




LUTRON QSN-4T5-120-D Energi Savr Node 0–10 V- Power Module User Guide

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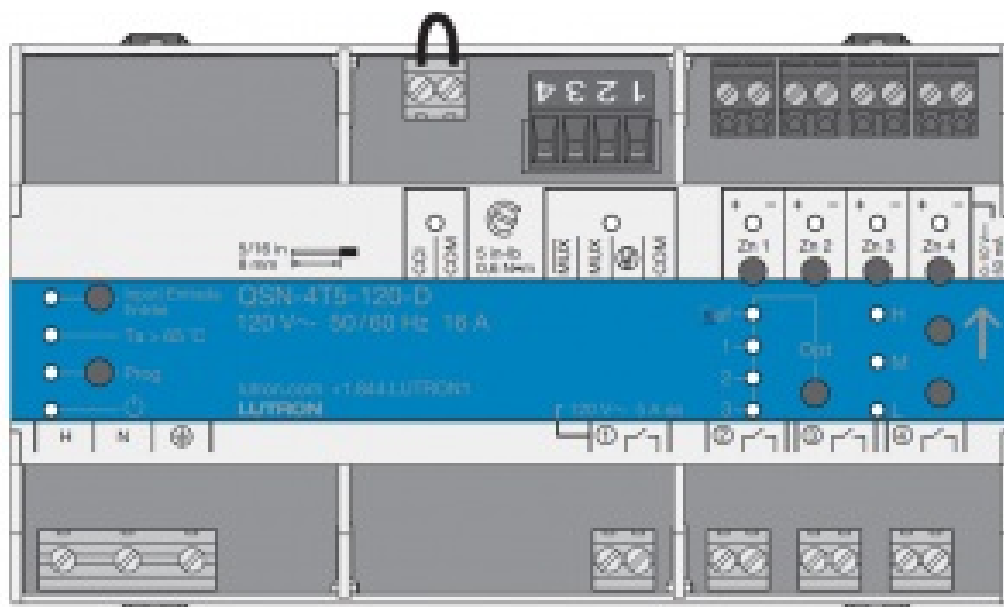
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Energi Savr Node 0 –10 V Power Module






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 / Switching lighting loads

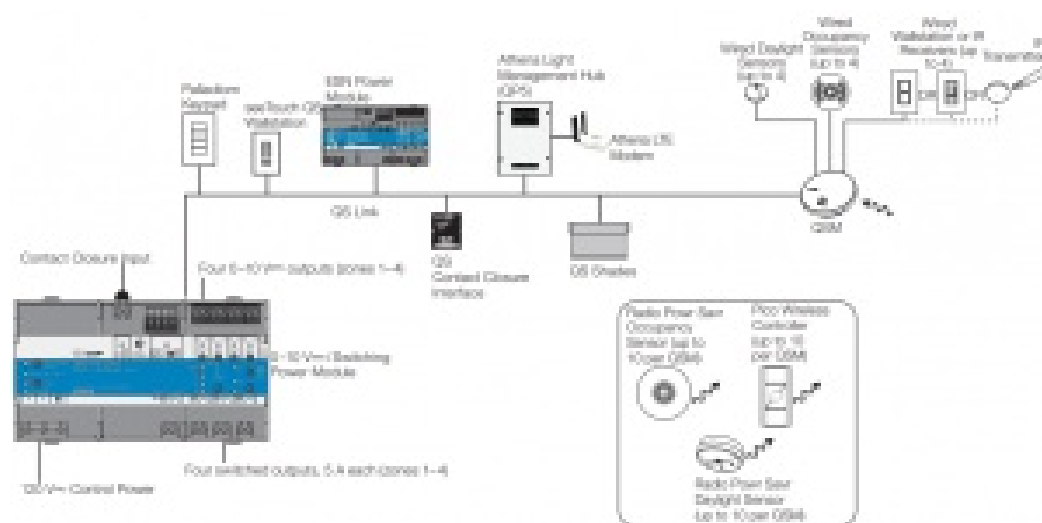


QSN-4T5-120-D

Features

- 0-10 V  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  outputs.
- Buttons on the module provide override control.
- LEDs on the module provide diagnostic information.
- 0 –10 V  power module can be used for 0 –10 V  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  fixtures used with this ESN must support switching power to turn on/off.

System Example



Specifications

Power

- 120 V~ 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~ 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
- UL® 924

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 for incandescent, ELV, MLV, and electronic ballast lighting loads.
- Switched outputs utilize latching relays to maintain relay state if control power is lost.
- 0 –10 V- rated for 50 mA maximum output, source or sink per zone.
- For applications requiring higher wattage ratings, use the PHPM-SW-DV-WH interface or refer to App Note #779 (P/N 048779) on www.lutron.com for alternatives.
- For applications requiring phase adaptive dimming, use the QSN-4A5-D phase adaptive power module.
- 0-10 V- 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- 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 “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)

- 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- 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 *Check down below*

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- module counts as one device toward the QS link device limit, and up to 4 zones toward the QS link zone limit.

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

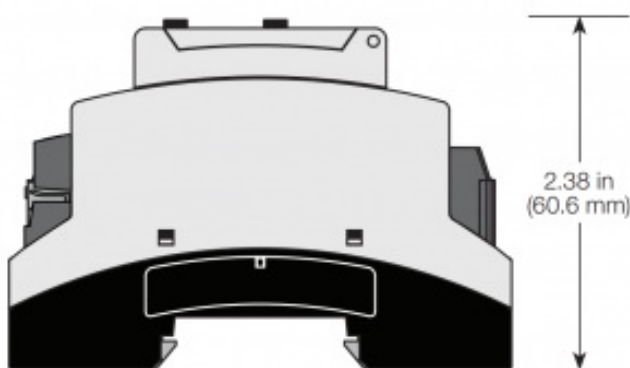
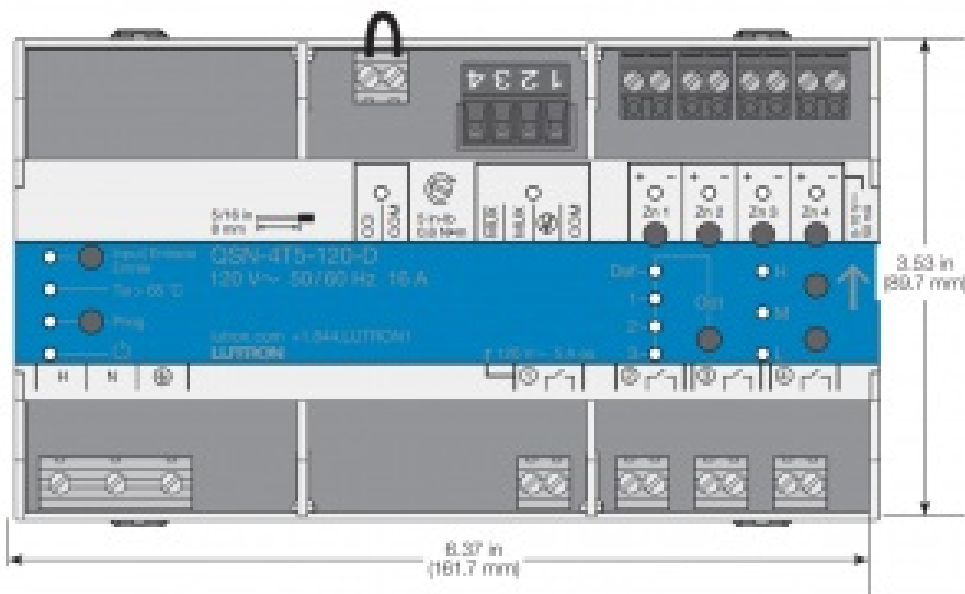
Emergency Contact Closure Input (CCI)

- The CCI behaves as an emergency contact closure input.
- If the CCI is open, the unit will enter emergency mode, which will turn on all loads and disable control from other devices.
- When the CCI is closed or jumpered (factory default), unit zones will return to the settings or levels they were at prior to entering emergency mode.

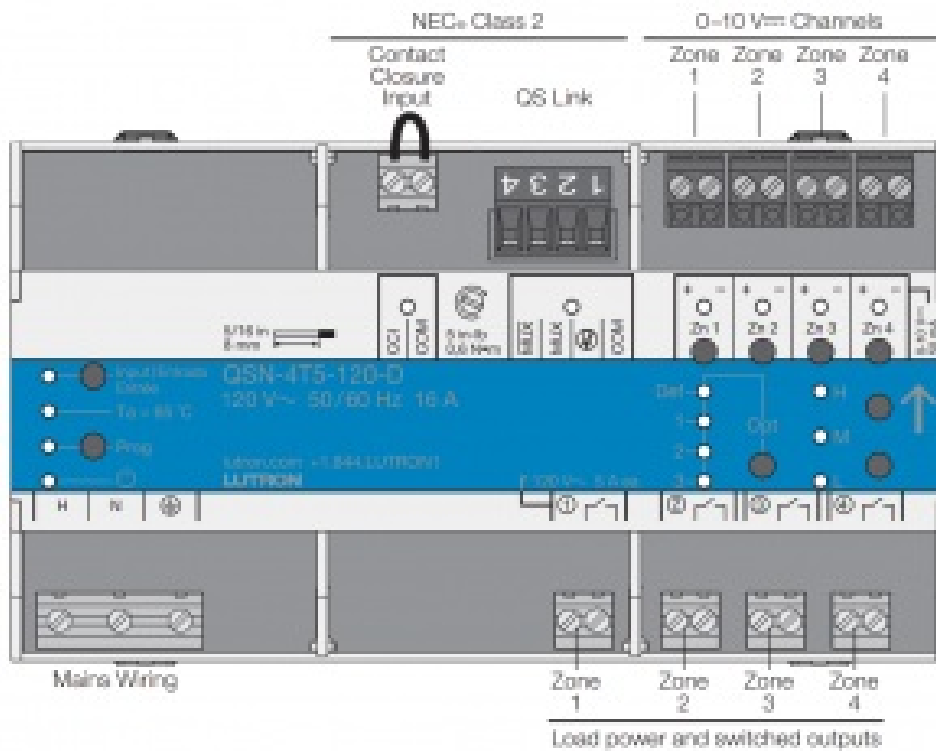
Mounting

- Module is 9 DIN modules wide, 8.5 in (216 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



Overview of Wiring Terminals



Mains Voltage Wiring

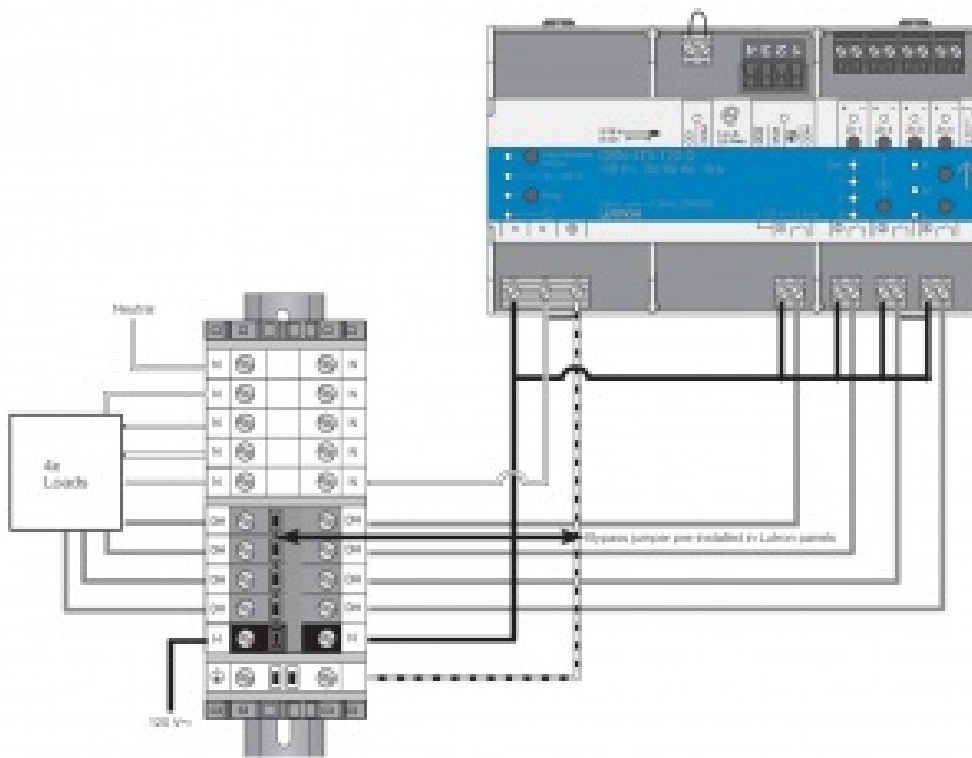
Wiring from Distribution Panel to Energi Savr Node

- 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.

Behavior During Power Failure

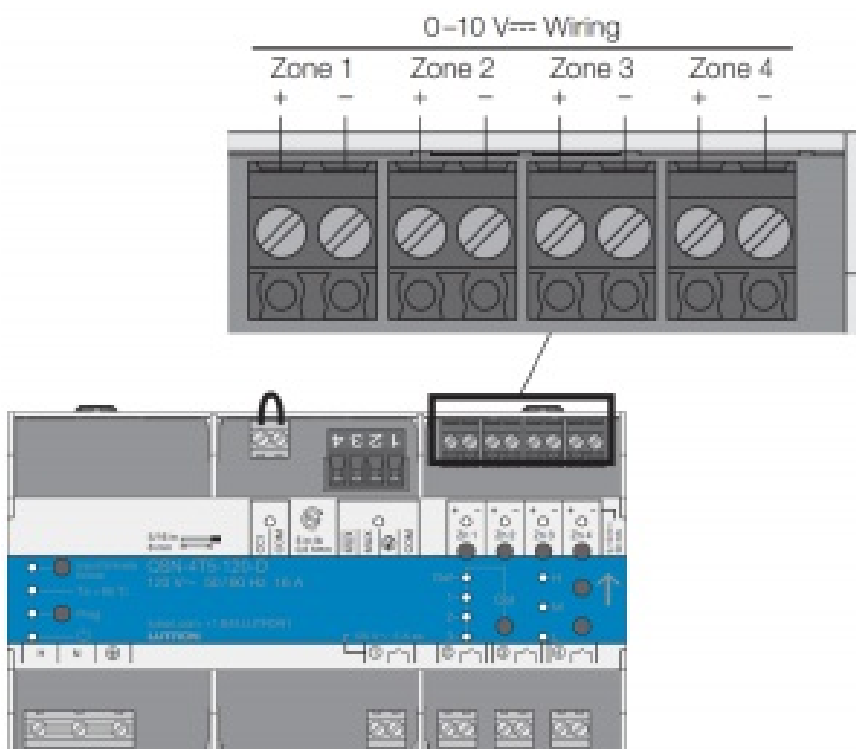
- Relays do not change state when power is lost to the H/N/ terminals. Follow local and national codes for emergency lighting requirements.
- After a power failure, the 0 –10 V- outputs return to their previous setting.

Single-Feed



Wiring: 0 – 10 V

- 0 –10 V- 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- zone 1-4.
- Follow all national and local electrical codes for separation requirements.

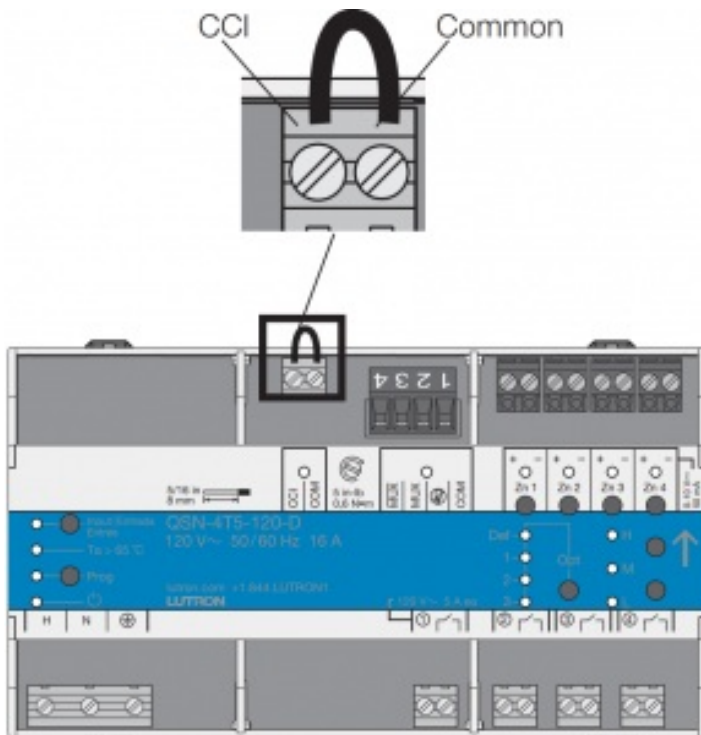


Wiring: Emergency Contact Closure Input

- Contact closure input (CCI) wiring is NEC® Class 2. Follow all applicable national and local codes for proper

circuit separation and protection.

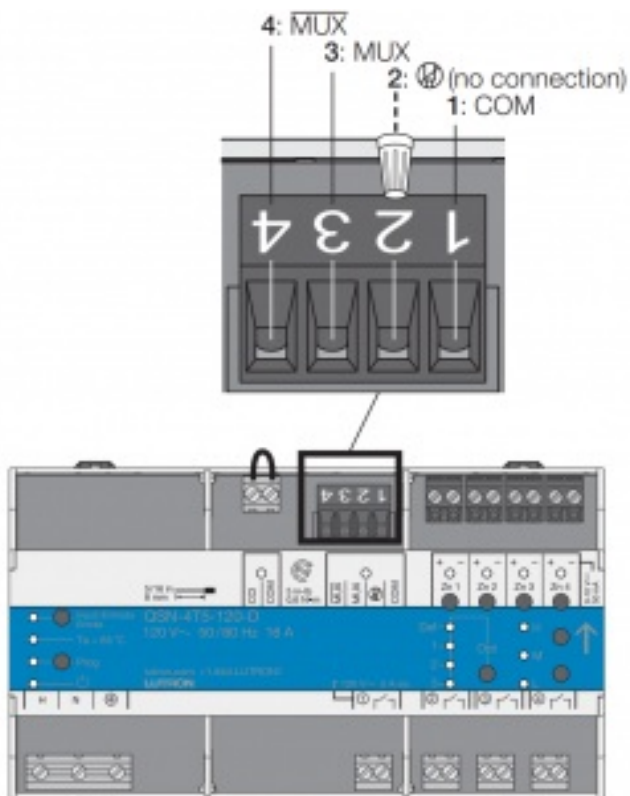
- When in emergency mode, all drivers and zone outputs will be at their programmed emergency light level (default is 100%). All other controls are locked out.
- The CCI is a local control only and cannot control other units over the QS link. A maximum of 32 units may be connected in parallel to a CCO 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 (NC). 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.



Wiring: QS Link

QS Link NECR Class 2 Wiring

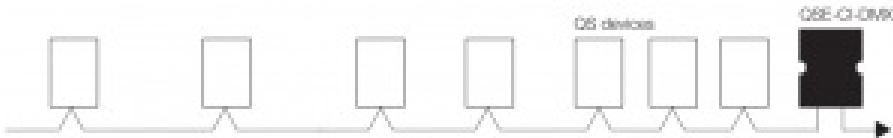
- Follow all applicable national and local codes for proper circuit separation and protection.
- Link communicates using NECR Class 2 wiring.
- Device does not supply or consume PDUs.
- Wiring may be daisy-chained or T-tapped.
- **DO NOT** connect terminal 2.
- Optional QS link wiring harnesses sold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



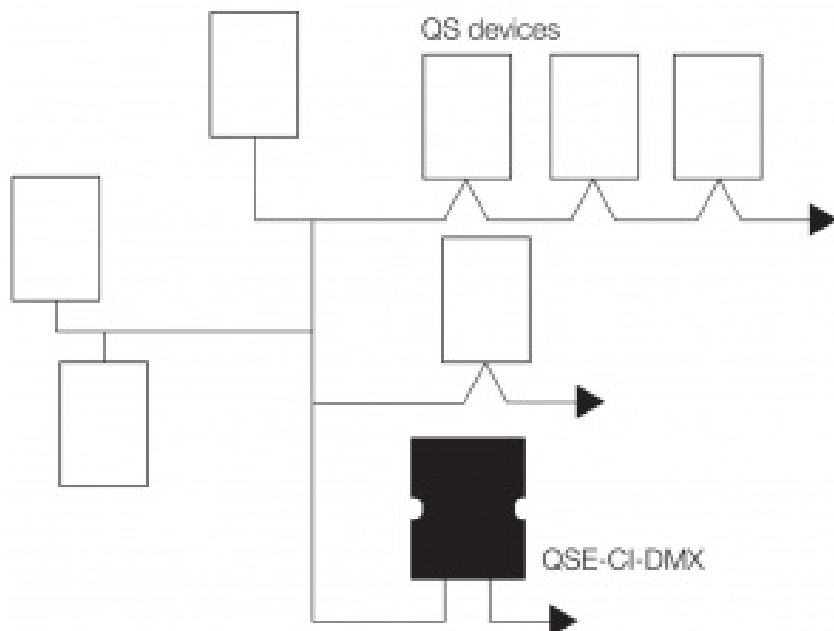
QS Link Wiring Options

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) GRX-PCBL-346S (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) GRX-PCBL-46L (plenum)
	Data (terminals 3 and 4): 1 pair 22 AWG (0.5 mm ²), twisted and screened	

Daisy-Chain Wiring Example



T-Tap Wiring Example




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Documents / Resources

	<p>LUTRON QSN-4T5-120-D Energi Savr Node 0–10 V- Power Module [pdf] User Guide Energi Savr Node 0 10 V- Power Module, QSN-4T5-120-D Energi Savr Node 0 10 V- Power Module</p>
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References

-  [Lutron: Beautiful light. Intelligent Shades. Powerful Controls](#)
-  [Lutron: Beautiful light. Intelligent Shades. Powerful Controls](#)