

Solutions for Upgrading from HomeWorks Illumination to HomeWorks QS

The following guide has been developed to assist those interested in upgrading an existing HomeWorks Illumination (HWI) system to a HomeWorks QS (HWQS) system.

HWQS Compatibility with HWI Equipment:

To simplify the upgrade process, HWQS is compatible with some HWI devices. See the table below for more information and how this will affect upgrades.

HWI Link/Devices	Supported by HomeWorks QS?	Notes
Panel link	Yes	Older modules and module interfaces may need to be replaced to maintain compatibility with HWQS (see Section 1B).
HWI keypads	Yes	Available for HWQS version 8.0 or greater and with the purchase of an HWI keypad link license and an HWI link translator.
Wired Maestro dimmers (H48)	Yes ¹	Additional interface boards may be required.
HomeWorks Vareo dimmers (D48)	No	To maintain local dimming and connection to the system, dimmers and D48 interface must be replaced by wireless HWQS Maestro dimmers (with use of RF link) or by wired Maestro dimmers and an H48 interface.
GRAFIK Eye control units/WPMs	Yes	Available for HWQS version 13.0 or greater and with the purchase of a GRX/GXI link license and an HWI link translator.
Sivoia QED shades (Q96)	Yes	Available for HWQS version 9.0 or greater and with the purchase of a HWI QED link license.
HWI RF link	No	Devices must be replaced with HWQS RF devices.

¹ Only 120 V~ H48 devices supported; 240 V~ H48 devices are not supported

Additional Considerations:

- Systems with more than 5 Processors – For HWI systems that have >5 HWI processors, contact HWSupport@lutron.com for additional guidance in completing your upgrade.
- Database Update - The database used by the HWI processor is NOT compatible with HWQS processors. A database conversion tool is available which allows for the area tree and most design elements to be converted to a HomeWorks QS database. For more information, refer to the **Design and Programming for HomeWorks Illumination to HomeWorks QS Upgrades** Application Note #586 (048586) at www.lutron.com.

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Section 1A: Processor Selection - Mapping HWI Processors to HWQS

Upgrading HWI Systems with 8-Series Processors (with MI Link) to HWQS

Applicable to these HWI processors:

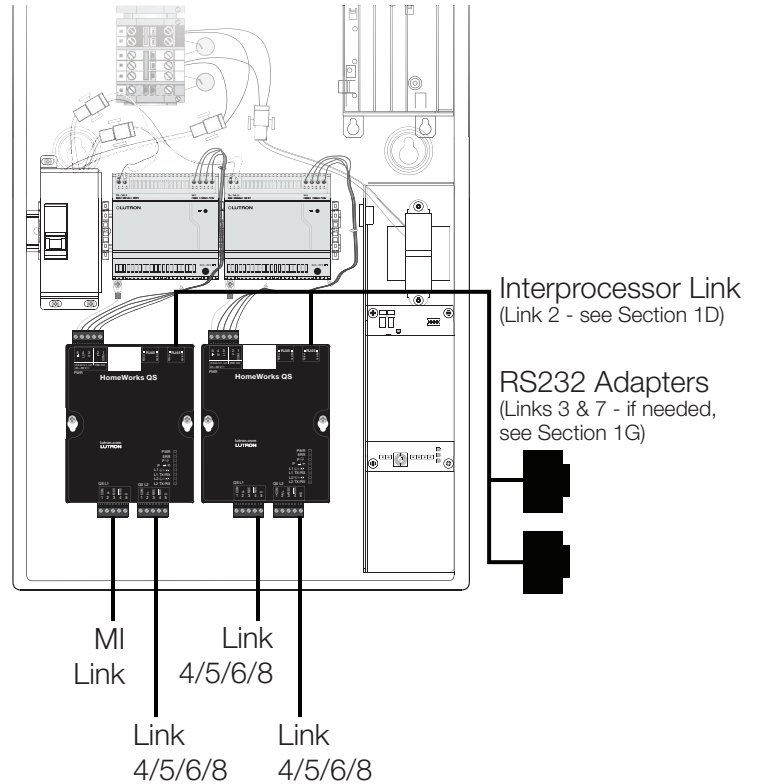
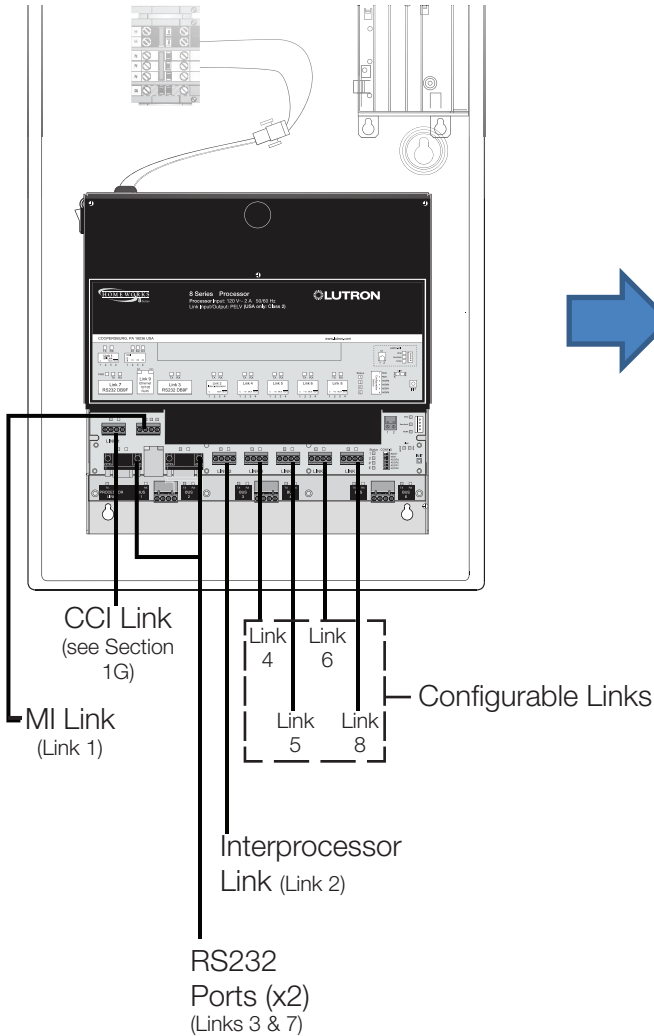
H8P5-MI-

H8P5-MI-H48-*

H8P5-MI-D48-**

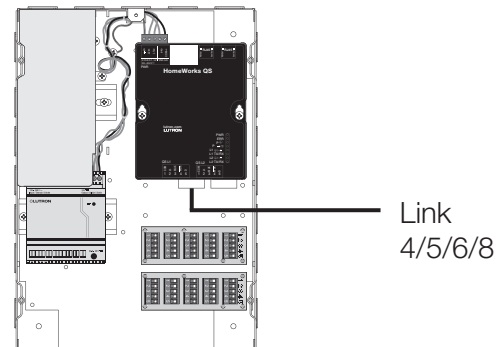
Existing 8-Series HWI processor in
an HWI-PNL-8 panel

Up to 2 HWQS processors and
1 module interface enclosed in an
existing HWI-PNL-8 panel (see Section
2A for installation instructions)



If 4th configurable link is required...

One additional HWQS processor
enclosed in an HWI-LV14
enclosure required



* See Section 1E for additional considerations.

** Controls and D48 interface must be replaced by wireless HWQS Maestro controls (with use of an RF link) or by wired Maestro controls and an H48 interface (see Section 1E).

Section 1A: Processor Selection - Mapping HWI Processors to HWQS (continued)

Upgrading HWI Systems with 8-Series Processors (with MI Link) to HWQS (continued)

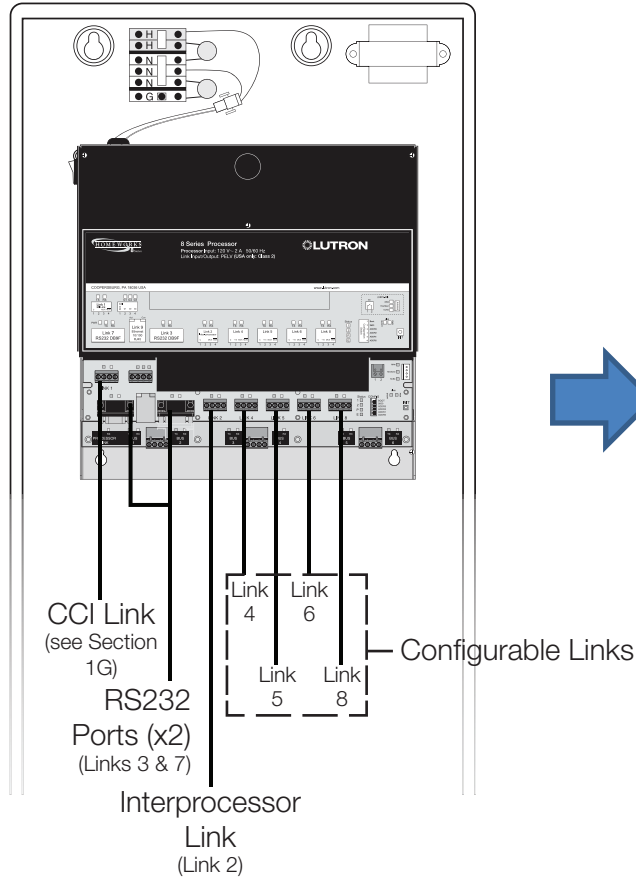
Applicable to these HWI processors:

H8P5-

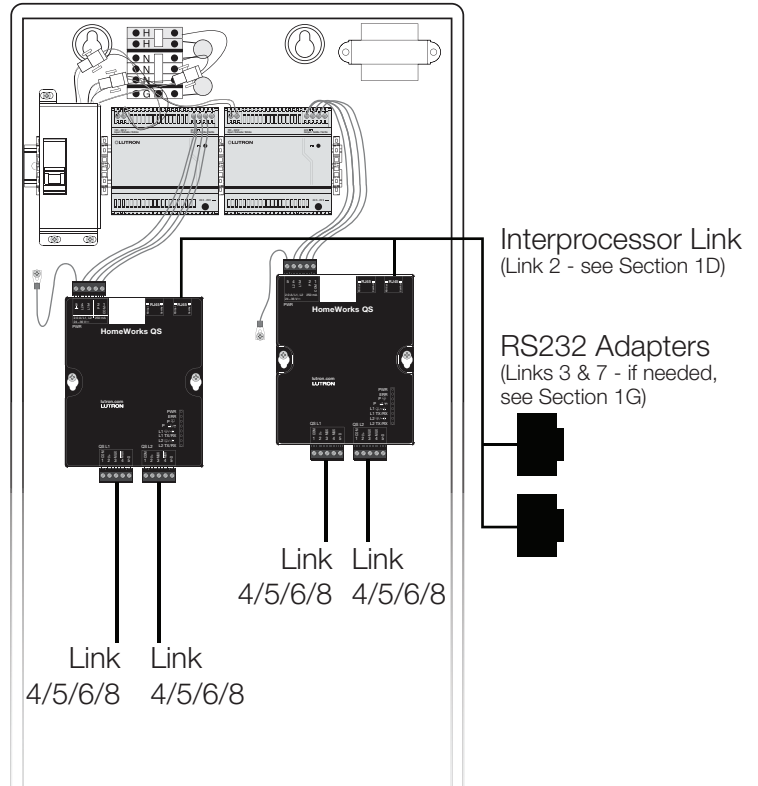
H8P5-H48-*

H8P5-D48-**

Existing 8-Series HWI processor in an HWI-LV32 enclosure



Up to 2 HWQS processors in an existing HWI-LV32 enclosure (see Section 2B for installation instructions)



* See Section 1E for additional considerations.

** Controls and D48 interface must be replaced by wireless HWQS Maestro controls (with use of an RF link) or by wired Maestro controls and an H48 interface (see Section 1E).

Section 1A: Processor Selection - Mapping HWI Processors to HWQS (continued)

Upgrading HWI Systems with 8-Series Processors (with MI Link) to HWQS (continued)

Applicable to these HWI processors:

H4P5-

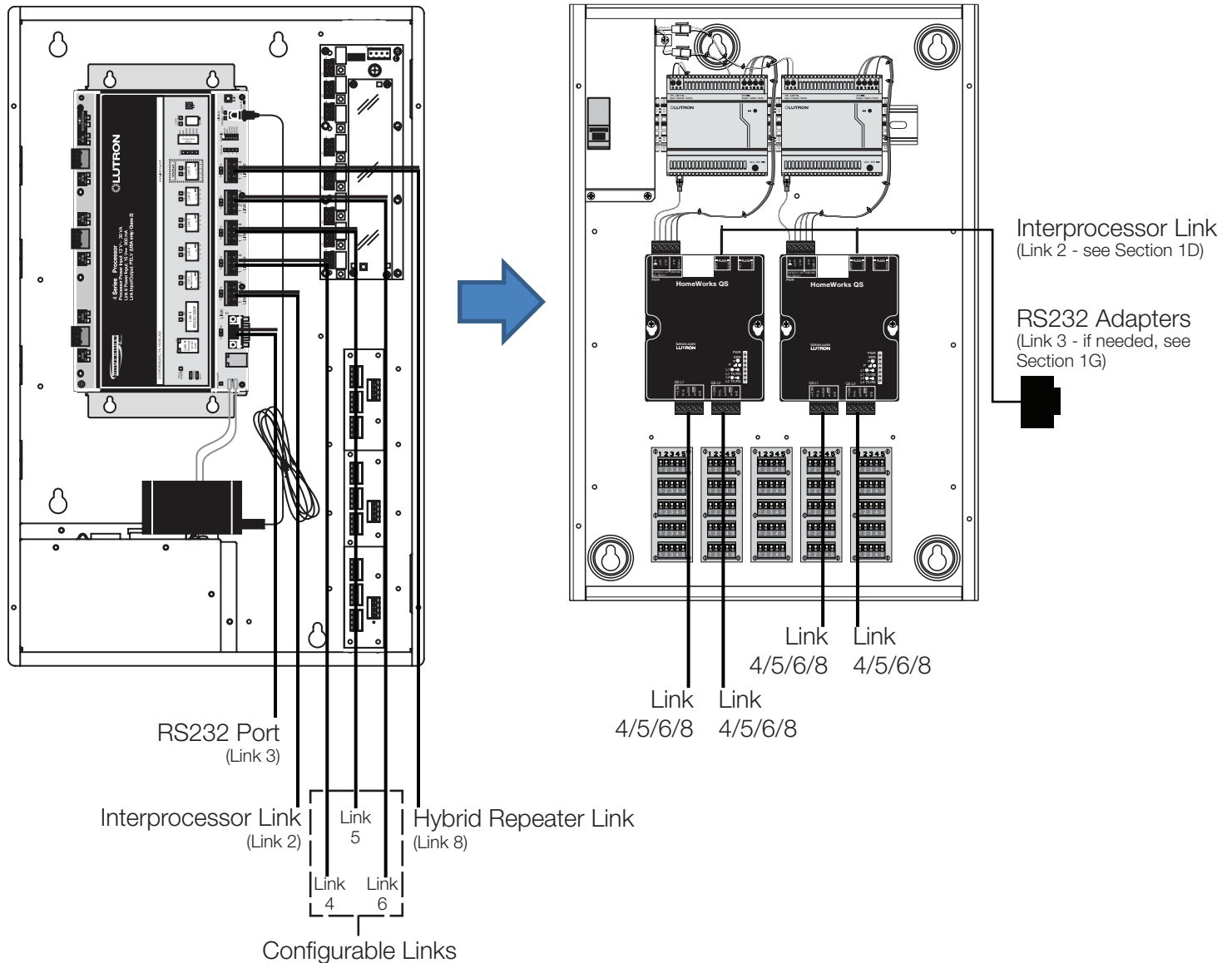
H4P5-H48- *

H4P5-H48-HRL- *

H4P5-HRL-

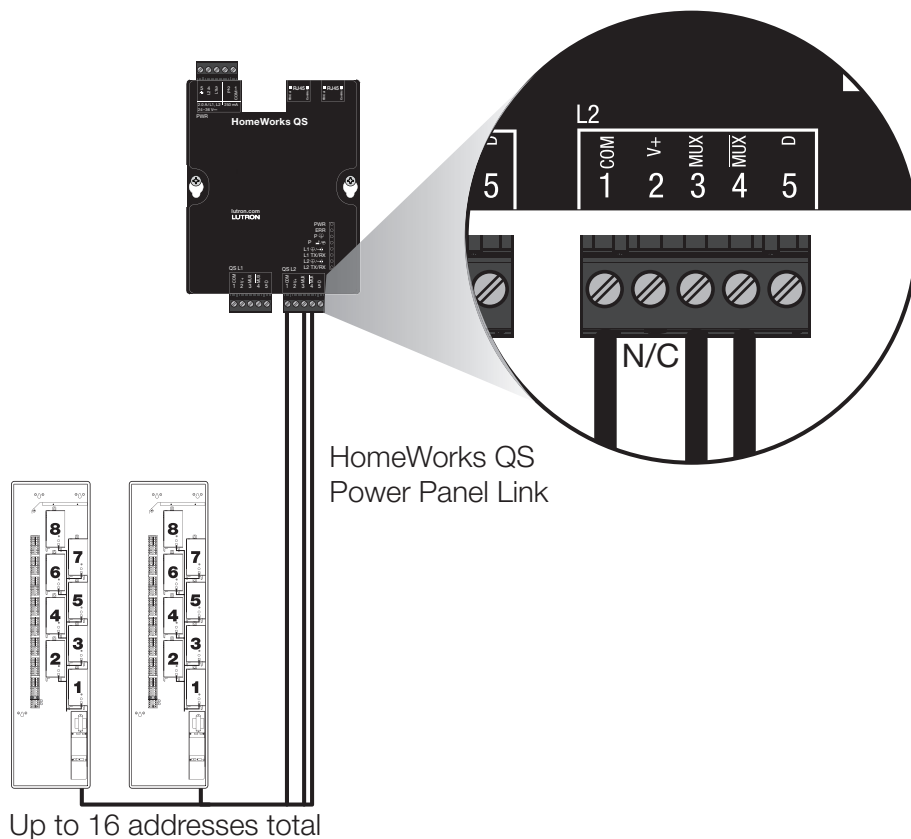
Existing 4-Series HWI processor
in an HWI-LV24 enclosure

Up to 2 HWQS processors enclosed
in an HWI-LV21 enclosure
(Existing HWI-LV24 enclosure cannot be used
for mounting HWQS processors)



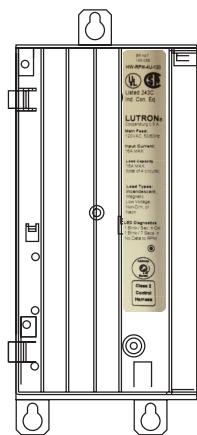
* See Section 1E for additional considerations.

Section 1B: Panel Link Considerations

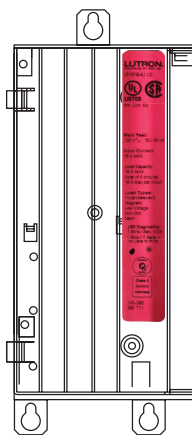


Additional Considerations: Lutron recommends replacing all RPM and MI modules built prior to 2003 (Date Code: L01 or older). If these modules are not replaced, the following issues may occur:

- Fade rates may be different between older RPM modules and the newer modules.
- Compatibility issues may occur between the HWI-MI module and the HWQS processor.



RPM-4U with WHITE label
(manufactured prior to 2003)



RPM-4U with RED label
(manufactured 2003 and later)

Section 1C: HWI Keypad Link

In order to allow integration of HWI keypads and contact closure interfaces (HWI-CCO & HWI-CCI) with your upgraded HWQS system, the following is required:

- HWQS software version 8.0 or later with an HWI keypad link license (HQ-HWI-KP-SW — purchase required)
- HWI link translator (HQ-HWI-LX — purchase required)
- 15 V $\overline{=}$ power supply to power HWI keypads & contact closure interfaces

NOTICE: HOMEWORKS ILLUMINATION KEYPADS AND CONTACT CLOSURE INTERFACES MUST BE RUN AT THE SPECIFIED 15 V $\overline{=}$ INPUT VOLTAGE. ATTEMPTING TO RUN THESE DEVICES USING THE 24 V $\overline{=}$ HWQS POWER SUPPLIES WILL RESULT IN DAMAGE TO THE DEVICE.

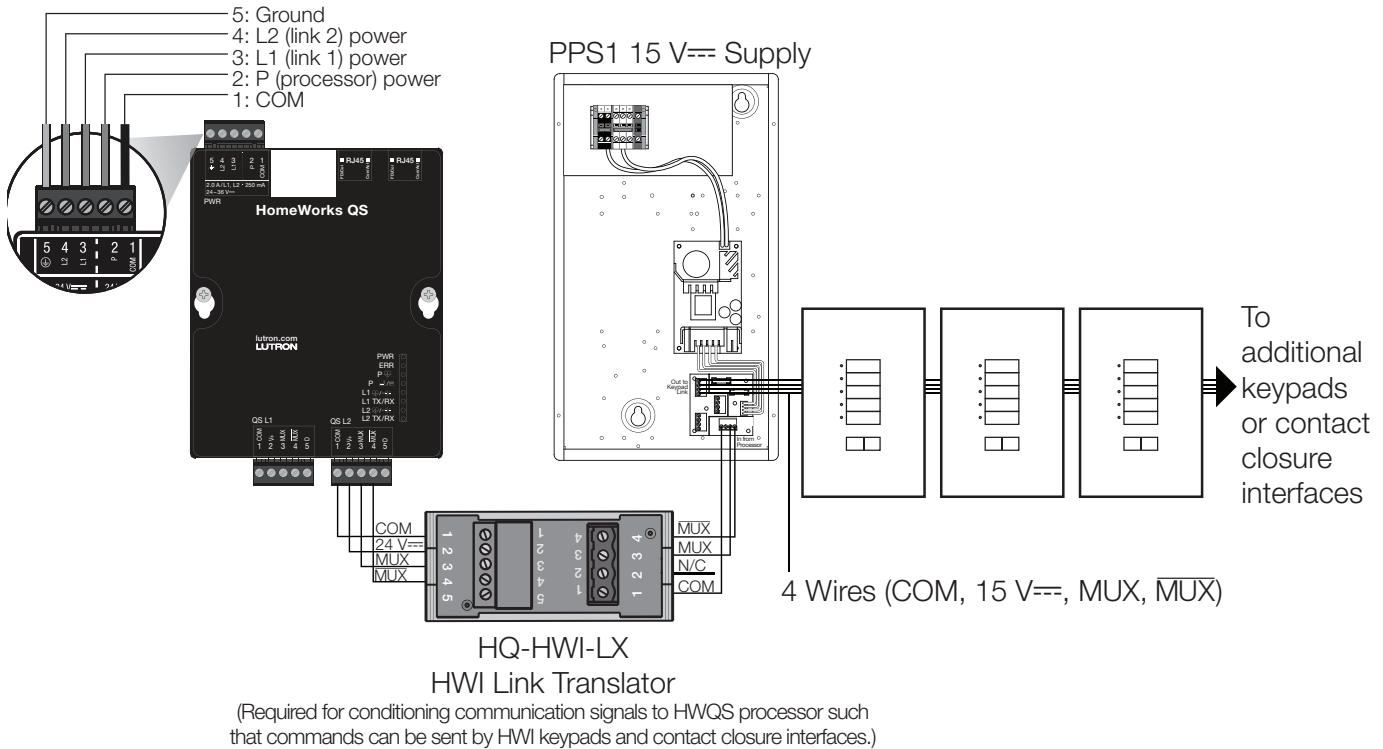
Lutron has the following 15 V $\overline{=}$ power supplies available that can be used to replace the on-board power supply used with the HWI processor. Any additional 15 V $\overline{=}$ power supplies already installed to power the HWI keypads should continue to be used to power those keypads in the upgraded system.

Power Supply Model Numbers	Wall-Mount or Plug-In?	Input Voltage (V) \sim	MAX# LEDs Powered
PPS1-120-15DC-3A	Wall-mount	120	500
T120-15DC-9-BL	Plug-in	120	150
PPS1-230-15DC-3A	Wall-mount	230	500
TE240-15DC-9-BL	Plug-in	230	150
TU240-15DC-9-BL	Plug-in	230	150

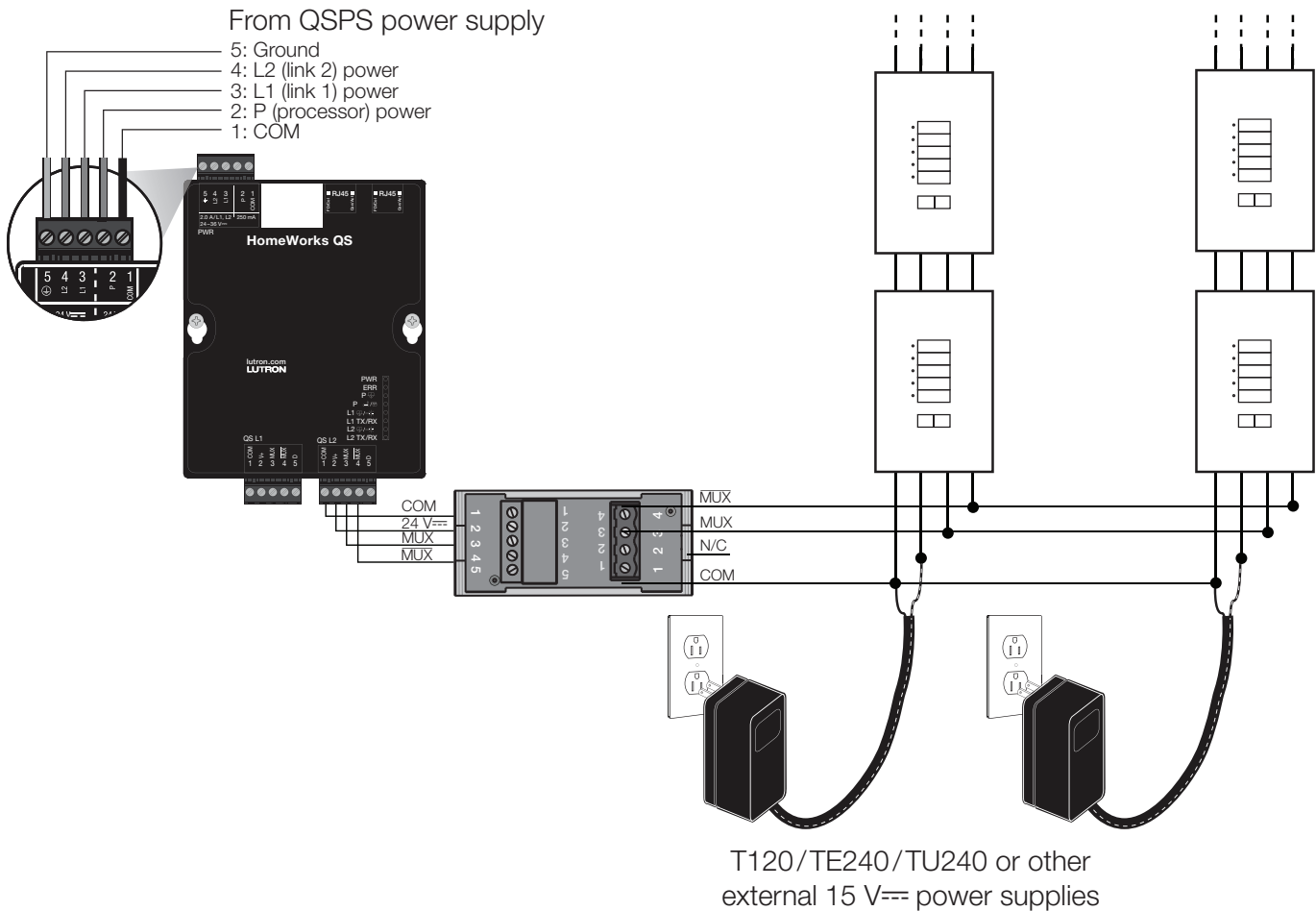
Additional 15 V $\overline{=}$ power supplies are also available through other manufacturers. If a non-Lutron manufactured power supply is used, it should be rated for 15 V $\overline{=}$ ($\pm .5$ V), 2.5 A or greater, and mounted externally from the panel. Lutron does not guarantee the performance or compatibility of any non-Lutron manufactured product and assumes no responsibility or liability with respect to such products. Lutron does not endorse or recommend the use of any non-Lutron manufactured power supply.

Section 1C: HWI Keypad Link (continued)

Wiring Diagram 1: Wiring of HWI Keypad Link with PPS1 Power Supply



Wiring Diagram 2: Wiring of HWI Keypad Link with T120/TE240/TU240-15DC-9-BL or other external power supplies

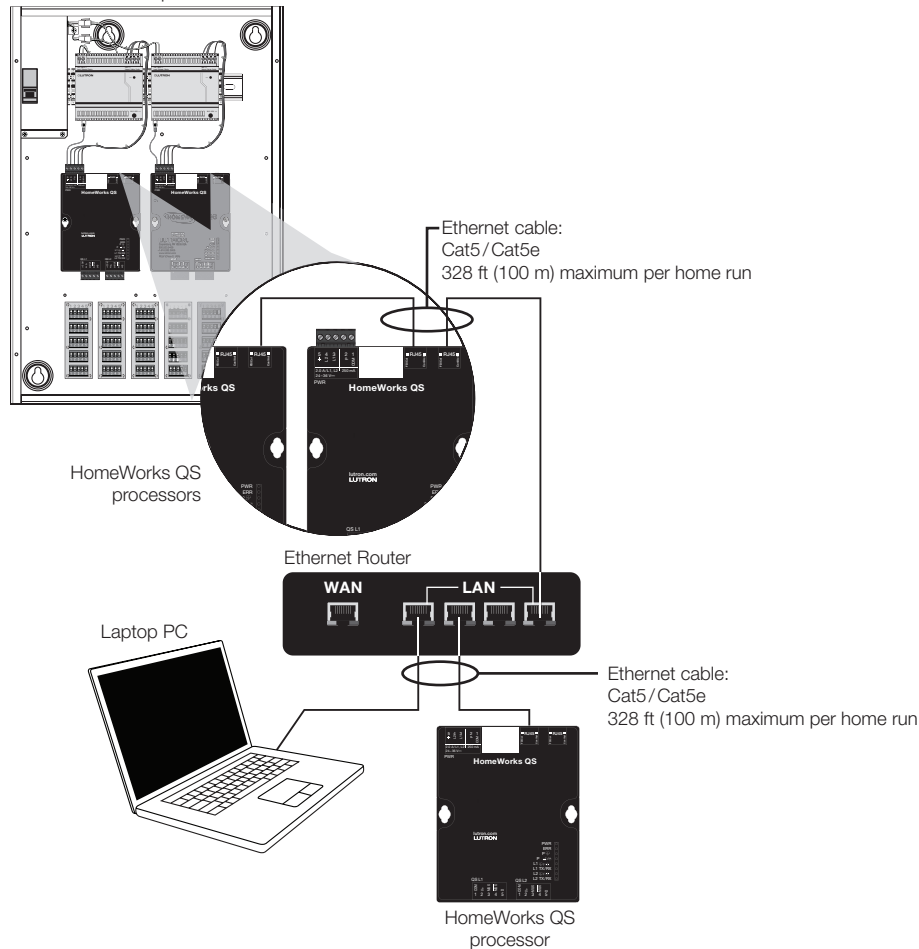


Section 1D: Interprocessor Link

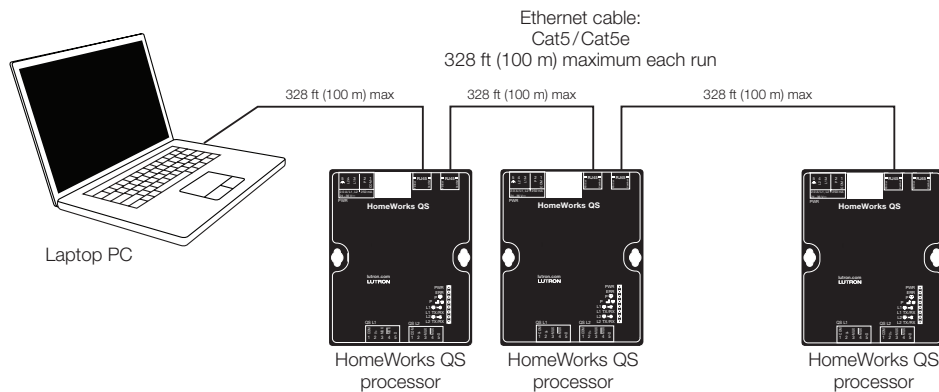
To connect multiple HWQS processors together, the original 4-conductor Lutron cable will be replaced by CAT5/5E Ethernet Cable. The system can be networked in the following ways:

Standard Networking: Connection using an Ethernet hub/switch/router

HQ-LV21 panel with
2 HomeWorks QS processors



Ad-Hoc Networking: Direct Ethernet connection from PC to processors



Up to 5 processors can be daisy-chained

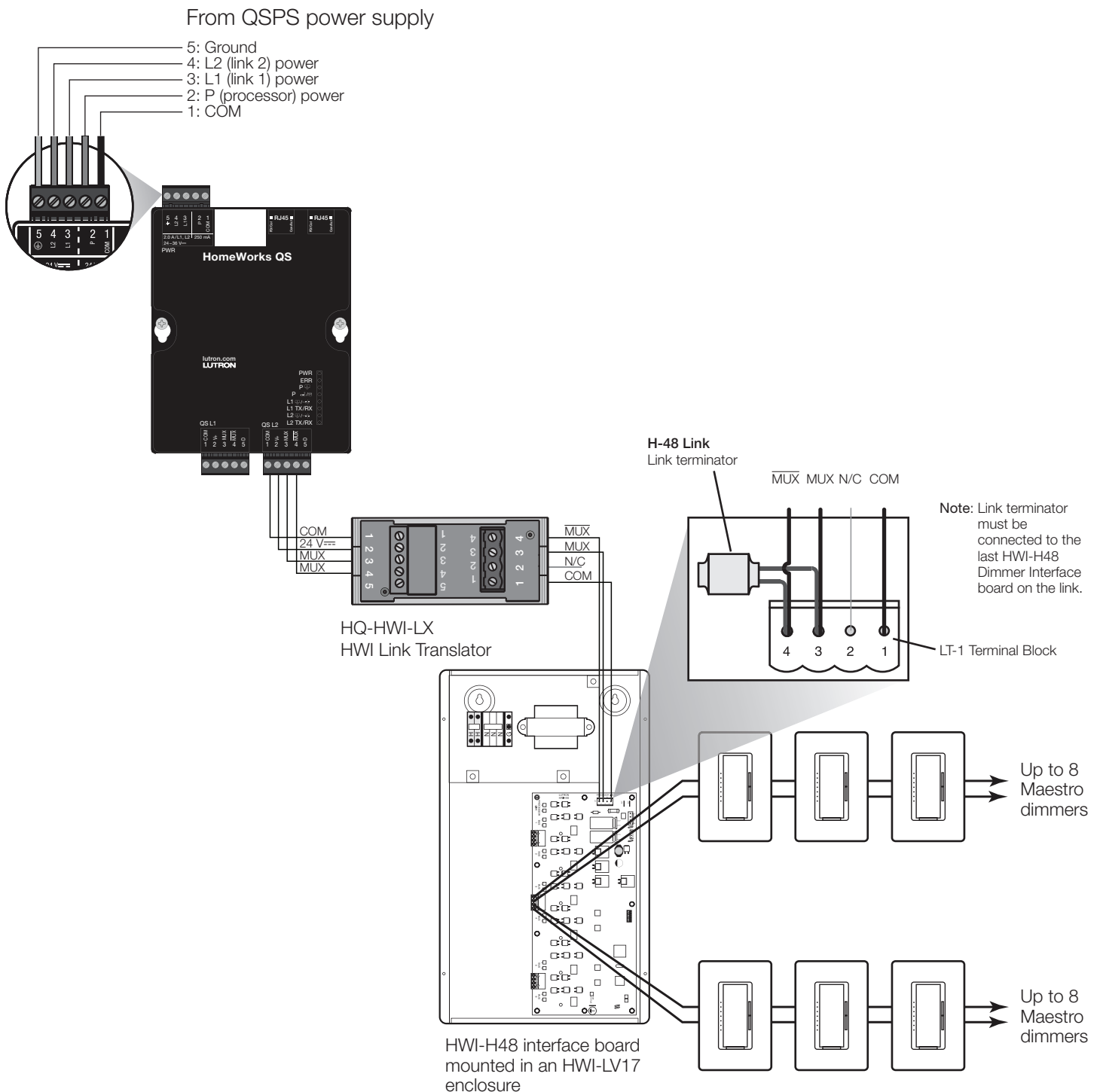
(For more information, refer to the **Residential Systems Networking Guide** at www.lutron.com/TechnicalDocumentLibrary/Residential_Systems_Networking_Guide.pdf)

Section 1E: H48/Q96 Link

External H48 Interface Mounting

For HWI processors that included an integrated HWI-H48 Interface (H8P5-MI-H48-, H8P5-H48-, H4P5-H48-, or H4P5-H48-HRL-), a separate HWI-H48 interface board will be required to connect to the wired Maestro dimmers. A separate HWI-H48 interface board will also be required if replacing an HWI-D48 interface (integrated or separate). If space for an HWI-H48 interface board is not already available in an existing enclosure, the HWI-H48 interface board can be mounted externally in an HWI-LV17 enclosure as shown.

NOTE: 240 V~ H48 devices are not supported

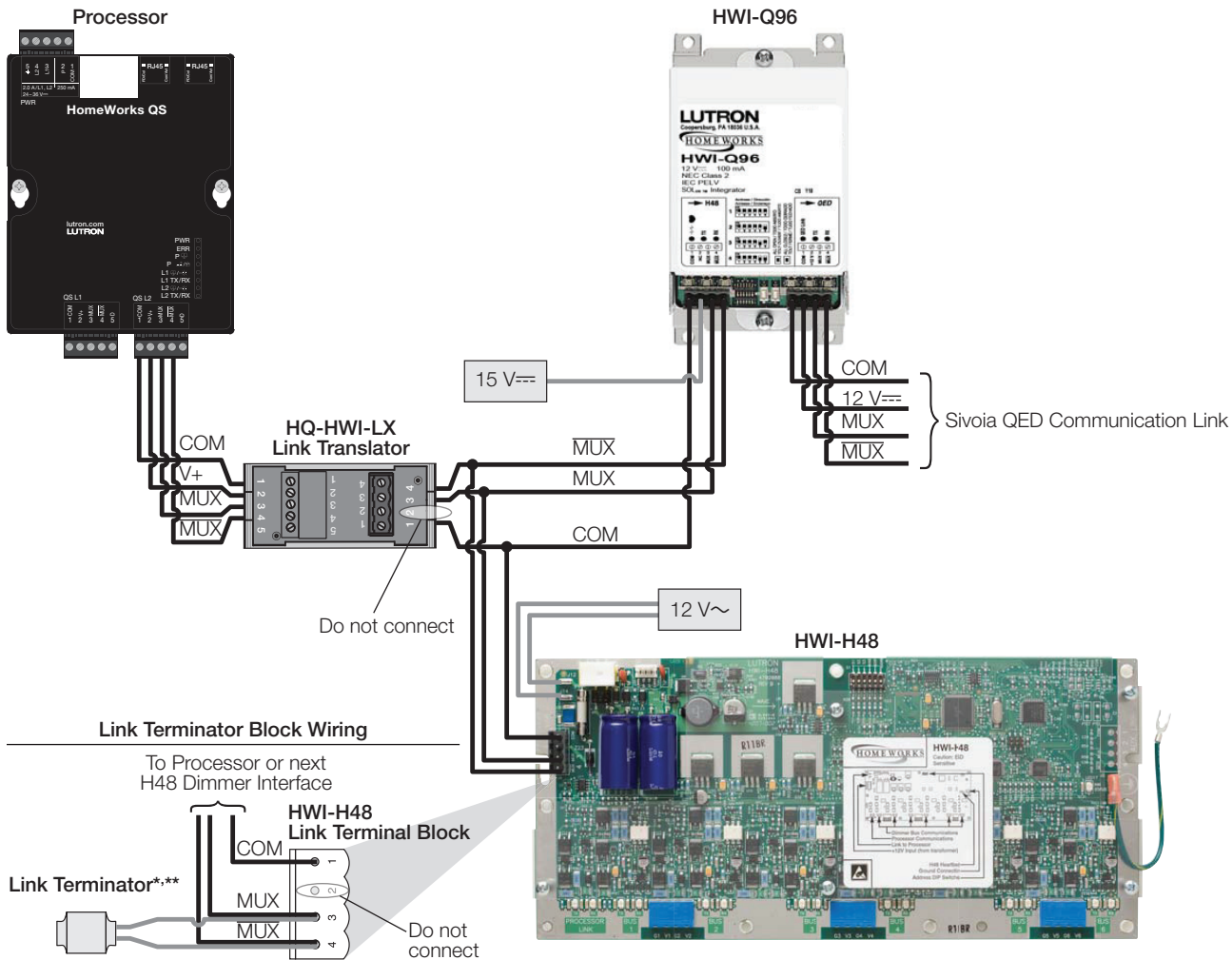


Section 1E: H48/Q96 Link (continued)

To integrate Sivoia QED shades with an HWQS system, the following are required:

- HWQS software version 9.0 or later with a Sivoia QED link license (HQ-HWI-Q96-SW [purchase required])
- Maintenance of existing power infrastructure for Sivoia QED shades and HWI-Q96 interfaces.

Note: Sivoia QED shades and HWI-Q96 interfaces do not use 24 V \equiv power supply as HWQS systems do.



Troubleshooting QED Shades

- Terminal command syntax: QEDADDRESSING, (link number), (interface number)
 - **QEDADDRESSING:** This command will find and address all the QED shades wired to a Q96 interface and report how many QED shades were found on the Q96 link.
 - **Link number:** 0 (Link 1) or 1 (Link 2)
 - **Interface number:** Unique interface number for each Q96 interface. Values 1-4.
- Terminal command syntax: GETQEDREVS, (link number), (interface number)
 - **GETQEDREVS:** This command will get the code revision for each QED shade on the Q96 link.
 - **Link number:** 0 (Link 1) or 1 (Link 2)
 - **Interface number:** Unique interface number for each Q96 interface. Values 1-4.

For further assistance with advanced troubleshooting commands, please contact Lutron Customer Assistance at 1.844.Lutron1.

* Required when the wire-run distance between Processor and Q96 or H48 interfaces exceeds 50 ft (15.25 m).

** Must be connected to the last HWI-H48 Dimmer Interface board on the link.

HWQS software version 13.0 or later with a GRX/GXI link license (HQ-HWI-GRX-SW [purchase required])
HWI link translator (HQ-HWI-LX — purchase required)

- Models supported by the HWQS system are as follows:

GRX-MR-2/3/4/6-A/T (120 V~)
GRX-IA-2/3/4/6-A/T (120 V~)
HWI-WPM-6D-120 (120 V~)
GRX-MR-2/3/4/6-A/T-CE (230 V~ CE)
GRX-IA-2/3/4/6-A/T-CE (230 V~ CE)
HWI-WPM-6D-230CE (230 V~ CE)
GRX-MR-2/3/4/6-A/T-AU (220-240 V~ non-CE)
GRX-IA-2/3/4/6-A/T-AU (220-240 V~ non-CE)
HWI-WPM-6D-240 (240 V~)
GXI-3104/3504-A/T-C
GRX-310x
GRX-350x

- See next page for notes pertaining to the GRAFIK Eye and Wallbox Power Module link.



Section 1F: GRAFIK Eye and Wallbox Power Module Link (continued)

Notes:

1. Optional keypads and interfaces that resided on this link in an Illumination system are not supported in HomeWorks QS system but will still work for local scene control of the GRAFIK Eye/Wallbox Power Modules. Only the models above are supported in a HomeWorks QS system.
2. GRX-350x/GRX-IA/GXI-350x units have zone and device scene control capability.
3. GRX-310x/GRX-MR/GXI-310x units have device scene control capability.
4. HWI-WPM units have zone control capability.
5. Legacy GRAFIK Eye, GRAFIK Integrale, and HWI-WPM can be integrated with HWQS as of version 13.0. The HomeWorks Illumination to HomeWorks QS online database conversion tool generates HWQS version 10.3 databases, which automatically removes the above mentioned devices or converts to QS versions based on the Wired Keypads option selected. If removed, the legacy devices can be manually added back in at any time in version 13.0 or higher.
6. PC Tool will not prevent programming limitations based on above. Example: GRX-MR zone assignments onto a QS keypad button will be allowed but not work.
7. Device scene changes must be made through the device.
8. Local device changes such as a zone's load type, low end setting or levels will not sync back with the system.
9. It is recommended to disable integration for the GRX-310x / GRX-MR / GXI-310x as individual zone control will not be possible through integration.

Section 1G: Integration Links

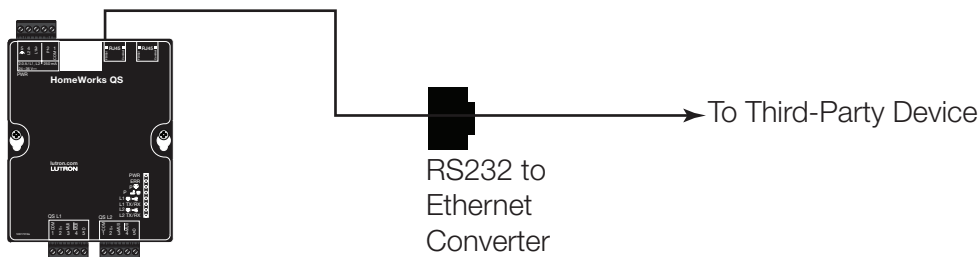
Contact Closure Integration

If utilizing the integrated contact closure input on the HWI processor, there are a few options available to utilize contact closure interfaces with the HWQS system.

- If an HWQS link is available, the following contact closure interfaces maybe used on this link to interface with the HWQS processor:
 - a. QSE-IO
 - b. HWQS keypad
 - c. QSE-CI-WCI
 - d. HQR-VCRX-WH
- If customer has the HWI keypad link enabled and has the following interfaces already installed, they may be used on this link to interface with the HWQS processor:
 - a. HWI-CCI-8
 - b. HWI seeTouch keypad

RS232 Integration

For customers integrating devices using serial connections, these devices can be integrated to the HWQS processor through the use of a serial to Ethernet converter. For more information, see the [HomeWorks QS Integration with Ethernet and RS232 Devices](#) Application Note at www.lutron.com.



Section 2A: HWI Processor Upgrade to HWQS for HWI-PNL-8 Panel Installations

The following pages describe how to install HWQS processors into HWI-PNL-8 panels that do not have the modifications required to install the necessary components. Most HWI-PNL-8 panels that shipped after November 15th, 2011 (date code U48 located in the upper right inside corner) will have the necessary modifications. Two harnesses connected to the bottom set of terminal blocks will indicate if the panel is new (legacy panels have just one harness).

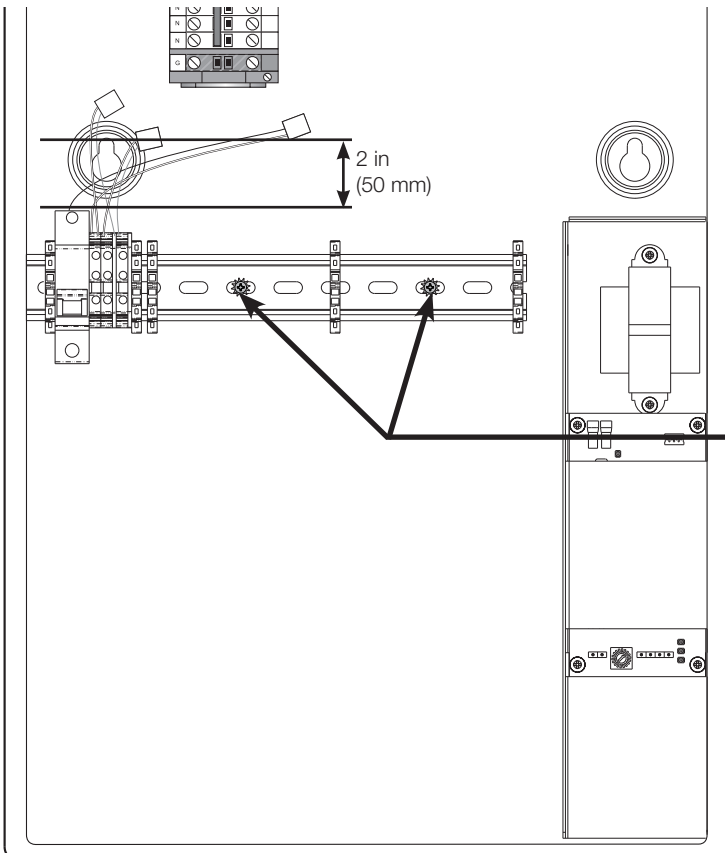
What you will need for this process:

- PNL-8-PWRKIT — For mounting HWQS power supply(s) (up to 2)
- QSPS-DH-1-75-H — HWQS power supply(s) (up to 2)
- HQP6-2 — HWQS processor(s) (up to 2)
- HWI-MI-120 or HWI-MI-230 (depending on supply voltage) — Module interface for interfacing between HWQS processor and RPM modules
- Drill and #29 drill bit 0.136 in (3.5 mm) diameter (The closest fractional bit is 9/64 in (3.5 mm). This is acceptable to use if necessary; tighten screws to 17 in-lb [1.97 N•m] maximum)
- Tape measure

⚠ WARNING! Shock hazard. May result in serious injury or death. Turn off power before installing components.

1. Disconnect and remove HWI processor.
2. Mount module interface to panel and connect power harnesses.
3. Using the illustration below, mount the PowerKit (PNL-8-PWRKIT) into the existing HWI-PNL-8 panel.

See the following page for mounting the assembly cover.



- Allow 2 in (50 mm) of space between the top of the keyhole and the top of the breaker
- Push assembly to the left so the DIN rail is flush to the inside edge of the panel
- Drill two 0.136 in (3.5 mm) holes and secure with screw and washer in each location (screws and washers included with assembly)

Note: Make sure that all metal shavings are removed

Mounting PowerKit assembly into HWI-PNL-8 panel

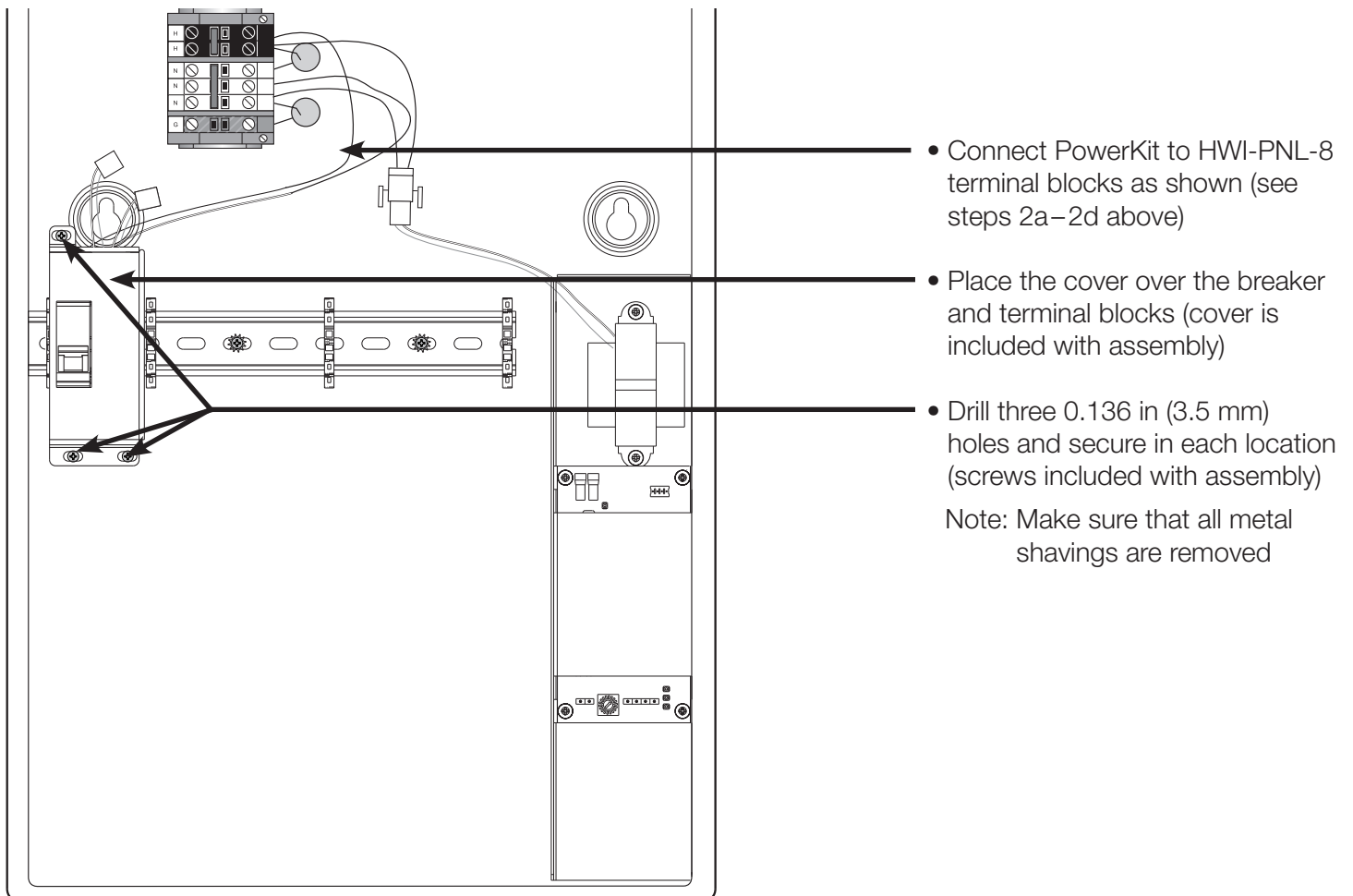
Section 2A: HWI Processor Upgrade to HWQS for HWI-PNL-8 Panel Installations (continued)

4. Wire power to the PowerKit and mount cover (**Qualified Electricians Only!**).

The PowerKit comes with a power harness (black and white wires) pre-installed to the breaker and terminal block. Since legacy HWI-PNL-8 panels lack the mating harness required, it is necessary to hard-wire the PowerKit to the terminal block above in order to provide power to the PowerKit.

- Remove the black and white power harness from the PowerKit, noting from which terminals the harness was removed.
- Replace with a black and white power cable (NM power cable) in the same locations that you just removed the harness.
- Run this cable to the same terminals where the harness that feeds the MI are terminated (or any hot and neutral feed from the long DIN rail terminal).
- Mount the PowerKit cover onto the PowerKit.

The mounting and wiring of the PowerKit is now complete.

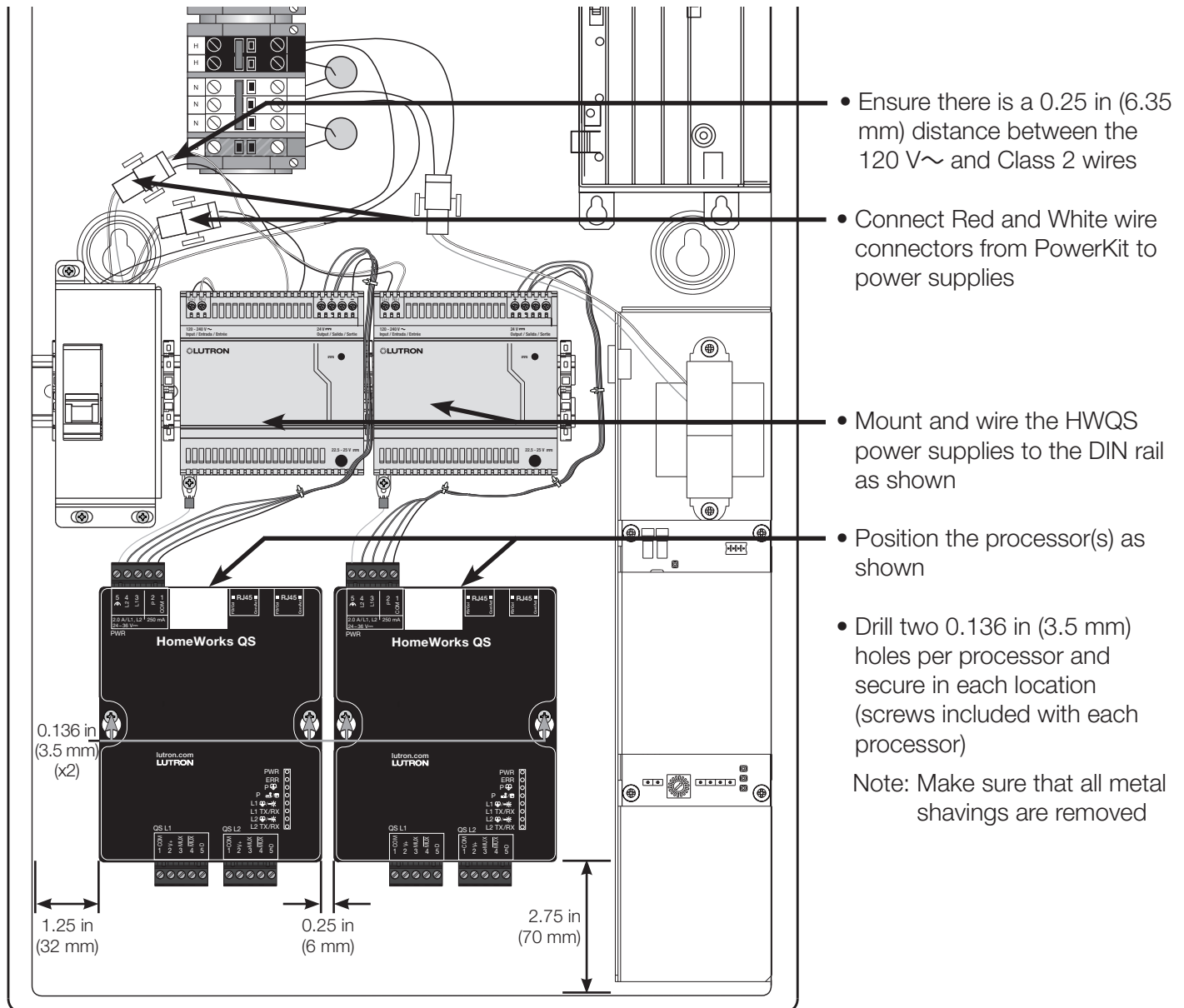


Mounting the cover for the PowerKit

Section 2A: HWI Processor Upgrade to HWQS for HWI-PNL-8 Panel Installations (continued)

5. Mount the HWQS processors into existing HWI-PNL-8 panel.
Refer to the illustration below for mounting the processor(s). The illustration shows two processors, although you may only have one.
6. Mount the 24 V \sim HWQS power supplies to the PNL-8-PWRKIT DIN rail and connect to the remaining red and white wire connectors as shown below.
7. Connect power from power supplies to HWQS processors.

The mounting of the processor(s) is now complete.



Mounting the HWQS processor(s)

8. Turn on main power feed and flip PowerKit switch to “On”.

Section 2B: HWI Processor Upgrade to HWQS for HWI-LV32 Enclosure Installations

The following pages describe how to install HWQS processors into HWI-LV32 enclosures that do not have the modifications required to install the necessary components.

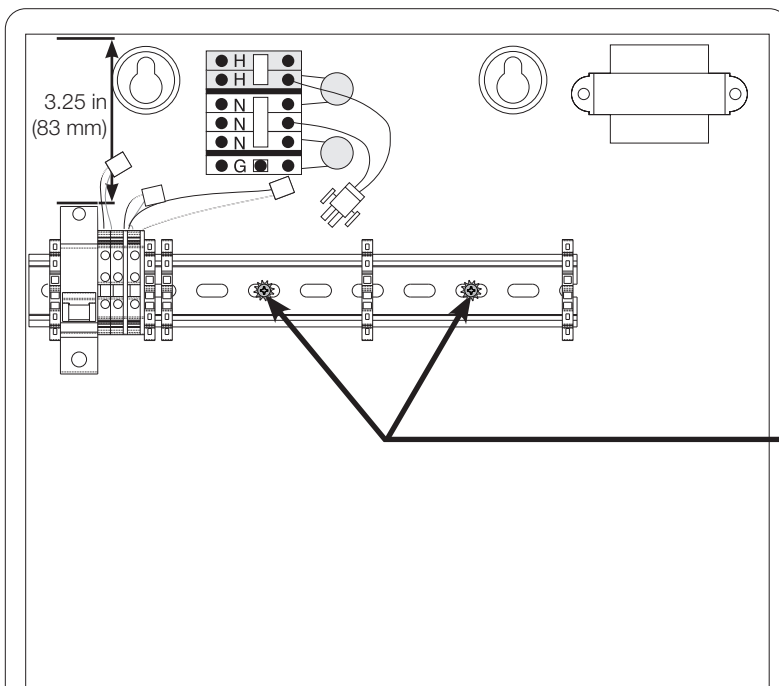
What you will need for this process:

- PNL-8-PWRKIT — For mounting HWQS power supply(s) (up to 2)
- QSPS-DH-1-75-H — HWQS power supply(s) (up to 2)
- HQP6-2 — HWQS processor(s) (up to 2)
- Drill and #29 drill bit 0.136 in (3.5 mm) diameter (The closest fractional bit is 9/64 in (3.5 mm). This is acceptable to use if necessary; tighten screws 17 in-lb [1.97 N·m] maximum)
- Tape measure

⚠ WARNING! Shock hazard. May result in serious injury or death. Turn off power before installing components.

1. Disconnect and remove HWI processor. Disconnect and remove all other interfaces and wire landing boards from panel prior to installation of processors and power supplies.
2. Using the illustration below, mount the PowerKit (PNL-8-PWRKIT) into the existing HWI-LV32 enclosure.

See the following page for mounting the assembly cover.



Mounting PowerKit assembly into HWI-LV32 enclosure

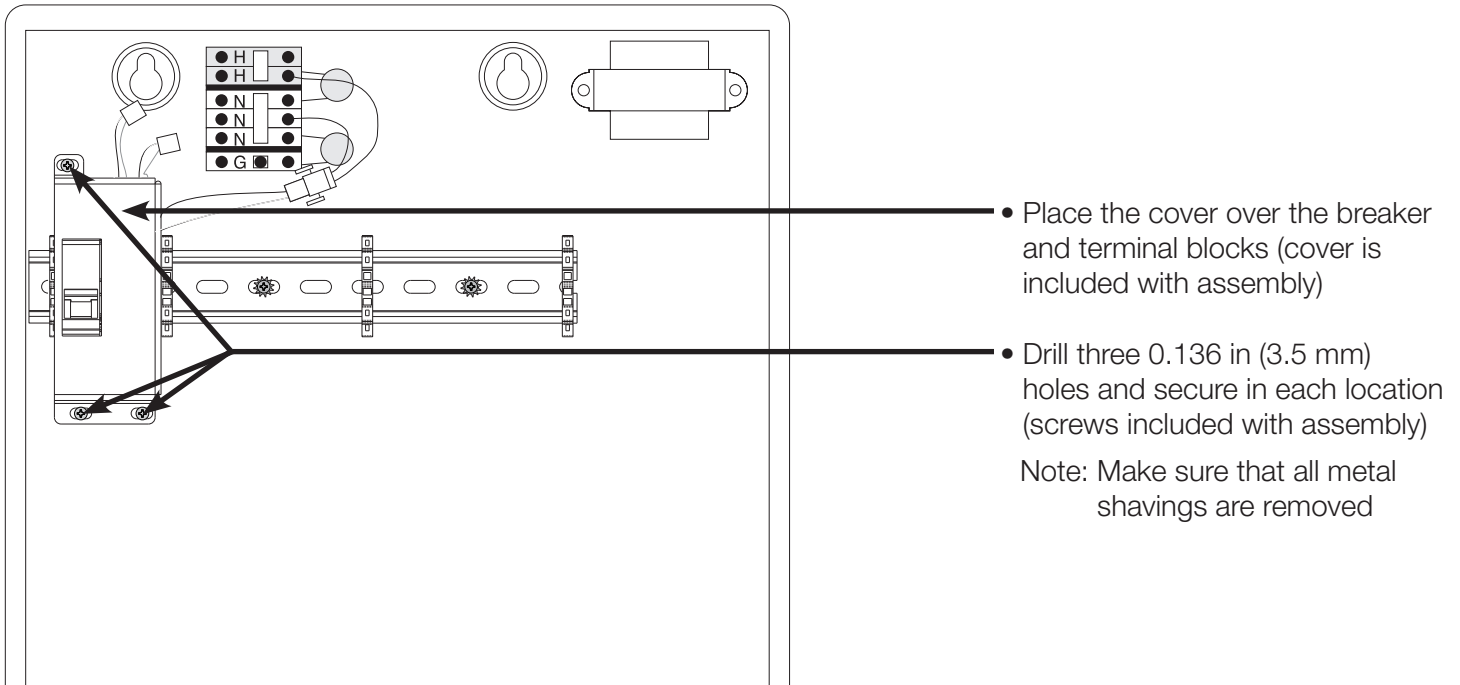
- Allow 3.25 in (83 mm) of space between the top of the panel and the top of the breaker
- Push assembly to the left so the DIN rail is flush to the inside edge of the panel
- Drill two 0.136 in (3.5 mm) holes and secure with screw and washer in each location (screws and washers included with assembly)

Note: Make sure that all metal shavings are removed

Section 2B: HWI Processor Upgrade to HWQS for HWI-LV32 Enclosure Installations (continued)

3. Wire power to the PowerKit and mount cover (**Qualified Electricians Only!**).
 - a. Connect black and white power connector to connector on panel terminal block.
 - b. Mount the PowerKit cover onto the PowerKit (see figure below).

The mounting and wiring of the PowerKit is now complete.

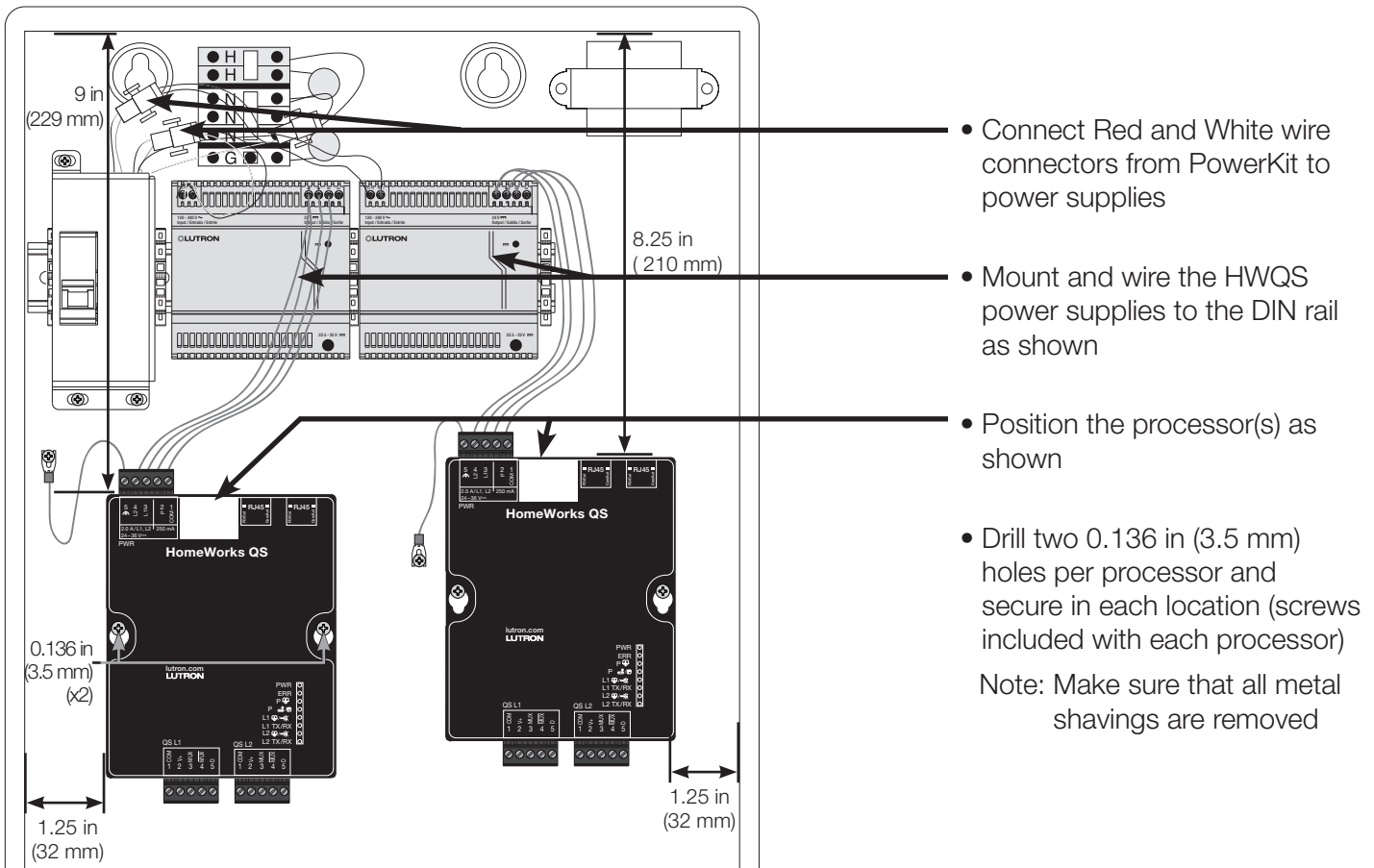


Mounting the cover for the PowerKit

Section 2B: HWI Processor Upgrade to HWQS for HWI-LV32 Enclosure Installations (continued)

4. Mount the HWQS processors into existing HWI-LV32 enclosure.
Refer to the illustration below for mounting the processor(s). The illustration shows two processors, although you may only have one.
5. Mount the 24 V== HWQS power supplies to the PNL-8-PWRKIT DIN rail and connect to the remaining red and white wire connectors as shown below.
6. Connect power from power supplies to processors.

The mounting of the processor(s) is now complete.



Mounting the HWQS processor(s)

7. Mount any interfaces or wire landing boards that were previously removed in step 1 that are intended to be used with the new HWQS system.
8. Turn on main power feed and flip PowerKit switch to “On”.

Section 2C: Upgrade Installation Checklist

Equipment

- ☐ HWQS Processor(s)
- ☐ Power Kit(s)
- ☐ Power Supplies (24 V=== for HWQS devices, 15 V=== for HWI devices)
- ☐ HWI Link Translator(s)
- ☐ Link licenses (required for each link using HWI Keypads, QED shades, or older GRAFIK Eye/WPMs)
- ☐ Lutron 4-Conductor Cable
- ☐ NM Power Cable (for HWI-PNL-8 installations)
- ☐ Ethernet Cable
- ☐ HWI-H48 Interface (when replacing processors with integrated H48 interfaces or replacing HWI-D48 interfaces)
- ☐ Wired Maestro dimmers or RF Maestro dimmers (when replacing existing wired Vareo dimmers or RF Maestro dimmers)
- ☐ Additional Low-Voltage Enclosures (when additional space is required for mounting HWQS processors or interfaces)

Database

- ☐ Convert the HWI database (1.62 or newer) to HWQS database
- ☐ Add programming and additional hardware to HWQS database
- ☐ Activate HWQS system
- ☐ Transfer database
- ☐ Test database

Lutron, HomeWorks, Sivoia, Sivoia QED, GRAFIK Eye, Maestro, Vareo, and Sivoia QED are trademarks of Lutron Electronics Co., Inc. registered in the U.S. and other countries.

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