LUTRON®

QUANTUM™

Light Management Hub

Installation Guide for CE Models
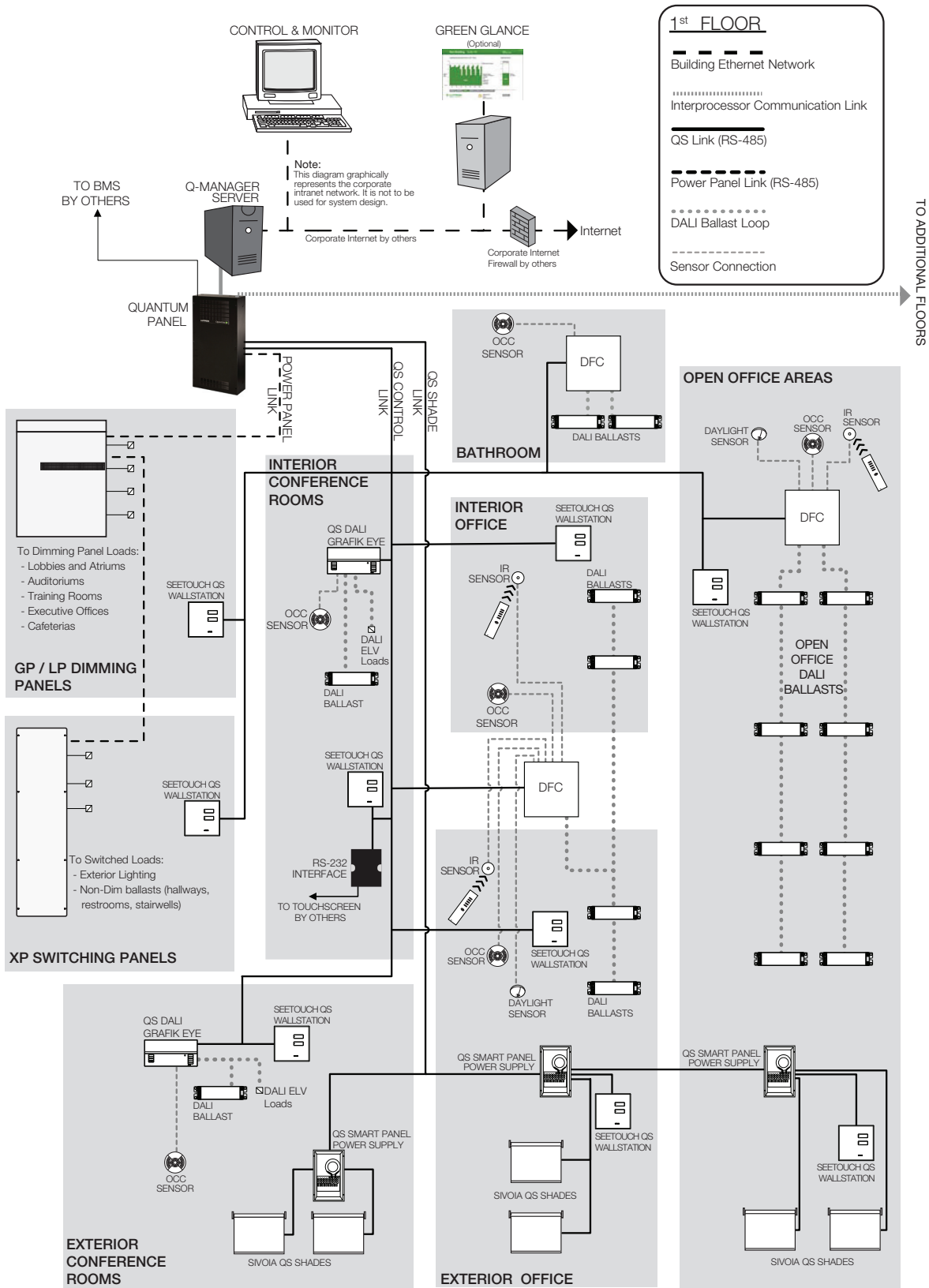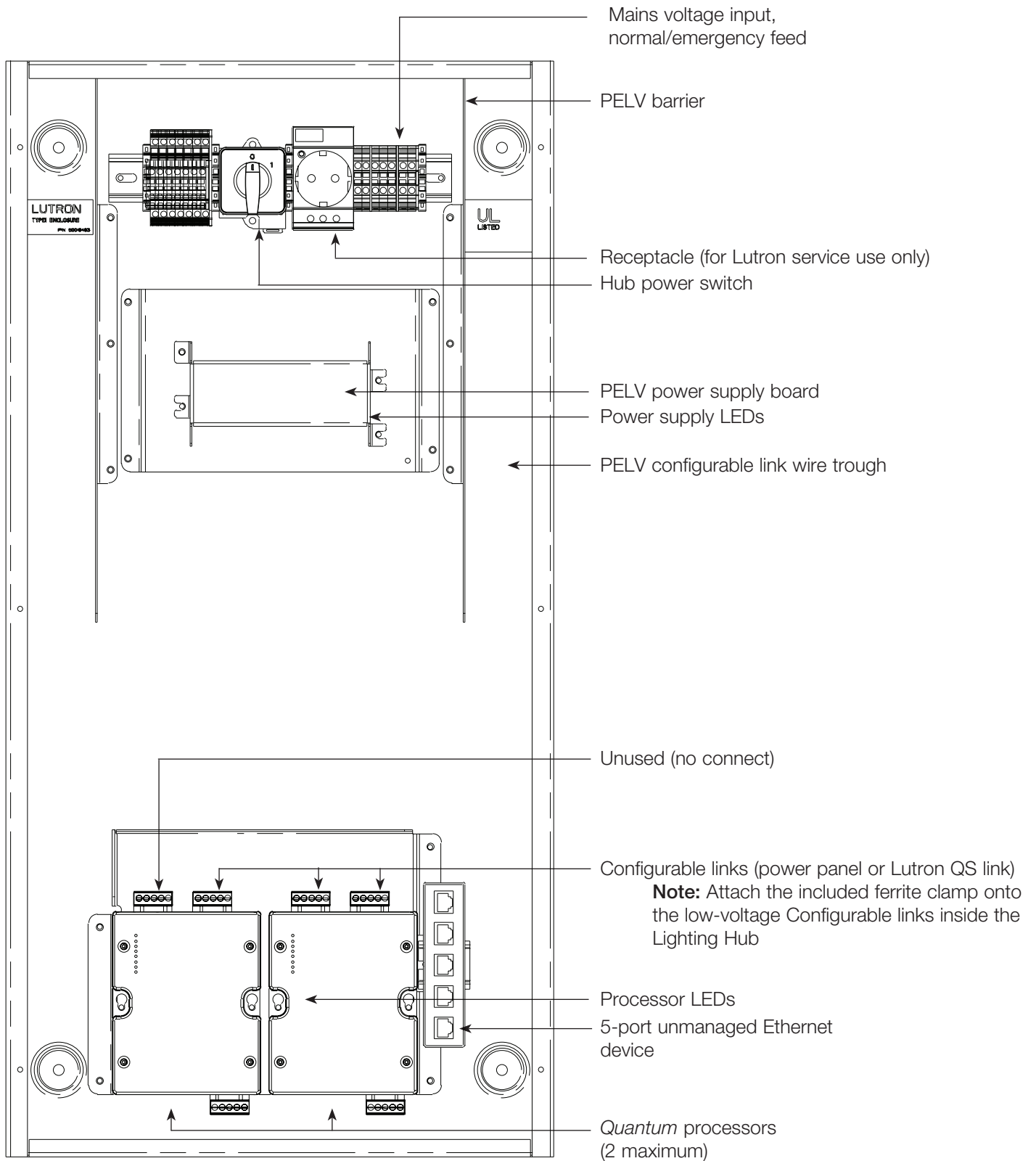
Please Read

Contents

The *Quantum* light management hub provides the ability to control DALI ballasts, Lutron GRAFIK Eye® power panels, GRAFIK Eye® QS, and Sivoia® QS shades from one centralised location.
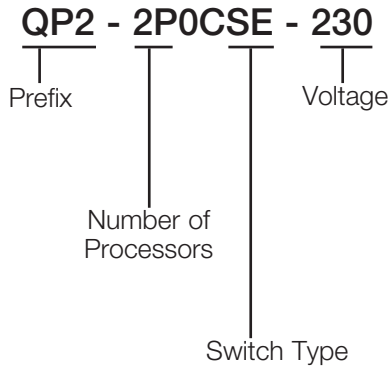
Quantum® System Overview

CONTROL & MONITOR

GREEN GLANCE
(Optional)

Note:
This diagram graphically represents the corporate intranet network. It is not to be used for system design.

TO BMS BY OTHERS

Q-MANAGER SERVER

Corporate Internet by others

Internet

Corporate Internet Firewall by others

QUANTUM PANEL

1st FLOOR

Building Ethernet Network

Interprocessor Communication Link

QS Link (RS-485)

Power Panel Link (RS-485)

DALI Ballast Loop

Sensor Connection

TO ADDITIONAL FLOORS

POWER PANEL LINK

QS CONTROL LINK

QS SHADE LINK

OCC SENSOR

DFC

DALI BALLASTS

BATHROOM

INTERIOR CONFERENCE ROOMS

QS DALI GRAFIK EYE

OCC SENSOR

DALI ELV Loads

DALI BALLAST

SEETOUCH QS WALLSTATION

RS-232 INTERFACE

TO TOUCHSCREEN BY OTHERS

To Dimming Panel Loads:
- Lobbies and Atriums
- Auditoriums
- Training Rooms
- Executive Offices
- Cafeterias

SEETOUCH QS WALLSTATION

GP / LP DIMMING PANELS

INTERIOR OFFICE

SEETOUCH QS WALLSTATION

IR SENSOR

DALI BALLASTS

OCC SENSOR

DFC

OPEN OFFICE AREAS

DAYLIGHT SENSOR

OCC SENSOR

IR SENSOR

DFC

SEETOUCH QS WALLSTATION

OPEN OFFICE DALI BALLASTS

SEETOUCH QS WALLSTATION

To Switched Loads:
- Exterior Lighting
- Non-Dim ballasts (hallways, restrooms, stairwells)

IR SENSOR

OCC SENSOR

SEETOUCH QS WALLSTATION

DAYLIGHT SENSOR

DALI BALLASTS

XP SWITCHING PANELS

QS DALI GRAFIK EYE

SEETOUCH QS WALLSTATION

DALI ELV Loads

DALI BALLAST

OCC SENSOR

QS SMART PANEL POWER SUPPLY

QS SMART PANEL POWER SUPPLY

SEETOUCH QS WALLSTATION

QS SMART PANEL POWER SUPPLY

SIVOIA QS SHADES

SEETOUCH QS WALLSTATION

EXTERIOR CONFERENCE ROOMS

SIVOIA QS SHADES

EXTERIOR OFFICE

SIVOIA QS SHADES

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Hub Overview

Mains voltage input,
normal/emergency feed

PELV barrier

Receptacle (for Lutron service use only)

Hub power switch

PELV power supply board

Power supply LEDs

PELV configurable link wire trough

Unused (no connect)

Configurable links (power panel or Lutron QS link)
Note: Attach the included ferrite clamp onto
the low-voltage Configurable links inside the
Lighting Hub

Processor LEDs

5-port unmanaged Ethernet
device

Quantum processors
(2 maximum)

LUTRON
TYPE ENCLOSURE
P/N 6006463

UL
LISTED

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Model Number Guide

Example

QP2 - 2P0CSE - 230

Prefix

Number of Processors

Switch Type

Voltage

Prefix
QP2 = Quantum® processor

Number of Processors
1P = 1 *Quantum* processor
2P = 2 *Quantum* processors

Switch Type
SE = Ethernet 5-port

Voltage
230 for 220 - 240 V~

Available Model Numbers
Contact Lutron for options not listed below.

QP2-1P0CSE-230
QP2-2P0CSE-230

<u>Additional Ratings</u>
50 / 60 Hz
Output: Processor - 24 V⎓ 1 A per link

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

QS Device Consumption Rules

The table below lists the devices available on the QS link. See below for each device's count toward the link maximums for switch legs, devices, and power draw. A *Quantum* QS link can have up to 512 switch legs (outputs), 99 devices, and 32 power draw units.

QS Device Description	Switch Leg Count	Device Count	Power Draw Units
3-zone GRAFIK Eye® QS	3	1	0
4-zone *GRAFIK Eye* QS	4	1	0
6-zone *GRAFIK Eye* QS	6	1	0
seeTouch® QS	0	1	1
Sivoia® QS Roller 64™	1	1	0
Sivoia QS Roller 100™	1	1	0
Sivoia QS Roller 225™	1	1	0
QS contact closure interface	up to 5	1	2
QS network interface	0	1	2
QS smart power panel	0	1	0
Digital Fluorescent Controls (Energi Savr Node QS™)	up to 128	1	0

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Dimensions

All dimensions in mm.

400

22,22

Top View

400

324

63,5

7,95

800

673

800

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Left Side View

Front View

148

4
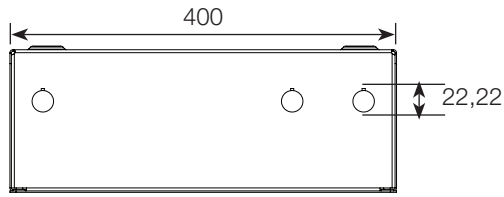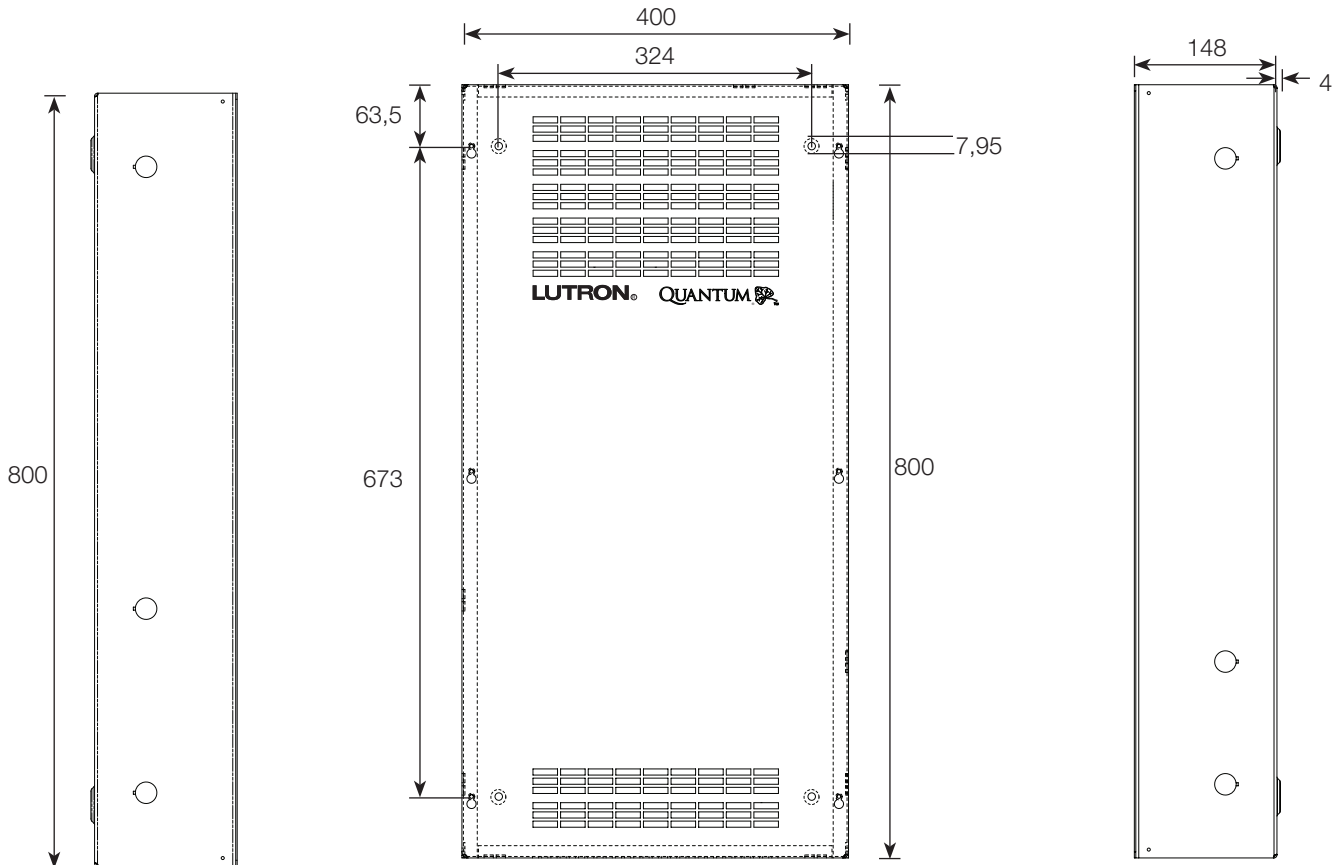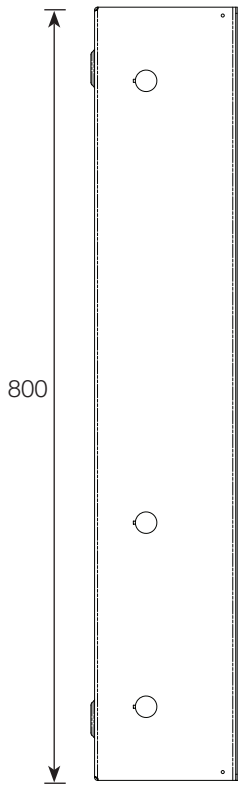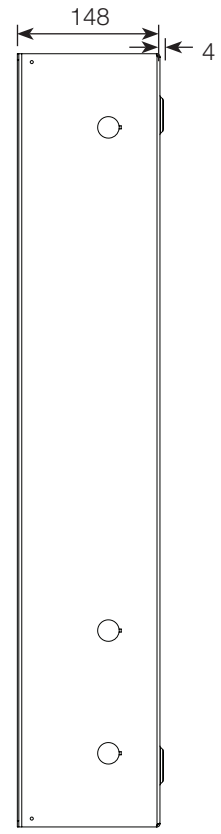
Right Side View
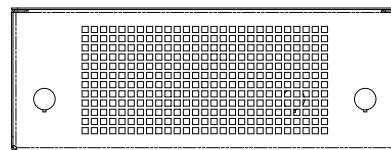
Bottom View

Mounting and Conduit Entry

Ceiling

Dedicated feed
Mains voltage only

PELV wiring only
for control links and
Ethernet connection

Alternate
PELV
entry

Alternate
PELV
entry

Wall

Alternate
PELV
entry

Front View

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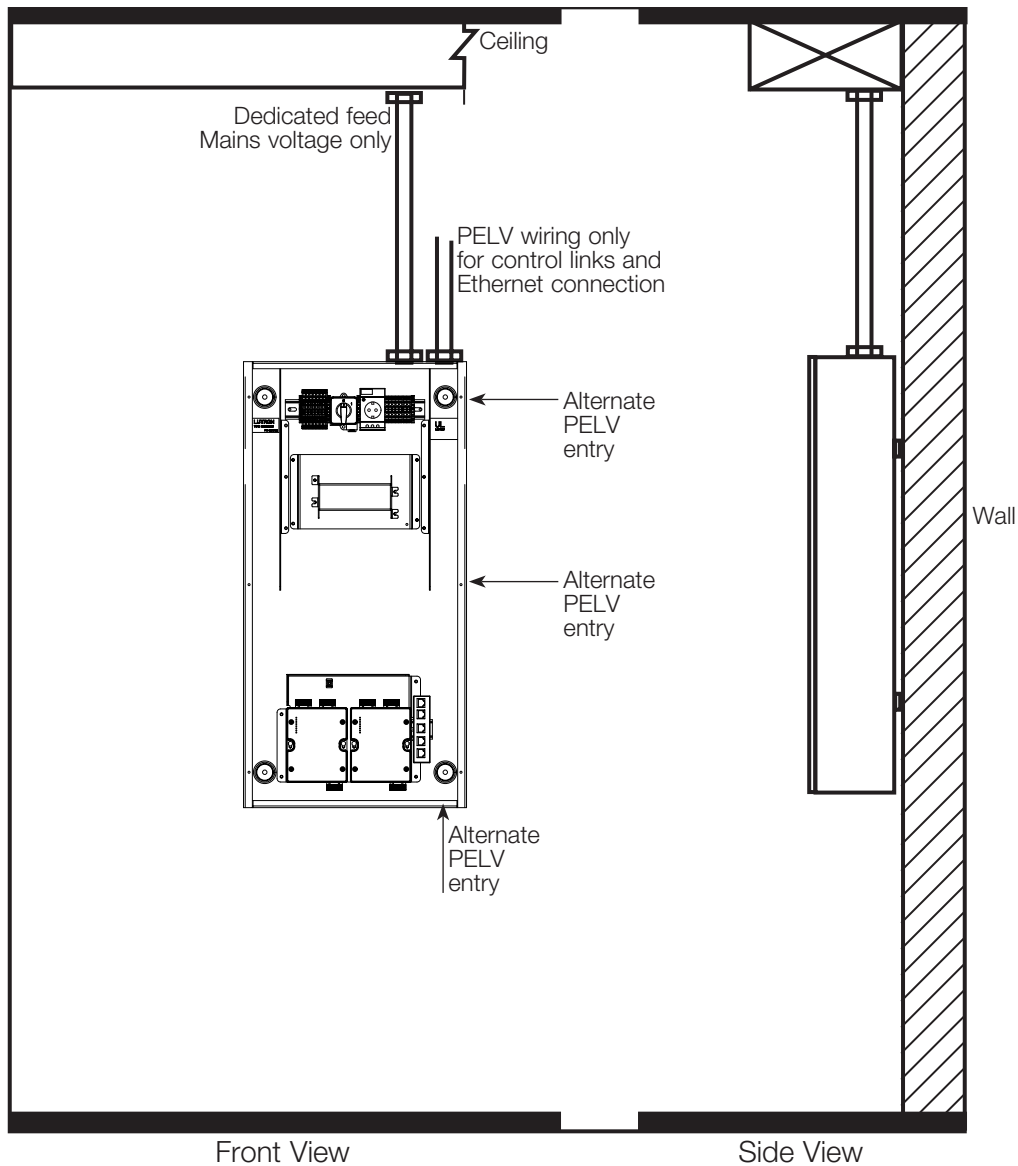
Notes
- Water damages equipment. Mount in a location where the hub and processors will not get wet. Mount within 7° of true vertical.
- A minimum of 305 mm unobstructed space is required in front of and below the hub for ventilation.

- Enclosure: IP-20 protection
- Weight: 20,4 kg
- Surface mount only
- For indoor use only
- 0 - 40 ℃
- Relative humidity less than 90% non-condensing

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Mains Voltage Wiring

PE

N

220-240 V⏦ N/E

Receptacle for Lutron Service use only

Protected Earth (green)
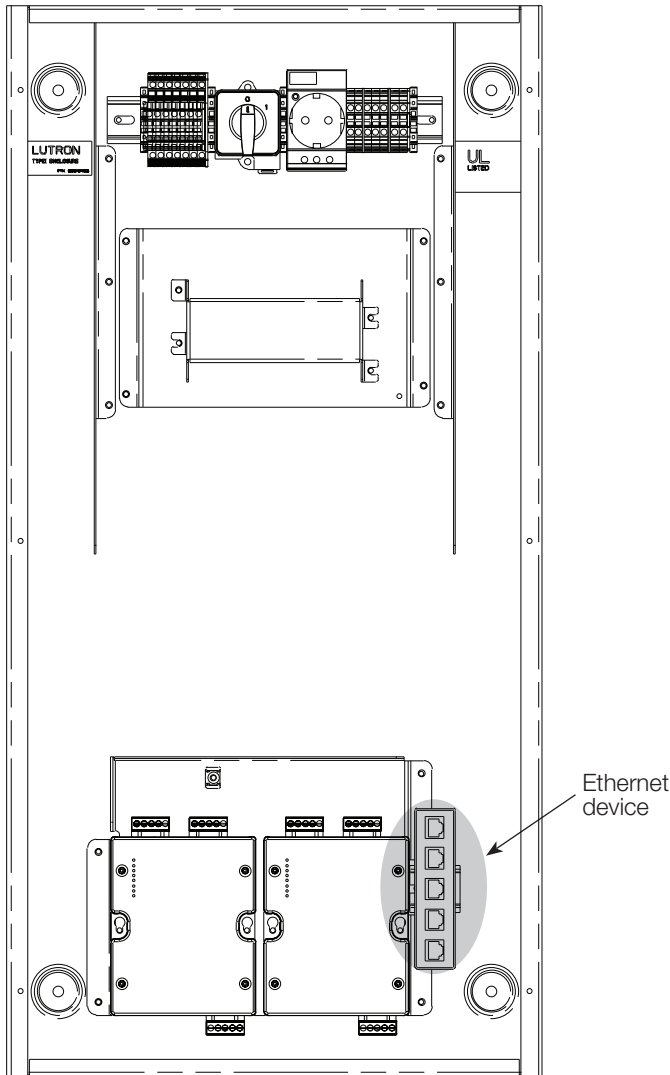
Neutral (blue)

Line (brown)
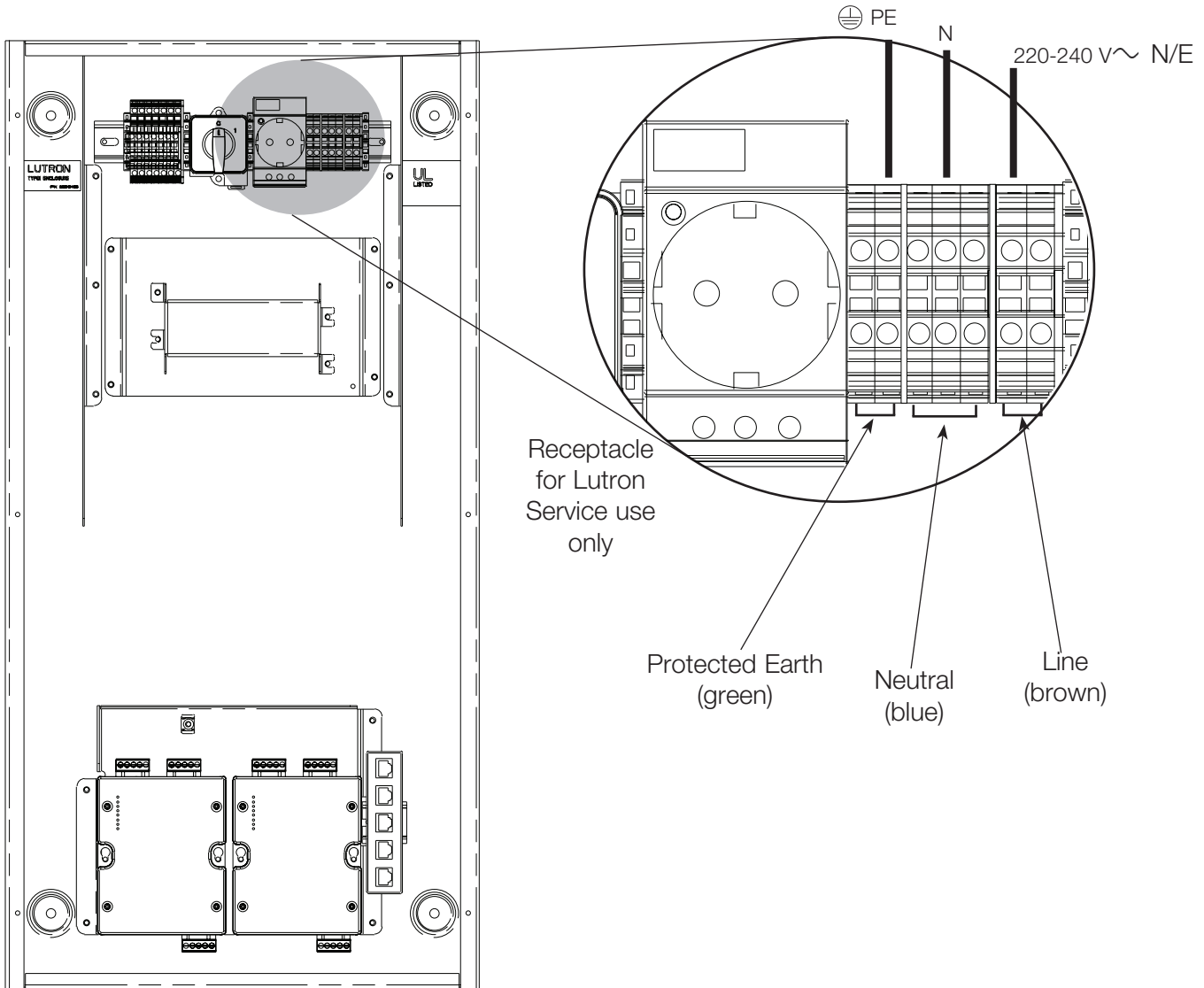
Notes
- Mains voltage must enter hub from top right of hub.
- Run a dedicated 220-240 V⏦ normal/emergency feed.
- Run wiring so mains line voltage is separate from PELV wiring.
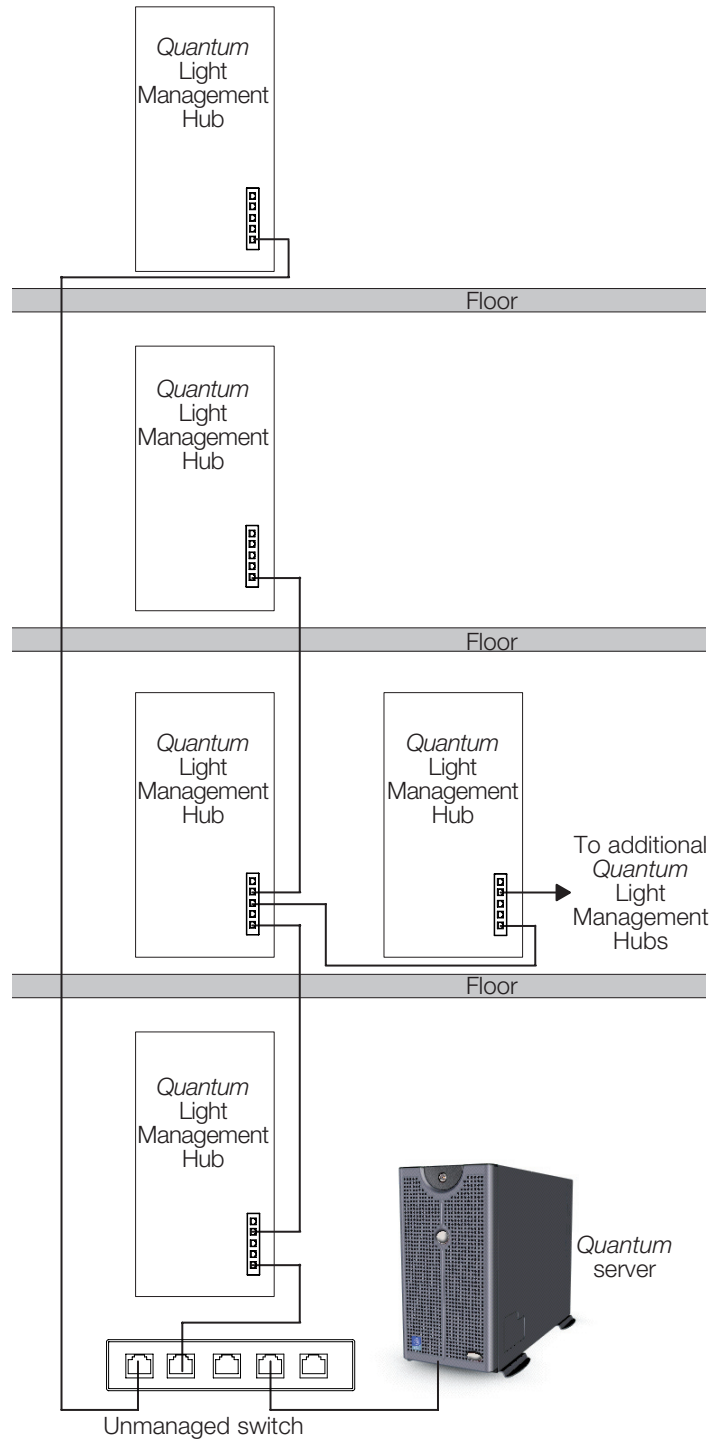
Wire Sizes
- Power feed (live): 2,5 - 4,0 mm^2
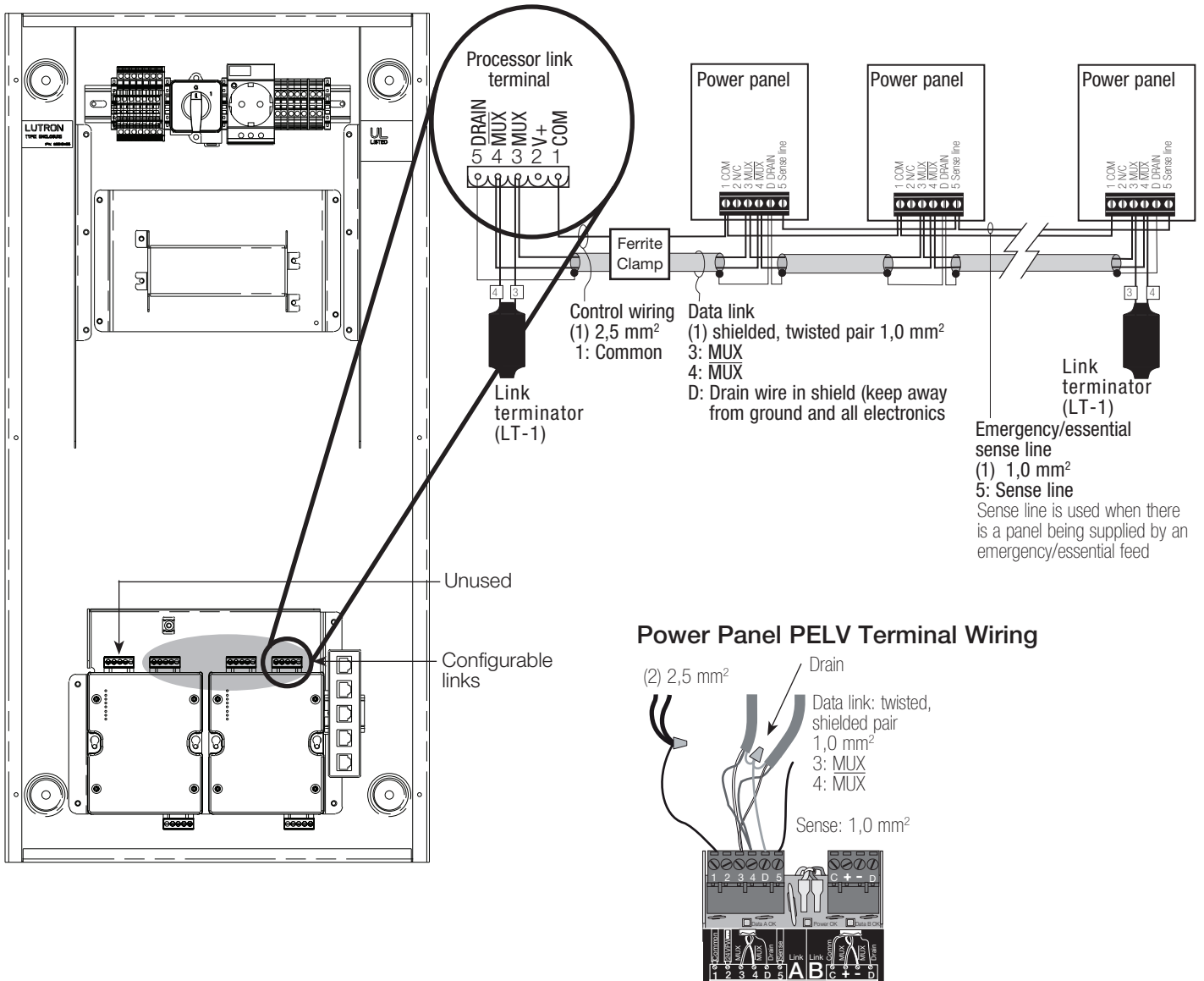
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Quantum® Ethernet Wiring

Ethernet device

Notes
- Ethernet wiring is considered PELV; do not run in the same conduit as mains voltage wiring.
- Wiring distance for any single Ethernet data link segment is 100 m max; use switches or hubs for longer distances.
- Processors cannot be more than 6 Ethernet hops away from the server.
- Processors communicate over the Ethernet network using multicast UDP; a dedicated network must be used for the lighting control system.
- Wiring between Hubs on a floor must be installed before startup. Wiring between floors can be added later.

Example of Ethernet Wiring: Riser Diagram

Quantum Light Management Hub

Quantum Light Management Hub

Quantum Light Management Hub

Quantum Light Management Hub

To additional *Quantum* Light Management Hubs

Quantum server

Unmanaged switch

Floor

Floor

Floor

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Configurable Link Wiring: Power Panel Link

Processor link terminal

5	4	3	2	1
DRAIN	MUX	MUX	V+	COM

Power panel

| 1 COM | 2 N/C | 3 MUX | 4 MUX | D DRAIN | 5 Sense line |

Power panel

| 1 COM | 2 N/C | 3 MUX | 4 MUX | D DRAIN | 5 Sense line |

Power panel

| 1 COM | 2 N/C | 3 MUX | 4 MUX | D DRAIN | 5 Sense line |

Ferrite Clamp

Link terminator (LT-1)

Control wiring
(1) 2,5 mm²
1: Common

Data link
(1) shielded, twisted pair 1,0 mm²
3: MUX
4: MUX
D: Drain wire in shield (keep away from ground and all electronics

Link terminator (LT-1)

Emergency/essential sense line
(1) 1,0 mm²
5: Sense line
Sense line is used when there is a panel being supplied by an emergency/essential feed

Unused

Configurable links

Power Panel PELV Terminal Wiring

(2) 2,5 mm²

Drain

Data link: twisted, shielded pair 1,0 mm²
3: MUX
4: MUX

Sense: 1,0 mm²

Notes
- Power panel link must be daisy-chained (no T-taps).
- Maximum of 32 power panels per link.
- It is not necessary to have the *Quantum* hub at the end of the link.
- 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.
- Each PELV terminal can accept only two 1.0 mm² wires. Two 2.5 mm² conductors will not fit. Connect as shown using appropriate wire connectors.
- Attach the included ferrite clamp onto the Power Panel link inside the Lighting Hub.

- 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 1 200 m.
- GRX-CBL-46L PELV wiring cable is available from Lutron and contains two 2,5 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.

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Configurable Link Wiring: GRAFIK Eye® QS and Sivoia® QS Shades
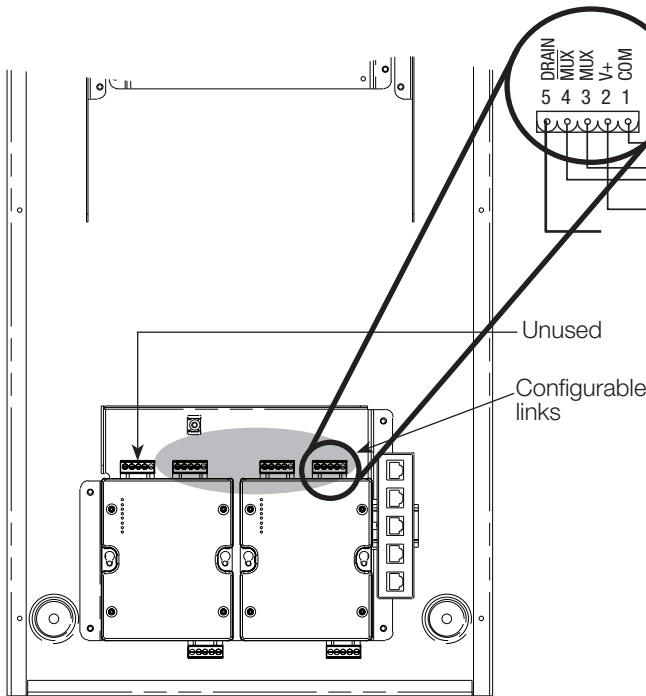
GRAFIK Eye QS Link

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

DRAIN MUX MUX V+ COM
5 4 3 2 1

GRAFIK Eye QS control unit

Ferrite Clamp

QS wallstations

Unused

Configurable links
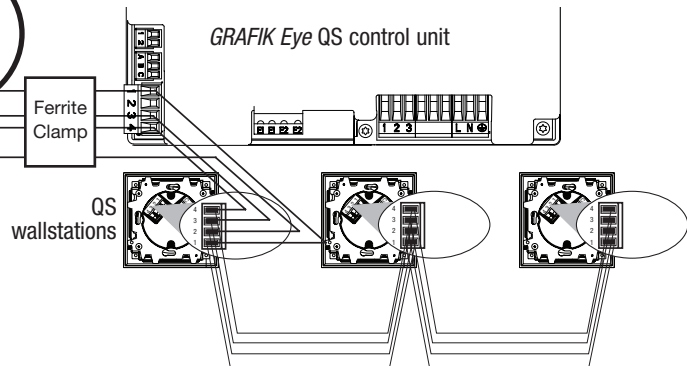
Note: Wallstations are powered directly from the light management hub (not the *GRAFIK Eye* QS control unit)
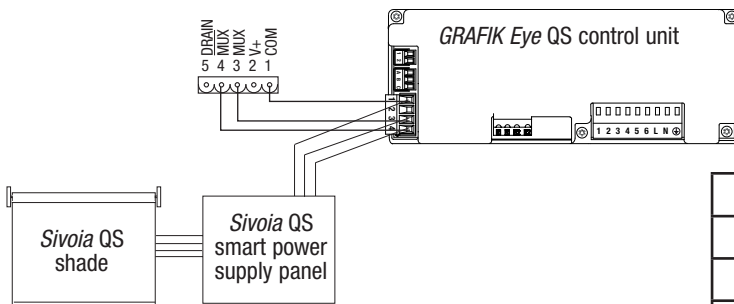
PELV Terminal Wiring

PELV (Class 2: USA) control wiring
(2) 1,0 mm²
1: Common
2: 24 V⎓

(2) 2,5 mm²

(2) 2,5 mm²

DRAIN wires
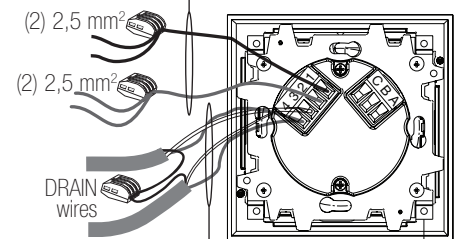
Data link: (1) twisted, shielded pair 1,0 mm²
3: MUX
4: MUX

Sivoia QS Shade Link

(do not use the "DRAIN" terminal)

DRAIN MUX MUX V+ COM
5 4 3 2 1

GRAFIK Eye QS control unit

1 2 3 4 5 6 L N ⊕

Sivoia QS shade

Sivoia QS smart power supply panel

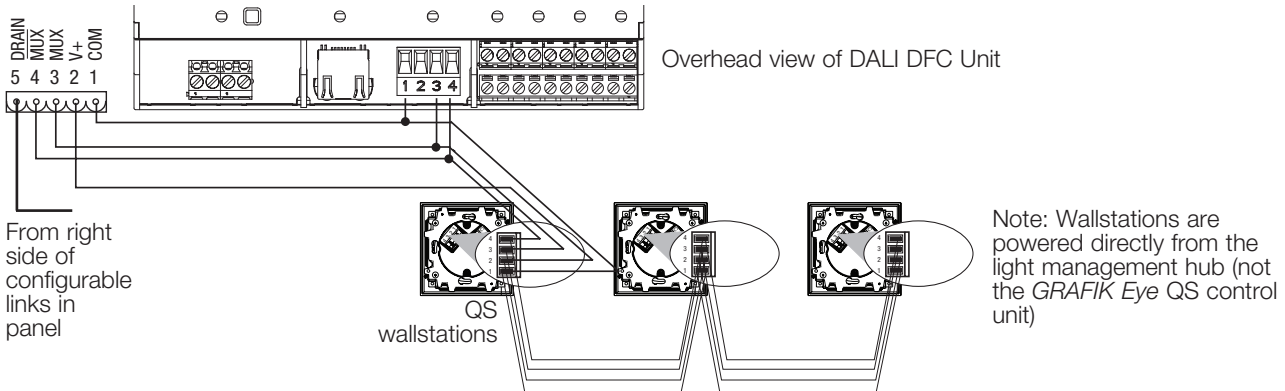| Wire Gauge	QS Link Max. Length
2,5 mm²	600 m
1,5 mm²	250 m
1,0 mm²	150 m

Notes

- System communication uses PELV wiring.
- Follow all local and national electrical codes when installing PELV wiring with mains wiring.
- Each terminal accepts up to two 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 devices, and 32 power draw units (see page 4).

- Attach the included ferrite clamp onto the low-voltage control wiring inside the Lighting Hub.
- 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.

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DALI QS Link

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


Overhead view of DALI DFC Unit

From right side of configurable links in panel

QS wallstations

Note: Wallstations are powered directly from the light management hub (not the *GRAFIK Eye* QS control unit)

Activate the System

You have completed your *Quantum* system installation. For onsite factory startup, call Lutron Technical Support and select Startup to schedule a field service visit. Allow for 10 working days between day of call and scheduled visit.

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In France: +33.(0)1.56.52.93.01
In Germany: +49.(0)30.9710.4590
In Spain: +34.93.496.57.42
In all other countries: +1.610.282.6701

LED	Normal Operation	Problem Indicator	Probable Cause and Solution
Power Supply			
LNK PWR OK	On	Off	No power from transformer: Check that power feed and power switch are on
Processor			
L1/L2 Tx Rx No links	Off	Off	Link error: Run software diagnostics
L1/L2 Heartbeat No links	Flashing	Off	Link error: Run software diagnostics
L1/L2 Tx Rx with link	Flashing	Off	Link error: Run software diagnostics
L1/L2 Heartbeat with link	Flashing	Off	Link error: Run software diagnostics
Processor Tx Rx	Off	On	Software uploading
		Flashing	Boot mode
Processor Heartbeat	Flashing	Flashing	Boot mode (if Tx Rx also flashing)
Error	Off	On	Link error: Run software diagnostics
Power	On	Off	Check power supply
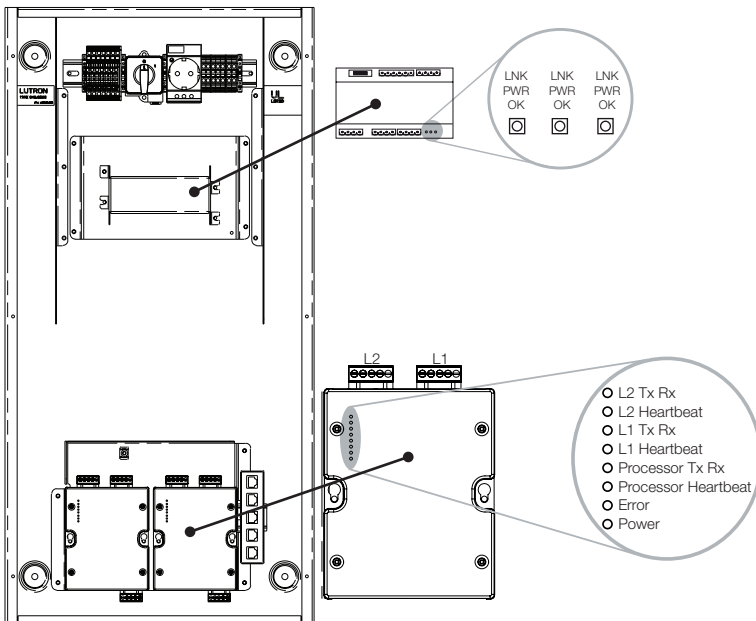
⁂LUTRON®

Warranty

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