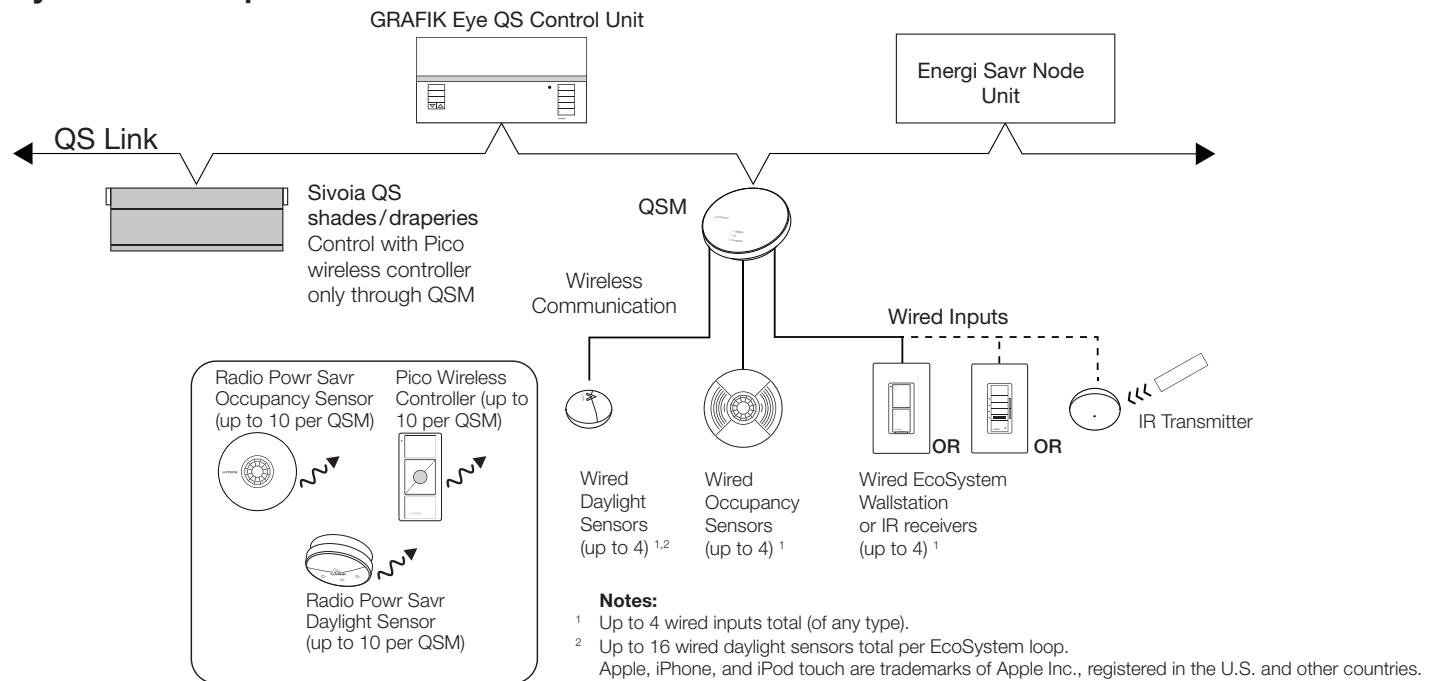


- Energi Savr Node unit with EcoSystem with 1 EcoSystem Digital Loop (QSN-1ECO-S).
- Energi Savr Node unit with EcoSystem with 2 EcoSystem Digital Loops (QSN-2ECO-S).

- Powers up to 2 EcoSystem Digital Loops (QSN-2ECO-S).
- Easy system programming with an intuitive application for *Apple iPhone* or *iPod touch* mobile digital devices (required for non-Quantum systems).
- Four occupancy sensor inputs for automated control of lights.
- Four daylight sensor inputs automatically adjust light levels based on the amount of natural light entering through the windows.
- Four IR receiver inputs for personal control.
- Includes QS control link for seamless integration of lights, control stations, and QS sensor modules.
- Expand the number of sensors and controls using the QS Sensor Module (QSM) or sensors connections on EcoSystem ballasts and modules.
- Connect directly to other Energi Savr Node units, GRAFIK Eye QS units, or Quantum systems to expand functionality and control.
- BAA-compliant model numbers available. Add a “U” prefix to the model number.



Job Name:	Model Numbers:
Job Number:	

Specifications

Energi Savr Node with EcoSystem

Regulatory Approvals

- UL® Listed
- CSA
- NOM Certified
- Lutron Quality Systems registered to ISO 9001.2008
- 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, 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 mm² to 4.0 mm²)
- EcoSystem Digital Loop Wiring: 18 AWG to 12 AWG (1.0 mm² to 4.0 mm²)
- Input Group Wiring: 22 AWG to 12 AWG (0.5 mm² to 4.0 mm²)
- QS Loop Wiring: 22 AWG to 12 AWG (0.5 mm² to 4.0 mm²)

Physical Design

- NEMA Type 1, IP-20 protection.

Mounting

- Surface-mount

Programming Requirements

- An *Apple iPod touch* or *iPhone* mobile digital device with the Energi Savr app is required for programming Energi Savr Node with EcoSystem systems
- The Energi Savr app is available from the *Apple App Store* online store
- The Energi Savr app cannot be used to program the Energi Savr Node with EcoSystem units when installed as part of a Quantum system
- The *Apple iPod touch* or *iPhone* communicates with the Energi Savr Node unit via a WiFi router (not included)
- See “Wiring: System Programming Connection” section for further information

Input Default Associations

- Energi Savr Node with EcoSystem units are pre-programmed from the factory to respond to inputs wired directly to the Energi Savr Node with EcoSystem unit
- Programmable CCI activates a scene using a normally open momentary closure by default

Apple, iPhone, and iPod touch are trademarks of Apple Inc., registered in the U.S. and other countries. AppStore is a service mark of Apple Inc.

Job Name:	Model Numbers:
Job Number:	

Specifications *(continued)*

EcoSystem

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

Occupancy Sensors

- Use Lutron LOS series of wired occupancy sensors in occupancy mode to control one or more areas.
- Use Lutron occupancy sensors in vacancy mode to automatically turn the lights off in an area after it becomes vacant.
- Use Lutron occupancy sensors to automatically turn the lights on in area when it becomes occupied and to automatically turn the lights off in an area after it becomes vacant.
- Each of the four occupancy inputs can power one Lutron occupancy sensor.
- Each area's occupied light level and unoccupied light level can be programmed independently.
- Up to four additional Lutron Wired Occupancy Sensors or ten additional Radio Powr Savr Occupancy/Vacancy Sensors can be assigned per QS Sensor Module (QSM) on the QS link.

seeTouch QS Controls

- seeTouch QS wallstations can be configured as a zone toggle or scene wallstation.
- In zone toggle mode, zone buttons are able to turn one or more zones on and off.
- In scene mode, buttons are able to recall scenes in one or more areas.
- All buttons on a wallstation will be in the same mode - zone toggle or scene.
- LED indicator displays zone or scene status.
- A single button can control lights or shades/draperies, but not both.

IR Wallstation or Receiver Input

- Four inputs for IR receivers or wallstations for control of lighting zones can be connected directly to the Energi Savr Node with EcoSystem unit.
- Use Lutron CC-4BRL-WH wallstations to control one or more zones.
- Use Lutron EC-IR-WH or EC-DIR-WH ceiling mount sensors to control one or more zones.
- Up to four additional wired wallstations or IR receivers can be assigned per QSM on the QS link

Daylight Sensors

- Lutron daylight sensors allow daylight harvesting with programmable effect on light output.
- Four daylight sensors can be connected directly to the Energi Savr Node with EcoSystem unit.
- Use Lutron EC-DIR-WH sensors to control one or more daylight rows.
- Alternatively, up to four additional Lutron Wired Daylight Sensors or ten additional Radio Powr Savr Daylight Sensors can be assigned per QSM on the QS link.
- Control 4 daylight rows per area with a maximum of 2 daylight sensors per area.

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.
- Start or stop Afterhours mode using a maintained closure.
- Enable or disable Load Shed mode to save energy during peak demand periods using a maintained closure.
- 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 #140, "EcoSystem Ballasts and Emergency Wiring" at www.lutron.com for more details.

Functionality with GRAFIK Eye QS

- Energi Savr Node with EcoSystem areas follow GRAFIK Eye QS unit scene activations when associated with the GRAFIK Eye QS unit.
- Energi Savr Node with EcoSystem areas respond to commands initiated by the GRAFIK Eye QS unit astronomic time clock when associated with the GRAFIK Eye QS unit.
- Energi Savr Node with EcoSystem areas operate in Afterhours mode when associated with a GRAFIK Eye QS unit that is in Afterhours mode.
- Zones on Energi Savr Node units cannot be associated with zone controls on GRAFIK Eye QS units.

Functionality with QSE-IO

- Energi Savr Node unit with EcoSystem responds to scene commands initiated by the QSE-IO, if the QSE-IO DIP switches have been set to either Scene Selection mode, Zone Toggle mode, Partition mode, or Occupancy Sensor mode.

Functionality with QSE-CI-NWK-E

- Integrate the Energi Savr Node unit with EcoSystem with touchscreens, PCs, A/V systems, or other digital systems and devices.
- Recall scenes and set/adjust zone levels.

Job Name:	Model Numbers:
Job Number:	

Specifications *(continued)*

QS Sensor Module (QSM)

- Use the QSM to integrate Radio Powr Savr Occupancy/Vacancy sensors, Radio Powr Savr Daylight sensors, and Pico Wireless Controllers with an Energi Savr Node unit with EcoSystem.
- Associate up to 99 QSMs per Energi Savr Node unit with EcoSystem.
- Assign up to 10 Radio Powr Savr Occupancy sensors per QSM.
- Assign up to 10 Radio Powr Savr Daylight sensors per QSM.
- Assign up to 10 Pico Wireless Controllers per QSM.
- Connect up to 100 wired or wireless sensors of each type per QS link.
- Wire and power up to 4 wired sensors per QSM:
 - Daylight sensors
 - Occupancy sensors
 - Infrared (IR) receivers or wallstations
- The Radio Powr Savr sensors and Pico Wireless Controllers associated with the QSM should be mounted within 60 ft (18 m) line of sight, or 30 ft (9 m) through walls, of the QSM.
- Refer to QSM Specification Submittal for more information.

EcoSystem Digital Loop Limits

- Up to 64 EcoSystem compatible fluorescent ballasts and/or LED drivers per EcoSystem digital loop.
- 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 loop if it is wired to an EcoSystem ballast on the same loop, or is programmed to communicate with a fluorescent ballast or LED driver on the EcoSystem digital loop.
- EcoSystem compatible fluorescent ballasts and LED drivers on the EcoSystem digital loop do not count as QS devices.

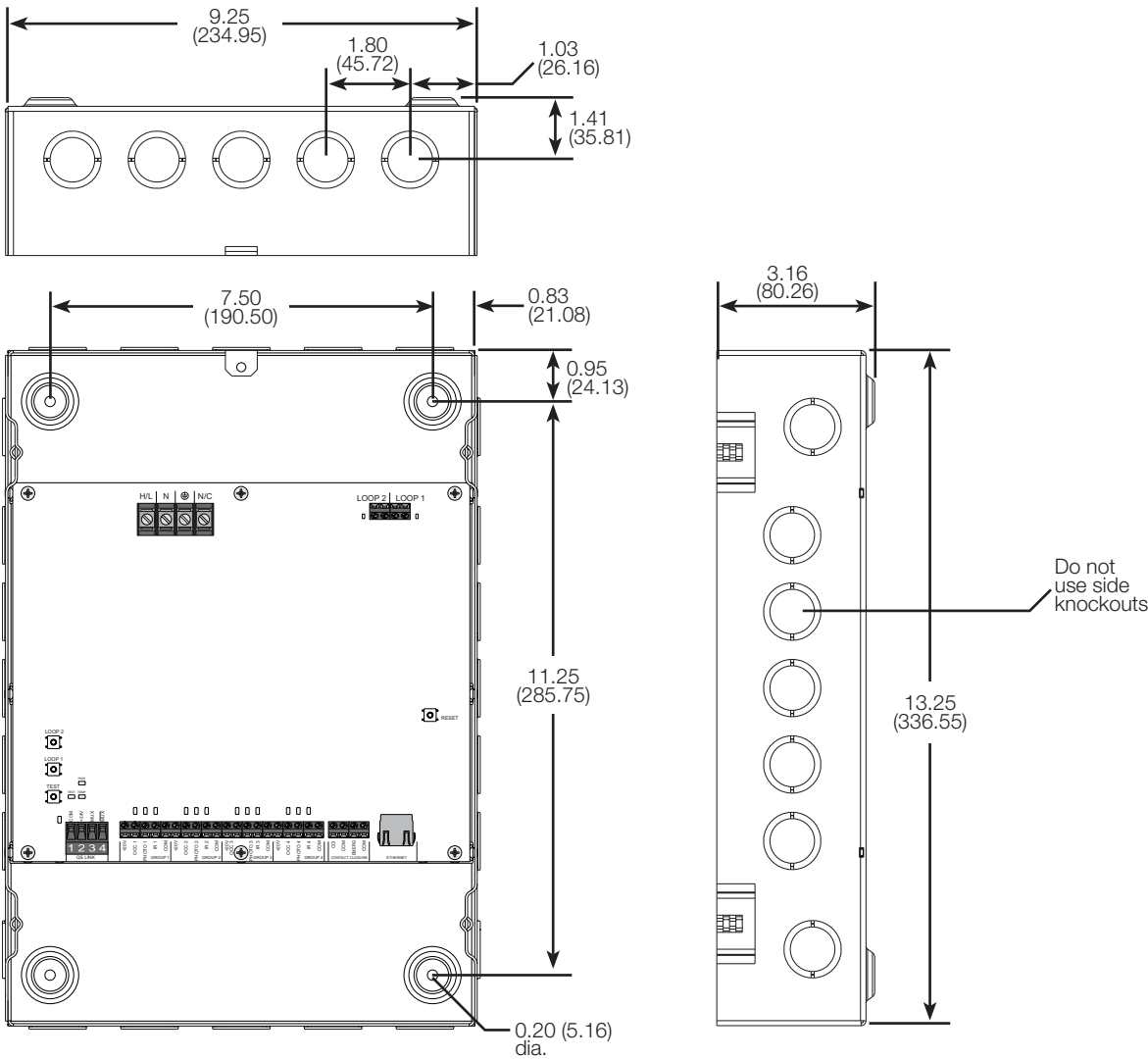
QS Link Limits

- 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 specification submittal (Lutron P/N 369405) for more information concerning Power Draw Units.
- The QS Link can have up to 100 devices and 100 zones.
- Each Energi Savr Node unit with EcoSystem counts as 1 device towards the 100 device limit.
- Each Energi Savr Node unit with EcoSystem can count as 1 to 100 zones towards the 100 zone limit, depending on the number of zones created (up to 512 zones in a Quantum system).
- A maximum of 8 EcoSystem digital loops may be connected to the QS link. Energi Savr Node unit with EcoSystem counts as up to 64 or up to 128 ballasts.

Job Name:	Model Numbers:
Job Number:	

Mechanical Dimensions

All dimensions shown as in (mm)



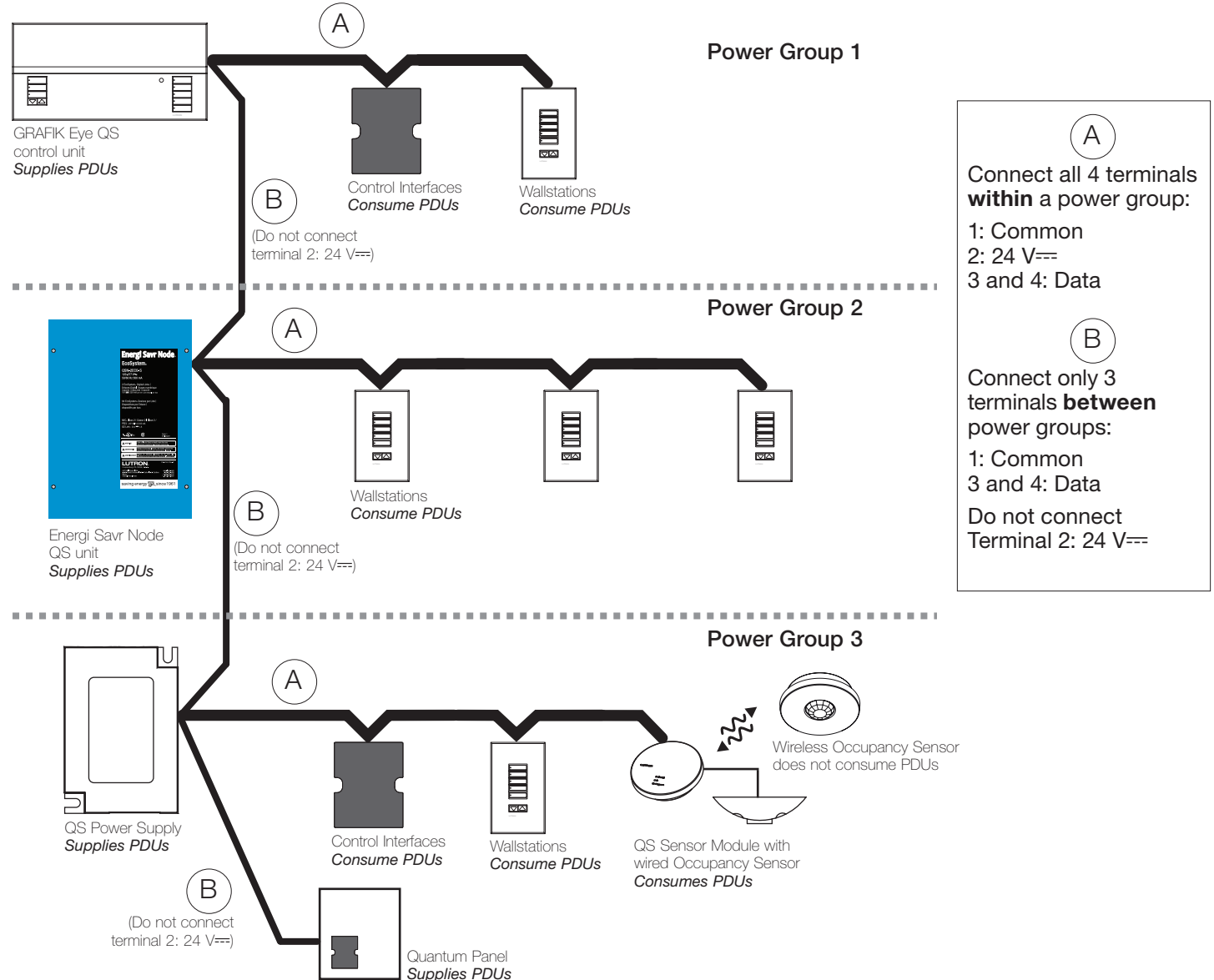
Power Draw Units (PDUs) on the QS Link

On the QS link, there are devices that supply power and devices that consume power. Each device has a specific number of PDUs it either supplies or consumes.

A Power Group consists of one device that supplies power and one or more devices that consume power; each Power Group may have only one power-supplying device. Refer to the QS Link Power Draw Units specification submittal (Lutron P/N 369405) for more information concerning PDU's.

Within Power Groups on the QS link, connect all 4 terminals (1, 2, 3, and 4), shown by the letter A in the diagram. Between devices on the QS link that supply power, connect only terminals 1, 3, and 4 (NOT terminal 2), shown by the letter B on the diagram. Wiring can be T-tapped or daisy-chained.

Power Group Wiring Example



Note: Each QS link has a limit of 100 total devices; device count can vary depending on your system and your connected devices.

LUTRON SPECIFICATION SUBMITTAL

Page

Job Name:	Model Numbers:
Job Number:	

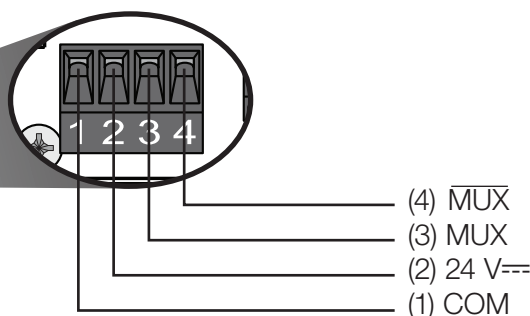
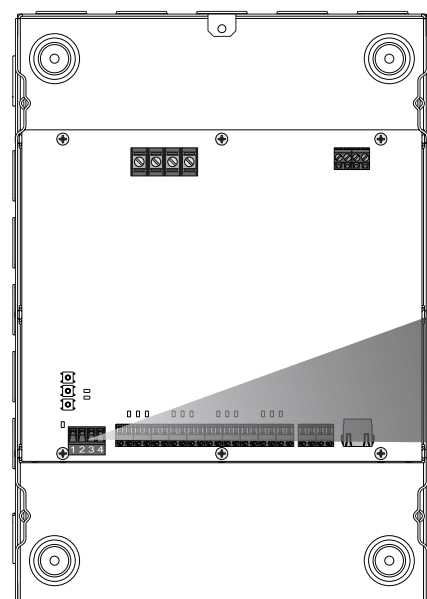
Wiring: QS Link

- 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).

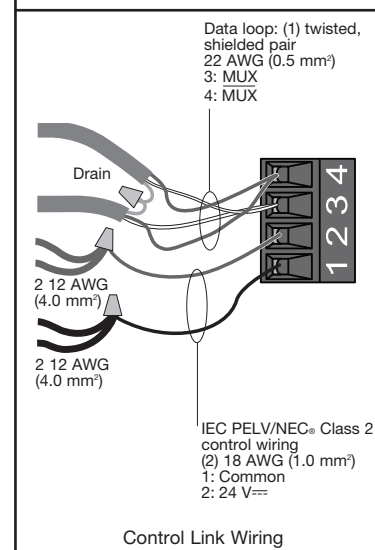
QS Link Wiring Distance	Wire Gauge	Available from Lutron in one cable:
Less than 500 ft (152.4 m)	Power (terminals 1 and 2): 1 pair 18 AWG (1.0 mm ²)	GRX-CBL-346S (non-plenum) GRX-PCBL-346S (plenum)
	Data (terminals 3 and 4): 1 pair 22 AWG (0.5 mm ²), twisted and shielded*	
500 ft (152.4 m) to 2000 ft (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 shielded*	

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

Energi Savr Node unit with EcoSystem



Wiring for QS link for 500 ft (152.4 m) to 2000 ft (610 m).
Terminal block will not accept 12 AWG (4.0 mm²) directly.

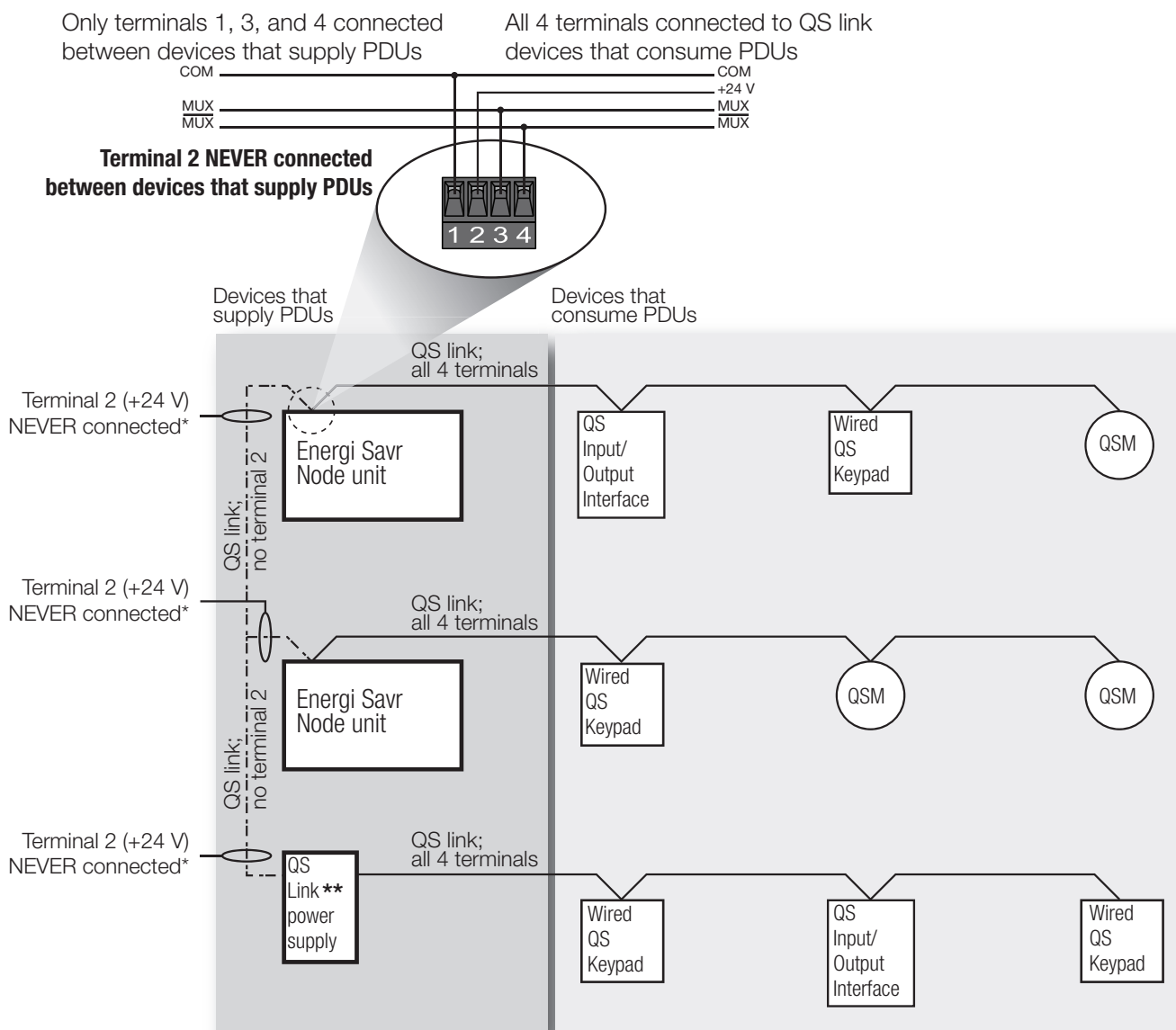


QS Link Wiring:

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

Job Name:	Model Numbers:
Job Number:	

Wiring: QS Link *(continued)*

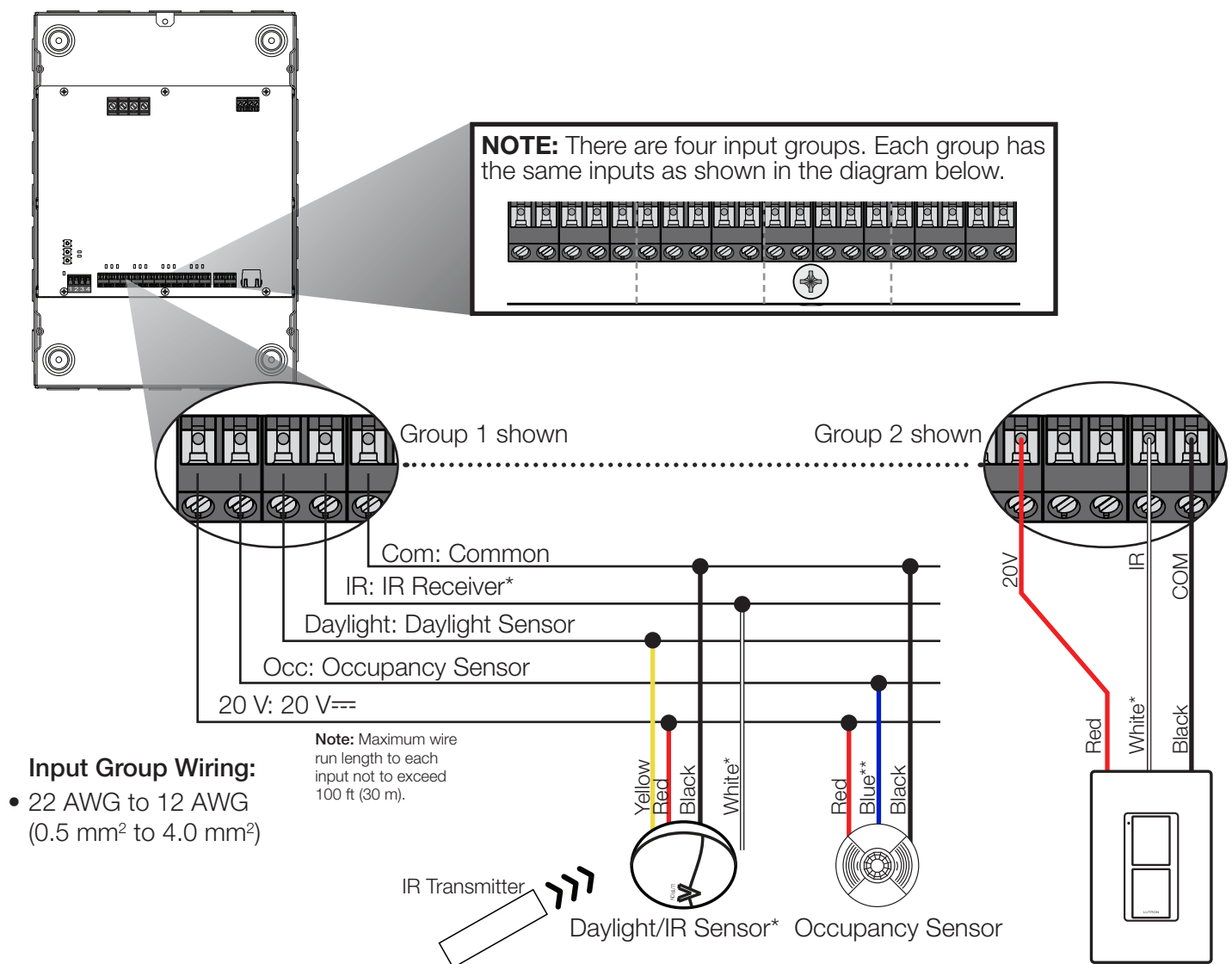


QS Link Wiring Rules

- * 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: IEC PELV / NEC® Class 2 Inputs



* **Note:** Only one IR device may be connected per input. If the IR signal from a daylight sensor is connected, a wall control may not be connected to the same input, and vice-versa.

**Connect the gray wire on -R model occupancy sensors.

Job Name:	Model Numbers:
Job Number:	

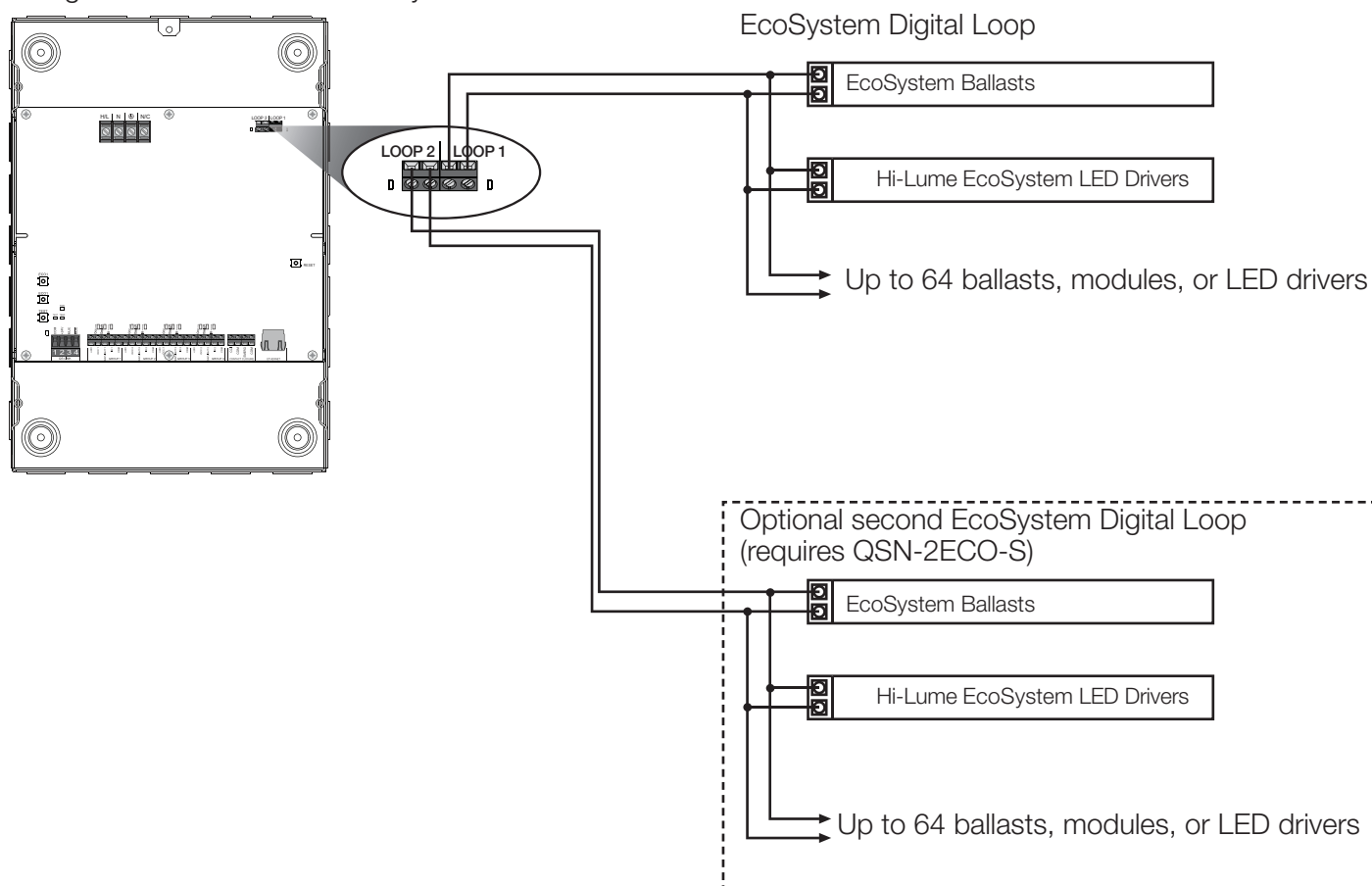
Wiring Diagram: EcoSystem Digital Loop

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 for more details).
- Polarity free.
- Topology free.
- EcoSystem Digital Loops are not electrically isolated from each other. A miswire or short on one EcoSystem Digital Loop will affect both loops.

Wire Gauge	Maximum EcoSystem Digital Loop Wire Length
12 AWG (4.0 mm ²)	2200 ft (671 m)
14 AWG (2.5 mm ²)	1400 ft (427 m)
16 AWG (1.5 mm ²)	900 ft (275 m)
18 AWG (1.0 mm ²)	570 ft (175 m)

Energi Savr Node unit with EcoSystem

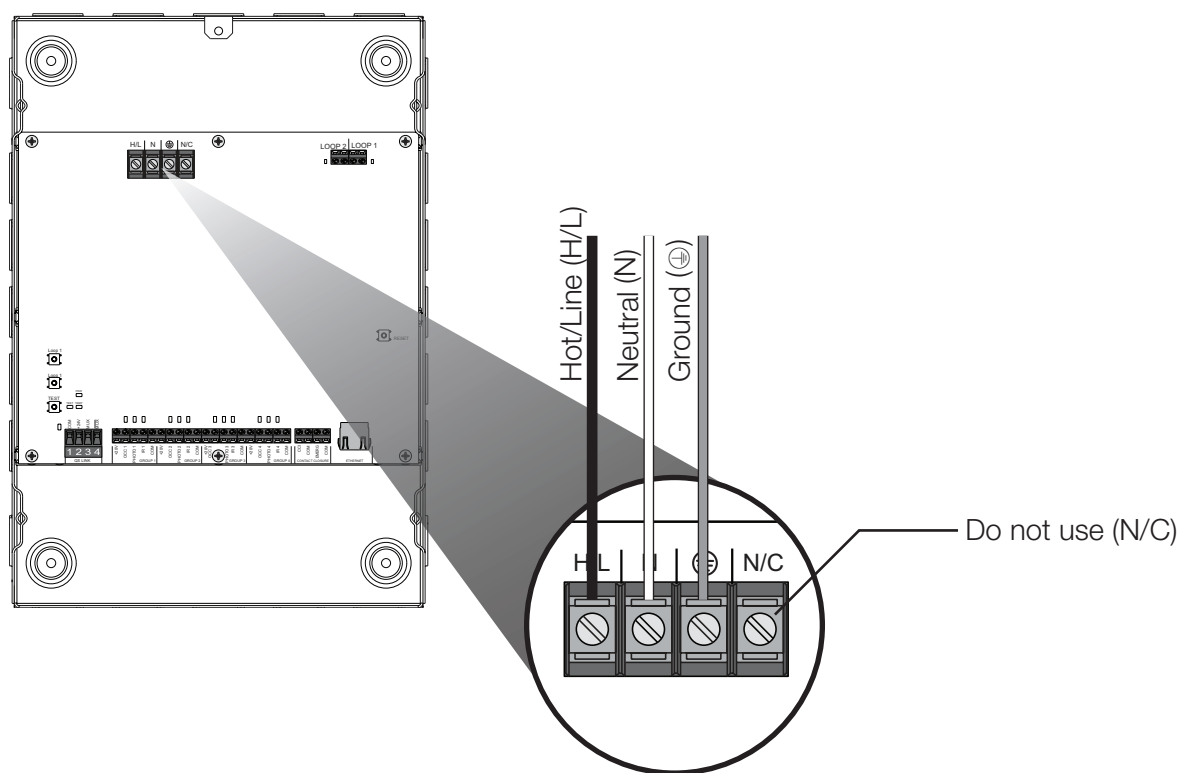


Wiring: Control Power

Wiring Notes

- Control Power wiring should be from a normal, non-emergency feed for proper operation of the Energi Savr Node unit with EcoSystem.
- Power terminals accept (1) or (2) 14 AWG to 12 AWG (2.5 mm² to 4.0 mm²) solid or stranded wire.

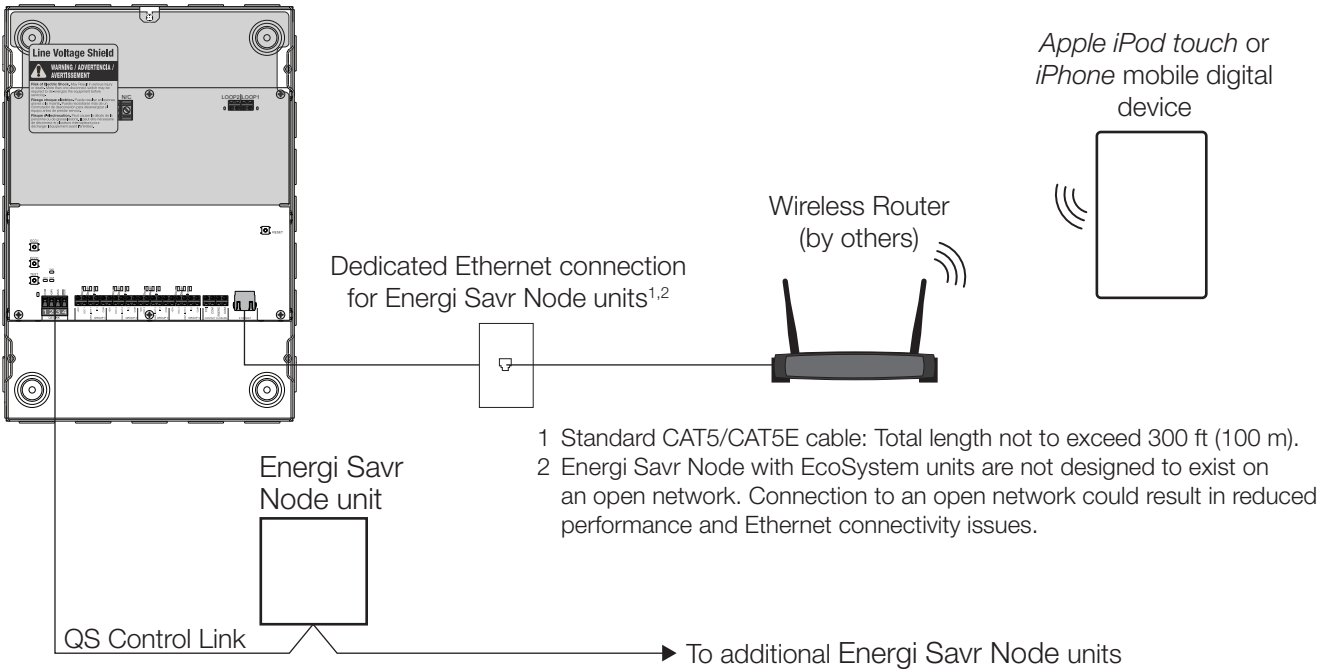
Energi Savr Node unit with EcoSystem



Job Name:	Model Numbers:
Job Number:	

Wiring: System Programming Connection

Energi Savr Node unit
with EcoSystem

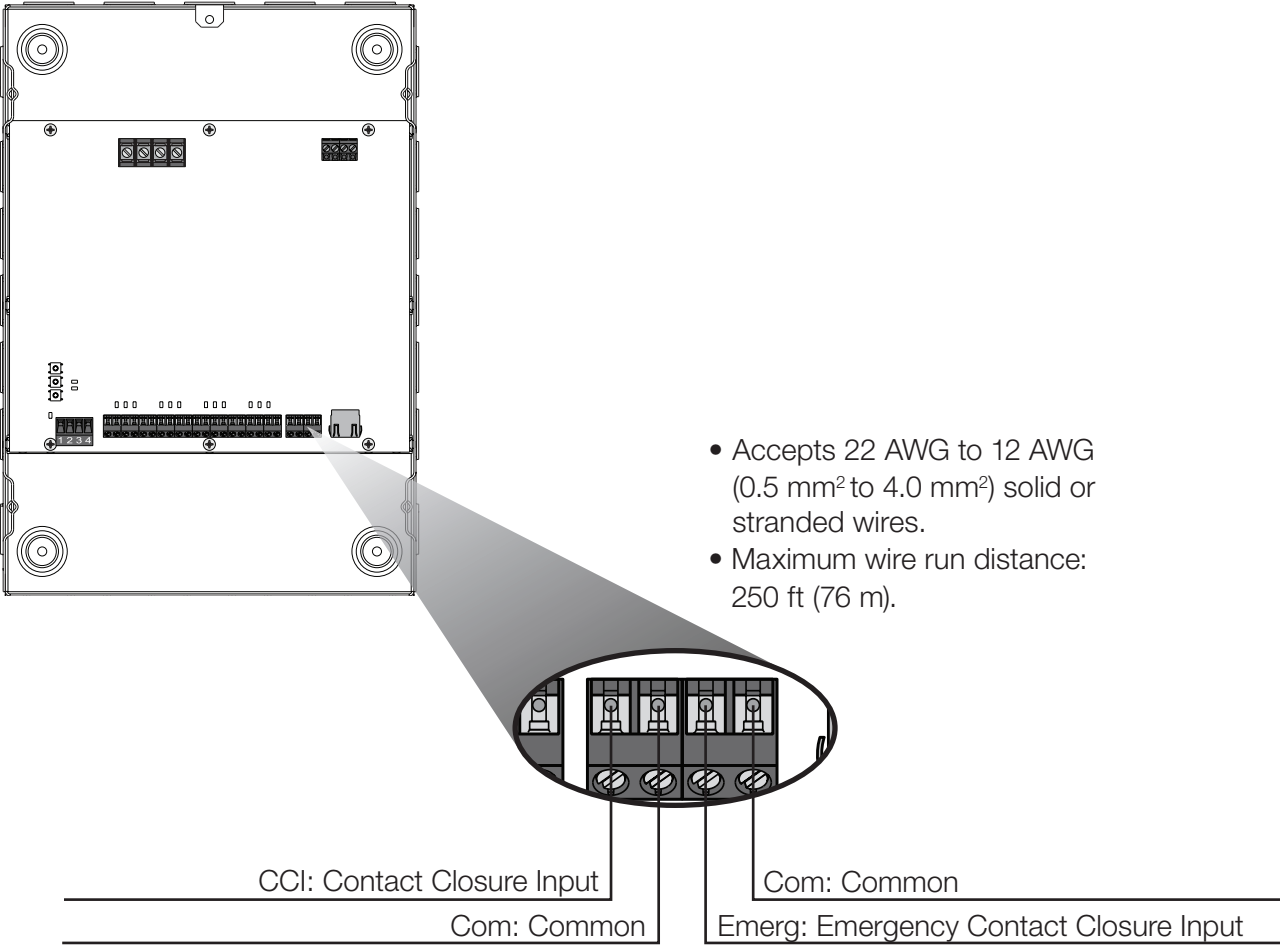


- Wireless router only required for programming with an *Apple iPod touch* or *iPhone*.
- Wireless router may be removed for normal operation.
- Lutron recommends that an Energi Savr Node unit with EcoSystem be wired to an Ethernet jack in the space for ease of access and proximity to power for the wireless router.
- Works with any standard wireless router that supports multicast packets.
- *Apple iPod touch* or *iPhone* can program other Energi Savr Node units connected to an Energi Savr Node unit with EcoSystem via the QS Link (except when part of a Quantum system).
- Energi Savr app is required (except when part of a Quantum system) to program Energi Savr Node units with EcoSystem and is available from the *Apple AppStore* online marketplace.

Apple, iPhone, and iPod touch are trademarks of Apple Inc., registered in the U.S. and other countries. AppStore is a service mark of Apple Inc.

Wiring: Contact Closure Inputs

Energi Savr Node unit with EcoSystem



Emergency CCI

- The attached device must provide a closed dry contact closure or solid-state output.
- Input is miswire-protected up to 36 V_{AC}.
- The Energi Savr Node with EcoSystem unit is shipped with a jumper pre-installed in the Emergency Contact Closure Input.
- Emergency mode is activated by opening the Emergency Contact Closure. Pre-installed jumper must be removed to utilize this function.
- See Application Note #140, “EcoSystem Ballasts and Emergency Wiring” at www.lutron.com for more details.

Programmable CCI

- The attached device must provide a dry contact closure or solid-state output.
- Input is miswire-protected up to 36 V_{AC}.

Lutron, Lutron, Hi-lume, Quantum, GRAFIK Eye, Sivoia, Pico, seeTouch and EcoSystem are trademarks of Lutron Electronics Co., Inc. registered in the U.S. and other countries.

Energi Savr Node and Radio Powr Savr are trademarks of Lutron Electronics Co., Inc.