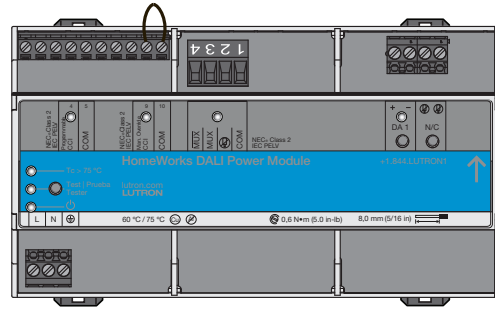


## HomeWorks DALI-2® Power Module (for the U.S.A. and Canada)

The DALI® Power Module unit is a DALI-2® certified DIN-rail mounted single master application controller for use with DALI®-compliant digital addressable loads in HomeWorks systems using QSX processors. It provides DALI® bus power and control for up to one DALI® bus with up to 64 DALI®-compliant, digital addressable loads.



### Model Number

LQSE-1DAL2-D

Feature	LQSE-1DAL2-D
DALI® single master application controller	✓
# of supported DALI® compliant buses	1
# of supported DALI® compliant loads per bus	64
# of Lutron zones per bus	64
Supports DALI® IEC62386-102 standard fade times	✓
Fade time support of up to 4 hours	✓
Supports DALI® IEC62386-202 (Type 1) self-contained emergency loads	✓
Supports DALI® IEC62386-209 (Type 8) tunable white (t <sub>c</sub> ) loads	✓
Supports dual channel tunable white loads	✓
Supports perceived intensity control	✓
Simultaneous control of color and intensity with independent fade times	✓
Dynamic DALI® group allocation <sup>1</sup>	✓
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	✓

<sup>1</sup> 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 HomeWorks Universal DALI® Power Module 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.

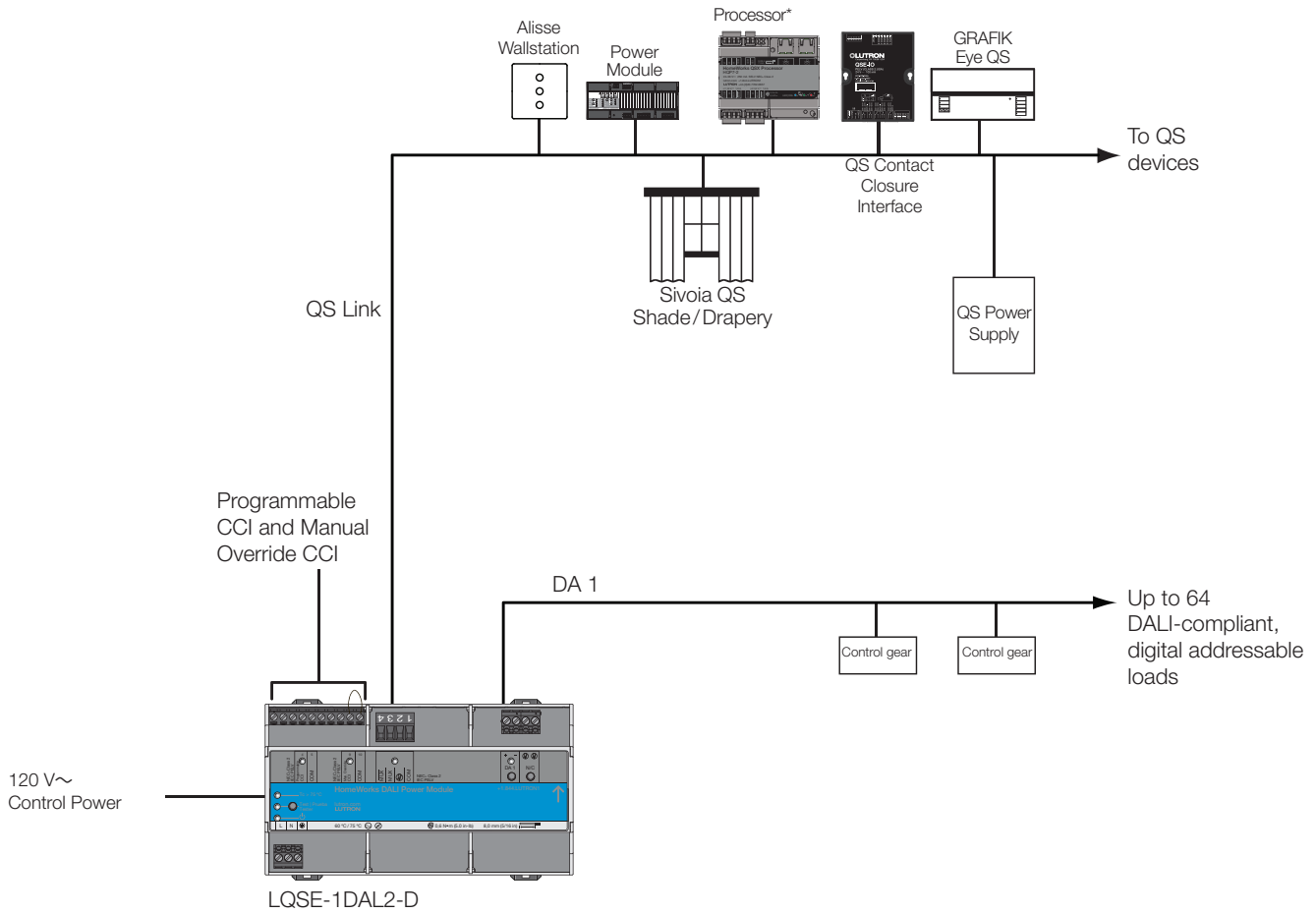
The DALI® version-1 standard does not ensure compatibility. To apply the original DALI® version-1 mark on LED drivers and fluorescent ballasts, no verification of the test results was required, and manufacturers could self-declare compliance and apply the DALI® mark. If you would like to use an LED driver 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

Page

Job Name:	Model Numbers:
Job Number:	

# Typical Application



\* Available for QSX processor only.

Job Name:	Model Numbers:
Job Number:	

## Specifications

### Power

- 120/220-240 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

- 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
- UL® 924

### 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

- Mains wiring: 18 AWG to 12 AWG (1.0 mm<sup>2</sup> to 4.0 mm<sup>2</sup>)
- DALI® Bus Wiring: 20 AWG to 12 AWG (0.5 mm<sup>2</sup> to 4.0 mm<sup>2</sup>)
- QS Link Wiring: 20 AWG to 12 AWG (0.5 mm<sup>2</sup> to 2.5 mm<sup>2</sup>)
- CCI and CCI Emergency Wiring: 20 AWG to 16 AWG (0.5 mm<sup>2</sup> to 1.5 mm<sup>2</sup>)

### Mounting

- Intended to mount within an IP20 (minimum) rated consumer panel or breaker panel with integrated DIN rail and dead cover.
- 9 DIN modules (161.7 mm).
- For more information on mounting and installation in panels with integrated DIN rail see the **DIN Rail Best Practices Application Note** (P/N 048466) at [www.lutron.com](http://www.lutron.com)

### DALI® Bus

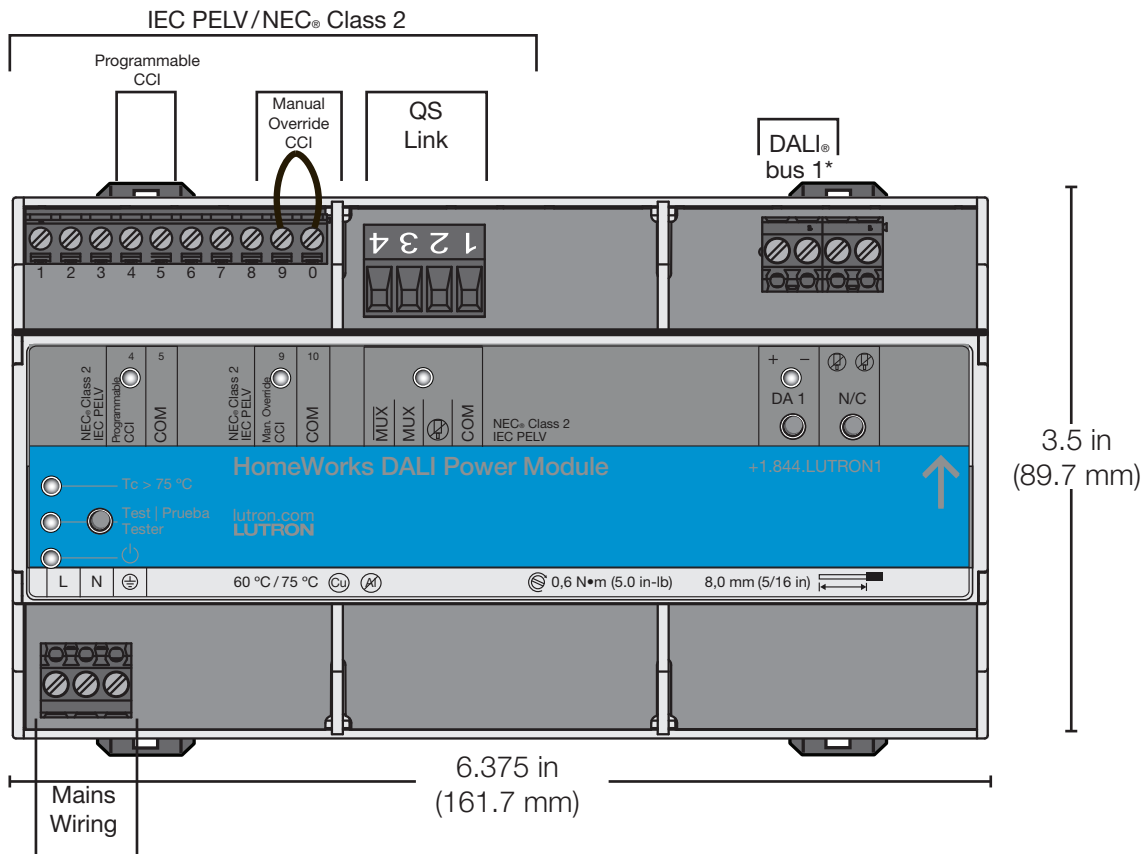
- The DALI® Power Module has an integrated bus power supply that provides a guaranteed current of 128 mA (maximum of 250 mA).
- The DALI® Power Module is a DALI® single master controller and therefore no other controller or sensor may exist on the same DALI® bus.
- Some DALI® loads may be polarity sensitive; 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).

### Troubleshooting and Maintenance Features

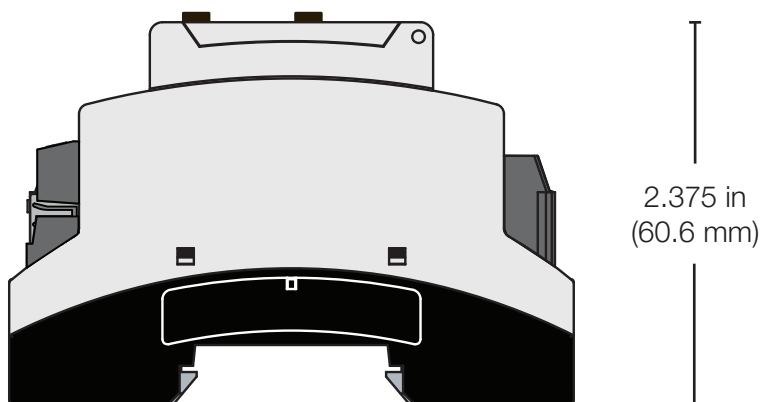
- Maintains redundant memory of control gear programming for ease of single- and multi-control gear replacement.
- After installation, "TEST" button verifies DALI® wiring on all fixtures.

Job Name:	Model Numbers:
Job Number:	

# Overview of Wiring Terminals and Mechanical Dimensions

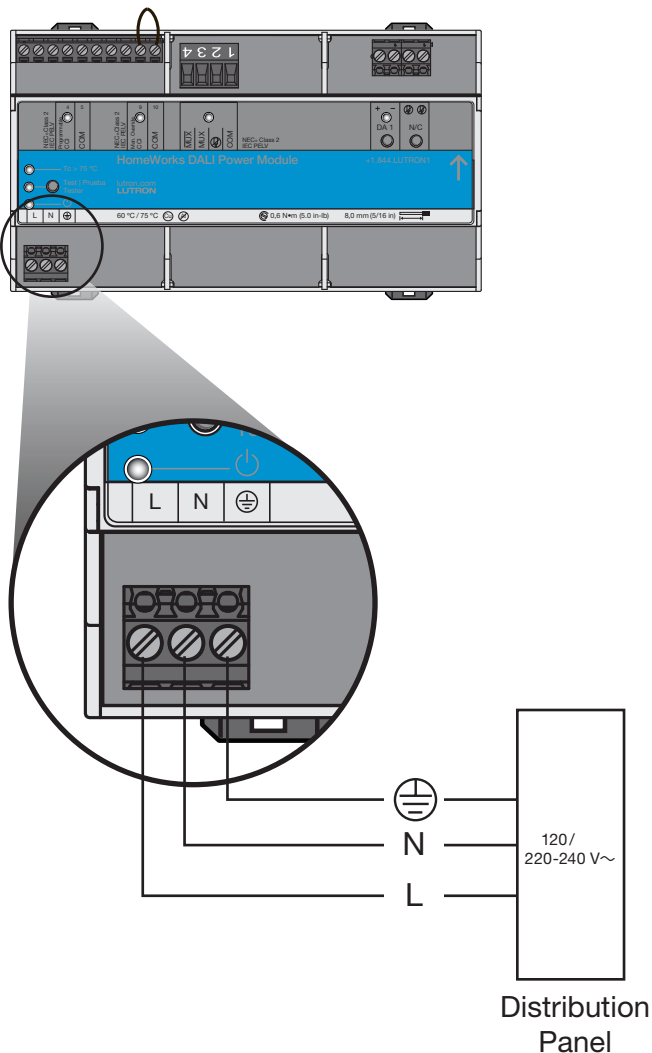


\* DALI bus wiring may be considered to be mains voltage. (It is not considered SELV.) Consult applicable national and local codes for compliance.



Job Name:	Model Numbers:
Job Number:	

## Wiring: Mains Voltage



### Wiring from Distribution to Bus Supply

- Turn off breaker at distribution panel.
- Run line, neutral, and  $\perp$  wires from a line/hot feed to the DALI® Power Module.

### Emergency Lighting Applications

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

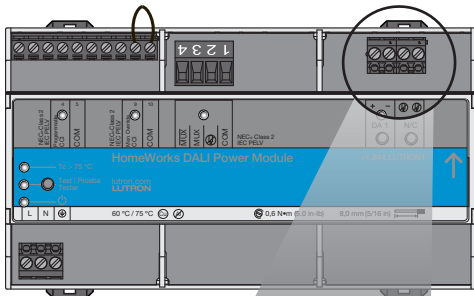
### Mains Wiring and Low Voltage Separation

- The DALI® Power Module is designed to separate mains wiring from PELV circuits.
- Follow appropriate local and national codes to avoid violating required separation guidelines.

$\perp$  – Earth/Ground  
 N – Neutral  
 L – Mains/Line

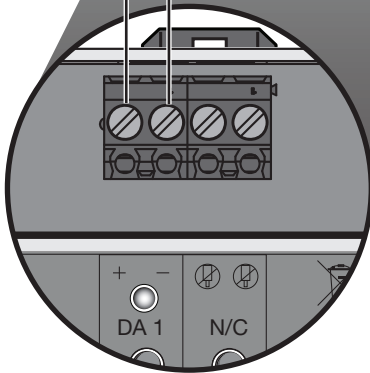
Job Name:	Model Numbers:
Job Number:	

## Wiring: DALI® Bus



### DALI® bus 1

DA 1 (-)  
DA 1 (+)



The DALI® Power Module will supply power to the DALI® bus independently. The bus supports a maximum of 64 DALI®-compliant, digital addressable loads.

### DALI® Wiring

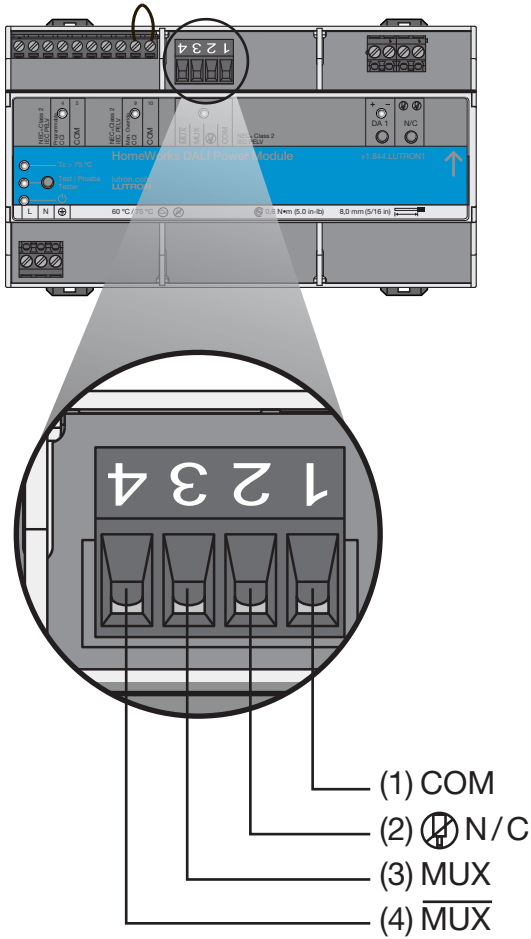
- DALI® wiring is not SELV.
- DALI® wiring is treated as mains voltage, and thus may be run within the same sheathing.
- Ensure that there is no greater than a 2 V drop between the DALI® Power Module and the end of the DALI® Bus.
- Consult all national and local electrical codes for separation requirements.

Wire Gauge	Maximum DALI®-compliant Bus Wire Length*
16 AWG (1.5 mm <sup>2</sup> )	984 ft (300 m)
20 AWG (0.75 mm <sup>2</sup> )	492 ft (150 m)
22 AWG (0.50 mm <sup>2</sup> )	328 ft (100 m)

\* Indicates the total length of DALI® wires.

Job Name:	Model Numbers:
Job Number:	

### Wiring: QS Link



#### 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 <sup>2</sup> )	QS-CBL-LSZH (Low-Smoke Zero-Halogen)
	Data (terminals 3 and 4): 1 pair 22 AWG (0.5 mm <sup>2</sup> ), 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 <sup>2</sup> )	GRX-CBL-46L (non-plenum)
	Data (terminals 3 and 4): 1 pair 22 AWG (0.5 mm <sup>2</sup> ), twisted and screened	GRX-PCBL-46L (plenum)

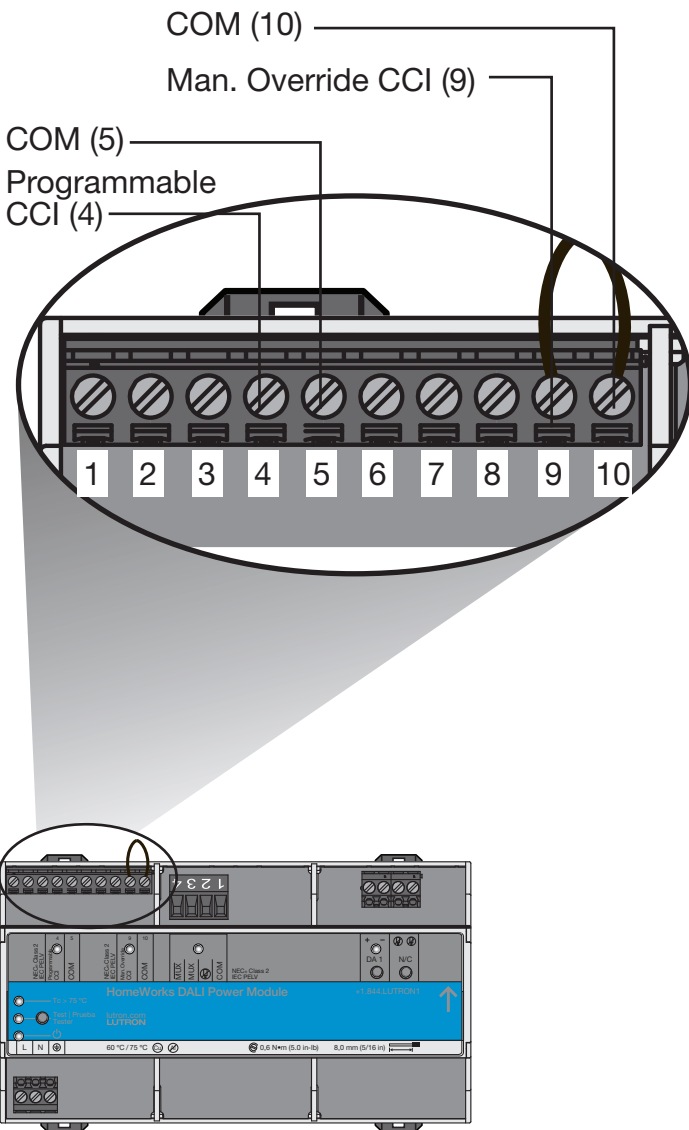
\* Varies by region, refer to the cable spec.

- Use one, twisted-screened pair of 20 AWG (0.5 mm<sup>2</sup>) for data link (MUX,  $\overline{\text{MUX}}$ ).

Neither supplies nor consumes PDUs

Job Name:	Model Numbers:
Job Number:	

## Wiring: Contact Closure Inputs



### Manual Override 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<sub>DC</sub>.
- The DALI® Power Module with DALI® is shipped with a jumper pre-installed in the Emergency Contact Closure Input.
- Manual Override 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](http://www.lutron.com) for more details.

### Programmable 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<sub>DC</sub> and sink 3.0 mA
  - Output collector PNP or active-high on-state voltage must be greater than 12 V<sub>DC</sub> 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 DALI® Power Module
- 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<sub>DC</sub>.

The Lutron logo, Lutron, Alisse, GRAFIK Eye, HomeWorks, and Sivoia are trademarks or registered trademarks of Lutron Electronics Co., Inc. in the US and/or other countries. All other product names, logos, and brands are property of their respective owners.

## LUTRON SPECIFICATION SUBMITTAL

Page

Job Name:	Model Numbers:
Job Number:	