

# Energi Savr Node with EcoSystem

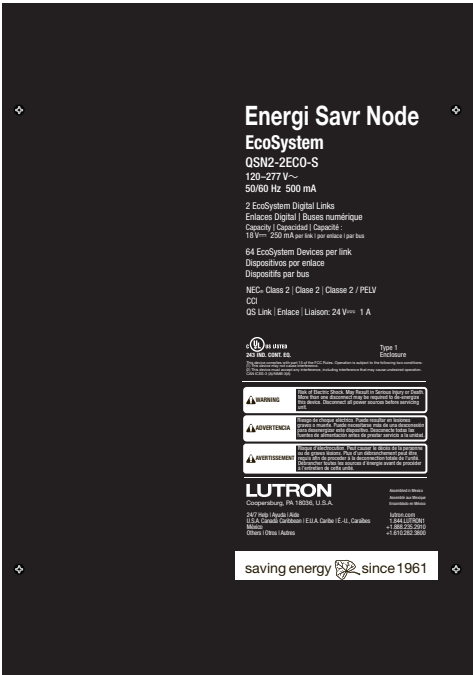
The Energi Savr Node (ESN) family is a group of intelligent, modular products for the control of lighting loads. This document describes the Energi Savr Node unit with EcoSystem, which can control all EcoSystem compatible products including EcoSystem LED drivers, modules, and ballasts.

## QSN2-2ECO-S: Energi Savr Node unit with two EcoSystem digital links

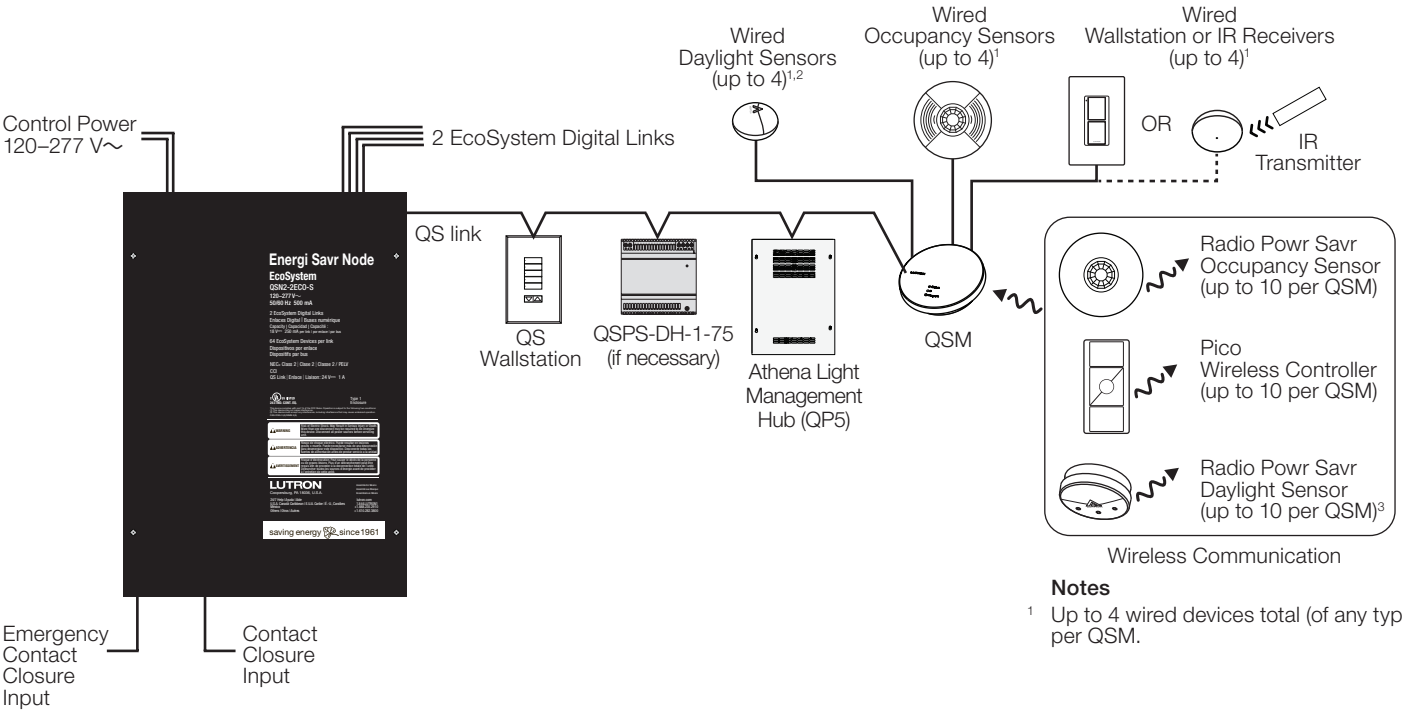
### Features

- Powers up to two EcoSystem digital links.
- Includes QS control link for seamless integration of lights, control stations, and QS sensor modules.
- Compatible with Lutron Athena system (software version 20.4 or higher\*).
- Compatible with Lutron Quantum system (software version 3.4.437 or higher\*).
- BAA-compliant model numbers available, refer to Lutron BAA product list at [www.lutron.com/baa](http://www.lutron.com/baa).

\* **Note:** Quantum or Athena systems lower than the listed version will require a billable upgrade to the latest version. Contact your local Lutron Representative for more information.



# System Example



## Specifications

### Energi Savr Node with EcoSystem

#### Regulatory Approvals

- cULus Listed
- NOM Certified
- Lutron Quality Systems registered to ISO 9001.2015
- Complies with requirements for use in other spaces used for environmental air (plenums) per NEC® 2014 300.22(C)(3)
- Meets the Canadian National Building Code plenum requirements for a concealed space used as a plenum within a floor or roof assembly
- For commercial use, FCC Part 15 Class A only

#### Power

- Control Power: 120-277 V~ 50/60 Hz
- 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
- Current draw: 0.5 A
- 10-year power failure memory: restores lighting to levels prior to power interruption

#### Environment

- Ambient Temperature Operating Range: 32 °F to 104 °F (0 °C to 40 °C)
- Relative humidity: less than 90% non-condensing.
- For indoor use only

#### Terminals

- Control Power Wiring:  
14 AWG to 12 AWG  
(2.5 mm<sup>2</sup> to 4.0 mm<sup>2</sup>) 7 in-lbs (0.8 N•m)  
(two wires, solid or stranded)
- EcoSystem Digital Link Wiring:  
18 AWG to 12 AWG  
(1.0 mm<sup>2</sup> to 4.0 mm<sup>2</sup>) 5 in-lbs (0.6 N•m)  
(single wire, solid or stranded)
- Contact Closure Wiring:  
20 AWG to 12 AWG  
(0.5 mm<sup>2</sup> to 4.0 mm<sup>2</sup>) 5 in-lbs (0.6 N•m)

- QS Link Wiring:

5 in-lbs (0.6 N•m)

#### Power (terminals 1 and 2):

22 AWG to 12 AWG (0.25 mm<sup>2</sup> to 2.5 mm<sup>2</sup>)  
(single wire, solid or stranded)

22 AWG to 18 AWG (0.25 mm<sup>2</sup> to 1 mm<sup>2</sup>)  
(two wires, solid or stranded)

#### Data (terminals 3 and 4):

1 pair, twisted and screened,  
22 AWG to 12 AWG (0.25 mm<sup>2</sup> to 2.5 mm<sup>2</sup>)  
(single wire, solid or stranded)

22 AWG to 18 AWG (0.25 mm<sup>2</sup> to 1 mm<sup>2</sup>)  
(two wires, solid or stranded)

#### Physical Design and Mounting

- NEMA Type 1, IP-20 protection.
- Surface-mount

#### EcoSystem

- Control up to 64 EcoSystem compatible devices (LED drivers, modules, or ballasts) per EcoSystem Digital Link (up to 128 devices per Energi Savr Node with EcoSystem unit):
- Digitally define areas and zones.
- Configure wired or wireless sensors and controls to control devices on multiple EcoSystem Digital Links and/or multiple Energi Savr Node units using Athena/Quantum programming software.
- Automatic replacement of a single failed driver, module, or ballast.
- EcoSystem Digital Link can be wired as Class 1 or IEC PELV/NEC® Class 2 for maximum wiring flexibility.

Job Name:	Model Numbers:
Job Number:	

## Specifications *(continued)*

### Contact Closure Input (CCI)

- Activate scenes using momentary or maintained closures from an external device like a timeclock.
- The attached device must provide a dry contact closure or solid-state output.
- Configurable for normally open (NO) or normally closed (NC) operation.
- Input is miswire-protected up to 36 V $\overline{=}$ .

### Emergency Contact Closure Input

- By default, contact closure input from Lutron Emergency Lighting Interface (LUT-ELI-3PH), security, or fire alarm systems turns all zones on to full output when emergency state is detected.
- Emergency contact closure input is normally closed (NC). The Energi Savr Node unit with EcoSystem is shipped with a jumper pre-installed.
- Response of each zone is configurable.
- Attached devices, by default, will go to maximum output and ignore control inputs.
- No operations will be allowed until emergency signal is cleared.
- The attached device must provide a normally-closed (NC) dry contact closure or solid-state output.
- Input is miswire-protected up to 36 V $\overline{=}$ .
- Emergency CCI cannot control other Energi Savr Node units.
- See Application Note #106 “Emergency Lighting” at [www.lutron.com](http://www.lutron.com) for more details.

### EcoSystem Digital Link Limits

- Up to 64 EcoSystem compatible LED drivers and/or fluorescent ballasts per EcoSystem digital link.
- Sensor and control communication limits:
  - 16 daylight sensors
  - 64 occupancy sensors
  - 64 infrared (IR) receivers or wallstations
 A sensor or control counts as a device on the EcoSystem digital link if it is wired to an EcoSystem driver or ballast on the same link, or is programmed to communicate with a LED driver or fluorescent ballast on the EcoSystem digital link.
- EcoSystem compatible LED drivers and ballasts on the EcoSystem digital link do not count as QS devices.

### QS Link Limits

- Each Energi Savr Node unit with EcoSystem can provide up to 30 Power Draw Units for other QS devices. Refer to the QS Link Power Draw Units (PDUs) specification submittal (Lutron P/N 369405) for more information concerning Power Draw Units.
- Each Energi Savr Node unit with EcoSystem counts as 1 device towards the device limit.
- Each Energi Savr Node unit with EcoSystem can count as 1 to 100 zones towards the zone limit, depending on the number of zones created.
- A maximum of 8 EcoSystem digital links may be connected to the QS link. Energi Savr Node unit with EcoSystem counts as two EcoSystem Digital Links and up to 128 switchlegs.

### Programming Options

- Setup and programming of the Energi Savr Node unit with EcoSystem is done through the Athena/Quantum programming software.

Job Name:	Model Numbers:
Job Number:	

## Specifications *(continued)*

### Out of Box Functionality

This section describes the default functionality when the unit is first installed.

#### 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.

#### Contact Closure Input (CCI)

- Activates a scene using a normally-open (NO) momentary closure from a dry contact closure device. Default scene sends all fixtures to 100%.

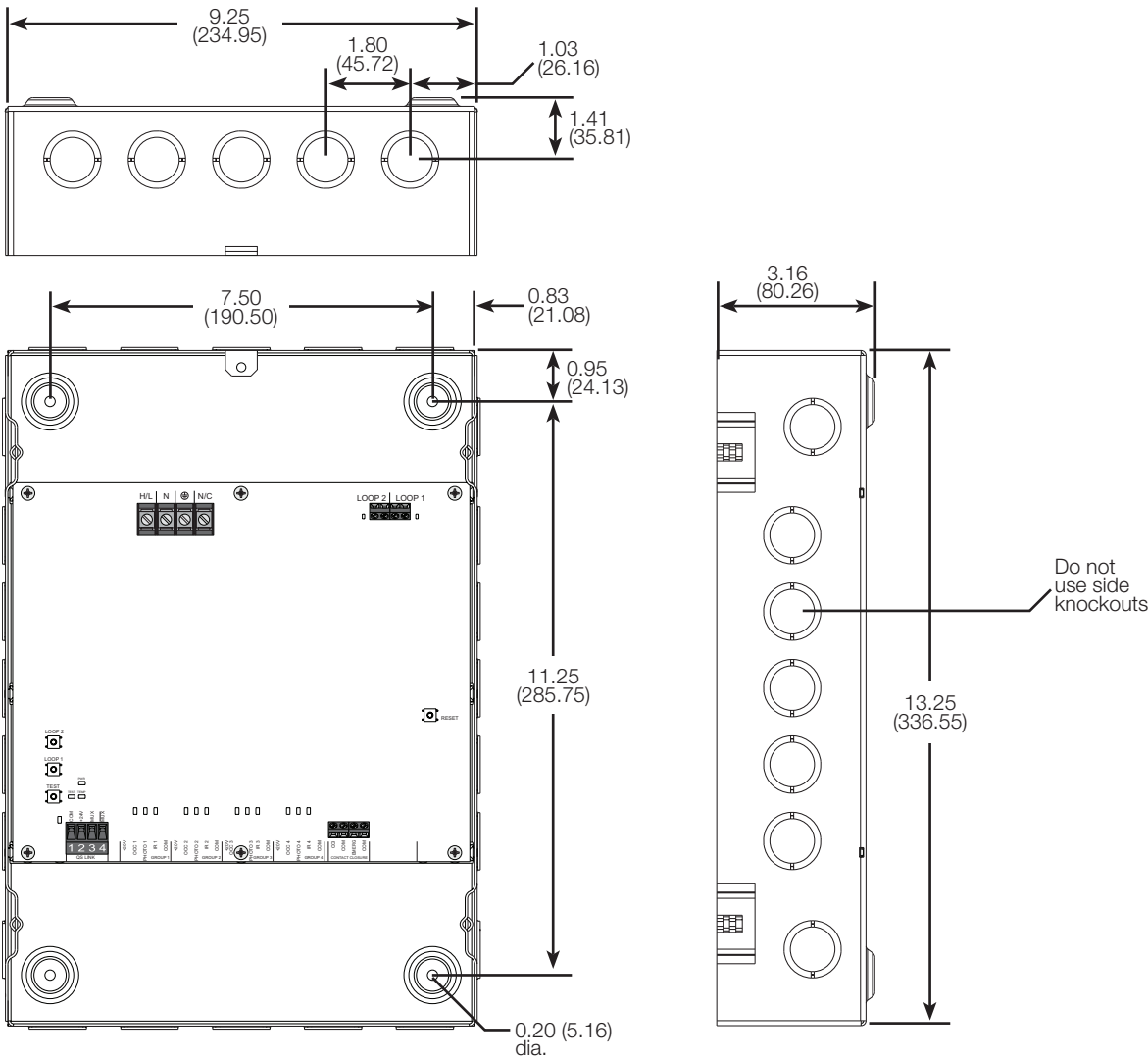
#### Normal Mode Operation

- Enter Test mode by pressing and holding the Test Button on the unit until the Test LED starts flashing
- Press the ECO1 or ECO2 button
- Each button press cycles the lights on the link between:
  - Going to low-end
  - Going to high-end
  - Going to off
  - Flashing

Job Name:	Model Numbers:
Job Number:	

Mechanical Dimensions

All dimensions shown as in (mm)



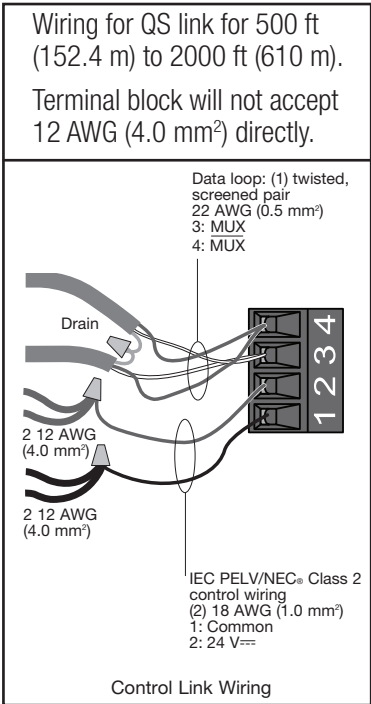
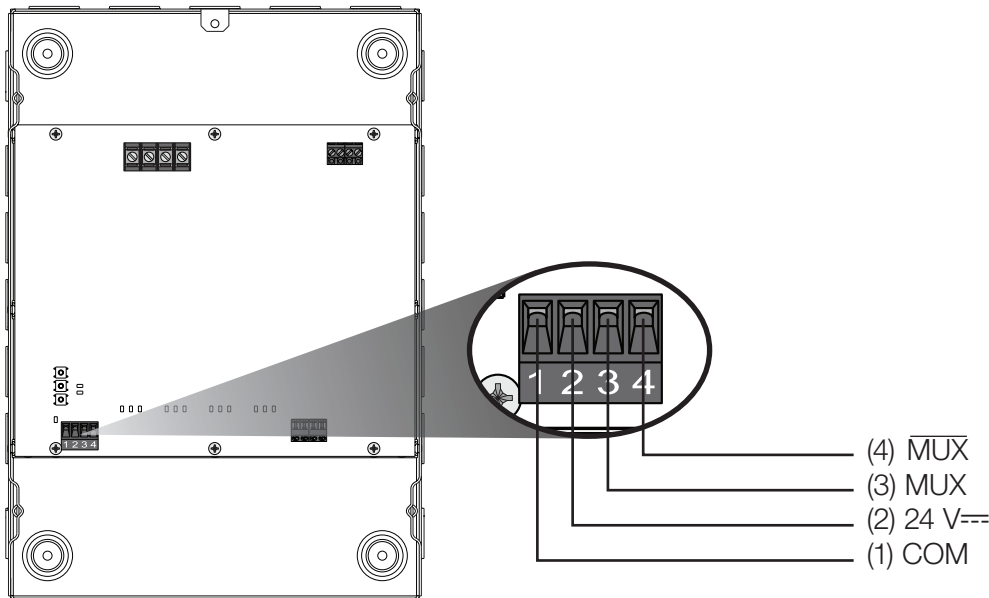
Wiring: QS Link

- QS link communication uses IEC PELV/NEC® Class 2 wiring. Follow all local and national electrical codes when installing IEC PELV/NEC® Class 2 wiring with line voltage wiring.
- The total distance of the QS link wiring must not exceed 2000 ft (610 m).

QS Link Wiring Distance	Wire Gauge	Available from Lutron in one cable:
Less than 500 ft (152.4 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 pair 22 AWG (0.5 mm²), twisted and screened*	
500 ft (152.4 m) to 2000 ft (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 pair 22 AWG (0.5 mm²), twisted and screened*	

\* Alternate Data-only cable: Use approved data loop cable (22 AWG [0.5 mm²] twisted/screened) from Belden, model #9461.

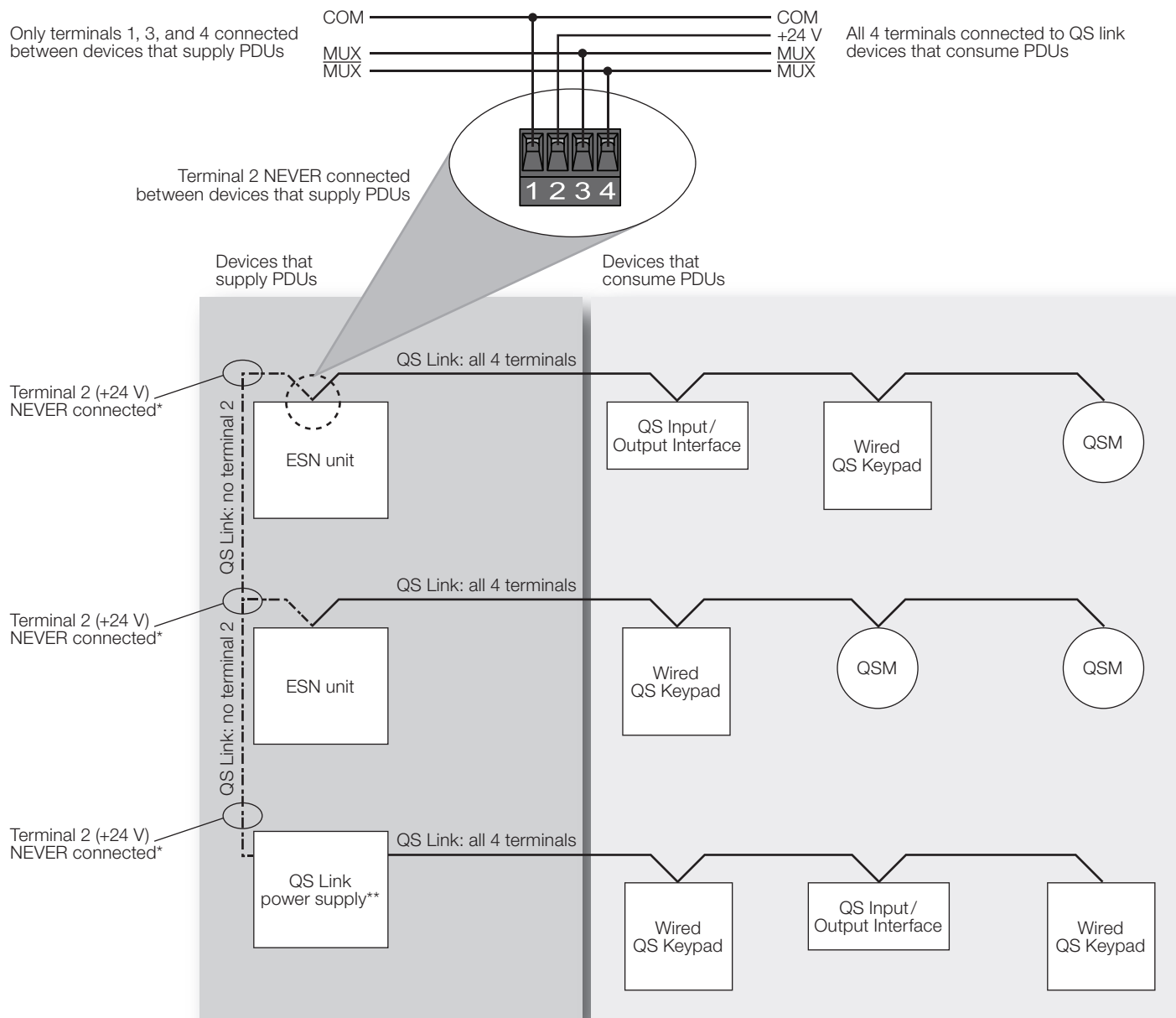
Energi Savr Node unit with EcoSystem



QS Link Wiring:

- 22 AWG to 12 AWG (0.5 mm² to 4.0 mm²)

## Wiring: QS Link (continued)



### QS Link Wiring Rules

\* Terminal 2 (+24 V) should NEVER be connected between devices that supply PDUs.

\*\* For QS Link power supply wiring connection details, refer to the installation instructions for the specific power supply model being used.

Job Name:	Model Numbers:
Job Number:	

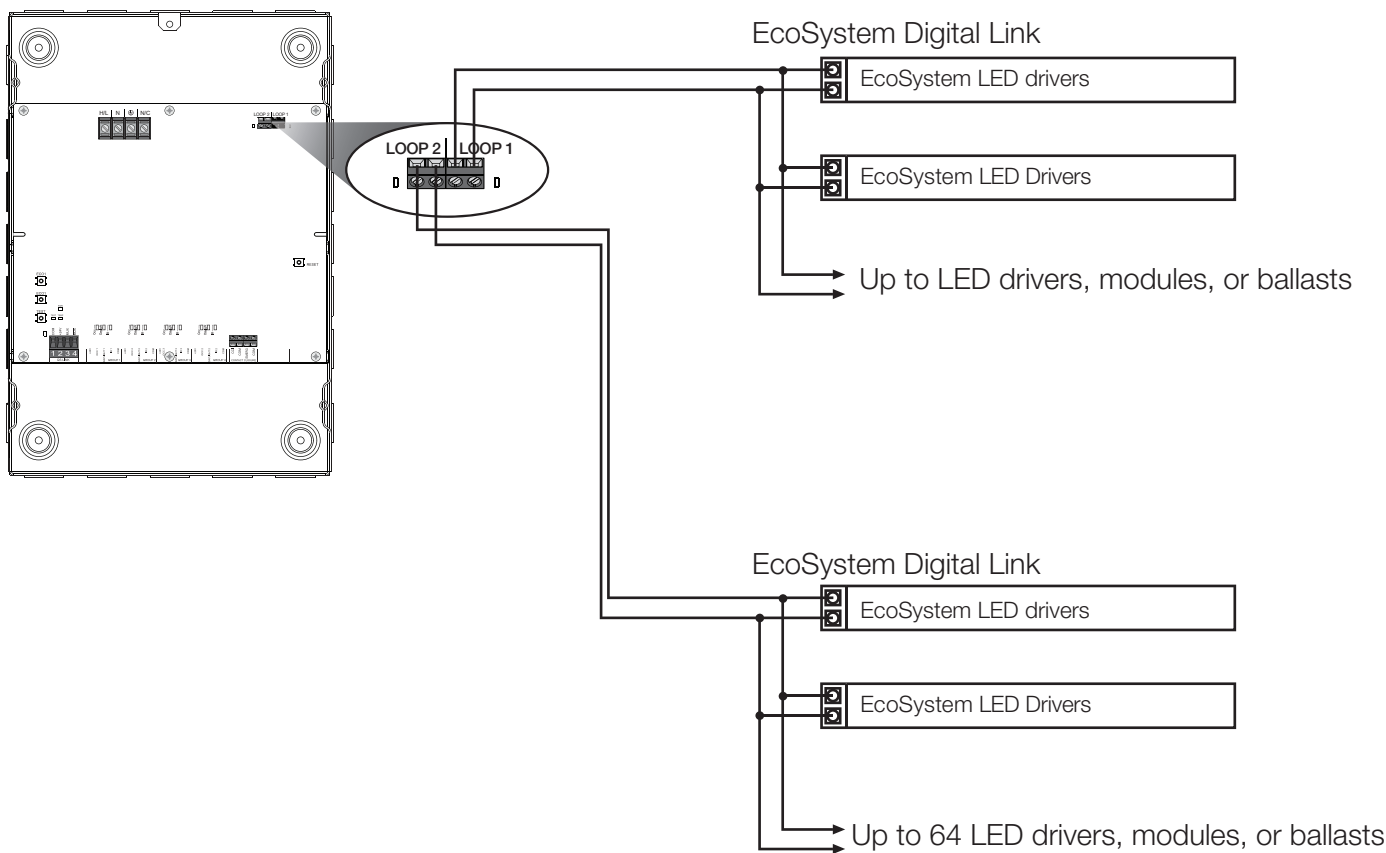
Wiring: EcoSystem Digital Link

Wiring Notes

- Can be wired as Class 1 or IEC PELV/NEC® Class 2 (see App Note #142, “EcoSystem Bus Class 1 and IEC PELV/NEC® Class 2 Listing” at [www.lutron.com](http://www.lutron.com) for more details).
- Polarity free.
- Topology free.
- EcoSystem Digital Links are not electrically isolated from each other. A miswire or short on one EcoSystem Digital Link will affect both links.

Wire Gauge	Maximum EcoSystem Digital Link Wire Length
12 AWG (4.0 mm²)	2200 ft (671 m)
14 AWG (2.5 mm²)	1400 ft (427 m)
16 AWG (1.5 mm²)	900 ft (275 m)
18 AWG (1.0 mm²)	570 ft (175 m)

Energi Savr Node unit with EcoSystem



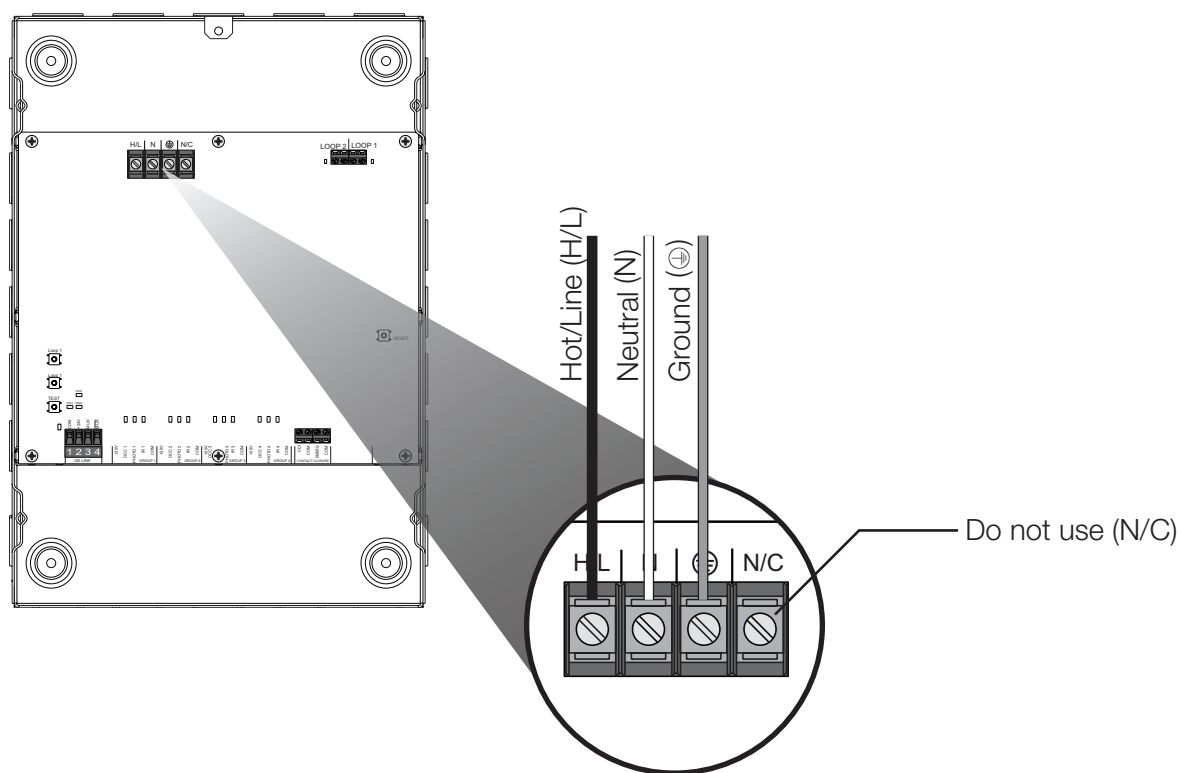


## Wiring: Control Power

### Wiring Notes

- Control Power wiring should be from a normal, non-emergency feed for typical operation of the Energi Savr Node unit with EcoSystem.
- For UL 924 compliance see Application Note #106 “Emergency Lighting” at [www.lutron.com](http://www.lutron.com) for more details.
- Power terminals accept (1) or (2) 14 AWG to 12 AWG (2.5 mm<sup>2</sup> to 4.0 mm<sup>2</sup>) solid or stranded wire.

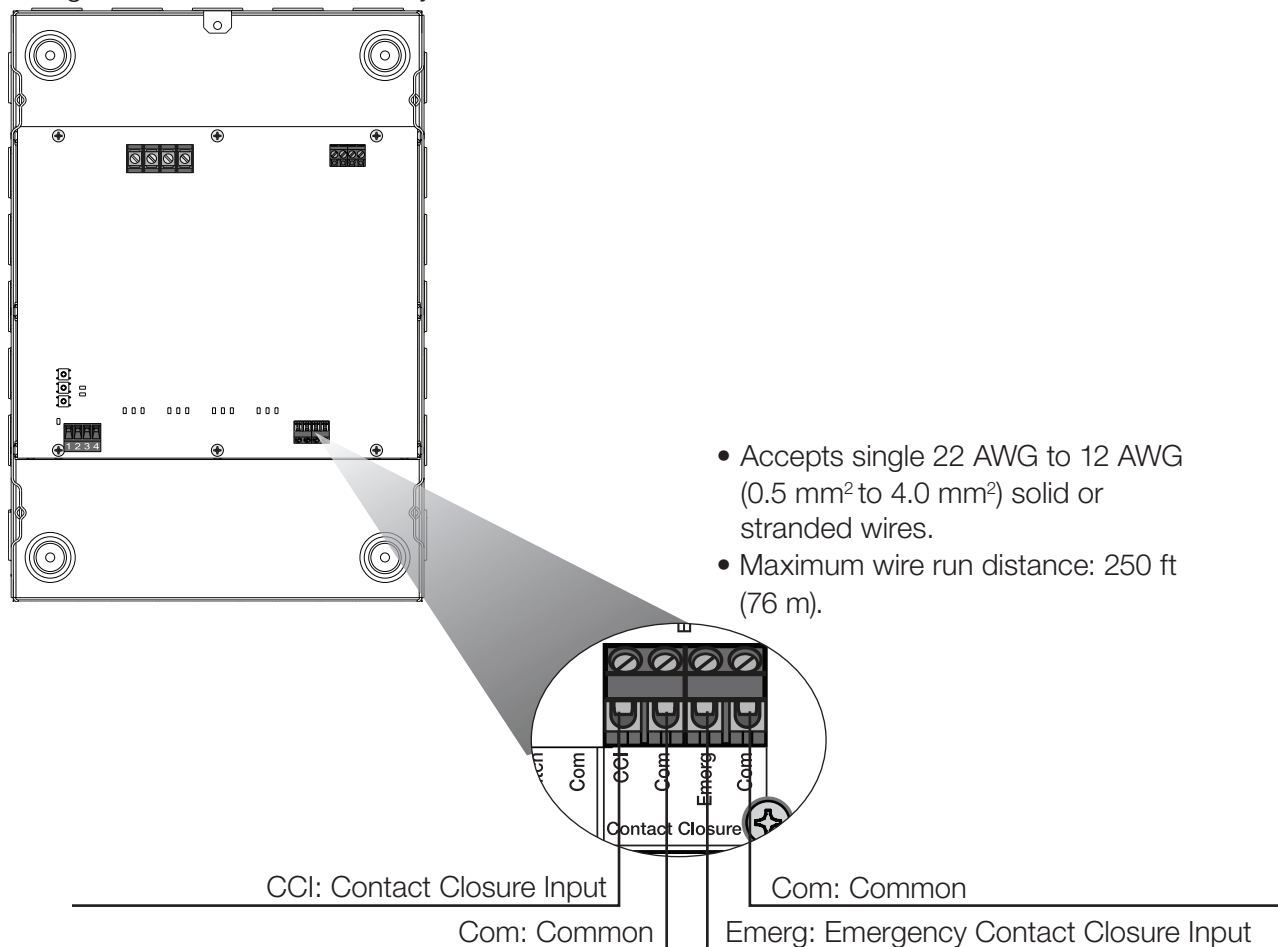
Energi Savr Node unit with EcoSystem



Job Name:	Model Numbers:
Job Number:	

## Wiring: Contact Closure Inputs

Energi Savr Node unit with EcoSystem



The Lutron logo, Lutron, Athena, Hi-lume, Quantum, Pico, EcoSystem, Energi Savr Node and Radio Powr Savr are trademarks or registered trademarks of Lutron Electronics Co., Inc. in the US and/or other countries.

### SPECIFICATION SUBMITTAL

Page

Job Name:	Model Numbers:
Job Number:	