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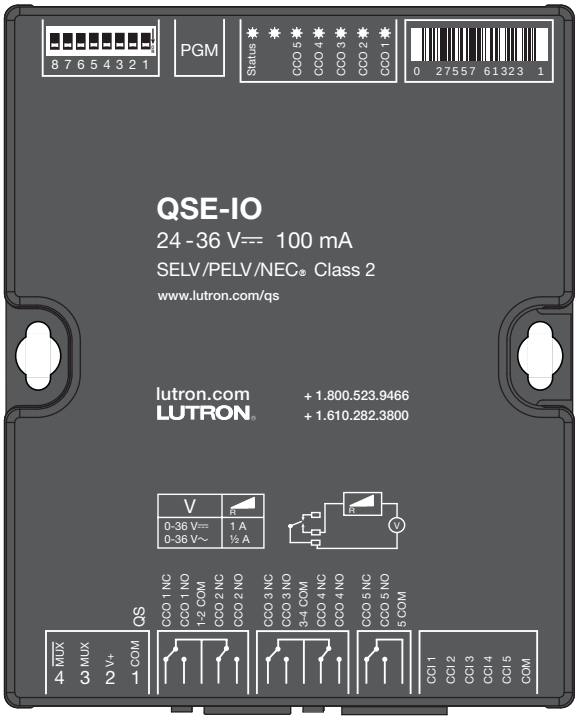
QSE-IO Control Interface

The QSE-IO contact closure interface provides integration with third-party equipment requiring contact closure input/output, including occupancy and vacancy sensors; motorized projection screens, skylights, and window shades; AV equipment; security systems; movable partition walls; and timeclocks. One QSE-IO interface provides five (5) dry contact closure outputs and five (5) inputs.

For complete functionality, programming instructions, and detailed DIP switch settings, see the QSE-IO Programming Guide, www.lutron.com/TechnicalDocumentLibrary/040391.pdf

Features

- Integrates a QS control system with equipment that has contact-closure inputs and outputs.
- Provides five inputs and five dry contact closure outputs.
- Provides both normally open (NO) and normally closed (NC) contacts.
- May be programmed to control or be controlled on a QS system.



QSE-IO Contact Closure Interface

Job Name:	Model Numbers:	
Job Number:		

Specifications

Regulatory Approvals

- UL® Listed
- cUL® Listed
- CE compliant

Power

- SELV/PELV/NEC® Class 2
- Operating voltage: 24–36 V⎓ 100 mA

QS Link Limits

- The QS wired communications link is limited to 100 devices and 100 zones. Each QSE-IO control interface counts as 1 device and 5 zones.
- Each QSE-IO control interface consumes 3 Power Draw Units (PDU) on the QS link. Refer to the QS Link Power Draw Units Specification Submittal (P/N 369405) at www.lutron.com for more information.
- The maximum wiring length for the QS link is 2000 ft (610 m).

Environment

- 32 °F to 104 °F (0 °C to 40 °C).
- Relative humidity less than 90% non-condensing.
- Indoor use only.
- Unit generates heat, maximum 8 BTU/hr.

Functionality and Operating Modes

- Using the inputs, contact closures in other equipment can operate control units to:
  – Select scenes
  – Adjust scenes to reflect status of movable walls
  – Toggle any combination of zones in the system between Off and a configurable preset value
  – Turn lights on or off and/or move shades based on room occupancy
  – Perform special functions such as sequencing, panic, control lockout, or timeclock disable
- Using the outputs, scene and/or zone changes in control units can:
  – Trigger outputs to control other equipment
  – Provide status feedback to other equipment

Functionality and Operating Modes (continued)

- Using the inputs, contact closures in other equipment can operate Sivoia® QS window treatments to:
  – Open or close.
  – Raise, lower, or stop.
  – Select one of three adjustable presets.
- Using the outputs, key presses on QS window treatment keypads or GRAFIK Eye® QS window treatment buttons can:
  – Trigger outputs to other motorized window treatment equipment
- Scene selection
- Occupancy sensor
- Zone toggle
- Shade input
- Special functions
- Shade output
- Partitioning
- For a full list of functionality and operating modes, please see the Operating Modes and Dipswitch Settings table on Pages 8 and 9

Requirements

- QS Link Power Supply, such as a:
  - GRAFIK Eye® QS
  - QS Link power supply, such as the QSPS-P1-1-50
  - Energi Savr Node™ QS
  - Quantum® light management hub
- QS Communication Link (SELV/PELV/NEC® Class 2) (see QS Link Wire Sizes table)

Specifications *(continued)*

Five Input Terminals

- Accept maintained inputs and momentary inputs with
  40 msec minimum pulse times
- Off-state leakage current must be less than 100 µA
- Open circuit voltage: 24 V⎓ maximum
- Inputs must be dry contact closure, solid state, open collector, or active-low (NPN) / active high (PNP) output
  – Open collector NPN or active-low on-state voltage must be less than 2 V⎓ and sink 3.0 mA
  – Open collector PNP or active-high on-state voltage must be greater than 12 V⎓ and source 3.0 mA

Five Output Terminals

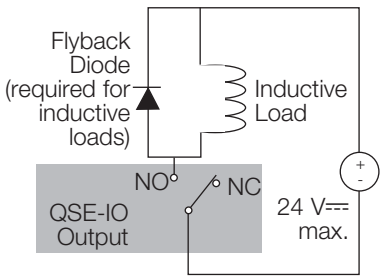
- Provide selectable maintained or momentary (1/4 second) outputs (SELV / PELV / NEC® Class 2 rated only)
- The QSE-IO is not rated to control unclamped, inductive loads. Inductive loads include, but are not limited to, relays, solenoids, and motors. To control these types of equipment, a flyback diode must be used (DC voltages only). See "Terminal Locations"
- Output relays are non-latching (if relays are closed and power is lost, relays will open)

Status LEDs

- Five Status LEDs light when associated output is active (on)

Output Ratings

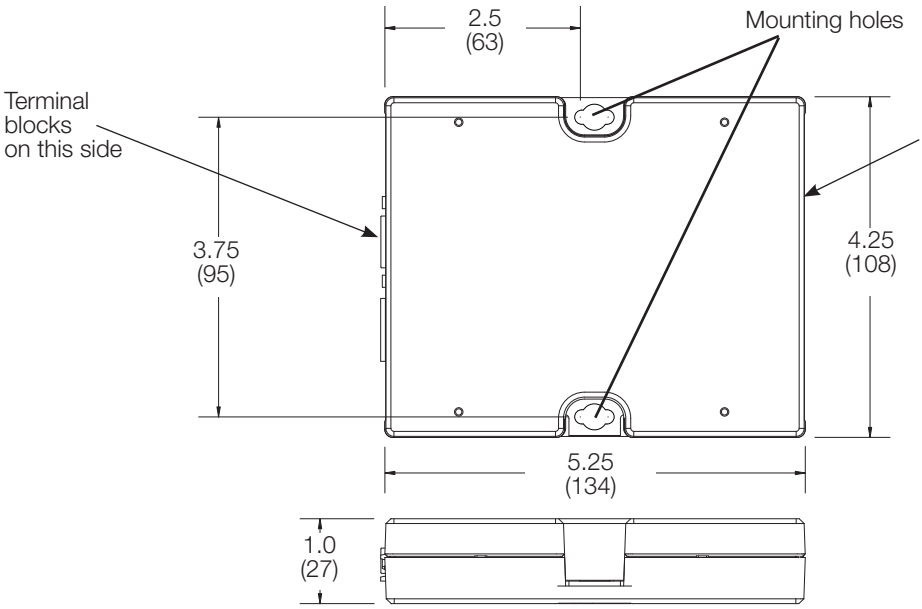
Supply Voltage	Resistive Load
0–24 V⎓	1.0 A
0–24 V∼	0.5 A



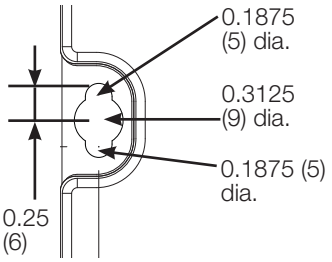
Job Name:	Model Numbers:	
Job Number:		

Dimensions

Dimensions are in inches (mm)



Mounting Hole Detail



#6 or #8 (M3 or M4)
screw recommended

Mounting Options

Mount where terminal blocks, switches, and LEDs are accessible. Strip 3/8 in (10 mm) of insulation from wires. Each data link terminal will accept up to two 18 AWG (1.0 mm²) wires. Connect wiring as shown on the Wiring page. LED 1 lights continuously (Power) and LED 7 blinks rapidly (Data Link RX) when the SELV/PELV/NEC® Class 2 Data Link is installed correctly. Choose from the following mounting methods:

1 Direct Wall Mounting

Mount the control interface directly on a wall, as shown in Mounting Methods at right, using screws (not included). When mounting, provide sufficient space for connecting cables.

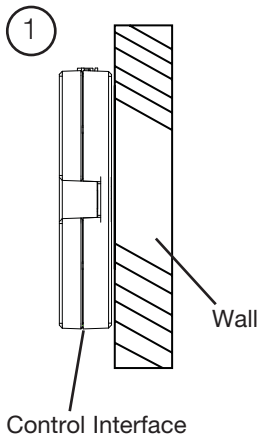
2 Rack Mounting

Place the unit in the LUT-19AV-1U AV rack using screws provided with the unit. The LUT-19AV-1U will hold up to four units.

3 Enclosed Wall Mounting

If conduit is desired for wiring, use the LUT-5x10-ENC to mount one unit.

Mounting Methods

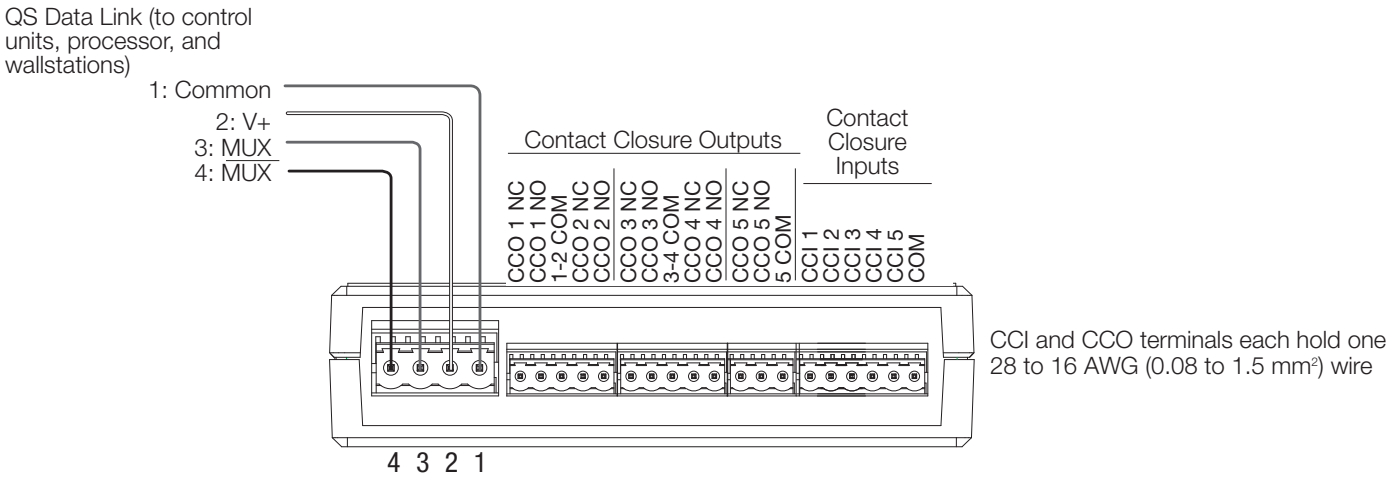


LUT-19AV-1U

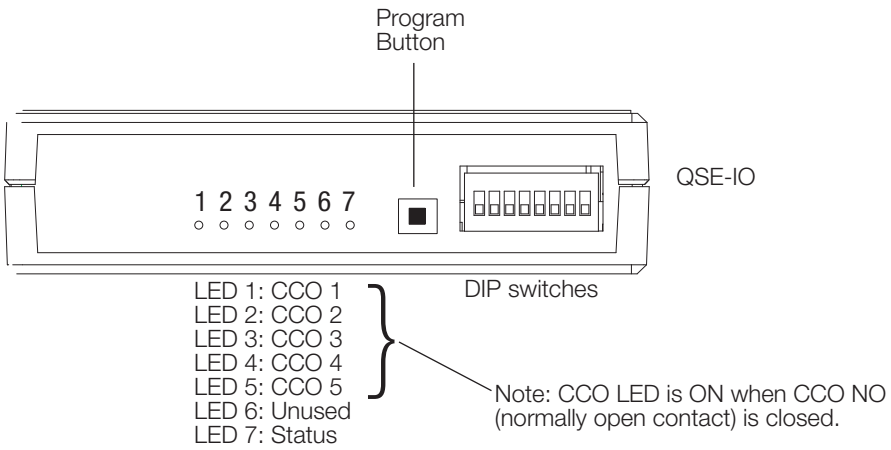
LUT-5x10-ENC

Job Name:	Model Numbers:	
Job Number:		

Terminal Locations



LED and DIP Switch Locations



QS Link Wire Sizes (check compatibility in your area)

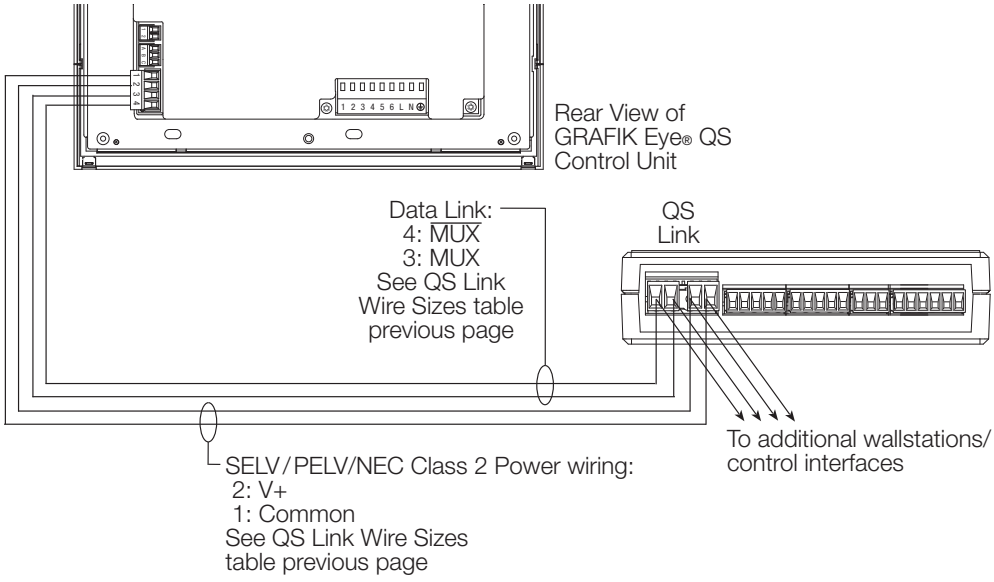
QS Link Wiring Length	Wire Gauge	Lutron® Cable Part Number
< 500 ft (153 m)	Power (terminals 1 and 2) 1 pair 18 AWG (1.0 mm²)	GRX-CBL-346S (non-plenum) GRX-PCBL-346S (plenum)
	Data (terminals 3 and 4) 1 twisted, shielded pair 22 AWG (0.5 mm²)	
500 to 2000 ft (153 to 610 m)	Power (terminals 1 and 2) 1 pair 12 AWG (4.0 mm²)	GRX-CBL-46L (non-plenum) GRX-PCBL-46L (plenum)
	Data (terminals 3 and 4) 1 twisted, shielded pair 22 AWG (0.5 mm²)	

Job Name:	Model Numbers:	
Job Number:		

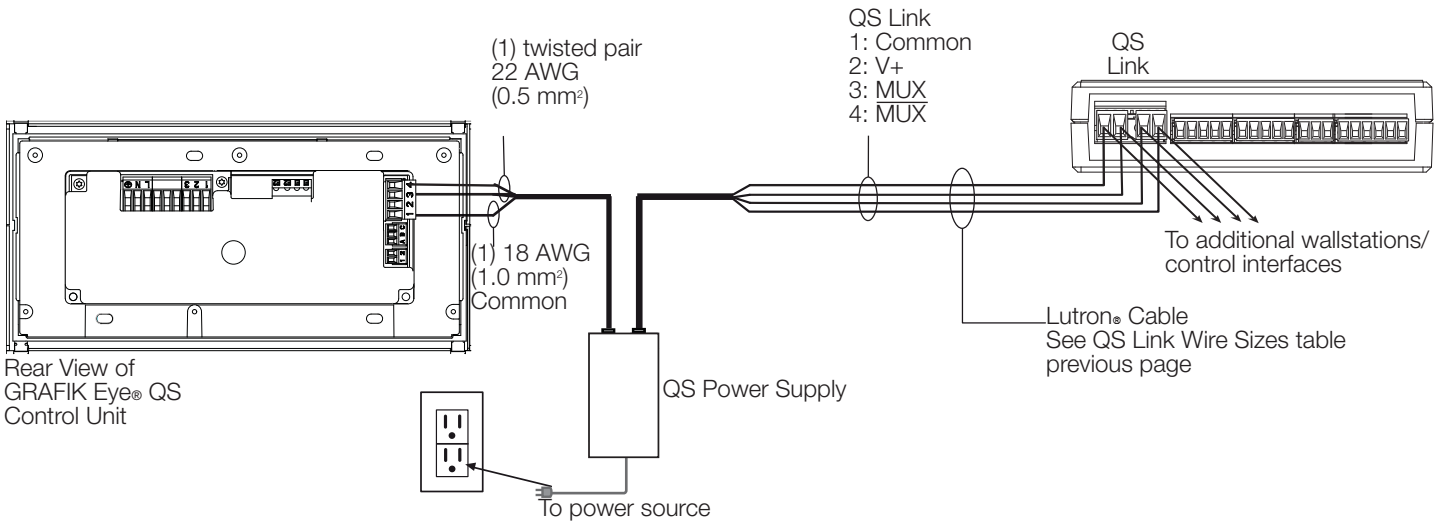
QS Link Wiring Methods (choose one)

- System communication uses SELV/PELV/NEC® Class 2 wiring.
- Follow all local and national electrical codes when installing SELV/PELV/NEC® Class 2 wiring with line voltage/mains wiring.
- Each terminal accepts up to two 18 AWG (1.0 mm²) wires.
- Total length of control link must not exceed 2000 ft (610 m).
- Typical Wire Sizes: See QS Link Wire Sizes table, previous page.
- Connect the terminal 1, 3, and 4 connections to all control units, wallstations, and control interfaces in the QS system. For terminal 2 connectivity, please refer to the wiring diagrams below.

Powered by GRAFIK Eye® QS Control Unit



Powered by a QS Link Power Supply

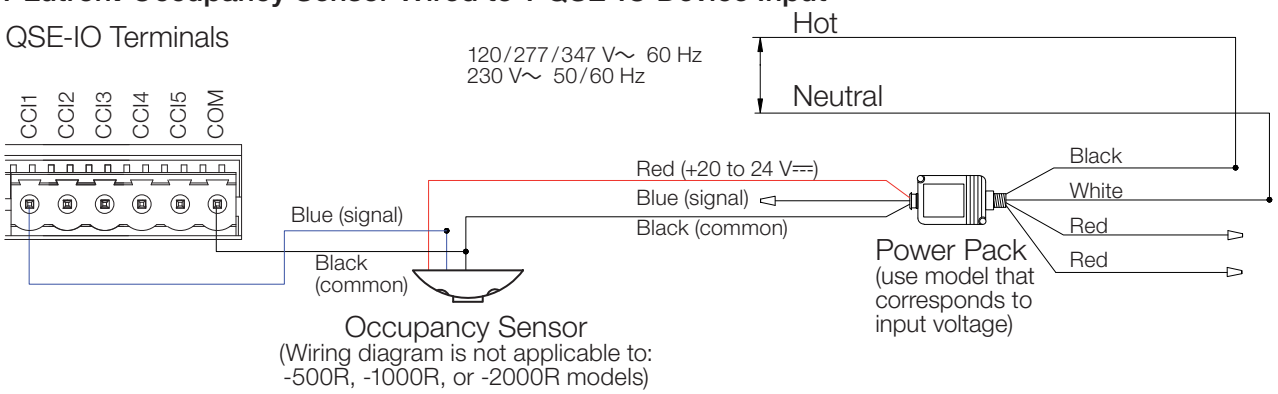


Job Name:	Model Numbers:	
Job Number:		

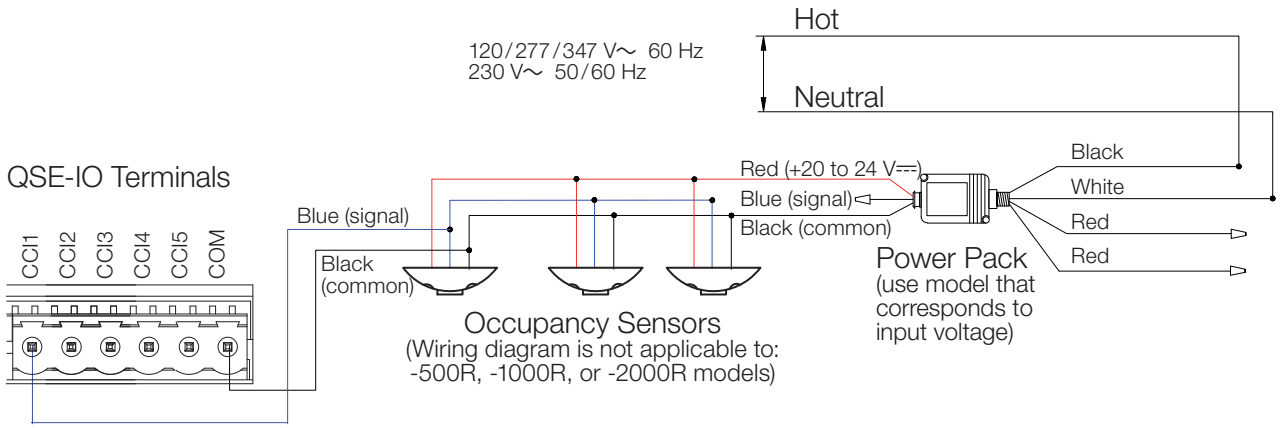
Wiring Application Examples

NOTE: Refer to Spec Submittal #369653 LOS-CDT Series on www.lutron.com for wiring details regarding Models -500R, -1000R, and -2000R for wiring the dry contact output from LOS sensors to the QSE-IO (e.g. 7 wire Occ Sensor with photocell)

1 Lutron® Occupancy Sensor Wired to 1 QSE-IO Device Input



3 Lutron® Occupancy Sensors Wired to 1 QSE-IO Device Input



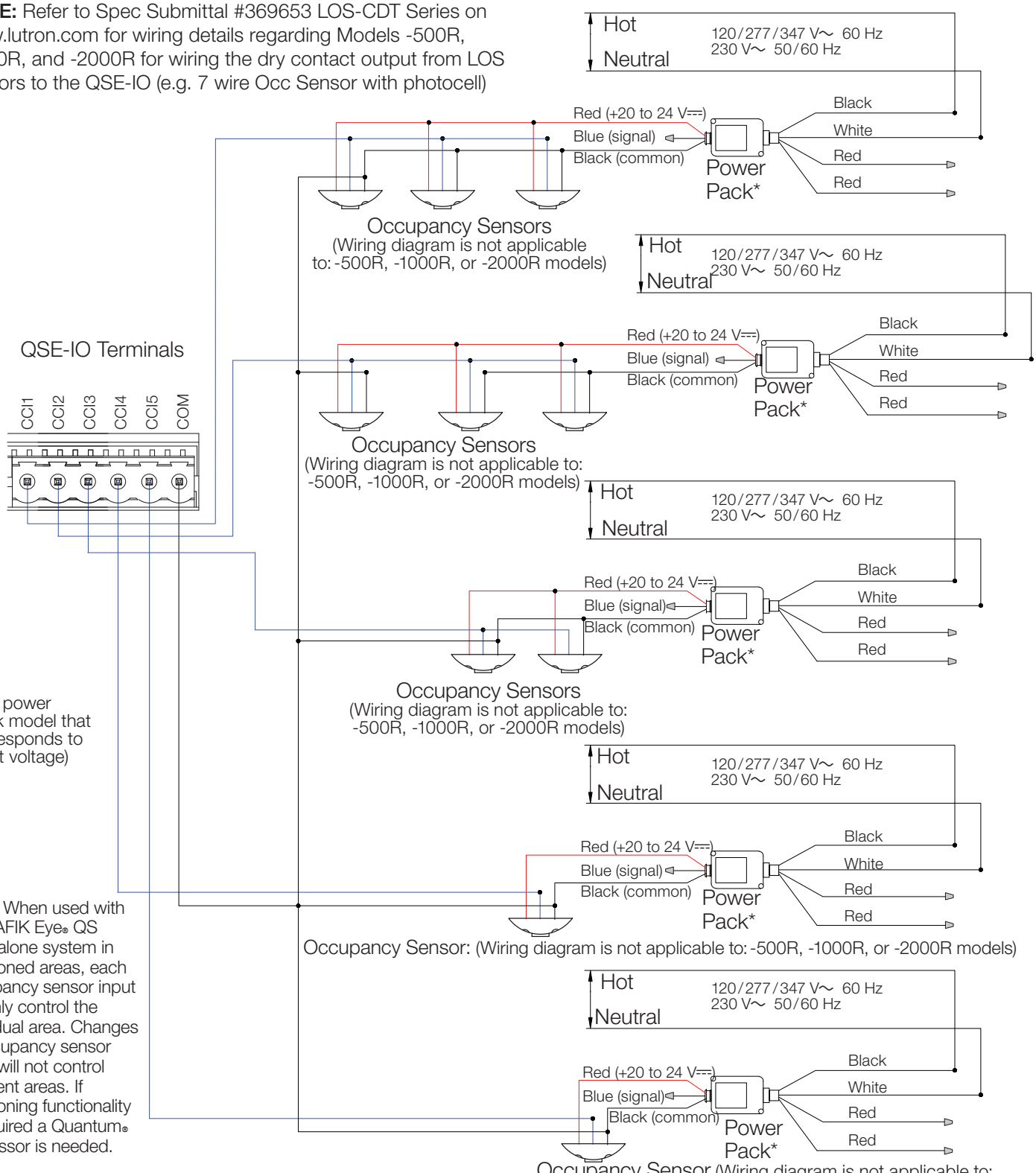
Note: When used with a GRAFIK Eye® QS standalone system in partitioned areas, each occupancy sensor input will only control the individual area. Changes in occupancy sensor state will not control adjacent areas. If partitioning functionality is required a Quantum® processor is needed.

Job Name:	Model Numbers:	
Job Number:		

Wiring Application Examples

Multiple Lutron® Occupancy Sensors Wired to Multiple QSE-IO Device Inputs

NOTE: Refer to Spec Submittal #369653 LOS-CDT Series on www.lutron.com for wiring details regarding Models -500R, -1000R, and -2000R for wiring the dry contact output from LOS sensors to the QSE-IO (e.g. 7 wire Occ Sensor with photocell)



Note: When used with a GRAFIK Eye® QS standalone system in partitioned areas, each occupancy sensor input will only control the individual area. Changes in occupancy sensor state will not control adjacent areas. If partitioning functionality is required a Quantum® processor is needed.

Job Name:	Model Numbers:	
Job Number:		

369374d 9 02.02.2018

QSE-IO Operating Modes and DIP Switch Settings Overview

Mode	Dip Switch						Contact Closures Invoke:						
Configuration	3	4	5	6	7	8	Input 1	Input 2	Input 3	Input 4	Input 5	Inputs	Outputs
Scene selection							Scene 1	Scene 2	Scene 3	Scene 4	Scene Off	Maintained or Momentary	Maintained
							Scene 5	Scene 6	Scene 7	Scene 8	Scene Off		
							Scene 9	Scene 10	Scene 11	Scene 12	Scene Off		
							Scene 13	Scene 14	Scene 15	Scene 16	Scene Off		
							Scene 1	Scene 2	Scene 3	Scene 4	Scene Off	Maintained or Momentary	Momentary
							Scene 5	Scene 6	Scene 7	Scene 8	Scene Off		
							Scene 9	Scene 10	Scene 11	Scene 12	Scene Off		
							Scene 13	Scene 14	Scene 15	Scene 16	Scene Off		
Special (maintained)							Sequence 5–16	Zone lockout	Scene lockout	Panic mode	Timeclock	Maintained	Maintained
Special (momentary)							Sequence 5–16	Zone lockout	Scene lockout	Panic mode	Timeclock	Momentary	
Special 2 (maintained)							Sequence 1–4	Zone lockout	Scene lockout	Panic mode	Afterhours mode	Maintained	Maintained
Special 2 (momentary)							Sequence 1–4	Zone lockout	Scene lockout	Panic mode	Afterhours mode	Momentary	
Shade input preset (“stop if moving”)							Shade open	Shade preset 1	Shade preset 2	Shade preset 3	Shade close	Maintained or Momentary	Maintained
Shade input preset (no “stop if moving”)													
Shade input (raise, lower, stop)							Shade open	Shade raise	Shade lower	Shade stop	Shade close	Momentary or Maintained	Maintained
Shade input dual group (“stop if moving”)							Open Group 1	Close Group 1	Open Group 2	Close Group 2	—	Maintained or Momentary	Maintained
Shade input dual group (no “stop if moving”)													
Shade input dual group (raise/lower)							Raise/Stop Group 1	Lower/Stop Group 1	Raise/Stop Group 2	Lower/Stop Group 2	—	Momentary	Momentary
Shade input toggle (“stop if moving”: open/stop/close/stop)							Toggle Group 1	Toggle Group 2	Toggle Group 3	Toggle Group 4	Toggle Group 5	Momentary	Momentary
Shade input toggle (no “stop if moving”: open/close)							Toggle Group 1	Toggle Group 2	Toggle Group 3	Toggle Group 4	Toggle Group 5	Maintained	Momentary
AC Shade output (maintained outputs)							Open Group 1	Stop Group 1	Close Group 1	Open Group 2	Close Group 2	Maintained or Momentary	Maintained
AC Shade output (momentary stop)							Open Group 1	Stop Group 1 if moving	Close Group 1	Open Group 2	Close Group 2	Maintained or Momentary	Maintained (except 2, which is Momentary)
AC Shade output (momentary outputs)							Open Group 1	Stop Group 1 if moving	Close Group 1	Open Group 2	Close Group 2	Maintained or Momentary	Momentary

Notes

- For AC shades with only 2 inputs (open/close), set DIP switch 1 to the up/on position to enable the feature that mimics “stop” (asserts both “open” and “close” CCOs together when a “stop” command is received).
- The QSE-IO provides no power, only a control signal, to AC shades. Refer to the instructions that came with your shades for more information.

Legend:
Up/On
Down/Off

Job Name:

Job Number:

Model Numbers:

369374d 10 02.02.2018

QSE-IO Operating Modes and DIP Switch Settings Overview (continued)

Mode	Dip Switch						Contact Closures Invoke:						
Configuration	3	4	5	6	7	8	Input 1	Input 2	Input 3	Input 4	Input 5	Inputs	Outputs
Partitioning (momentary)	↓	↓	↑	↑	↓	↓	Wall 1	Wall 2	Wall 3	Wall 4	Wall 5	Momentary	Maintained
Partitioning (maintained)	↓	↓	↑	↑	↓	↓	Wall 1	Wall 2	Wall 3	Wall 4	Wall 5	Maintained	Maintained
Occupancy sensor (auto on/off)	↓	↓	↑	↑	↓	↓	Generates events on occupancy and vacancy					Maintained	Maintained
Occupancy sensor (manual on/auto off)	↓	↓	↓	↑	↓	↓	Generates events on vacancy only					Maintained	Maintained
Zone toggle (maintained)	↓	↑	↑	↑	↓	↑	Toggle 1	Toggle 2	Toggle 3	Toggle 4	Toggle 5	Maintained	Maintained
Zone toggle (momentary)	↓	↑	↑	↑	↓	↓	Toggle 1	Toggle 2	Toggle 3	Toggle 4	Toggle 5	Momentary	
Zone toggle with raise/lower (maintained)	↓	↑	↑	↑	↑	↑	Toggle 1	Toggle 2	Toggle 3	Raise	Lower	Maintained	
Zone toggle with raise/lower (momentary)	↓	↑	↑	↑	↑	↓	Toggle 1	Toggle 2	Toggle 3	Raise	Lower	Momentary	
Zone control (maintained output)	↓	↑	↑	↑	↓	↑	Toggle 1	Toggle 2	Toggle 3	Toggle 4	Toggle 5	Maintained	Maintained
	↑	↑	↑	↑	↓	↑	Toggle 1	Toggle 2	Toggle 3	Toggle 4	Toggle 5	Momentary	
Zone control (momentary output)	↓	↑	↑	↑	↑	↓	Pulse 1	Pulse 2	Pulse 3	Pulse 4	Pulse 5	Maintained	Momentary
	↑	↑	↑	↑	↑	↓	Pulse 1	Pulse 2	Pulse 3	Pulse 4	Pulse 5	Momentary	
Zone control (pulsed output)	↓	↑	↑	↑	↑	↑	Pulse 1	Pulse 2	Pulse 3	Pulse 4	Pulse 5	Maintained	Pulsed
	↑	↑	↑	↑	↑	↑	Pulse 1	Pulse 2	Pulse 3	Pulse 4	Pulse 5	Momentary	
Hotel configuration 1	↓	↑	↑	↓	↑	↓	Service (make up room)	Privacy (do not disturb)	Doorbell	Start/end afterhours mode	Toggle Scene 1/ Off	1-3: Maintained or Momentary 4-5: Maintained	Maintained (except 3)
Hotel configuration 2	↓	↑	↑	↓	↑	↑	Service (make up room)	Privacy (do not disturb)	Doorbell	Start/end afterhours mode	Enable/ disable Scene lockout	1-3: Maintained or Momentary 4-5: Maintained	Maintained (except 3)
Integration configuration	↓	↑	↑	↓	↑	↑	Control output 1	Control output 2	Control output 3	Control output 4	Control output 5	Maintained or Momentary	Maintained or Momentary

Notes

- Occupancy sensor: Each input represents 1 sensor/group of sensors. Response to sensor event is programmable at the assigned lighting control.
- "Momentary" output pulse is of fixed duration (250 ms default).
  "Pulsed" output duration corresponds to activating button being held/released.
- Hotel: "Service" and "Privacy" are mutually exclusive; "Doorbell" is locked out when "Privacy" is active.
- DIP switch 1 must be up/on to activate the "Start/End Afterhours" feature on CCI4.
- DIP switch 2 must be up/on to activate the "Toggle Scene" or "Scene Blackout" feature on CCI 5.
- Occupancy sensors will not participate in partitioning logic.

Legend:
↑ Up/On
↓ Down/Off

Job Name:	Model Numbers:	
Job Number:		