

Energi Savr Node 0-10 V \equiv Power Module

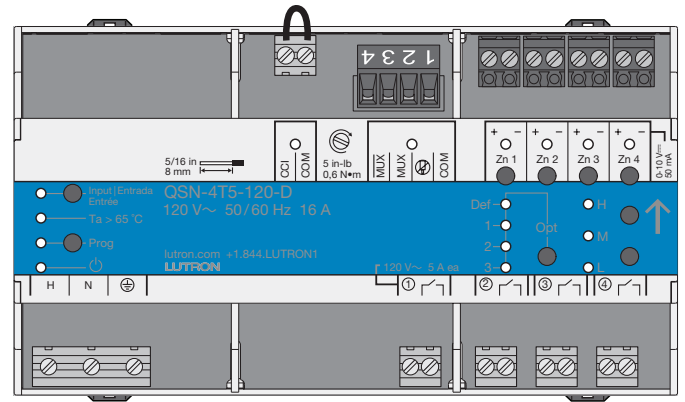
The Energi Savr Node (ESN) family is a group of modular products for the control of lighting loads.

This document describes the following:

QSN-4T5-120-D: 4-zone ESN for 0-10 V \equiv / Switching lighting loads

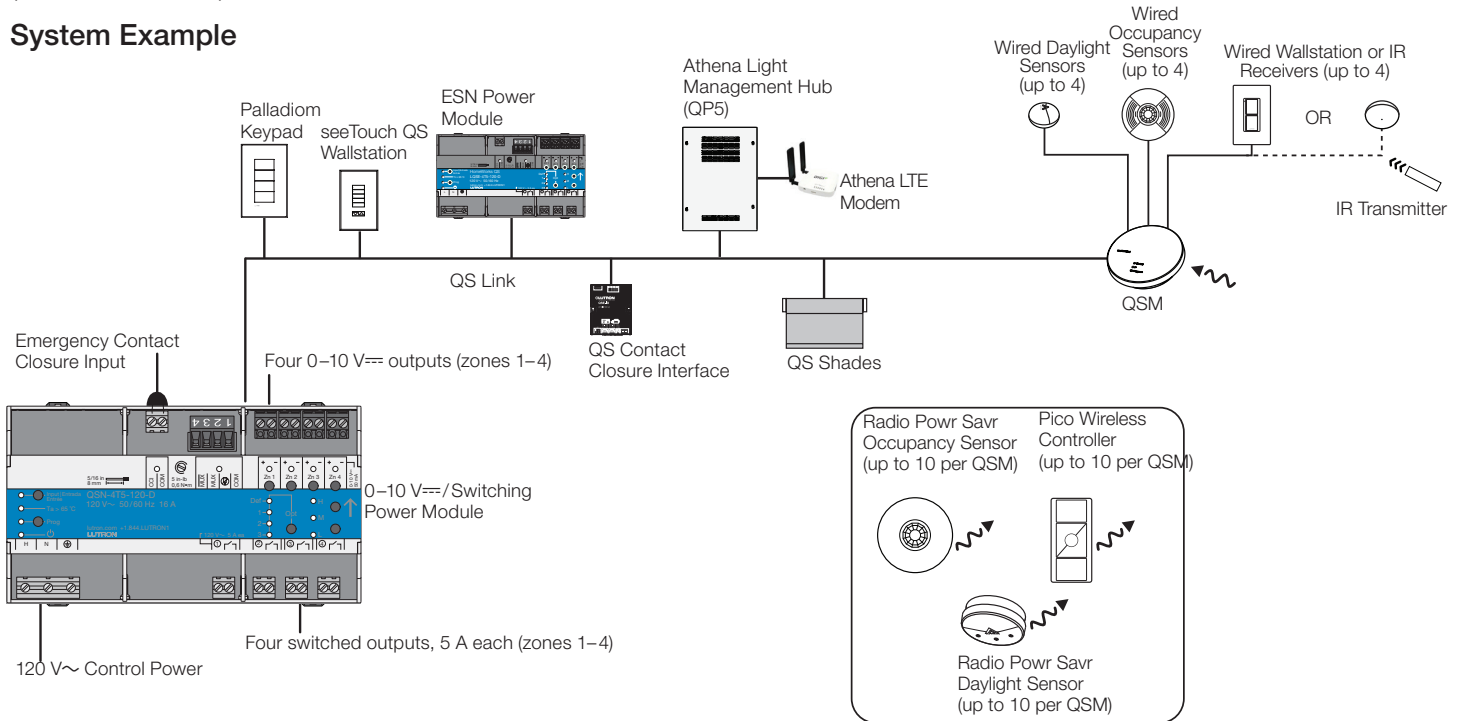
Features

- 0-10 V \equiv power module can be used in an Athena system.
- Includes QS link for seamless integration of lights and control.
- Auto sink and source capability for 0-10 V \equiv outputs.
- Buttons on the module provide override control.
- LEDs on the module provide diagnostic information.
- 0-10 V \equiv power module can be used for 0-10 V \equiv and switching applications only.
- Emergency contact closure input (CCI).
- Power failure memory automatically returns the outputs to the levels they were set to prior to a power outage.
- Switched outputs utilize latching relays to maintain relay state if control power is lost.
- 0-10 V \equiv fixtures used with this ESN must support switching power to turn on/off.
- Evaluated by UL \circledR for use in emergency lighting systems in accordance with UL924 when paired with a LUT-ELI-3PH (UL \circledR file E234628).



QSN-4T5-120-D

System Example



Job Name:	Model Numbers:
Job Number:	

Specifications

Power

- 120 V_{AC} 50/60 Hz 5 A of switching load per zone
16 A maximum per module
- Lightning strike protection meets ANSI/IEEE standard 62.31–1980. Can withstand voltage surges of up to 6000 V_{AC} and current surges of up to 3000 A.

Regulatory Approvals

- Lutron Quality Systems registered to ISO 9001:2015
- cULus Listed
- NOM Certified
- ICES-5(B)/NMB-5(B)
- FCC Class B

Environment

- See **Mounting** on page 4 for thermal specifications.
- Room ambient temperature is between 32 °F and 104 °F (0 °C and 40 °C)
- Relative humidity: less than 90% non-condensing
- For indoor use only

Output Zone Ratings

- Each zone is rated at 5 A for switching (maximum of 16 A per module). Rated to switch incandescent, resistive, inductive, or capacitive lighting loads as defined by NEMA 410.
- Switched outputs utilize latching relays to maintain relay state if control power is lost.
- 0–10 V_{DC} rated for 50 mA maximum output, source or sink per zone.
- For applications requiring higher wattage ratings, use the PHPM-SW-DV-WH interface.
- For applications requiring phase adaptive dimming, use the QSN-4A5-D phase adaptive power module.
- 0-10 V_{DC} fixtures must support switching power to turn on/off. Use switched outputs to switch fixtures according to wiring diagram shown on page 6.
- Minimum voltage (Off, when relay is open) at the 0-10 V_{DC} terminals of the ESN module is 1.0 V when 0-10V wires are loaded to 50 mA. Voltage at the fixture will vary; refer to App Note #587 (P/N 048587) on www.lutron.com "0-10 V Control Topology - *How far can I run a low-voltage 0-10V circuit*" to determine required wire gauges, lengths, and compatibility.

Terminals (Torque, wire gauge & type ratings)

- Mains wiring: 5 in-lbs (0.6 N•m)
16 AWG to 10 AWG (1.0 mm² to 4.0 mm²)
(single wire, solid or stranded)
- Zone wiring: 5 in-lbs (0.6 N•m)
16 AWG to 10 AWG (1.0 mm² to 4.0 mm²)
(single wire, solid or stranded)
- Emergency CCI wiring: 5 in-lbs (0.6 N•m)
20 AWG to 10 AWG (0.5 mm² to 4.0 mm²)
(single wire, solid or stranded)
20 AWG to 16 AWG (0.5 mm² to 1.0 mm²)
(two wires, solid or stranded)
- 0–10 V_{DC} wiring: 5 in-lbs (0.6 N•m)
20 AWG to 16 AWG (0.5 mm² to 1.0 mm²)
(single wire, solid or stranded)
- QS link: 5 in-lbs (0.6 N•m)

Power:

20 AWG to 10 AWG (0.5 mm² to 4.0 mm²)

Data:

22 AWG to 18 AWG (0.34 mm² to 0.75 mm²)
(1 twisted, screened pair)

See **Wiring: QS Link** section on page 8

Programming and Compatibility Requirements

- Setup and programming of the switching power module is done through the Athena programming software.
- Athena software version 20.4 or higher is required.

QS Link Limits

- Each 0–10 V_{DC} module counts as one device toward the QS link device limit, and up to 4 zones toward the QS link zone limit.

<p>Job Name:</p> <p>Job Number:</p>	<p>Model Numbers:</p>
--	------------------------------

Out of Box Functionality

Normal Mode Operation

- Zone buttons:
 - Selects zone to control
- Raise/Lower buttons:
 - Turns loads on and off
 - Dim loads up and down

Emergency Contact Closure Input (CCI)

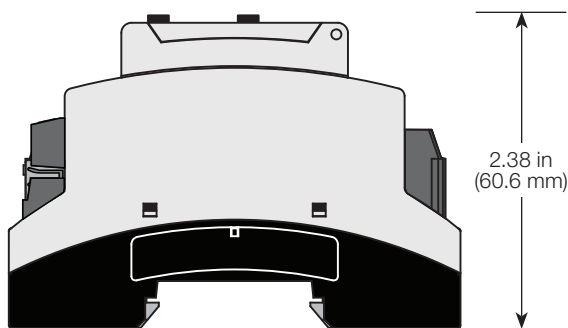
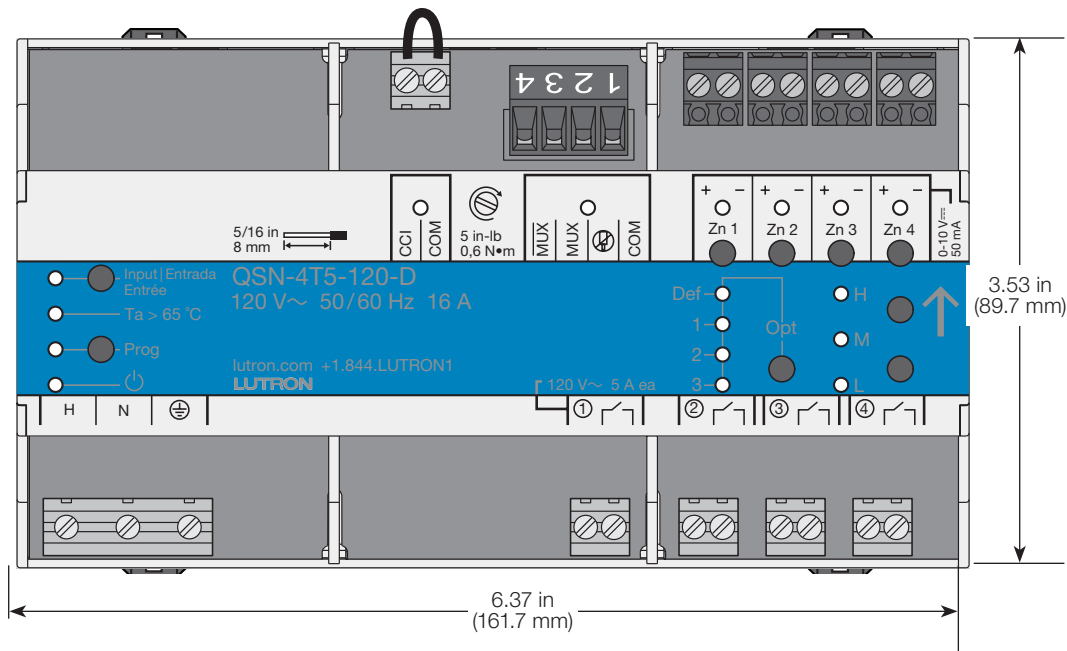
- Normal mode: The unit can dim loads as normal and respond to button presses, occupancy sensors, daylight sensors, timeclock events and preset scene calls.
- Emergency mode: When the Emergency CCI is open, the unit will override the light output to its emergency level and enter lockout mode. It will not respond to any button presses, occupancy sensors, daylight sensors, timeclock events, or preset scene calls.
- Return from Emergency mode to Normal mode: Once the Emergency CCI is closed or jumpered, the zones will return to the previous light level and it will again respond to button presses, occupancy sensors, daylight sensors, timeclock events, and preset scene calls.

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

Mounting

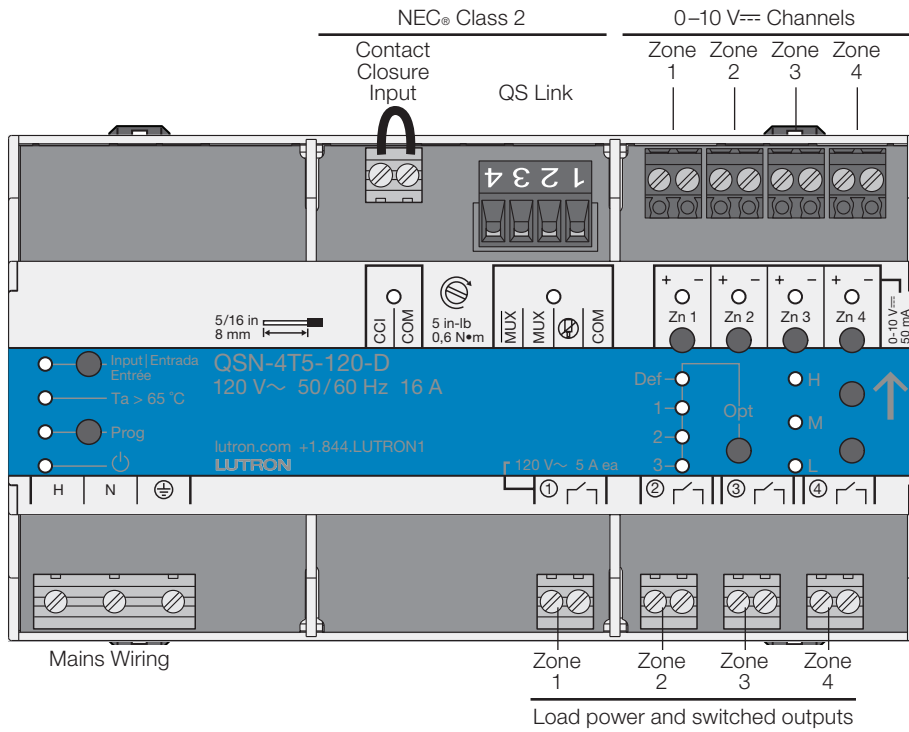
- Module is 9 DIN wide, 6.37 in (161.7 mm).
- Mount in a Lutron DIN panel (see Lutron specification submittal 3691183 at www.lutron.com).
- Mount unit in orientation shown.
- Mount to DIN rail by pressing unit onto the rail with the clips locked. To remove from rail, unlock clips using a screwdriver.
- Mount the module where audible noise is acceptable (internal relays click).
- Mount in an accessible and serviceable location.
- Unit generates heat, maximum 4 BTUs/hr.
- Mount unit such that all the conditions below are met:
 - Ambient temperature operating range (inside mounting panel): 32 °F to 104 °F (0 °C to 40 °C)
 - Calibration point maximum: 149 °F (65 °C)

Mechanical Dimensions



Job Name:	Model Numbers:
Job Number:	

Overview of Wiring Terminals



Job Name:	Model Numbers:
Job Number:	

Mains Voltage Wiring

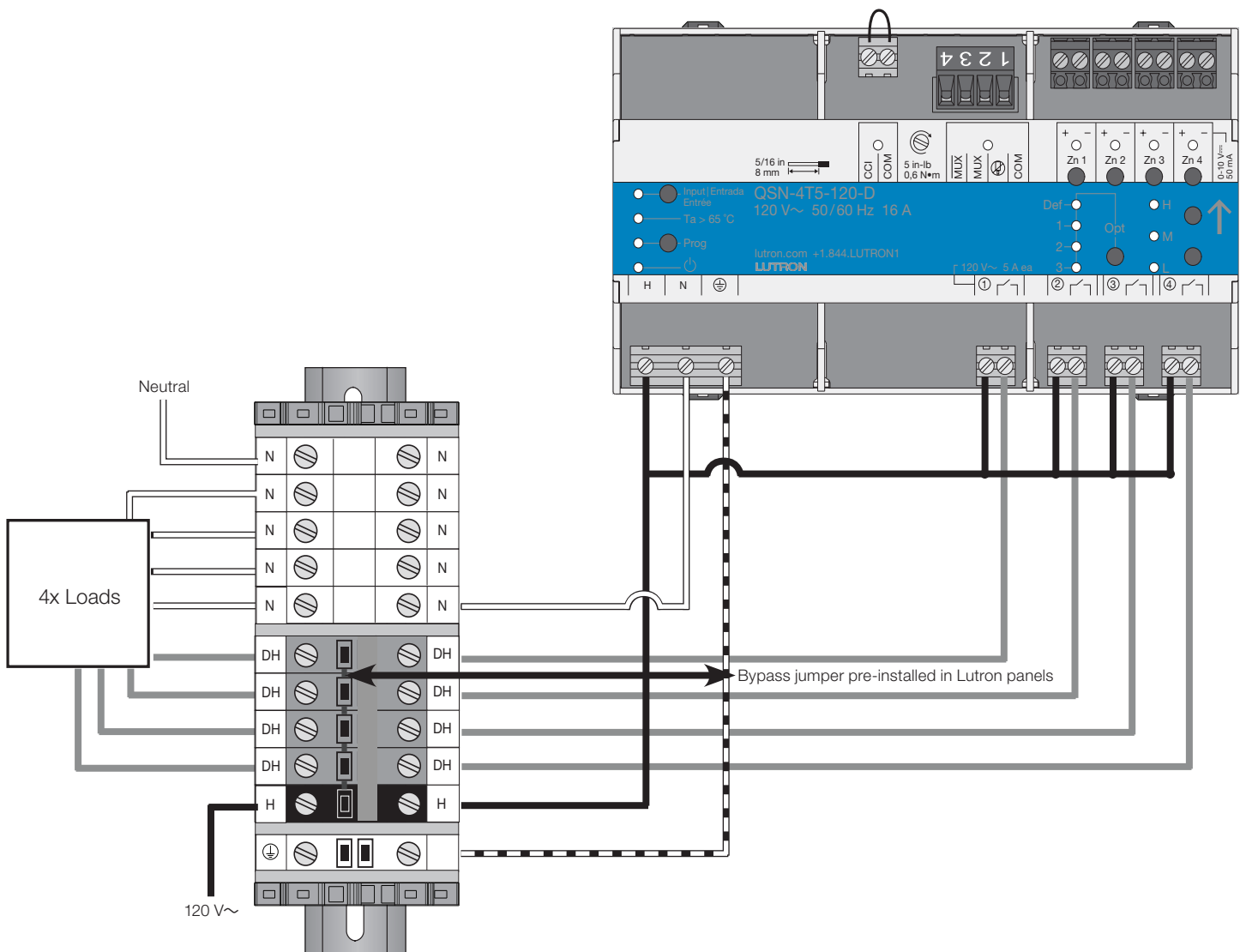
Wiring from Distribution Panel to Energi Savr Node

- Turn off all circuit breakers or isolators feeding the unit at the distribution panel.
- Run line/hot, neutral, and earth (⊕) wires from a 120 V[~] 50/60 Hz feed to the 0-10 V⁼⁼ unit.
- Follow appropriate local and national codes.
- Optional pre-stripped wiring harness sold separately, Lutron P/N PDW-T-DV.

Behavior During Power Failure

- Relays do not change state when power is lost to the H/N/⊕ terminals. Follow local and national codes for emergency lighting requirements.
- After a power failure, the 0-10 V⁼⁼ outputs return to their previous setting.

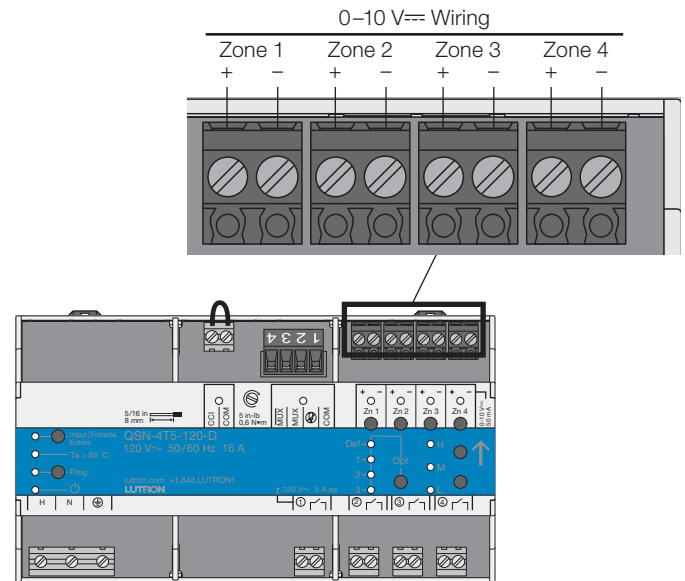
Single-Feed



Job Name:	Model Numbers:
Job Number:	

Wiring: 0-10 V_{DC}

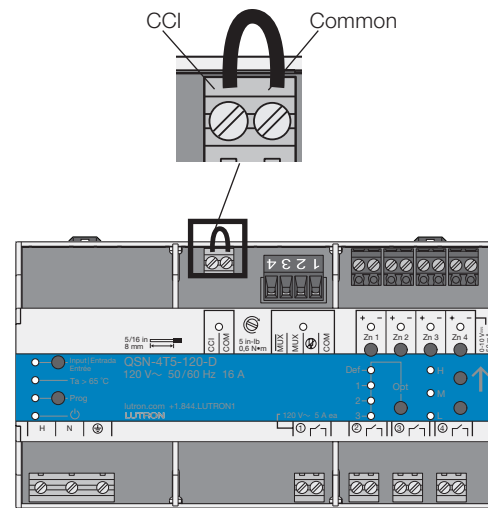
- 0-10 V_{DC} zones 1-4 are double insulated from line voltage and the QS link but are not insulated from each other. They share the same common terminal (negative “-” terminal)
- Do not mix NEC® Class 2 circuits and non-NEC® Class 2 circuits for 0-10 V_{DC} zone 1-4.
- Follow all national and local electrical codes for separation requirements.



Wiring: Emergency Contact Closure Input

- Contact closure input (CCI) wiring is NEC® Class 2. Follow all applicable national and local codes for proper circuit separation and protection.
- When in emergency mode, all drivers and zone outputs will be at their programmed emergency light level (default is 100%). All other controls are locked out.
- The CCI is a local control only and cannot control other units over the QS link. A maximum of 32 units may be connected in parallel to a CCO device (LUT-ELI-3PH) if the event is intended to affect multiple devices. Refer to Lutron’s Emergency Lighting Application Note #106 (P/N 048106) on www.lutron.com for details.
- Emergency contact closure input is normally closed (N.C.). The unit is shipped with a jumper wire pre-installed.

Note: The unit will default to emergency mode if the CCI is left open. If no emergency contact input is required, leave the wire jumper in the CCI terminals.



Job Name:	Model Numbers:
Job Number:	

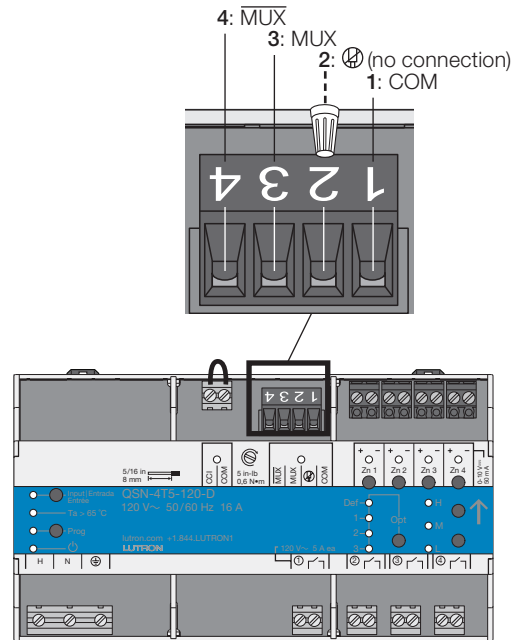
Wiring: QS Link

QS Link NEC® Class 2 Wiring

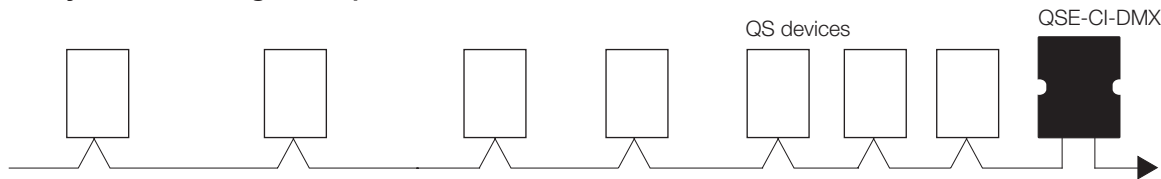
- Follow all applicable national and local codes for proper circuit separation and protection.
- Link communicates using NEC® Class 2 wiring.
- Device does not supply or consume PDUs.
- Wiring may be daisy-chained or T-tapped.
- Do NOT connect terminal 2.
- Optional QS link wiring harnesses sold separately, refer to Lutron specification submittal 3691183 on www.lutron.com for part numbers.

QS Link Wiring Options

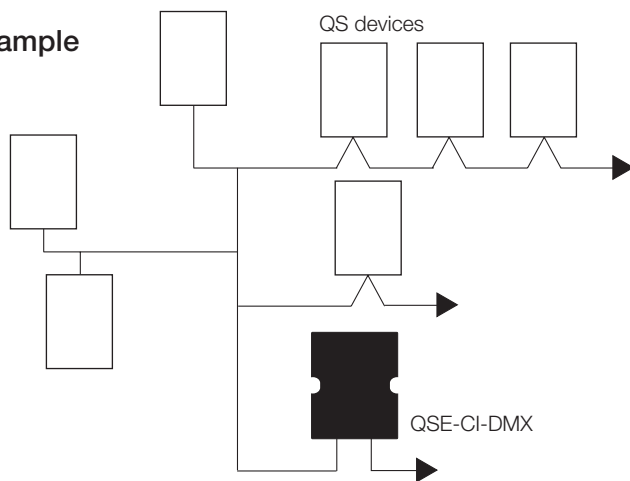
Control Link Length	Wire Gauge (for terminals)	Available from Lutron in one cable:
Less than 500 ft (153 m)	Power (terminals 1 and 2): 1 pair 18 AWG (1.0 mm ²)	GRX-CBL-346S (non-plenum)
	Data (terminals 3 and 4): 1 pair 22 AWG (0.5 mm ²), twisted and screened	
500 ft (153 m) to 2000 ft (610 m)	Power (terminals 1 and 2): 1 pair 12 AWG (4.0 mm ²)	GRX-CBL-46L (non-plenum)
	Data (terminals 3 and 4): 1 pair 22 AWG (0.5 mm ²), twisted and screened	GRX-PCBL-46L (plenum)



Daisy-Chain Wiring Example



T-Tap Wiring Example



The Lutron logo, Lutron, Athena, Energi Savr Node, Palladiom, Pico, Radio Powr Savr, and seeTouch are trademarks or registered trademarks of Lutron Electronics Co., Inc. in the US and/or other countries.

All other product names, logos, and brands are property of their respective owners.

Job Name:	Model Numbers:
Job Number:	