

Energi Savr Node DALI® Universal

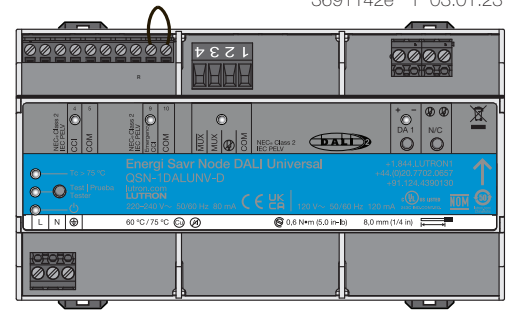
The Energi Savr Node unit is a DALI-2® certified DIN-rail mounted single master application controller for use with DALI®-compliant digital addressable loads in Athena, Quantum, myRoom plus, and myRoom XC systems. It provides DALI® bus power and control for two independent DALI® buses with up to 64 DALI®-compliant, digital addressable loads on each bus.

Model Numbers

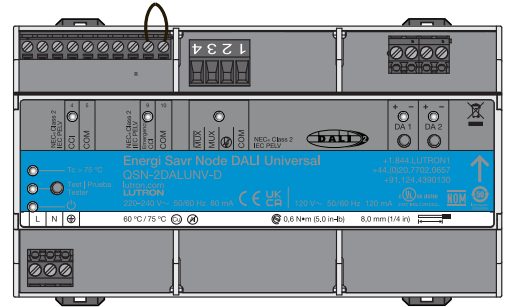
QSN-1DALUNV-D (Available in Athena and myRoom XC only)

QSN-2DALUNV-D

QSN-2DALUNV-S



QSN-1DALUNV-D



QSN-2DALUNV-D



QSN-2DALUNV-S

Feature	Quantum ¹	myRoom plus ¹	Athena ¹	myRoom XC ¹
DALI® single master application controller	✓	✓	✓	✓
# of supported DALI® compliant buses	2	2	1 or 2	1 or 2
# of supported DALI® compliant loads per bus	64	64	64	64
# of Lutron zones per bus	64	64	64	64
Supports DALI® IEC62386-102 standard fade times	✓	✓	✓	✓
Fade time support of up to 4 hours	X	X	✓	✓
Supports DALI® IEC62386-202 (Type 1) self-contained emergency loads	✓	X	✓	✓
Supports DALI® IEC62386-209 (Type 8) tunable white (t _c) loads	X	X	✓	✓
Supports dual channel white tunable loads	✓	X	X ²	X ⁴
Supports perceived intensity control	✓	✓	✓	✓
Simultaneous control of color ³ and intensity with independent fade times	X	X	✓	✓
Dynamic DALI® group allocation ⁴	X	X	✓	✓
Field configurable system failure level, minimum/maximum levels, and fade times	✓	✓	✓	✓
Power failure memory retains control unit programming in the event of power loss	✓	✓	✓	✓
Lights remain unchanged during firmware upgrade	✓	✓	✓	✓

¹ For compatible software versions by device, see the Programming and Compatibility Requirements section within Specifications.

² Dual channel white tunable load support has been replaced with Type 8 tunable white loads for Athena and myRoom XC systems.

³ Actual color temperature output is determined by the tolerance of the third-party driver.

⁴ Dynamic DALI® group allocation automatically and intelligently assigns zones to DALI® groups to maximize dimming performance and minimize asynchronous behavior of loads within a zone.

DALI® Compatibility

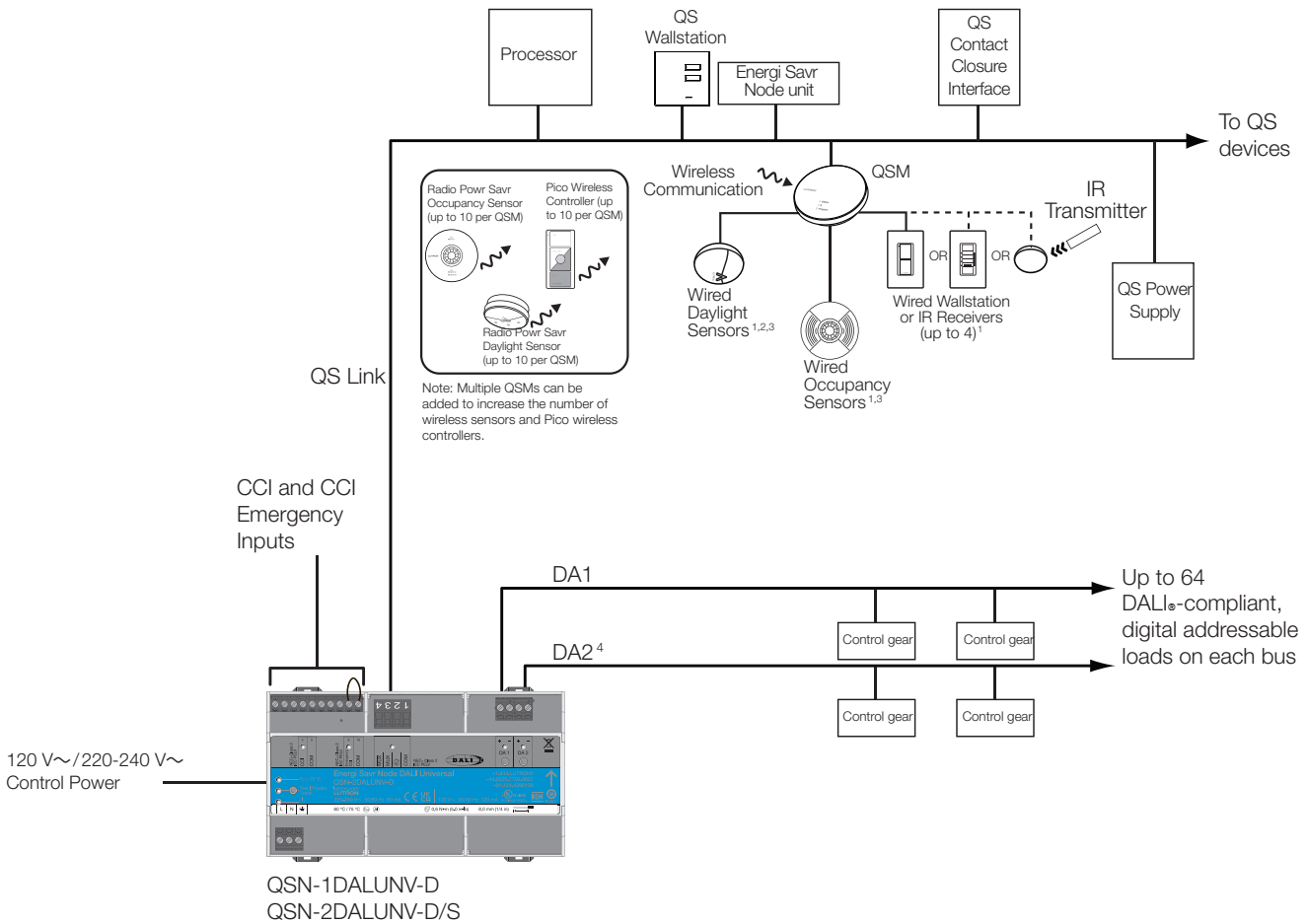
The Lutron Energi Savr Node DALI® Universal (ESN) is DALI-2® certified by the Digital Illumination Interface Alliance® (DiiA®). In order to ensure compatibility with Lutron DALI® controllers, the connected DALI® LED drivers and fluorescent ballasts must be DALI-2® certified and marked. In addition to compatibility, it is important to select high-quality and high-performance LED drivers and fluorescent ballasts. DALI-2® certified devices are readily available from many manufacturers and are tested for compatibility with the standard. For a complete list of available DALI-2® certified devices, see the DiiA® website at <https://www.digitalilluminationinterface.org/products>. DALI® devices that are not listed on the DiiA® website and are not marked DALI-2® cannot be considered DALI-2® certified.

The DALI® version-1 standard does not ensure compatibility. To apply the original DALI® version-1 mark on LED drivers and fluorescent ballasts, no verification of the test results was required, and manufacturers could self-declare compliance and apply the DALI® mark. If you would like to use an LED driver or fluorescent ballast that is not DALI-2® certified but carries a DALI® version-1 logo, Lutron recommends that these devices be tested to ensure compatibility. Lutron is able to perform this testing on request. Samples of the drivers and light engines must be submitted to Lutron and the expected turnaround time is 6 to 8 weeks after the drivers are received. Fees for testing may apply. Lutron recommends that this testing be performed before the fixtures and lighting controls are purchased and installed. Contact your Lutron sales representative for more information.

LUTRON SPECIFICATION SUBMITTAL

Job Name:	Model Numbers:
Job Number:	

Typical Application



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

Specifications

Power

- QSN-1DALUNV-D: 120/220-240 V~ 50 / 60 Hz, max 120 mA
- QSN-2DALUNV-D: 120/220-240 V~ 50/60 Hz, max 120 mA
- QSN-2DALUNV-S: 120 V~ 50/60 Hz max 120 mA
- 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
- DALI® Bus Output: 16 V== 128 mA guaranteed supply current, 250 mA maximum supply current per bus

Standards

QSN-1DALUNV-D, QSN-2DALUNV-D

- Lutron Quality Systems registered to ISO 9001:2015
- IEC 60669-2-5
- DALI-2® certified - IEC 62386-101 and IEC62386-103 ed.2
- NOM Certified
- ICES-3(B)/NMB-3(B)
- FCC Part 15
- cULus Listed
- Evaluated by UL® for use in emergency lighting systems in accordance with UL924 when paired with a LUT-ELI-3PH (UL® file E234628)

QSN-2DALUNV-S

- Lutron Quality Systems registered to ISO 9001:2015
- NOM Certified
- ICES-3(B)/NMB-3(B)
- FCC Part 15
- cULus Listed
- Complies with requirements for use in other spaces used for environmental air (plenums) per NEC® 201 300.22(C)(3)
- Meets the Canadian National Building Code plenum requirements for a concealed space used as a plenum within a floor or roof assembly

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 (torque, wire gauge & type ratings)

- Mains wiring: 5 in-lbs (0.6 N•m)
18 AWG to 12 AWG (1.0 mm² to 4.0 mm²)
- DALI® Bus Wiring: 5 in-lbs (0.6 N•m)
20 AWG to 12 AWG (0.5 mm² to 4.0 mm²)
- QS Link Wiring: 5 in-lbs (0.6 N•m)

Power (terminal 1):

- 20 AWG to 12 AWG (0.5 mm² to 4.0 mm²) (single wire, solid or stranded)
- 24 AWG to 18 AWG (0.25 mm² to 1.0 mm²) (two wires, solid or stranded)

Data (terminals 3 and 4):

- 1 pair, twisted and screened,
20 AWG to 12 AWG (0.5 mm² to 4.0 mm²) (single wire, solid or stranded)
- 24 AWG to 18 AWG (0.25 mm² to 1.0 mm²) (two wires, solid or stranded)
- CCI and CCI Emergency Wiring: 5 in-lbs (0.6 N•m)
20 AWG to 16 AWG (0.5 mm² to 1.5 mm²) (single wire, solid or stranded)
- 24 AWG to 18 AWG (0.25 mm² to 1.0 mm²) (two wires, solid or stranded)

Job Name:	Model Numbers:
Job Number:	

Specifications *(continued)*

DALI® Buses

- Energi Savr Node unit has an integrated bus power supply that provides a guaranteed current of 128 mA (maximum of 250 mA) to power each bus.
- Energi Savr Node unit is a DALI® single master controller and therefore no other controllers or sensors may exist on the same DALI® bus.
- Some DALI® loads may be polarity sensitive; refer to individual manufacturers' specifications for proper connection to the DALI® bus.
- Short circuit protection with automatic re-start (610 ms shutdown delay with a 3 second re-start followed by 800 ms shutdown delay with 160 ms retry time).

QS Link Limits

- Each power module counts as one device toward the QS link device limit, and the assigned number of switchlegs to the device will count toward the switchleg limit.

Programming and Compatibility Requirements

- Setup and programming of the DALI Universal power module is done through the programming software.
- QSN-2DALUNV-D and QSN-2DALUNV-S are supported in all versions of Athena and myRoom XC.
- QSN-2DALUNV-D and QSN-2DALUNV-S are supported in versions 3.4.441 or greater for Quantum and 3.3.441 or greater for myRoom plus.
NOTE: Quantum systems lower than 3.4.441 will require a billable upgrade to the latest version of Quantum. Contact your local Lutron representative for more information.
- QSN-1DALUNV-D is supported in versions 23.4 or greater of Athena and myRoom XC.
- QSN-1DALUNV-D is not supported in Quantum and myRoom plus.

<p>Job Name:</p> <p>Job Number:</p>	<p>Model Numbers:</p>
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Out of Box Functionality

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

- Maintains redundant memory of control gear programming for ease of single- and multi-control gear replacement.
- After installation, “TEST” button verifies DALI® wiring on all fixtures.

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.

Test Mode

Verify DALI lights connected to DALI bus 1 and DALI bus 2:

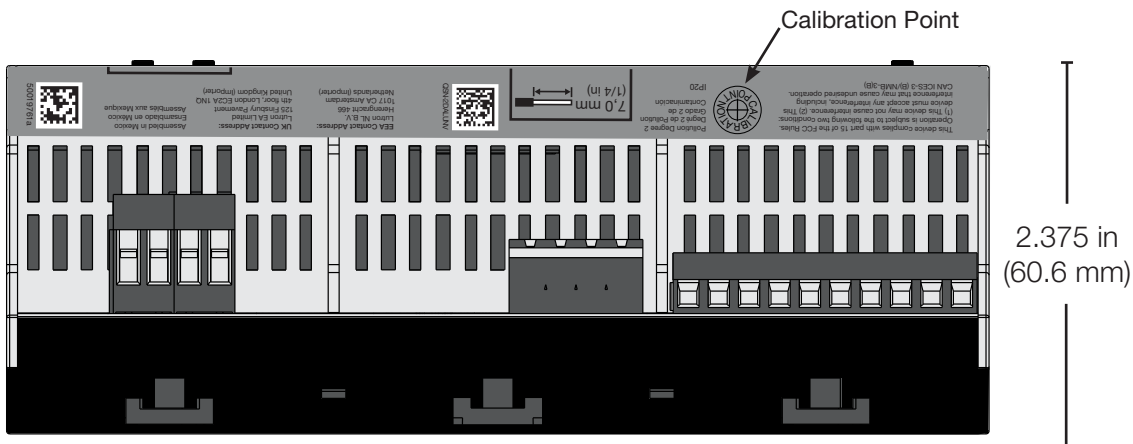
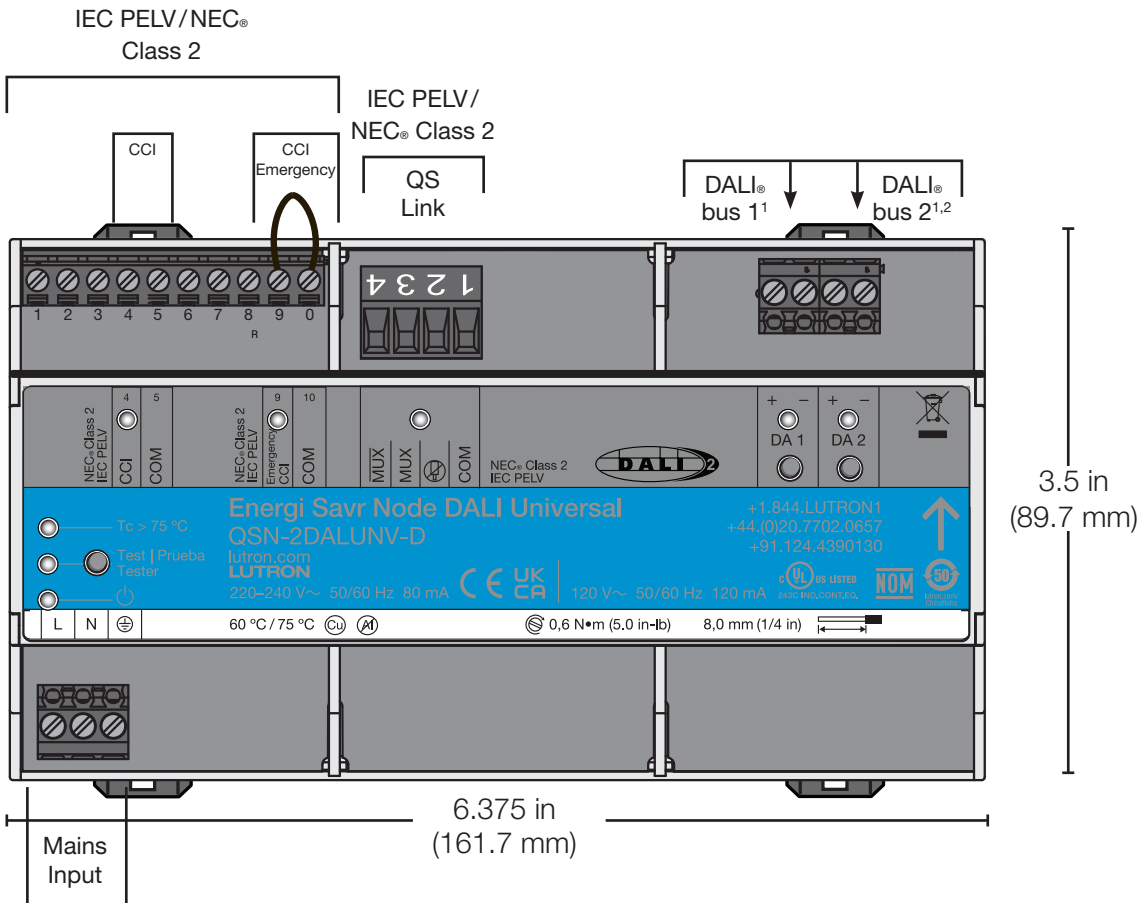
- Enter Test Mode by pressing and holding the test button on the DALI Universal power module until the Test LED starts flashing.
- To test the lights connected to DALI bus 1, press the DA1 button. Pressing the button cycles the lights between high-end, low-end, flashing, identify DALI emergency drivers, and off.
- To test the lights connected to DALI bus 2, press the DA2 button. Pressing the button cycles the lights between high-end, low-end, flashing, identify DALI emergency drivers, and off.
- To exit Test Mode, press and hold the Test button until the Test LED stops flashing.

Job Name:	Model Numbers:
Job Number:	

Overview of Wiring Terminals and Mechanical Dimensions

QSN-1DALUNV-D, QSN-2DALUNV-D

All dimensions shown as in (mm)



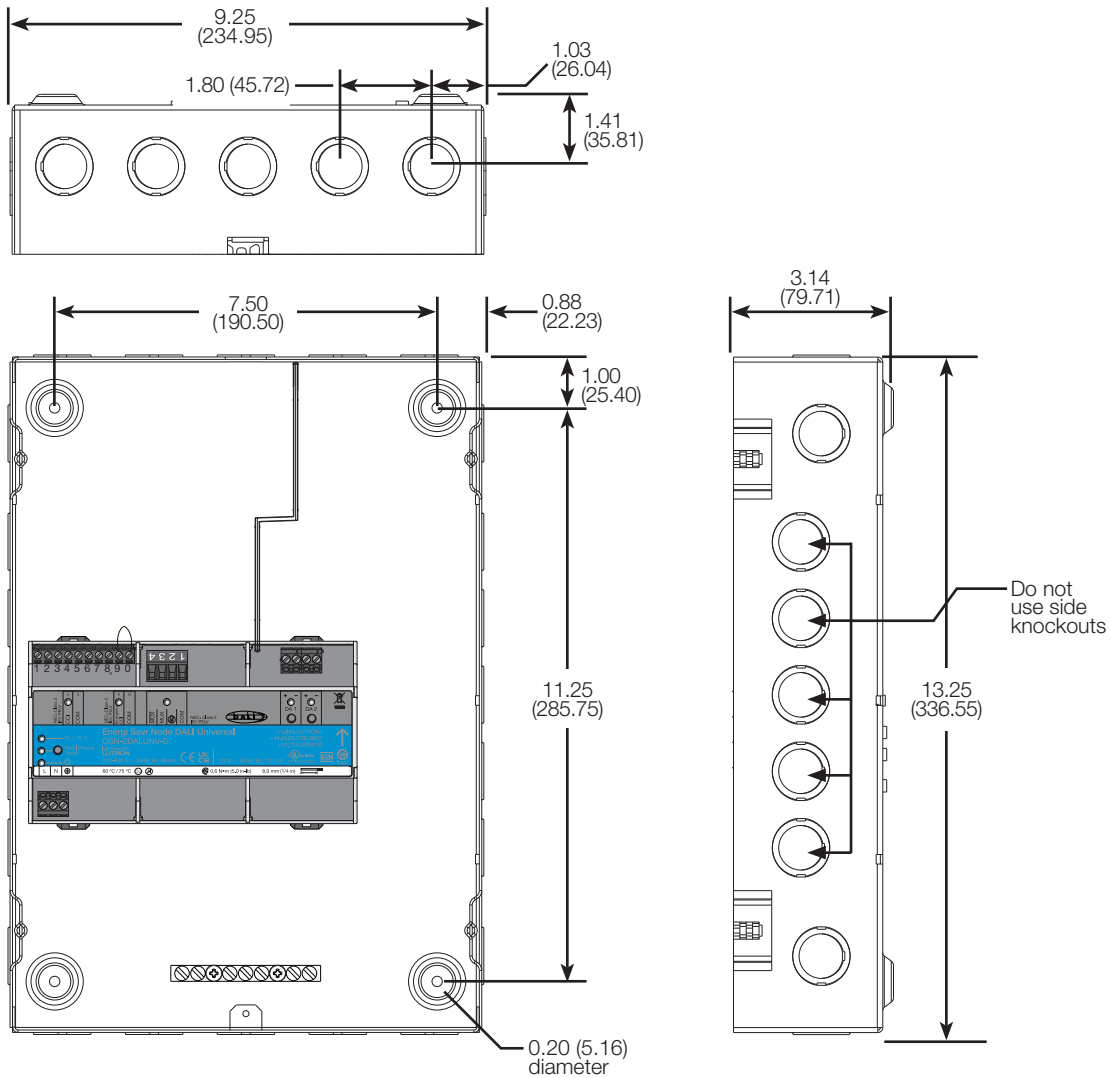
¹ Wire DALI® according to local codes.
² DA2 is not available for the QSN-1DALUNV-D.

Job Name:	Model Numbers:
Job Number:	

Mechanical Dimensions

QSN-2DALUNV-S

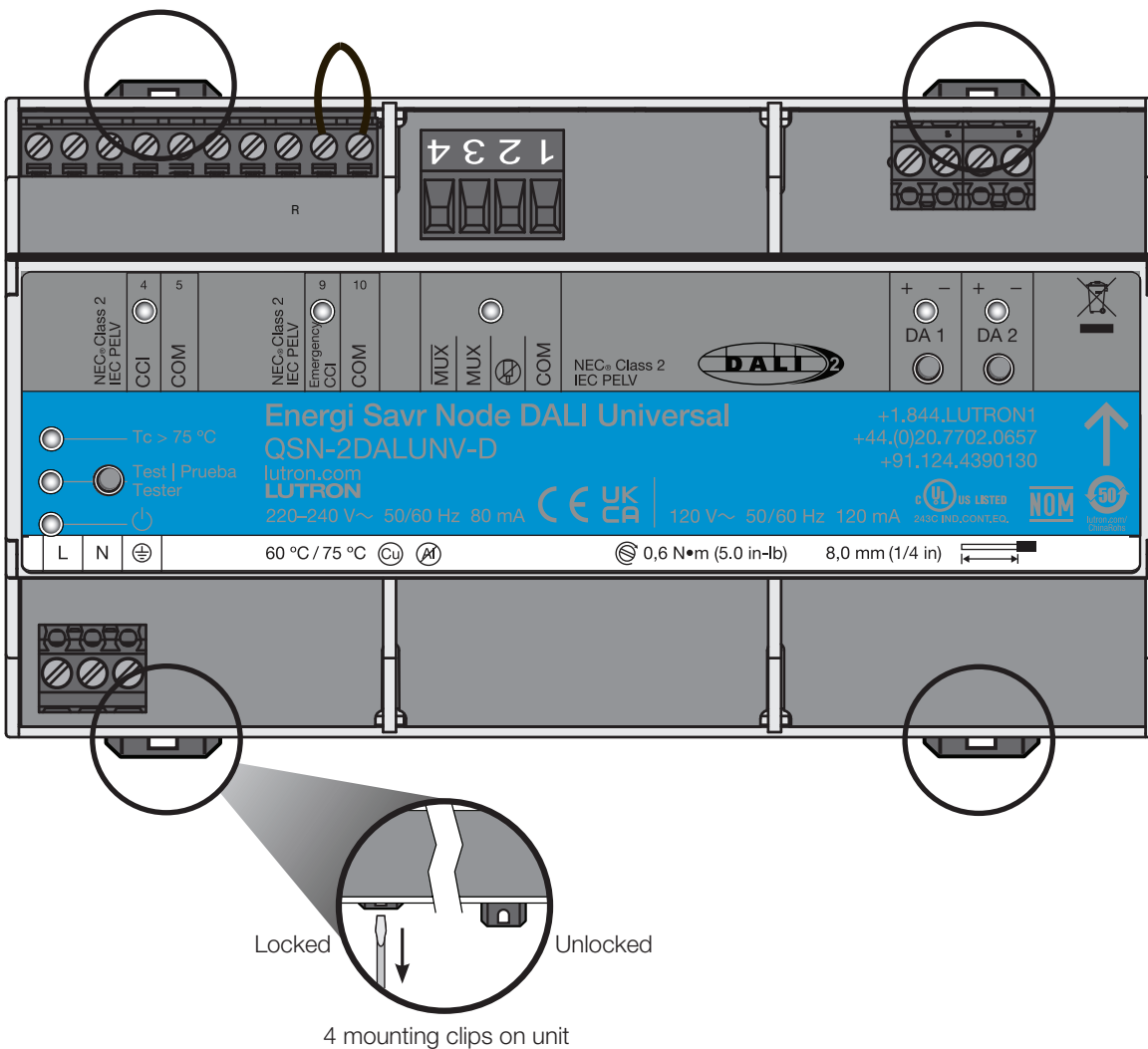
All dimensions shown as in (mm)



Job Name:	Model Numbers:
Job Number:	

Mounting for QSN-1DALUNV-D, QSN-2DALUNV-D

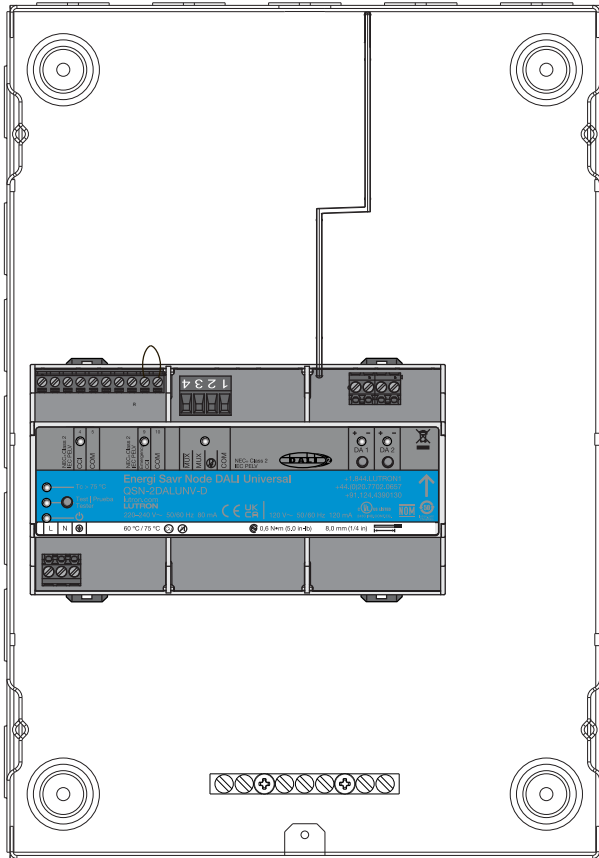
- Mount module such that all the conditions below are met:
 - Room ambient temperature is between 32 °F and 104 °F (0 °C and 40 °C)
 - Calibration point maximum: 167 °F (75 °C)
- Intended to mount within an IP20 (minimum) rated consumer panel or breaker panel with integrated DIN rail and dead cover
 - Mount to DIN rail by pressing the module onto the rail with the clips locked. To remove from the rail, unlock clips using a screwdriver
- Module is 9 DIN wide: 6.375 in (161.7 mm)
- Unit generates heat, maximum 24 BTUs/hour
- For more information on mounting and installation in panels with an integrated DIN rail see the **DIN Rail Best Practices Application Note** (P/N 048466) at www.lutron.com



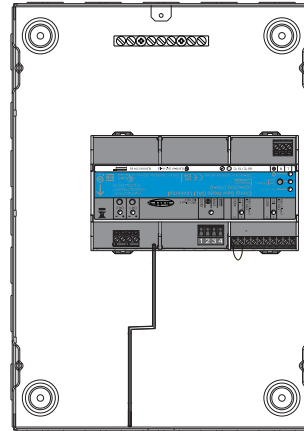
Job Name:	Model Numbers:
Job Number:	

Mounting for QSN-2DALUNV-S

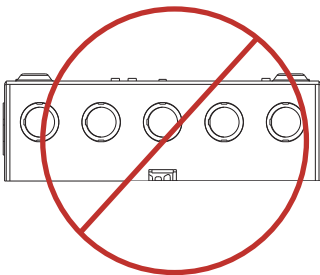
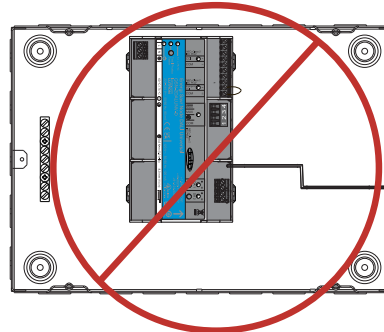
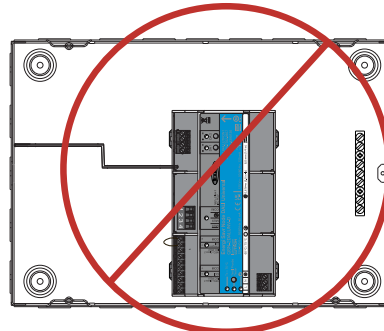
- For indoor use only
- Surface-mount
- Mount the ESN unit in a position where it can be easily located and accessed if service or troubleshooting is necessary.
- Mount vertically to ensure adequate cooling. Use 4 screws in corners of panel to securely mount the unit.
- Unit generates heat, maximum 24 BTUs/hour.
- Mount panel such that the room ambient temperature is between 32 °F and 104 °F (0 °C and 40 °C)
- To install, remove metal outer panel cover and mount vertically to ensure adequate cooling. Use four (4) screws in the corners of the panel to securely mount unit.
- Unit is 9.25 in (234.95 mm) wide x 13.25 in (336.55 mm) tall.



Recommended orientation

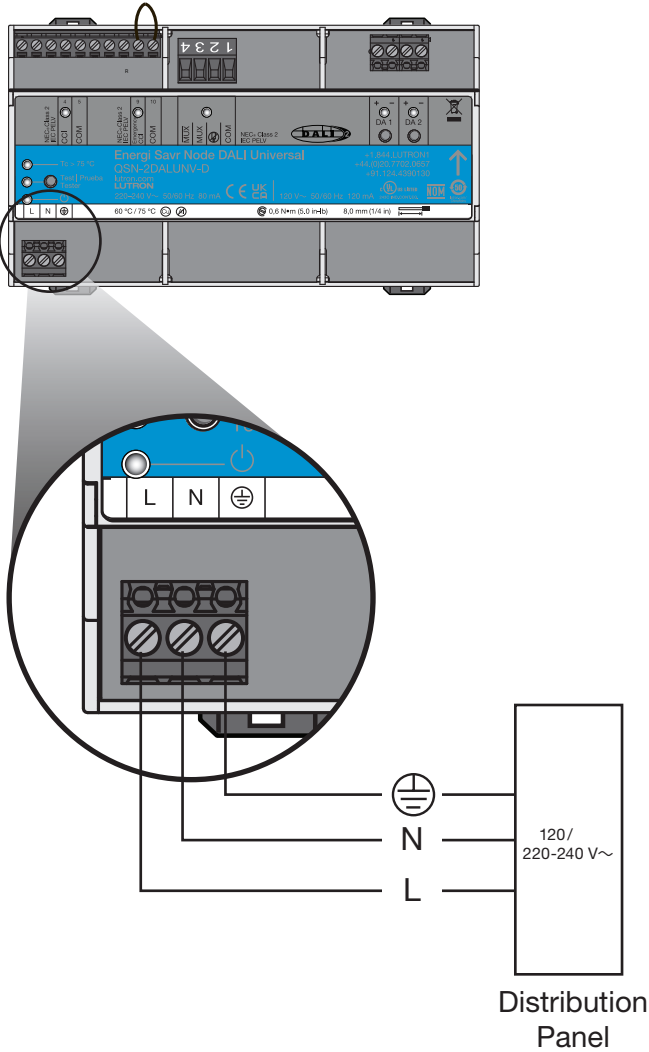


Alternate orientation option



Job Name:	Model Numbers:
Job Number:	

Wiring: Mains Input



⊕ – Earth / Ground

N – Neutral

L – Mains / Line

Wiring from Distribution to Bus Supply

- Turn off breaker at distribution panel.
- Run line, neutral, and ⊕ wires from a line/hot feed to the Energi Savr Node unit.

Emergency Lighting Applications

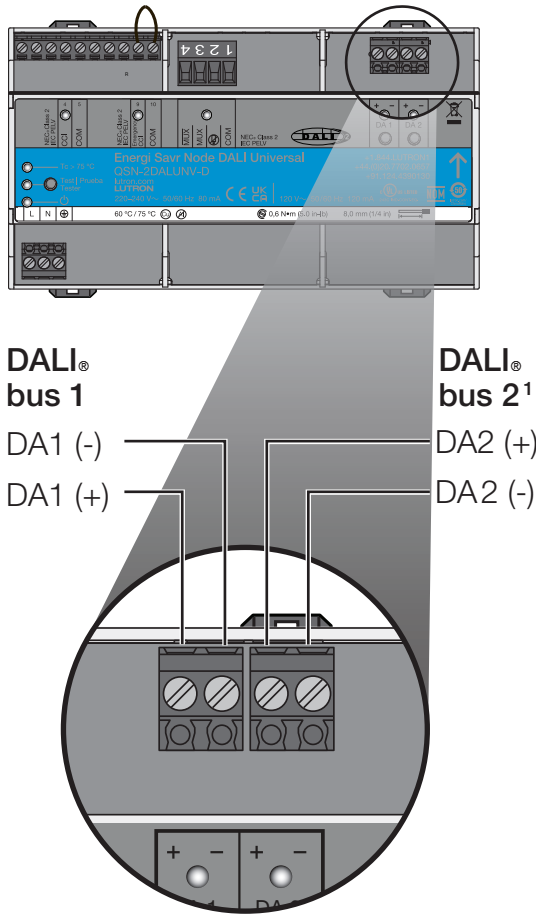
- Use normal (non-essential) power only.
- When normal power drops out, the Energi Savr Node unit will not power the DALI® buses. When this occurs, control gear powered from emergency feeds go to their system failure level (full light output by default).

Mains Wiring and Low Voltage Separation

- The Energi Savr Node unit is designed to separate mains wiring from PELV circuits.
- Follow appropriate local and national codes to avoid violating required separation guidelines.

Job Name:	Model Numbers:
Job Number:	

Wiring: DALI® Bus



The Energi Savr Node unit will supply power to each DALI® bus independently. Each bus supports a maximum of 64 DALI®-compliant, digital addressable loads per bus.

DALI® Wiring

- DALI® wiring is not SELV.
- DALI® wiring is treated as mains voltage, and thus may be run within the same sheathing.
- Ensure that there is no greater than a 2 V drop between the Energi Savr Node unit and the end of the DALI® bus.
- Consult all national and local electrical codes for separation requirements.

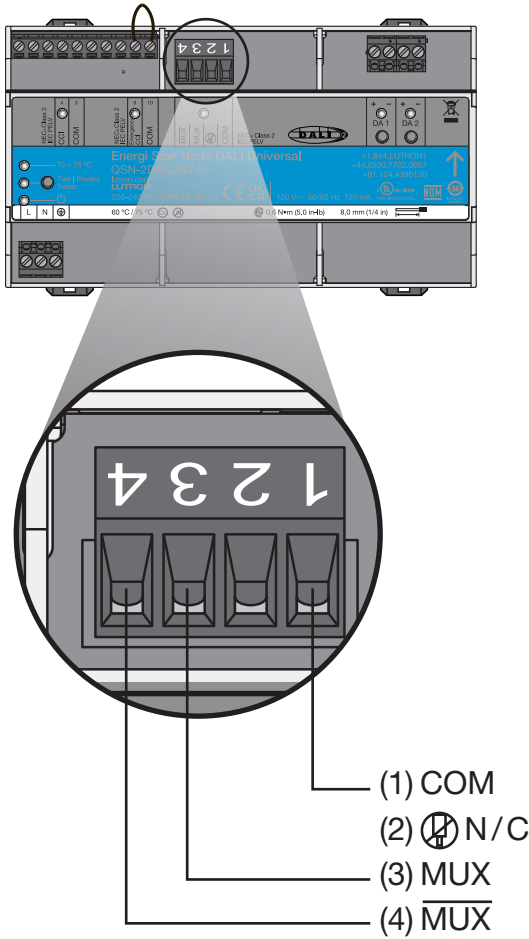
Wire Gauge	Maximum DALI®-compliant Bus Wire Length *
16 AWG (1.5 mm ²)	984 ft (300 m)
20 AWG (0.75 mm ²)	492 ft (150 m)
22 AWG (0.5 mm ²)	328 ft (100 m)

* Indicates the total length of DALI® wires.

¹ DA2 is not available for QSN-1DALUNV-D.

Job Name:	Model Numbers:
Job Number:	

Wiring: QS Link



Neither supplies nor consumes PDUs

QS Link Wiring (IEC PELV/NEC® Class 2)

- Link communicates using IEC PELV wiring.
- Follow all applicable national and local codes for proper circuit separation and protection.
- Wiring may be daisy chained or t-tapped.
- Total length of QS link must not exceed 2000 ft (610 m).

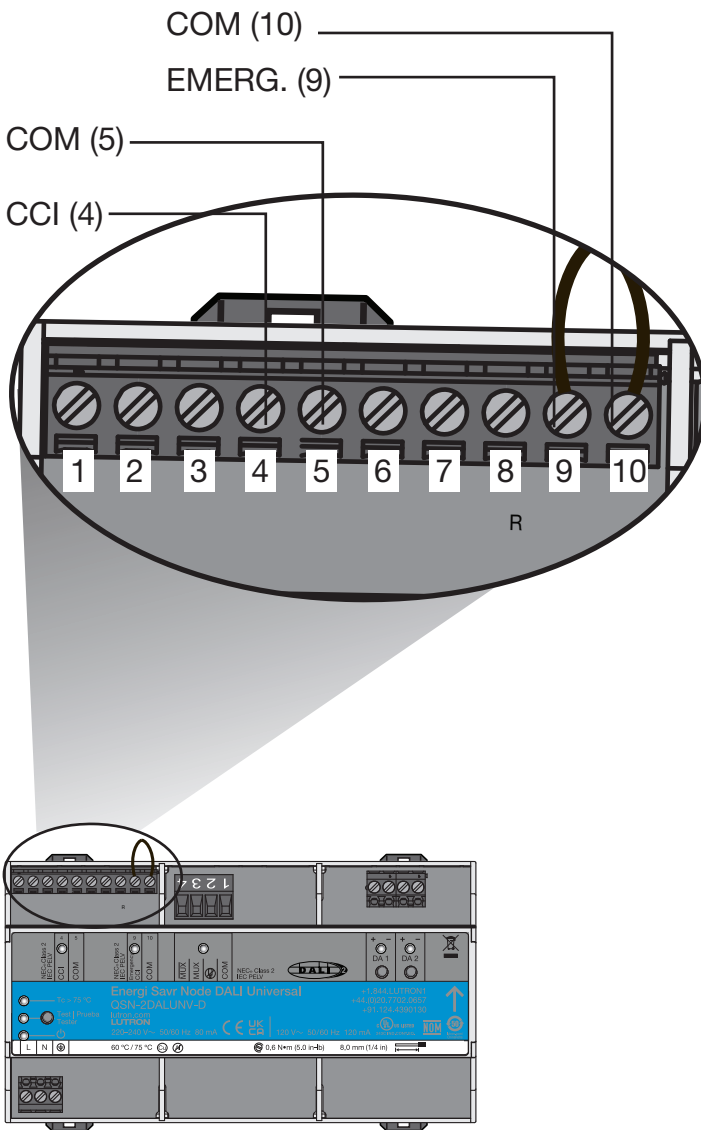
QS Link Wiring Length	Wire Gauge	Available from Lutron in one cable:*
Less than 502 ft (153 m)	Power (terminals 1 and 2): 1 pair 18 AWG (1.0 mm ²)	QS-CBL-LSZH (Low-Smoke Zero-Halogen)
	Data (terminals 3 and 4): 1 pair 22 AWG (0.5 mm ²), twisted and screened	GRX-CBL-346S (non-plenum) GRX-PCBL-346S (plenum)
502 ft to 2000 ft (153 m to 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)

* Varies by region, refer to the cable spec.

- Use one, twisted-screened pair of 22 AWG (0.5 mm²) for data link (MUX, MUX).

Job Name:	Model Numbers:
Job Number:	

Wiring: Contact Closure Inputs



Emergency CCI Wiring (IEC PELV/NEC® Class 2)

- The attached device must provide a closed dry contact closure or solid-state output.
- Input is miswire-protected up to 36 V_{DC}.
- The Energi Savr Node unit with DALI® 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 the **Emergency Lighting Systems Application Note (P/N 048106)** at www.lutron.com for more details.

CCI Wiring (IEC PELV/NEC® Class 2)

- The attached device must provide a dry contact closure, solid-state output, open collector or active-low (NPN)/active-high (PNP) output.
 - Open collector NPN or active-low on-state voltage must be less than 1 V_{DC} and sink 3.0 mA
 - Output collector PNP or active-high on-state voltage must be greater than 12 V_{DC} and source 3.0 mA
 - The outputs must stay in the closed or open states for at least 40 msec in order to be recognized by the Energi Savr Node unit
- If there is any question as to whether the third-party device generating these outputs is compatible with these specifications, contact the manufacturer.
- Input is miswire-protected up to 36 V_{DC}.

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Job Name:	Model Numbers:
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