

Light Management Hub

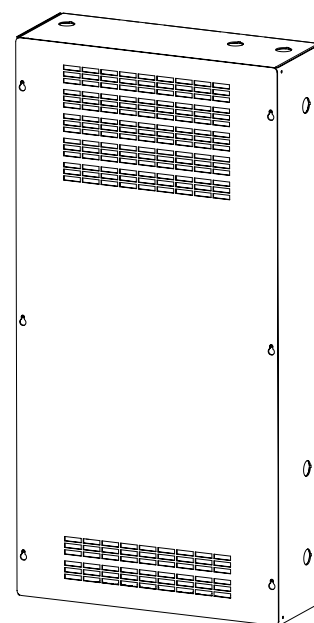
The Quantum Light Management Hub (QP2) connects Lutron QS devices, Lutron power panels, and DMX512 devices to your Quantum lighting control system.

Features

- Designed to control, manage, and monitor any Lutron Energi Savr Node units, Lutron power panels, GRAFIK Eye QS units, Sivoia QS shade/drapery systems, and DMX512 devices.
- Supports both astronomic and time-of-day events to automatically control the lights and shades in the system.
- Simple reconfiguration of a space without rewiring.
- Individually control, monitor, and adjust any light or shade in a space.
- QS links are topology-free.

QP2 Hub Capabilities

- Lighting management panels communicate via an Ethernet connection using multicast protocol.
- Each hub can contain up to 2 Quantum processors. Each processor has 2 digital communication links for a maximum of 4 links per hub. Each link can be configured to communicate on one of the following protocols.
 - Lutron power panels
 - Lutron QS devices
 - DMX512 devices



Panel Capabilities

- Each Quantum Light Management Hub (QP2) has 2 links that can be individually configured to communicate with:
 - Lutron power panels
 - Lutron QS devices
 - DMX-512 devices for lighting zones (use QSE-CI-DMX for DMX integration zones)

Allowed combinations of links for any single processor:

	DMX-In	DMX-Out	QS	Panel	DBI
DMX-In			✓		✓
DMX-Out			✓		✓
QS	✓	✓	✓	✓	✓
Panel			✓	✓	✓
DBI	✓	✓	✓	✓	

Job Name:	Model Numbers:
Job Number:	

Specifications

Regulatory Approvals

- CE

Power

- Input voltage: 220 – 240 V~, normal/emergency feed
50/60 Hz 10 A
- Output: Processor – 24 V= 1 A per link
83 BTUs/hr

Physical Design

- Enclosure: IP-20 protection
- Weight: 20.4 kg

Mounting

- Surface mount only

Environment

- For indoor use only
- 0 °C to 40 °C
- Relative humidity less than 90% non-condensing



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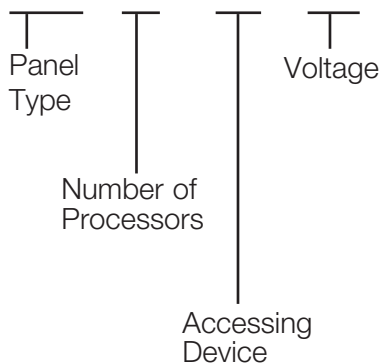
Model Numbers:

Job Number:

How to Build a Model Number

Example

QP2 - 2P0CSE - 230



Panel Type

QP2 = Quantum Light Management Hub

Number of Processors

1P = 1 Quantum processor

2P = 2 Quantum processors

Accessing Device

SE = 5-port unmanaged Ethernet switch

Voltage

230 for 220 – 240 V~

Additional Ratings

50/60 Hz

Output: Processor – 24 V= 1 A per link

Available Model Numbers

Contact Lutron for options not listed below.

QP2-1P0CSE-230

QP2-2P0CSE-230

Note:

This panel is rated for Class A, Commercial Use Only.

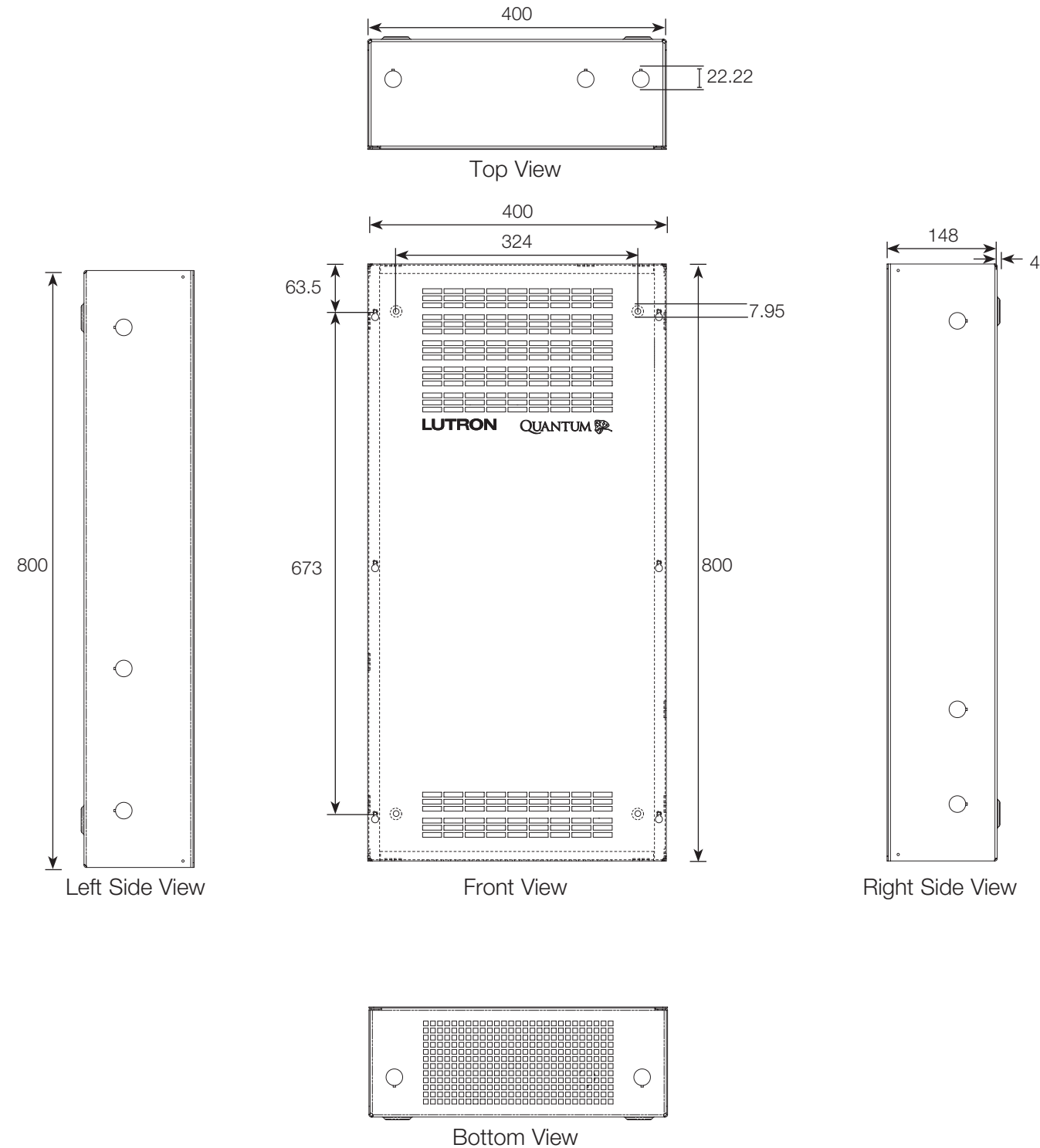
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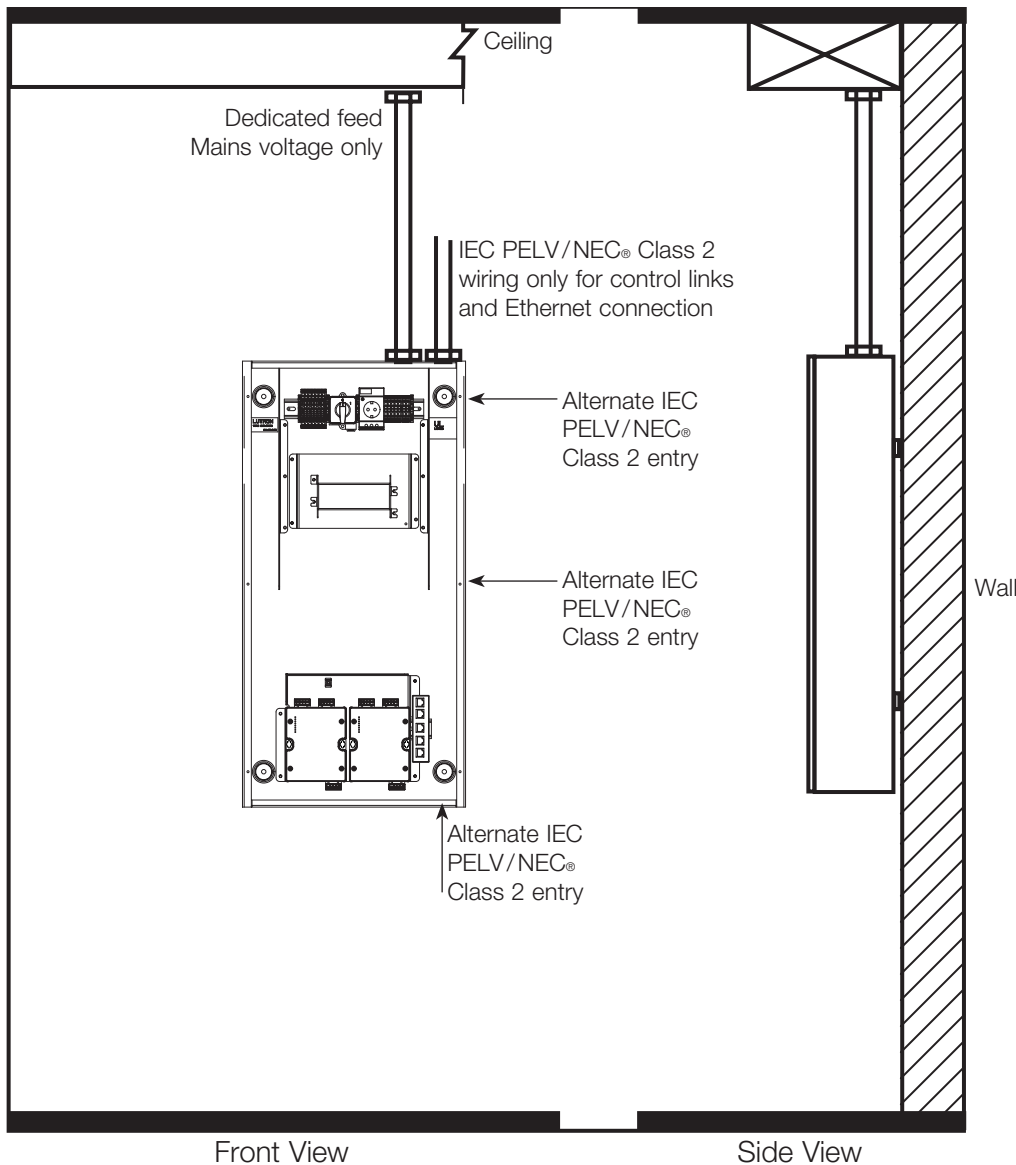
Dimensions

All dimensions shown as: mm



Mounting and Conduit Entry Notes

- Water damages equipment. Mount in a location where the panel and processors will not get wet. Mount within 7° of true vertical.
- A minimum of 305 mm unobstructed space is required in front of and below the panel for ventilation.

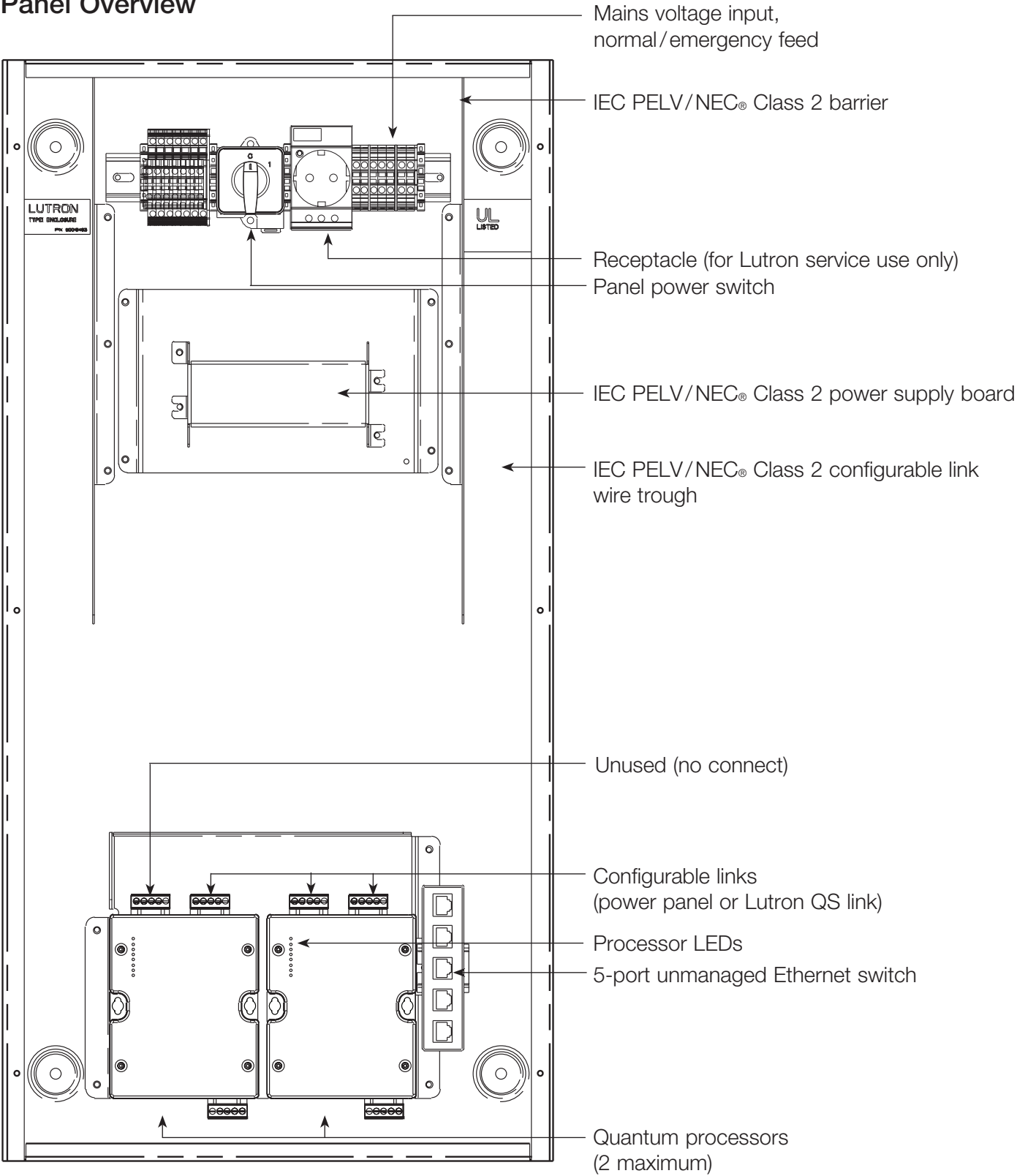


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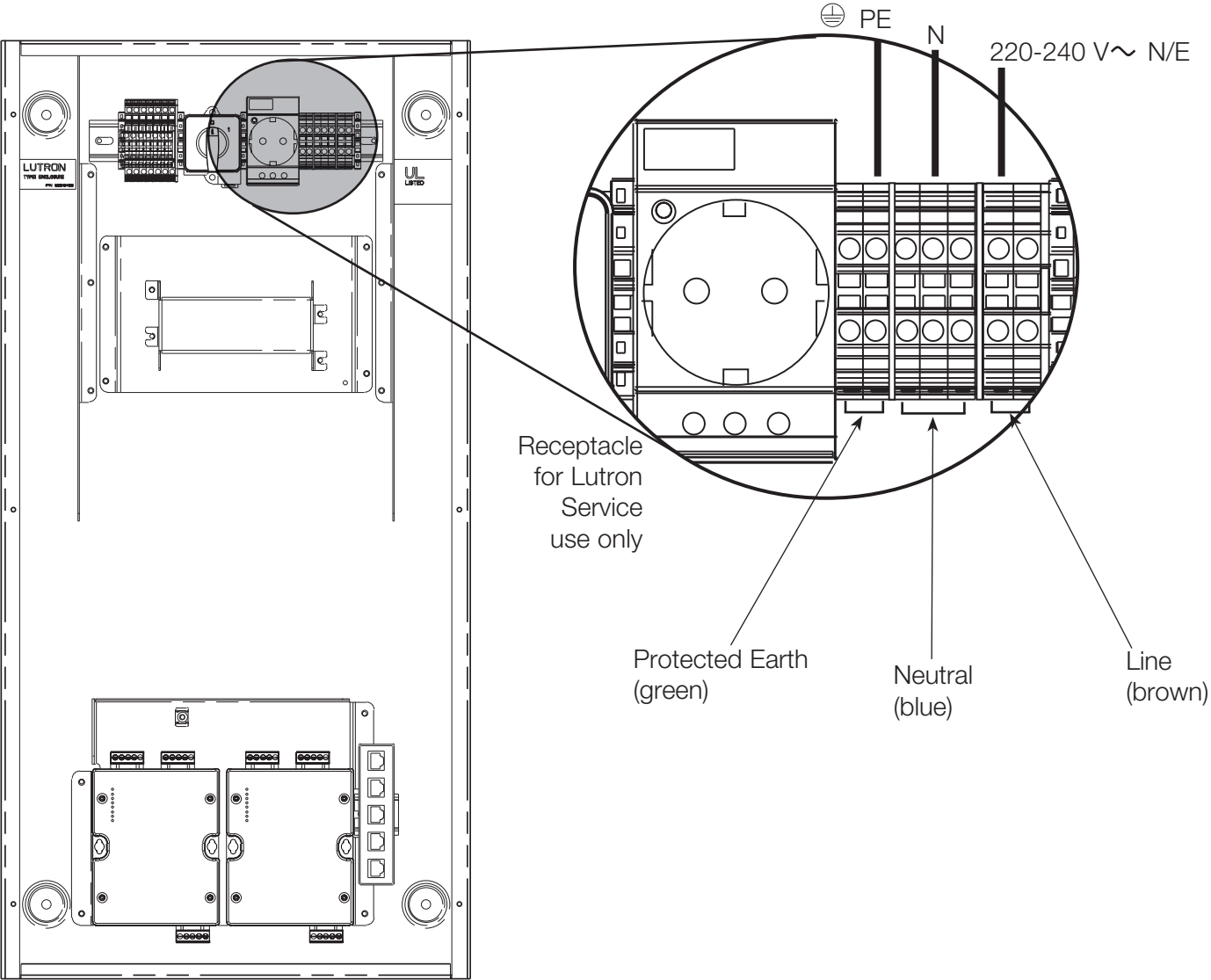
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Panel Overview



Job Name:	Model Numbers:
Job Number:	

Line Voltage Wiring



Notes

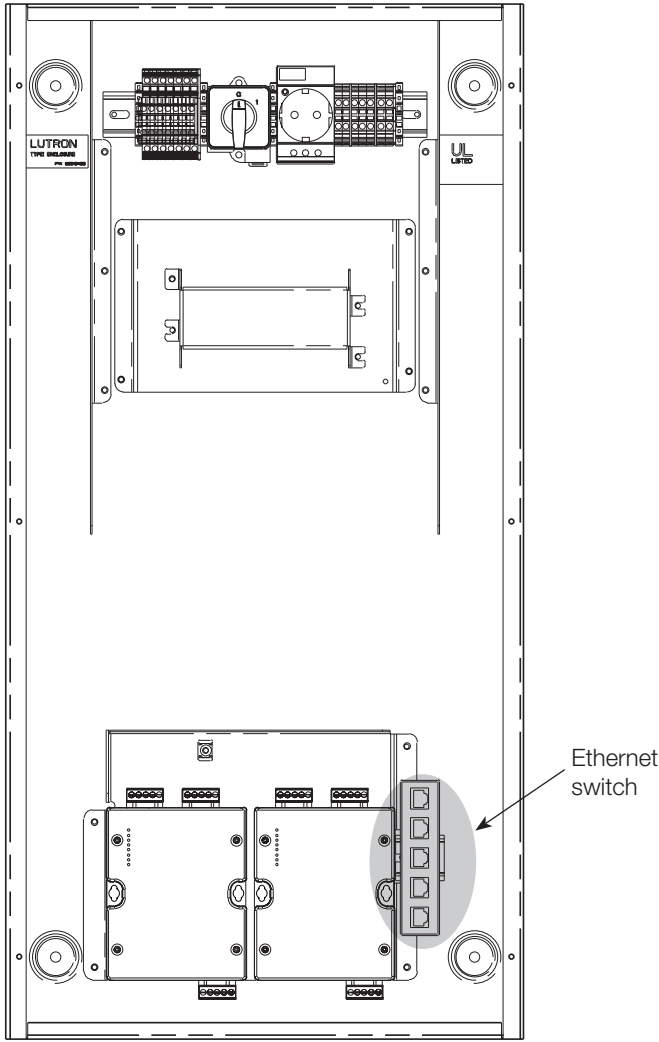
- Mains voltage must enter hub from top right of hub.
- Run a dedicated 220-240 V~ normal/emergency feed.
- Run wiring so mains line voltage is separate from IEC PELV/NEC® Class 2 wiring.

Wire Sizes

- Power feed (live): 2.5 to 4.0 mm²

Job Name:	Model Numbers:
Job Number:	

Quantum Ethernet Wiring



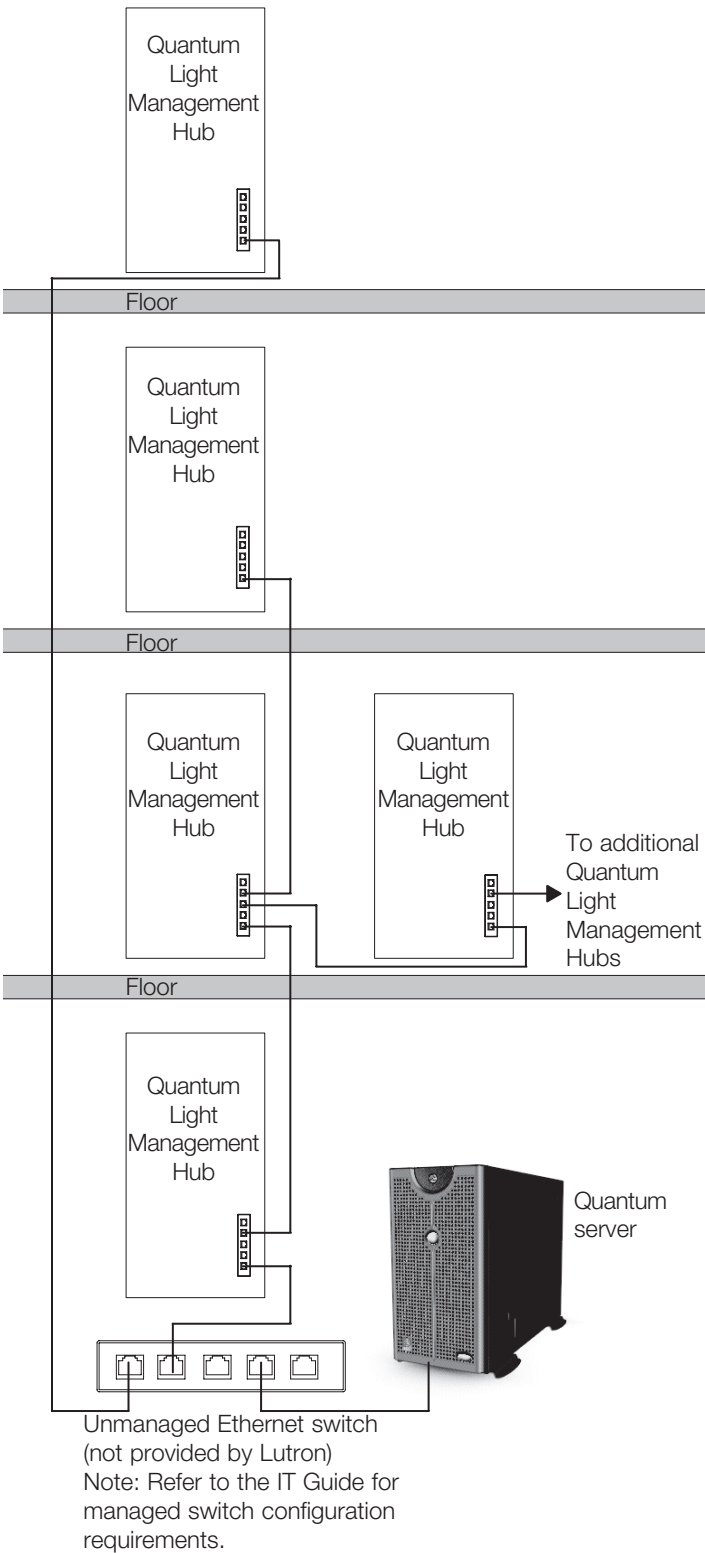
Notes

The inter-processor wiring is considered IEC PELV/NEC® Class 2; do not run in the same conduit as line (mains) voltage wiring.

- Processors cannot be daisy-chained. Each must be connected to an Ethernet switch.
 - Inter-processor wiring uses a standard Ethernet connection. All wiring must comply with IEEE 802.3 standards and must support Any-Source Multicast communication.
- Wiring distance for any single “wire segment”^{*} is 100 m max; use unmanaged Ethernet switches for longer distances.
- Processors cannot be more than 6 “wire segments” from the server.
- A dedicated network or VLAN is recommended for the lighting control system.
- For more information about connecting a Quantum system to a corporate or building wide network, please refer to the Quantum IT Guide (P/N 040423) at www.lutron.com/ITGuide

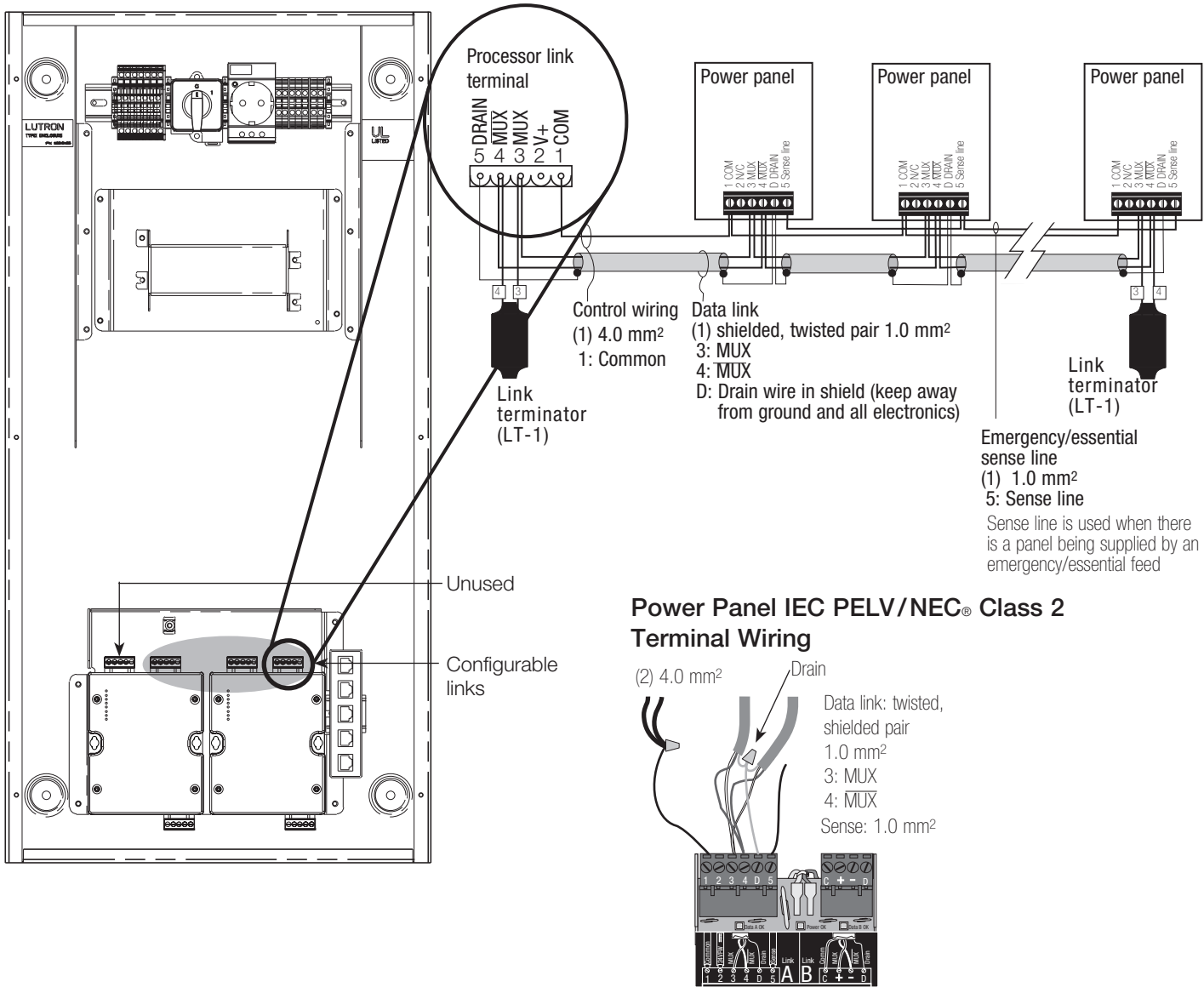
^{*} A wire segment is a length of cable connecting two devices communicating over Ethernet.

Example of Ethernet Wiring: Riser Diagram



Job Name:	Model Numbers:
Job Number:	

Configurable Link Wiring: Power Panel Link

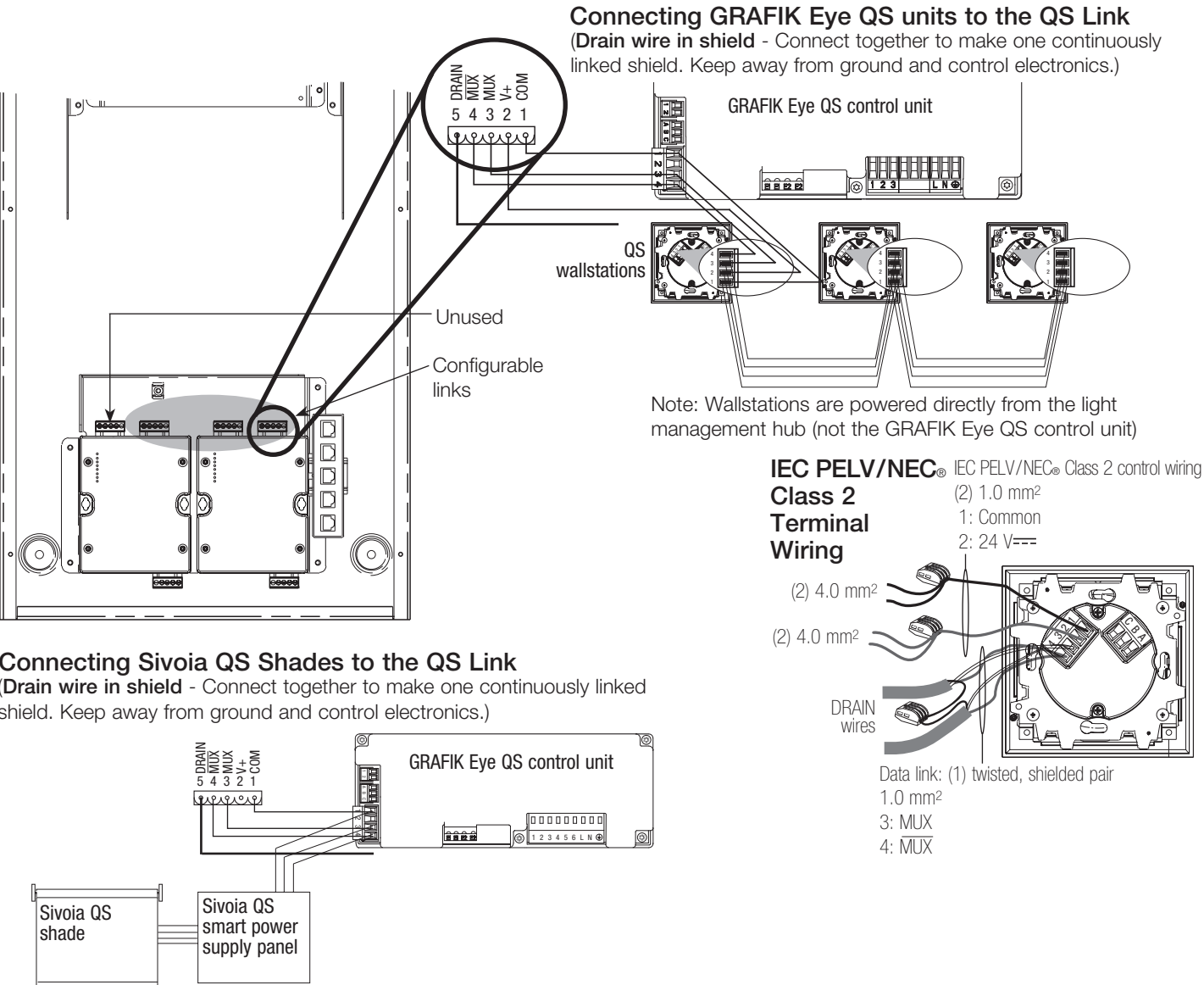


Notes

- Power panel link must be daisy-chained (no T-taps).
- Maximum of 32 power panels per link (note that some GP series panels can contain more than one circuit selector per panel).
- It is not necessary to have the Quantum connection at the end of the link. The panel can be in the middle of the link also.
- The sense wire (terminal 5) is used whenever there is a panel being supplied by an emergency/essential feed; see power panel instructions for details. The sense wire will not be terminated at the Quantum hub.
- Each IEC PELV/NEC® Class 2 terminal can accept only two 0.5 mm²-1.0 mm² wires. Two 4.0 mm² conductors will not fit. Connect as shown using appropriate wire connectors.
- Total length of the power panel link may be no more than 600 m. Lutron model: MX-RPTR-220/240 can be used to extend the link beyond 600 m. Contact Lutron for more information.
- Total length of control link may be no more than 600 m. If link repeater interface and GRX-CBL-46L cable are used, length may be up to 1200 m.
- IEC PELV/NEC® Class 2 wiring cable is available from Lutron (GRX-CBL-46L) and contains two 4.0 mm² conductors for control power, one twisted, shielded pair of 1.0 mm² for data link, and one 1.0 mm² conductor for emergency (essential) sense line.

Job Name:	Model Numbers:
Job Number:	

Configurable Link Wiring: QS Link

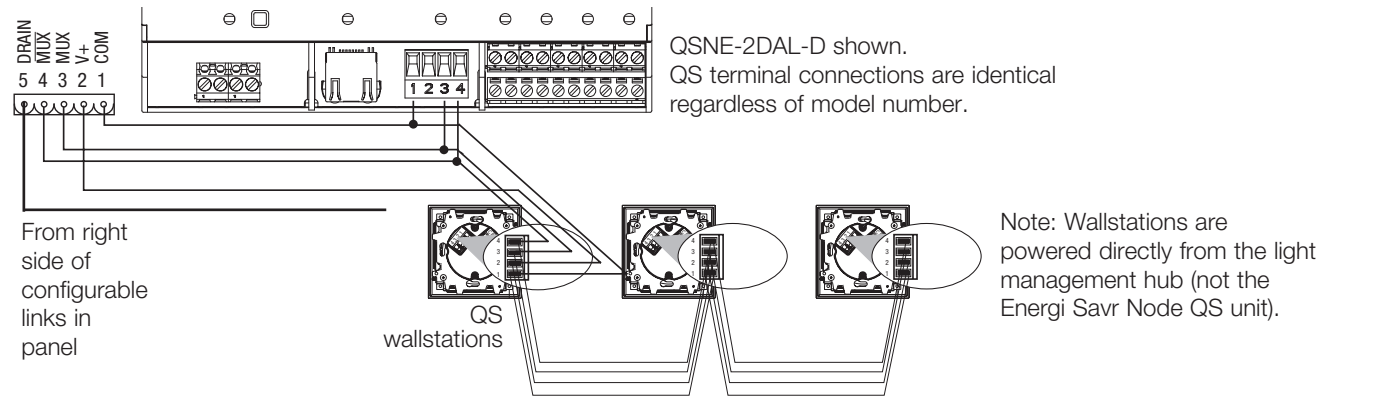


Available Power Draw Units (PDUs) per link	Maximum Link Length	Wire Gauge	Available from Lutron in one cable
33	152 m	Power (terminals 1 and 2) 1 pair 1.0 mm² Data (terminals 3 and 4) 1 pair 0.5 mm² twisted and shielded	GRX-CBL-346S GRX-PCBL-346S
33	610 m	Power (terminals 1 and 2) 1 pair 4.0 mm² Data (terminals 3 and 4) 1 pair 0.5 mm² twisted and shielded	GRX-CBL-46L GRX-PCBL-46L

Configurable Link Wiring: QS Link

Connecting Energi Savr Node devices to the QS Link

(Drain wire in shield - Connect together to make one continuously linked shield. Keep away from ground and control electronics.)



Wire Gauge	QS Link Max. Length
2.5 mm ²	600 m
1.5 mm ²	250 m
1.0 mm ²	150 m

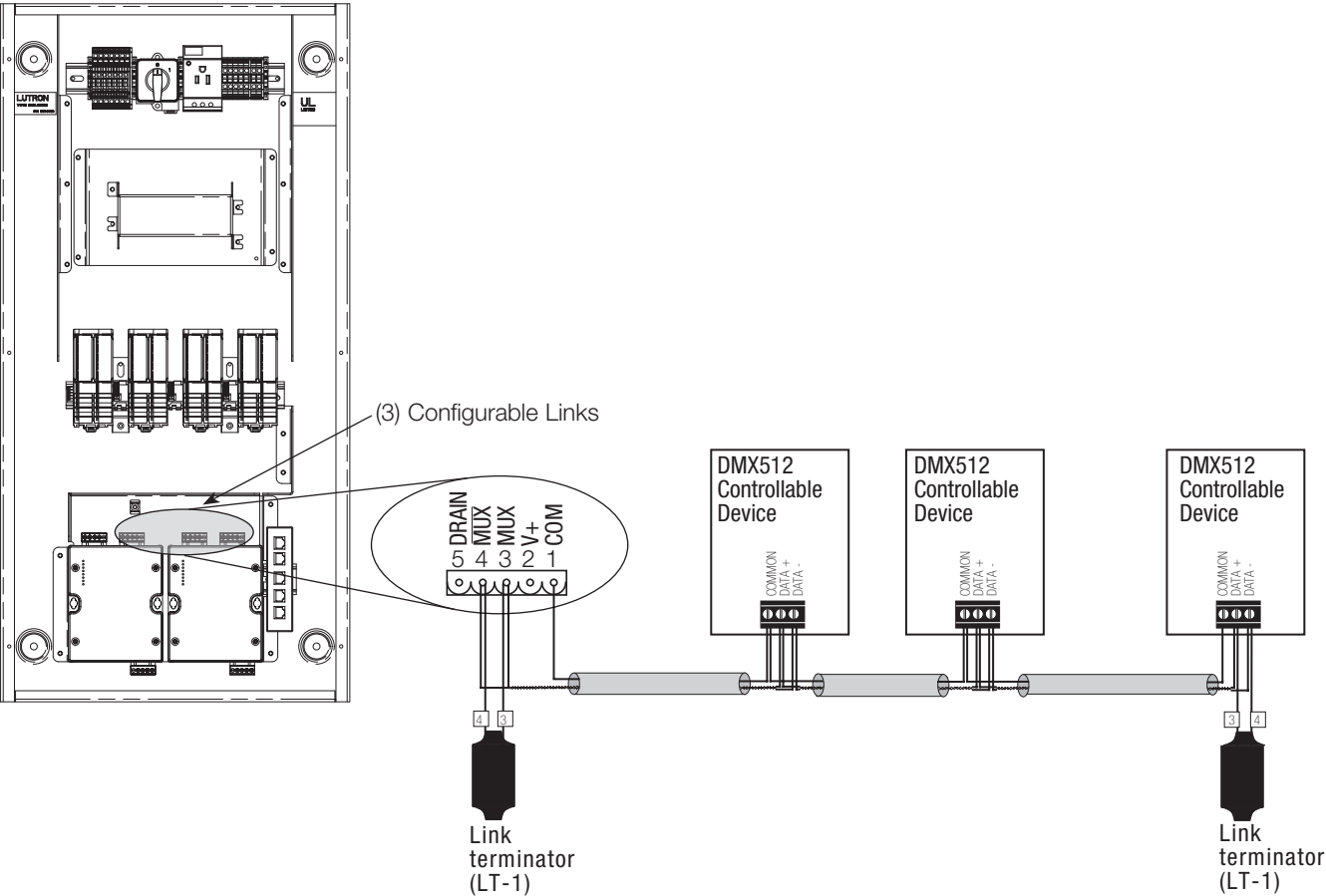
Notes

- System communication uses IEC PELV/NEC® Class 2 wiring.
- Follow all local and national electrical codes when installing IEC PELV/NEC® Class 2 wiring with mains wiring.
- Each terminal accepts up to two 0.5 mm²-1.0 mm² wires.
- Total length of control link must not exceed 600 m; If exceeding 600 m, contact Lutron for wiring configuration.
- Make all connections in the control unit's wallbox.
- A Quantum QS link can have up to 512 switch legs (outputs), 99 QS devices, and 33 power draw units (see page 4).
- QS Link Wiring can be T-tapped or daisy-chained.
- Wire sizes:
 - Two 2.5 mm² conductors for control power.
 - One twisted, shielded pair of 1.0 mm² for data link.
 - Cable is available from Lutron: GRX-CBL-46L.
- See Lutron cable specifications for all plenum and non-plenum options available.
http://www.lutron.com/TechnicalDocumentLibrary/cables_nonplenum.pdf
http://www.lutron.com/TechnicalDocumentLibrary/cables_plenum.pdf
- The Quantum Light Management Hub provides 33 power draw units (PDUs) on the QS Link. Refer to the QS Link Power Draw Units Specification Submittal (Lutron P/N 369405) at www.lutron.com

Job Name:	Model Numbers:
Job Number:	

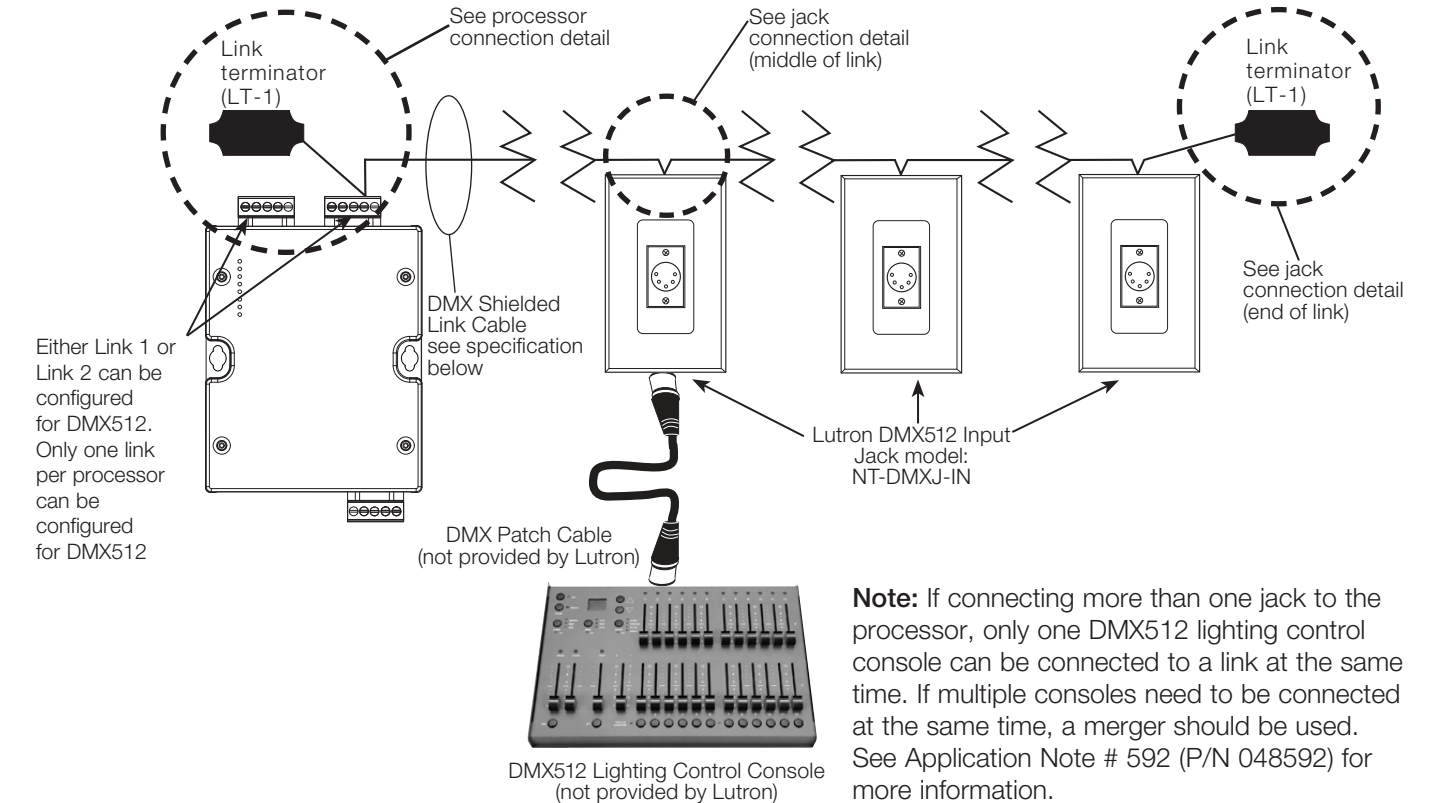
Configurable Link Wiring: DMX512

DMX512 Output Wiring Example

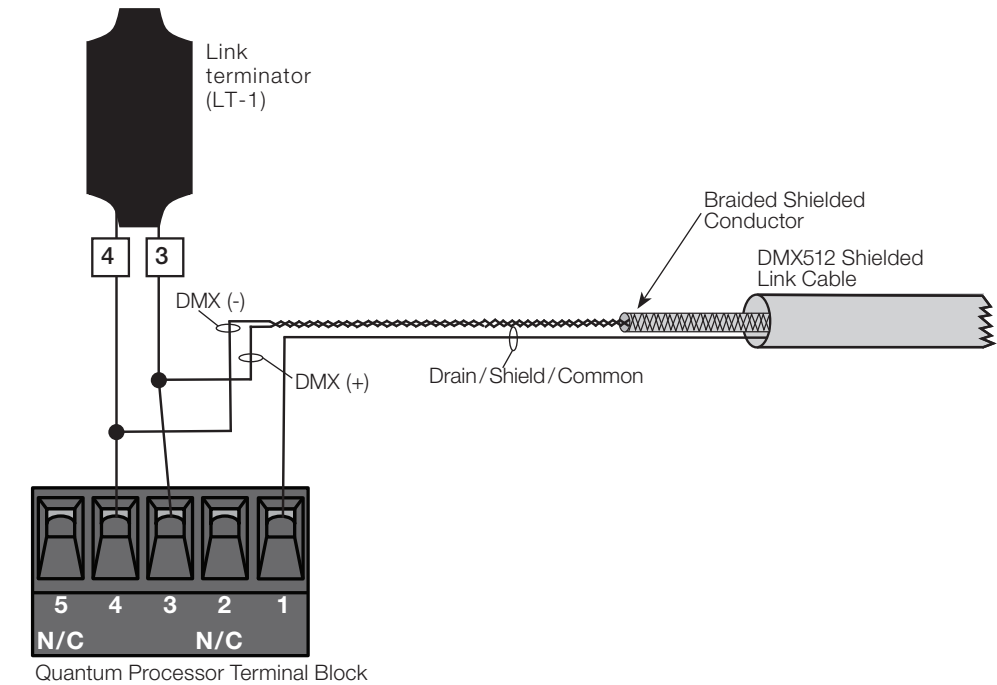


Configurable Link Wiring: DMX512 (continued)

DMX512 Input Typical 1-Line Diagram



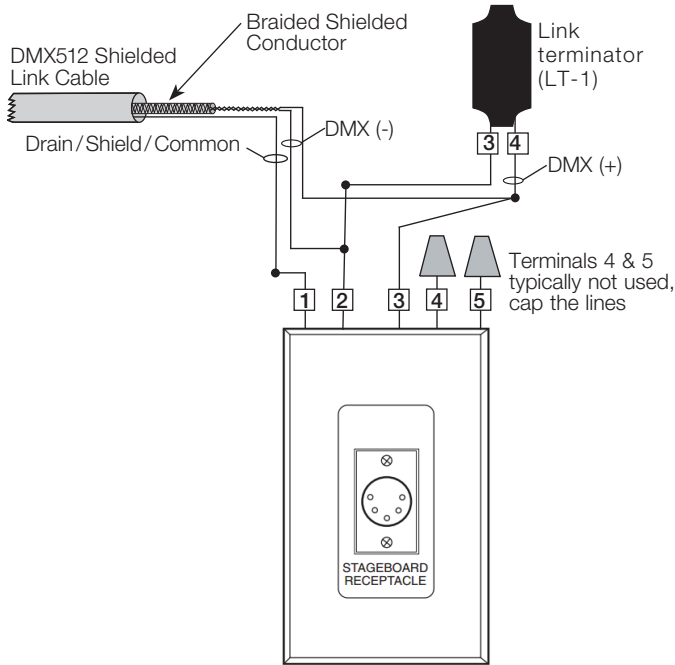
DMX512 Quantum Processor Connection Details



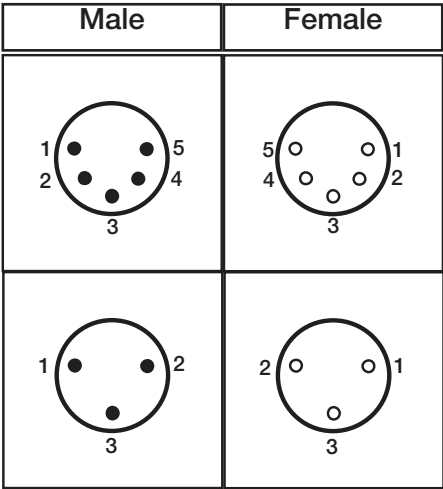
Job Name:	Model Numbers:
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Configurable Link Wiring: DMX512 (continued)

Jack Connection Detail (End of Link)



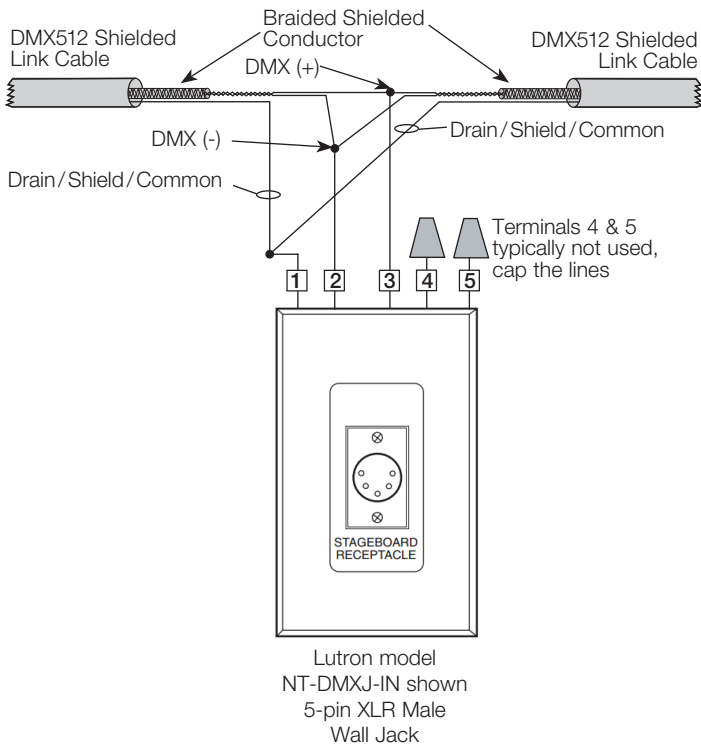
Alternate XLR Jack Pinouts



DMX XLR Jack Pinout Standard

1	Drain/Shield/Common
2	DMX (-) Primary Link
3	DMX (+) Primary Link
4	DMX (-) Secondary Link
5	DMX (+) Secondary Link

Jack Connection Detail (Middle of Link)



Job Name:	Model Numbers:
Job Number:	

Configurable Link Wiring: DMX512 (continued)

DMX Cable Wiring Table

The table below provides information pertaining to Lutron-provided (optional) DMX cable and how it should be terminated. For third-party cable, consult with the manufacturer for their connection recommendations and always use shielded cable that complies with the ANSI E1.11-2008, USITT DMX512-A standard.

Manufacturer	Model	Signal Name	Wire Color	Lutron model NT-DMXJ-IN connection	Lutron Quantum Processor Connection
Lutron	GRX-CBL-DMX-250 or GRX-CBL-DMX-500	Drain/Shield/Common	Use braided wire that surrounds the twisted pairs	Pin 1 - Drain/Shield/Common (white with black stripe)	Pin 1 - Common
		DMX (-) Primary Link	White or pink	Pin 2 - DMX (-) Primary Link (red)	Pin 4 - MUX
		DMX (+) Primary Link	Black	Pin 3 - DMX (+) Primary Link (yellow)	Pin 3 - MUX
		DMX (-) Secondary Link	Green	Pin 4 - DMX (-) Secondary Link (blue)	No connection (cap the wire)
		DMX (+) Secondary Link	Red	Pin 5 - DMX (+) Secondary Link (black)	No connection (cap the wire)

Notes

- Installation and all devices must comply with the ANSI E1.11-2008, USITT DMX512-A standard.
- Below are a few Important points from the standard:
 - All DMX512 devices in a DMX512 universe must be wired in a daisy-chain configuration.
 - Total length of the link wiring for one DMX512 universe must not exceed 305 m. DMX repeaters or splitters can be used to extend the link. All repeaters must comply with the standard. The repeater manufacturer's guidelines must be followed.
 - All cable used must comply with the standard. Lutron models GRX-CBL-DMX-250 and GRX-CLB-DMX-500 comply with the standard and are recommended.
 - DMX512 link terminators must be installed at both ends of the DMX512 link. Lutron model LT-1A link terminators are included with the panel and are recommended. Note that some DMX512 devices have built-in link terminators.
 - A maximum of (31) DMX512 devices can be directly connected to the DMX512 controller. If (32) or more devices are required, DMX512 repeaters or splitters must be used to extend the number of devices. A repeater or splitter is needed so that no more than (32) devices are directly connected on the same wire segment. Note that link terminators are required at the beginning and end of every wire segment.
- The Quantum processor can be programmed to either control DMX512 devices (DMX512 output) or to receive DMX512 signals from a DMX512 controller (DMX512 input) such as a theatrical stage board.
- All wiring must be low-voltage IEC PELV/NEC® Class 2 wiring. Each terminals of the Lutron processor can accept only stranded wire, and either (1 or 2) 0.5 mm² – 1.0 mm² conductors or (1) 1.5 mm² – 4.0 mm².
- The Quantum processor can be at the end or in the middle of the DMX512 link. The link terminators must always be installed at the ends of the link.
- Only one link of the processor can be configured as a DMX512 link. The other link of the processor must be configured as a QS link.
- DMX512 devices must be addressed prior to commissioning of the system. A schedule of the DMX devices and their addresses must be supplied to the Lutron project manager prior to commissioning. Lutron is not responsible for the addressing of the DMX512 devices.
- Refer to the Lutron DMX512 Application Note #592 (P/N 048592) at www.lutron.com for information on the different DMX512 applications that Lutron can provide.

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