

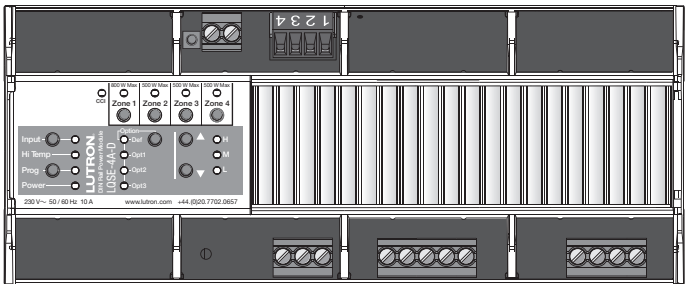
Adaptive Power Module

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The Adaptive Power Module family is a group of modular products for the control of permanently installed lighting fixtures. This document describes the following product: Adaptive Power Module (model LQSE-4A-D)

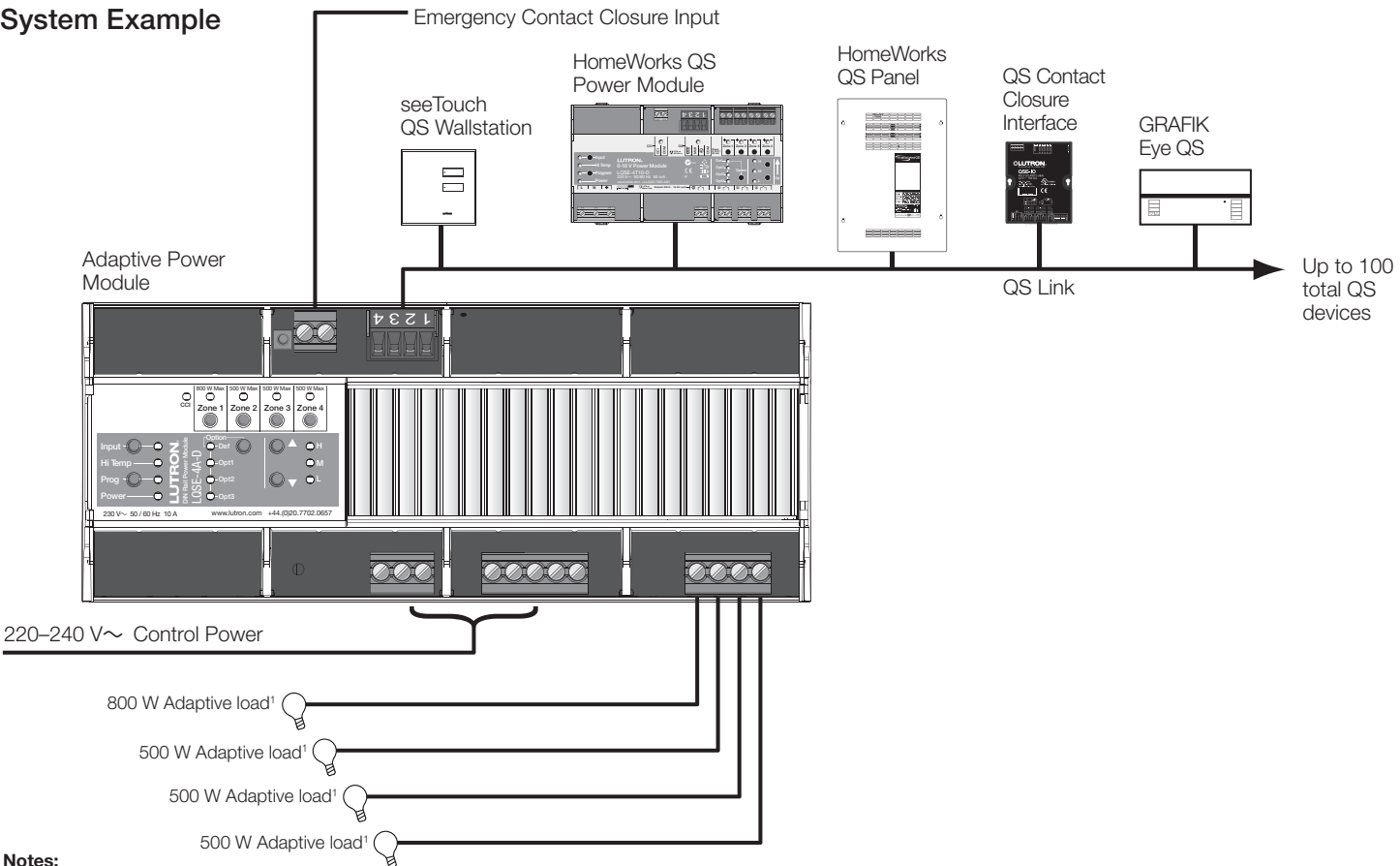
Features

- Adaptive Power Modules can be used in a HomeWorks QS system.
- An auto-detect mode is available to detect and configure leading edge or trailing edge dimming for incandescent/halogen, electronic/magnetic low voltage and neon/cold cathode light sources.
- Controls dimmable CFL/LED loads. Refer to Lutron P/N 048478 on www.lutron.com for compatibility with dimmable CFL/LED light sources.
- RTISS Equipped technology compensates for incoming line-voltage variations (up to $\pm 2\%$ change in frequency/second) such as changes in Root Mean Square (RMS) voltage, frequency shifts, harmonics and line noise.
- RTISS-TE operates on the trailing edge of the AC sine wave. This allows for true instantaneous voltage compensation.
- Unit is 12 DIN modules (216 mm) wide.
- Provides air gap off (when all zones are off).
- LEDs on front of unit provide diagnostic information.
- Includes QS link for seamless integration of lights and controls.



LQSE-4A-D

System Example



Notes:
1 See "Output Zone Ratings" in "Specifications" section, for specific load types ratings.

Specifications

Adaptive Power Module

Power

- 220–240 V~ 50/60 Hz
- 10 A maximum total input current
- Lightning strike protection meets ANSI/IEEE standard 62.31-1980. Can withstand voltage surges of up to 6 000 V and current surges of up to 3 000 A.

Standards

- RoHS Compliant
- IEC/EN 60669-2-1
- CE marked
- Lutron Quality Systems registered to ISO 9001.2015

Environment

- See **Mounting** on page 4 for thermal specifications
- Relative humidity: less than 90% non-condensing
- For indoor use only

Output Zone Ratings

- **No Derating** is required if all the conditions below are met:
 - Calibration point maximum is 70 °C
 - Room ambient temperature is between 0 °C and 30 °C
 - Panel ambient temperature is between 0 °C and 50 °C
- **100 W Derating** is required on all zones for a single module in a single non-ventilated DIN enclosure if:
 - The room ambient temperature is between 30 °C and 40 °C.
- **200 W Derating** is required on all zones for multiple row non-ventilated DIN enclosure if:
 - The room ambient temperature is between 30 °C and 40 °C.

Output Zone Ratings (*continued*)

- Each zone has no minimum load requirement.
- When programmed to "auto" mode, the unit starts in trailing edge and if an incompatible load is detected, it will convert to leading edge.
- Internal relay provides an air gap off when all zones are off.
- One load type per zone.
- Output must not be used to control receptacles, including plug-in lamps.
- Output must be directly connected to the load. Output breakers or switches must not be used.
- Run a separate neutral for each load circuit. A common neutral connection is not recommended.
- Maximum wire length between the Energi Savr Node unit and the load must be less than 30.5 m.
- Unit may be powered by Ground Fault Interrupter (GFI) or Residual Current Circuit Breaker with Overload (RCBO) protected circuit if required. Load circuit wiring (from breaker to unit to load) must be run in its own non-metallic conduit, or nuisance tripping may occur.
- For applications requiring 0–10 V== control, use Ten Volt Interface (GRX-TVI) or the LQSE-4T10-D.
- For applications requiring higher wattage ratings, use a power booster (NGRX-PB, NGRX-ELVI, NGRX-FDBI).

Each zone is rated for the following wattage and load types^{A, B}:

Load Type	Zone 1 Rating			Zone 2, 3 and 4 Rating (per zone)		
	No Derating	100 W Derating	200 W Derating	No Derating	100 W Derating	200 W Derating
Incandescent/Halogen	800 W	700 W	600 W	500 W	400 W	300 W
Electronic Low Voltage	800 W	700 W	600 W	500 W	400 W	300 W
Magnetic Low Voltage ^C	800 VA (600 W ^C)	700 VA (525 W ^C)	600 VA (450 W ^C)	500 VA (375 W ^C)	400 VA (300 W ^C)	300 VA (225 W ^C)
Neon/Cold Cathode ^D	800 VA (600 W ^C)	700 VA (525 W ^C)	600 VA (450 W ^C)	500 VA (375 W ^C)	400 VA (300 W ^C)	300 VA (225 W ^C)

^A Additional load type options are available in the HomeWorks QS software suite, some may require an interface. Contact Lutron for details.

^B Refer to Lutron P/N 048478 on www.lutron.com for compatibility with dimmable CFL/LED light sources.

^C Actual lamp wattage.

^D Only use iron core transformers intended for use with an electronic switch or dimmer per Clause 8.3 of IEC/EN 60669-2-1

LUTRON® SPECIFICATION SUBMITTAL

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Job Name:	Model Numbers:
Job Number:	

Specifications *(continued)*

Terminals (Torque, wire gauge & type ratings)

- Mains wiring: 0.6 N•m
1.0 mm² to 4.0 mm²
(single wire, solid or stranded)
1.0 mm² to 1.5 mm²
(two wires, solid or stranded)
- Zone wiring: 0.6 N•m
1.0 mm² to 4.0 mm²
(single wire, solid or stranded)
- CCI wiring: 0.6 N•m
0.5 mm² to 4.0 mm²
(single wire, solid or stranded)
- QS Link: 0.6 N•m
0.5 mm² to 4.0 mm²
(single wire, solid or stranded)
0.5 mm² to 1.0 mm²
(two wires, solid or stranded)

Out of Box Functionality

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

Emergency Contact Closure Input (CCI)

- When the CCI is open, the Energi Savr Node QS unit will enter Emergency Mode, which will turn on all loads to their emergency level and disable control of local zones and QS devices.
- When the CCI is closed or jumpered, Energi Savr Node QS unit zones will return to the settings or levels they were at prior to entering emergency mode. Note: Unit will process any sensor events received while in emergency mode after it exits emergency mode.

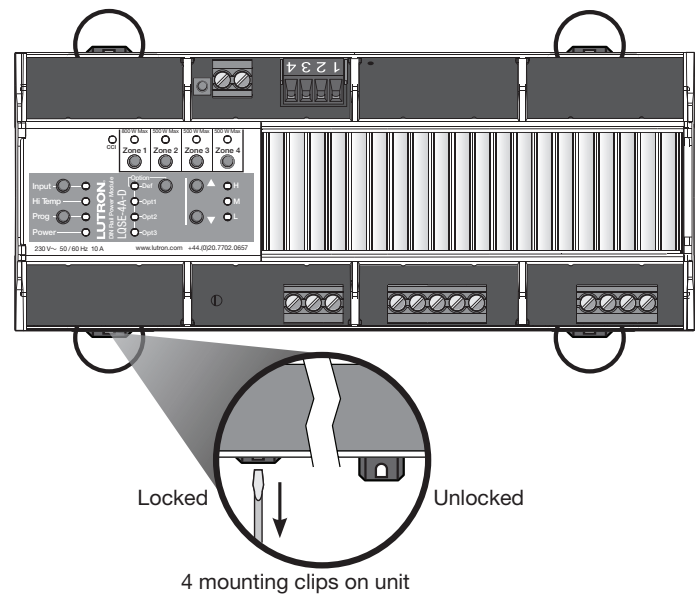
Normal Mode Operation

- By default each zone is set to an unassigned/Non-Dim load type. Each zone will switch load on or off until it is configured via unit programming. Once configured, the load type cannot be changed back to unassigned / Non-Dim.
- Zone and raise/lower buttons on the unit can be used to:
 - turn loads on and off.
 - dim loads up and down.
- Input and sensor status LEDs ('Occ', 'Photo', 'IR', and 'Switch') verify connections to dry contact switches and sensors.

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Job Number:	

Mounting

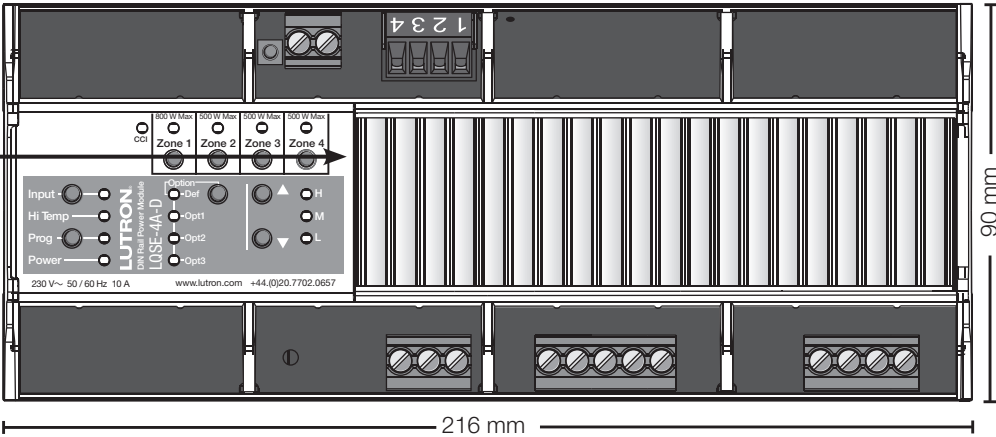
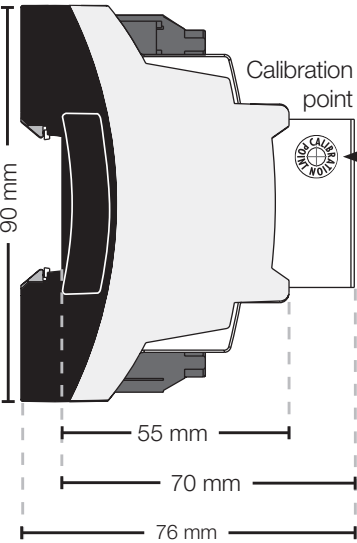
- See Lutron P/N 048466 at www.lutron.com for more information on mounting and installation in panels with integrated DIN rail.
- Mount in IP20 (minimum) rated consumer panel or breaker panel with integrated DIN rail.
- Mount unit in orientation shown.
- Unit may be mounted by unlocking the four mounting clips on the back of the unit. Clips must be locked once unit to securely attached the unit to the DIN rail.
- Mount in an accessible and serviceable location.
- Unit generates heat, maximum 75 BTUs/Hour
- Mount unit such that all the conditions below are met:
 - Room ambient temperature is between 0 °C and 30 °C
 - Temperature inside mounting panel, within 20 mm of unit, is between 0 °C and 50 °C
 - Calibration point maximum: 70 °C



Mechanical Dimensions

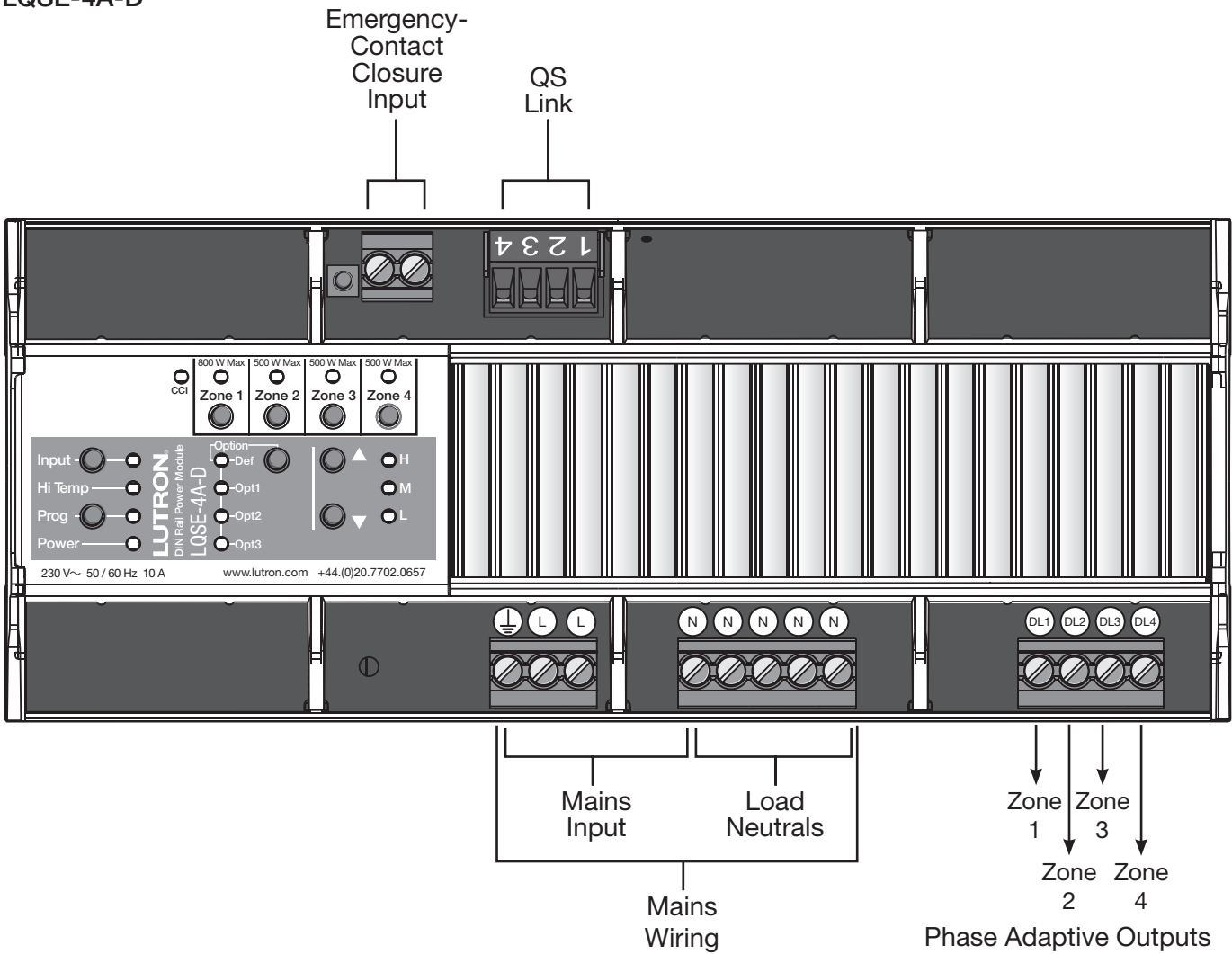
Left Side View

Front View



Overview of Wiring Terminals

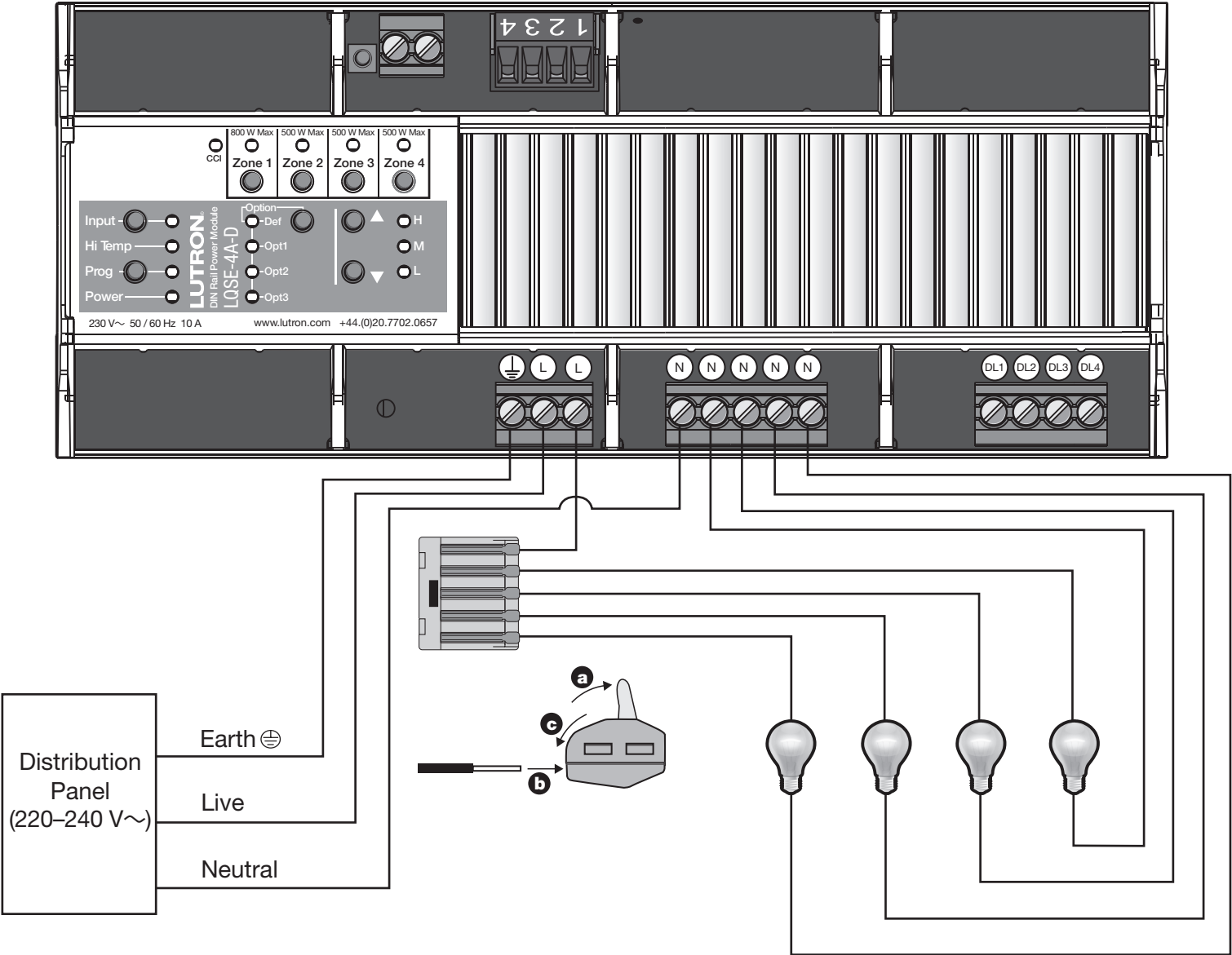
LQSE-4A-D



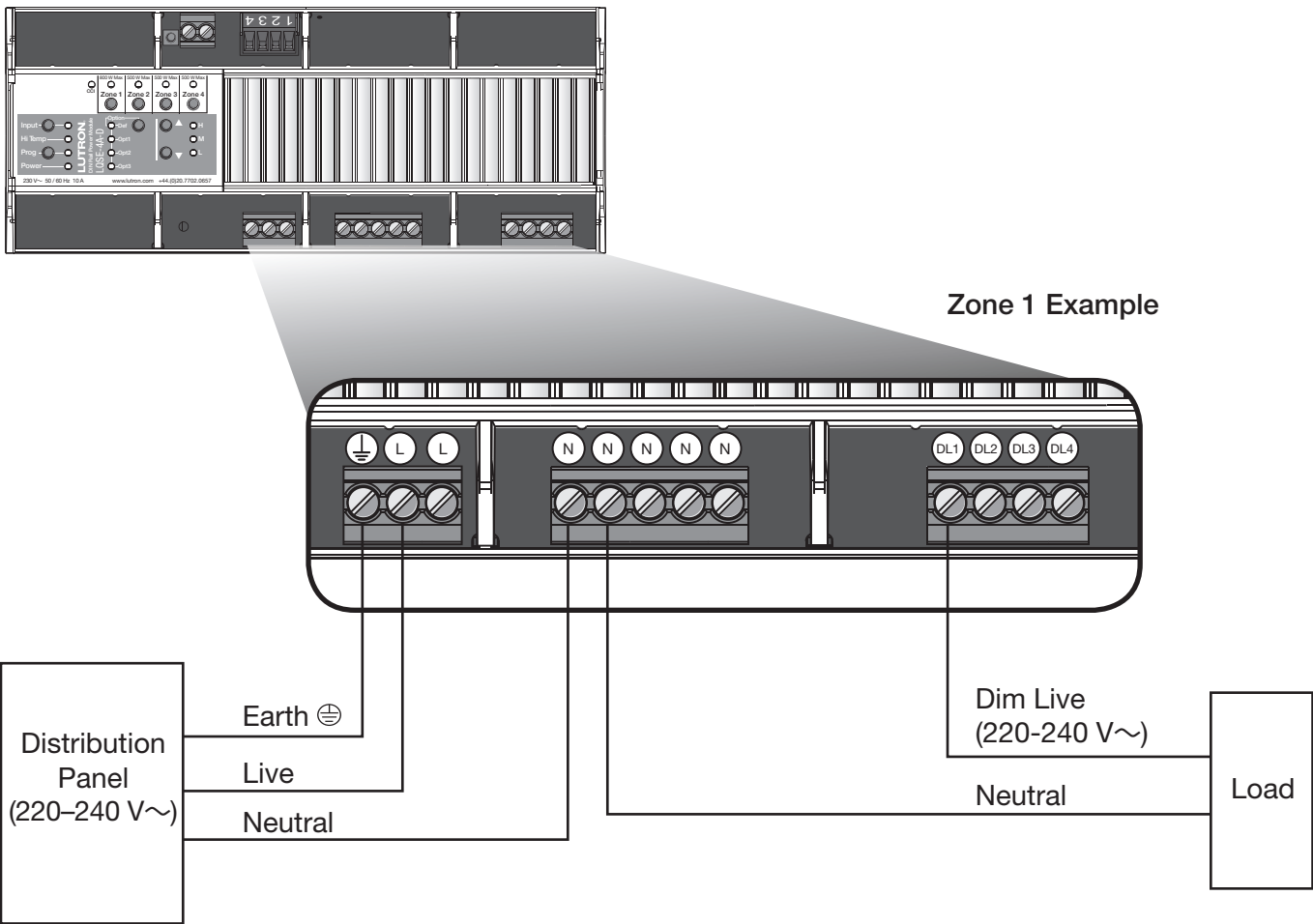
Verify Wiring

LQSE-4A-D

- Unit ships with bypass connector pre-installed for load wiring verification. Bypass connector is used to apply power to loads to identify any load or wiring faults prior to wiring loads to unit.
 - Load wiring must be verified before wiring loads to unit.
- To verify wiring:
 1. Turn off power.
 2. Wire loads to provided connector.
 3. Apply power, ensure the desired loads are powered and properly wired.
 4. Turn off power and wire loads to DL terminals on unit.



Mains Voltage Wiring



Wiring from Distribution to Adaptive Power Module

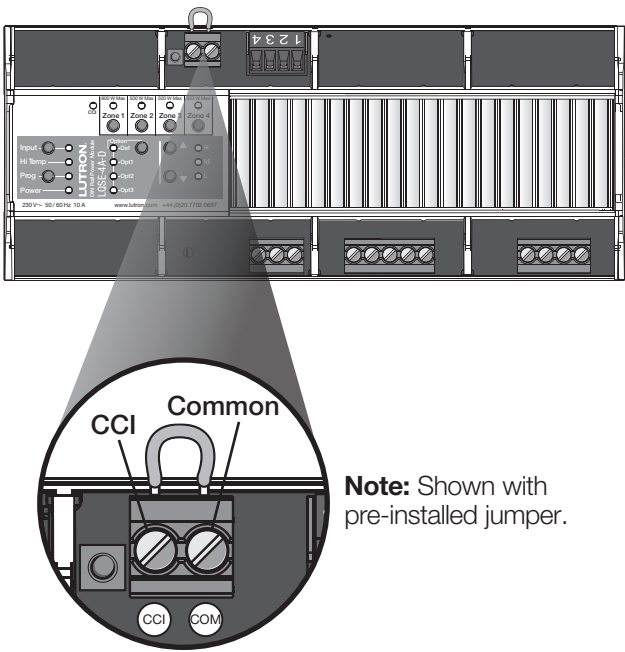
- Turn off all circuit breakers or isolators feeding the Adaptive Power Module at distribution panel.
- Run live, neutral, and earth (⊕) wires from a 220-240 V~ 50/60 Hz feed to the DIN Rail Power Module unit.
- Run a separate neutral for each load circuit. A common neutral connection is not recommended.

Mains Wiring and IEC PELV Separation

- Follow appropriate local and national codes to avoid violating required separation guidelines.

Job Name:	Model Numbers:
Job Number:	

Wiring: Emergency Contact Closure Input



Note: Shown with pre-installed jumper.

IEC PELV Emergency Contact Closure Input

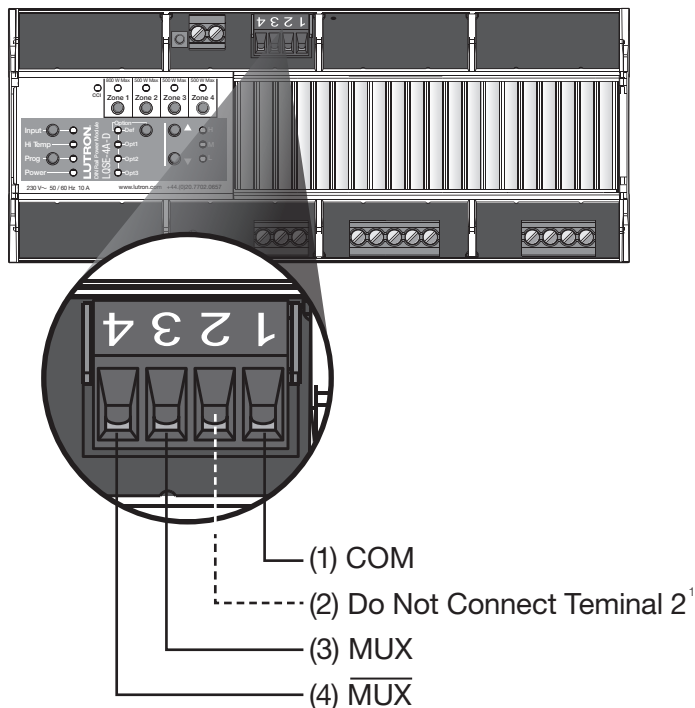
- Contact Closure Input (CCI) wiring is IEC PELV/NEC® Class 2.
Follow all applicable national and local codes for proper circuit separation and protection.
- Turn off all breakers or isolators feeding the Energi Savr Node QS unit at distribution panel before servicing unit.
- The CCI is a local control only and cannot control other Energi Savr Node QS units over the QS link. A maximum of 32 Energi Savr Node QS units may be connected in parallel to an Emergency or Manual override device if the event is intended to affect multiple devices.
- When in emergency mode, all zone outputs will be at their programmed emergency light level (configurable for each zone, default is 100%). All sensors and controls are locked out.
- Emergency contact closure input is normally closed (NC). The Energi Savr Node QS unit is shipped with a jumper pre-installed.

Note: The Energi Savr Node QS unit will default to Emergency Mode if the CCI is left open. If no Emergency Contact Closure Input is required, please leave the wire jumper in the CCI terminals.

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Job Name:	Model Numbers:	
Job Number:		

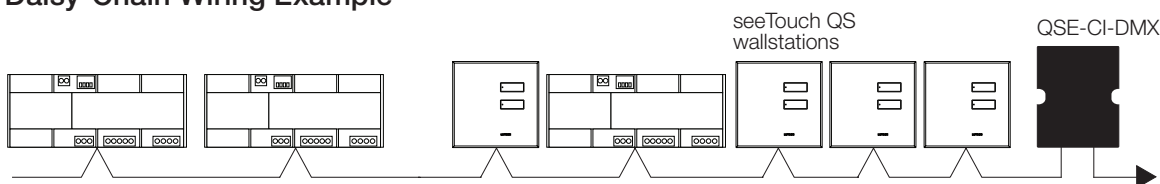
Wiring: QS Link



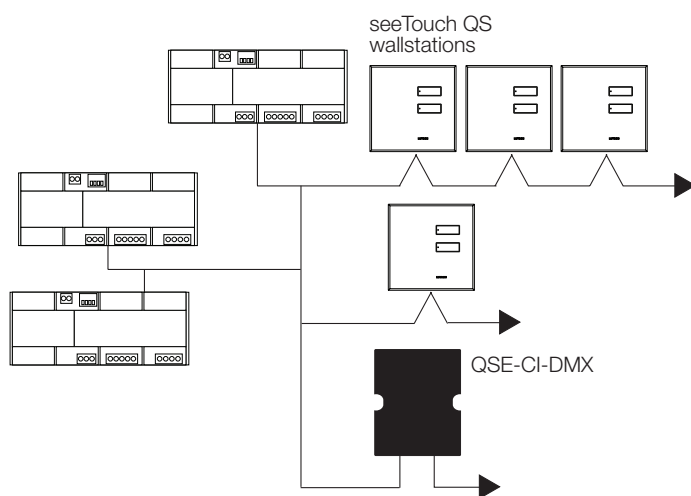
QS Link IEC PELV Wiring

- Link communicates using IEC PELV/NEC® Class 2 wiring.
- Turn off all breakers or isolators feeding the Adaptive Power Module at distribution panel before servicing unit.
- 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 600 m.
- For lengths under 150 m, use two 1,0 mm² conductors for control power (24 V_{AC}, COM).
- For lengths over 150 m, use two 4,0 mm² conductors for control power (24 V_{AC}, COM).
- Use one, twisted-shielded pair of 1,0 mm² conductors for data link (MUX, $\overline{\text{MUX}}$).

Daisy-Chain Wiring Example



T-Tap Wiring Example



¹ Unit does not consume or supply PDUs on the QS link. Do not connect the 24 V_{AC} wire to unit.

Note: 24 V_{AC} wire must bypass the unit if other devices on the link consume PDUs.