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Application Note #840

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## Design and Programming for HomeWorks Illumination to HomeWorks QSX Upgrades

## 1.0 Overview

HomeWorks systems with QSX processors support Lutron's latest product innovations, including:

- Intelligent lighting solutions
- Retrofit shades (Palladiom wire-free, Triathlon)
- Latest luxury keypads
- PRO LED+ dimming technology
- Modern integration (LEAP)
- Remote servicing capabilities
- Enhanced app control

To take advantage of these innovative benefits, existing HomeWorks Illumination customers may want to upgrade their systems to HomeWorks QSX. This application note addresses how to upgrade from a hardware and software perspective, providing best practices to allow for the simplest possible transition from Illumination to QSX.

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Before beginning a HomeWorks Illumination to HomeWorks QSX upgrade it's best to understand how the systems compare and contrast. HomeWorks Illumination systems had dedicated link types for each product category (remote power panels, QED shades [Q96], RF, wired keypads, wired Maestro dimmers and switches [H48], Vareo dimmers [D48] and wallbox power modules (WPM), and GRAFIK Eye systems). HomeWorks QSX link types are categorized based on the communication protocol from the devices to the system, thus product categories can span across various link types on the QSX system. Below is a comparison of the HomeWorks Illumination system architecture to the HomeWorks QSX system architecture.



Note: Not all devices are shown for each system type.

For a more detailed list of the HomeWorks QSX system, reference the HomeWorks System Architecture for 120 V~ and 434 MHz regions document at: <u>https://assets.lutron.com/a/documents/homeworks\_system\_architecture.pdf</u>

For a thorough overview of the HomeWorks Illumination system architecture, reference the HomeWorks Illumination Technical Reference Guide at: <u>https://assets.lutron.com/a/documents/366-963h\_full.pdf</u>

The HomeWorks QSX system offers simplified wiring, improved design aesthetics and dimmers that are optimized for control of LED lighting. As a result of the architectural differences, it is important to understand the basics of each processor and link type in the HomeWorks Illumination system when upgrading the system to HomeWorks QSX. The following sections will provide an overview of the HomeWorks Illumination and subsequently link-by-link guidance on how to upgrade the link during the migration to the HomeWorks QSX platform.

#### 2.1 HomeWorks Illumination Processors

For those that do not have a background in HomeWorks Illumination, an understanding of the processors is very important. Like HomeWorks QSX, HomeWorks Illumination processors can be found physically installed in enclosures either at the bottom of an 8 RPM panel, such as an HWI-PNL-8, or a low-voltage enclosure. The following details give a brief overview of each HomeWorks Illumination processor's configuration options and show how they may compare to the HomeWorks QSX processors.



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#### 2.1 HomeWorks Illumination Processors (continued)

#### 2.1.1 HomeWorks Illumination 8-Series Processors

8-Series processors provided the most options for Illumination systems. These processors were intended for large scale HomeWorks Illumination systems with capabilities for module interfaces and remote power modules (RPMs) for centralized dimming. These processors included 8 links plus an Ethernet communication link.

Link Number	Link Name	Description
1	MI Link	Panel link
2	Inter-Processor Link	Provided for processor-to-processor connectivity for multi-processor projects
3	RS-232 Communication	Used for database uploads and third-party integration
4	Configurable (Keypad, H48/Q96, D48, or GRAFIK Eye/WPM)	Dedicated for specific controls categories based on the selected link configuration
5	Configurable (Keypad, H48/Q96, D48, or GRAFIK Eye/WPM)	Dedicated for specific controls categories based on the selected link configuration
6	Configurable (Keypad, H48/Q96, D48, or GRAFIK Eye/WPM)	Dedicated for specific controls categories based on the selected link configuration
7	RS-232 Communication	Used for database uploads and third-party integration
8	Configurable (RF, Keypad, H48/ Q96, D48, or GRAFIK Eye/WPM)	In addition to the configuration options for links 4-6, this link could also be configured as an RF link for wireless controls
9	Ethernet Communication	

HomeWorks Illumination 8 series processors could be pre-configured with various link types depending on the project's requirements. Links 1, 2, 3, 7 and 9 were not configurable and therefore were always predefined as shown above. Below is an illustration of the physical link layout on the processor and the link type descriptions for each model number.

8-Series Processors with a Module Interface (H8P5-MI-120, H8P5-MI-D48-120, H8P5-MI-H48-120):



8-Series Processors without a Module Interface (H8P5-120, H8P5-D48-120, H8P5-H48-120):



#### 2.1 HomeWorks Illumination Processors (continued)

#### 2.1.1 HomeWorks Illumination 8-Series Processors (continued)

HomeWorks Illumination Processor	Description	Details		
H8P5-120	Wired processor only	A module interface is not built into the processor and no links are preconfigured		
H8P5-D48-120	Wired processor with one integral dimmer interface (D48)	Link 4 is preconfigured as a D48 link		
H8P5-H48-120	Wired processor with one integral dimmer interface (H48)	Link 4 is preconfigured as a H48 link		
H8P5-MI-120	Wired processor with one integral module interface	A module interface is built into the processor		
H8P5-MI-D48-120	Wired processor with one integral module interface and one integral dimmer interface (D48)	A module interface is built into the processor and Link 4 is preconfigured as a D48 link		
H8P5-MI-H48-120	Wired processor with one integral module interface and one integral dimmer interface (H48)	A module interface is built into the processor and Link 4 is preconfigured as a H48 link		

NOTE: The model number can be found on the left hand side of the processor, near the power switch.

#### 2.1 HomeWorks Illumination Processors (continued)

#### 2.1.1 HomeWorks Illumination 8-Series Processors (continued)

#### 2.1.1.1 Upgrading HWI Systems with 8-Series Processors to HomeWorks QSX

When upgrading from HomeWorks Illumination to HomeWorks QSX it's important to understand how the installed Illumination processors could compare to the upgraded QSX processors. See the image comparison below for examples of how 8-series processors could be converted to HomeWorks QSX processors.

Applicable for 8-Series processors with a module interface: H8P5-MI H8P5-MI-H48-<sup>1</sup> H8P5-MI-D48-<sup>1</sup>



<sup>1</sup> Controls and D48 or H48 interface must be replaced by HomeWorks QSX equivalent controls with use of a wireless receiver (see section 3.4). <sup>2</sup> Include Panel Link to QS Link Translator (HQ-MI-LX) if existing RPM panels will be retained. See section 3.1 for more information.



#### 2.1 HomeWorks Illumination Processors (continued)

#### 2.1.1 HomeWorks Illumination 8-Series Processors (continued)

#### 2.1.1.1 Upgrading HWI Systems with 8-Series Processors to HomeWorks QSX (continued)

Applicable for 8-Series processors without a module interface: H8P5-H8P5-H48-1

H8P5-D48-1



<sup>1</sup> D48 and H48 equipment must be replaced by equivalent by HomeWorks QSX RF controls (see section 3.4).

#### 2.1 HomeWorks Illumination Processors (continued)

#### 2.1.2 HomeWorks Illumination 4-Series Processors

4-Series HomeWorks Illumination processors were designed for smaller scale HomeWorks Illumination systems which did not utilize a module interface and remote power modules (RPMs) for centralized dimming. Dimming was typically performed locally with wired Maestro devices and a GRAFIK Eye control unit or a smaller form of centralization using wallbox power modules (WPMs). These processors included six (6) links plus an Ethernet communication link.

Link Number	Link Name	Description
2	Inter-Processor Link	Provided for processor-to-processor connectivity
3	RS-232 Communication	Used for database uploads and third-party integration
4	Configurable (Keypad, H48/Q96, D48, or GRAFIK Eye/WPM)	Dedicated for specific controls categories based on the selected link configuration
5	Configurable (Keypad, H48/Q96, D48, or GRAFIK Eye/WPM)	Dedicated for specific controls categories based on the selected link configuration
6	Configurable (Keypad, H48/Q96, D48, or GRAFIK Eye/WPM)	Dedicated for specific controls categories based on the selected link configuration
8	RF Link <sup>1</sup>	RF link for wireless controls
9	Ethernet Communication	

<sup>1</sup> RF link 8 is only available on HRL models of 4-series processors. See below for more information.

HomeWorks Illumination 4-Series processors could be pre-configured with various link types depending on the project's requirements. Links 2 and 3 were not configurable and therefore were always predefined as shown above. Additionally, an RF link could be added if the RF 4-Series processor was selected. Below is an illustration of the physical link layout on the processor and the link type descriptions for each model number.



HomeWorks Illumination Processor	Description	Details
H4P5-120	Wired processor only	An RF link is not built into the processor and no links are preconfigured
H4P5-HRL-120	Wired processor with hybrid repeater link	The RF link 8 is built into the processor; links 4-6 are not preconfigured
H4P5-H48-120	Wired processor with one integral dimmer interface (H48)	Link 4 is preconfigured as a H48 link
H4P5-H48-HRL-120	Wired processor with one integral dimmer Interface (H48) and a hybrid repeater link	The RF link 8 is built into the processor and link 4 is preconfigured as a H48 Link

#### 2.1 HomeWorks Illumination Processors (continued)

#### 2.1.2 HomeWorks Illumination 4-Series Processors (continued)

#### 2.1.2.1 Upgrading HWI Systems with 4-Series Processors to HomeWorks QSX

When upgrading from HomeWorks Illumination to HomeWorks QSX it's important to understand how the installed Illumination processors could compare to the upgraded QSX processors. See the image comparison below for an example of how 4-series processors could be converted to HomeWorks QSX processors.

Applicable to 4-Series Processors: H4P5-H4P5-H48-<sup>1</sup> H4P5-H48-HRL-<sup>1</sup> H4P5-HRL-<sup>1</sup>

Note that the QSX processors cannot be mounted inside of an LV24. The LV24 must be replaced by and LV14 or LV21 enclosure.



<sup>1</sup> D48 and H48 equipment must be replaced by equivalent by HomeWorks QSX RF controls (see section 3.4)



### 2.1 HomeWorks Illumination Processors (continued)

#### 2.1.3 HomeWorks Illumination RF Processors (HRP5-120)

The last processor option for HomeWorks Illumination systems is the RF Series processor. This processor was intended for retrofit applications which would employ a more localized lighting control topology. This processor included 4 links plus an Ethernet communication link and offered only RF control capabilities. Below is an illustration of the physical link layout on the processor and the link type descriptions for each model number.



Link Number	Link Name	Description
2	Inter-Processor Link	Provided for processor-to-processor connectivity
3	RS-232 Communication	Used for database uploads and third-party integration
7	RS-232 Communication	Used for database uploads and third-party integration
8	RF Link	RF link for wireless controls
9	Ethernet Communication	

#### 2.1.3.1 Upgrading HWI Systems with RF Processors to HomeWorks QSX

When upgrading from HomeWorks Illumination to HomeWorks QSX it's important to understand how the installed Illumination processors could compare to the upgraded QSX processors. See the image comparison below for an example of how 4-series processors could be converted to HomeWorks QSX processors.

Applicable to RF Processors: HRP5-120

Existing RF HWI Processor with Mounting Hole Locations (Do not mount inside an enclosure) HomeWorks QSX Dual-Radio Wireless Processor (HQP7-RF-2) with Mounting Options (Do not mount inside an enclosure)



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#### 2.2 System Power Considerations

Power is required for HomeWorks Illumination systems differently than HomeWorks QSX systems. HomeWorks Illumination systems required a separate power supply for the processor, and each type of device on the system. The power supplies used in HomeWorks Illumination were 15 V== supplies (see section 3.0 for more information on device power requirements). The HomeWorks QSX wired processors are powered by 24 V== Lutron power supplies. In the QSX system power is defined in terms of Power Draw Units (PDUs). Each Lutron device that consumes power from the Lutron power supply is given a negative value and each Lutron device that supplies power is given a positive value. For HomeWorks QSX systems, PDUs are required for the wired processors (HQP7-2 & HQP7-1) **AND** any low-voltage Lutron device. When conducting upgrades from Illumination to QSX note that the old power supplies must be removed. The newer 24 V== power supplies will need to be provided for the QSX system, determine how many Lutron 24 V== power supplies are required for the QSX system in accordance with the standard QSX PDU regulations.

For more information on PDU requirements for QSX system devices reference the **Power Draw Units (PDUs) on the QS Link** document at: <u>https://assets.lutron.com/a/documents/369405\_pdu\_spec\_submittal.pdf</u>

#### 2.3 System Wiring Considerations

HomeWorks Illumination system processors had a dedicated link on the processor for connecting multiple processors together called the Inter-processor Link (link 2). HomeWorks QSX does not require a dedicated link for processor-toprocessor connectivity. Instead, each QSX processor includes two Ethernet ports for networking purposes. When upgrading from Illumination to QSX be sure to verify network requirements for the QSX system after determining how many QSX processors are required for the upgrade. The QSX processor quantity will depend not only on how many Illumination processors existed on the project, but also what link types were used in the Illumination system that are being converted to QSX link types and the system device limitations. See section 3.0 of this document for assistance with determining the best upgrade path for each HomeWorks Illumination link type and device. Section 3.0 will outline not only what devices are recommended for upgrade, but also capabilities for reusing existing HomeWorks Illumination link wire. Section 3.2 of this document details the HomeWorks QSX Networking options for multiple processor connectivity.

For more information about networking recommendations for QSX systems, refer to the **HomeWorks 16.0+ Networking Guide** at: <u>https://assets.lutron.com/a/documents/048760.pdf</u>

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The first consideration when upgrading a job from HomeWorks Illumination to HomeWorks QSX is what HomeWorks Illumination equipment is currently installed on the job site. Understanding what equipment exists and the compatible replacement QSX equipment is fundamental to conducting a successful upgrade.

The below sections will feature each individual HomeWorks Illumination link type and focus on the best practices for upgrading the link to HomeWorks QSX. The below table provides an overview of compatibility for each HomeWorks Illumination link type in QSX. Details about device compatibility and recommended upgrade solutions are provided for each link in the below sections.

HWI Link/Devices	HWI Link Number	Supported by QSX?	Notes	Can Wire be Reused?
Panel Link	Link 1	Yes	Older modules and module interfaces may need to be replaced to maintain compatibility with HomeWorks QSX (see Section 3.1)	Yes
Inter-Processor Link	Link 2	N/A	HomeWorks QSX processors are connected via the Ethernet ports built into the processor (see Section 3.2)	No
RS-232 Port	Links 3 & 7	No	Utilize LEAP integration via the QSX processor (see Section 3.3)	N/A
HWI Keypads	Links 4, 5 & 6	No	Replace with Palladiom or seeTouch QS keypads (see Section 3.4.1)	Yes
Wired Maestro Dimmers (H48)	Links 4, 5 & 6	No	Replace with RF Maestro dimmers (see Section 3.4.2)	Yes
Sivoia QED Shades (Q96)	Links 4, 5 & 6	No	Replace with Sivoia QS shades (see Section 3.4.3)	Yes
GRAFIK Eye Control Units/WPMs	Links 4, 5 & 6	No	Replacement options vary depending on the existing unit (see Section 3.4.4)	Yes
HomeWorks Vareo Dimmers (D48)	Links 4, 5 & 6	No	Replace with RF Maestro dimmers (see Section 3.4.5)	Yes
HWI RF Link	Link 8	No	Replace with CCA Link (see Section 3.5)	Yes

#### 3.1 Link 1: HWI MI Link

There are multiple options to upgrade the MI link, also known as the panel link, from a legacy HomeWorks system to HomeWorks QSX.

- 1. Retain the existing panel link equipment
- 2. Replace all existing remote power module (RPM) panels with DIN modules
- 3. Replace with Lutron Intelligent Lighting solutions such as Ketra, Rania, Lumaris, etc.
- 4. A combination of any of the above options.

The needs of the upgrade will determine what option is required for the project. If fixtures are being replaced, consider options 2 or 3 for the upgrade. If fixtures are not being replaced, option 1 to retain the existing panel link infrastructure offers a simpler and more cost-effective solution for the upgrade. Each option requires different considerations and new equipment to achieve the upgrade. Review the following sections for more information about these considerations.

#### 3.1 Link 1: HWI MI Link (continued)

#### 3.1.1 Retaining the Existing MI Link

Choosing to retain the existing panel link will require each existing module interface, specification grade panel interface or circuit selector to be replaced with a Panel Link to QS Link Translator (HQ-MI-LX). This will allow the QS link on the HomeWorks QSX system to communicate with the existing RPMs or dimmer cards and eliminates the need to replace the panels that were used in the HomeWorks Illumination system. Panel link wiring and manual override can be reused for the HomeWorks QSX system. Each Panel Link to QS Link Translator will count as one device on the QS Link. With this option no link limitations will be exceeded if converting one entire panel link to a new QS link because like the HomeWorks Illumination panel link, the HomeWorks QSX QS link can control up to 512 zones. Note that the new panel label provided with the Panel Link to QS Link translator must be placed on the front of the existing panel cover to conclude this replacement. When manual override mode is enabled:

- All lighting loads will go to the programmed level
- All fan loads are unaffected
- All motor loads will stop any ongoing operation

When implementing this conversation begin by considering if remote power module (RPM) panels or panels with circuit selectors (GP or LP Panels) exist and will be reused for the HomeWorks QSX system.

**Note:** Use of the Panel Link to QS Link Translator does not add to or extend the warranty of any of the legacy panel equipment that is being retained on the system.

#### 3.1.1.1 Upgrading Remote Power Module (RPM) Panels to HomeWorks QSX

The Panel Link to QS Link translator is compatible with the following feed-through and breaker panels:

Feed-Through Panels

- HWI-PNL-5
- HWI-PNL-8

Breaker Panels

- HWBP-8D-15-120L3
- HWBP-8D-20-120L3
- HWBP-8D-15-120L4
- HWBP-8D-20-120L4
- HWBP-2S-15-120L3
- HWBP-2S-20-120L3
- HWBP-2S-15-120L4
- HWBP-2S-20-120L4

#### 3.1 Link 1: HWI MI Link (continued)

#### 3.1.1 Retaining the Existing MI Link (continued)

#### 3.1.1.1 Upgrading Remote Power Module (RPM) Panels to HomeWorks QSX (continued)

The panel link to QS link translator will be installed in the RPM panel where the existing MI link was located. The MI link would have been powered by the MI link 15 V $\sim$  power supply. The panel link to QS link translator can be powered by either the existing MI power supply, or the new QS link power supply. See the below images for power and wiring details for each replacement scenario.

#### The MI was installed into the RPM Panel

#### Module Interface BEFORE Upgrade

MI required hot and neutral connection for power directly from the RPM main. 15 V=== link power was not used.

#### Panel Link to QS Link Translator AFTER Upgrade

Existing hot and neutral connection for power from the RPM main will be reused to power the panel link to QS link translator. Re-use panel link wiring to connect translator to the QS link. Pin 2 remains not connected as the translator is powered from the MI's AC transformer and the translator does not source PDUs.



For detailed installation instructions refer to the **Panel Link to QS Link Translator installation guide** (P/N 043612) at www.lutron.com

#### 3.1 Link 1: HWI MI Link (continued)

3.1.1 Retaining the Existing MI Link (continued)

#### 3.1.1.1 Upgrading Remote Power Module (RPM) Panels HomeWorks to QSX (continued)

The MI was built into the 8-Series HomeWorks Illumination Processor

#### Module Interface BEFORE Upgrade

MI was built into the processor and therefore was powered from the same source as the processor.

#### Panel Link to QS Link Translator AFTER Upgrade

The panel link to QS link translator is powered by the new QS link power supply. Splice the 24 V== power wire and common wire between the QS link power supply and the HomeWorks QSX processors to provide power to the panel link to QS link translator. Use the PNL-8-PWRKIT to mount the new power supply and processor inside the existing enclosure.



#### 3.1.1.1.1 Remote Power Module Compatibility

The following RPMs are compatible with the panel link to QS link translator. However, RPMs shipped prior to 2003, L01 date code and older, have the potential for compatibility issues with the HomeWorks QSX system. It is recommended to replace these units built prior to 2003 with an RPM to DIN Subplate and DIN modules. 4U modules with compatibility issues will have a white unit label instead of red.

QS Link 1,2

- HW-RPM-4A
- HW-RPM-4E<sup>3</sup>
- HW-RPM-4J
- HW-RPM-4FSQ
- HW-RPM-4MHW-RPM-4R
- HW-RPM-4U
- GRX-TVM2
- <sup>1</sup> Pin 2 not connected.
- <sup>2</sup> During installation, ensure the wires are tucked within the enclosure.

<sup>&</sup>lt;sup>3</sup> In HomeWorks QSX, the older HW-RPM-4E is no longer directly supported. Reverse-phase dimming is accomplished using the HW-RPM-4A phase-adaptive dimming module. Any installations that are being upgraded containing 4E modules can keep the existing 4E modules as part of the HomeWorks QSX system. When constructing the new HomeWorks QSX database, the 4E will need to be simulated using a 4A module in the programming software. See section 4.3 of this document for instructions on how to accomplish this.



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#### 3.1 Link 1: HWI MI Link (continued)

#### 3.1.1 Retaining the Existing MI Link (continued)

#### 3.1.1.2 Upgrade HomeWorks Specification Grade Panels to HomeWorks QSX

The panel link to QS link translator is compatible with the following specification grade panels:

- HS3-
- HS4-
- HS8-
- HS16-
- HS24-
- HS36-
- HS72-

HomeWorks specification grade panels can be upgraded to work with HomeWorks QSX similarly to RPM panels. Inside of each specification grade panel is at least one HS-REP-SPI interface. The amount of interfaces per panel varies and depends upon the quantity of dimming cards being controlled. Each HS-REP-SPI must be replaced by a panel link to QS link translator (HQ-MI-LX).

Note that out of the box, the HQ-MI-LX uses a baud rate that is aligned with the HWI-MI interface but not the baud rate that the SPI uses. The baud rate must be changed using the Lutron Designer software. Use the following steps to change the baud rate to the appropriate setting for any HQ-MI-LX replacing an SPI.

	Baud Rate Settin	Ig		×
ipment L	If you are unable to c panel, changing the b for baud rate changes baud rate set locally o Baud Rate:	ontrol some baud rate ma s to take effe on the interfa HI-1 HI-1	loads connected y fix that. You m ct, which will ov ice.	d to this ust transfer erride the
0		HI-2		Done
			3-4	Adaptive M
				A densities Ad

- 1. Navigate to Design > Equipment and locate the spec grade panels where the HQ-MI-LX interfaces are located.
- 2. Below the panel select "Show Baud Rate Setting".
- 3. Use the dropdown menu to select HI 2. Repeat this for each HQ-MI-LX that is replacing an SPI.
- 4. Transfer the database.

#### 3.1 Link 1: HWI MI Link (continued)

#### 3.1.1 Retaining the Existing MI Link (continued)

#### 3.1.1.3 Upgrading Panels with Circuit Selectors to HomeWorks QSX

Occasionally panels would be utilized on residential projects that were typically found in a commercial environment. These panels would include specification grade GP panels with dimming cards instead of modules and an interface called a circuit selector instead of the module interface. Other panel types would be LP and XP panels. These panels could be similar in size and appearance to a PNL-8 panel and would contain modules which appeared to be similar to RPMs with the exception that the model numbers of these modules would begin with LP or XP instead of HW. These panels would also contain circuit selectors.

#### 3.1.1.3.1 GP Specification Panel Upgrades

Upgrading specification panels with dimming cards requires a replacement of the circuit selector. Additionally, it is recommended to replace any dimming cards with a date code prior to 2003. If the dimmer cards are not replaced, the baud rate of the cards must be verified to ensure the Panel Link to QS Link Translator is set to a compatible baud rate prior to commissioning. The first thing to determine is which dimming cards are in the panel. First identify the label color on the circuit selector interface.

- Black Label Circuit Selector 2 (CS2) Controller
- Blue Label Circuit Selector 1 (CS1) Controller

If the circuit selector is a CS1, with a blue colored product label, all dimming cards are recommended to be replaced with current shipping versions.

If the circuit selector is a CS2, with a black colored product label, the baud rate of the CS2 must be verified. The CS2 could communicate to both older and newer dimming cards. The baud rate setting determines which dimming cards are present.

To identify the baud rate on the CS2, follow the steps below to enter setup mode on the CS2.

**NOTE:** Must be on site to complete these steps.

- 1. If the circuit selector is locked ("Lc" is displayed), you must first unlock the circuit selector.
  - a. Power down the processor the circuit selector is connected to (this must remain off or the processor will not allow the CS2 to be unlocked).
  - b. Hold buttons 3 and 4 on the circuit selector.
- c. Keep holding buttons 3 and 4 until the View Value LED is lit solid. Now the CS2 is unlocked.
- 2. Go into the 2<sup>nd</sup> level menu by pressing and holding buttons 2 and 5 for nine seconds (until Select Value LED blinks).
- 3. Within 5-10 seconds of completing the previous step, go into the 3<sup>rd</sup> level menu by pressing and holding buttons 1, 2, and 5 until Select Value LED blinks.
- 4. Use button 5 on the CS2 to navigate down until the circuit 7-segment display shows "bd". Verify the baud is set for "HI 1". If the baud rate is not set to "HI 1" then the baud rate must be changed on the panel link to QS link translator.
- 5. Exit to View Value mode by holding buttons 1 and 5 until View Value LED turns on.

#### 3.1 Link 1: HWI MI Link (continued)

#### 3.1.1 Retaining the Existing MI Link (continued)

#### 3.1.1.3 Upgrading Panels with Circuit Selectors to HomeWorks QSX (continued)

#### 3.1.1.3.1 GP Specification Panel Upgrades (continued)

The baud rate on the panel link to QS link translator can be changed in the Lutron Designer software. By default, the panel link to QS link translator is set to a baud rate of HI-1. Follow these steps to change the baud rate in the HomeWorks QSX software for each panel link to QS link translator that needs to be changed to a baud rate of HI-2. **NOTE:** this needs to be completed after the HomeWorks Illumination Database is converted to QSX. See section 4.0 of this document for more information on database conversions.

- Build Rate Setting
   Control some loads connected to this bone loads connected to this bone loads connected to this bone loads that may fink that. No must transfer to boot dire as of that the load t
- 1. Navigate to Design > Equipment and locate a panel with a HQ-MI-LX.
  - 2. Below the panel select "Show Baud Rate Setting."
  - 3. Use the dropdown menu to select HI 2. Repeat this for each HQ-MI-LX that must be set to HI-2.
  - 4. Transfer the database.

The circuit selector interfaces must be replaced with the HQ-MI-LX. Note that GP panels with greater than 24 circuits required multiple circuit selectors and each circuit selector must be replaced with the panel link to QS link translator.



Circuit Selector

GP Panel with Black Labeled Circuit Selector

#### 3.1.1.3.2 LP Panel Upgrades

LP panels have a similar appearance to legacy HomeWorks remote power module panels in both the size of the panel and types of modules used for dimming and switching. These modules can be used in a HomeWorks QSX system as long as it is verified that the modules communicate using the standard 4-wire harness seen in panels with HW-RPMs and that they are newer than the L01 date code. The circuit selector interface needs to be replaced with an HQ-MI-LX.



Circuit Selector

LP Panel with Black Labeled Circuit Selector

#### 3.1 Link 1: HWI MI Link (continued)

#### 3.1.2 Upgrading RPM Panels to DIN Panels

Replacing all RPMs with DIN modules provides superior dimming and switching performance. To replace the existing RPMs with new DIN modules, consider what DIN modules are compatible with similar load types to each RPM, the panel enclosures, and link limitations.

#### 3.1.2.1 RPM to DIN Load Type Compatibility

If fixtures that were used with the HomeWorks Illumination system are replaced it could be beneficial to procure fixtures that will utilize similar control wiring. For that reason, in many cases replacing the RPMs will require a direct equivalent DIN module. Below is a list of the compatible DIN modules with each RPM.

RPM	Compatible Load Types	Din Module Suggested Replacement	Compatible Load Types
HW-RPM-4A     INC, MLV, ELV, NCC, F2W     I       Adaptive Dimming Module     I     I		LQSE-4A5-120-D LED+ Phase Adaptive DIN Rail Module <sup>1</sup>	LED reverse-phase, LED forward-phase, INC/HAL, ELV, NCC, MLV, Lutron Hi-lume A-series LTE
HW-RPM-4E     INC, ELV       ELV Dimming Module     INC, ELV		LQSE-4A5-120-D LED+ Phase Adaptive DIN Rail Module <sup>1</sup>	LED reverse-phase, LED forward-phase, INC/HAL, ELV, NCC, MLV, Lutron Hi-lume A-series LTE
HW-RPM-4J     INC, MLV, ELV, NCC, F2W       Adaptive Dimming Module     INC, MLV, ELV, NCC, F2W		LQSE-4A5-120-D LED+ Phase Adaptive DIN Rail Module <sup>1</sup>	LED reverse-phase, LED forward-phase, INC/HAL, ELV, NCC, MLV, Lutron Hi-lume A-series LTE
HW-RPM-4FSQ Quiet Fan Speed Control Module	Fan Motor	N/A – For Fan Speed Control Maestro or Sunnata Fan Spee HRST-ANF). <b>DO NOT PLACE</b> <b>THE PANEL.</b> HQRx-2ANF or output used.	in HomeWorks QSX use the d control (HQRD-2ANF or THESE FAN CONTROLS IN HRST-ANF <sup>3</sup> needed for each
HW-RPM-4M         INC, Motor (Bi-Directional)           Motor Interlock Module         INC, Motor (Bi-Directional)		LQSE-4M-120-D Motor Control Power Module <sup>2</sup>	AC motors
HW-RPM-4RSwitched Lighting,Relay Module1/3 HP Motor		LQSE-4T20-120-D Switching DIN Rail Module	Switched lighting, switched receptacles, 1 HP Motor, 0-10V
HW-RPM-4U Dimming Module	INC, MLV, NCC, F2W, SFL	LQSE-4A5-120-D LED+ Phase Adaptive DIN Rail Module <sup>2</sup>	LED reverse-phase, LED forward-phase, INC/HAL, ELV, NCC, MLV, Lutron Hi-lume A-series LTE
HW-RPM-4U + Two GRX- TVM2 Dimming Module + 0-10V Control	0-10V	LQSE-4T20-120-D Switching DIN Rail Module	Switched lighting, switched receptacles, 1 HP Motor, 0-10V
Amperage rating per output on the sug is lower than the output ratings on the specification sheets to determine exac compatibility. For INC lighting loads replace with the Load rating is not equivalent to output	ggested DIN replacement RPM. Review product t replacement load LQSE-4A5-120-D. of 4FSQ.	- C- INC: Incandescent MLV: Magnetic Low-Voltage	ELV: Electronic Low-Voltage SFL: Switched (non- dim) Fluorescent



1

2

#### 3.1 Link 1: HWI MI Link (continued)

#### 3.1.2 Upgrading RPM Panels to DIN Panels (continued)

#### 3.1.2.2 Panel Enclosures

DIN modules are DIN rail mounted and therefore cannot be mounted in RPM panels. However, the DIN retrofit subplate (PD8-PNL-8-SUB) can be used for 8-position RPM panels ONLY. If 8-position RPM panels were not used on the project, the panel enclosure must be replaced with a DIN panel enclosure to house the new DIN modules.

#### 3.1.2.3 Link Limitations

Each panel link for the HomeWorks Illumination system could control up to 128 devices and 512 zones. The QS link can control up to 512 zones but is limited to a maximum of 99 devices. For that reason, when converting RPM panels to DIN panels, additional QS links may be required to account for the total quantity of DIN modules. This could result in the need for additional HomeWorks QSX processors. The below image provides one example for upgrading a fully loaded MI RPM panel link to QS links with DIN modules.

#### **HomeWorks Illumination**

Device Totals: (1) HomeWorks Illumination Processor (1) Configured Processor Link (16) Remote Power Panels (128) 4A Remote Power Modules (512) Lighting Zones

#### HomeWorks QSX

Device Totals: (1) HomeWorks QSX Processor (2) Configured Processor Links (16) DIN Retrofit Subplate (128) 4A5 DIN Modules (512) Lighting Zones



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#### 3.1 Link 1: HWI MI Link (continued)

#### 3.1.3 Upgrade to Intelligent Lighting

Another option for upgrading the legacy MI link could be to upgrade the fixtures to native Lutron intelligent light sources. Intelligent light sources provide the highest level of light quality, highest level of experience and natively communicate to the system so there is no need to worry about dimmer compatibility. Some of the light sources require access above the ceiling or the ceiling to be re-done:

- 1. Ketra D2 and D3
- 2. Rania D2

NOTE: All circuits would be wired hot in this scenario.

Many of the intelligent light sources can be retrofitted into existing homes with no major modification including:

- 1. Ketra lamps (A20, S30 and S38)
- 2. Ketra retrofit downlight (D4R)
- 3. Ketra linear (G2 and LS0)
- 4. Lumaris tape light

Utilizing Lutron's intelligent lighting to replace the legacy MI link would not require a configured link from the wired processor on the HomeWorks QSX system. Instead, use the dual radio processor or the CCX gateway and follow standard QSX system rules to establish a robust CCX network.

For more information about CCX recommendations for QSX systems, refer to the **Clear Connect System Type X Best Practices** Application Note #745 (P/N 048745) at:

https://mylutronservices.lutron.net/passwordprotecteddocumentlibrary/048745.pdf

#### 3.2 Link 2: Inter-Processor Link

All communication between processors in a HomeWorks QSX system is done via IP communication over Ethernet. There is no need for an RS-485 based inter-processor link, as was utilized in HomeWorks Illumination systems. There are two Ethernet ports per QSX processor. All processors on a system need to be on the same Local Area Network (LAN). Often, each processor is tied into its own switch or router port, but up to 5 processors may be daisy-chained off of one switch or router port.

To connect multiple HomeWorks QSX processors together, the original 4-conductor Lutron cable will be replaced by Cat5e (minimum) Ethernet cable. The system can be networked in the following ways:



Standard Networking: Connection Using an Ethernet Hub/Switch/Router

#### Ad-Hoc Networking: Direct Ethernet Connection from PC to Processors



For more information on networking in a HomeWorks QSX system, refer to the **HomeWorks 16.0+ Networking Guide** at: <u>https://assets.lutron.com/a/documents/048760.pdf</u>



#### 3.3 Links 3 & 7: RS-232 Communication Port

HomeWorks Illumination processors had either one or two RS-232 ports which were typically used for system database uploads and integration with third-party systems. All communication with the HomeWorks QSX processors is done over the Local Area Network (LAN) for both uploads and third-party integration. For integrations that still require RS232, use an RS232 to Ethernet converter (not provided by Lutron) to allow the integration to communicate with the HomeWorks QSX processor over the LAN. Note that integration through the converter is one-way integration and not bi-directional. Integrations that are moving to a LEAP-based integration will need to be re-programmed and may require replacement of some of the third-party devices to make them compatible.

#### 3.4 Links 4, 5 & 6: Configurable Links

Links 4, 5, and 6 on the HomeWorks Illumination system could be configured as either a keypad link, wired H48 Maestro link, QED shade link, GRAFIK Eye/WPM link, or wired D48 Vareo dimmer link. All of these legacy links will need to be replaced with a QS wired link, CCA link or CCX devices. Below is a list of recommended link replacements for each legacy product category. The following sections will provide more details about recommended device replacement and wiring considerations. Use this section to determine what HomeWorks QSX devices are needed, the links that are required for the HomeWorks QSX system, and the quantity of links needed. This will assist with understanding how many QSX processors and QS power supplies are required for the upgrade.

HomeWorks Illumination Link	Device Power Requirements	Recommended QSX Link Replacement	QSX Power Requirements
HWI Keypad Link	15 V power supply for each keypad link	QS wired	24 V power supply for QS device power draw units <sup>1</sup>
Wired Maestro Link (H48)	120 V~ line voltage	CCA or CCX	CCA Link: 24 V=== power supply for hybrid repeater device power draw units <sup>1</sup> CCX Processor/Gateway: POE CCA & CCX Devices: 120 V~ line voltage
Sivoia QED Shade Link (Q96)	10 output transformer panel provides 15 V low- voltage power for Sivoia QED shades. The panel powers up to 10 Sivoia QED Electronic Drive Units (EDUs).	QS wired with Sivoia QS shades	10 output transformerpanel provides 24 V== low-voltage power for Sivoia QS shades. The panel powers up to 10 Sivoia QS electronic drive units (EDUs).
GRAFIK Eye Control Units/WPMs Link	15 V power supply for each keypad link	QS wired or CCA	QS or CCA Link: 24 V=== power supply for QS device power draw units <sup>1</sup> CCA Devices: 120 V~ line voltage
HomeWorks Vareo Dimmer Link (D48)	120 V∼ line voltage	CCA or CCX	CCA Link: 24 V=== power supply for hybrid repeater device power draw units <sup>1</sup> CCX Processor/Gateway: POE CCA & CCX Devices: 120 V~ line voltage

<sup>1</sup> For more information on Power Draw Units, refer to the **Power Draw Units (PDUs) on the QS Link** document at: <u>https://assets.lutron.com/a/documents/369405\_pdu\_spec\_submittal.pdf</u>

#### 3.4 Links 4, 5 & 6: Configurable Links (continued)

#### 3.4.1 Replacing Wired Keypads

All existing legacy HomeWorks keypads must be replaced with HomeWorks QSX keypads. The legacy wired keypads utilize the same wiring infrastructure as the QS wired link in a HomeWorks QSX system. The power infrastructure would need to be updated from 15 V=== power supplies to 24 V=== QS power supplies.

The next step would be to determine which style of HomeWorks QSX keypad will be used as the replacement. This decision will take into account a number of variables including replacing the existing programming functionality of the existing keypad as well as the desired aesthetic to coordinate with the interior design. As the programming is as old as the legacy system, the programming is often upgraded along with the hardware to account for an evolving lifestyle of the client and in those cases exactly replicating the same button quantity may not matter. The below cross-reference chart illustrates which HomeWorks QSX seeTouch and Palladiom keypads deliver similar functionality for each model number of wired HomeWorks Illumination keypad.

Lastly, consider that the keypad link on the legacy HomeWorks system supported up to 32 devices on each link. The QS wired link can support up to 99 devices. When upgrading legacy keypads to QS wired keypads, there is the potential that two keypad links could be combined into one QS wired link. The ability to combine links could depend on the quantities of devices that require replacements, as well as the existing wiring. If two keypad links were wired to the same equipment room, consider combining the links into one QS wired link after determining how many replacement QS wired keypads are required using the below cross-reference chart.

			R	eplacemen	t Alternatives	
	HomeWorks Illumination Mod	el Number	QS seeTouch Wired Model N	lumber	QS Palladiom Model Numb	ber
	STWD-1B	1 Gang	HQWx-W1B	1 Gang	HQWT-B-P2W	1 Gang
	STWD-2B	1 Gang	HQWx-W2BS	1 Gang	HQWT-B-P2W	1 Gang
	STWD-3B	1 Gang	HQWx-W3BS	1 Gang	HQWT-B-P3W	1 Gang
	STWD-3BRL	1 Gang	HQWx-W3BSRL	1 Gang	HQWT-B-PRW	1 Gang
	STWD-4B	1 Gang	HQWx-W4BS	1 Gang	HQWT-B-P4W	1 Gang
	STWD-4FS	1 Gang	HQWx-W4S	1 Gang	HQWT-B-P3W + HQWT-B-P3W	2 Gang
seeTouch	STWD-4S	1 Gang	HQWx-W4S	1 Gang	HQWT-B-P2W + HQWT-B-PRW	2 Gang
Kevpads	STWD-4SIR	1 Gang	HQWx-W5BIR	1 Gang	HQWT-B-P2W + HQWT-B-PRW	2 Gang
	STWD-5B	1 Gang	HQWx-W5B	1 Gang	HQWT-B-P2W + HQWT-B-P3W	2 Gang
	STWD-5FS	1 Gang	HQWx-W6B	1 Gang	HQWT-B-P3W + HQWT-B-P3W	2 Gang
	STWD-5BRL	1 Gang	HQWx-W5BRL	1 Gang	HQWT-B-P2W + HQWT-B-PRW	2 Gang
	STWD-6B	1 Gang	HQWx-W6B	1 Gang	HQWT-B-P3W + HQWT-B-P3W	2 Gang
	STWD-6BRL	1 Gang	HQWx-W6BRL	1 Gang	HQWT-B-P3W + HQWT-B-PRW	2 Gang
	STWD-7B	1 Gang	HQWx-W7B	1 Gang	HQWT-B-P3W + HQWT-B-P4W	2 Gang
	HWI-KP5	1 Gang	HQWx-W7B	1 Gang	HQWT-B-P3W + HQWT-B-P4W	2 Gang
	HWI-KP10	1 Gang	HQWx-W5B + HQWx-W7B	2 Gang	HQWT-B-P4W x 3	3 Gang
Architectural Slim	HWI-KP15	2 Gang	HQWx-W5B x 2 + HQWx-W7B	3 Gang	HQWT-B-P4W x 4	4 Gang
and Large Button	HWI-KP-LB6	1 Gang	HQWx-W6B	1 Gang	HQWT-B-P3W + HQWT-B-P3W	2 Gang
	HWI-KP-LB9	2 Gang	HQWx-W4BS + HQWx-W5B	2 Gang	HQWT-B-P3W x 3	3 Gang
	HWI-2B	1 Gang	HQWx-W2BS	1 Gang	HQWT-B-P2W	1 Gang

**NOTE:** Depending on the button quantity needed to deliver equivalent functionality, additional keypads may need to be ganged.

#### 3.4 Links 4, 5 & 6: Configurable Links (continued)

#### 3.4.2 Replacing Wired Maestro Devices (H48)

All existing wired Maestro devices must be replaced with similar HomeWorks QSX RF models. The wired Maestro devices in legacy HomeWorks systems utilize standard 120 V~ power and load wiring in addition to low-voltage communication wires that connect each device back to the H48 interface card using a two-wire bus protocol. There are 6 total busses with a maximum of 8 wired Maestro devices per bus for a total of 48 wired Maestro devices per card. Up to four H48 interface cards can be connected to a H48 Link. The following table highlights the key specs of the H48 link architecture:

H48 Link				
Number of H48 interfaces per link max				
Number of H48 Maestro devices per link max				
Number of H48 Maestro devices per interface card				
Number of H48 devices per bus	8			

HomeWorks QSX RF dimmers communicate with the system via either CCA or CCX wireless communication and the dimmers require standard 120 V~ power and load wiring. For that reason, the 120 V~ wiring used for the H48 wired Maestro devices can be reused for the HomeWorks QSX wireless dimmers, and the low-voltage control wire can be capped or removed.

#### H48 Dimmer Wiring BEFORE Upgrade

Maestro wired dimmers required violet and gray connections for communication via Class 2, 1-pair twisted/ shielded 18–22 AWG (1.0–0.5 mm<sup>2</sup>) cable.



#### RF Maestro Dimmer Wiring AFTER Upgrade

Existing violet and gray communication wires should be capped



#### 3.4 Links 4, 5 & 6: Configurable Links (continued)

#### 3.4.2 Replacing Wired Maestro Devices (H48) (continued)

The next step would be to figure out which HomeWorks QSX dimmer would allow for similar functionality and performance. The below cross-reference chart illustrates which HomeWorks CCA RF Maestro dimmers and CCX Sunnata dimmers deliver equivalent functionality for each model number of wired H48 Maestro dimmers.

HomeWorks Illumination Wired	Replacement Options HomeWorks QSX RF Model		
Maestro (H48) Model	Maestro	Sunnata	
HWD-6D	HQRx-PRO <sup>3</sup>	HRST-PRO-N <sup>1</sup>	
HWD-6ND	HQRx-6ND <sup>3</sup>	HRST-PRO-N	
HWD-10D	HQRx-10D <sup>3</sup>	HRST-PRO-N <sup>1</sup>	
HWD-10ND	HQRx-10ND <sup>3</sup>	HRST-PRO-N	
HWD-5NE	HQRx-PRO <sup>3</sup>	HRST-PRO-N	
HWD-8ANS	HQRx-8ANS <sup>3</sup>	HRST-8ANS	
HWD-2ANF	HQRx-2ANF <sup>3</sup>	HRST-ANF <sup>2</sup>	

<sup>1</sup> Sunnata dimmers and switches require a neutral and cannot be programmed to control loads that are not directly wired to the dimmer.

The Sunnata fan control maximum amperage is 1.5 A, less than the maximum amperage of the wired Maestro fan control. Verify fan amperage requirements to ensure compatibility with Sunnata fan control.

x = A for Architectural or D for Designer.

**NOTE:** Many of the older Satin Colors have been discontinued. Colors may need to change.

**NOTE:** 240 V $\sim$  Maestro controls are not supported in HomeWorks QSX.

Lastly, the RF Maestro and Sunnata dimmers require a wireless transceiver to communicate with the HomeWorks QSX system. As previously stated, each H48 wired Maestro link could control up to 192 wired Maestro dimmers. In HomeWorks QSX, each CCA link can control up to 95 wireless devices. Each CCX gateway or dual radio processor can control up to 100 CCX devices. For that reason, the final step is to determine how many wireless transceivers and/or wireless links are required based on the number of replacement wireless dimmers.

Adding RF also adds the ability to take advantage of newer features for CCA and/or CCX such as, Palladiom wire-free shades, battery powered Roman shades, intelligent lighting solutions such as Lumaris, Rania or Ketra, Radio Powr Savr sensors, and Pico wireless controls. To use the CCX Sunnata controls as a replacement, at least one dual radio processor (HQP7-RF-2) or one CCX gateway (HQP7-RF) will be required. Note that the gateway must be used with at least one system processor (HQP7-2. HQP7-1 or HQP7-RF-2). In order to use a CCA link, at least one hybrid repeater (HQR-REP-120) will need to be purchased and physically wired back to the HomeWorks QSX processor's configurable link. Additional hybrid repeaters may be required to extend the communication range.

#### 3.4 Links 4, 5 & 6: Configurable Links (continued)

#### 3.4.2 Replacing Wired Maestro Devices (H48) (continued)

The below image provides one example for upgrading a fully loaded legacy H48 Maestro link to HomeWorks CCA links with RF Maestro devices.

#### **HomeWorks Illumination**

- Device Totals:
- (192) Wired Maestro Controls
- (1) HomeWorks Illumination Processor
- (1) Configured Processor Link
- (4) H48 Dimmer Interfaces

## Equipment Room HomeWorks Maestro Wired Control QTY: 48 HWI 8-Series Processor QTY: 1

#### HomeWorks QSX

Device Totals: (192) RF Maestro Controls (2) HomeWorks QSX Processors (3) Configured Processor Link (QTY depends of coverage) Hybrid Repeater



**NOTE:** The quantity of hybrid repeaters may vary depending on device locations. If additional wireless CCA range is required for a CCA link, consider using a dual radio processor (HQP7-RF-2), instead of a wired CCA link from a wired processor, to cover an additional approximate 2500 ft<sup>2</sup> (232 m<sup>2</sup>).

#### 3.4 Links 4, 5 & 6: Configurable Links (continued)

#### 3.4.3 Replacing Sivoia QED Shades (Q96)

The Q96 is an interface used to allow control of up to 96 Sivoia QED shades in HomeWorks Illumination. Q96 interfaces are not supported in HomeWorks QSX. All QED shades or shade drives must be replaced with Sivoia QS. It is recommended to replace the shades, not just the shade drives, because in many cases the client will require new fabric or other updates to the shades during the upgrade process anyway. Additionally, the QED shade power supplies must also be replaced with QS shade power supplies.

The first thing to consider when upgrading QED shades to Sivoia QS are the specs for the Q96 link architecture compared to the QS wired link specs. The following table highlights the key specs of the Q96 link architecture:

Q96 Link Limitations	
Number of Q96 interfaces per link max	4
Number of QED shades per Q96 interface	96
Number of QED shades per link max	256

As shown in the table, the maximum number of shades each Q96 link could support was 256. In HomeWorks QSX, the maximum number of devices per QS wired link is 99. For that reason, when upgrading to Sivoia QS shades, additional QS wired links may be required to support the total quantity of shades from one existing Q96 link. Below is an example of upgrading one near fully loaded Q96 link to QS wired link with Sivoia QS shades.

#### **HomeWorks Illumination**

Device Totals:

- (1) HomeWorks Illumination Processor
- (1) Configured Processor Link
- (1) Q96 Integrator for HomeWorks and Sivoia QED
- (25) QED Shade Power Panel

(250) QED Shades



Device Totals: (2) HomeWorks QSX Processors (3) Configured Processor Links (25) QS Shade Power Panel (250) Sivoia QS Shades





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#### 3.4 Links 4, 5 & 6: Configurable Links (continued)

#### 3.4.3 Replacing Sivoia QED Shades (Q96) (continued)

When upgrading a Q96 link, the existing processor link wire can be reused for the QS wire in the HomeWorks QSX system. The existing shade wiring (from the QED shade power supply to each QED shade drive) can also be reused to wire the new Sivoia QS shades to the new QS shade power supply. However, the shade wiring must be reconfigured to be capable of controlling the QS wired shades. The below image illustrates how the new Sivoia QS shades can reuse the existing shade wiring.

#### QED Shade Wiring BEFORE Upgrade

QED shades required 7-conductor wire.



А	Power Supply	Three (3) conductors 16–20 AWG (1.5 – 0.5 mm <sup>2</sup> )
В	Shade Communicaiton	Four (3) conductors 18 AWG (0.75 mm <sup>2</sup> ), twisted and shielded
С	Sivoia QED Communication Link	Four (3) conductors 18 AWG (0.75 mm <sup>2</sup> ), twisted and shielded

#### 3.4 Links 4, 5 & 6: Configurable Links (continued)

#### 3.4.3 Replacing Sivoia QED Shades (Q96) (continued)

#### Sivoia QS Shade Wiring AFTER Upgrade

QS wired shades required 4-conductor wire. Reuse the existing 7-conductor QED shade wire and cap all unused wires.

4-Pin Terminal Block



А	Power Supply	Three (3) conductors 16–20 AWG (1.5 – 0.5 mm <sup>2</sup> )
В	Shade Communicaiton	Four (3) conductors 18 AWG (0.75 mm <sup>2</sup> ), twisted and shielded
С	Sivoia QED Communication Link	Four (3) conductors 18 AWG (0.75 mm <sup>2</sup> ), twisted and shielded

For more information on swapping QED drives with QS drives refer to the **Sivoia QS Shade Drive Upgrade Guide** at: <a href="https://www.lutron.com/TechnicalDocumentLibrary/Sivoia%20QS%20Shade%20Upgrade%20App%20Note%20-%20Rev%20A.pdf">www.lutron.com/TechnicalDocumentLibrary/Sivoia%20QS%20Shade%20Upgrade%20App%20Note%20-%20Rev%20A.pdf</a>

**NOTE ABOUT QED KEYPADS/CONTROLS:** QED keypads (model number SVQ-xxx) may exist on an existing HomeWorks Illumination QED link. These keypads must be replaced to support the new Sivoia QS shades. A suggested replacement for existing QED keypads is a Pico wireless control and wallbox adapter. The buttons on a Pico wireless control can then be programmed to control both Sivoia QS shades and other HomeWorks QSX devices from within the HomeWorks QSX programming software.

**NOTE:** HWI-SV keypads are also not compatible and are recommended to be replaced with Pico wireless controls.

#### 3.4 Links 4, 5 & 6: Configurable Links (continued)

#### 3.4.4 Replacing GRAFIK Eye/Wallbox Power Modules

HomeWorks Illumination supported the use of GRAFIK Eye, GRAFIK Integrale and wallbox power module (WPM) controls (8 modules and 48 zones maximum per link). HomeWorks QSX cannot support these older GRAFIK Eye and wallbox power modules. The recommended upgrade path for GRAFIK Eye and wallbox power modules depends on the model that is existing on the project.

#### 3.4.4.1 Upgrade to GRAFIK Eye QS

The first upgrade option is applicable for 4- or 6-zone GRAFIK Eye control units or WPMs ONLY (GRX-IA-4, GRX-MR-4, GRX-IA-6, GRX-MR-6, HWI-WPM-120-6D). These units can be replaced with 4- or 6-zone GRAFIK Eye QS control units (QSGRJ-4P or QSGRJ-6P). This is a direct replacement; all wiring can be reused and the same backbox size is required.

#### 3.4.4.2 Upgrade to RF Controls

This option is applicable to 2-, 3- or 4-zone units. The 2-zone units required a standard US 2-gang backbox, 3-zone units required a standard US 3-gang backbox, and all other units required a 4-gang standard US backbox. For that reason, replacing the existing GRAFIK Eye with wireless dimmers is the most direct upgrade option for the 2- and 3-zone configurations. Additionally, this can be another option to upgrade the 4- zone units. Remember to consider that the RF Maestro dimmers and Sunnata dimmers require a wireless transceiver to communicate with the HomeWorks QSX system. If replacing GRAFIK Eye control units with RF Maestro dimmers, the link wire can be reused for the CCA hybrid repeater link. Any unused link wire should be capped.

The below cross-reference chart illustrates the recommended replacement HomeWorks QSX Maestro or Sunnata dimmers for each type of HomeWorks Illumination GRAFIK Eye control unit.

	Replacement Options HomeWorks QSX RF Model			
HomeWorks Illumination GRAFIK Eye	Maestro	Sunnata		
	HQRx-PRO <sup>2</sup>	HRST-PRO-N <sup>1</sup>		
	HQRx-HN5BRL <sup>2</sup>	HRST-HN <sup>1</sup>		
	HQRx-PRO <sup>2</sup>	HRST-PRO <sup>1</sup>		
GRX-IA-3 or GRX-MR-3	HQRx-PRO <sup>2</sup>	HRST-PRO <sup>1</sup>		
	HQRx-HN5BRL <sup>2</sup>	HRST-HN <sup>1</sup>		
	HQRx-PRO <sup>2</sup>	HRST-PRO <sup>1</sup>		
	HQRx-PRO <sup>2</sup>	HRST-PRO <sup>1</sup>		
GRA-IA-4 OF GRA-IVIR-4	HQRx-PRO <sup>2</sup>	HRST-PRO <sup>1</sup>		
	HQRx-HN5BRL <sup>2</sup>	HRST-HN <sup>1</sup>		

<sup>1</sup> Sunnata dimmers and switches require a neutral and cannot be programmed to control loads that are not directly wired to the dimmer.

 $^{2}$  x = A for Architectural or D for Designer.

#### 3.4 Links 4, 5 & 6: Configurable Links (continued)

#### 3.4.4 Replacing GRAFIK Eye/Wallbox Power Modules (continued)

#### 3.4.4.3 Upgrade to DIN Panels

If GRAFIK Eye control units or wallbox power modules were located inside closets or equipment rooms, upgrading to DIN panels could be the best option. This option will require new DIN modules and enclosures for the DIN modules. Existing link wiring will need to be wired from the new HomeWorks QSX processor to the new DIN modules and existing load wiring can be reused and wired inside the new panel to the DIN modules. All GRAFIK Eye models could control incandescent, magnetic low-voltage, or neon/cold cathode load types. Wallbox power modules could control incandescent, tungsten halogen, magnetic low-voltage transformer, neon/cold cathode, and Lutron Tu-Wire electronic fluorescent dimming ballasts. For that reason, when replacing GRAFIK Eye or wallbox power modules with DIN modules, use the LQSE-4A5-120-D. The quantity of DIN modules that are required will depend on the number of zones that were controlled by the GRAFIK Eye control units and wallbox power modules.

#### 3.4.4.4 Upgrade to Intelligent Lighting

Another option for upgrading legacy GRAFIK Eye and wallbox power modules could be to upgrade the fixtures to native Lutron intelligent light sources. Intelligent light sources provide the highest level of light quality, highest level of experience and natively communicate to the system so there is no need to worry about dimmer compatibility. Some of the light sources require access above the ceiling or the ceiling to be re-done:

- 1. Ketra D2 and D3
- 2. Rania D2

NOTE: All circuits would be wired hot in this scenario.

Many of the intelligent light sources can be retrofitted into existing homes with no major modifications including:

- 1. Ketra lamps (A20, S30 and S38)
- 2. Ketra retrofit downlight (D4R)
- 3. Ketra linear (G2 and LS0)
- 4. Lumaris tape light

Utilizing Lutron's intelligent lighting to replace the legacy MI link would not require a configured link from the wired processor on the HomeWorks QSX system. Instead, use the dual radio processor or the CCX gateway and follow standard QSX system rules to establish a robust CCX network.

For more information about CCX recommendations for QSX systems, refer to the **Clear Connect-Type X Best Practices** Application Note #745 (P/N 048745) at www.lutron.com

#### 3.4 Links 4, 5 & 6: Configurable Links (continued)

#### 3.4.5 Replacing Vareo Dimmers (D48)

The wired Vareo communication link (D48 link), is not supported by the HomeWorks QSX system. All of the hardware must be replaced. The recommended upgrade path is to upgrade to a wireless link. The wired Vareo dimmers utilize standard 120 V $\sim$  power and load wiring and communicate back to the D48 interface card using a two-wire bus protocol. There are 12 total busses with a maximum of four Vareo devices per bus for a total of 48 Vareo devices per card. Up to four D48 interface cards can be connected to a D48 link. The following table highlights the key specs of the D48 link architecture:

D48	
Number of D48 cards per link max	4
Number of D48 Vareo devices per link max	192
Number of zones per D48 link max	192
Number of D48 Vareo devices per D48 interface card	48
Number of zones per D48 interface card	48
Number of buses per D48 card	12
Number of D48 devices per bus	4

The HomeWorks QSX RF dimmers communicate with the system via either CCA or CCX wireless communication and the dimmers require standard 120 V $\sim$  power and load wiring. For that reason, the power and load wiring used for the D48 dimmers can be reused for the HomeWorks QSX wireless dimmers, and the control wire can be capped or removed.

#### Vareo Dimmer Wiring BEFORE Upgrade

Vareo dimmers required violet and gray connections for communication via 2-pair twisted/shielded 22 AWG (0.5 mm<sup>2</sup>) cable.



 $^{\scriptscriptstyle 1}$  To HomeWorks panel or next HomeWorks Vareo control - Class 2 wiring.

#### Vareo Dimmer Wiring AFTER Upgrade

Existing Violet and Gray communication wires should be capped.



#### 3.4 Links 4, 5 & 6: Configurable Links (continued)

#### 3.4.5 Replacing Vareo Dimmers (D48) (continued)

The next step would be to figure out which HomeWorks QSX dimmer would allow for equivalent functionality and performance. The table below addresses direct replacement of the D48 devices. In the event where the load type changes or a neutral is present, alternate dimmers and switches may be swapped for the existing D48 device. Refer to the **RF dimmer specification submittals** for more information on load type and wiring capabilities: <a href="https://www.lutron.com/en-US/Service-Support/Pages/Technical/ProductSpecification.aspx">www.lutron.com/en-US/Service-Support/Pages/Technical/ProductSpecification.aspx</a>

HomeWorks Illumination Vareo	Replacement Options HomeWorks QSX RF Model		
Dimmer (D48) Model	Maestro Sunnata		
HWV-600D	HQRx-PRO <sup>2</sup>	HRST-PRO-N <sup>1</sup>	
HWV-1000D	HQRx-10ND <sup>2,3</sup>	HRST-PRO-N <sup>1</sup>	
HWV-1000NS	HQRx-8ANS <sup>2</sup>	HRST-PRO-N	
HWV-FDB-8A	HQRx-F6AN <sup>2,4</sup>	N/A	
VETS-R	HQx-RD <sup>2</sup>	HRST-RD	

<sup>1</sup> Sunnata dimmers and switches require a neutral and cannot be programmed to control loads that are not directly wired to the dimmer.  $^{2}$  x = A for Architectural or D for Designer

 $^{2}$  x = A for Architectural or D for Designer.

<sup>3</sup> The minimum load for the RF link devices is 10 W higher at 50 W.

<sup>4</sup> 2 A less capacity.

Both options change the aesthetic from the Vareo architectural style tapswitch to the Maestro or Sunnata style tapswitch. Despite this change, Maestro controls can be purchased in the same Architectural colors as the Vareo controls, using Architectural style faceplates, in addition to using the Designer colors and faceplates. Replacement faceplate must be ordered in addition to the Maestro or Sunnata controls.

Lastly, consider that the RF Maestro and Sunnata dimmers require a wireless transceiver to communicate with the HomeWorks QSX system. As previously shown, each D48 Vareo dimmer link could control up to 192 Vareo dimmers. In HomeWorks QSX each CCA link can control up to 95 wireless devices and each CCX gateway or dual radio processor can control up to 100 CCX devices. For that reason, the final step is to determine how many wireless transceivers and/or wireless links are required based on the number of replacement wireless dimmers.

Adding RF also adds the ability to take advantage of newer features for CCA and/or CCX such as, Palladiom wire-free shades, battery powered Roman shades, intelligent lighting solutions such as Lumaris, Rania or Ketra, Radio Powr Savr sensors, and Pico wireless controls. To use the CCX Sunnata controls as a replacement, at least one dual radio processor (HQP7-RF-2) or one CCX gateway (HQP7-RF) will be required. Note that the gateway must be used with at least one system processor (HQP7-2, HQP7-1 or HQP7-RF-2). In order to use a CCA link, at least one hybrid repeater (HQR-REP-120) will need to be purchased and physically wired back to the HomeWorks QSX processor's configurable link. Additional hybrid repeaters may be required to extend the communication range. The following images provide one example for upgrading a fully loaded legacy D48 Vareo link to HomeWorks CCA links with RF Maestro devices.

#### 3.4 Links 4, 5 & 6: Configurable Links (continued)

#### 3.4.5 Replacing Vareo Dimmers (D48) (continued)

#### HomeWorks Illumination

#### Device Totals:

- (1) HomeWorks Illumination Processor
- (1) Configured Processor Link
- (4) D48 Dimmer Interfaces
- (192) Wired Vareo Controls



#### HomeWorks QSX

Device Totals: (2) HomeWorks QSX Processors (3) Configured Processor Link (QTY depends of coverage) Hybrid Repeater (192) RF Maestro Controls

Equipment Room
HomeWorks QSX Processor (HQP7-1) QTY: 1 Hybrid Repeater (HQR-REP-120) QTY: 1 30 ft (9 m) maximum Configured CCA Link 1
HomeWorks QSX Processor (HOP7-2) QTY: 1 Hybrid Repeater (HQR-REP-120) QTY: 1 Gonfigured CCA Link 2 Hybrid Repeater (HQR-REP-120) QTY: 3 Hybrid Repeater (HQR-REP-120) QTY: 3
RF Maestro Control QTY: 64 30 ft (9 m) maximum Hybrid Repeater (HQR-REP-120) QTY: 1

**NOTE:** The quantity of hybrid repeaters may vary depending on device locations. If additional wireless CCA range is required for a CCA link consider using a dual radio processor (HQP7-RF-2), instead of a wired CCA link from a wired processor, to cover an additional approximate 2500 ft<sup>2</sup> (232 m<sup>2</sup>).

#### 3.5 Link 8: RF Link

Legacy HomeWorks RF devices are not supported in HomeWorks QSX and must be replaced with HomeWorks QSX RF devices. Legacy HomeWorks RF devices communicate at a similar frequency to HomeWorks QSX CCA RF devices, but the manner in which they send data and the overall RF link architecture is completely different. As a result, legacy RF devices, including QED RF shades and wireless keypads, are not supported by the HomeWorks QSX system. The devices would need to be replaced. The following chart depicts a cross-reference for legacy HomeWorks RF devices that were controlled via the RF link.

	HomeWorks Illumination RF Model	Suggested Replacement HomeWorks QSX CCA Model	Suggested Replacement HomeWorks QSX CCX Model	Notes
	STRD-1B	HQRx-W1B <sup>1</sup>	HRST-W2B	CCX model is not an exact replacement
	STRD-2B	HQRx-W2BS <sup>1</sup>	HRST-W2B	_
	STRD-3B	HQRx-W3BS1	HRST-W3BRL	CCX model is not an exact replacement
	STRD-3BRL	HQRx-W3BSRL1	HRST-W3BRL	_
	STRD-4B	HQRx-W4BS <sup>1</sup>	HRST-W4B	_
	STRD-4FS	HQRx-W4S <sup>1</sup>	HRST-W4B	Not an exact replacement
	STRD-4S	HQRx-W4S <sup>1</sup>	HRST-W4B	-
Wall Mounted	STRD-4SIR	HQRx-W4S <sup>1</sup>	HRST-W4B	HomeWorks QS RF keypads do not have an IR option
Roypado	STRD-5B	HQRx-W5B <sup>1</sup>	HRST-W2B + HRST-W3BRL	CCX model is not an exact replacement & requires 2-gang
	STRD-5FS	HQRx-W6B <sup>1</sup>	HRST-W2B + HRST-W4B	CCX model is not an exact replacement & requires 2-gang
	STRD-5BRL	HQRx-W5BRL <sup>1</sup>	HRST-W2B + HRST-W3BRL	CCX model requires 2-gang
	STRD-6B	HQRx-W6B <sup>1</sup>	HRST-W2B + HRST-W4B	CCX model requires 2-gang
	STRD-6BRL	HQRx-W6BRL <sup>1</sup>	HRST-W3BRL + HRST-W4B	CCX model is not an exact replacement & requires 2-gang
	STRD-7B	HQRx-W7B <sup>1</sup>	HRST-W3BRL + HRST-W4B	CCX model requires 2-gang
	HRT-5S2RL	HQR-T5RL	-	-
	HRT-10S2RL	HQR-T10RL	-	-
	HRT-15S2RL	HQR-T15RL	-	-
Tabletop Keypads	HRT-6LRL-C	HQR-T5RL	-	Not an exact replacement; different aesthetics
	HRT-5RL-C	HQR-T5RL	-	Not an exact replacement; different aesthetics
	HRT-10RL-C	HQR-T10RL	-	Not an exact replacement; different aesthetics
	HRT-15RL-C	HQR-T15RL	-	Not an exact replacement; different aesthetics
	HRD-2ANF	HQRx-2ANF <sup>1</sup>	HRST-ANF <sup>2,3</sup>	-
	HRD-5NE	HQRx-PRO <sup>1</sup>	HRST-PRO <sup>2</sup>	-
	HRD-6D	HQRx-PRO <sup>1</sup>	HRST-PRO <sup>2</sup>	-
Dimmers, Switches and	HRD-6ND	HQRx-6ND1	HRST-PRO <sup>2,3</sup>	-
Fan Controls	HRD-8ANS	HQRx-8ANS <sup>1</sup>	HRST-8ANS <sup>2</sup>	-
	HRD-10D	HQRx-10D1	HRST-PRO <sup>2,3</sup>	-
	HRD-10ND	HQRx-10ND1	HRST-PRO <sup>2,3</sup>	-
	HRD-3LD	HQR-3LD	-	Additional replacement option is Ketra A20
	HR-VCRX-SW	HQR-VCRX-WH	-	-
Interfaces	HR-VCTX-SW	PJ2-4B + PICO-CARVISOR-CL	-	Additional replacement option is HomeLink
internation	HR-CCI-6-SW	HQR-VCRX-WH	-	Not an exact replacement
	HR-REP-120	HQR-REP-120	HQP7-RF-2 <sup>4</sup> or HQP7-RF <sup>4</sup>	CCX model is not an exact replacement

 $^{1}$  x = A or Architectural or D for Designer.

Sunnata dimmers and switches require a neutral and cannot be programmed to control loads that are not directly wired to the dimmer.

The Sunnata control maximum amperage is less than the maximum amperage of the Illumination RF model. Verify amperage requirements to ensure compatibility with Sunnata control. Follow standard QSX system rules to establish a robust CCX network.



#### 3.5 Link 8: RF Link (continued)

Devices which are not an exact replacement indicate that some hardware functionality is different from one device to another, either from an aesthetic perspective or a functional perspective. Refer to the product specification submittals, on www.lutron.com, for more information. RF QED shades would need to have their drives replaced with a Sivoia QS drive and RF shade dongle. Refer to the **Sivoia QS Shade Drive Upgrade Guide** application Note for more information at: www.lutron.com/TechnicalDocumentLibrary/Sivoia%20QS%20Shade%20Upgrade%20App%20Note%20-%20Rev%20A.pdf

Beyond that, it's important to consider the number of wireless transceivers needed for the upgrade. In HomeWorks Illumination, you could have a total of 5 hybrid repeaters on one RF Link. In HomeWorks QSX, the maximum number of hybrid repeaters per configured CCA link on a HomeWorks QSX wired processor (HQP7-2) is 4. In HomeWorks QSX, when using the dual radio processor (HQP7-RF-2) an additional 4 hybrid repeaters can be used to extend the wireless CCA range. Keep this in mind when determining repeater placement in the HomeWorks QSX system with wired processors. If 5 hybrid repeaters were used on the existing system, use the dual radio wireless processor and 4 hybrid repeaters. If replacing legacy RF devices with CCX devices dual radio processors or CCX gateways will be required. 5 hybrid repeaters could provide up to approximately 12,500 ft<sup>2</sup> (1,161 m<sup>2</sup>) of wireless coverage. Each CCX transceiver can provide up to 10,000 ft<sup>2</sup> (929 m<sup>2</sup>) of wireless coverage.

#### 3.6 Link 9: Ethernet Link

HomeWorks Illumination processors utilized the Ethernet link for system commissioning and for third-party integration. There was one Ethernet port on the processors and a cross-over cable was required for a direct PC connection to the processor. All HomeWorks Illumination processors had to be on the same Local Area Network (LAN).

All communication between processors in a HomeWorks QSX system is done via IP communication over Ethernet and third-party integration is done via LEAP. There are two Ethernet ports per processor and there is no requirement for a cross-over cable (straight-thru can be used). All processors on a system need to be on the same LAN. Often, each processor is tied into its own switch or router port but up to 5 processors may be daisy-chained off of one switch or router port.

**NOTE:** Going to LEAP may require alteration of the third-party configuration.

For more information about networking recommendations for QSX systems, refer to the **HomeWorks 16.0+ Networking Guide** at: <u>https://assets.lutron.com/a/documents/048760.pdf</u>

### 4.0 Programing Software and Databases

Databases for HomeWorks Illumination systems were created in the HomeWorks Illumination programming software. The software architecture for these systems is different from HomeWorks QSX and thus is not compatible with the Lutron Designer software. Any job that is being upgraded from HomeWorks Illumination to HomeWorks QSX will need to have advanced programming recreated in the Lutron Designer programming software but most of the design components and simple programming can be converted from a HomeWorks Illumination database to a HomeWorks QSX database using an online conversion utility.

The following sections demonstrate how to retrieve a database from an existing HomeWorks Illumination project and use the database conversion tool to aid in programming the new HomeWorks QSX database.

#### 4.1 Extracting the HWI Database

The first step to converting a HomeWorks Illumination database to a HomeWorks QSX database is to retrieve the HomeWorks Illumination database from the existing system. This will require you to create a template HomeWorks Illumination file and establish connection with the existing system.

To create a template file, install the latest version of the HomeWorks Illumination software on your device. Note, you must be logged into a qualified myLutron account to download the software. Then, create a new HomeWorks Illumination project that includes all the HomeWorks Illumination processors that exist on site. Download the HomeWorks Illumination software from this location: <u>https://www.lutron.com/en-US/Service-Support/Pages/Technical/LegacyProducts.aspx#Software</u>

Establish a connection to the existing system using either the terminal in the HomeWorks Illumination software or using a direct connection to the HomeWorks Illumination processor via RS232. The recommended method for extraction is via the RS232 connection and using a slower baud rate like 9600. Once the direct connection is established, open the terminal by clicking on the terminal icon, enable the Use Direct Connect icon, and the software will automatically open the processor connection enabling the option to Extract Project from the downwards arrow icon.

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For more information about how to extract HomeWorks Illumination files refer to the **HomeWorks Illumination Extraction Procedure** Application Note #829 (P/N 048829) at www.lutron.com

#### 4.2 HomeWorks Illumination Database Converter Tool

The next step is to convert the extracted database from a HomeWorks Illumination file to a HomeWorks QS file, and finally to a HomeWorks QSX file. The HomeWorks Illumination Database Converter Tool is an online tool that converts a HomeWorks Illumination database to a HomeWorks QS database. The tool generates a HomeWorks QS database which contains most of the design elements of the HomeWorks Illumination database such as the load schedule and area tree.

Key software revision information:

- Compatible with HomeWorks Illumination databases revision 1.62 and newer
  - If converting a HomeWorks Interactive database to HomeWorks QS, first open the database in Illumination version 1.62 or newer and then save as an Illumination database. When this conversion occurs, the 3-Wire Motor Module Time to Off parameter in the motor loads is lost and must be manually re-entered in the Design Load screen.
- Converts the HomeWorks Illumination database to a revision 15.13.3 HomeWorks QS database which can be used in any revision 15.13.3 and newer.

To utilize the conversion tool, start by proceeding to www.lutron.com. After logging in to a qualified myLutron account, go to the Technical Information section of the myLutron Resources and click on **Tools**.



#### Click on Access the HomeWorks Illumination to HomeWorks QS Converter link.

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HomeWorks Illumination	to HomeWorks QS Conv Works Illumination project	erter t files version 1	1.62 or greater, to HomeWorks QS project files.
Access the HomeWorks	Illumination to HomeWor	ks QS Converte	ter Tool

The Converter Tool page will open. Click on **Choose File** to enter the File Directory and select the desired HomeWorks Illumination database file for conversion.



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#### 4.2 HomeWorks Illumination Database Converter Tool (continued)

Once the HomeWorks Illumination database file has been selected, use the **Options** drop down menu to select **Convert to HWQS** for both wired keypads and wired QED shades.



Click on **Convert** to begin the conversion process. The conversion tool will provide a log for feedback and an estimated time until completion.



Once the conversion is complete, a text file report will be available to highlight what design elements were dropped or converted to the new HomeWorks QS database.

choose File	HWI Sample	Project.HDF	Options -	Convert	Download	Clear
1/27/2017,	8:39:53 AM	: Uploading HWI Sample Project.HDF.				
1/27/2017,	8:40:10 AM	: Converting HWI Sample Project.HDF from	HWI to HW	QS.		
1/27/2017,	8:40:34 AM	: Conversion in progress. Estimated time	to complet	tion is 1	minute 32	seconds
1/27/2017,	8:41:30 AM	: HWQS Download ready. Download will exp	ire in 4 ho	ours.		
1/27/2017.	8:41:30 AM	: View conversion report here.				

Click on **Download** to download the HomeWorks QS database to the hard drive.

To finish converting the file to a HomeWorks QS file, download the HomeWorks QS software version 15.13.3. After logging in to a qualified myLutron account, go to the **Technical Information** section of the myLutron Resources and click on **Design Software**.



#### 4.2 HomeWorks Illumination Database Converter Tool (continued)

Click on HomeWorks QS Non-beta 15.13.3 Installer.

		SOFTWAR	-	8
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	Design Software	Tools	Spec Tools	
Show All 🗸				
Please read the followin	g documents before dow	nloading the HV	VQS software:	
For 15.13.3: Only the Hi compatible with this GU is packaged with this Gi	WQS Palladiom Thermos II. Any older versions of th UI.	tat firmware (3.0 he thermostat (2	<ol> <li>packaged with this GUI or newer</li> <li>or earlier) will need to be upgrad</li> </ol>	are led to what
HomeWorks QS Syste     Software License     HomeWorks QS Non-     HomeWorks QS Non-	em Recommendations beta 15.13.3 Release No -beta 15.13.3 Installer	es		
RadioRA 2 Inclusive Sof Level 2 dealers - Upgrad Click here to upgrade yo	ftware de your software from Es: our software	sentials to Inclus	iive.	

Open the HomeWorks QS database in the HomeWorks QS software to convert the file completely to version 15.13.3.





Save the HomeWorks QS file.



#### 4.2 HomeWorks Illumination Database Converter Tool (continued)

Open the .hwqs file using the **HomeWorks** application in the latest version of **Lutron Designer** to convert the file to HomeWorks QSX.



Select the Project Privacy Settings, Upgrade Settings, and update time zone information per the listed warning.



Review the important updates to the project database and select Apply Settings and Convert the Database.

Project File Conversion	×
This file must be converted from version 15.13.3 to 24.2, do you want to continue?	_
Review-Important updates to Project Database:	
1. HomeWorks processor(s) will be converted to corresponding QSX processor(s). Network settings for each processor will be preserved, however, they will need to be activated again	in.
2. Only 'QS' and 'RF'(Clear Connect Type A) links will be supported on QSX processor(s) in this version. On conversion,	
a. All supported link types on existing HomeWorks processor(s) will be preserved during conversion including their device link assignments and activation statuses. b. All unsupported link types will be defaulted to 'QS' link. Devices link assignment will be removed and activation status will be reverted.	
3. Following devices/features are not supported in HomeWorks system using QSX processor and will be dropped upon project conversion:	
a. Dynamic Keypad. b. All cool Automation 3rd Party HVAC Controllers: HVAC zones and associated programming will be retained. c. Siemens Thermostat: HVAC zone and associated programming will be retained. d. Teinet Integration Integration logins and Ethernet commands will be dropped.	
4. HVAC controllers (TouchPRO Thermostat and Single zone HVAC Controller) are not supported in HomeWorks system using QSX processor. On conversion:	
a. Following devices will be obsoleted 1. Will see Temp karpy and 2. Wreiess temperature sensor 3.TouchPRD Thermodat 4. Single zone HVAC Controller b. If these devices exist in the project, they will be preserved but their link assignments will be removed. They cannot be reassigned. c. Associated HVAC zones, programming options (e.g. sensors states buttons/timeclocks) will also be preserved.	
Apply Settings and Convert the Database	Do Not Convert

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#### 4.2 HomeWorks Illumination Database Converter Tool (continued)

The following is a list of all items that are converted to the HomeWorks QSX database:

- Area tree
- Load schedule
- Load assignment to available controls (including RPMs and local dimmers)
- HomeWorks QSX RF devices used to replace legacy RF devices
- Engraving, device location names, and box numbers
- GRAFIK Eye QS and QS wallbox power modules used to replace older HomeWorks Illumination GRAFIK Eye control units and wallbox power modules
- Programming- Single Action, Toggle, Advanced Toggle, Timeclock

The following items are not converted to the HomeWorks QS database:

- D48 devices (not automatically converted; replacement devices must be manually added)
- Processors
- Link assignment
- Advanced programming- variables, sequences, conditional logic
- Activation

#### 4.3 Database Design

Once the HomeWorks Illumination database is updated to the latest version of HomeWorks in Lutron Designer, there are a few items that may need to be redesigned after the conversion. On any project, it's important to verify the HomeWorks QSX system is designed correctly in the software before proceeding with programming. The following items should be considered when reviewing and updating the HomeWorks QSX design.

- 1. Verify and Update System Components
  - Add replacements for D48 devices
  - Replace converted devices if the default conversion is not desired
  - RPM Panels: Replace 4E modules with 4A modules
  - Spec Grade Panels: Verify baud rate for Panel Link to QS Link Translator. See section 3.1.1 of this document for more information
  - Add QSX Processors
- 2. Assign Loads and Devices
  - Replace fixtures if default conversion is not desired
  - Assign loads to D48 replacement dimmers (converted dimmers will retain load assignments)
  - Assign loads to DIN modules (converted RPMs will retain load assignments)
- 3. Link Assignment
  - Assign QS devices to QS links
  - Assign the Panel Link to QS Link Translator to a QS link
  - Assign CCA devices to CCA links
  - Assign CCX devices and loads to CCX transceivers

Once all aspects of design have been completed the QSX system and devices can be activated. The following sections provide detail on the most efficient method for updating aspects of the QSX design following a database conversion.

#### 4.3 Database Design (continued)

#### 4.3.1 Replacing Converted Devices

During the database conversion from HomeWorks Illumination to HomeWorks QSX some devices will automatically convert from the Illumination version to an equivalent HomeWorks QSX version. The following chart highlights to what the devices are automatically converted.

HomeWorks Illumination Device	HomeWorks QSX Automatic Conversion
Wired keypads	SeeTouch QS keypads
H48	Maestro RF
Sivoia QED shades	Sivoia QS shades
GRAFIK Eye/WPM	N/A – replacement devices must be manually added
D48	N/A – replacement devices must be manually added
RF link	Maestro RF

View section 3.4 of this document for more information about the recommended upgrade options for each devic type. If any of the above automatically converted devices are not being used for the project, utilize the Lutron Designer software to replace the devices with the correct ones.

To accomplish this, the most efficient way includes using Canvas View. First, switch to Canvas View by selecting **View > Switch to Canvas View** in the tool bar.



Choose to import floor plans or add blank floor plans. If floorplans are available, it is recommended to import floor plans. However, in many cases, floor plans will not be available for upgrade projects and a blank floor plan can be used. Select **Add Blank Floor Plan**.



On the left side of the screen in the **Floor** dropdown list, select one of the floors from the existing project to associate it with the blank floor plan and click **Done**.



#### 4.3 Database Design (continued)

#### 4.3.1 Replacing Converted Devices (continued)

If more than one floor exists on the project, **right click** next to the floor warning to add additional blank floorplans. Select the floors from the **Floor** dropdown list to associate a new blank page with each floor that exists on the project.

1. Right click near the floor warning





3. The floor warning is now gone. All floors have been assigned to a page

Homeworks QS
Floor
Pool House
Import Floor Plans 🛛 🔊

Set the scale for each page by clicking on the **Pencil Icon** next to inches.



**NOTE:** If using a blank floorplan, the scale may not be exact and wireless ranges must be verified.

Use the Area tool to draw all areas on the project.

- 1. Click on the Area tool
- 2. Draw the area and select an area name from the dropdown list





3. All devices, shades, fixtures, and load connections will appear within the area. Once all areas are drawn on the page, the area warning will disappear

	Den Hwosx Pe	ersona
	Select Area Fixtures Auto Detect Dim CCO Maintained CCO Pulse Ceiling Fan DMX - Blue DMX - Colors	Au CC Far DN DN
	DMX - Dimmer	DN

#### 4.3 Database Design (continued)

#### 4.3.1 Replacing Converted Devices (continued)

Navigate to a floor with a device that needs to be replaced. In the device list right click on the device and click Select All.



All devices of that kind will be highlighted in red on the floor plan. **Right click** on one of the highlighted devices. Select **Replace Device**.



**NOTE:** If the device is a part of a ganged wallstation, you will have to select the device within the gang that needs to be replaced, as pictured here.

In the Replace With screen, select the device that is replacing the previous control and click Replace.

Repla	ce With		×
4	seeTouch 4S		
11 4 101	seeTouch 4S		
5	seeTouch 5B		
6	seeTouch 6B		
н 6я.	seeTouch 6BRL		
4	Palladiom 4B		
?	Visor Control Transmitter		I
HQ REP	Hybrid Repeater		I
NC RX	Visor Control Receiver		
100	1000 W 2 Wire		
		Cancel	Replace

**NOTE:** For the device to appear in the Replace With screen, it must exist in the device list.

For more information on how to add devices in canvas view review the Canvas View – Stamping Devices (OVW 392) video here:

https://lutron.docebosaas.com/US/learn/course/1978/canvas -view-stampingdevices-ovw-392;lp=233

All devices of that type on the selected page will be replaced with the new control. Repeat the last three steps for all floors to replace the device for the entire project. Notice, device names, ganged configurations, and compatible load connections will be retained with this method. It is acceptable to manually replace the devices using classic view instead, however, all load assignments, ganged configurations, and device names will need to be reentered.

To learn more about using Canvas View review the LP 743 – Lutron Designer – Canvas View videos here: <a href="https://lutron.docebosaas.com/US/learn/lp/233/lp-743-lutron-designer-canvas-view">https://lutron.docebosaas.com/US/learn/lp/233/lp-743-lutron-designer-canvas-view</a>

LUTRON

#### 4.3 Database Design (continued)

#### 4.3.2 Panel Link to QS Link Translator

If the HomeWorks QSX system retains the remote power module (RPM) panels from the HomeWorks QSX system, the Panel Link to QS Link Translator must be added to the HomeWorks QSX design. The Panel Link to QS Link Translator is considered a QS device on the system, review section 3.1.1 of this document for more information on reusing RPM panels in the HomeWorks QSX system.

If the database converter tool was used to convert the HomeWorks Illumination database to HomeWorks QSX, the software will automatically retain the RPM panels and convert the existing module interface to the Panel Link to QS Link Translator within each panel. Verify that the address in the software for each RPM matches the address set on the rotary address dial on each RPM module.

Equipment Eocadons   Epend al	conapse all			
🖻 Panel 1 🛛 🗙 🛛 Edit 🖌	Not Assigned			
	Output	Input		
in the second se		RPM Type	Area	Zone Name
A	1-1	Dimming Module	Foyer	+ Foyer + Dow
and the second	1-2	Dimming Module	Office	+ Office + Dow
<b>2</b>	1-3	Dimming Module	Aaron's Bathroom	+ Shower Light
	1-4	Dimming Module	Aaron's Bathroom	+ Aaron's Bath
	2-1	Dimming Module	Halway	_+ Halway + Do
	2-2	Dimming Module	Family Room	- + Family Room
	2-3	Dimming Module	Dining Room	-+ Dining Room
	2-4	Dimming Module	Dining Room	+ Dining Room
	3-1	Adaptive Module	Dining Room	- + Dining Room
The second second second	3-2	Adaptive Module	Foyer	-+ Foyer + Cove
🛌 🗰 si si 🧱 si	3-3	Adaptive Module	Hallway	-+ Halway + Co
	3-4	Adaptive Module	Foyer	-+ Foyer + Close
	4-1	Adaptive Module	Family Room	- + Family Room
	4-2	Adaptive Module	Family Room	- + Family Room
	4-3	Adaptive Module	Foyer	-+ Foyer + Exte
+ +	4-4	Adaptive Module	Master Bath	Master Bath
	5-1	Adaptive Module	Master Bedroom	_+ Downlights
	5.2	Adaptive Module	Marter Bath	- + Master Rath

**NOTE:** If HomeWorks specification panels or specification GP panels were used, the baud rate on the Panel Link to QS Link Translator may need to be changed in the software. For more information on how to achieve this, view section 3.1.1.2 & 3.1.1.3 of this document.

Before the device can be activated to the HomeWorks QSX system, it must be assigned to a QS link in **Design > Link** Assignment.

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#### 4.3 Database Design (continued)

#### 4.3.3 Electronic Low Voltage Module (4E)

In HomeWorks Illumination, RPM panels could have included the 4E remote power module. If the HomeWorks QSX system is retaining the RPM panels, this module is not compatible and will be replaced with the 4A in the HomeWorks QSX database. If the database converter tool was used to convert the HomeWorks Illumination database to HomeWorks QSX, the software will automatically retain the RPM panels and convert the existing 4E modules to 4A modules within each panel. However, it is important to note that the loads compatible with the 4E module differ from the 4A module. For that reason, it is essential that only reverse-phase load types be assigned to modules that were converted from a 4E to a 4A in the software.

To accomplish this, two things must be done. First ensure that all loads tied to 4E modules are defined as reverse-phase loads in the load schedule. Go to **Design > Loads** and select the area of the tree where the loads are found.



Add the loads that are to be tied to the 4E module(s) and ensure that they are defined as reverse-phase style load types. Available load type selection options include: electronic low-voltage and LED reverse-phase.

Loads	3rd Party HVAC					
Zone # 0	Zone Name $\theta$	Voltage 0	Load Type	Fixture Wattage $\theta$	Fixture Qty	Total Watts
1	Spots	120V	Electronic Low Voltage	25	1	29

The second step is to add 4A modules into any panel where 4E modules are physically installed. A 5 or 8 position panel will need to be added to the software first. The modules are subsequently added to the panel by clicking on the "+" sign that corresponds to the physical position of the RPM within the panel. Panels and RPMs are added in the **Design > Equipment** section of the HomeWorks QS programming software.

#### 4.4 Programming Software

Once the design is complete, programming updates can be made. As previously stated, some programming will be retained when the conversion from the HomeWorks Illumination software to the HomeWorks QSX Lutron Designer software is complete. More advanced programming such as variables, sequences, and conditional logic will need to be reprogrammed entirely. More basic programming such as single action or toggle button programing and timeclock programming will be retained. However, it is recommended to verify all programming is correct in the HomeWorks QSX software before transferring the database. Additionally, consider opportunities to simplify the homeowners use of their updated HomeWorks QSX system while programming. In some cases, it may not be best to replicate the exact programming of the existing system to ensure the homeowner has the most intuitive user experience with their updated system.

#### 4.4.1 Where Programmed

The Where Programmed tool will provide the most efficient path to compare the programming from the HomeWorks Illumination software while attempting to replicate/update the programming in the HomeWorks QSX system.

#### HomeWorks Illumination Software

In the HomeWorks Illumination software, the Where Programmed tool and report can be found in the Reports menu by clicking **Where Programmed**.



Select a device to see all programming from the existing database which affects that device. Lighting zones, shades, fans, keypads, interfaces, and global presets can be selected. There is a filter which shows devices in specific rooms.



#### HomeWorks QSX Lutron Designer Software

In the HomeWorks QSX software, the Where Programmed tool can be found in the Tools menu by clicking **Where Programmed**.



Choose the assignable Items that require review. Lighting zones, lighting areas, shade groups, motor zones, fans, contact closures, devices, timeclocks, vacation mode, security mode, and occupancy settings can be selected. Each area that has the select item will be visible.



#### 4.4 Programming Software (continued)

#### 4.4.1 Where Programmed (continued)

The Where Programmed tool will provide the most efficient path to compare the programming from the HomeWorks Illumination software while attempting to replicate/update the programming in the HomeWorks QSX system.

#### HomeWorks Illumination Software (continued)

Once the device has been selected, one of two things can be used to reveal all programming assignments. The **Where** tab can be selected to show the programming and is used while the HomeWorks Illumination software is open, or the **Print** tab can be selected to create paper copies of programming assignments, which can be useful if the HomeWorks Illumination software is not available when re-creating the database in the HomeWorks QSX software.



#### HomeWorks QSX Lutron Designer Software (continued)

Click on one of the items within an area to view the devices to which it is assigned. This will showcase the keypad with the assignment, the buttons programmed to the item, the load levels programmed to the button, and engraving for the button. This information cannot be printed as a report but is useful when comparing the HomeWorks Illumination Where Programmed report. Using these two tools simultaneously allows you to compare the programming from the existing Illumination system to the updated HomeWorks QSX system.



Notice, in this example the Kitchen Entry Keypad Button 4 is not listed in the HomeWorks QSX Where Programmed screen, but it is shown in Where Programmed from the HomeWorks Illumination database. This could indicate the Kitchen Entry keypad button 4 needs programming updates.

#### 4.4 Programming Software (continued)

#### 4.4.2 The Keypad Programming Report

The Keypad Programming report can be used for programming the upgraded job into HomeWorks QSX. This report is different from Where Programmed, in that it allows the programmer to view a keypad or system trigger to see all loads or devices assigned to it, as well as the levels, fades, and delays attributed to the affected preset assignments. Where Programmed shows which triggers are used for each individual assignable item.

#### HomeWorks Illumination Software

The **Keypad Programming** report, found in the **Reports** menu of the HomeWorks Illumination programming software.



After selecting the Keypad Programing report either choose to show one select control station or the entire projects control stations.

🖃 Detached Ga	arage	C Selected Control Station
🖨 Dyno Ro	om	C Cate Desiral
	Entry (Box #67) [4:6:3]	C All Web Enabled Keypads
🖻 - Main Ga	rage	
	Garage Entry (Box #69)	9. 🕅 Show Global Preset Details
1	Panel 2\HWI-CC0-8 1	1
0	Panel 3\HWI-CC0-8 1	1
i 🟭	Shop Entry (Box #68) [+	[*
E Guest House		
. ⊟-Bathroon	ń	
	Entry (Box #58) [3:8:1:1	:1
· 0:	Near Shower (Box #59)	9(
Bedroom		
11	Closet Entry (Box #57)	N
	Entry (Day #EC) (2-0-1-1	1 OK Cancel
<	>	

The report output can be printed or saved, and displays a depiction of the keypad, button and CCI component numbers, and all preset assignments.



#### HomeWorks QSX Lutron Designer Software

The keypad programming report, found in the **Reports** menu of the HomeWorks QSX programming software by selecting Programming.



The programming report will show all devices that have some programming for the entire project.

Programming	
Display Options  Include cover page Relat Options	
🖬 Print Page Numbers	Programming Report Area Path: Detached Garapellain GasapelGarape Entry
	Model #HOWN-WORRLN-BL Gang Position:2 Notes:
	Input Number: 18
	Type: Lower Action: Master Lower
	Details
	Master Raise Lover still raise or lover the level of the preset
	Type: Raise Action: Master Raise

The report output can be printed or saved, and displays a depiction of the keypad, button and CCI component numbers, and all preset assignments.

Model #:HQWA-WIBSN-BL Gang Position:1				
Notes:		1980		
				1001 1 0
Input Number: 1 Type: Toggle	Action: Press On			LED Logic: Room
Input Number: 1 Type: Toggle Assignable Item Type	Action: Press On Item Description/Area Path	CommandiLevel	Fade	LED Logic: Room
Input Number: 1 Type: Toggle Assignable Rem Type Lighting - Zones	Action: Preis On Item Description/Area Path Main House-Aaron's Bathroom-Vanity	Command/Level 73%	Fade 4 s	LED Logic: Room

By comparing the Keypad Programming Report from the HomeWorks Illumination Software to the Programming Report from the HomeWorks QSX software it provides a simple path to confirm all buttons are programmed correctly for the HomeWorks QSX System.

#### 4.4 Programming Software (continued)

#### 4.4.3 Timeclock Programming Report

The Timeclock Programming Report, also found using the Reports menu in the HomeWorks Illumination software, shows a list of all timeclock events and what times and days of the week on which they execute.

Time	Clock Prog	rammi	ng Re	port						
			Tim	e Cloc	k Sum r	nary				
<b>F</b>	Nearest City: Coopersburg, Pennsylvania									
	Latitude: 4	0.5 N Lo	ongitude:	75.4 V	V					
👄 Ast	tronomic Events		Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Special
Name:	Sunset		-	~	1	~	~	~	~	
Time:	+00:00 Sunset			1	1	Ť	•	Ť.,	•	

The second half of the report shows which preset assignments are currently programmed to each timeclock event.

Time Clock Programming Report						
						]
Astronomic Events						
Event:	Sunset		Schedules: All Days			
Time:	+00:00 Sunset					
Type:	Default					
Notes:						
Event Preset 1						
Name		Delay	Fade	Level/Cmd		
H8P5 MI D48 120 4U.1		00:00	00:02		75%	

This report can be used to easily see what events existed in the HomeWorks Illumination system and program them into the new Lutron Designer database for the residence.

### 5.0 Appendix: Important Links to Additional Support Resources

HomeWorks Illumination Technical Reference Guide: https://assets.lutron.com/a/documents/366-963h\_full.pdf

HomeWorks System Architecture for 120 V $\sim$  and 434 MHz regions: https://assets.lutron.com/a/documents/homeworks\_system\_architecture.pdf Power Draw Units (PDUs) on the QS Link:

https://assets.lutron.com/a/documents/369405\_pdu\_spec\_submittal.pdf

HomeWorks 16.0+ Networking Guide: https://assets.lutron.com/a/documents/048760.pdf

Clear Connect System Type X Best Practices: https://mylutronservices.lutron.net/passwordprotecteddocumentlibrary/048745.pdf

Sivoia QS Shade Drive Upgrade Guide: www.lutron.com/TechnicalDocumentLibrary/Sivoia%20QS%20Shade%20Upgrade%20App%20Note%20-%20Rev%20A.pdf

Download the HomeWorks Illumination software: https://www.lutron.com/en-US/Service-Support/Pages/Technical/LegacyProducts.aspx#Software

HomeWorks Illumination Extraction Procedure: Application note #829 (P/N 048829) at www.lutron.com

Canvas View – Stamping Devices (OVW 392): https://lutron.docebosaas.com/US/learn/course/1978/canvasview-stamping-devices-ovw-392;lp=233

LP 743 – Lutron Designer – Canvas View: https://lutron.docebosaas.com/US/learn/lp/233/lp-743-lutrondesigner- canvas-view

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#### **Lutron Contact Numbers**

WORLD HEADQUARTERS USA Lutron Electronics Co., Inc. 7200 Suter Road Coopersburg, PA 18036-1299 TEL: +1.610.282.3800 FAX: +1.610.282.1243

support@lutron.com

www.lutron.com/support

North & South America Customer Assistance USA, Canada, Caribbean: 1.844.LUTRON1 (1.844.588.7661) Mexico: +1.888.235.2910 Central/South America: +1.610.282.6701 UK AND EUROPE: Lutron EA Limited 51 Lime Street, 3rd floor London EC3M 7DQ England TEL: +44.(0)20.7702.0657 FAX: +44.(0)20.7480.6899 FREEPHONE (UK): 0800.282.107 Technical Support: +44.(0)20.7680.4481

lutronlondon@lutron.com

ASIA: Lutron GL Ltd. 390 Havelock Road #07-04 King's Centre Singapore 169662 TEL: +65.6220.4666 FAX: +65.6220.4333 Technical Support: 800.120.4491

lutronsea@lutron.com

#### Asia Technical Hotlines

Northern China: 10.800.712.1536 Southern China: 10.800.120.1536 Hong Kong: 800.901.849 Indonesia: 001.803.011.3994 Japan: +81.3.5575.8411 Macau: 0800.401 Taiwan: 00.801.137.737 Thailand: 001.800.120.665853 Other Countries: +65.6220.4666