

HomeWorks®
Technical Reference Guide | Rev F



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Short Form Performance Specifications & Benefits

We continue to update our products to serve your needs better. Please see our web site for the most up-to-date version. www.lutron.com/hwi

Introduction to HomeWorks®

The Most Powerful and Most Flexible Lighting Control System in the World

Whether building a new home, renovating an existing one or updating current lighting controls, *HomeWorks* provides the perfect control solution. *HomeWorks*, the world's leading whole-house lighting control system, provides simple, convenient control of all home lighting, as well as the ability to control audio, video, and many other sub-systems in a home. *HomeWorks* provides many benefits including:

- Increased Security
- Design and Control Flexibility
- Added Convenience
- Improved Aesthetics

INCREASED SECURITY

HomeWorks seamlessly integrates with home security systems. In the event of an alarm, interior lights turn on, illuminating a safe exit, while exterior lights flash, thereby drawing immediate attention.

HomeWorks provides peace of mind by allowing homeowners the ability to turn all lights on instantly from a single button press.

HomeWorks makes a home safer by automatically turning on landscape and security lighting each night. A built-in astronomical timeclock automatically adjusts for changing sunrise and sunset times throughout the year.

Every day, a *HomeWorks* system automatically records the home's actual lighting usage patterns. These patterns are replayed when the home is unoccupied. This unique feature allows for a realistic appearance of activity that standard timers cannot achieve.

DESIGN AND CONTROL FLEXIBILITY

HomeWorks systems provide the ultimate flexibility. Wired control products are targeted for new home construction, and radio frequency (RF) control products for retrofit installations. Use a combination of both products, wired and RF, when undergoing minor renovations or when building an addition onto an existing residence.

When designing a control system that is not part of the original specification, or expanding an existing system, RF products provide an easy retrofit solution. RF products allow the system to be expanded at any time, accommodating unexpected additions and last minute changes.

After the installation, homeowners still retain a high level of flexibility. *seeTouch™* Keypads may be easily reconfigured to accommodate new control requirements. To change color, engraving, and button configuration, simply snap off the existing *seeTouch* button faceplate kit and replace it with a new one.

ADDED CONVENIENCE

Control each light in a home from any *HomeWorks* Keypad, providing instant access to all areas of the home and landscape. This eliminates the tedious task of setting the home lighting just right for daily activities or special occasions.

A single button press creates a "path of light" to softly light the way to another room, allowing for late-night trips to the bathroom or kitchen without fumbling for switches in a dark hallway. Monitoring individual rooms or areas throughout a home requires no more than a quick glance at a keypad's discreet status LEDs.

Introduction to HomeWorks® (cont.)

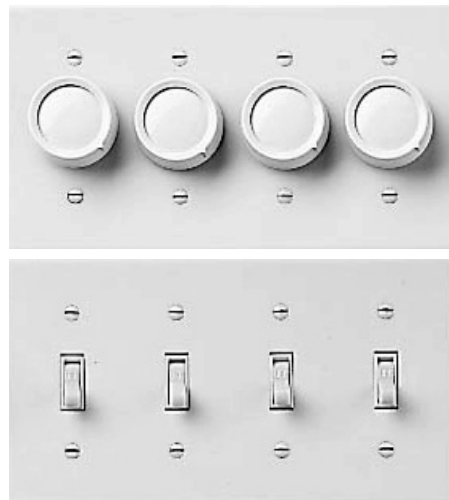
IMPROVED AESTHETICS

HomeWorks gives homeowners the power to enhance the beauty of their home and decor with an endless variety of customized room and whole-house lighting scenes. One button press dims the lights for a soft romantic dinner while another button press lights the house for a festive party.

Keypads provide a clean, elegant look on the wall by combining the functions of many standard switches and dimmers into a single control. Contrast the elegant simplicity of a single keypad to the large bank of switches often found at the front door. Integrate whole-house audio and video controls into *HomeWorks* Keypads to further reduce wall clutter and provide a consistent look.

Integrate wall controls from most other systems in a home under one seamless, customized wallplate to maintain aesthetic consistency. Match keypads to a home's paint, wallpaper or decor.

Lutron combines the industry's largest selection of controls and matching accessories with an extensive array of colors and finishes. *HomeWorks* Keypads are available with custom engraving. *seeTouch™* Keypads provide a unique backlighting feature whereby engraving is readable in the dark.



Replace large banks of switches with one elegant keypad



Features Overview

LUTRON QUALITY

Lutron has been the world leader in lighting controls since inventing the solid-state dimmer more than 40 years ago. All Lutron® products are designed and manufactured to the highest quality standards, minimizing the likelihood of damage caused by power surges, lightning strikes, or static electricity. All HomeWorks® systems are covered by an 8-year limited warranty. Lutron was one of the first 20 companies in the US to earn the ISO 9001 international quality certification. Lutron is ISO 9001:2000 certified.

FAIL-SAFE OPERATION

HomeWorks Local Lighting Controls and GRAFIK Eye® Preset Local Lighting Controls remain fully functional even in the unlikely event communication to the processor is interrupted. Dimming panels also have manual override capabilities, which can be activated from dedicated switches located anywhere in the home.

POWER-FAILURE MEMORY

All *HomeWorks* components are designed with 10-year power-failure memory. If power is interrupted and restored, lights will automatically return to the levels to which they were set prior to the power outage. *HomeWorks* system programming is retained in non-volatile memory and is not affected by loss of power.

SECURITY

Connect *HomeWorks* to a security system to activate lights in case of an alarm. Selected lights will turn on to a pre-determined security level, while others flash repeatedly to attract attention. Security Mode may also be activated manually from a keypad. When Security Mode is deactivated, the lighting returns to the original levels set before Security Mode was activated.

AESTHETIC CONSISTENCY

HomeWorks Keypads and Local Lighting Controls complement each other with matching colors, styles, and finishes. A full range of wallplates, receptacles, telephone jacks, and cable jacks are available to match the system controls. Architectural-style faceplates can also be customized to match a home's paint, wallcoverings, or decor.

ASTRONOMICAL TIMECLOCK

HomeWorks can automatically trigger events at specific times of the day or at times relative to sunrise or sunset. Program multiple schedules allowing for different timeclock events on weekdays, weekends, holidays, etc. Enable or disable timeclock schedules from any keypad. Additionally, any timeclock event can be programmed using conditional logic, so the event will occur only if a specified condition is met.

TELEPHONE INTERFACE

The Telephone Interface allows the homeowner to access and control up to ten different functions or events from any touchtone phone. The Telephone Interface guides the homeowner through each step with customized voice messages and provides positive verbal response when a function or event has been activated. Utilize this capability from telephones within the house or across the world.

VACATION MODE

HomeWorks constantly monitors and records the state of all lighting in a home. When Vacation Mode is activated, the system plays back these events, providing a realistic appearance of activity while the home is unoccupied. The system can be programmed to record the last day's, the last week's, or the last two weeks' activities.

Features Overview (cont.)

INTEGRATION

HomeWorks® has been designed to integrate with audio, video, and other subsystems in a home. A typical application includes control of an audio system from buttons on a HomeWorks Keypad. Interface the system with other equipment using contact closure inputs and outputs, infrared inputs, and RS-232 serial communication.

CONDITIONAL LOGIC

HomeWorks provides the capability to activate events only if specific conditions are met. For example, program driveway sensors to turn on exterior lighting only if it is dark. A single "Dining" button could set different lighting and music for breakfast, lunch, and dinner.

RETROFIT WITH EASE

Add lighting control to existing homes with HomeWorks RF devices. Existing switches are replaced with RF Dimmers, RF Switches, and RF Keypads using existing line-voltage wiring. RF Lamp Dimmers simply plug into receptacles to integrate table and floor lamps into the system.

PROGRAMMING FLEXIBILITY

HomeWorks Keypads can be customized to meet customers' changing needs. Each keypad button may be programmed to activate any of the lights in the system. Keypad buttons may also be programmed to control audio, video, and other integrated subsystems.

BACKLIT KEYPADS

HomeWorks seeTouch™ Keypads are backlit so that the button labels are easily read in a dark room.

RF TABLETOP CONTROLS

HomeWorks RF Tabletop Keypads and RF Lamp Dimmers offer great flexibility for the placement of controls. Locations such as bedside, countertops, and end tables are ideal for these controls.

CAR VISOR CONTROL

The HomeWorks Car Visor transmitter clips on to a car's sun visor providing complete control of the system from the convenience of the car. Any car equipped with HomeLink® is compatible as well.




HomeLink and the HomeLink Compatible logo are registered trademarks of Johnson Controls.

Specifying a HomeWorks® System

There are three key elements to specifying a *HomeWorks* system:

- Establish Construction Type
- Choose System Design
- Select Aesthetic Style

A system designer must understand these three elements and their customers' requirements to select the proper system components.

Construction Types	System Designs	Aesthetic Styles
New Construction	<ul style="list-style-type: none"> • Localized • Centralized • Optimized 	<ul style="list-style-type: none"> • Architectural  • Designer 
Existing Construction	<ul style="list-style-type: none"> • Localized 	<ul style="list-style-type: none"> • Designer 

Construction Type

HomeWorks® can be used in both new and existing homes. A project's construction type determines the system design options and the aesthetic style offerings.

Two construction types exist:

NEW CONSTRUCTION OR MAJOR RENOVATION

Open wall access allows low-voltage communication wiring to be easily run to controls. This construction type provides maximum flexibility in system design (localized, centralized, optimized) and aesthetic styles (Architectural and Designer).

EXISTING CONSTRUCTION OR MINOR RENOVATION

Retrofit applications use RF controls, eliminating the difficult or impossible task of running low-voltage wiring. This construction type will have a localized system design and a Designer-style aesthetic.

USING THIS GUIDE

Page headers will indicate which products are suitable for new construction and which products are suitable for existing construction.

Pages in this guide that include products suitable for new construction will have the following box highlighted:

Architectural-style	Designer-style	New Construction	Existing Construction
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Pages in this guide that include products suitable for existing construction will have the following box highlighted:

Architectural-style	Designer-style	New Construction	Existing Construction
---------------------	----------------	------------------	------------------------------

System Design

Typical system designs begin with a floor plan layout. The system design and controls used are based on the construction type and customer requirements. HomeWorks® flexible architecture provides multiple system design options. Depending on construction type and customer preferences, *HomeWorks* systems may be designed in three different ways:

LOCALIZED DESIGN

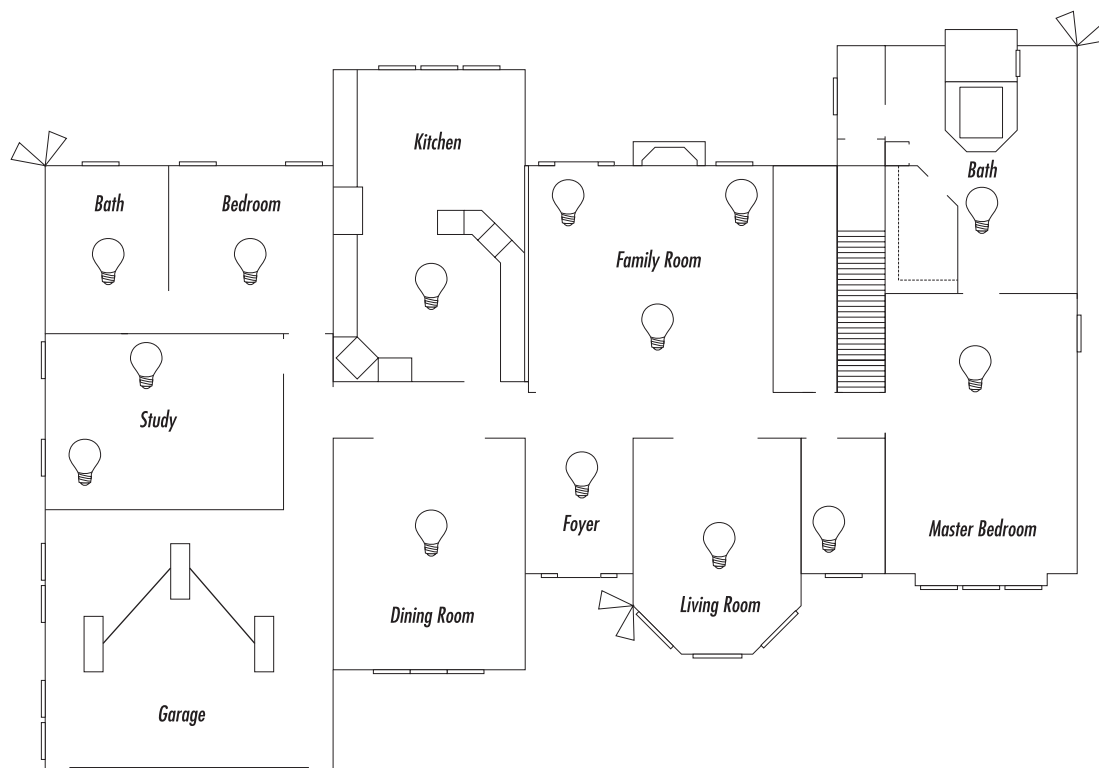
Localized designs use a traditional approach to lighting control, placing familiar, easy-to-use dimmers throughout the home. Keypads are added to the design for control of multiple lights.

CENTRALIZED DESIGN

Centralized designs place dimmers remotely, eliminating local lighting controls. All lights are controlled from keypads, providing maximum programming flexibility, while minimizing wall clutter.

OPTIMIZED DESIGN

Optimized designs combine the benefits of localized and centralized designs. Local dimmers are placed in areas where simple, straight-forward operation is desired (guest bedrooms, bathrooms and kids' rooms). Keypads and remotely-mounted dimmers replace banks of switches in areas where multiple lights are controlled (front door, kitchen and master bedroom).



Pgs. 14-27 cover these system designs in detail.

Aesthetic Styles

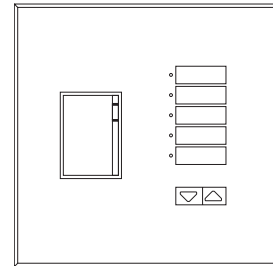
HomeWorks® products are available in two aesthetic styles:

ARCHITECTURAL-STYLE

Architectural-style products include Vareo® Local Lighting Controls, GRAFIK Eye® Controls, Architectural-style Keypads, and Nova T☆® coordinating accessories. These products are available for new construction projects only.

FEATURES

- Products available with Architectural Matte plastic and metal finishes
- Square corners, beveled edges
- Minimalist aesthetics intended to blend with its environment
- Color matching available

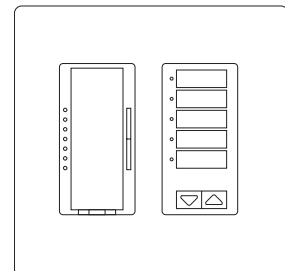


DESIGNER-STYLE

Designer-style products include Maestro® Local Lighting Controls, Designer-style Keypads, and Claro® and Satin Colors™ coordinating accessories. These products are available for new construction and existing construction projects.

FEATURES

- Products available with Designer Gloss Colors and *Satin Colors* matte plastic finishes
- Rounded corners, rounded edges
- Fashion aesthetic intended to complement its environment
- All products use standard decorator opening



USING THIS GUIDE

Pages in this guide that include Architectural-style products will have the following box highlighted:



Pages in this guide that include Designer-style products will have the following box highlighted:



System Design

System Design

New Construction
or
Major Renovation

Localized Design

A localized design for new construction uses HomeWorks® Local Lighting Controls (Wired Vareo®, and Maestro® Local Lighting Controls, GRAFIK Eye® Preset Local Lighting Controls, and RF Lamp Dimmers) to directly control all lighting loads. One benefit of this type of system is that it is easily understood by homeowners and guests, since the individual lighting loads are controlled in the same manner as with traditional dimmers and switches.

Keypads are added to provide control of multiple lights within one area or to control all of the lights throughout the home. In this design, keypads are typically installed in locations such as entryways, master bedrooms, and key entertaining areas.

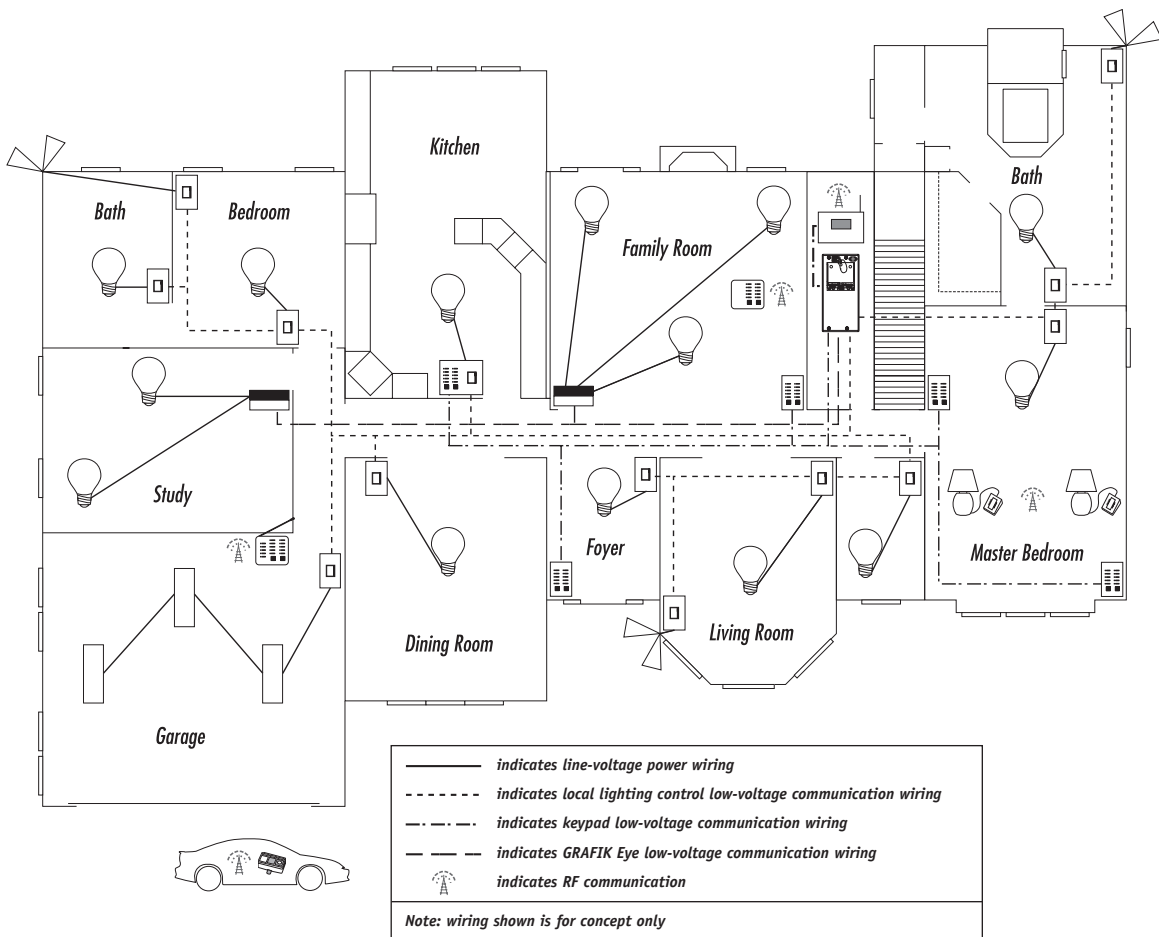
Local lighting controls allow the homeowner to dim and switch loads directly, providing “fail-safe” operation, even if communication to the processor is temporarily interrupted.

The addition of RF devices to a localized design provides convenient portable control from any location. Activate lights from an RF Tabletop Keypad. Dim table and floor lamps from RF Lamp Dimmers. Control garage doors and lighting from RF Visor Controls.

The new construction localized design is the only true pre-wire compatible configuration for whole-home lighting control because it uses the same line-voltage wiring plan as a home without a control system. This design is ideal for the homeowner who wants to add a wired control system at any time.

LOCALIZED DESIGN SUMMARY:

- Simple controls, familiar operation
- Local lighting controls provide “fail-safe” operation
- Add portable RF devices for convenient control
- Pre-wire capability
- Uses existing line-voltage wiring



Centralized Design

A centralized design for new construction uses Remote Power Modules to control all lighting loads, eliminating local lighting controls. The Remote Power Modules are mounted in Remote Power Panels, located in equipment rooms or electrical closets. In this design, all lights are controlled from keypads, providing the maximum programming flexibility while minimizing wall clutter. Keypads have the ability to perform any function from control of a single light to whole-home control.

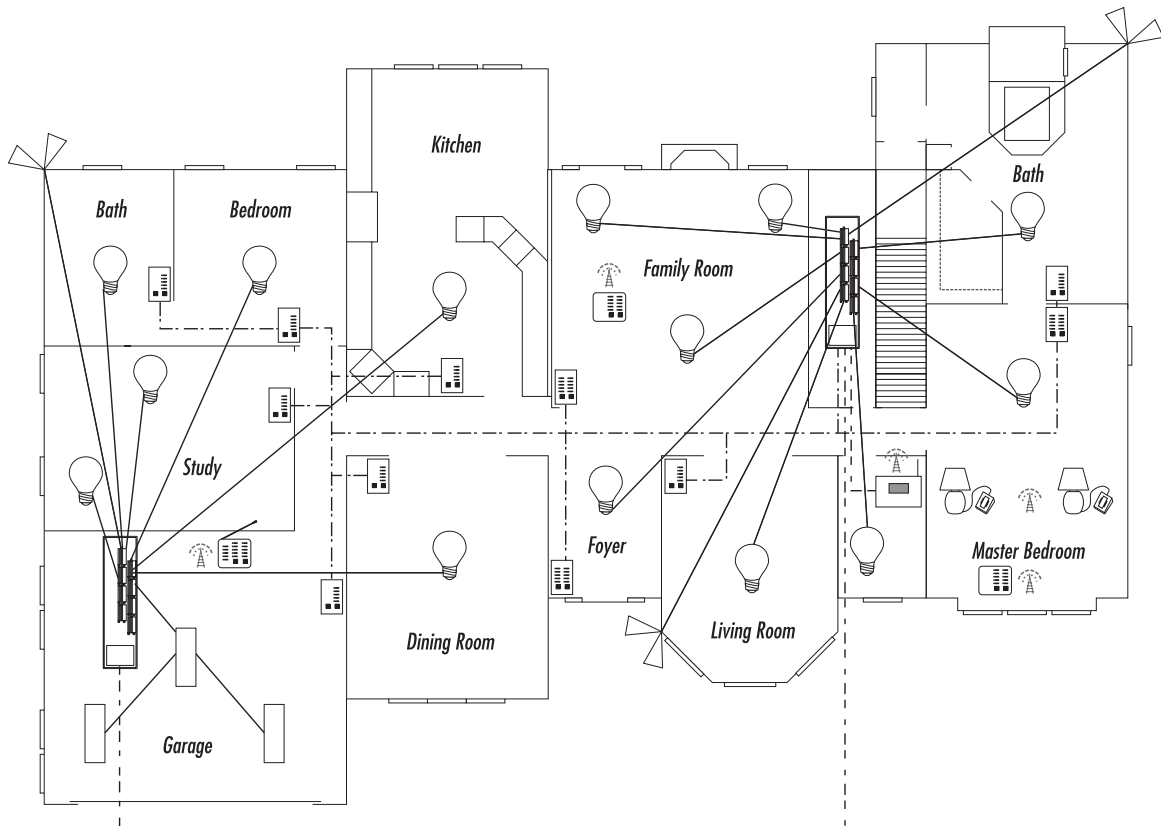
Remote Power Modules, located in the Remote Power Panels, support larger wattage loads and a wide range of load types, reducing the need for Power Boosters or specialized interfaces.

Each Remote Power Panel has manual override control providing "fail-safe" operation in the unlikely event communication to the processor is interrupted.

The addition of RF devices to a centralized design provides convenient portable control from any location. Activate lights from an RF Tabletop Keypad. Dim table and floor lamps from RF Lamp Dimmers. Control garage doors and lighting from RF Visor Controls.

CENTRALIZED DESIGN SUMMARY:

- Minimizes wall clutter
- Minimizes need for Power Boosters or Interfaces
- Maximum programming flexibility
- Manual override control provides "fail-safe" operation
- Add portable RF devices for convenient control



— indicates line-voltage power wiring
 - - - indicates keypad low-voltage communication wiring
 ···· indicates interpanel link
 Ⓜ indicates RF communication

Note: wiring shown is for concept only

Optimized Design

The unique optimized design for new construction possible with HomeWorks® combines the benefits of centralized and localized designs. Typically, local lighting controls are used in guest rooms, bathrooms, and in any other areas where simple, familiar controls are desired. Lighting loads in foyers, dining rooms, living rooms, and other key entertainment areas are often wired to Remote Power Panels, reducing wall clutter in these high-profile areas. Keypads are then distributed throughout the home, providing multi-room or whole-home control wherever it is desired.

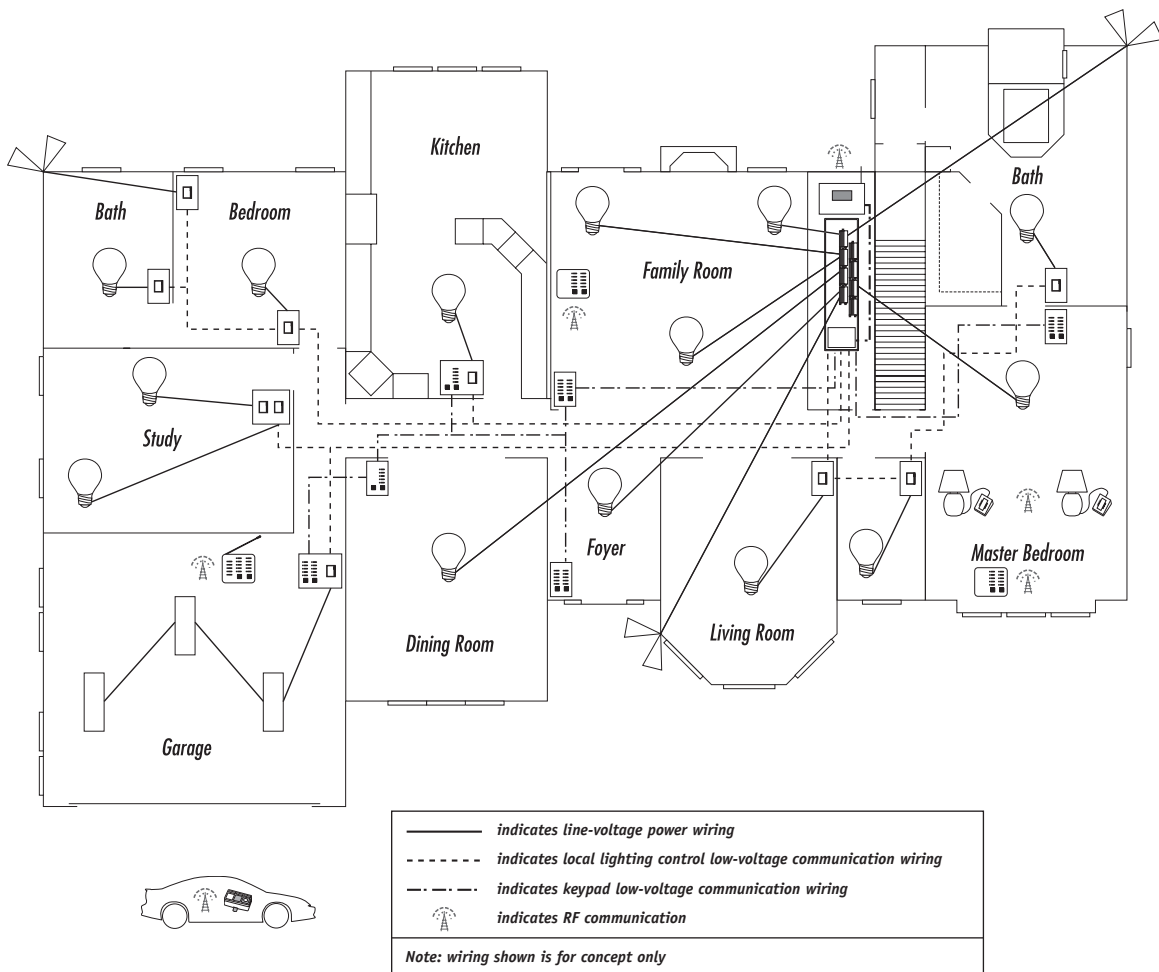
In this design, areas of the house that have been pre-wired can be easily added to the system at a later date.

The addition of RF devices to an optimized design provides convenient portable control from any location. Activate lights from an RF Tabletop Keypad. Dim table and floor lamps from RF Lamp Dimmers. Control garage doors and lighting from RF Visor Controls.

The new construction optimized design allows pre-wiring for later installation of local lighting controls because it uses the same line-voltage wiring plan as a home without a control system. This design is ideal for the homeowner who would like to start with a basic system and then expand it later.

OPTIMIZED DESIGN SUMMARY:

- Simple controls, familiar operation
- Minimizes wall clutter
- Minimizes need for Power Boosters or Interfaces
- Maximum programming flexibility
- Local lighting controls provide “fail-safe” operation
- Add portable RF devices for convenient control
- Pre-wire capability



New Construction System Design Overview

RF COMPONENTS



Switches



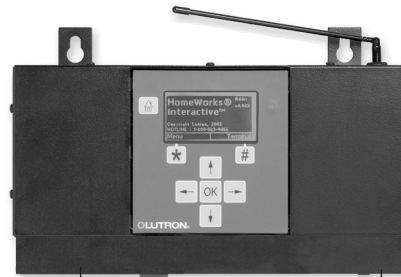
Dimmers



Tabletop Keypads



RF Signal Repeaters



RF Processors

To RS-232

To Additional Processors



RF Visor Controls

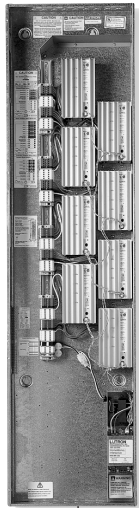


Keypads



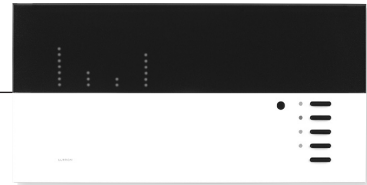
Lamp Dimmers

WIRED COMPONENTS

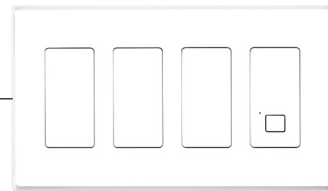


Remote Power Panels

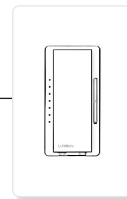
Wired Processors



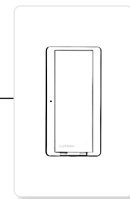
GRAFIK Eye®



Wallbox Power Modules

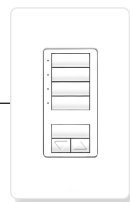
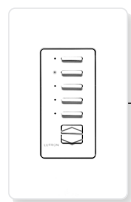


Dimmers



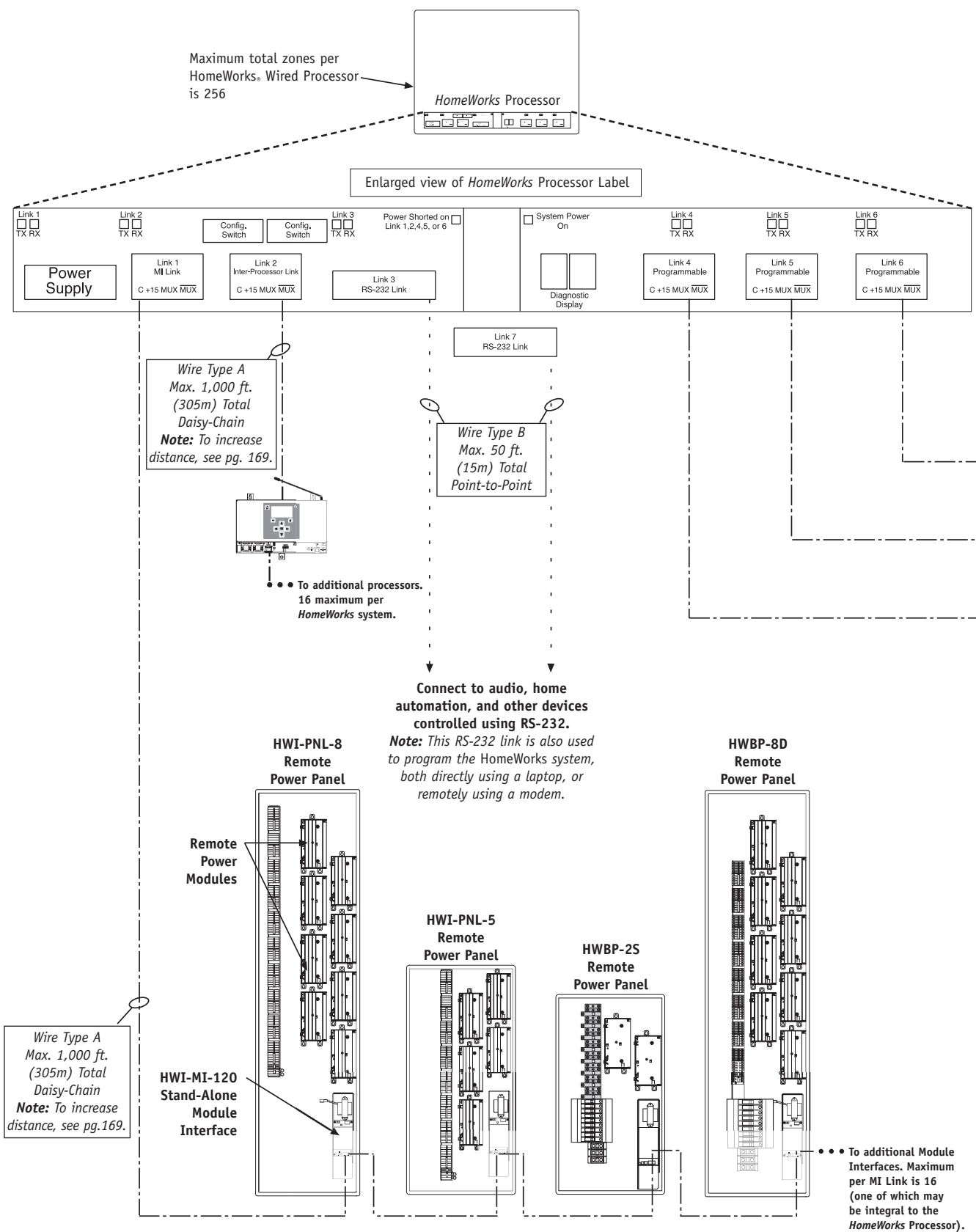
Switches

To RS-232



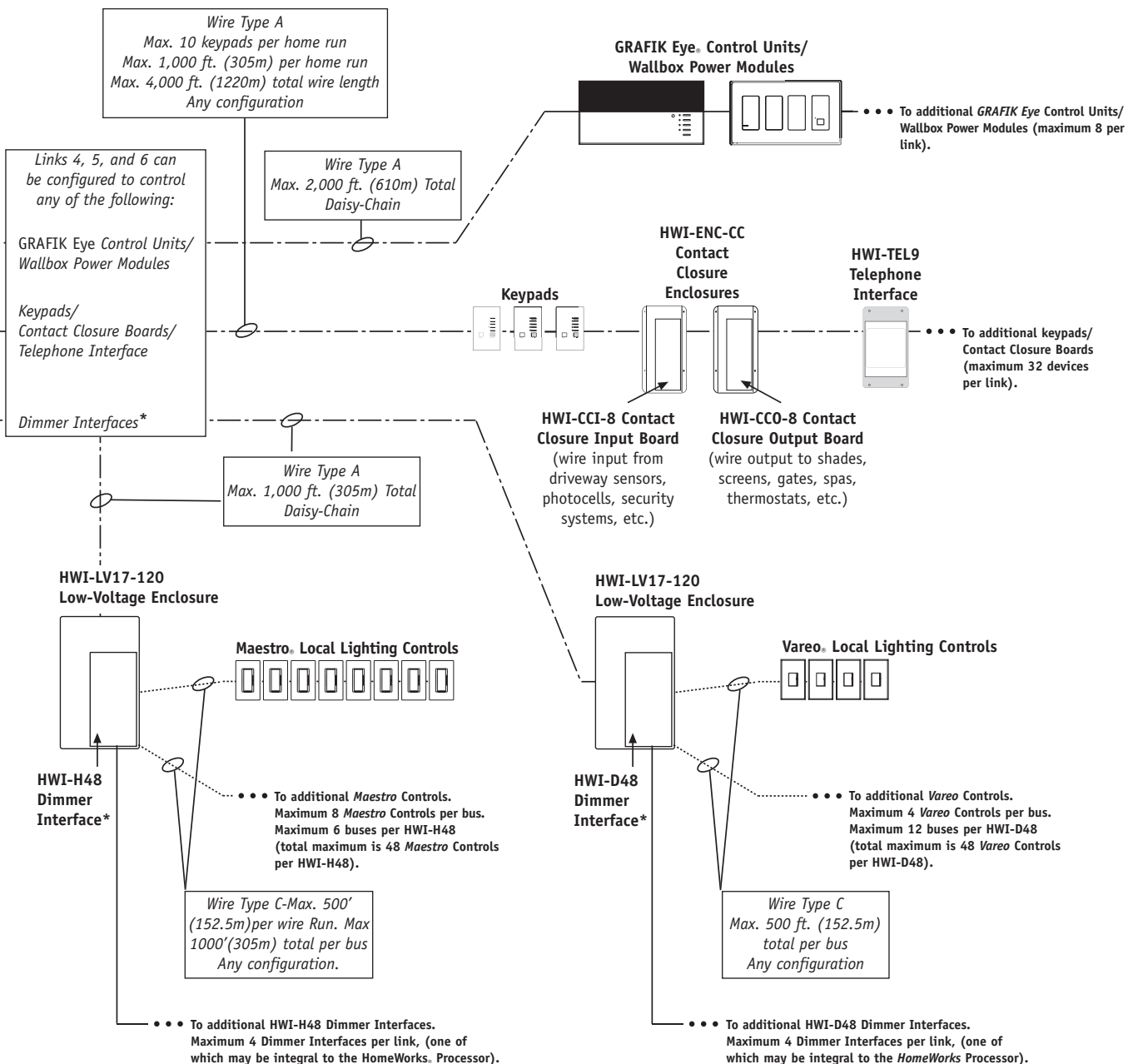
Keypads

System Wiring and Communication Overview



Wire Type Key

- **Type A:** Two pair [one pair #18 AWG (1.0mm²), one pair #18-22 AWG (1.0-0.5mm²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used.
- - - - **Type B:** Standard RS-232 Cable (all pins straight through).
- **Type C:** One pair #18-22 AWG (1.0-0.5mm²) twisted shielded Class 2 wire.



* H48s and D48s cannot share a link.

System Design

Existing Construction
or
Minor Renovation

Localized Design

A localized design for existing construction uses HomeWorks® RF Maestro® Local Lighting Controls and RF Lamp Dimmers to directly control all lighting loads. One benefit of this type of system is that it is easily understood by homeowners, since the individual lighting loads are controlled in the same manner as with traditional dimmers and switches.

RF Keypads are added to provide control of multiple lights within one area or all of the lights throughout the home. In this design, keypads are typically installed in locations such as entryways, master bedrooms, and key entertaining areas.

Local lighting controls allow the homeowner to dim and switch loads directly. This provides “fail-safe” operation, even if communication to the processor is temporarily interrupted.

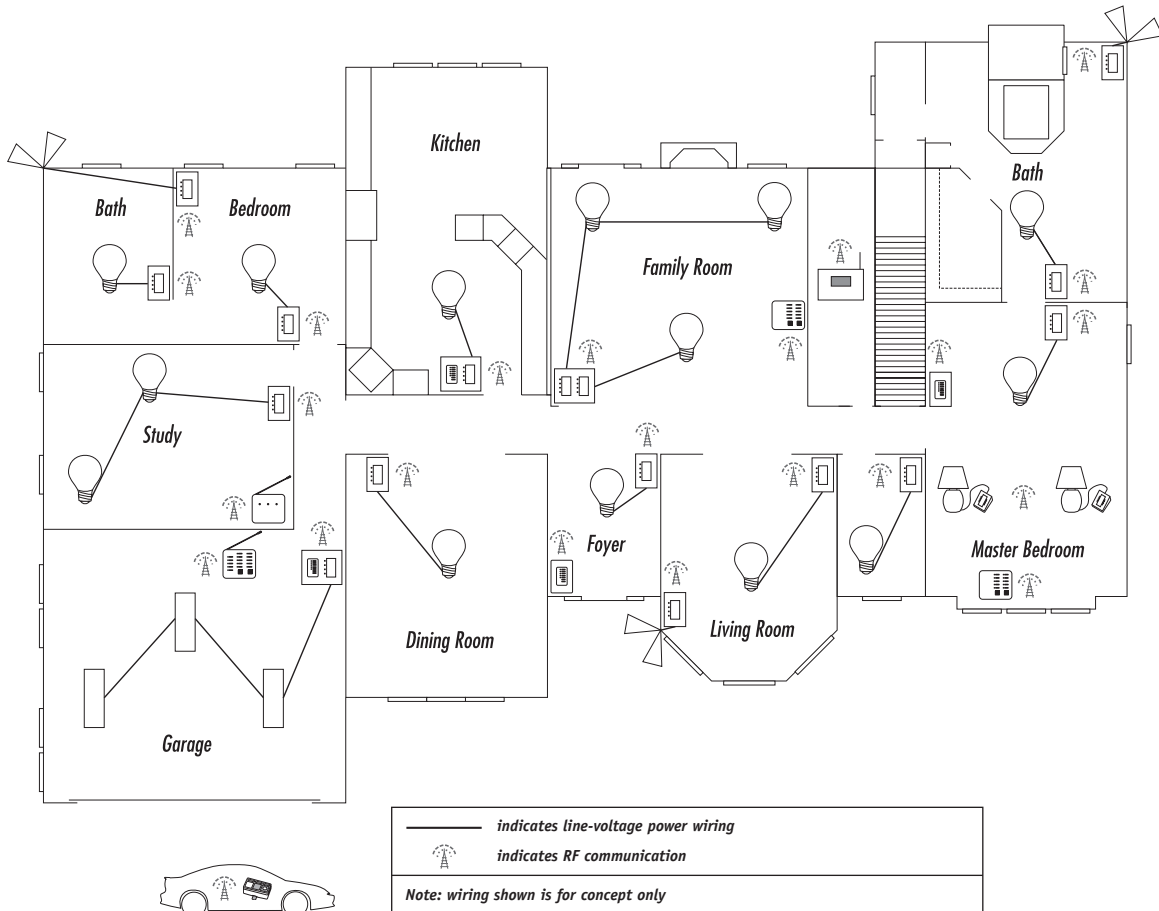
The use of RF components in a localized design is the only truly retrofit configuration for whole-home lighting con-

trol. This configuration uses the same line-voltage wiring plan as a home without a control system. This design is ideal for the homeowner who wants to add a control system at any time.

Portable RF devices provide convenient control from any location. Activate lights from an RF Tabletop Keypad. Dim table and floor lamps from RF Lamp Dimmers. Control garage doors and lighting from RF Visor Controls.

LOCALIZED DESIGN SUMMARY:

- Simple controls, familiar operation
- Local lighting controls provide “fail-safe” operation
- Uses existing line-voltage wiring
- No low-voltage wiring necessary
- Portable RF devices for convenient control
- Add whole-home lighting control at any time



Existing Construction System Design Overview

SYSTEM DESIGN

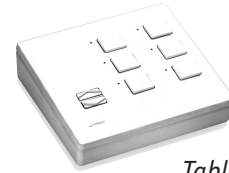
RF COMPONENTS



Switches



Dimmers



Tabletop Keypads



RF Signal Repeaters



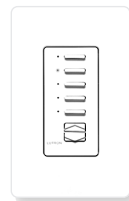
RF Processors

To RS-232

To Additional Processors



RF Visor Controls



Keypads

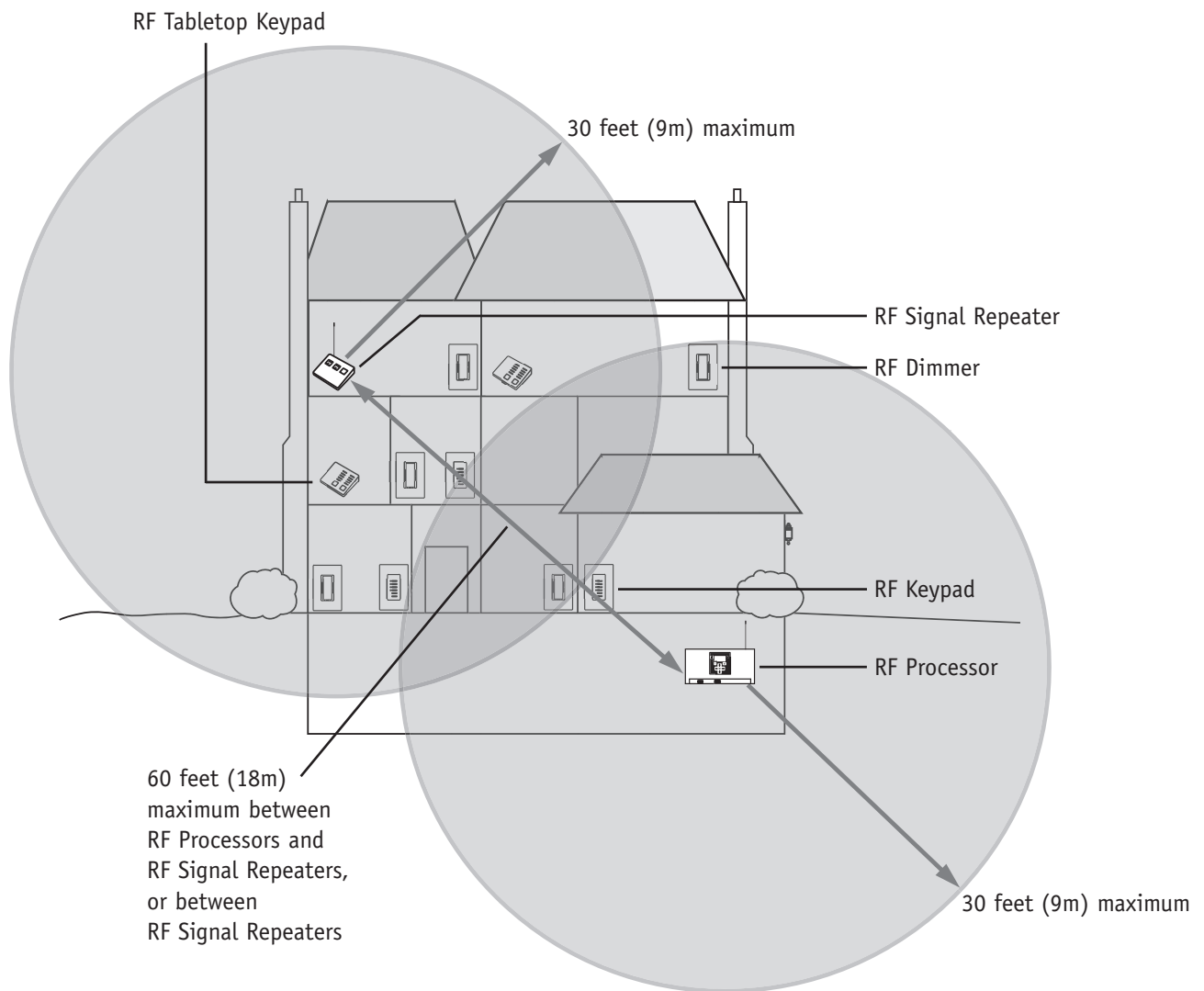


Lamp Dimmers

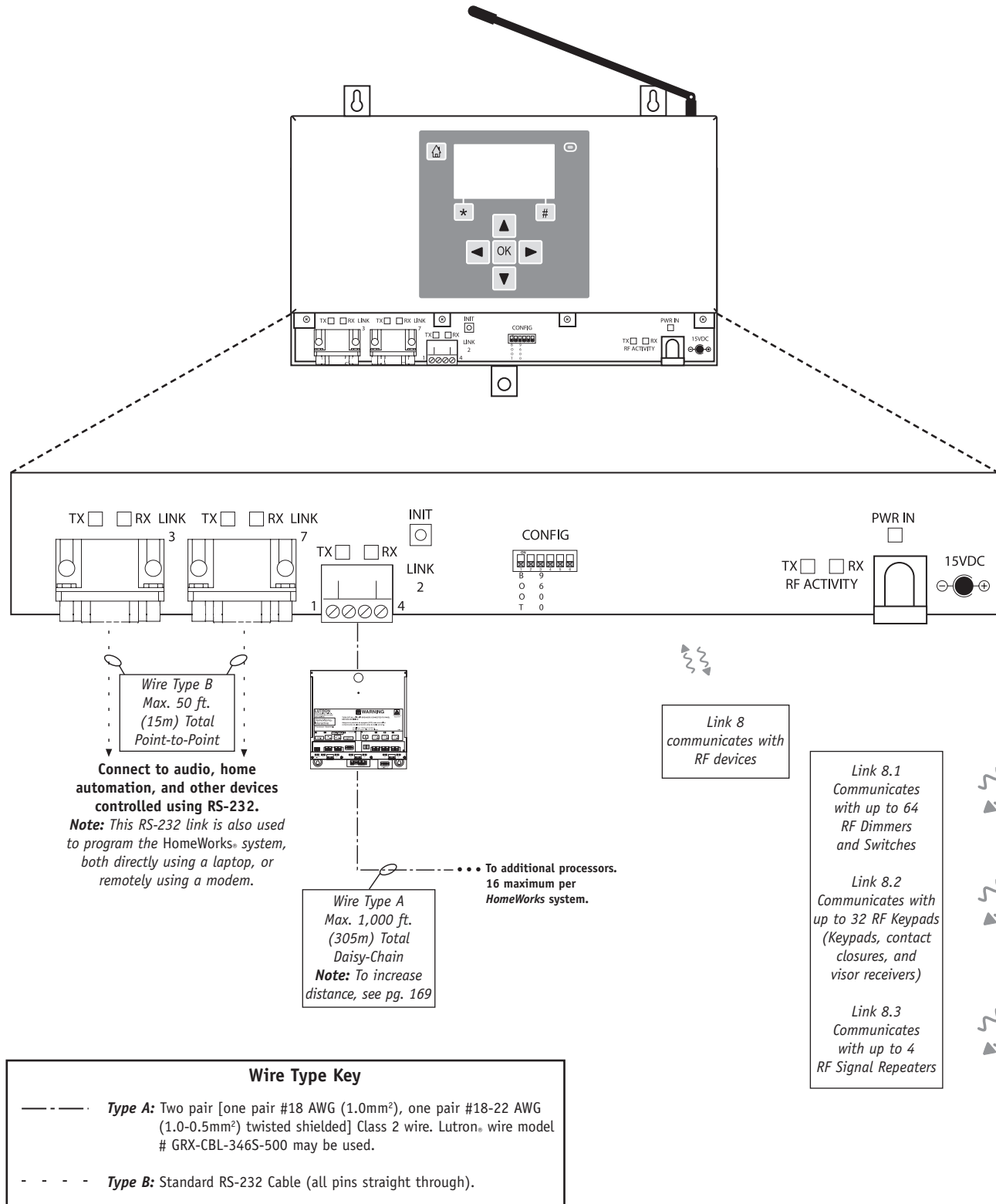
RF Coverage Diagram

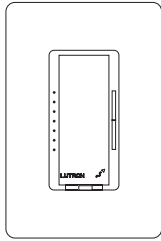
SYSTEM COMMUNICATION NOTES:

- RF Local Lighting Controls and RF Keypads must be located within 30 feet (9m) of an RF Signal Repeater or an RF Processor. Multiple RF Signal Repeaters may be necessary to provide adequate coverage.
- RF Local Lighting Controls cannot be controlled by the system and RF Keypads do not function until they are addressed and programmed using the HomeWorks® Utility.

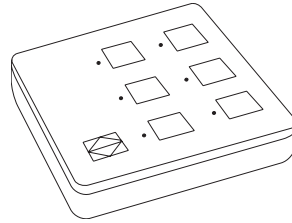


System Wiring and Communication Overview

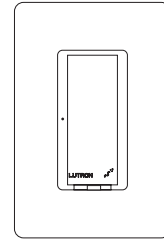




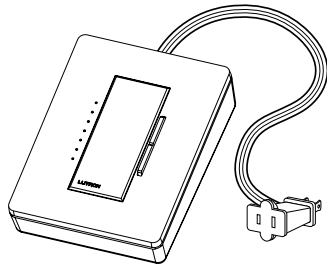
RF Dimmers



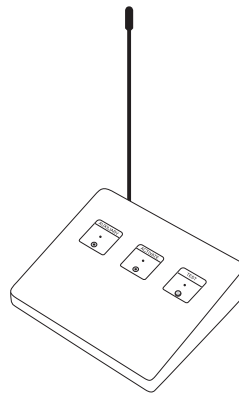
RF Tabletop Keypads



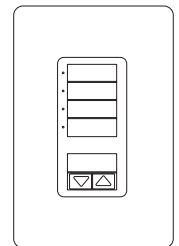
RF Switches



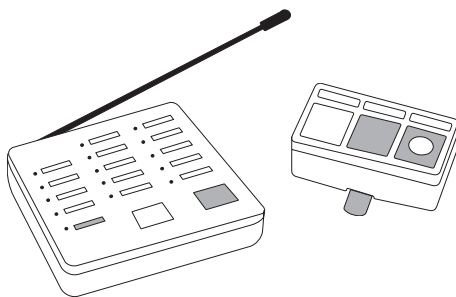
RF Lamp Dimmers



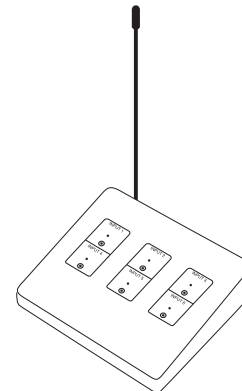
RF Signal Repeaters



RF Keypads



RF Visor Controls



RF Contact Closure Interfaces

Component Overview

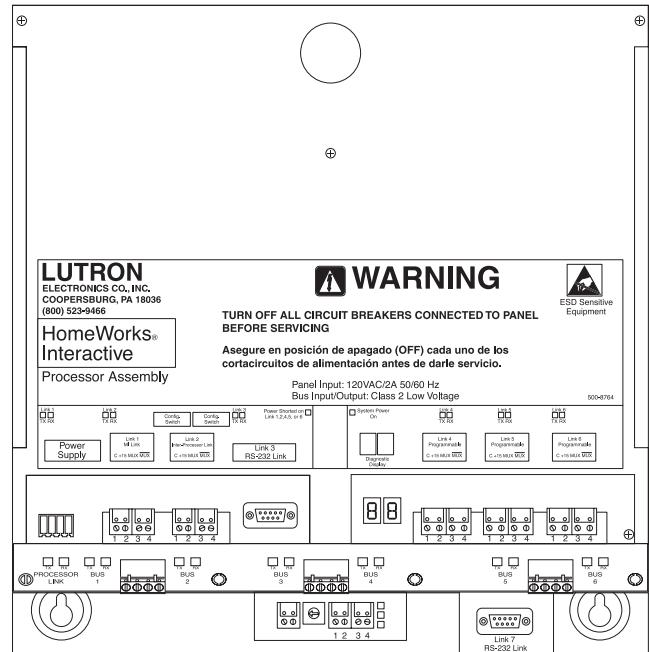
Wired Processors

HomeWorks® Processors comprise the major communication hub of a Wired HomeWorks system. Each processor has seven communication links, which allow the processor to interact with various HomeWorks system components, including: Wired Vareo® and Maestro® Local Lighting Controls, Remote Power Modules, GRAFIK Eye® Preset Local Lighting Controls, Wired Keypads, Contact Closure Devices, and other Wired and RF Processors.

All of these components can be connected directly to the processor, with the exception of Wired Vareo and Maestro Local Lighting Controls and Remote Power Modules, which require interfaces. Wired Vareo Local Lighting Controls require a D48 Dimmer Interface, Wired Maestro Local Lighting Controls require an H48 Dimmer Interface and Remote Power Modules require a Module Interface (MI). These interfaces are available as stand-alone components or as built-in components in specific models of processors, as shown in the chart below.

Each Wired Processor supports control of up to 256 lighting zones and up to 96 keypads. Use up to 16 Wired Processors as one system, and control up to 4,096 lighting zones and 1,024 wired keypads.

For technical specifications, see pg. 86.



**Wired Processor
(HWI-PM-H48-120 shown)**

HomeWorks Wired Processor Models

Compatible Aesthetic Styles	Processor Model #	Integral Dimmer Interface	Integral Module Interface (MI)	Installs in Remote Power Panel or Low-Voltage Enclosure Model #
Architectural-style Designer-style	HWI-PO-120 (Wired Processor only)	No	No	HWI-LV32-120
Architectural-style Designer-style	HWI-PM-120 (Wired Processor with MI)	No	Yes	HWI-PNL-8
Architectural-style	HWI-PO-D48-120 (Wired Processor with D48)	Yes (D48)	No	HWI-LV32-120
Architectural-style	HWI-PM-D48-120 (Wired Processor with MI and D48)	Yes (D48)	Yes	HWI-PNL-8
Designer-style	HWI-PO-H48-120 (Wired Processor with H48)	Yes (H48)	No	HWI-LV32-120
Designer-style	HWI-PM-H48-120 (Wired Processor with MI and H48)	Yes (H48)	Yes	HWI-PNL-8

Wired Processors (cont.)

PROCESSOR LINKS

Each Wired Processor has seven communication links, which allow the processor to interact with other equipment. Four of the seven links are designated for specific equipment connections, and three of the links are configurable through the HomeWorks® Utility, allowing the system to be tailored to meet the needs of the installation.

Communication Link 1: This link is designated for communication with Module Interfaces. It must be wired in a daisy-chain configuration and requires a link terminator at the last Module Interface when the total cable length exceeds 50 feet (15m).

Communication Link 2: This link is designated for communication between processors. It must be wired in a daisy-chain configuration and requires terminators at both ends of the link when the total cable length exceeds 50 feet (15m).

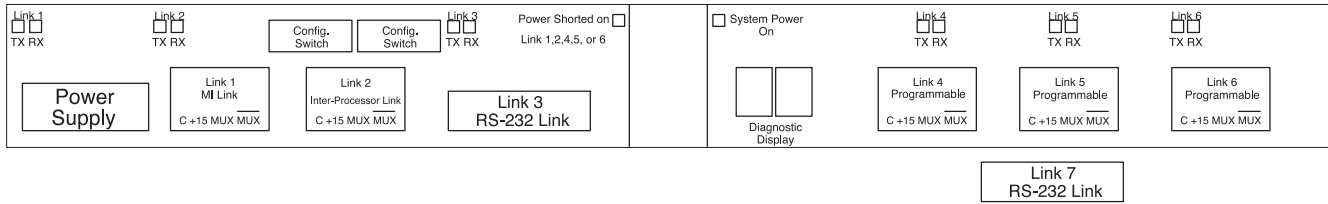
Communication Links 3 and 7: These links are multi-purpose RS-232 ports. One port is initially used for uploading the programming information to the processor. Connect a modem to one of these ports for simple remote programming. When they are not being used for programming, the RS-232 ports can be used for two-way serial communications with A/V equipment, security systems, HVAC, and home automation controls. Maximum cable length is 50 feet (15m).

Communication Links 4, 5, and 6: Each of these links can be configured to communicate with one of the following: Keypads and interfaces, Wired Vareo® Local Lighting Controls (via a D48 Dimmer Interface), Wired Maestro® Local Lighting Controls (via an H48 Dimmer Interface), or GRAFIK Eye® Preset Local Lighting Controls and Wallbox Power Modules. See the chart on the next page, pg. 32

For wiring information, see chart on pg 32.

Wired Processors (cont.)

Enlarged View of Wired Processor Label (showing Communication Links)



Communication Link Information

Non-Configurable	Function	Link Capacity	Wiring Configuration	Terminators?	Max. Wire Length & Type
Link 1	Link to Remote Power Modules	16 Module Interfaces, each controlling up to 8 RPMs	Daisy-Chain	At last Module Interface ²	1,000 ft. (305m) total ¹ , Type A
Link 2	Link to other processors	16 processors (RF or Wired)	Daisy-Chain	At first & last processor ²	1,000 ft. (305m) total ¹ , Type A
Links 3 and 7	RS-232 port	N/A	Point-to-Point	No	50 ft. (15m) max., Type B
Configurable	Possible Function	Link Capacity	Wiring Configuration	Terminators?	Max. Wire Length & Type
Links 4, 5, and 6 (configure each link to communicate with one of the following: Keypads and interfaces, Wired Vareo® Controls, Wired Maestro® Controls, or GRAFIK Eye® Controls and WPMs).	Link to keypads (Keypads/Contact Closure Interfaces/Telephone Interface)	32 devices	Any (Daisy-Chain, Star, T-tap, etc.)	No	1,000 ft. (305m) per home run, Type A ³ 4,000 ft. (1220m) total
	Link to Local Architectural Lighting Controls	4 D48 Dimmer Interfaces, each controlling up to 48 Wired <i>Vareo</i> Controls	Daisy-Chain	At processor and last Dimmer Interface ²	1,000 ft. (305m) total, Type A
	Link to Local Designer Lighting Controls	4 H48 Dimmer Interfaces, each controlling up to 48 Wired <i>Maestro</i> Controls	Daisy-Chain	At processor and last Dimmer Interface ²	1,000 ft. (305m) total, Type A
	Link to <i>GRAFIK Eye</i> /WPM	8 <i>GRAFIK Eye</i> /WPMs	Daisy-Chain	No	2,000 ft. (610m) total, Type A

Type A = Two pair [one pair #18 AWG (1.0mm²), one pair #18-22 AWG (1.0-0.5mm²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used.

Type B = Standard RS-232 cable.

¹ To increase link distance, see pg. 169, Link Extender specifications.

² Terminators required if total cable length exceeds 50 feet (15m).

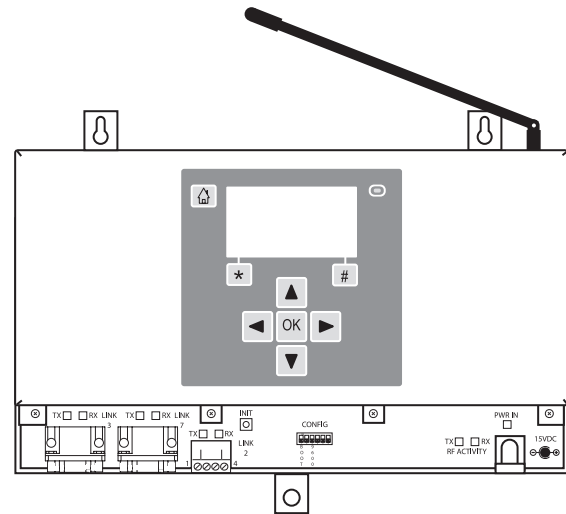
³ Maximum ten keypads per 1,000 feet (310m) wire run; maximum 4,000 feet (1220m) total wire length.

RF Processors

HomeWorks® RF Processors are the major communication hub of an RF system. Each RF Processor has up to four communication links, allowing the RF Processor to interact with various *HomeWorks* system components, including: RF Maestro® Local Lighting Controls, RF Keypads, RF Contact Closure Interfaces, RF Signal Repeaters, and other RF and Wired Processors.

Each RF Processor supports the control of 64 RF Local Lighting Controls and 32 RF Keypads. Use up to 16 RF Processors in one system to control up to 1,024 RF lighting zones and 512 RF Keypads.

For technical specifications, see pg. 88.



**RF Processor
(H-RFP-2P shown)**

HomeWorks RF Processor Models

Compatible Aesthetic Styles	Processor Model #	RS-232 Ports	Communicates with Wired Processor	Requires Enclosure?
Designer-style	H-RFP-1P (RF Processor with one RS-232 port)	1	Yes (wiring required)	No
Designer-style	H-RFP-2P (RF Processor with two RS-232 ports)	2	Yes (wiring required)	No

RF Processors (cont.)

PROCESSOR LINKS

Each RF Processor has up to four communication links, which allow the processor to interact with other equipment. Three of the four links are designated for wired communications, and one link is designated for RF communications.

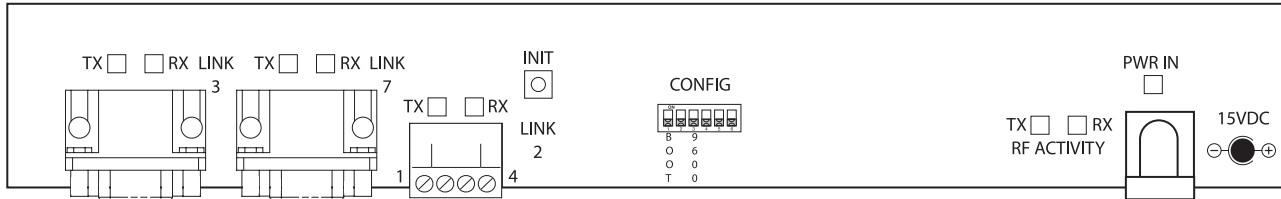
Communication Link 2: This link is designated for communication between processors. It must be wired in a daisy-chain configuration and requires terminators at both ends of the link when the total cable length exceeds 50 feet (15m).

Communication Links 3 and 7: These links are multi-purpose RS-232 ports used for uploading programming information to the processor. Connect a modem to one of these ports for simple remote programming. When they are not being used for programming, the RS-232 ports can be used for two-way serial communications with A/V equipment, security systems, HVAC, and home automation controls. Maximum cable length is 50 feet (15m).

Communication Link 8: This link is designated for RF communication with dimmers, switches, keypads, and RF Signal Repeaters. Link 8.1 provides communication with RF Maestro® Local Lighting Controls. Link 8.2 provides communication with RF Keypads, and Link 8.3 provides communication with RF Signal Repeaters.

RF Processors (cont.)

Enlarged View of RF Processor Communication Links



Communication Link Information

Non-Configurable	Function	Link Capacity	Wiring Configuration	Terminators?	Max. Wire Length & Type/ RF Range
Link 2	Link to other processors	16 processors (RF or Wired)	Daisy-Chain	At first & last processor ¹	1,000 ft. (305m) total ² , Type A
Links 3 and 7	RS-232 port	N/A	Point-to-Point	No	50 ft. (15m) max., Type B
Link 8	8.1 RF Dimmers and Switches	64 Devices	RF communication	N/A	RF Dimmers and Switches must be located within 30 ft. (18m) of an RF Processor or an RF Signal Repeater
	8.2 RF Keypads, Contact Closure Interfaces, and Visor Receivers	32 Devices	RF communication	N/A	RF Keypads must be located within 30 ft. (18m) of an RF Processor or an RF Signal Repeater
	8.3 RF Signal Repeaters	4 Devices	RF communication	N/A	RF Signal Repeaters must be located within 60 ft. (36m) of an RF Processor or an RF Signal Repeater

Type A = Two pair [one pair #18 AWG (1.0mm²), one pair #18-22 AWG (1.0-0.5mm²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used.

Type B = Standard RS-232 cable.

¹ Terminators required if total cable length exceeds 50 feet (15m).

² To increase link distance, see pg. 169, Link Extender specifications.

RF Signal Repeater

The HomeWorks® RF Signal Repeater provides additional coverage area for RF signals sent between RF Maestro® Local Lighting Controls or RF Keypads and an RF Processor.

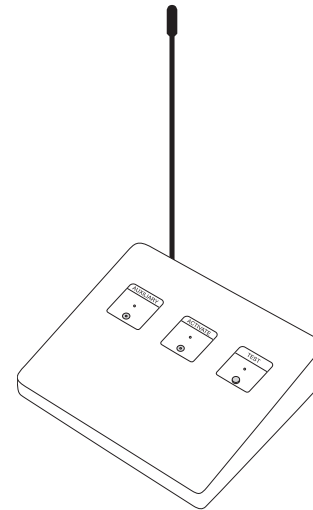
RF SIGNAL REPEATER **(MODEL # HR-REP-SW)**

RF Signal Repeaters work together with an RF Processor to extend the coverage area. Each RF Signal Repeater covers approximately 2,500 square feet (232m²) of living space. Up to four RF Signal Repeaters can be added to each RF Processor.

COMMUNICATION TO RF PROCESSOR

The RF Signal Repeater must be located within 60 feet (18m) of an RF Processor or another RF Signal Repeater. Physical connections to the processor are not required.

For technical specifications, see pg. 90.



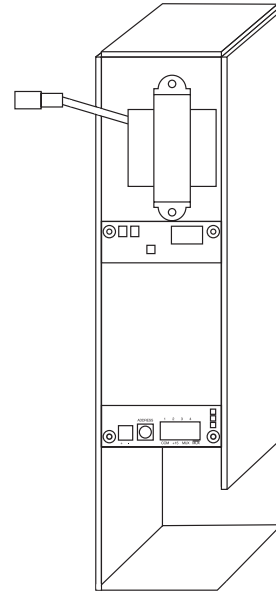
RF Signal Repeater
(HR-REP-SW)

Module Interface

Module Interfaces control up to eight RPMs and are available in two configurations: either integral to a HomeWorks® Wired Processor or as a stand-alone component. Each HomeWorks Wired Processor controls up to 16 Module Interfaces (one of which may be integral to the processor).

STAND-ALONE MODULE INTERFACE **(MODEL # HWI-MI-120)**

A stand-alone Module Interface controls up to eight RPMs in a Remote Power Panel enclosure that does not contain a processor. In this configuration, the Module Interface manages communication between the RPMs and a Wired Processor located in a separate enclosure. A stand-alone Module Interface derives power from its own internal power transformer. A stand-alone Module Interface installs in a 59-inch (150cm) Remote Power Panel (model # HWI-PNL-8 and HWBP-8D) with up to eight RPMs, in a 32-inch (81cm) Remote Power Panel (model # HWI-PNL-5) with up to five RPMs, or in a 24-inch (61cm) Remote Power Panel (model # HWBP-2S) with up to two RPM-4Rs.



**Enlarged View of
Stand-Alone Module Interface
(HWI-MI-120)**

INTEGRAL MODULE INTERFACE

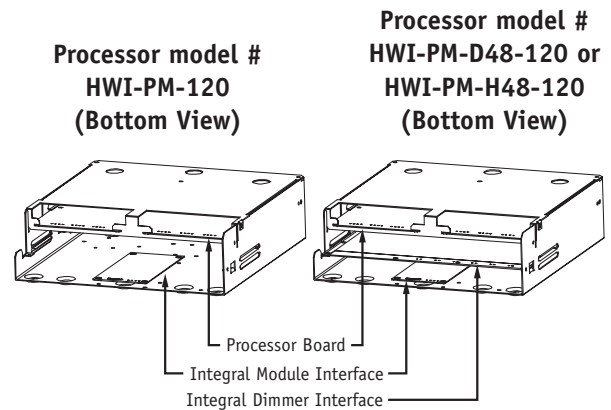
Three of the six Wired Processor model numbers (model # HWI-PM-120, HWI-PM-D48-120 and HWI-PM-H48-120) contain integral Module Interfaces, allowing up to eight RPMs to be installed in the same enclosure as a processor. Integral Module Interfaces receive power from the processor's internal power supply. These processors with integral Module Interfaces must always be installed in a 59-inch (150cm) Remote Power Panel (model # HWI-PNL-8).

MANUAL OVERRIDE CAPABILITIES

A manual override input is provided on each Module Interface, allowing a pre-determined lighting scene to be activated from designated override switches installed anywhere in the home.

CONNECTION TO WIRED PROCESSOR

Each HomeWorks Wired Processor has one communication link (Link 1) dedicated to the control of up to 16 MIs. This connection must be daisy-chained and requires two pair [one pair #18 AWG (1.0mm²), one pair #18-22 AWG (1.0-0.5mm²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used.



For technical specifications, see pg. 92.

Remote Power Modules

HomeWorks® Remote Power Modules (RPMs) are used in both centralized and optimized system designs to control lighting, motor, and fan loads. There are several different models of RPMs; each model controls specific load types, as noted below. The RPMs are mounted in one of four Remote Power Panels. Model # HWI-PNL-8 and HWBP-8D house up to eight RPMs, model # HWI-PNL-5 houses up to five RPMs, and model # HWBP-2S houses up to two RPM-4Rs.

DIMMING MODULE

(MODEL # HW-RPM-4U-120)

Each of the four outputs of the Dimming Module directly dim or switch incandescent¹, magnetic low-voltage, neon/cold cathode, or fluorescent (Tu-Wire®) lighting. Each of the four outputs directly switch electronic low-voltage lighting. The total capacity of a Dimming Module is 16A @ 120V (1920W/VA)², comprised of any combination of load types. The total load capacity may be divided among the four outputs in any manner.

ELECTRONIC LOW-VOLTAGE MODULE

(MODEL # HW-RPM-4E-120)

Each of the four outputs of the ELV module directly dim electronic low-voltage transformers¹ using reverse phase control technology. The total capacity of the ELV module is 16A @ 120V (1920W)². The total load capacity of any individual output is limited to 9A @ 120V (1080W)², which can include up to 2.5A (300W) of incandescent lighting.

MOTOR MODULE

(MODEL # HW-RPM-4M-120)

Each Motor Module controls four 3-wire 120V AC motors for applications such as shades, draperies, and hurricane shutters. Individual control outputs use two mechanically interlocked relays for directional control that prevents simultaneous operation of both outputs. Maximum relay contact rating is 1/4HP, 5A @ 120V for inductive loads, and 3A @ 120V for resistive loads.

POWER RELAY MODULE

(MODEL # HW-RPM-4R)

Each of the four outputs of the Power Relay Module directly switches incandescent, neon/cold cathode, magnetic low-voltage, electronic low-voltage, fluorescent, or high intensity discharge (HID), making this module ideal for high-wattage applications, such as landscape and security lighting. The total capacity of a Power Relay Module is 64A @ 120V (7680W/VA). The total load capacity of any individual output is limited to 16A @ 120VAC (1920W/VA), 1/3 HP.

QUIET FAN SPEED CONTROL MODULE

(MODEL # HW-RPM-4FSQ-120)

Each of the four outputs of the fan module controls a single ceiling fan. Each output uses quiet speed control technology that eliminates fan motor buzzing. There are five available speeds: off, low, medium, medium-high, and high. Each output is rated to control a single ceiling fan load up to 2A @ 120V.

CONNECTION TO MODULE INTERFACE

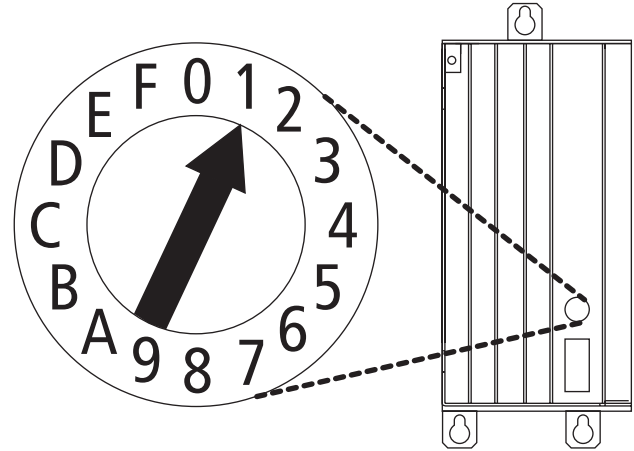
All RPMs must be connected to a Module Interface housed within the same panel enclosure. If a processor is located in the same enclosure as RPMs, a processor with an integral Module Interface must be used (either model # HWI-PM-120, HWI-PM-D48-120, or HWI-PM-H48-120), which is indicated by processor model numbers containing an "M". RPMs within an enclosure are connected to the Module Interface using a Lutron-provided harness. To minimize the effects of single power supply failure, each RPM is powered by its own internal power supply.

For technical specifications, see pgs. 94-97.

¹ In rare cases, incandescent lamps and electronic low-voltage transformers will "buzz" or "hum." The HW-HIFC-10-2 Filter Choke assembly reduces this hum. The Filter Choke Assembly can be installed in place of module 8 in an HWI-PNL-8 Remote Power Panel. See pg. 171 for additional information.

² For higher wattages or for load types other than those listed, a Power Booster or Interface is required. See pg. 49 for more information.

Remote Power Modules (cont.)



Enlarged view of
Address Switch

ADDRESS SWITCH POSITION FOR HW-RPM-4U, 4E, 4R, 4FSQ

Position	Module Output/Purpose
0	All outputs OFF
1-8	Address for normal operation
9, A	Not used
B	Output 1 ON Use for temporary lighting and/or zone testing
C	Output 2 ON Use for temporary lighting and/or zone testing
D	Output 3 ON Use for temporary lighting and/or zone testing
E	Output 4 ON Use for temporary lighting and/or zone testing
F	All outputs ON Use for temporary lighting and/or zone testing

ADDRESS SWITCH POSITION FOR HW-RPM-4M

Position	Module Output/Purpose
0	All relays OFF
1-8	Address for normal operation
9, A-D	Not used
E	All raise relays ON Use for directional motor testing
F	All lower relays ON Use for directional motor testing

Remote Power Feed-Through Panels

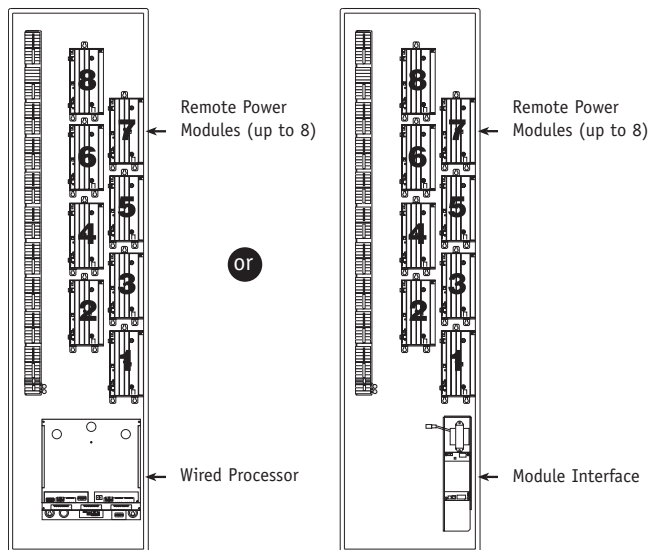
Remote Power Feed-Through Panels are available in two different sizes, each of which may be either surface-mounted or recess-mounted in an electrical closet or other equipment room. The number of Remote Power Panels and the types of components within them may be specified to fit the size, lighting plan, and design of a home. Remote Power Panels may be distributed throughout the home for added flexibility during installation of the line-voltage wiring.

Remote Power Feed-Through Panels may contain HomeWorks® Wired Processors, Remote Power Modules, or Module Interfaces. Shown below are a few of the possible configurations.

For technical specifications, see pgs. 98-101.

EIGHT-MODULE REMOTE POWER FEED-THROUGH PANEL (MODEL # HWI-PNL-8)

Accommodates one of the following combinations of components:

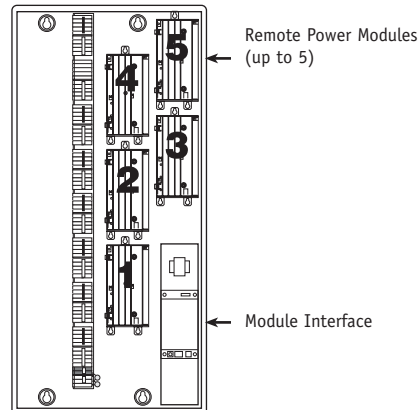


- 1 Wired Processor
 - Up to 8 Remote Power Modules¹
- 1 Module Interface
 - Up to 8 Remote Power Modules¹

¹ One HW-HIFC-10-2 Filter Choke may be installed in place of module 8, see pg. 171.

FIVE-MODULE REMOTE POWER FEED-THROUGH PANEL (MODEL # HWI-PNL-5)

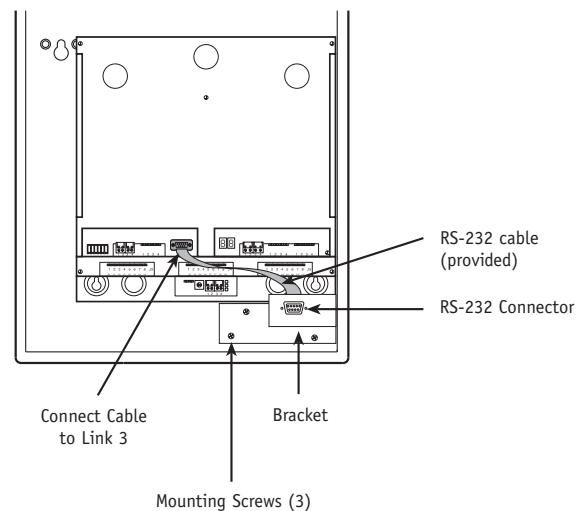
Accommodates the following combination of components:



- 1 Module Interface
- Up to 5 Remote Power Modules

Note: HWI-PNL-5 **cannot** house a HomeWorks Wired Processor

KIT FOR PERMANENT RS-232 CONNECTION IN HWI-PNL-8 (MODEL # HWI-KIT-RS232)



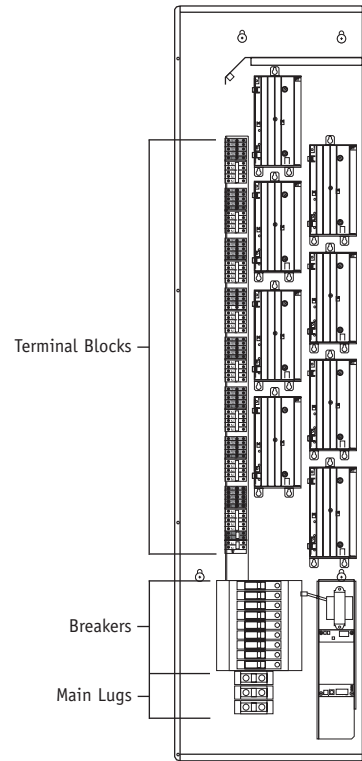
Note: HWI-KIT-RS232 can be installed in HWI-PNL-8, allowing for a connection to RS-232 port without removing the panel cover.

Remote Power Panels with Breakers

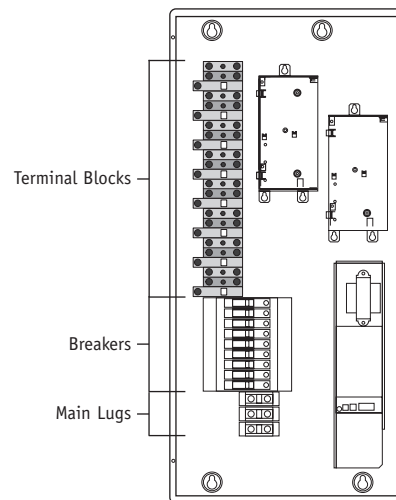
Remote Power Panels with Breakers are available in two different sizes, each of which may be either surface-mounted or recess-mounted in an electrical closet or other equipment room. The number of Remote Power Panels and the types of components within them may be specified to fit the size, lighting plan, and design of a home. Both the HWBP-8D and HWBP-2S include factory-installed wiring from the breakers to the terminal blocks. Remote Power Panels may be distributed throughout the home for added flexibility during installation of the line-voltage wiring. Remote Power Panels with Breakers require only one feed from the main distribution panel, reducing the number of wiring connections required (feed-through panels require up to nine separate feeds).

Remote Power Panels with Breakers may contain Remote Power Modules and a Module Interface.

For technical specifications, see pgs. 102-105.



**Remote Power Panel with Breakers
(HWBP-8D)**



**Remote Power Panel with Breakers
(HWBP-2S)**

GRAFIK Eye® Preset Local Lighting Controls

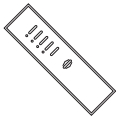
GRAFIK Eye Preset Local Lighting Controls allow you to easily create and recall multiple lighting scenes for the changing activities that occur in a room. Up to 16 preset scenes can be stored in each *GRAFIK Eye*, making them ideal for home theaters, living rooms, and dining rooms. *GRAFIK Eye* preset scenes can be easily adjusted manually at the Control Unit at any time. *GRAFIK Eye* Controls are available to dim or switch two, three, four, or six zones of incandescent, magnetic low-voltage, or neon/cold cathode lighting loads.

CONNECTION TO WIRED PROCESSOR

Each HomeWorks® Wired Processor has three configurable links (see pg. 30 for processor details), each capable of controlling up to eight *GRAFIK Eye* Control Units or WPMs. This connection requires two pair [one pair #18 AWG (1.0mm²), one pair #18-22 AWG (1.0-0.5mm²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used. The maximum cable length is 2,000 feet (610m), and this link must be wired in a daisy-chain configuration.

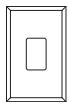
For technical specifications, see pgs. 106-109.

ACCESSORY CONTROLS



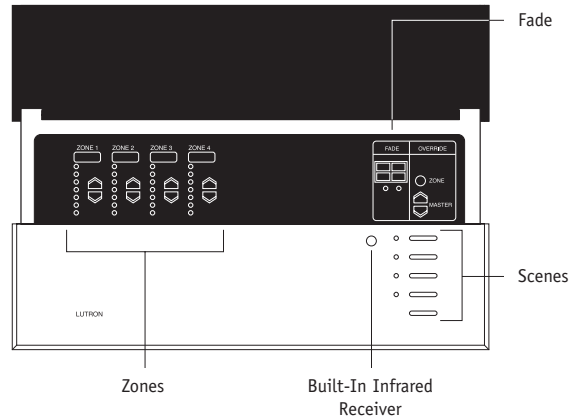
Handheld Infrared Remote Control Transmitters GRX-IT, GRX-8IT (White Only)

Controls four (or eight) scenes plus master raise/lower and off. Recalls or fine tunes light levels. Turns lighting on or off.



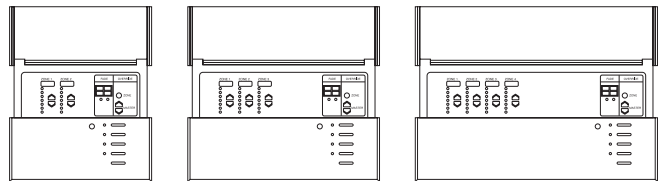
On/Off Doorway Control NTGRX-1S

Switches lighting on or off from a remote wall location. Line/main voltage control (functions as 3-way switch).



**GRAFIK Eye Preset Lighting Control
(GRX-IA-4 shown)**

GRAFIK EYE MAIN CONTROL UNIT INSTALLATION NOTES



2-Zone
installs in
2-gang
US wallbox

3-Zone
installs in
3-gang
US wallbox

**4-Zone (pictured)
and 6-Zone**
installs in 4-gang
US wallbox

Note: Use 3-1/2 inch (89mm) deep masonry wallboxes for ease of installation of GRAFIK Eye Control Units.

FINISHES AND COLORS

GRAFIK Eye Preset Local Lighting Controls are available in Architectural Matte finish plastic colors and metallic finishes. Colors include: White(WH), Beige(BE), Ivory(IV), Black(BL), Gray(GR) and Brown(BR). Metallic finishes include: Clear Anodized Aluminum(CLA), Black Anodized Aluminum(BLA), Brass Anodized Aluminum(BRA), Satin Brass(SB), Bright Brass(BB), Antique Brass(QB), Bright Chrome(BC), Satin Chrome(SC), Satin Nickel(SN), Bright Bronze(BZ), Satin Bronze(SZ), Antique Bronze(QZ), and 24-karat Gold Plate(AU). Custom finishes and paint matching are also available.

Wallbox Power Module

HomeWorks® Wallbox Power Modules (WPM) control six independent zones of lighting and fit in a 4-gang wallbox. The WPM is designed to be placed in closets, equipment rooms, and other locations in the home where it is “hidden” from view. Homeowners use system keypads to control the WPM.

CONNECTION TO WIRED PROCESSOR

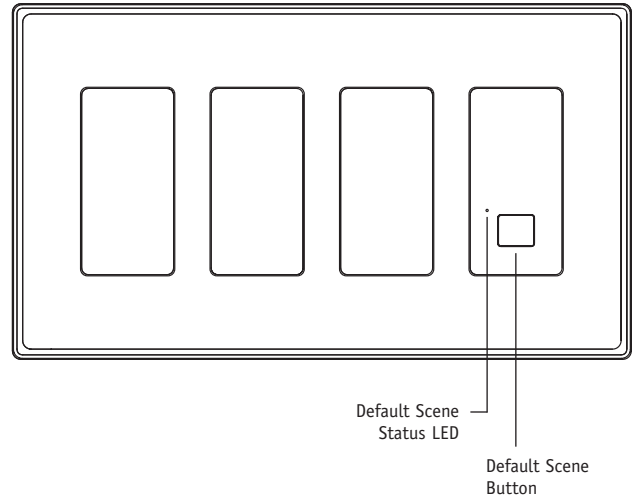
The WPM is wired like a six-zone GRAFIK Eye® control unit (IA-6). Each HomeWorks Wired Processor has three configurable links (see pg. 30 for processor details), each capable of controlling up to eight WPM or GRAFIK Eye Control Units. This connection requires two pair [one pair #18 AWG (1.0mm²), one pair #18-22 AWG (1.0-0.5mm²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used. The maximum cable length is 2,000 feet (610m), and this link must be wired in a daisy-chain configuration.

The wattage and load type specifications of the WPM are the same as six-zone GRAFIK Eye control unit (GRX-MR-6/IA-6 models). All connections on the back of the WPM are identical to those on the six-zone GRAFIK Eye control unit.

DEFAULT SCENE BUTTON

Each WPM has a Default Scene button on the front of the unit that allows a user to toggle between a preprogrammed scene (defined in the HomeWorks Utility) and OFF. This scene is stored inside the WPM and can be accessed at any time. The Default Scene provides “fail-safe” operation allowing the WPM to be controlled locally in the unlikely event communication to the processor is lost. Connect an NTGRX-1S control to the SSA input to allow remote operation of the Default Scene.

For technical specifications, see pgs. 110-112.



**Wallbox Power Module
(HWI-WPM-6D-120)**

WPM BENEFITS:

- Provides a cost-effective dimming solution to jobs with lower wattage loads
- Reduces overall job cost by up to 5-20% when less than 96 control zones are required
- Install in yachts, luxury buses, small condominiums, or anywhere space is a premium
- Add remote zones without installing an enclosure

Note: Use 3-1/2 inch (89mm) deep masonry wallboxes for ease of installation of GRAFIK Eye Control Units.

D48 Dimmer Interface

D48 Dimmer Interfaces control up to 48 Wired Vareo® Local Lighting Controls and are available in two configurations: either integral to a HomeWorks® Wired Processor or as a stand-alone component. See pg. 30 for processor details.

STAND-ALONE DIMMER INTERFACES (MODEL # HWI-D48)

Each stand-alone Dimmer Interface (model # HWI-D48) expands the capacity of the HomeWorks Wired Processor by providing control of up to 48 additional Wired Vareo Local Lighting Controls. Each stand-alone Dimmer Interface installs in either a 32-inch (81cm) Low-Voltage Enclosure (model # HWI-LV32-120) with a Wired Processor or in a 17-inch (43cm) Low-Voltage Enclosure (model # HWI-LV17-120).

INTEGRAL DIMMER INTERFACES

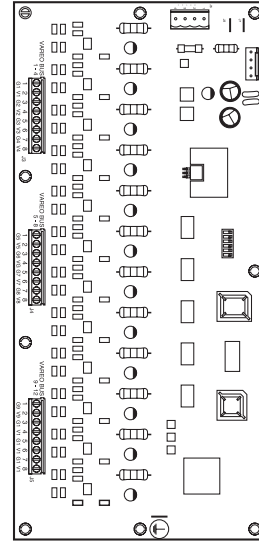
Two of the six HomeWorks Wired Processor model numbers (HWI-PM-D48-120 and HWI-PO-D48-120) contain integral D48 Dimmer Interfaces, allowing up to 48 Wired Vareo Local Lighting Controls to be connected directly to the processor. Processors with integral Dimmer Interfaces may be installed in either a 59-inch (150cm) Remote Power Panel (model # HWI-PNL-8) or in a 32-inch (81cm) Low-Voltage Enclosure (model # HWI-LV32-120).

LOCAL LIGHTING CONTROL COMMUNICATIONS

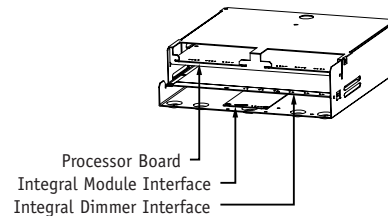
Each D48 Dimmer Interface has twelve communication buses that are used to communicate with the wired local lighting controls. Each of the twelve buses support a maximum of four uniquely-addressed Wired Vareo Local Lighting Controls. The maximum total cable length for each communication bus is 500 feet (152m). Buses may be wired in a daisy-chain, home run, star, or T-tap configuration.

CONNECTION TO WIRED PROCESSOR

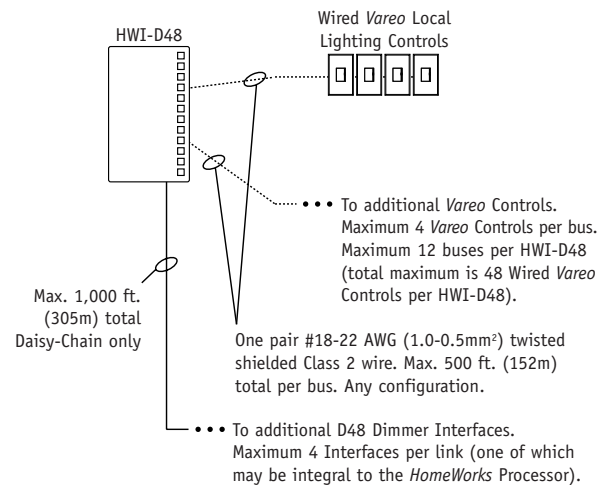
Each HomeWorks Wired Processor has three configurable links, each capable of controlling up to four Dimmer Interfaces, one of which may be integral to the processor. No more than four Dimmer Interfaces can be connected to a single processor. All Dimmer Interfaces must be connected to the same configurable link. This connection requires two pair [one pair #18 AWG (1.0mm²), one pair #18-22 AWG (1.0-0.5mm²) twisted shielded Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used. The maximum cable length is 1,000 feet (305m), and this link must be wired in a daisy-chain configuration.



**Stand-Alone Dimmer Interface
(HWI-D48)**



**Integral Dimmer Interface
(HWI-PO-D48-120 or HWI-PM-D48-120)**



Communication Wiring

For technical specifications, see pgs. 113-114.

Wired Vareo® Local Lighting Controls

LOCAL LIGHTING CONTROLS

Wired *Vareo* Local Lighting Controls, used in both localized and optimized system designs, function much like standard dimmers and switches, but can be controlled as part of the whole-house lighting control system. Local Lighting Controls are useful in locations where single circuits of lighting need to be dimmed or switched. Wired *Vareo* Dimmers incorporate advanced features such as fade on/fade off, long fade off, and rapid full on. Wired *Vareo* Local Lighting Controls include a Front Accessible Safety Switch (FASS™) for safe lamp replacement. HomeWorks®. Wired *Vareo* Local Lighting Controls install in single-pole, 3-way, or 4-way applications.

ACCESSORY CONTROL

Remote switches (VETS-R) are used in conjunction with a Wired *Vareo* Local Lighting Control to provide 3-way and 4-way control. Use up to nine VETS-R Controls with a single Wired *Vareo* Local Lighting Control for switching from up to ten locations.

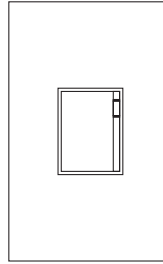
FINISHES AND COLORS

Vareo Local Lighting Controls are available in Architectural Matte finish plastic colors and metallic finishes. Colors include: White(WH), Beige(BE), Ivory(IV), Gray(GR), Brown(BR), Black(BL), and Taupe(TP). Metallic finishes include: Clear Anodized Aluminum(CLA), Black Anodized Aluminum(BLA), Brass Anodized Aluminum(BRA), Satin Brass(SB), Bright Brass(BB), Antique Brass(QB), Bright Chrome(BC), Satin Chrome(SC), Satin Nickel(SN), Bright Bronze(BZ), Satin Bronze(SZ), Antique Bronze(QZ), and 24-karat Gold Plate(AU). Custom finishes and paint matching are also available.

GANGING VAREO CONTROLS

Gang multiple *Vareo* Controls together (mounted side-by-side behind a single faceplate) in a series of connected wallboxes for a cleaner look. A scored section or “fin”, along each side of the mounting plate, is removed to facilitate ganging of controls. The load rating for each control must be derated when a fin has been broken.

For ganging and derating information, see pg. 119.

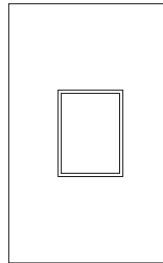


DIMMING CONTROL LOAD RATINGS

HWV-600D dims a single incandescent or magnetic low-voltage circuit up to 600W/VA from one location.

HWV-1000D dims a single incandescent or magnetic low-voltage circuit up to 1000W/VA from one location.

HWV-FDB-8A dims a single fluorescent circuit up to 8A from one location when used with *Lutron* Hi-lume® and ECO-10™ Electronic Fluorescent Dimming Ballasts.



SWITCHING CONTROL LOAD RATINGS

HWV-1000NS switches a single circuit of any lighting load type up to 1000W/VA from one location. HWV-1000NS requires a neutral wire connection.

Note: For wattages exceeding those listed above or for load types other than those listed, a Power Booster or Interface is required. See pg. 49 for more information.

INSTALLATION NOTE

Use 3-1/2 inch (89mm) deep wallboxes for ease of installation.

CONNECTION TO D48 DIMMER INTERFACE

All Wired *Vareo* Local Lighting Controls must be connected to a D48 Dimmer Interface. A Dimmer Interface is available as a stand-alone component (model # HWI-D48) or as an integral part of processors with model numbers containing “D48” (HWI-PM-D48-120 and HWI-PO-D48-120). Each Wired *Vareo* Local Lighting Control communicates with a Dimmer Interface via a one pair twisted shielded #22 AWG (0.5mm²) cable.

For technical specifications, see pgs. 115-122.

H48 Dimmer Interface

H48 Dimmer Interface controls up to 48 Wired Maestro® Local Lighting Controls and are available in two configurations: either integral to a HomeWorks® Wired Processor or as a stand-alone component.

See pg. 30 for processor details.

STAND-ALONE DIMMER INTERFACE (MODEL # HWI-H48)

Each stand-alone Dimmer Interface (model # HWI-H48) expands the capacity of the HomeWorks Wired Processor by providing control of up to 48 additional Wired Maestro Local Lighting Controls. Each stand-alone Dimmer Interface installs in either a 32-inch (81cm) Low-Voltage Enclosure (model # HWI-LV32-120) with a processor or in a 17-inch (43cm) Low-Voltage Enclosure (model # HWI-LV17-120).

INTEGRAL DIMMER INTERFACE

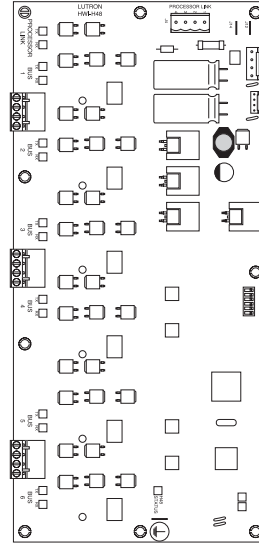
Two of the six HomeWorks Wired Processor model numbers (HWI-PM-H48-120 and HWI-PO-H48-120) contain integral H48 Dimmer Interfaces, allowing up to 48 Wired Maestro Local Lighting Controls to be connected directly to the processor. Processors with integral Dimmer Interfaces may be installed in either a 59-inch (150cm) Remote Power Panel (model # HWI-PNL-8) or in a 32-inch (81cm) Low-Voltage Enclosure (model # HWI-LV32-120).

LOCAL LIGHTING CONTROL COMMUNICATIONS

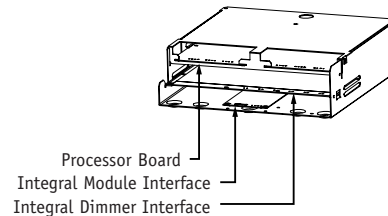
Each H48 Dimmer Interface has six communication buses that are used to communicate with the wired local lighting controls. Each of the six buses support a maximum of eight uniquely-addressed Wired Maestro Local Lighting Controls. Each Maestro bus may have a max 500' (152.5m) per wire run but may not exceed 1000' (305m) total per bus. Buses may be wired in a daisy-chain, home run, star, or T-tap configuration.

CONNECTION TO WIRED PROCESSOR

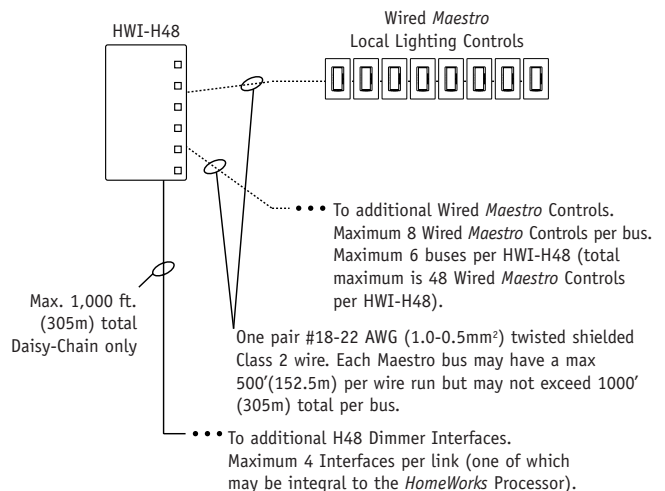
Each HomeWorks Wired Processor has three configurable links, each capable of controlling up to four Dimmer Interfaces, one of which may be integral to the processor. No more than four Dimmer Interfaces can be connected to a single processor. All Dimmer Interfaces must be connected to the same configurable link. This connection requires two pair [one pair #18 AWG (1.0mm²), one pair #18-22 AWG (1.0-0.5mm²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used. The maximum cable length is 1,000 feet (305m), and this link



**Stand-Alone Dimmer Interface
(HWI-H48)**



**Integral Dimmer Interface
(HWI-PO-H48-120 or HWI-PM-H48-120)**



Communication Wiring

For technical specifications, see pgs. 123-124.

Wired Maestro® Local Lighting Controls

LOCAL LIGHTING CONTROLS

Wired *Maestro* Local Lighting Controls, used in both localized and optimized system designs, function much like standard dimmers and switches, but can be controlled as part of the whole-house lighting control system. Local Lighting Controls are useful in locations where single circuits of lighting need to be dimmed or switched. Wired *Maestro* Dimmers incorporate advanced features such as fade on/fade off, long fade to off, and rapid full on. In addition, the local control may be programmed similar to a keypad button press with single and double tap functions, turning on or off multiple lights. Wired *Maestro* Local Lighting Controls include a Front Accessible Safety Switch (FASS™) for safe lamp replacement. HomeWorks®. Wired *Maestro* Local Lighting Controls install in single-pole, 3-way, or 4-way applications.

ACCESSORY CONTROLS

Remote dimmers (HD-RD) and remote switches (HD-RS) are used in conjunction with a Wired *Maestro* Local Lighting Control to provide 3-way and 4-way control. Use up to nine HD-RD with a single Wired *Maestro* Dimmer for dimming from up to ten locations. Use up to nine HD-RS with a single Wired *Maestro* Switch for switching from up to ten locations.

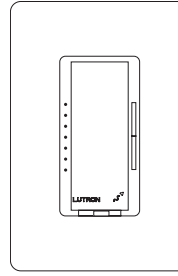
FINISHES AND COLORS

Wired *Maestro* Local Lighting Controls are available in Designer Gloss and Satin Colors™ Matte Finishes. Designer Gloss Finishes include: White(WH), Ivory(IV), Almond(AL), Light Almond(LA), Gray(GR), Brown(BR), and Black(BL). *Satin Colors* include: Hot(HT), Ochre(OC), Terracotta(TC), Desert Stone(DS), Stone(ST), Limestone(LS), Blue Mist(BT), Midnight(MN), Taupe(TP), Eggshell(ES), Biscuit(BI), and Snow(SN). Claro® and *Satin Colors* wallplates sold separately.

GANGING MAESTRO CONTROLS

Install multiple *Maestro* Controls together (mounted side-by-side behind a single faceplate) in a multi-gang wallbox for a cleaner look. The load rating for each control must be derated when ganging with other controls.

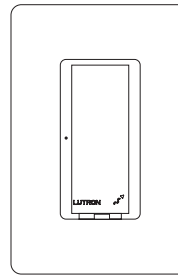
For ganging and derating information, see pg. 130.



DIMMING CONTROL LOAD RATINGS

HWD-6D and HWD-6ND dim a single incandescent or magnetic low-voltage circuit up to 600W/VA from one location. HWD-6ND requires a neutral wire connection.

HWD-10D and HWD-10ND dim a single incandescent or magnetic low-voltage circuit up to 1000W/VA from one location. HWD-10ND requires a neutral wire connection.



SWITCHING CONTROL LOAD RATINGS

HWD-8ANS switches a single circuit of any lighting load type up to 8A from one location. HWD-8ANS requires a neutral wire connection.

Note: For wattages exceeding those listed above or for load types other than those listed, a neutral wire dimmer (HWD-6ND) and a Power Booster or Interface is required. See pg. 49 for more information.

INSTALLATION NOTE

Use 3-1/2 inch (89mm) deep wallboxes for ease of installation.

CONNECTION TO H48 DIMMER INTERFACE

All Wired *Maestro* Local Lighting Controls must be connected to an H48 Dimmer Interface. A Dimmer Interface is available as a stand-alone component (model # HWI-H48) or as an integral part of processors with model numbers containing "H48" (HWI-PM-H48-120 and HWI-PO-H48-120). Each Wired *Maestro* Local Lighting Control communicates with a Dimmer Interface via a one pair twisted shielded #18-22 AWG (1.0-0.5mm²) cable.

For technical specifications, see pgs. 125-131.

RF Maestro® Local Lighting Controls

LOCAL LIGHTING CONTROLS

RF *Maestro* Local Lighting Controls, used in localized system designs, function much like standard dimmers and switches, but can be controlled as part of the whole-house lighting control system. Local Lighting Controls are useful in locations where single circuits of lighting need to be dimmed or switched. RF *Maestro* Dimmers incorporate advanced features such as fade on/fade off, long fade off, and rapid full on. In addition, the local control may be programmed similar to a keypad button press with single and double tap functions, turning on or off multiple lights. RF *Maestro* Local Lighting Controls include a Front Accessible Safety Switch (FASS™) for safe lamp replacement. HomeWorks® RF *Maestro* Local Lighting Controls install in single-pole, 3-way, or 4-way applications.

ACCESSORY CONTROL

Remote Dimmers (HD-RD) and Remote Switches (HD-RS) are used in conjunction with a RF *Maestro* Local Lighting Control to provide 3-way and 4-way control. Use up to nine HD-RD with a single RF *Maestro* Dimmer for dimming from up to ten locations. Use up to nine HD-RS with a single RF *Maestro* Switch for switching from up to ten locations.

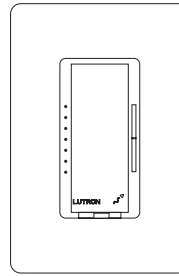
FINISHES AND COLORS

RF *Maestro* Local Lighting Controls are available in Designer Gloss and Satin Colors™ Matte Finishes. Designer Gloss Finishes include: White(WH), Ivory(IV), Almond(AL), Light Almond(LA), Gray(GR), Brown(BR), and Black(BL). Satin Colors include: Hot(HT), Ochre(OC), Terracotta(TC), Desert Stone(DS), Stone(ST), Limestone(LS), Blue Mist(BT), Midnight(MN), Taupe(TP), Eggshell(ES), Biscuit(BI), and Snow(SN). Claro® and Satin Colors wallplates sold separately.

GANGING RF MAESTRO CONTROLS

Install multiple *Maestro* Controls together (mounted side-by-side behind a single faceplate) in a multi-gang wallbox for a cleaner look. The load rating for each control must be derated when ganging with other controls.

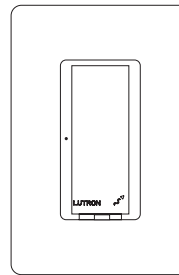
For ganging and derating information, see pg. 136.



DIMMING CONTROL LOAD RATINGS

HRD-6D and HRD-6ND dim a single incandescent or magnetic low-voltage circuit up to 600W/VA from one location. HRD-6ND requires a neutral wire connection.

HRD-10D and HRD-10ND dim a single incandescent or magnetic low-voltage circuit up to 1000W/VA from one location. HRD-10ND requires a neutral wire connection.



SWITCHING CONTROL LOAD RATINGS

HRD-8ANS switches a single circuit of any lighting load type up to 8A from one location. HRD-8ANS requires a neutral wire connection.

Note: For wattages exceeding those listed above or for load types other than those listed, a neutral wire dimmer (HRD-6ND) and a Power Booster or Interface is required. See pg. 49 for more information.

INSTALLATION NOTE

Use 3-1/2 inch (89mm) deep wallboxes for ease of installation.

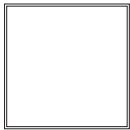
COMMUNICATION TO RF PROCESSOR

All RF *Maestro* Local Lighting Controls must be located within 30 feet (9m) of an RF Processor or an RF Signal Repeater. Each HomeWorks RF Processor is capable of controlling up to 64 RF Local Lighting Controls.

For technical specifications, see pgs. 132-137.

Power Boosters and 120V Interfaces

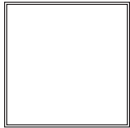
Power Boosters and 120V Interfaces work with specific load types and/or increase the zone capacity of Wired Vareo® Local Lighting Controls, Wired and RF Maestro® Local Lighting Controls with neutral wire, GRAFIK Eye® Preset Local Lighting Controls, and Remote Power Modules. Power Boosters and 120V Interfaces are typically installed in electrical closets or other hidden locations, since they do not need to be accessed during normal operation of the HomeWorks® system.



W = 4-1/2"
(114mm)
L = 4-1/2"
(114mm)

POWER BOOSTER (MODEL # NGRX-PB-WH)

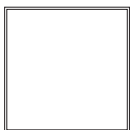
Single-zone interface to dim incandescent, magnetic low-voltage, and neon/cold-cathode (low/normal power factor transformers) sources. Maximum power capacity 1920W/VA @ 120V. Power Boosters are designed to be mounted in a two-gang US wallbox.



W = 4-1/2"
(114mm)
L = 4-1/2"
(114mm)

FLUORESCENT INTERFACE (MODEL # GRX-FDBI-16A-120)

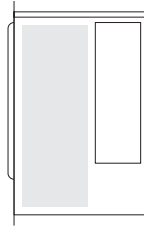
Single-zone interface to dim or switch Lutron® Hi-lume® Fluorescent Ballasts. Maximum capacity 16A (dimming) or 10A (switching) @ 120V. The Fluorescent Interface is designed to be mounted in a two-gang US wallbox.



W = 4-1/2"
(114mm)
L = 4-1/2"
(114mm)

ELECTRONIC LOW-VOLTAGE INTERFACE (MODEL # ELVI-1000)

Single-zone interface to dim electronic low-voltage lighting. Maximum capacity 1000W @ 120V. The Electronic Low-Voltage Interface is designed to be mounted in a two-gang US wallbox.



W = 10-3/8"
(263mm)
L = 14-3/4"
(374mm)
D = 5-13/16"
(147mm)

HI-POWER BOOSTERS (MODEL # HP-2, HP-4, HP-6)

Single-zone interface to dim or switch incandescent, magnetic low-voltage, electronic low-voltage, neon/cold cathode (low/normal power factor transformers), Lutron Fluorescent Dimming Ballasts, fluorescent non-dim, and HID (high intensity discharge) lamps.

Maximum capacity is 1920 W/VA for HP-2, 3840 W/VA for HP-4, and 5760 W/VA for HP-6 @ 120V. Up to five Hi-Power Boosters can be daisy-chained for additional capacity. Hi-Power Boosters are designed to be surface-mounted.



W = 6-1/8"
(155mm)
L = 12-1/2"
(318mm)
D = 3-5/16"
(84mm)

0-10 VOLT INTERFACE (MODEL # GRX-TV1)

Single-zone interface to dim or switch fluorescent lights that have Lutron ECO-10™ (TVE Series) Electronic Dimming Ballasts.

Dims and switches any 0-10V electronic fluorescent dimming ballast powered by 100-277V. Switches up to 5A of electronic capacitive fluorescent ballasts.

Also switches motors - 1/4HP @ 100-127V, 1/2HP @ 200-277V.

Requires 100-127V or 200-240V power for proper operation.

INSTALLATION NOTES:

For models NGRX-PB-WH, GRX-FDBI-16A-120, and ELVI-1000, use 3-1/2 inch (89mm) deep masonry wallboxes for ease of installation. The use of a Power Booster or Interface removes the lighting load from the controlling device (Wired Vareo, Wired and RF Maestro Local Lighting Controls, GRAFIK Eye Preset Local Lighting Controls, or Remote Power Modules) and replaces it with a 40W "dummy load". This 40W load satisfies the minimum load requirements for the controlling device.

For technical specifications, see pgs. 138-145.

Note: All measurements have been rounded to a 1/16 inch.

Keypads

HomeWorks® Keypads, available in many styles, colors, and finishes, provide homeowners with a simple and elegant way to operate lights, shades, motorized screens, pumps, thermostats, and many other devices. Keypads have LEDs that provide real-time status indication. Lutron provides custom engraving to clearly identify each button's function.

Keypads are available in a variety of button styles and button configurations. Since each button on every keypad model can be programmed to control any lighting load or device on the *HomeWorks* system, choosing a keypad for a particular location requires no more than choosing the desired style and number of buttons. Engraving can be added to any keypad. Please contact Lutron® Customer Service or your local *Lutron* Representative for details.

Each *HomeWorks* Wired Processor has three configurable links, each capable of directly controlling up to 32 Wired Keypads. See pg. 30 for processor details

Each *HomeWorks* RF Processor is capable of controlling up to 32 RF Keypads.

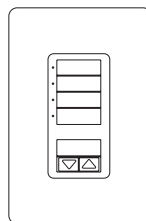
CONNECTION TO PROCESSOR

Up to 32 Wired Keypads can be directly connected to a configurable link on a *HomeWorks* Wired Processor using two pair [one pair #18 AWG (1.0mm²), one pair #18-22 AWG (1.0-0.5mm²) twisted shielded] Class 2 cable. Keypads may be wired in a daisy-chain, home run, star, or T-tap configuration. The maximum total cable length of any wire run is 1,000 feet (305m) with up to 10 keypads or interfaces. The maximum total cable length is 4,000 feet (1220m).

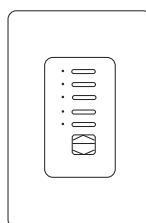
Up to 32 RF Keypads can communicate to an RF Processor. Keypads must be located within 30 feet (9m) of the RF Processor or an RF Signal Repeater.

For technical specifications, see pgs. 146-150.

Designer-style



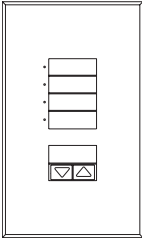
seeTouch™
(Wired and RF* models)



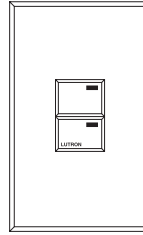
Slim Button
(Wired and RF models)

* Available third quarter 2003.

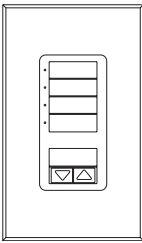
Architectural-style



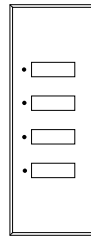
**seeTouch™ - No Insert
(Wired models)**



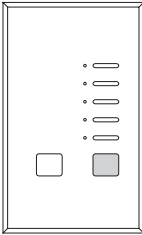
**2-Button
(Wired models)**



**seeTouch - Insert
(Wired models)**



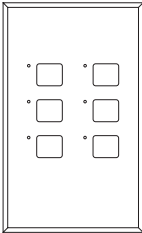
**Signature Series™
(Wired models)**



**Slim Button
(Wired models)**



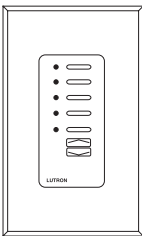
**Architrave™
(Wired models)**



**Large Button
(Wired models)**



**European-style
(Wired models)**



**Slim Button - Insert
(Wired models)**

Wired Keypads

seeTouch™ KEYPADS

The Architectural-style *seeTouch* Keypads feature large, easy-to-use buttons, plus a unique backlit engraving option that makes the keypads readable any time of the day or night. *seeTouch* buttons are rounded, allowing engraving to be displayed at an upward angle and increasing readability. *seeTouch* Keypads are available with one to seven buttons, allowing you to customize the number of functions to fit your needs.

The flexible design allows the number of buttons and the configuration of the buttons to be changed after the keypad is installed.

Wired *seeTouch* models have two contact closure inputs on the back of the unit which provide independent functions from the front buttons. Other options include configurations with infrared receiver and raise/lower buttons.

FINISHES AND COLORS

Architectural-style *seeTouch* Keypads are available in Architectural Matte finish plastic colors and metallic finishes. Colors include: White(WH), Beige(BE), Ivory(IV), Black(BL), Gray(GR), Brown(BR), and Taupe(TP). Metallic finishes include: Clear Anodized Aluminum(CLA), Black Anodized Aluminum(BLA), Brass Anodized Aluminum(BRA), Satin Brass(SB), Bright Brass(BB), Antique Brass(QB), Bright Chrome(BC), Satin Chrome(SC), Satin Nickel(SN), Bright Bronze(BZ), Satin Bronze(SZ), Antique Bronze(QZ), and 24-karat Gold Plate(AU). Custom finishes and paint matching are also available. Please contact Lutron Customer Service or your local Lutron Representative for details and pricing.

ORDERING METHODS

a) Engraving will be decided after installation

- 1) Order keypad with button/faceplate.
ST-Model-Color
- 2) After engraving is determined, order engraved button/faceplate kit.
SK-Model-Color-E

b) Engraving will be decided before installation

- 1) Order keypad without buttons or faceplate.
Non-IR: ST-NB-NONE
IR: ST-NBIR-NONE
- 2) Order engraved button/faceplate kit.
SK-Model-Color-E

seeTouch - NO INSERT

1-Button



Keypad: ST-1B-NI-XX
Button/Faceplate: SK-1B-NI-XX-E
Description: 1-button - no insert

2-Button



Keypad: ST-2B-NI-XX
Button/Faceplate: SK-2B-NI-XX-E
Description: 2-button - no insert

3-Button



Keypad: ST-3B-NI-XX
Button/Faceplate: SK-3B-NI-XX-E
Description: 3-button - no insert



Keypad: ST-3BRL-NI-XX
Button/Faceplate: SK-3BRL-NI-XX-E
Description: 3-button with raise/lower - no insert

4-Button



Keypad: ST-4B-NI-XX
Button/Faceplate: SK-4B-NI-XX-E
Description: 4-button - no insert



Keypad: ST-4FS-NI-XX
Button/Faceplate: SK-4FS-NI-XX-E
Description: 4-button favorite scenes - no insert



Keypad: ST-4S-NI-XX
Button/Faceplate: SK-4S-NI-XX-E
Description: 4-scene - no insert



Keypad: ST-4SIR-NI-XX
Button/Faceplate: SK-4SIR-NI-XX-E
Description: 4-scene with IR receiver - no insert

5-Button



Keypad: ST-5B-NI-XX
Button/Faceplate: SK-5B-NI-XX-E
Description: 5-button - no insert



Keypad: ST-5FS-NI-XX
Button/Faceplate: SK-5FS-NI-XX-E
Description: 5-button favorite scene - no insert



Keypad: ST-5BRL-NI-XX
Button/Faceplate: SK-5BRL-NI-XX-E
Description: 5-button with raise/lower - no insert

XX= Color Code

Wired Keypads (cont.)

seeTouch™ - NO INSERT (cont.)

6-Button



Keypad: ST-6B-NI-XX
 Button/Faceplate: SK-6B-NI-XX-E
 Description: 6-button - no insert



Keypad: ST-6BRL-NI-XX
 Button/Faceplate: SK-6BRL-NI-XX-E
 Description: 6-button with raise/lower - no insert

7-Button



Keypad: ST-7B-NI-XX
 Button/Faceplate: SK-7B-NI-XX-E
 Description: 7-button - no insert

seeTouch - INSERT

1-Button



Keypad: ST-1B-I-XX
 Button/Faceplate: SK-1B-I-XX-E
 Description: 1-button - insert

2-Button



Keypad: ST-2B-I-XX
 Button/Faceplate: SK-2B-I-XX-E
 Description: 2-button - insert

3-Button



Keypad: ST-3B-I-XX
 Button/Faceplate: SK-3B-I-XX-E
 Description: 3-button - insert



Keypad: ST-3BRL-I-XX
 Button/Faceplate: SK-3BRL-I-XX-E
 Description: 3-button with raise/lower - insert

4-Button



Keypad: ST-4B-I-XX
 Button/Faceplate: SK-4B-I-XX-E
 Description: 4-button - insert



Keypad: ST-4FS-I-XX
 Button/Faceplate: SK-4FS-I-XX-E
 Description: 4-button favorite scenes - insert

seeTouch - INSERT (cont.)

4-Button (cont.)



Keypad: ST-4S-I-XX
 Button/Faceplate: SK-4S-I-XX-E
 Description: 4-scene - insert



Keypad: ST-4SIR-I-XX
 Button/Faceplate: SK-4SIR-I-XX-E
 Description: 4-scene with IR receiver - insert

5-Button



Keypad: ST-5B-I-XX
 Button/Faceplate: SK-5B-I-XX-E
 Description: 5-button - insert



Keypad: ST-5FS-I-XX
 Button/Faceplate: SK-5FS-I-XX-E
 Description: 5-button favorite scene - insert



Keypad: ST-5BRL-I-XX
 Button/Faceplate: SK-5BRL-I-XX-E
 Description: 5-button with raise/lower - insert

6-Button



Keypad: ST-6B-I-XX
 Button/Faceplate: SK-6B-I-XX-E
 Description: 6-button - insert



Keypad: ST-6BRL-I-XX
 Button/Faceplate: SK-6BRL-I-XX-E
 Description: 6-button with raise/lower - insert

7-Button



Keypad: ST-7B-I-XX
 Button/Faceplate: SK-7B-I-XX-E
 Description: 7-button - insert

seeTouch - NO BUTTONS

No-Button



Keypad: ST-NB-NONE
 Description: No buttons

Keypad: ST-NBIR-NONE
 Description: No buttons with IR receiver

XX= Color Code

Wired Keypads (cont.)

SLIM BUTTON KEYPADS

Slim Button Keypads provide the largest number of buttons per gang, thereby maximizing control in minimal space. Slim Button Keypads feature multiple button columns and two large buttons which provide logical partitioning of keypad function.

These keypads can be engraved below each button with names of your choosing. Engraving can be added by returning the faceplate with an engraving schedule or ordering a new faceplate with engraving.

FINISHES AND COLORS

Architectural-style Slim Button Keypads ship with a faceplate. Keypads are available in Architectural Matte finish plastic colors and metallic finishes. Colors include: White(WH), Beige(BE), Ivory(IV), Black(BL), Gray(GR), Brown(BR), and Taupe(TP). Metallic finishes, custom finishes, and paint matching are also available. Please contact Lutron Customer Service or your local Lutron Representative for details and pricing.

SLIM BUTTON INSERT KEYPADS

The design of this keypad features five slim buttons in an industry-standard decorator opening, allowing multiple keypads to be easily ganged together with other devices in your home, such as audio and security controls.

Slim Button Insert Keypads are available with a master raise/lower or an infrared receiver. These keypads can be engraved below each button with names of your choosing. Engraving can be added by returning the faceplate with an engraving schedule or ordering a new faceplate with engraving.

FINISHES AND COLORS

Architectural-style Slim Button Insert Keypads ship with a faceplate. Keypads are available in Architectural Matte finish plastic colors and metallic finishes. Colors include: White(WH), Beige(BE), Ivory(IV), Black(BL), Gray(GR), Brown(BR), and Taupe(TP). Metallic finishes, custom finishes, and paint matching are also available. Please contact Lutron Customer Service or your local Lutron Representative for details and pricing.

SLIM BUTTON KEYPADS

5-Button



Keypad: HWI-KP5-XX
Faceplate only: HW-B1-NFB-XX
Description: 5-button with master on/off

10-Button



Keypad: HWI-KP10-XX
Faceplate only: HW-B2-NFB-XX
Description: 10-button with master on/off

15-Button



Keypad: HWI-KP15-XX
Faceplate only: HW-B3-NFB-XX
Description: 15-button with master on/off

SLIM BUTTON INSERT KEYPADS

5-Button



Keypad: HWI-5S-NM-XX
Faceplate only: NT-T7-NFB-XX
Description: 5-button



Keypad: HWI-5S-M-XX
Faceplate only: NT-T6-NFB-XX
Description: 5-button with master raise/lower



Keypad: HWI-5S-IR-XX
Faceplate only: NT-T6-NFB-XX
Description: 5-button with IR receiver

XX= Color Code

Wired Keypads (cont.)

LARGE BUTTON KEYPADS

The design of this keypad features large, easy-to-use buttons. Large Button Keypads feature multiple button columns which provide logical partitioning of keypad functions.

These keypads can be engraved on or below each button with names of your choosing. Engraving can be added by returning the faceplate with an engraving schedule or ordering a new faceplate with engraving.

FINISHES AND COLORS

Architectural-style Large Button Keypads ship with a faceplate. Keypads are available in Architectural Matte finish plastic colors and metallic finishes. Colors include: White(WH), Beige(BE), Ivory(IV), Black(BL), Gray(GR), Brown(BR), and Taupe(TP). Metallic finishes, custom finishes, and paint matching are also available. Please contact Lutron Customer Service or your local Lutron Representative for details and pricing.

2-BUTTON KEYPAD

The design of this keypad features two large buttons. 2-Button Keypads are ideal for areas where intuitive control is required. Typical locations include hallways, entrances, guest rooms, bathrooms, and children's rooms.

This keypad can be engraved on each button with names of your choosing. Engraving can be added by ordering a new faceplate with engraving. 2-Button Keypads have two contact closure inputs on the back of the unit which provide independent function from the front buttons.

FINISHES AND COLORS

Architectural-style 2-Button Keypads ship with specified color faceplate. Keypads are available in Architectural Matte finish plastic colors and metallic finishes. Colors include: White(WH), Beige(BE), Ivory(IV), Black(BL), Gray(GR), Brown(BR), and Taupe(TP). Metallic finishes, custom finishes, and paint matching are also available.

LARGE BUTTON KEYPADS

6-Button



Keypad: HWI-KP-LB6-XX
Faceplate only: HWI-B4-NFB-XX
Description: 6-button

9-Button



Keypad: HWI-KP-LB9-XX
Faceplate only: HWI-B5-NFB-XX
Description: 9-button

2-BUTTON KEYPAD

2-Button



Keypad: HWI-2B-XX
Faceplate only: NT-T8-NFB-XX
Description: 2-button

XX= Color Code

Wired Keypads (cont.)

SIGNATURE SERIES™ KEYPADS

Signature Series Keypads allow you to incorporate the functions of standard-size HomeWorks® Keypads into a sleek, narrow-profile control that fits flush into a door trim, door jamb, or custom cabinetry. *Signature Series* Keypads can also be used at standard switch locations throughout your home to add a unique and elegant look. *Signature Series* Keypads include 3- and 4-button configurations, available with blue or green status indicators. *Signature Series* Keypads feature large, easy-to-use buttons, plus a unique backlit (blue or green) engraving option that makes the keypads readable any time of the day or night. Buttons are rounded, allowing engraving to be displayed at an upward angle and increasing readability.

Signature Series Keypads may be mounted with or without a wallbox (WBOX-SA1-Q1).

FINISHES AND COLORS

Signature Series Keypads ship with solid metal faceplates. Metal finishes include: White(WH) (Monterey only), Bright Brass(BB), Satin Nickel(SN), Bright Chrome(BC), Field Paintable(FP), Unfinished Brass(UB), and 24K gold plated(AU).

ORDERING METHOD

- 1) Order keypad with buttons/faceplate.
HWS-Model-Color
- 2) After engraving is determined, order engraved button kit with same number of buttons as control.
HKS-Model-Color-E

SIGNATURE SERIES KEYPADS

3-Button Monaco™ (Blue Status Indicators)



Keypad: HWS-3B-B-XX
Button Kit: HKS-3B-BL-E
Description: 3-button

4-Button Monaco™ (Blue Status Indicators)



Keypad: HWS-4B-B-XX
Button Kit: HKS-4B-BL-E
Description: 4-button

3-Button Monterey™ (Green Status Indicators)



Keypad: HWS-3B-G-XX
Button Kit: For white Monterey Keypads only
HKS-3B-WH-E

Button Kit: For non-white Monterey Keypads
HKS-3B-BL-E

Description: 3-button

4-Button Monterey™ (Green Status Indicators)



Keypad: HWS-4B-G-XX
Button Kit: For white Monterey Keypads only
HKS-4B-WH-E

Button Kit: For non-white Monterey Keypads
HKS-4B-BL-E

Description: 4-button

Wallbox

Model: WBOX-SA1-Q1
Description: *Signature Series* wallbox (1 metal box)

XX= Color Code

Wired Keypads (cont.)

ARCHITRAVE™ KEYPADS

Architrave Keypads allow you to incorporate the functions of standard-size HomeWorks® Keypads into a sleek, narrow-profile control that fits flush into a door trim, door jamb, or custom cabinetry. *Architrave* Keypads can also be used at standard switch locations throughout your home to add a unique and elegant look. *Architrave* Keypads can be engraved, below each button, with names of your choosing. *Architrave* Keypads may be mounted with or without a wallbox.

FINISHES AND COLORS

Architrave Keypads are available with a White(WH) or Bright Brass(BB) metal faceplate. Other metallic finishes are also available. Please contact Lutron Customer Service or your local Lutron Representative for details and pricing.

ORDERING METHOD

- 1) Order keypad with buttons/faceplate.
HWI-Model-Color
- 2) After engraving is determined, order engraved faceplate with same number of buttons as control.
AR-M4-Model-Color
(Excludes HWI-LB5-DC1)

ARCHITRAVE KEYPADS

5-Button



Keypad: HWI-KP5-DN-XX
Faceplate only: AR-M4-DN-XX
Description: Door narrow 5-button with master on/off



Keypad: HWI-KP5-DW-XX
Faceplate only: AR-M4-DW-XX
Description: Door wide 5-button with master on/off



Keypad: HWI-LB5-DC1-XX
Faceplate only: Custom
Description: 5 large buttons with raise/lower

Wallboxes

241-399
Wallbox for HWI-KP5-DW
(1 metal box)
241-663
Wallbox for HWI-LB5-DC1
(1 metal box)

XX= Color Code

Wired Keypads (cont.)

EUROPEAN-STYLE KEYPADS

European-style Keypads provide the ability to control and monitor lighting, audio, video, and other home systems in a single room and throughout your home. The design of this keypad features large, rounded buttons, and large LEDs to clearly show lighting status. The unique square shape of this keypad adds distinction to any installation. European-style Keypads are available with master raise/lower and/or infrared receiver. Buttons are rounded, allowing engraving to be displayed at an upward angle and increasing readability.

FINISHES AND COLORS

Colors available include: Black(BL) and White(WH). Engraving is also available.

ORDERING METHOD

- 1) Order keypad with buttons/faceplate.
HWI-Model-Color
- 2) After engraving is determined, order engraved faceplate with same number of buttons as control.
EFP-Model-Color

EUROPEAN-STYLE KEYPADS

2-Button



Keypad: HWI-2SE-XX
Faceplate only: EFP-2B-SL-XX
Description: 2-scene

4-Button



Keypad: HWI-4SE-M-XX
Faceplate only: EFP-4SE-M-XX
Description: 4-scene with off and raise/lower



Keypad: HWI-4SE-IR-XX
Faceplate only: EFP-4SE-IR-XX
Description: 4-scene with off, raise/lower and IR receiver

8-Button



Keypad: HWI-8SE-M-XX
Faceplate only: EFP-8SE-M-XX
Description: 8-scene with off and raise/lower



Keypad: HWI-8SE-IR-XX
Faceplate only: EFP-8SE-IR-XX
Description: 8-scene with off, raise/lower and IR receiver

Wallboxes

Model: EBB-15-RD
Description: Round plastic wallbox for European-style Keypads (15 plastic wallboxes)

Model: EBB-15-SQ
Description: Square metal wallbox for European-style Keypads (15 metal wallboxes)

XX= Color Code

Wired Keypads (cont.)

seeTouch™ KEYPADS

The Designer-style *seeTouch* Keypads feature large, easy-to-use buttons, plus a unique backlit engraving option that makes the keypads readable any time of the day or night. *seeTouch* buttons are rounded, allowing engraving to be displayed at an upward angle and increasing readability. *seeTouch* Keypads are available with one to seven buttons, allowing you to customize the number of functions to fit your need. The flexible design even allows the number of buttons and the configuration of the buttons to be changed after the keypad is installed.

All *seeTouch* models have two contact closure inputs on the back of the unit which provide independent functions from the front buttons. Other options include configurations with infrared receiver and raise/lower buttons.

FINISHES AND COLORS

Designer-style *seeTouch* Keypads are available in Designer Gloss Finishes and Satin Colors™ Matte Finishes. Designer Gloss Finishes include: White(WH), Ivory*(IV), Almond(AL), Light Almond(LA), Gray*(GR), Brown*(BR), and Black(BL). *Satin Colors* include: Hot*(HT), Ochre*(OC), Terracotta*(TC), Desert Stone*(DS), Stone*(ST), Limestone*(LS), Blue Mist*(BT), Midnight(MN), Taupe(TP), Eggshell(ES), Biscuit(BI), and Snow(SW).

* Button and insert color differ. Refer to *seeTouch* Ordering Guide (367-571) for details.

ORDERING METHODS

a) Engraving will be decided after installation

- 1) Order keypad with buttons.
STWD-Model-Color
- 2) After engraving is determined, order engraved button kit.
SKD-Model-Color-E

b) Engraving will be decided before installation

- 1) Order keypad without buttons.
Non-IR: ST-NB-NONE
IR: ST-NBIR-NONE
- 2) Order engraved button kit.
SKD-Model-Color-E

seeTouch KEYPADS

Wallplate sold separately*

1-Button



Keypad*: STWD-1B-XX
Button Kit: SKD-1B-XX-E
Description: 1-button

2-Button



Keypad*: STWD-2B-XX
Button Kit: SKD-2B-XX-E
Description: 2-button

3-Button



Keypad*: STWD-3B-XX
Button Kit: SKD-3B-XX-E
Description: 3-button



Keypad*: STWD-3BRL-XX
Button Kit: SKD-3BRL-XX-E
Description: 3-button with raise/lower

4-Button



Keypad*: STWD-4B-XX
Button Kit: SKD-4B-XX-E
Description: 4-button



Keypad*: STWD-4FS-XX
Button Kit: SKD-4FS-XX-E
Description: 4-button favorite scenes



Keypad*: STWD-4S-XX
Button Kit: SKD-4S-XX-E
Description: 4-scene



Keypad*: STWD-4SIR-XX
Button Kit: SKD-4SIR-XX-E
Description: 4-scene with IR receiver

* Claro® Gloss and Satin Colors Matte Finishes wallplate sold separately.

XX= Color Code

Wired Keypads (cont.)

seeTouch™ KEYPADS (cont.)

Wallplate sold separately*

5-Button



Keypad*: STWD-5B-XX

Button Kit: SKD-5B-XX-E

Description: 5-button



Keypad*: STWD-5FS-XX

Button Kit: SKD-5FS-XX-E

Description: 5-button favorite scene



Keypad*: STWD-5BRL-XX

Button Kit: SKD-5BRL-XX-E

Description: 5-button with raise/lower

6-Button



Keypad*: STWD-6B-XX

Button Kit: SKD-6B-XX-E

Description: 6-button



Keypad*: STWD-6BRL-XX

Button Kit: SKD-6BRL-XX-E

Description: 6-button with raise/lower

7-Button



Keypad*: STWD-7B-XX

Button Kit: SKD-7B-XX-E

Description: 7-button

seeTouch - NO BUTTONS

No-Button



Keypad: ST-NB-NONE

Description: No buttons

Keypad: ST-NBIR-NONE

Description: No buttons with IR receiver

* *Claro® Gloss and Satin Colors™ Matte Finishes*
wallplate sold separately.

XX= Color Code

Wired Keypads (cont.)

SLIM BUTTON KEYPADS

The design of this keypad features five slim buttons in an industry-standard decorator opening, allowing the keypads to be easily ganged with other devices in your home, such as audio and security controls.

Slim Button Keypads are available with master on/off and/or master raise/lower. The Designer-style Keypads can be custom engraved below each button.

FINISHES AND COLORS

Designer-style Slim Button Keypads are available in Designer Gloss Finishes and Satin Colors™ Matte Finishes. Designer Gloss Finishes include: White(WH), Ivory(IV), Almond(AL), Light Almond(LA), Gray(GR), Brown(BR), and Black(BL).

Satin Colors include: Hot(HT), Ochre(OC), Terracotta(TC), Desert Stone(DS), Stone(ST), Limestone(LS), Blue Mist(BT), Midnight(MN), Taupe(TP), Eggshell(ES), Biscuit(BI), and Snow(SW).

ORDERING METHODS

- 1) Order keypad with buttons.
HWD-Model-Color
- 2) After engraving is determined, order engraved button kit.
HKD-Model-Color-E

SLIM BUTTON KEYPADS

*Wallplate sold separately**

5-Button



Keypad: HWD-5KP-XX
Button Kit: HKD-5KP-XX-E
Description: 5-button with master on/off



Keypad: HWD-5RL-XX
Button Kit: HKD-5RL-XX-E
Description: 5-button with raise/lower

10-Button



Keypad: HWD-10KP-XX
Button Kit: HKD-10KP-XX-E
Description: 10-button with master on/off



Keypad: HWD-10RL-XX
Button Kit: HKD-10RL-XX-E
Description: 10-button with master on/off and raise/lower

* *Claro® Gloss and Satin Colors Matte Finishes wallplate sold separately.*

XX= Color Code

RF Keypads

seeTouch™ KEYPADS

Designer-style *seeTouch* Keypads feature large, easy-to-use buttons, plus a unique backlit engraving option that makes the keypads readable any time of the day or night. *seeTouch* buttons are rounded, allowing engraving to be displayed at an upward angle, increasing readability. *seeTouch* Keypads are available with one to seven buttons, allowing you to customize the number of functions to fit your need. The flexible design even allows the number of buttons and the configuration of the buttons to be changed after the keypad is installed.

Options include configurations with infrared receiver and raise/lower buttons.

FINISHES AND COLORS

Designer-style *seeTouch* Keypads are available in Designer Gloss Finishes and Satin Colors™ Matte Finishes. Designer Gloss Finishes include: White(WH), Ivory*(IV), Almond(AL), Light Almond(LA), Gray*(GR), Brown*(BR), and Black(BL). *Satin Colors* include: Hot*(HT), Ochre*(OC), Terracotta*(TC), Desert Stone*(DS), Stone*(ST), Limestone*(LS), Blue Mist*(BT), Midnight(MN), Taupe(TP), Eggshell(ES), Biscuit(BI), and Snow(SW).

* Button and insert color differ. Refer to *seeTouch* Ordering Guide (367-571) for details.

ORDERING METHODS

a) Engraving will be decided after installation

- 1) Order keypad with buttons.
STRD-Model-Color
- 2) After engraving is determined, order engraved button kit.
SKD-Model-Color-E

b) Engraving will be decided before installation

- 1) Order keypad without buttons.
Non-IR: STR-NB-NONE
IR: STR-NBIR-NONE
- 2) Order engraved button kit.
SKD-Model-Color-E

seeTouch KEYPADS

Wallplate sold separately*

1-Button



Keypad*: STRD-1B-XX
Button Kit: SKD-1B-XX-E
Description: 1-button

2-Button



Keypad*: STRD-2B-XX
Button Kit: SKD-2B-XX-E
Description: 2-button

3-Button



Keypad*: STRD-3B-XX
Button Kit: SKD-3B-XX-E
Description: 3-button



Keypad*: STRD-3BRL-XX
Button Kit: SKD-3BRL-XX-E
Description: 3-button with raise/lower

4-Button



Keypad*: STRD-4B-XX
Button Kit: SKD-4B-XX-E
Description: 4-button



Keypad*: STRD-4FS-XX
Button Kit: SKD-4FS-XX-E
Description: 4-button favorite scenes



Keypad*: STRD-4S-XX
Button Kit: SKD-4S-XX-E
Description: 4-scene



Keypad*: STRD-4SIR-XX
Button Kit: SKD-4SIR-XX-E
Description: 4-scene with IR receiver

* Claro® Gloss and Satin Colors™ Matte Finishes wallplate sold separately.

XX= Color Code

RF Keypads (cont.)

seeTouch™ KEYPADS (cont.)

Wallplate sold separately*

5-Button



Keypad*: STRD-5B-XX
Button Kit: SKD-5B-XX-E
Description: 5-button



Keypad*: STRD-5FS-XX
Button Kit: SKD-5FS-XX-E
Description: 5-button favorite scene



Keypad*: STRD-5BRL-XX
Button Kit: SKD-5BRL-XX-E
Description: 5-button with raise/lower

6-Button



Keypad*: STRD-6B-XX
Button Kit: SKD-6B-XX-E
Description: 6-button



Keypad*: STRD-6BRL-XX
Button Kit: SKD-6BRL-XX-E
Description: 6-button with raise/lower

7-Button



Keypad*: STRD-7B-XX
Button Kit: SKD-7B-XX-E
Description: 7-button

seeTouch - NO BUTTONS

No-Button



Keypad: STR-NB-NONE
Description: No buttons

Keypad: STR-NBIR-NONE
Description: No buttons with IR receiver

* *Claro® Gloss and Satin Colors™ Matte Finishes*
wallplate sold separately.

XX= Color Code

RF Keypads (cont.)

SLIM BUTTON KEYPADS

The design of this keypad features five slim buttons in an industry-standard decorator opening, allowing multiple keypads to be easily ganged with other devices in your home, such as audio and security controls.

Slim Button Keypads are available with master on/off and/or master raise/lower. The Designer-style Keypads can be custom engraved below each button.

FINISHES AND COLORS

Designer-style Slim Button Keypads are available in Designer Gloss Finishes and Satin Colors™ Matte Finishes. Designer Gloss Finishes include: White(WH), Ivory(IV), Almond(AL), Light Almond(LA), Gray(GR), Brown(BR), and Black(BL). *Satin Colors* include: Hot(HT), Ochre(OC), Terracotta(TC), Desert Stone(DS), Stone(ST), Limestone(LS), Blue Mist(BT), Midnight(MN), Taupe(TP), Eggshell(ES), Biscuit(BI), and Snow(SW).

ORDERING METHODS

- 1) Order keypad with insert.
HRD-Model-Color
- 2) After engraving is determined, order engraved insert with same button configuration as control.
HKD-Model-Color-E

SLIM BUTTON KEYPADS

*Wallplate sold separately**

5-Button



Keypad*: HRD-5KP-XX
Button Kit: HKD-5KP-XX-E
Description: 5-button with master on/off



Keypad*: HRD-5RL-XX
Button Kit: HKD-5RL-XX-E
Description: 5-button with raise/lower

10-Button



Keypad*: HRD-10KP-XX
Button Kit: HKD-10KP-XX-E
Description: 10-button with master on/off



Keypad*: HRD-10RL-XX
Button Kit: HKD-10RL-XX-E
Description: 10-button with master on/off and raise/lower

* *Claro® Gloss and Satin Colors™ Matte Finishes wallplate sold separately.*

XX= Color Code

RF Tabletop Keypads

HomeWorks® RF Tabletop Keypads provide maximum flexibility to locate the devices where the homeowner can conveniently monitor and control lighting, window treatments, and other home systems. Tabletop keypads are ideal for night stands, coffee tables, and kitchen counters. Keypad buttons are programmed to create a customized control that meets the individual needs of each home. Keypads have LEDs that provide real-time status indication. Custom engraving is available to clearly identify each button's function. RF Tabletop Keypads can be part of any system design, whether it is localized, centralized, or optimized.

SLIM AND LARGE BUTTON RF TABLETOP KEYPADS

The RF Tabletop Keypads are available with Slim Button (5-, 10-, or 15-button) and Large Button (6-button) configurations. All of these models are available with or without raise/lower buttons. Metal faceplates can be added to enhance the look of any RF Tabletop Keypad. Units can be purchased as plug-in only (-A) or plug-in/battery combo units (-C).

COMMUNICATION TO RF PROCESSOR

All RF Tabletop Keypads must be located within 30 feet (9m) of an RF Processor or an RF Signal Repeater. Each HomeWorks RF Processor is capable of controlling up to 32 RF Keypads. The Tabletop Keypad counts as one of the 32 RF Keypads. Each HomeWorks system is capable of controlling up to 32 plug-in/battery combo keypads (-C).

FINISHES AND COLORS

Tabletop Keypad colors include: Snow(SW) and Midnight(MN). Faceplate finishes and colors include: Snow(SW) and Midnight(MN) (plastic), Satin Brass(SB), Bright Brass(BB), Bright Chrome(BC), Clear Anodized Aluminum(CLA), Black Anodized Aluminum(BLA), Brass Anodized Aluminum(BRA), Antique Brass(QB), Antique Bronze(QZ), Satin Chrome(SC), Satin Nickel(SN), and Bright Nickel(BN).

ORDERING METHOD

- 1) Order keypad with buttons/faceplate.
HRT-Model-Color
- 2) After engraving is determined, order engraved faceplate with same number of buttons as control.
HKT-Model-Color-E

For technical specifications, see pgs. 149-150.

SLIM BUTTON

5-Button



Keypad: HRT-5KP-A-XX
HRT-5KP-C-XX
Faceplate only: HKT-5KP-XX-E
Description: 5-button with master on/off



Keypad: HRT-5RL-A-XX
HRT-5RL-C-XX
Faceplate only: HKT-5RL-XX-E
Description: 5-button with master on/off and raise/lower

10-Button



Keypad: HRT-10KP-A-XX
HRT-10KP-C-XX
Faceplate only: HKT-10KP-XX-E
Description: 10-button with master on/off



Keypad: HRT-10RL-A-XX
HRT-10RL-C-XX
Faceplate only: HKT-10RL-XX-E
Description: 10-button with master on/off and raise/lower

15-Button



Keypad: HRT-15KP-A-XX
HRT-15KP-C-XX
Faceplate only: HKT-15KP-XX-E
Description: 15-button with master on/off



Keypad: HRT-15RL-A-XX
HRT-15RL-C-XX
Faceplate only: HKT-15RL-XX-E
Description: 15-button with master on/off and raise/lower

LARGE BUTTON

6-Button



Keypad: HRT-6LKP-A-XX
HRT-6LKP-C-XX
Faceplate only: HKT-6LKP-XX-E
Description: 6-button



Keypad: HRT-6LRL-A-XX
HRT-6LRL-C-XX
Faceplate only: HKT-6LRL-XX-E
Description: 6-button with raise/lower

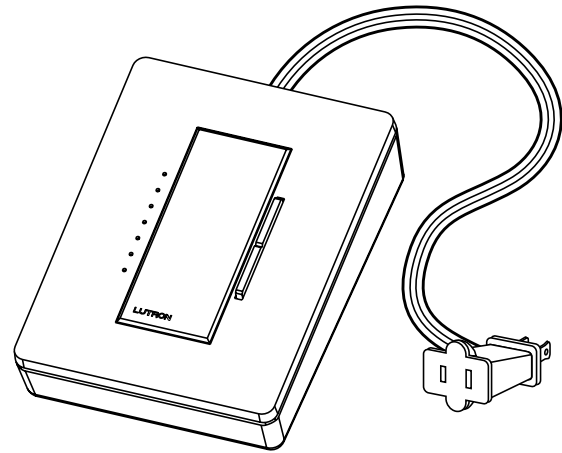
XX= Color Code

RF Lamp Dimmer

RF LAMP DIMMER (MODEL # HRT-3LD)

HomeWorks® RF Lamp Dimmers allow table and floor lamps to be included in the *HomeWorks* lighting control system. Each RF Lamp Dimmer controls one table or floor lamp with simple and intuitive buttons for on/off and raise/lower. Simple to install, RF Lamp Dimmers are plugged into any standard wall outlet. Built-in intelligence allows each RF Lamp Dimmer to be controlled from the *HomeWorks* Keypad in the home, as well as from touchscreens, universal remotes, and home automation controls.

RF Lamp Dimmers incorporate advanced features such as fade on/fade off, long fade to off, and rapid full on. In addition, the local control may be programmed similar to a keypad button press with single and double tap functions, turning on or off multiple lights. RF Lamp Dimmers are suitable for any home and can be added to a *HomeWorks* system at any time.



**RF Lamp Dimmer
(HRT-3LD)**

FINISHES AND COLORS

RF Lamp Dimmers are available in Snow(SW) and Midnight (MN).

DIMMING CONTROL LOAD RATINGS

HRT-3LD dims a single incandescent or magnetic low-voltage circuit up to 300W/VA.

COMMUNICATION TO RF PROCESSOR

All RF Lamp Dimmers must be located within 30 feet (9m) of an RF Processor or an RF Signal Repeater. Each *HomeWorks* RF Processor is capable of controlling up to 64 RF Local Lighting controls.

For technical specifications, see pg. 151.

RF Visor Controls

RF VISOR RECEIVER AND TRANSMITTER (MODEL # HR-VCRX-SW AND HR-VCTX-SW)

HomeWorks® RF Visor Controls may be used in any system design that utilizes an RF Processor. These devices provide control of lighting and other equipment from your car with just the touch of a button. The RF Visor Receiver has four dry contact outputs that can be used for garage doors or gates. Turn lights on or off, set scenes, or turn on Vacation Mode from your car as you are leaving your home. Pre-printed labels are provided to clearly identify each button's function. Each transmitter provides up to seven functions. Up to ten transmitters will work with one receiver.

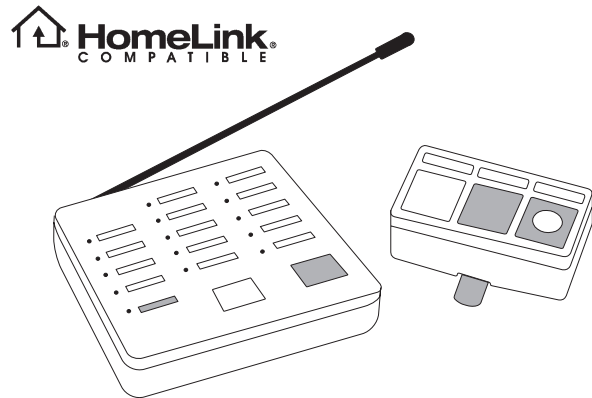
FINISHES AND COLORS

RF Visor Controls' colors include: Snow(SW).

COMMUNICATION TO RF PROCESSOR

The RF Visor Receiver must be located within 30 feet (9m) of an RF Processor or an RF Signal Repeater. Each HomeWorks RF Processor is capable of controlling up to 32 RF Keypads. The RF Visor Receiver counts as one of the 32 RF Keypads.

For technical specifications, see pg. 152.



**RF Visor Receiver and Transmitter
(HR-VCRX-SW and HR-VCTX-SW)**

HomeLink and the HomeLink Compatible logo are registered trademarks of Johnson Controls.

Contact Closure Interfaces

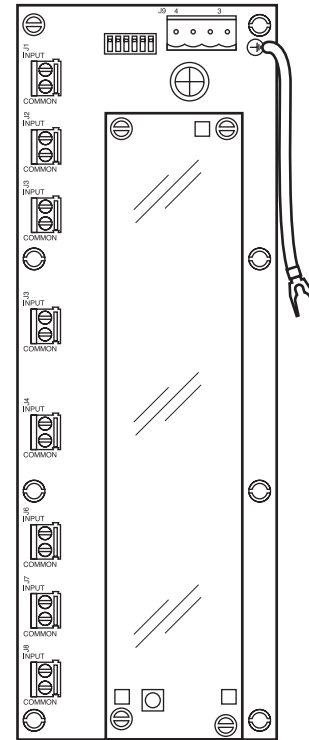
Contact Closure Interfaces allow simple integration of the HomeWorks® system with other equipment throughout the house. Equipment such as driveway sensors, photocells, and security systems are able to activate lighting scenes and other HomeWorks system events through the use of Contact Closure Input Interfaces (HWI-CCI-8 and HR-CCI-6-SW). Equipment such as shades, screens, gates, spas, and thermostats can be controlled by the HomeWorks system through the use of Contact Closure Output Interfaces (HWI-CCO-8). In addition, both the HWI-CCI-8 and the HWI-CCO-8 provide an infrared (IR) input that can be used to initiate HomeWorks system events using IR remote controls.

Contact Closure Interfaces (HWI-CCI-8 and HWI-CCO-8) can be mounted in any of three different enclosures: HWI-LV32-120, HWI-LV17-120, and HWI-ENC-CC.

Note: *Wired seeTouch™ Keypads and Wired 2-Button Keypads also include contact closure inputs.*

See pg. 55 for 2-Button Keypad details.

See pg. 52 and 57 for SeeTouch Keypad details.



**Wired Contact Closure Input Interface
(HWI-CCI-8)**

CONTACT CLOSURE INPUT INTERFACES

Many electronic systems and devices have the capability to provide status or control in the form of dry contact closure outputs. Each individual device output can be connected to one of the Contact Closure Inputs on a contact Closure Input Interface. These contact closure inputs are programmed in the same fashion as the buttons on a HomeWorks Keypad. For example, a driveway sensor can be connected to a CCI Interface and programmed to activate a “Welcome Home” scene.

Each of the contact closure inputs can be individually programmed as normally-open or normally-closed.

WIRED CONTACT CLOSURE INPUT INTERFACE (MODEL # HWI-CCI-8)

Each dry contact closure input has an LED indicator that shows the state of the connected device. The Contact Closure Input Interface has an IR receiver that is programmed independently of the contact closure inputs. This receiver allows Lutron® Handheld IR Transmitters (GRX-IT, and GRX-8IT) to function as “wireless keypads” when used in conjunction with standard IR repeater systems. The Lutron IR codes can be learned by most learning remotes, allowing audio/video remotes to control the lighting system.

CONNECTION TO WIRED PROCESSOR

Each Contact Closure Interface uses one keypad address. Up to 32 can be directly connected to a configurable link on a HomeWorks Processor using two pair [one pair #18 AWG (1.0mm²), one pair #18-22 AWG (1.0-0.5mm²) twisted shielded] Class 2 cable. Contact Closure Interfaces must reside on a link that has been configured for keypads, and may be wired in a daisy-chain, home run, or T-tap configuration. The maximum total cable length of any wire run is 1,000 feet (305m) with up to 10 keypads or interfaces. The maximum total cable length is 4,000 feet (1220m).

Contact Closure Interfaces (cont.)

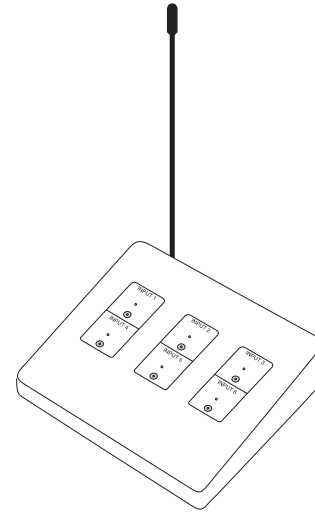
RF CONTACT CLOSURE INPUT INTERFACE **(MODEL # HR-CCI-6-SW)**

Devices that provide contact closure outputs are not always located near the processor. RF CCI Interfaces can be distributed throughout the home, locating them near the devices to which they are interfacing. The RF CCI Interface has six contact closure inputs which are programmed in the same fashion as the buttons on a HomeWorks® Keypad. Six buttons allow you to test each contact closure input's programming from the front of the control. Each dry contact closure input has an LED indicator that shows the state of the connected device.

COMMUNICATION TO RF PROCESSOR

All RF CCI Interfaces must be located within 30 feet (9m) of an RF Processor or an RF Signal Repeater. Each HomeWorks RF Processor is capable of controlling up to 32 RF Keypads. Each RF CCI Interface counts as one of the 32 RF Keypads.

For technical specifications, see pgs. 155-156.



**RF Contact Closure Input Interface
(HR-CCI-6-SW)**

Contact Closure Interfaces (cont.)

WIRED CONTACT CLOSURE OUTPUT INTERFACE (MODEL # HWI-CCO-8)

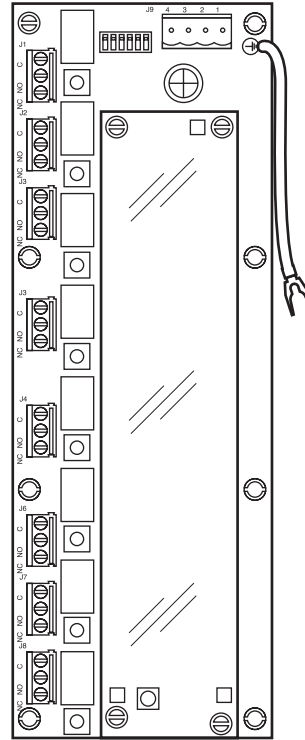
Many electronic devices have dry contact closure inputs, allowing them to be controlled by an external system. The HomeWorks® system uses the Contact Closure Output Board to control pumps, thermostats, audio/video, and other equipment supplied with dry contact closure inputs. Each CCO Interface has eight individually-controlled contact closure outputs and eight corresponding push buttons with LED indicators. When placed in “manual control mode”, the push buttons on the board are used to change the state of each relay, allowing functional testing of the devices that are being controlled. Both normally-open and normally-closed relay contacts are provided for each CCO, and each output can be programmed to provide either momentary (pulsed) or maintained (latching) functionality.

These CCOs can be assigned to any keypad button or time-clock event in the same manner as any lighting load. In a typical application, a HomeWorks Keypad button can be programmed to activate an output on a CCO Interface that is connected to a motorized window treatment. The CCO Interface has an IR receiver that is programmed independently of the contact closure outputs. This receiver allows Lutron® Handheld IR Transmitters (GRX-IT, and GRX-8IT) to function as “wireless keypads” when used in conjunction with standard IR repeater systems. The Lutron IR codes can be learned by most learning remotes, allowing audio/video remotes to control the lighting control system.

CONNECTION TO WIRED PROCESSOR

Each Contact Closure Interface uses one keypad address. Up to 32 can be directly connected to a configurable link on a HomeWorks Processor using two pair [one pair #18 AWG (1.0mm²), one pair #18-22 AWG (1.0-0.5mm²) twisted shielded] Class 2 cable. Contact Closure Interfaces must reside on a link that has been configured for keypads, and may be wired in a daisy-chain, home run, or T-tap configuration. The maximum total cable length of any wire run is 1,000 feet (305m) with up to 10 keypads or interfaces. The maximum total cable length is 4,000 feet (1220m).

For technical specifications, see pgs. 157-158.



**Wired Contact Closure Output Interface
(HWI-CCO-8)**

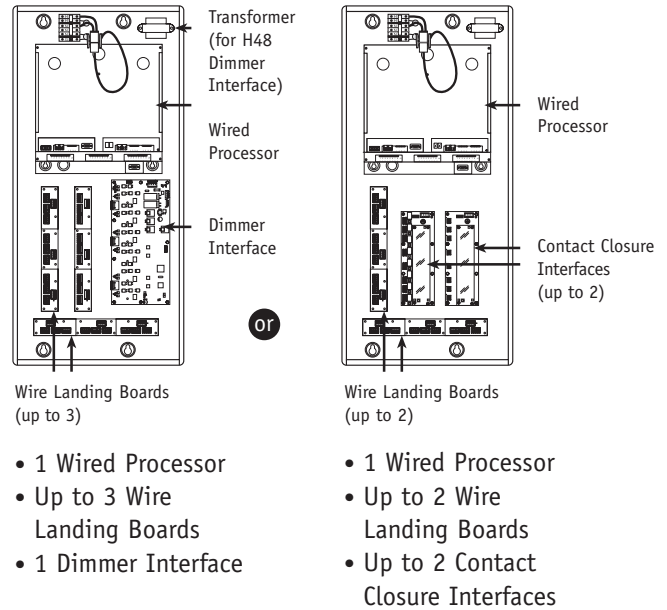
Low-Voltage Enclosures

Low-Voltage Enclosures are available in three different sizes, each of which may be either surface-mounted or flush-mounted in an electrical closet or equipment room. Both the number of enclosures and the types of components within them are customized to fit the size, lighting plan, and design of a home. Low-Voltage Enclosures can be distributed throughout the home near the rooms they are controlling to provide maximum flexibility during installation of the low-voltage wiring.

32" (81CM) LOW-VOLTAGE ENCLOSURE (MODEL # HWI-LV32-120)

32-inch Low-Voltage Enclosures accommodate several components including Wired Processors, Dimmer Interfaces, Wired Contact Closure Interfaces, and Wire Landing Boards. Shown are a few of the possible configurations. Low-Voltage Enclosures cannot house Remote Power Modules (RPMs).

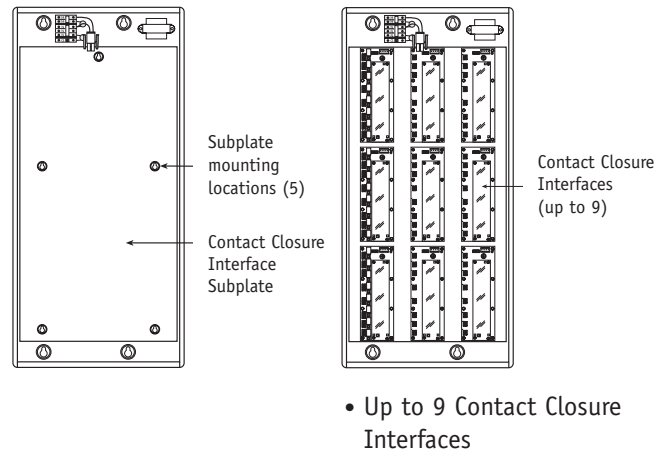
For technical specifications, see pgs. 159-160.



CONTACT CLOSURE INTERFACE SUBPLATE (MODEL # HWI-SUB32-CC9)

The HomeWorks® Contact Closure Interface Subplate installs in the HWI-LV32-120 enclosure allowing up to nine Contact Closure Interfaces to be mounted in one panel. Install the HWI-SUB32-CC9 using the three processor mounting screws already installed in the enclosure, plus two additional screws provided with the HWI-SUB32-CC9.

For technical specifications, see pg. 161.



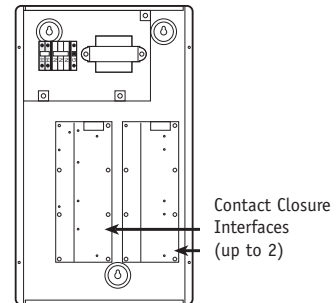
Note: Low-Voltage Enclosures **cannot** house Remote Power Modules (RPMs). For technical specifications, see pgs 161-164.

Low-Voltage Enclosures (cont.)

17" (44CM) LOW-VOLTAGE ENCLOSURE (MODEL # HWI-LV17-120)

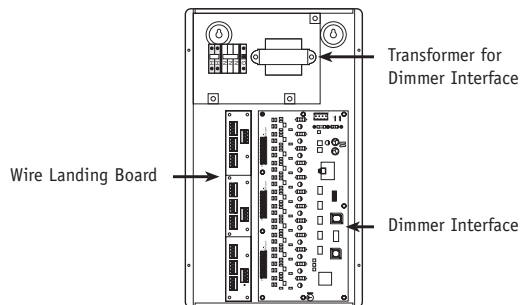
17-inch Low-Voltage Enclosures accommodate several components including Dimmer Interfaces, Contact Closure Interfaces, and Wire Landing Boards. Shown are a few of the possible configurations.

For technical specifications, see pgs. 162-163.



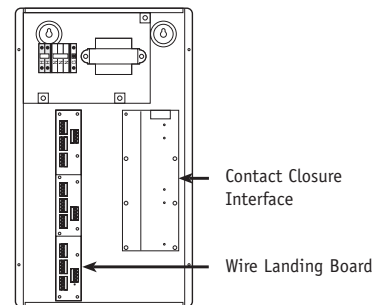
- Up to 2 Contact Closure Boards

or



- 1 Dimmer Interface
- 1 Wire Landing Board

or

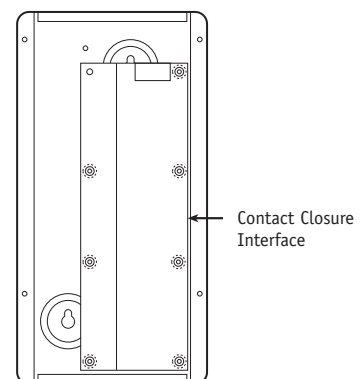


- 1 Contact Closure Board
- 1 Wire Landing Board

10" (25 CM) LOW-VOLTAGE ENCLOSURE (MODEL # HWI-ENC-CC)

The 10-inch Low-Voltage Enclosure accommodates one Contact Closure Interface (HWI-CCI-8 or HWI-CCO-8). Shown is the mounting configuration.

For technical specifications, see pg. 164.



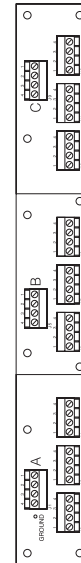
- 1 Contact Closure Interface

Wire Landing Board

WIRE LANDING BOARD **(MODEL # HWI-WLB)**

The Wire Landing Board is a wiring aid consisting of a printed circuit board with three sets of four terminal blocks. Each of these sets of terminal blocks is connected pin-to-pin, simplifying home run wiring. The Wire Landing Board is installed in a Low-Voltage Enclosure (see pg. 71-72 for more information).

For technical specifications, see pg. 165.



Wire Landing Board
(HWI-WLB)

Telephone Interface

TELEPHONE INTERFACE

(MODEL # HWI-TEL9)

The Telephone Interface allows a homeowner to activate lighting scenes and other system functions from any touchtone telephone inside the home or anywhere in the world. By using the Telephone Interface with the HomeWorks® system, the numeric buttons on the telephone serve as a ten-button keypad. Like other HomeWorks Keypads, each button can be individually programmed. Common applications of the Telephone Interface include turning on driveway or interior lights from a car, activating Vacation Mode from a remote location, turning on a spa before getting home, or checking the status of the security system. At the time of system installation, custom voice messages can be recorded to indicate the precise function of each of the ten buttons. These voice messages make it simple and easy for a homeowner to check status, activate functions, and receive voice confirmation that changes have been executed. A user-selected personal access code prevents unauthorized system access.

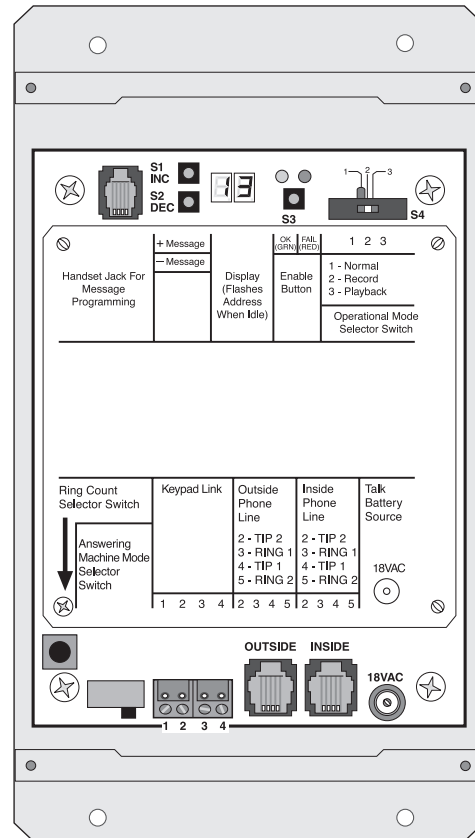
INSTALLATION INFORMATION

The Telephone Interface is surface-mounted in a location convenient to an incoming phone line. The Telephone Interface **does not** require a dedicated phone line and can share a line with household phones and answering machines. Just like a fax machine, the TEL9 requires an analog line or an analog extension on a phone system.

CONNECTION TO WIRED PROCESSOR

The TEL9 uses keypad address number 32. It must be connected to a HomeWorks Wired Processor communication link that has been configured for keypads. One Telephone Interface can be directly connected to a configurable link on a HomeWorks Processor using two pair [one pair #18 AWG (1.0mm²), one pair #18-22 AWG (1.0-0.5mm²) twisted shielded] Class 2 cable. The TEL9 may be wired in a daisy-chain, home run, star, or T-tap configuration. The maximum total cable length of any wire run is 1,000 feet (305m) with up to 10 keypads or interfaces. The maximum total cable length is 4,000 feet (1220m).

For technical specifications, see pgs. 166-167.



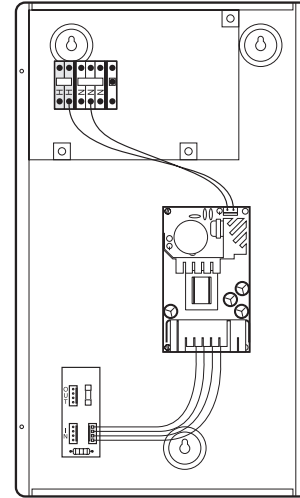
Telephone Interface
(HWI-TEL9)

Auxiliary Power Supply

AUXILIARY POWER SUPPLY (MODEL # HWI-PS-120)

The Auxiliary Power Supply is an additional +15VDC power source that can be used to power keypads and Contact Closure Interfaces when the power supply capacity of the processor is exceeded. A Wired Processor can power a maximum of 300 LEDs; the HWI-PS can power a maximum of 350 LEDs. For example, a Wired Processor can power 30 HWI-KP10 Keypads before an HWI-PS is required.

For technical specifications, see pg. 168.



**Auxiliary Power Supply
(HWI-PS-120)**

Model	LED Count
HWI-KP5, HWI-5S-IR, HWI-KP10, HWI-4SE, HWI-KP15, HWI-8SE, HWI-KP-LB6, HWD-5KP, HWI-KP-LB9, HWD-5RL, HWI-5S-M, HWD-10KP, HWI-5S-NM, HWD-10RL	Number of LEDs on keypad See pg. 148.
HWS-3B-G, HWI-2B, HWS-4B-G, HWI-CCI-8, HWS-3B-B, HWI-CCO-8 HWS-4B-B,	10
HWI-TEL9, all seeTouch™ models	15
HWI-2SE	3
HWI-HHP-LD	45

Handheld Programmer and Jack

HANDHELD PROGRAMMER (MODEL # HWI-HHP-LD)

The Handheld Programmer (HHP) is an intuitive, portable control that allows any user to make real-time modifications to scene settings in a HomeWorks® system. It is ideal for lighting designers, architects, and homeowners who want to adjust lighting scenes without the use of a laptop computer. After a system has been completely programmed, the lighting designer or homeowner can use the HHP to fine-tune lighting scenes without requiring a service call from the system installer. Programming jacks may be installed in discreet locations throughout the home to allow convenient in-room adjustments.

Since the HHP accesses a limited portion of the system database, changes can be made without fear of altering fundamental system programming. Furthermore, these changes are retained in the HomeWorks system. When the designer or homeowner has completed their lighting scene adjustments, the installer can retrieve the changes from the system using the HomeWorks Utility. These changes can be integrated into the database on the installer's laptop for safe-keeping.

For technical specifications, see pgs. 172-173.

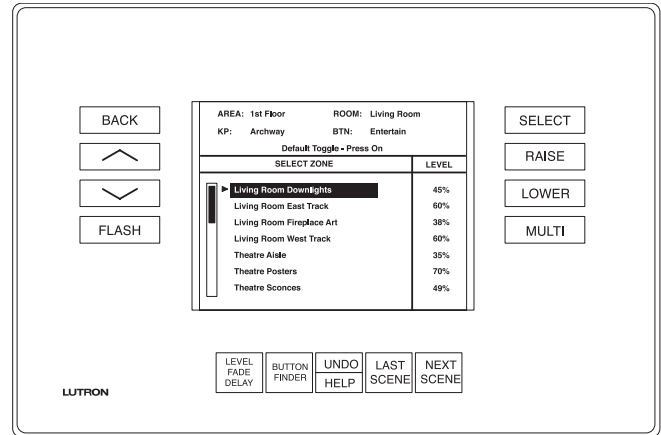
HANDHELD PROGRAMMER JACK (MODEL # HWI-HHPJ)

The HomeWorks Programming Jack connects the HHP to the HomeWorks system. There are no limitations to the number of Programming Jacks on a keypad link. However, the HHP has an LED count of 45 which must be subtracted from the keypad link capacity.

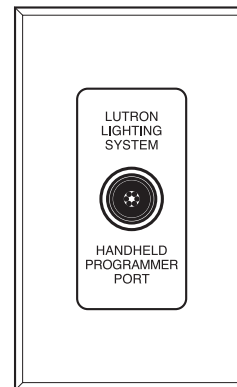
For technical specifications, see pgs. 172-173.

FINISHES AND COLORS

Architectural-style Programming Jacks ship with a face-plate. Programming Jacks are available in Architectural Matte finish plastic colors and metallic finishes. Colors include: White(WH), Beige(BE), Ivory(IV), Black(BL), Gray(GR), and Brown(BR). Metallic finishes include: Clear Anodized Aluminum(CLA), Black Anodized Aluminum(BLA), Brass Anodized Aluminum(BRA), Satin Brass(SB), Bright Brass(BB), Antique Brass(QB), Bright Chrome(BC), Satin Chrome(SC), Satin Nickel(SN), Bright Bronze(BZ), Satin Bronze(SZ), Antique Bronze(QZ), and 24-karat Gold Plate(AU). Custom finishes and paint matching are also available.



**Handheld Programmer
(HWI-HHP-LD)**



**Programming Jack
(HWI-HHPJ)**

CONNECTION TO PROCESSOR

Up to 32 Wired Keypads can be directly connected to a configurable link on a HomeWorks Wired Processor using two pair [one pair #18 AWG (1.0mm²), one pair #18-22 AWG (1.0-0.5mm²) twisted shielded] Class 2 cable. Keypads may be wired in a daisy-chain, home run, or T-tap configuration. The maximum total cable length of any wire run is 1,000 feet (305m) with up to 10 keypads or interfaces. The maximum total cable length is 4,000 feet (1220m).

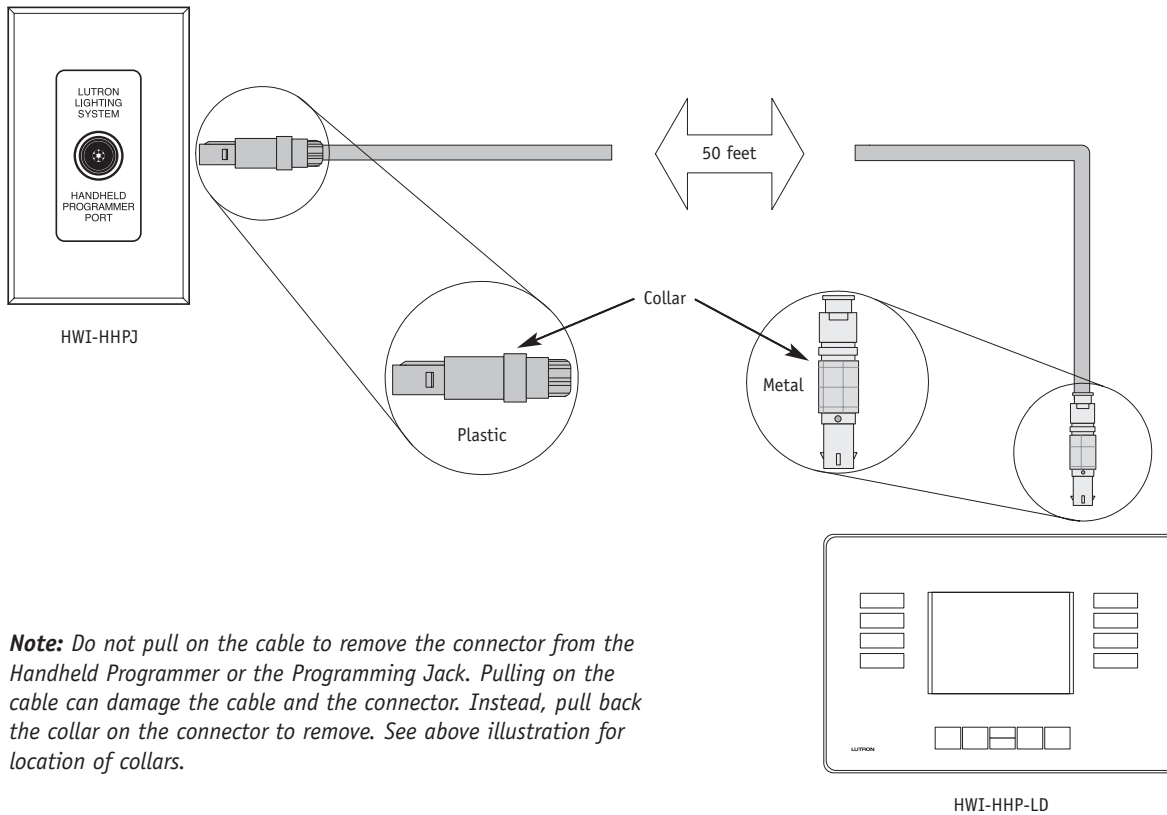
For technical specifications, see pg. 172-173.

Handheld Programmer and Jack (cont.)

CONNECTION OF HANDHELD PROGRAMMER TO WALL JACK

Only one HHP may be connected to the system at any time. The HHP uses the equivalent of 45 LEDs on the keypad link. If the HHP is connected to a keypad link powered by the processor, ensure the 300 LED limit is not exceeded. If the HHP is connected to a keypad link powered by the HWI-PS, ensure the 350 LED limit is not exceeded.

- Plug the end of the cable with the metal connector into the top receptacle on the Handheld Programmer.
- Plug the end of the cable with the plastic connector into the most convenient Programming Jack.
- Upon connection, the HHP will begin to download the database from the system processor.



Note: Do not pull on the cable to remove the connector from the Handheld Programmer or the Programming Jack. Pulling on the cable can damage the cable and the connector. Instead, pull back the collar on the connector to remove. See above illustration for location of collars.

Architectural-style Coordinating Accessories

Switches



Model: NT-1PS-XX
Description: 20A, 120/277V, single-pole

Model: NT-3PS-XX
Description: 20A, 120/277V, 3-way

Model: NT-4PS-XX
Description: 20A, 120/277V, 4-way

Receptacles



Model: NTR-15-XX
Description: 15A, 125V

Model: NTR-20-XX
Description: 20A, 125V

GFCI Receptacles



Model: NTR-15-GFCI-XX
Description: 15A, 125V

Model: NTR-20-GFCI-XX
Description: 20A, 125V

Isolated Ground Receptacles¹



Model: NTR-15-IG-OR-XX
Description: 15A, 125V

Model: NTR-20-IG-OR-XX
Description: 20A, 125V

Cable TV Jack



Model: NT-CJ-XX
Description: F-style, 75-0hm

Telephone Jacks



Model: NT-PJ-XX
Description: Single – 6-conductor RJ11



Model: NT-PJ8X2-XX²
Description: Double – 8-conductor RJ45, category 5



Model: NT-PJ8X3-XX²
Description: Triple – 8-conductor RJ45, category 5

Telephone/Cable TV Jack²



Model: NT-PJ8CJ-XX
Description: 8-conductor RJ45, category 5 and F-style, 75-0hm

Multi-Port Frame



Model: NT-6PF-XX
Description: Six-port frame
Compatible with Hubbell Xcelerator™ telephone and data jacks and Hubbell Snap-fit modules including BNC, RCA, S-video, F-type, and fiber optic connectors.

Integrating Multiple Controls



For a seamless look, keypads and Vareo® Local Lighting Controls can be combined behind a common, custom-made wallplate. All Architectural color and finish choices are available for custom wallplates. Custom backbox configurations may be required³.

Integrating Other Controls



Other manufacturers' controls can be ganged with HomeWorks® Keypads using a custom wallplate. Examples include AMX, Audioaccess®, Elan, Linn, and B&W™. All Architectural color and finish choices are available. Custom backbox configurations may be required³. Consult your Lutron Customer Service Representative.

Audioaccess is a registered trademark of Madrigal Audio Laboratories, Inc.

B&W is a trademark of B&W Loudspeakers Ltd.

¹ The isolated ground receptacle is orange; wallplate is the specified color. Receptacle can be special ordered to match wallplate color. Contact your Lutron Representative or Customer Service.

² Wallplate and insert match specified color. Device (e.g., jack) and device trim are White for Ivory, White, and Beige products; Black for Gray, Brown, Black, custom, and special metal products.

³ See Figs. 8, 9, pg. 119 for additional information.

XX= Color Code

HANDHELD INFRARED TRANSMITTERS

Handheld Infrared Transmitters select and adjust scenes up to 50 feet (15m). Use scene selection buttons to select four or eight scenes and off (depending on model), and raise/lower buttons to brighten or dim the selected scene.



4-Button

Model: GRX-IT-WH
Description: 4-buttons with off and raise/lower (White)



8-Button

Model: GRX-8IT-WH
Description: 8-buttons with off and raise/lower (White)

FINISHES AND COLORS

All Architectural-style coordinating accessories and wallplates are available in Architectural Matte finish plastic colors and metallic finishes. Colors include: White(WH), Beige(BE), Ivory(IV), Gray(GR), Brown(BR), Black(BL), and Taupe(TP). Metallic finishes include: Anodized Aluminum(CLA), Satin Brass(SB), Bright Brass(BB), Antique Brass(QB), Bright Chrome(BC), Satin Chrome(SC), Satin Nickel(SN), Bright Bronze(BZ), Satin Bronze(SZ), Antique Bronze(QZ), and 24-karat Gold Plate(AU). Accessories and wallplates are also available in ten metallic finishes. Custom paint matching is also available. Please contact Lutron Customer Service or your local Lutron Representative for details and pricing.

MULTI-GANG WALLPLATES

2-Gang



Model: VWP-2-XX
Description: 2 Vareo® openings



Model: VWP-2CR-XX
Description: 1 Vareo opening, 1 receptacle opening



Model: VWP-2RC-XX
Description: 1 receptacle opening, 1 Vareo opening



Model: VWP-2R-XX
Description: 2 receptacle openings

3-Gang



Model: VWP-3-XX
Description: 3 Vareo openings

4-Gang



Model: VWP-4-XX
Description: 4 Vareo openings

XX= Color Code

Designer-style Coordinating Accessories

Switches



Model: SC-1PS-XX
CA-1PSH-XX
Description: 15A, 120/277V, single-pole

Model: SC-3PS-XX
CA-3PSH-XX
Description: 15A, 120/277V, 3-way

Model: SC-4PS-XX
CA-4PSH-XX
Description: 15A, 120/277V, 4-way

Receptacle



Model: SCR-15-XX
CAR-15H-XX
Description: 15A, 125V

GFCI Receptacle



Model: SCR-15-GFCI-XX
CAR-15-GFCIH-XX
Description: 15A, 125V

Cable TV Jack



Model: SC-CJ-XX
CA-CJH-XX
Description: F-style, 75-Ohm coaxial cable

Telephone Jack



Model: SC-PJ-XX
CA-PJH-XX
Description: 6-conductor, RJ11

Multi-Port Frame



Model: SC-6PF-XX
CA-6PF-XX
Description: Six-port frame
Compatible with Hubbell Xcelerator™ telephone and data jacks and Hubbell Snap-fit modules including BNC, RCA, S-video, F-type, and fiber optic connectors.

Integrating Other Controls



Other manufacturers' decorator controls can be ganged with HomeWorks® controls using a Claro® or Satin Colors™ wallplate. All Designer-style color and finish choices are available.

HANDHELD INFRARED TRANSMITTERS

Handheld Infrared Transmitters select and adjust scenes up to 50 feet (15m). Use scene selection buttons to select four or eight scenes and off (depending on model), and raise/lower buttons to brighten or dim the selected scene.

4-Button



Model: GRX-IT-WH
Description: 4-buttons with off and raise/lower

8-Button



Model: GRX-8IT-WH
Description: 8-buttons with off and raise/lower

Note: Use the SC prefix when ordering Satin Colors Accessories.
Use the CA prefix when ordering Claro Gloss Accessories.

XX= Color Code

WALLPLATES**1-Gang**

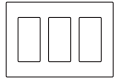
Model: SC-1-XX
CW-1-XX

Description: 1-gang screwless wallplate

**2-Gang**

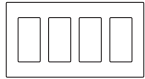
Model: SC-2-XX
CW-2-XX

Description: 2-gang screwless wallplate

**3-Gang**

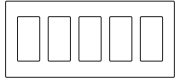
Model: SC-3-XX
CW-3-XX

Description: 3-gang screwless wallplate

**4-Gang**

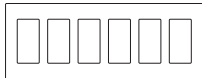
Model: SC-4-XX
CW-4-XX

Description: 4-gang screwless wallplate

**5-Gang**

Model: SC-5-XX
CW-5-XX

Description: 5-gang screwless wallplate

**6-Gang**

Model: SC-6-XX
CW-6-XX

Description: 6-gang screwless wallplate

Note: Use the SC prefix when ordering Satin Colors™ Matte Finishes Wallplates.
Use the CW prefix when ordering Claro® Designer Gloss Color Wallplates.

FINISHES AND COLORS

All Designer-style coordinating accessories and wallplates are available in Designer Gloss Finishes and Satin Colors™ Matte Finishes. Designer Gloss Finishes include: White(WH), Ivory(IV), Almond(AL), Light Almond(LA), Gray(GR), Brown(BR), and Black(BL). *Satin Colors* Matte Finishes include: Hot(HT), Ochre(OC), Terracotta(TC), Desert Stone(DS), Stone(ST), Limestone(LS), Blue Mist(BT), Midnight(MN), Taupe(TP), Biscuit(BI), Eggshell(ES), and Snow(SW).

XX= Color Code

Technical Specifications

System Specifications

Wired Processor Communication Link Specifications

Link Type	Max. per Processor	Baud Rates	Wiring Configuration	Termination Required
Module Interface	1	125K	Daisy-Chain	Yes, at last MI on link ¹
Inter-Processor	1	125K	Daisy-Chain	Yes, at both ends of link ¹
GRAFIK Eye®	3	31.25K	Daisy-Chain	No
RS-232	2	9600-115.2K	Point-to-Point	No
Keypad	3	10.42K-41.67K	Any	No
Dimmer Interface (D48)	3	62.5K	Daisy-Chain	Yes, at both ends of link ¹
Dimmer Interface (H48)	1	125K	Daisy-Chain	Yes, at both ends of link ¹

¹ Terminators required if total cable length exceeds 50 feet (15m).

RF Processor Communication Link Specifications

Link Type	Max. per Processor	Baud Rates	Wiring Configuration	Termination Required
Inter-Processor	1	125K	Daisy-Chain	Yes, at both ends of link ¹
RS-232	2	9600-115.2K	Point-to-Point	No
RF Keypads	1	N/A	RF	N/A
RF Dimmers	1	N/A	RF	N/A
RF Signal Repeaters	1	N/A	RF	N/A

¹ Terminators required if total cable length exceeds 50 feet (15m).

Remote Power Module (RPM) Capacities

Number of zones per RPM	4
Max. number of RPMs per Module Interface (MI)	8
Max. number of MIs per MI link	16
Max. number of MI links per processor	1
Max. number of RPMs per processor	128
Max. number of RPM zones per processor	256
Max. number of processors per system	16
Max. number of RPMs per system	2,048
Max. number of RPM zones per system	4,096

GRAFIK Eye® Capacities

Max. number of GRAFIK Eye Control Units per GRAFIK Eye link	8
Max. number of GRAFIK Eye Accessory Controls per GRAFIK Eye link	15
Max. number of GRAFIK Eye links per processor	3
Max. number of GRAFIK Eye Control Units per processor	24
Max. number of GRAFIK Eye Accessory Controls per processor	45
Max. number of processors per system	16
Max. number of GRAFIK Eye Control Units per system	384
Max. number of GRAFIK Eye Accessory Controls per system	720

Wired Vareo® Local Lighting Controls Capacities

Max. number of <i>Vareo</i> Local Lighting Controls per Dimmer Interface (D48) bus	4
Number of buses per D48	12
Max. number of <i>Vareo</i> Local Lighting Controls per D48	48
Max. number of D48 Dimmer Interface Boards per processor D48 link	4
Max. number of <i>Vareo</i> Local Lighting Controls per processor D48 link	192
Max. number of D48 links per processor	3
Max. number of <i>Vareo</i> Local Lighting Controls per processor	256
Max. number of processors per system	16
Max. number of <i>Vareo</i> Local Lighting Controls per system	4,096

Wired Maestro® Local Lighting Controls Capacities

Max. number of <i>Maestro</i> Local Lighting Controls per Dimmer Interface (H48) bus	8
Number of buses per H48	6
Max. number of <i>Maestro</i> Local Lighting Controls per H48	48
Max. number of H48 Dimmer Interface per processor H48 link	4
Max. number of <i>Maestro</i> Local Lighting Controls per processor H48 link	192
Max. number of H48 links per processor	1
Max. number of <i>Maestro</i> Local Lighting Controls per processor	192
Max. number of processors per system	16
Max. number of <i>Maestro</i> Local Lighting Controls per system	3,072

RF *Maestro* Local Lighting Controls Capacities

	RF
Max. number of <i>Maestro</i> Local Lighting Controls per RF Link	64
Max. number of RF Dimmer Links per RF Processor	1
Max. number of RF <i>Maestro</i> Local Lighting Controls per RF Processor	64
Max. number of RF Processors per system	16
Max. number of RF <i>Maestro</i> Local Lighting Controls per system	1,024

Keypad Capacities

	RF	Wired
Max. number of devices per keypad link	32	32
Max. number of keypad links per processor	1	3
Max. number of keypads per processor	32	96
Max number of tabletop plug-in/battery combo keypads (-C) per system	32	N/A
Max. number of processors per system	16	16
Max. number of keypads per system	512	1,536

Wired Processors

Model Number	HWI-PO-120: HomeWorks® Processor only. HWI-PM-120: HomeWorks Processor with one integral Module Interface (MI). HWI-PO-D48-120: HomeWorks Processor with one integral Dimmer Interface (D48). HWI-PO-H48-120: HomeWorks Processor with one integral Dimmer Interface (H48). HWI-PM-D48-120: HomeWorks Processor with one integral Module Interface (MI) and one integral Dimmer Interface (D48). HWI-PM-H48-120: HomeWorks Processor with one integral Module Interface (MI) and one integral Dimmer Interface (H48).
Input Voltage	100-140VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Line-Voltage Connections	Mates with Lutron-provided 2-pin pigtail on DIN-rail terminal block. Power switch provided on top left of processor. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57nM).
Low-Voltage Wire Type	Two pair [one pair #18 AWG (1.0mm ²), one pair #18-22(1.0-0.5mm ²) twisted shielded] Class 2 cable.
Low-Voltage Wiring Configuration	All processors on the same system must be have the inter-processor communication links connected in a daisy-chain configuration.
Low-Voltage Connections	One 4-pin removable terminal block. Each of the four terminals will accept up to two #18 AWG (1.0mm ²) wires. Up to two standard female DB-9 serial RS-232 connections.
RS-232 Ports	Supports full handshaking and modem indicator lines. DB-9 pinout: Pin 1 - DCD Pin 4 - DSR Pin 7 - CTS Pin 2 - TX Pin 5 - GND Pin 8 - RTS Pin 3 - RX Pin 6 - DTR Pin 9 - RI
Addressing	Via DIP Switch. Counts as 1 of 16 processor addresses. <i>See Fig. 2, pg. 87.</i>
Diagnostics	Two 7-segment LED displays, a power LED, Communication link power short circuit LED, Links 1-7 Tx and Rx LEDs.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Miswire Protection	All terminal block inputs are over-voltage and miswire protected against wire reversals and shorts. 15V communications link power is short-circuit protected.
Power-Failure Memory	Lithium battery provides ten years of data retention.
Internal Timeclock	Accuracy +/- 90 seconds per month (specified as during data retention time).
Dimensions	<i>See Fig. 1, pg. 87.</i>
Mounting	HWI-PNL-8: Processor mounts at bottom of panel. <i>See Fig. 3, pg. 87.</i> HWI-LV32-120: Processor mounts at top of enclosure. <i>See Fig. 4, pg. 87.</i>
Mounting Hole Locations	<i>See Fig. 1, pg. 87.</i>
Shipping Weight (all model numbers)	9 lbs. (4.1kg)

Wired Processors (cont.)

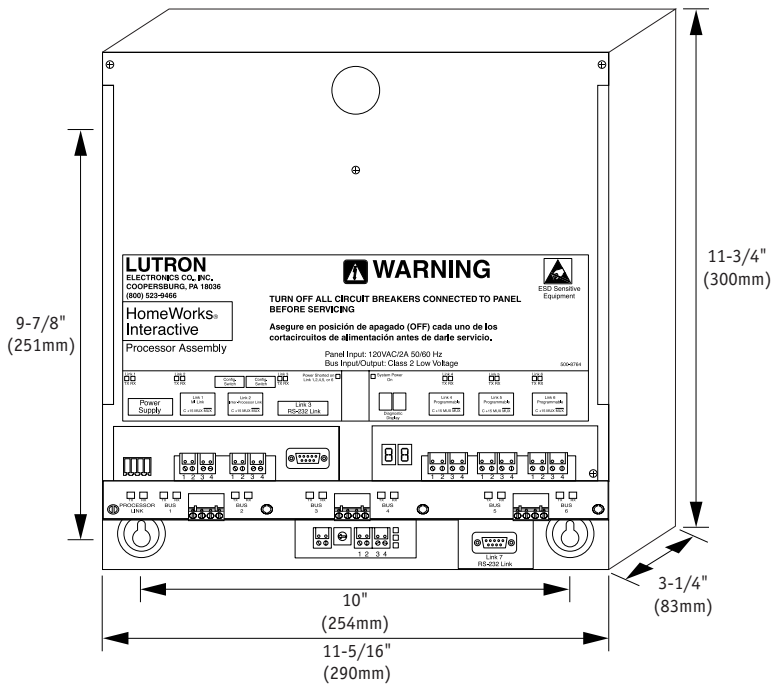


Figure 1 – Dimensions and Mounting Hole Locations

Note: All six HomeWorks® Wired Processor models have the same dimensions.

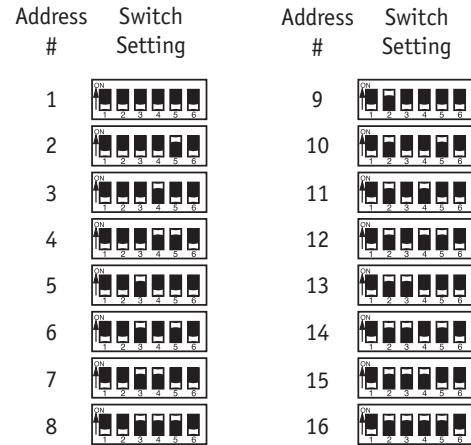
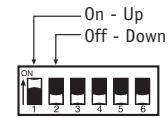


Figure 2 – Addressing DIP Switches

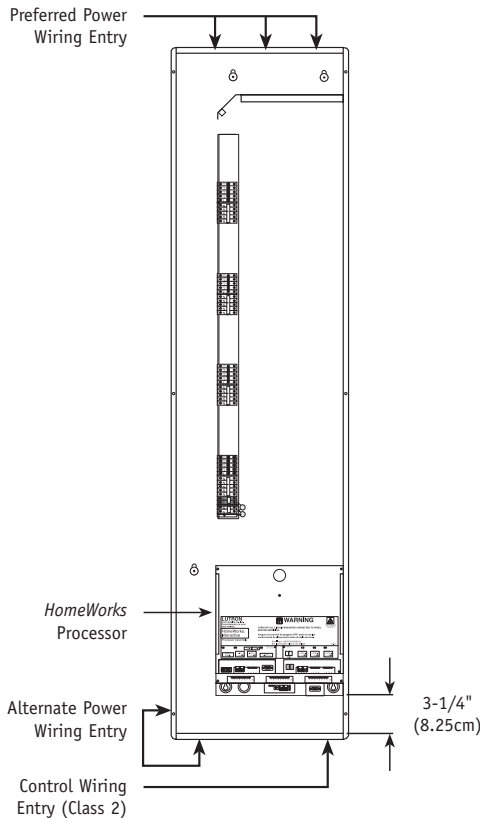


Figure 3 – Mounting Location in an HWI-PNL-8

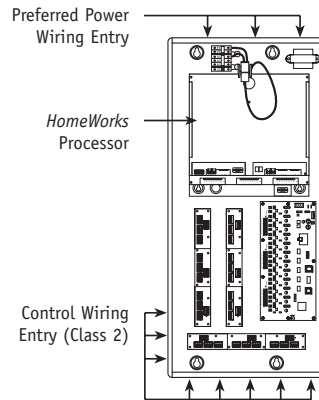


Figure 4 – Mounting Location in an HWI-LV32-120

RF Processors

Model Numbers	H-RFP-1P: HomeWorks® RF Processor with one integral RS-232 port. H-RFP-2P: HomeWorks RF Processor with two integral RS-232 ports.
Input Voltage	120/127VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM, FCC, IC
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Line-Voltage Connections	Lutron provides a plug-in low-voltage transformer.
Low-Voltage Wire Type	Two pair [one pair #18 AWG (1.0mm ²), one pair #18-22 AWG (1.0-0.5mm ²) twisted shielded] Class 2 cable.
Low-Voltage Wiring Configuration	All processors on the same system must be have the inter-processor communication links connected in a daisy-chain configuration.
Low-Voltage Connections	One 4-pin removable terminal block. Each of the four terminal will accept up to two #18 AWG (1.0mm ²) wires. Up to two standard female DB-9 serial RS-232 connections.
RS-232 Ports	Supports full handshaking and modem indicator lines. DB-9 pinout: Pin 1 - DCD Pin 4 - DSR Pin 7 - CTS Pin 2 - TX Pin 5 - GND Pin 8 - RTS Pin 3 - RX Pin 6 - DTR Pin 9 - RI
Addressing	Via the LCD display. Counts as 1 of 16 processor addresses.
Diagnostics	LCD display, Power LED, Links 2, 3, 7, and 8 Tx and Rx LEDs.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Miswire Protection	All terminal block inputs are over-voltage and miswire protected against wire reversals and shorts.
Power-Failure Memory	Lithium battery provides ten years of data retention.
Internal Timeclock	Accuracy +/- 30 seconds per month (specified as during data retention time).
Dimensions	See Fig. 1, pg. 89.
Mounting	This enclosure is designed to be surface-mounted using the three pre-drilled holes in the mounting flange. Unit is self-contained in an enclosure. Unit must be located within 5 feet (1.5m) of a 120V receptacle.
Mounting Hole Locations	See Fig. 1, pg 89.
RF Coverage	2,500 square feet (232m ²) of living space.
Shipping Weight (all model numbers)	5.6 lbs. (2.5kg)

RF Processors (cont.)

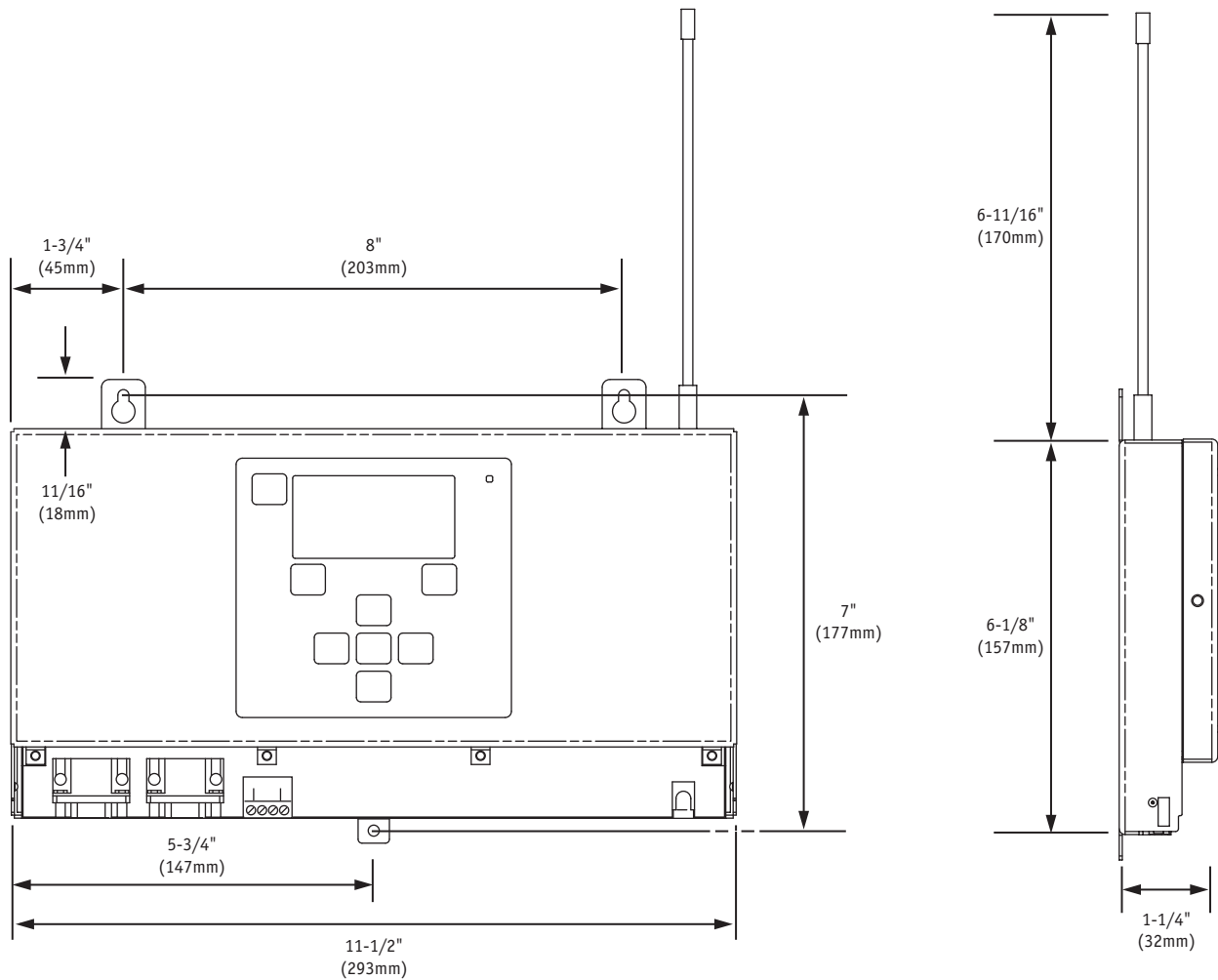


Figure 1 – Dimensions
(port cover removed)

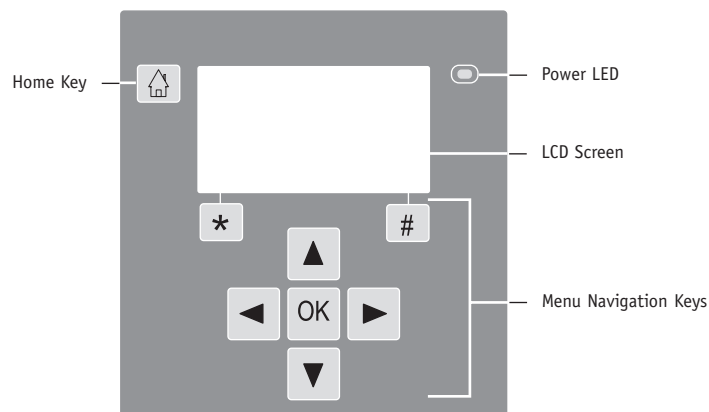


Figure 2 – LCD Display

RF Signal Repeater

Model Number	HR-REP-SW: Provides additional RF coverage area.
Input Voltage	120/127VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM, FCC, IC
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Line-Voltage Connections	Lutron provides a plug-in low-voltage transformer.
Addressing	Via the HomeWorks® Utility, using unique device serial numbers. Units must be installed prior to addressing. Counts as 1 of 4 repeater addresses on an RF Processor.
Diagnostics	Test button provides RF communication check.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Dimensions	See Fig. 1, pg. 91.
Mounting	Unit must be located within 5 feet (1.5m) of a 120V receptacle. Unit must be placed within 60 feet (18m) of an RF Signal Repeater or an RF Processor.
Coverage	2,500 square feet (232m ²) of living space.
Shipping Weight	1.5 lbs. (0.7kg)

RF Signal Repeater (cont.)

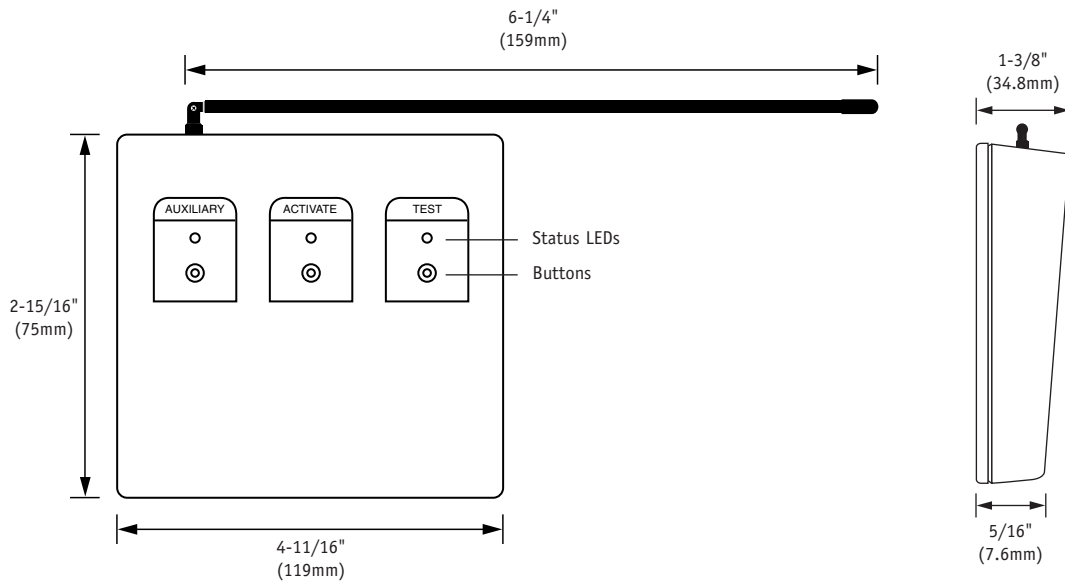


Figure 1 – Dimensions

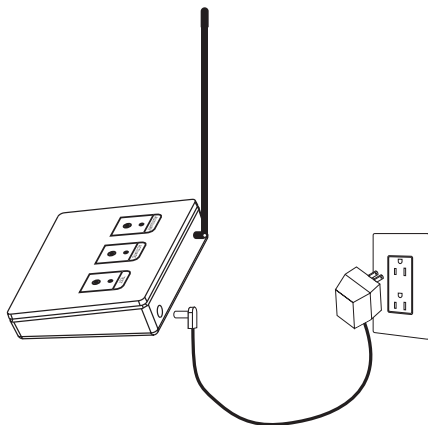
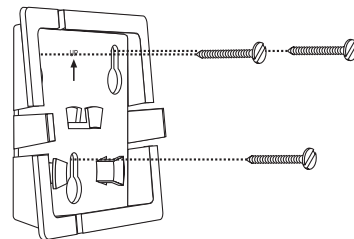
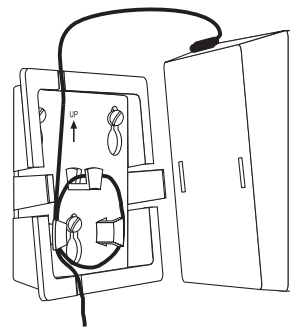


Figure 2 – Installation



Attach mounting bracket to wall using the supplied screws and wall anchors.



Wrap excess power supply cord around the cord holder. Align device and snap onto mounting bracket.

Figure 3 – Mounting

Module Interface

Specifications apply to HWI-MI-120 Stand-Alone Module Interfaces and to Module Interfaces integral to HomeWorks® Processors

Model Numbers	HWI-MI-120: Stand-Alone Module Interface. HWI-PM-120: Wired Processor with integral Module Interface. HWI-PM-D48-120: Wired Processor with integral Module Interface. HWI-PM-H48-120: Wired Processor with integral Module Interface.
Input Voltage	When integral to a processor, the MI is powered by 15VDC provided by terminals 1 and 2 on the processor communications link connector. When a stand-alone MI is used, it is powered by a separate line-voltage feed (120/127VAC, 50/60Hz) at the DIN rail terminal blocks and should not have terminal 2 connected on the processor communications link connector.
Regulatory Approvals	UL, CSA, NOM
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Low-Voltage Wire Type	Two pair [one pair #18 AWG (1.0mm ²), one pair #18-22 AWG (1.0-0.5mm ²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used.
Low-Voltage Wiring Configuration	Maximum wire length of 1,000 feet (305m). Must be wired in a daisy-chain configuration. Terminators required if total cable length exceeds 50 feet (15m).
Low-Voltage Connections	One 4-pin removable terminal block. Each of the four terminals will accept up to two #18 AWG (1.0mm ²) wires.
Addressing	Via rotary switch. Counts as 1 of 16 MI addresses on an MI link.
Diagnostics	Three LEDs for troubleshooting communications with the processor and the RPMs.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Miswire Protection	All terminal block inputs are over-voltage and miswire protected against wire reversals and shorts.
Fail Safe Operations	The manual override scene is activated for all RPMs connected to the MI by closing a switch that is wired between the two manual override terminals. The switch (or relay) contacts must be rated for switching 50 milliamps at 30VDC. A single switch can be used for multiple MIs wired in parallel, but proper polarity must be maintained across all units. In this configuration, the switch must be rated for the sum of the current for all of the MIs connected (e.g., six MIs wired to a single manual override switch requires a switch rated for 300 milliamps at 30VDC).
Mounting Dimensions	See Fig. 1, pg. 93.
Mounting	See Fig. 2, pg. 93. An integral MI is mounted within the processor housing (HWI-PM-120, HWI-PM-D48-120, or HWI-PM-H48-120). A stand-alone MI mounts in the lower right-hand corner of a panel enclosure (HWI-PNL-8, HWBP-8D, HWI-PNL-5, and HWBP-2S).
Shipping Weight	4 lbs. (1.8kg)
Output	Compatible with HW-RPM-4U Dimming Module, HW-RPM-4E ELV Module, HW-RPM-4FSQ Fan Speed Module, HW-RPM-4M Motor Module, and HW-RPM-4R Power Relay Module.

Module Interface (cont.)

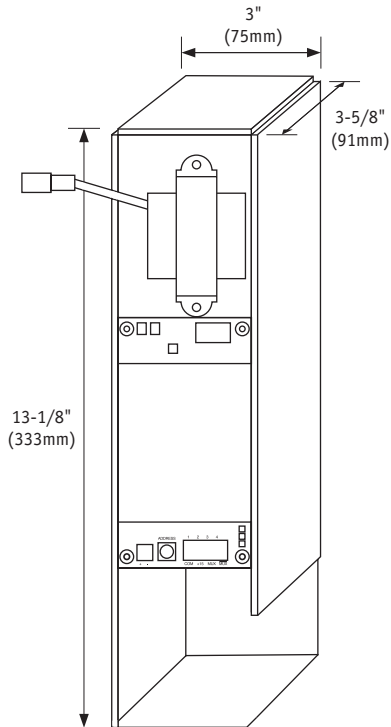


Figure 1 - HWI-MI-120 Dimensions

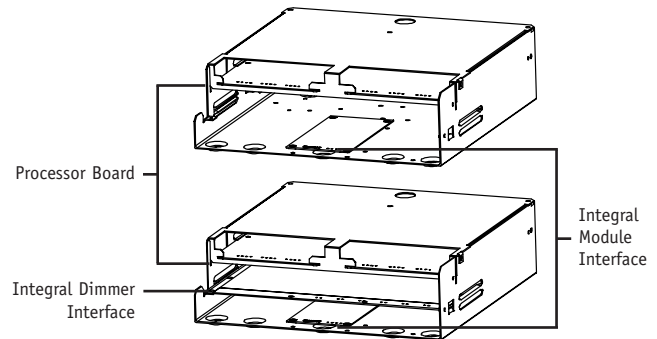


Figure 2 - Integral MI

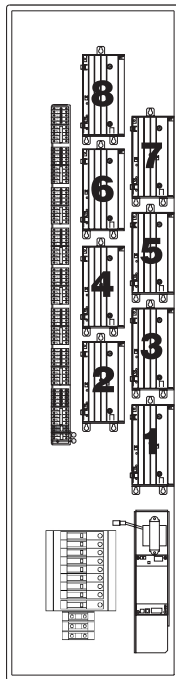


Figure 3 - HWI-MI-120 Mounted in a HWBP-8D Enclosure

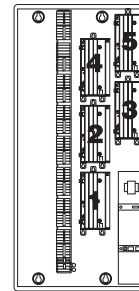


Figure 4 - HWI-MI-120 Mounted in a HWI-PNL-5 Enclosure

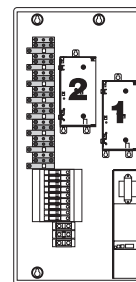


Figure 5 - HWI-MI-120 Mounted in a HWBP-2S Enclosure

TECHNICAL SPECIFICATIONS

Remote Power Modules

All Remote Power Modules

Model Numbers	HW-RPM-4U-120: Dimming Module. HW-RPM-4E-120: Electronic Low-Voltage Dimming Module. HW-RPM-4FSQ-120: Quiet Fan Speed Control Module. HW-RPM-4M-120: Motor Module. HW-RPM-4R: Power Relay Module.
Input Voltage	RPM-4U, RPM-4M, RPM-4E, RPM-4FSQ: 108-132VAC, 50/60Hz RPM-4R: 108-264VAC, 50/60Hz
Number of Outputs	4
Regulatory Approvals	UL, CSA, NOM
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Heat Generated Fully Loaded	Each RPM will generate up to 75 BTUs per hr. when fully loaded.
Line-Voltage Connections	Separate line-voltage feeds at the DIN rail terminal blocks for each RPM. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57Nm).
Low-Voltage Communications	Via Lutron-provided communication harness.
Addressing	Via rotary switch. Counts as 1 of 8 RPM addresses per MI. <i>See pg. 39.</i>
Diagnostics	LED provided to indicate proper communications with Module Interface.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Fail-Safe Operation	Rotary switch on the RPM allows for manual operation of each load.
Dimensions	3-7/8" (99mm) wide x 7" (178mm) high
Mounting	HWI-PNL-8 and the HWBP-8D Remote Power Panels will hold up to 8 RPMs. HWI-PNL-5 Remote Power Panel will hold up to 5 RPMs. HWBP-2S Remote Power Panel will hold up to 2 RPM-4Rs. Note: RPMs may hum slightly and internal relays will click when in use. Mount where such noise is acceptable. Locate at least 6 feet (1.8m) away from sensitive electronic equipment.
Shipping Weight	2.2 lbs. (1.0kg)
Minimum Load	25W/VA per output.
Lamp Buzz	Lamp Debuzzing Coils are available from Lutron to reduce lamp filament buzzing. (Lutron® model # HW-HIFC-10-2, LDC-10-TCP, or LDC-16-TCP).

Remote Power Modules (cont.)



HW-RPM-4U-120 • Dimming Module

Load Types	Incandescent ¹ , magnetic low-voltage, electronic low-voltage ^{1,2} , neon/cold cathode, Lutron® Tu-Wire® Fluorescent Dimming Ballasts, or Lutron Hi-Lume® and Eco-10™ Fluorescent Dimming Ballasts (using GRX-FDBI-16A-120 Interface). Outputs are compatible with Lutron NGRX-PB-WH, and HP 2•4•6 Power Boosters for higher wattage applications.
Maximum Load	For 20A branch circuit, total load per module: 16A continuous, total load per switch leg: 16A continuous. For 15A branch circuit, total load per module: 12A continuous, total load per switch leg: 12A continuous.
Wiring	See Fig. 1, pg. 97. Terminal blocks will accept one #18-10 AWG (1.0-2.5mm ²) wire or two #18-16 AWG (1.0-1.5mm ²) wires.
Technology	Forward phase control using Triac technology.
Interference Suppression	EMI/RFI suppression circuitry.
Air Gap	Provided when all four circuits are off.



HW-RPM-4E-120 • Electronic Low-Voltage Dimming Module

Load Types	Electronic low-voltage.
Maximum Load	For 20A branch circuit, total load per module: 16A continuous, total load per switch leg: 9A continuous. For 15A branch circuit, total load per module: 12A continuous, total load per switch leg: 9A continuous.
Wiring	See Fig. 1, pg. 97. Terminal blocks will accept one #18-10 AWG (1.0-2.5mm ²) wire or two #18-16 AWG (1.0-1.5mm ²) wires.
Technology	Reverse phase control using FET technology.
Interference Suppression	EMI/RFI suppression circuitry.
Air Gap	Provided when all four circuits are off.

HW-RPM-4FSQ-120 • Quiet Fan Speed Control Module

Load Type	Ceiling fan.
Maximum Load	2A per output, single ceiling fan.
Wiring	See Fig. 1, pg. 97. Terminal blocks will accept one #18-10 AWG (1.0-2.5mm ²) wire or two #18-16 AWG (1.0-1.5mm ²) wires.
Technology	Switched capacitor quiet control circuitry.
Number of Speeds	Five: off, low, medium, medium-high, high.
Interference Suppression	EMI/RFI suppression circuitry.
Air Gap	Provided when all four circuits are off.

¹ In rare cases, incandescent lamps and electronic low-voltage transformers will “buzz” or “hum”. The HW-HIFC-10-2 filter choke assembly reduces this hum. The filter choke assembly can be installed in place of the top RPM in an HWI-PNL-8 Remote Power Panel.

² HW-RPM-4U-120 requires ELVI-1000 to dim ELV loads (see pg.138). No interface required to switch ELV with the HW-RPM-4U-120. Use the HW-RPM-4E-120 to eliminate need for this interface.

Remote Power Modules (cont.)

HW-RPM-4M-120 • Motor Module

Load Types	Bi-directional three-wire 120V motor loads, or incandescent non-dim. Outputs are not rated for switching electronic low-voltage or electronic ballasts.
Maximum Load	For 20A branch circuit, 1/4 HP per circuit. 5A maximum per circuit for motor loads, 3A maximum per circuit for tungsten loads.
Wiring	Terminal blocks will accept one #18-10 AWG (1.0-2.5mm ²) wire or two #18-16 AWG (1.0-1.5mm ²) wires. Requires that four additional terminal blocks be mounted onto the DIN rail assembly. <i>See Fig. 2, pg. 97.</i>
Technology	Relay switching, mechanical-interlocked relays guarantee motor protection.
Interference Suppression	EMI/RFI suppression circuitry.
Air Gap	Provided when all four circuits are off.

HW-RPM-4R • Power Relay Module (120V-240V)

Softswitch™

Load Types	Non-dim loads.
Maximum Load	For 20A branch circuits, total load per RPM: 64A continuous, total load per switch leg: 16A continuous, 1/3 hp For 15A branch circuits, total load per RPM: 48A continuous, total load per switch leg: 12A continuous, 1/3 hp
Wiring	Terminal blocks will accept one #18-10 AWG (1.0-2.5mm ²) wire or two #18-16 AWG (1.0-1.5mm ²) wires. Requires that four additional gray terminal blocks. Gray terminal blocks accept one #18-8 AWG (0.75-1.0mm ²) wire or two #16-12 AWG (1.5-4.0mm ²) wires and three additional black terminal blocks be mounted onto the DIN rail assembly. <i>See Fig. 3, pg. 97.</i>
Technology	Patented triac arc suppression technology used to extend relay life.
Interference Suppression	EMI/RFI suppression circuitry.
Air Gap	Provided when all four circuits are off.

Remote Power Modules (cont.)

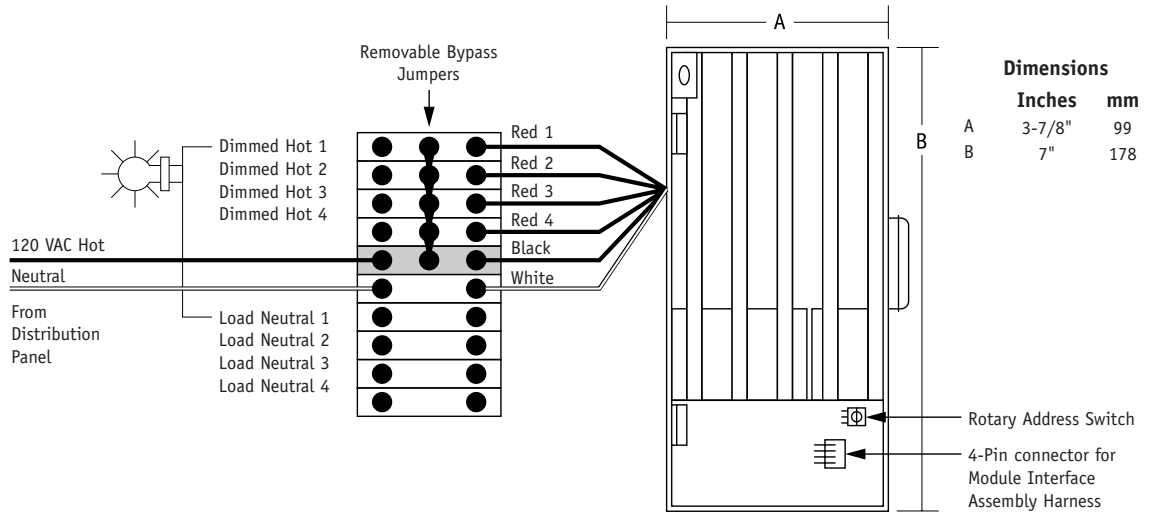


Figure 1 – HW-RPM-4U-120, HW-RPM-4E-120 and HW-RPM-4FSQ-120

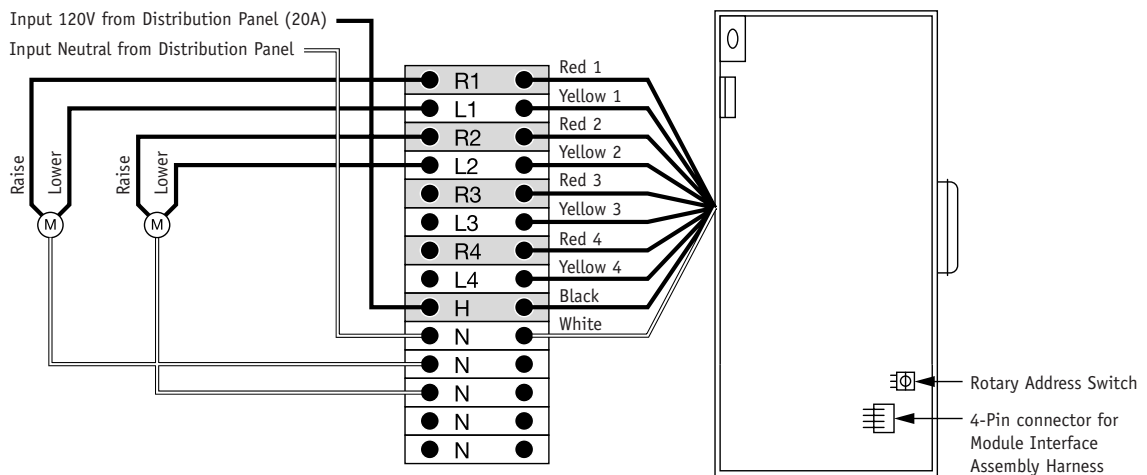


Figure 2 – HW-RPM-4M-120

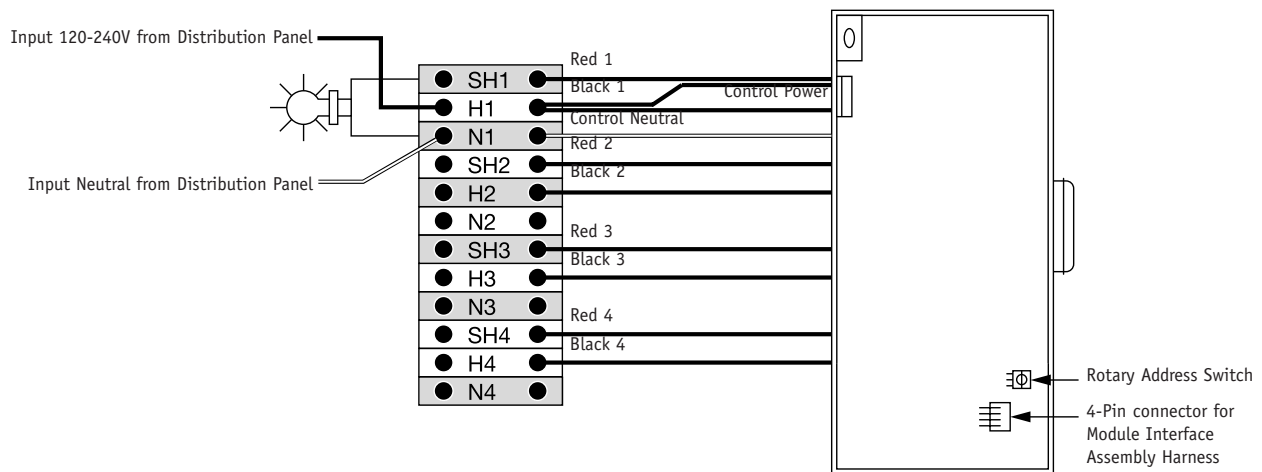


Figure 3 – HW-RPM-4R

TECHNICAL SPECIFICATIONS

Remote Power Feed-Through Panels

Model Number	HWI-PNL-8: Eight module Remote Power Feed-Through Panel.
Capacity	Eight RPMs (HW-RPM-4U, HW-RPM-4E, HW-RPM-4FSQ, HW-RPM-4M, and HW-RPM-4R) and one Module Interface or Wired Processor. <i>See Fig. 3, pg. 99.</i>
Regulatory Approvals	UL, CSA, NOM
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling	Passive cooling. Mount in a place where the vented cover will not be blocked.
Heat Generated Fully Loaded	600 BTUs per hr. maximum.
Line-Voltage Connections	Use copper wire only, supply conductors 60/75°C. DIN rail-mounted terminal blocks provided for line-voltage Remote Power Module (RPM) wiring and processor/MI power. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57nM). <i>See Figs. 1, 2, 3, pg. 97.</i>
DIN Rail Terminal Blocks	Terminal blocks will accept one #18-10 AWG (1.0-2.5mm ²) wire or two #18-16 AWG (1.0-1.5mm ²) wires. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57 nM). All terminal blocks are shipped with bypass jumpers installed. After verifying that each circuit is wired correctly, remove the bypass jumpers for system operation.
Ground Bar Terminals	24 ground termination points.
Miswire Protection	All terminal blocks are shipped with bypass jumpers installed.
Mounting	May be surface-mounted or flush-mounted. Panel fits between standard 16" (406mm) on-center stud framing. Panel must be mounted vertically (+/- 7 degrees from vertical). Allow at least 12" (30cm) air space at top and bottom and a minimum of 12" (30cm) clearance in front of panel, or allow air space as required by local codes (whichever is greater). Remote Power Panels will hum slightly and internal relays will click while in use. Mount where such noise is acceptable. Mount the panel so that line-voltage wiring will be at least 6 feet (1.8m) from audio or electronic equipment and its wiring.
Dimensions	14-3/8" (36.5cm) x 59" (150cm) x 3-7/8" (9.8cm) <i>See Fig. 1, pg. 99.</i>
Construction	Enclosure: 16-gauge galvanized sheet metal (unpainted). Cover: Painted (black) metal cover with ventilation holes. Cover is attached using four phillips-head screws.
Shipping Weight	25 lbs. (11.4kg)

Remote Power Feed-Through Panels (cont.)

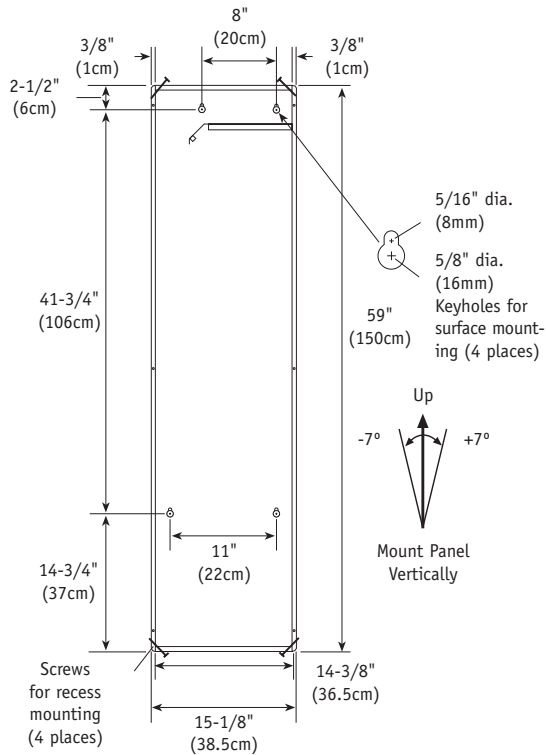


Figure 1 – Panel Dimensions and Mounting

Note: The panel is 3-7/8" (9.8cm) deep past cover mounting tabs.

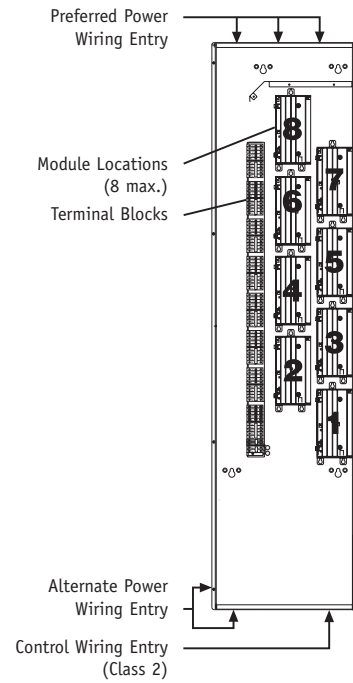
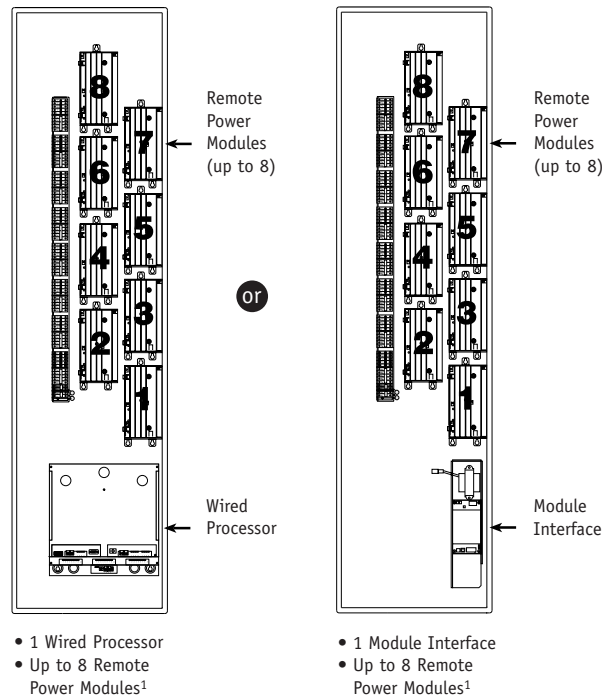


Figure 2 – Wiring Entry



- 1 Wired Processor
- Up to 8 Remote Power Modules¹

- 1 Module Interface
- Up to 8 Remote Power Modules¹

¹ One HW-HIFC-10-2 filter choke may be installed in place of module 8.

Figure 3 – Panel Configurations

Remote Power Feed-Through Panels (cont.)

Model Number	HWI-PNL-5: Five module Remote Power Feed-Through Panel.
Capacity	Five RPMs (HW-RPM-4U, HW-RPM-4E, HW-RPM-4FSQ, HW-RPM-4M, and HW-RPM-4R) and one Module Interface. <i>See Fig. 3, pg. 101.</i>
Regulatory Approvals	UL, CSA, NOM
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling	Passive cooling. Mount in a place where the vented cover will not be blocked.
Heat Generated Fully Loaded	420 BTUs per hr. maximum
Line-Voltage Connections	Use copper wire only, supply conductors 60/75°C. DIN rail-mounted terminal blocks provided for line-voltage Remote Power Module (RPM) wiring and processor/MI power. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57nM). <i>See Fig. 1,2,3 pg. 97.</i>
DIN Rail Terminal Blocks	Terminal blocks will accept one #18-10 AWG (1.0-2.5mm ²) wire or two #18-16 AWG (1.0-1.5mm ²) wires. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57 nM). All terminal blocks are shipped with bypass jumpers installed. After verifying that each circuit is wired correctly, remove the bypass jumpers for system operation.
Ground Bar Terminals	24 ground termination points.
Miswire Protection	All terminal blocks are shipped with bypass jumpers installed.
Mounting	May be surface-mounted or flush-mounted. Panel fits between standard 16" (406mm) on-center stud framing. Panel must be mounted vertically (+/- 7 degrees from vertical). Allow at least 12" (30cm) air space at top and bottom and a minimum of 12" (30cm) clearance in front of panel. or allow air space as required by local codes (whichever is greater). Remote Power Panels will hum slightly and internal relays will click while in use. Mount where such noise is acceptable. Mount the panel so that line-voltage wiring will be at least 6 feet (1.8m) from audio or electronic equipment and its wiring.
Dimensions	14-3/8" (36.5cm) x 32" (81cm) x 3-7/8" (9.8cm) <i>See Fig. 1, pg. 101.</i>
Construction	Enclosure: 16-gauge galvanized sheet metal (unpainted). Cover: Painted (black) metal cover with ventilation holes. Cover is attached using four phillips-head screws.
Shipping Weight	18 lbs. (8.6kg)

Remote Power Feed-Through Panels (cont.)

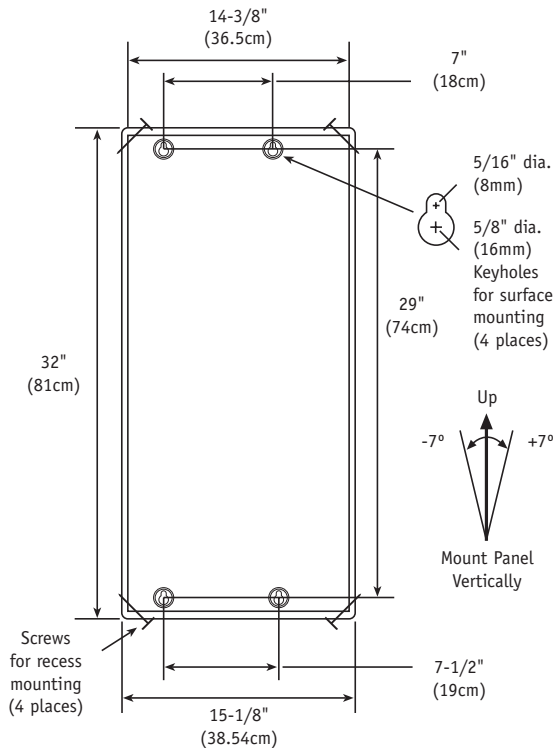


Figure 1 – Panel Dimensions and Mounting

Note: The Panel is 3-7/8" (9.8cm) deep past cover mounting tabs.

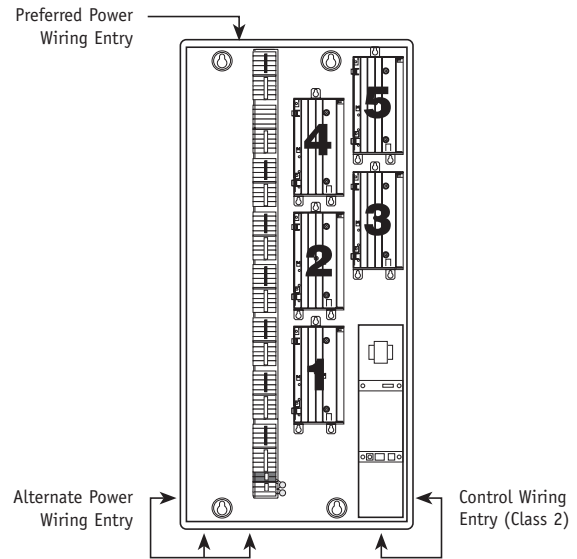
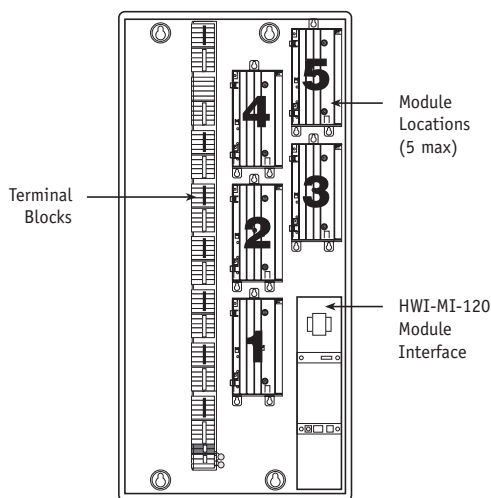


Figure 2 – Wiring Entry



- 1 Module Interface
- Up to 5 Remote Power Modules

Figure 3 – Panel Configuration

Remote Power Panels with Breakers

Model Numbers	<p>Single Phase: HWBP-8D-15-120L3: 15A circuit breakers for up to 8 RPMs (4U, 4E, 4M, 4FSQ). HWBP-8D-20-120L3: 20A circuit breakers for up to 8 RPMs (4U, 4E, 4M, 4FSQ).</p> <p>Three Phase: HWBP-8D-15-120L4: 15A circuit breakers for up to 8 RPMs (4U, 4E, 4M, 4FSQ). HWBP-8D-20-120L4: 20A circuit breakers for up to 8 RPMs (4U, 4E, 4M, 4FSQ).</p>
Capacity	Eight RPMs (HW-RPM-4U, HW-RPM-4E, HW-RPM-4FSQ, and HW-RPM-4M) and one Module Interface. <i>See Fig. 3, pg. 103.</i>
Input Voltage	<p>Single Phase: 120V/240V 1-Phase 3-Wire 80A feed. Three Phase: 120V/208V 3-Phase 4-Wire 60A feed.</p>
Regulatory Approvals	UL, CSA, NOM
Environment	<p>Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.</p>
Cooling	<p>Passive cooling. Mount in a place where the vented cover will not be blocked.</p>
Heat Generated Fully Loaded	600 BTUs per hr. maximum.
Line-Voltage Connections	Use copper wire only, supply conductors 60/75°C. DIN rail-mounted terminal blocks provided for line-voltage Remote Power Module (RPM) wiring and MI power. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57nM). <i>See Fig. 1, 2, 3, pg. 97.</i>
DIN Rail Terminal Blocks	Terminal blocks will accept one #18-10 AWG (1.0-2.5mm ²) wire or two #18-16 AWG (1.0-1.5mm ²) wires. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57 nM). All terminal blocks are shipped with bypass jumpers installed. After verifying that each circuit is wired correctly, remove the bypass jumpers for system operation.
Ground Bar Terminals	24 ground termination points.
Miswire Protection	All terminal blocks are shipped with bypass jumpers installed.
Mounting	<p>Must be installed in a way to provide sufficient access and working space according to National Electrical Code (NEC). May be surface-mounted or flush-mounted. Panel fits between standard 16" (406mm) on-center stud framing. Panel must be mounted vertically (+/- 7 degrees from vertical). Allow at least 12" (30cm) air space at top and bottom and a minimum of 12" (30cm) clearance in front of panel, or allow air space as required by local codes (whichever is greater). Remote Power Panels will hum slightly and internal relays will click while in use. Mount where such noise is acceptable. Mount the panel so that line-voltage wiring will be at least 6 feet (1.8m) from audio or electronic equipment and its wiring.</p>
Dimensions	<p>14-3/8" (36.5cm) x 59" (150cm) x 3-7/8" (9.8cm) <i>See Fig. 1, pg. 103.</i></p>
Construction	<p>Enclosure: 16-gauge galvanized sheet metal (unpainted). Cover: Painted (black) metal cover with ventilation holes. Cover is attached using four phillips-head screws.</p>
Shipping Weight	55 lbs. (25kg)

Remote Power Panels with Breakers (cont.)

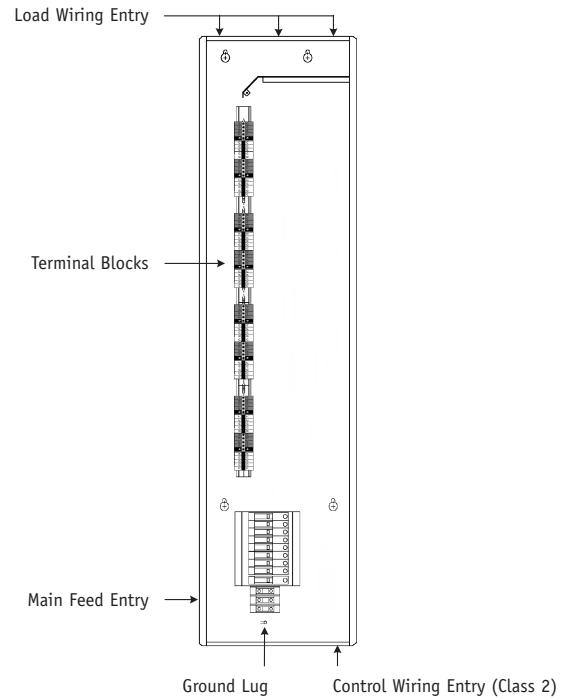
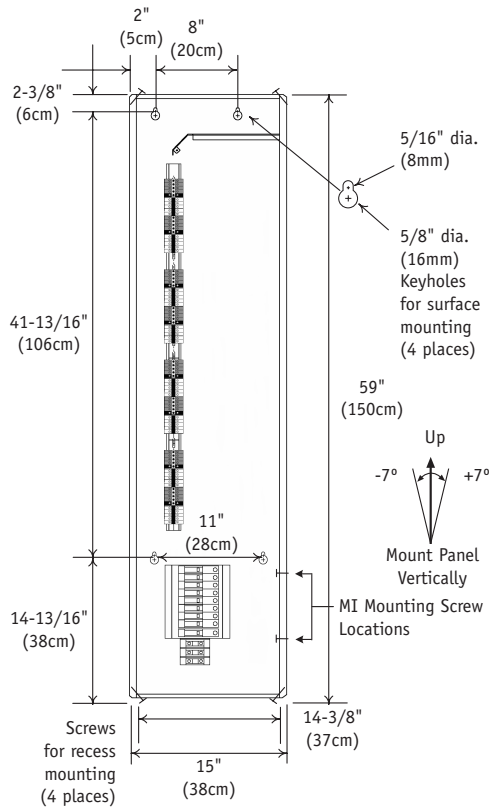
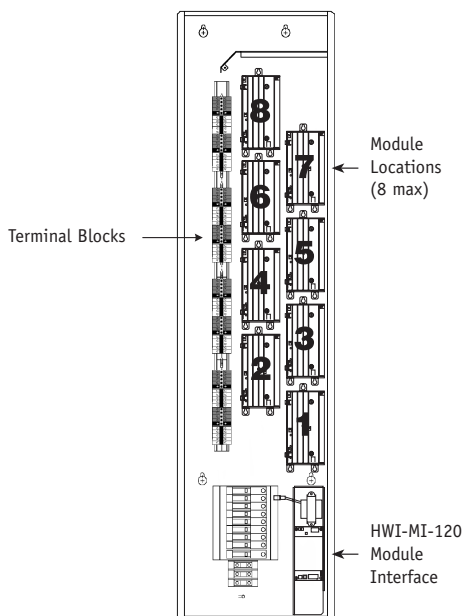


Figure 1 – Panel Dimensions and Mounting

Note: The Panel is 3-7/8" (9.8cm) deep past cover mounting tabs.

Figure 2 – Wiring Entry



- 1 Module Interface
- Up to 8 Remote Power Modules

Figure 3 – Panel Configuration

TECHNICAL SPECIFICATIONS

Remote Power Panels with Breakers

Model Numbers	<p>Single Phase: HWBP-2S-15-120L3: 15A circuit breakers for up to 2 RPMs (4R only). HWBP-2S-20-120L3: 20A circuit breakers for up to 2 RPMs (4R only).</p> <p>Three Phase: HWBP-2S-15-120L4: 15A circuit breakers for up to 2 RPMs (4R only). HWBP-2S-20-120L4: 20A circuit breakers for up to 2 RPMs (4R only).</p>
Capacity	Two RPM-4Rs, and one Module Interface (MI). <i>See Fig. 3, pg. 105.</i>
Input Voltage	<p>Single Phase: 120V/240V 1-Phase 3-Wire 80A feed.</p> <p>Three Phase: 120V/208V 3-Phase 4-Wire 60A feed.</p>
Regulatory Approvals	UL, CSA, NOM
Environment	<p>Ambient operating temperature: 0-40°C, 32-104°F</p> <p>Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.</p>
Cooling	<p>Passive cooling.</p> <p>Mount in a place where the vented cover will not be blocked.</p>
Line-Voltage Connections	Use copper wire only, supply conductors 60/75°C. DIN rail-mounted terminal blocks provided for line-voltage Remote Power Module (RPM) wiring and MI power. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57nM). <i>See Figs. 1, 2, 3, pg. 97.</i>
DIN Rail Terminal Blocks	Terminal blocks will accept one #18-10 AWG (1.0-2.5mm ²) wire or two #18-16 AWG (1.0-1.5mm ²) wires. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57 nM). All terminal blocks are shipped with bypass jumpers installed. After verifying that each circuit is wired correctly, remove the bypass jumpers for system operation.
Ground Bar Terminals	24 ground termination points.
Miswire Protection	All terminal blocks are shipped with bypass jumpers installed.
Mounting	<p>Must be installed in a way to provide sufficient access and working space according to National Electrical Code (NEC)</p> <p>May be surface-mounted or flush-mounted. Panel fits between standard 16" (406mm) on-center stud framing. Panel must be mounted vertically (+/- 7 degrees from vertical). Allow at least 12" (30cm) air space at top and bottom and a minimum of 12" (30cm) clearance in front of panel, or allow air space as required by local codes (whichever is greater). Remote Power Panels will hum slightly and internal relays will click while in use. Mount where such noise is acceptable. Mount the panel so that line-voltage wiring will be at least 6 feet (1.8m) from audio or electronic equipment and its wiring.</p>
Dimensions	<p>14-3/8" (36.5cm) x 24" (61cm) x 3-7/8" (9.8cm)</p> <p><i>See Fig. 1, pg. 105.</i></p>
Construction	<p>Enclosure: 16-gauge galvanized sheet metal (unpainted).</p> <p>Cover: Painted (black) metal cover with ventilation holes.</p> <p>Cover is attached using four phillips-head screws.</p>
Shipping Weight	19 lbs. (8.6kg)

Remote Power Panels with Breakers (cont.)

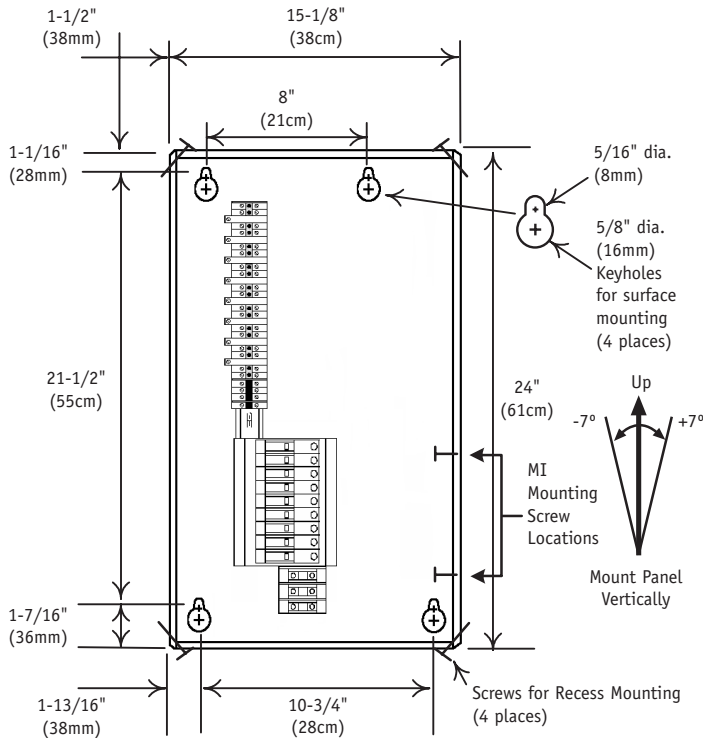


Figure 1 – Panel Dimensions and Mounting

Note: The Panel is 3-7/8" (9.8cm) deep past cover mounting tabs.

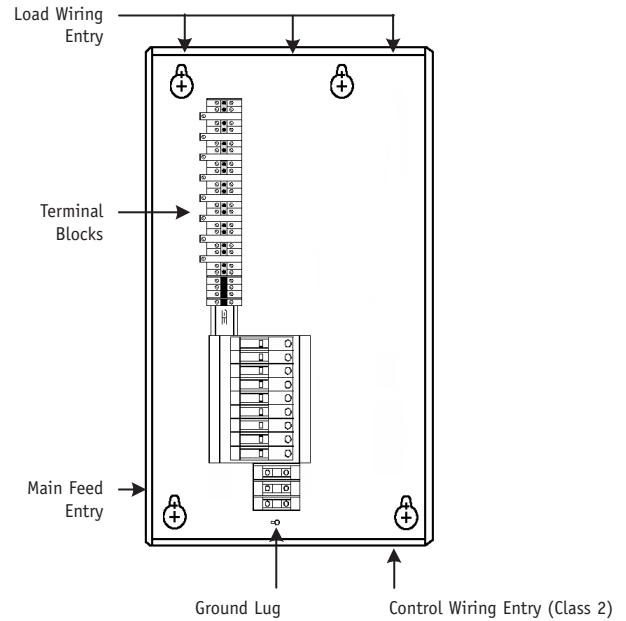


Figure 2 – Wiring Entry

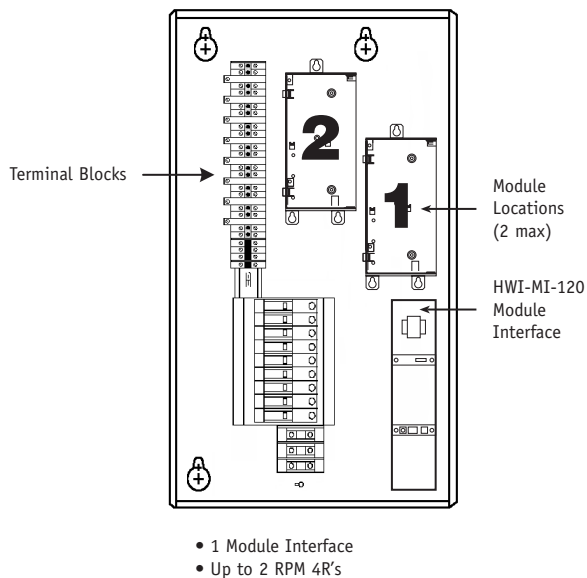


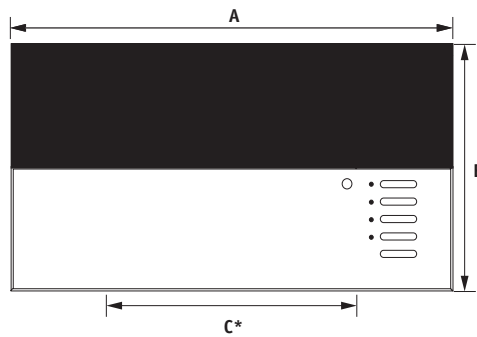
Figure 3 – Panel Configuration

GRAFIK Eye® Preset Local Lighting Controls

Control Units

Model Numbers	GRX-IA-2, GRX-IA-3, GRX-IA-4, GRX-IA-6: Allows scene and zone control from HomeWorks®. GRX-MR-2, GRX-MR-3, GRX-MR-4, GRX-MR-6: Allows scene control from HomeWorks.
Input Voltage	100-127VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM
Load Types	Incandescent, magnetic low-voltage, neon/cold cathode, fluorescent (requires GRX-FDBI-16A-120 or Hi-Power 2•4•6™), electronic low-voltage (requires ELVI-1000 or HP 2•4•6). Outputs are compatible with Lutron® NGRX-PB-WH, and Hi-Power 2•4•6 Power Boosters for higher wattage applications.
Maximum Load	2-zone: 1200W/VA per control unit, 800W/VA per zone. 3-zone: 1500W/VA per control unit, 800W/VA per zone. 4-zone: 1920W/VA per control unit, 800W/VA per zone. 6-zone: 1920W/VA per control unit, 800W/VA per zone.
Minimum Load	25W/VA per zone.
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Line-Voltage Connections	See Figs. 4, 5, 6, pg. 108.
Low-Voltage Wire Type	Two pair [one pair #18 AWG (1.0mm ²), one pair #18-2222-18 AWG (1.0-0.5mm ²) twisted shielded] Class 2 wire. Lutron wire model # GRX-CBL-346S-500 may be used.
Low-Voltage Configuration	Maximum of 2,000 feet (610m) total. Must be wired in a daisy-chain configuration. See Figs. 7, 8, pg. 109.
Low-Voltage Wiring Connection	One 4-pin removable terminal block. Each of the four terminals will accept up to two #18 AWG (1.0mm ²) wires. Do not connect Terminal 2 on processor communication link connector.
Addressing	Via 7-segment display. Use 1 of 8 addresses on a GRAFIK Eye link.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Air Gap	Provided when all four circuits are off.
Power-Failure Memory	Non-volatile RAM.
Fail-Safe Operation	In the unlikely event that communication with the processor is interrupted, all GRAFIK Eye Preset Local Lighting Controls will still operate, offering local control.
Dimensions	See Figs. 1, 2, pg. 107.
Mounting	2-zone: 2-gang US wallbox, 3-zone: 3-gang US wallbox, 4-zone: 4-gang US wallbox, 6-zone: 4-gang US wallbox, 2-3/4" (70mm) deep minimum, 3-1/2" (89mm) deep recommended for ease of wiring. If mounting one control above another, leave at least 4-1/2" (11.4cm) vertical spacing between them.
Shipping Weight	2 lbs. (.9kg)

GRAFIK Eye® Preset Local Lighting Controls (cont.)



	Dimensions		
	A	B	C*
GRX-MR-2/ IA-2	5-9/16" (144mm)	4-9/16" (116mm)	1-13/16" (46mm)
GRX-MR-3/ IA-3	7-1/4" (184mm)	4-9/16" (116mm)	3-5/8" (92mm)
GRX-MR-4 IA-4	8-5/16" (227mm)	4-9/16" (116mm)	5-7/16" (138mm)
GRX-MR-6/ IA-6			

Figure 1 – Front View

* Dimensions between mounting holes.

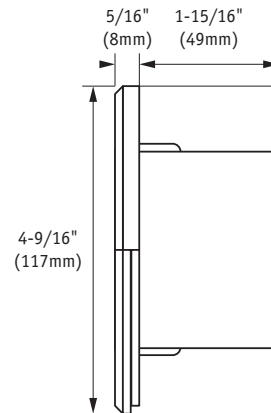


Figure 2 – Side View

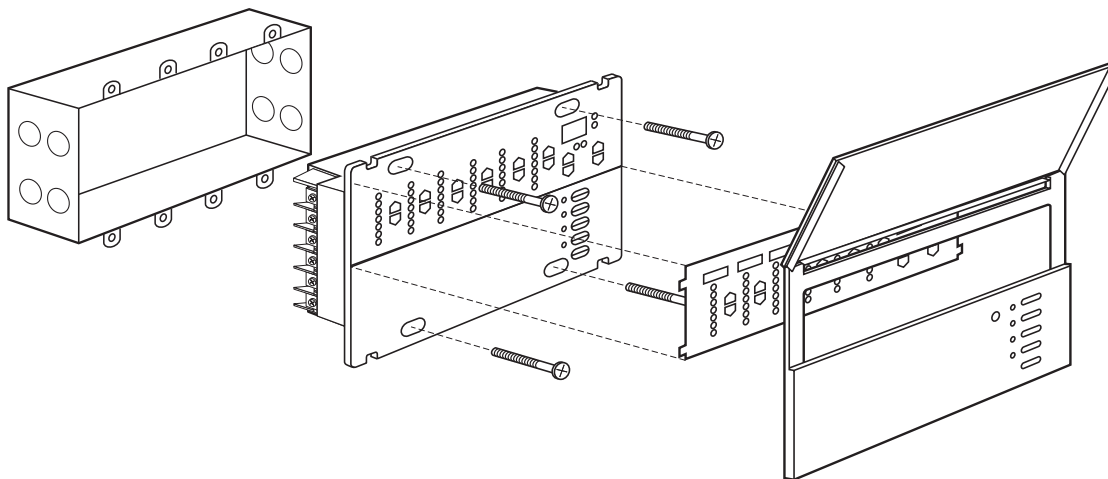


Figure 3 – Mounting

GRAFIK Eye® Preset Local Lighting Controls (cont.)

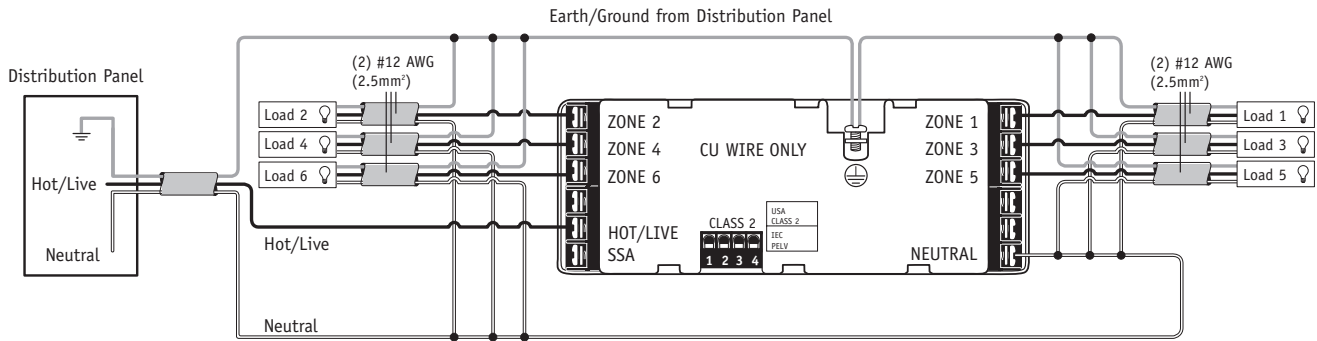


Figure 4 – Line-Voltage Wiring Diagram

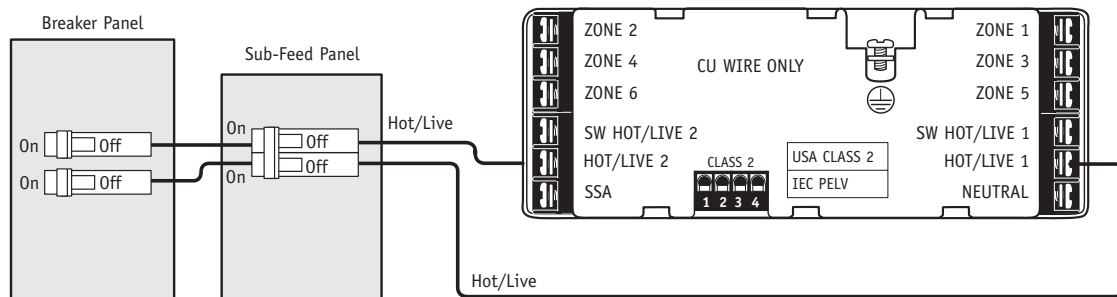


Figure 5 – Dual Feed Option, Line-Voltage Wiring Diagram (Special Order Product)

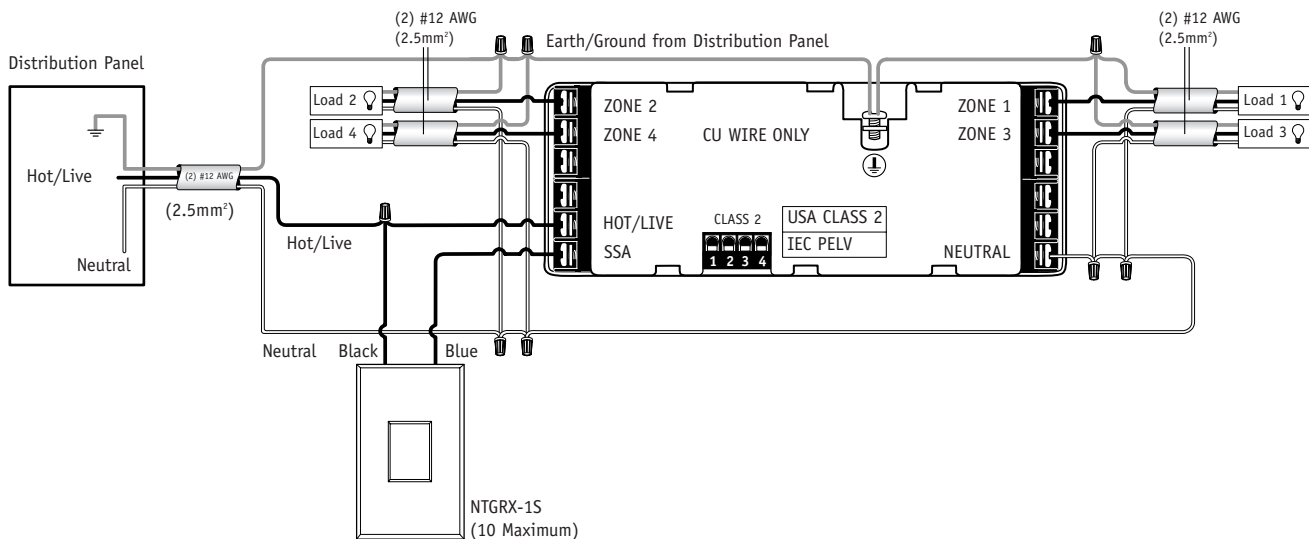


Figure 6 – Single Scene Activator Wiring Diagram

TECHNICAL SPECIFICATIONS

GRAFIK Eye® Preset Local Lighting Controls (cont.)

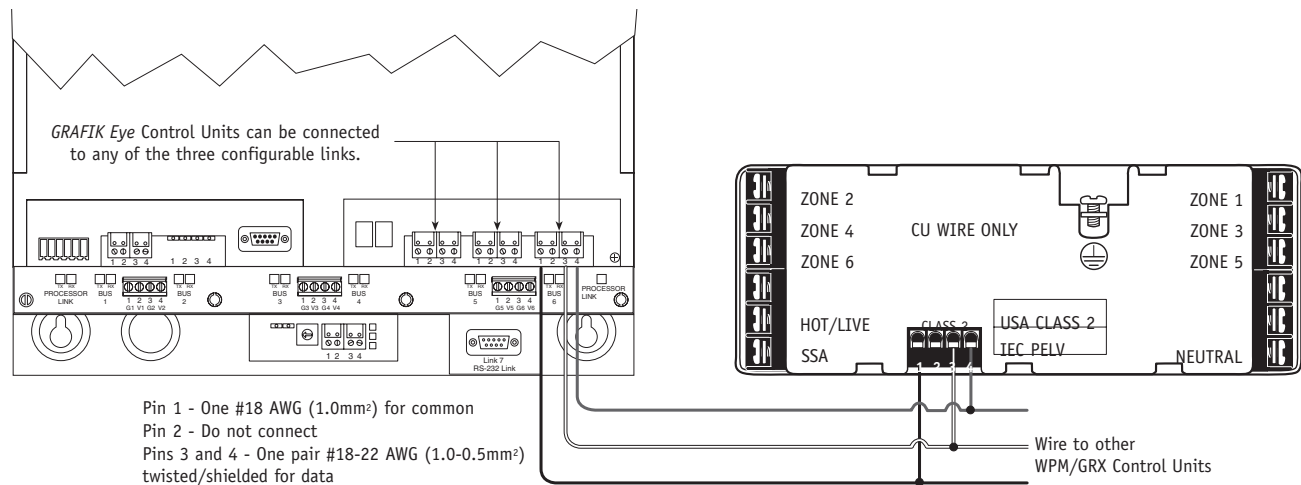


Figure 7 – Connection to Wired Processor

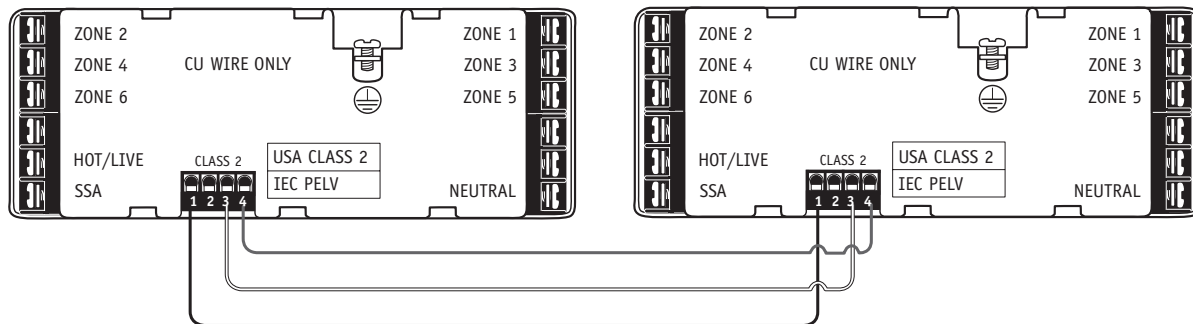


Figure 8 – Connection to Other GRAFIK Eye Control Units

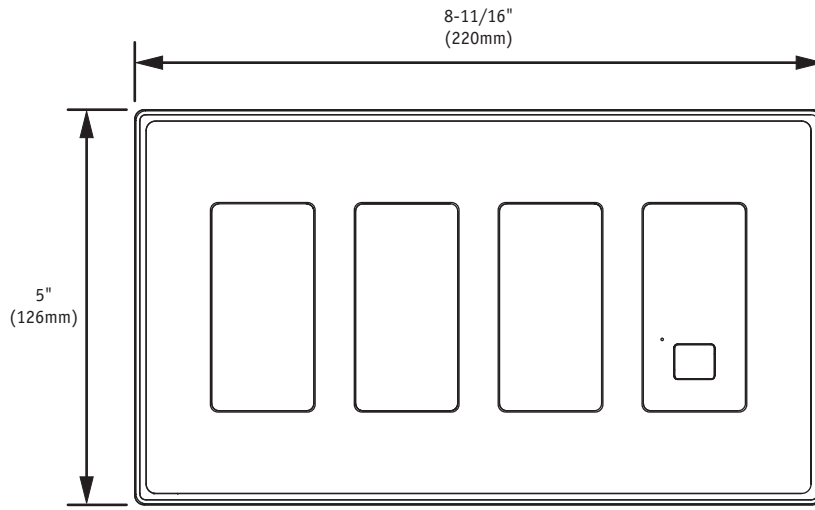
- (1) Connection between #2 terminals is not made between GRAFIK Eye Control Units and the HomeWorks® Processor.
- (2) Connection between #2 terminals is not made between two GRAFIK Eye Control Units.

Wallbox Power Module

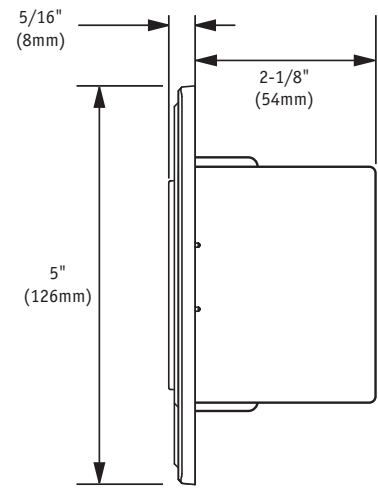
Control Unit

Model Number	HWI-WPM-6D-120: Control six independent zones of lighting.
Input Voltage	100-127VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM
Load Types	Incandescent, magnetic low-voltage, neon/cold cathode, fluorescent (requires GRX-FDBI-16A-120 or Hi-Power 2•4•6™), electronic low-voltage (requires ELVI-1000 or Hi-Power 2•4•6). Outputs are compatible with Lutron® NGRX-PB-WH and Hi-Power 2•4•6 Power Boosters for higher wattage applications.
Maximum Load	1920W/VA per control unit, 800W/VA per zone.
Minimum Load	25W/VA per zone.
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Line-Voltage Connections	See Fig. 6, pg. 112.
Low-Voltage Wire Type	Two pair [one pair #18 AWG (1.0mm ²), one pair #18-22 AWG (1.0-0.5mm ²) twisted shielded] Class 2 wire. Lutron wire model # GRX-CBL-346S-500 may be used.
Low-Voltage Wiring Configuration	Maximum of 2,000 feet (610m) total. Must be wired in a daisy-chain configuration. See Fig. 5, pg. 112.
Low-Voltage Connections	One 4-pin removable terminal block. Each of the four terminals will accept up to two #18 AWG (1.0mm ²) wires. Do not connect Terminal 2 on processor communication link connector.
Addressing	Via rotary dial. Use 1 of 8 addresses on a GRAFIK Eye® link.
Diagnostics	LED provided to indicate proper communications with Module Interface.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Air Gap	Provided when all four circuits are off.
Power-Failure Memory	Non-volatile RAM.
Fail-Safe Operation	In the unlikely event that communication with the processor is interrupted, all Wallbox Power Modules will still operate, offering local control.
Dimensions	See Figs. 1, 2, pg. 111.
Mounting	2-zone: 2-gang US wallbox, 3-zone: 3-gang US wallbox, 4-zone: 4-gang US wallbox, 6-zone: 4-gang US wallbox, 2-3/4" (70mm) deep minimum, 3-1/2" (89mm) deep recommended for ease of wiring. If mounting one control above another, leave at least 4-1/2" (11.4cm) vertical spacing between them.
Shipping Weight	2 lbs. (0.9kg)

Wallbox Power Module (cont.)



**Figure 1 – Front View
Dimensions**



**Figure 2 – Side View
Dimensions**

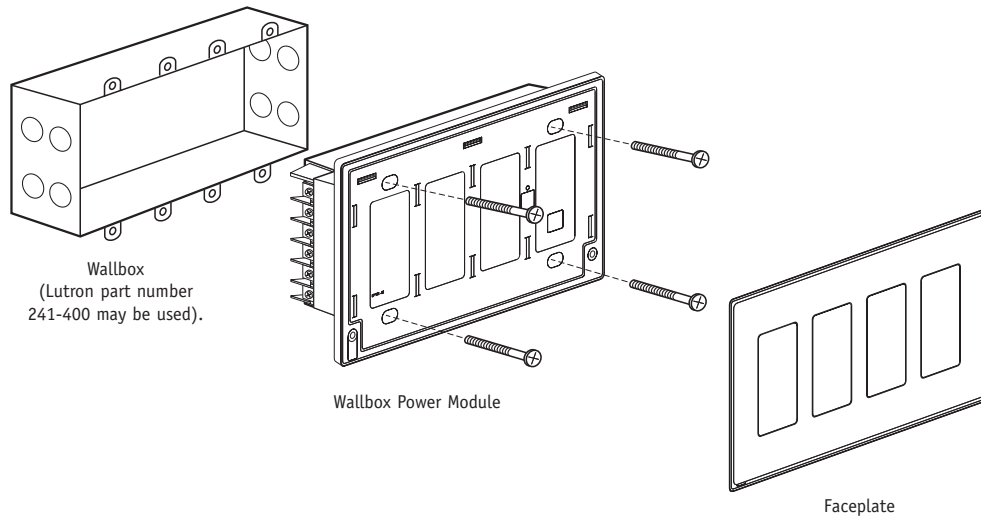


Figure 3 – Mounting

Wallbox Power Module (cont.)

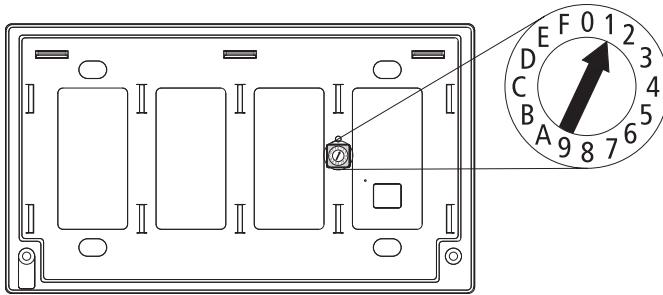


Figure 4 – Rotary Address Dial Location
(faceplate removed)

Position	Proper Module Output/Purpose
0	All Zones OFF
1-8	Address for normal operation
9	Zone 1 Full ON, all others OFF
A	Zone 2 Full ON, all others OFF
B	Zone 3 Full ON, all others OFF
C	Zone 4 Full ON, all others OFF
D	Zone 5 Full ON, all others OFF
E	Zone 6 Full ON, all others OFF
F	All Zones Full ON

Table 1 – Rotary Address Dial Operation

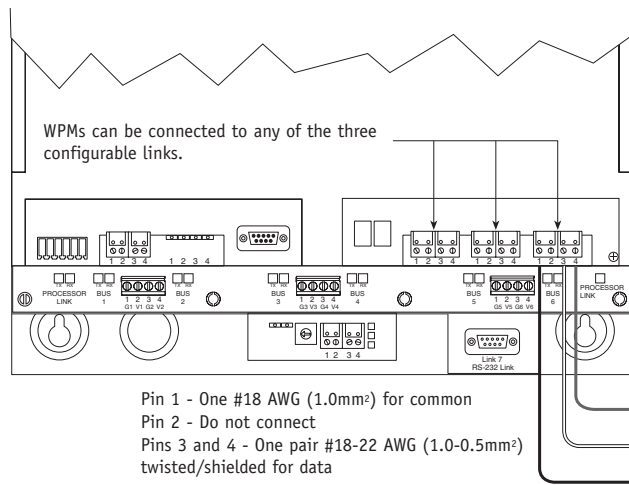


Figure 5 – Connection to Wired Processor

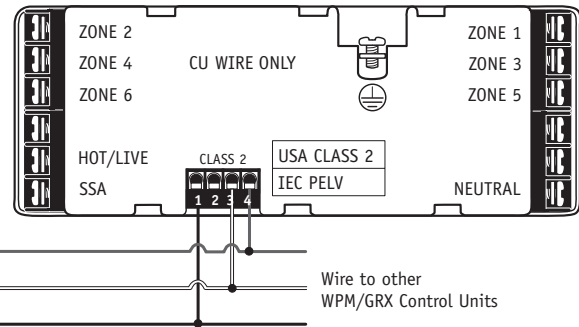


Figure 6 – Line-Voltage Wiring Diagram

TECHNICAL SPECIFICATIONS

¹ Connection between #2 terminals is not made between a Wired Wallbox Power Module and the HomeWorks® Processor.
Connection between #2 terminals is not made between two Wired Wallbox Power Modules or GRAFIK Eye® Control Units.

D48 Dimmer Interface

Specifications apply to HWI-D48 Stand-Alone Dimmer Interfaces and to Dimmer Interfaces integral to processors

Model Numbers	HWI-D48-120: Stand-Alone D48 Dimmer Interface. HWI-PO-D48-120: Wired Processor with integral D48 Dimmer Interface. HWI-PM-D48-120: Wired Processor with integral D48 Dimmer Interface.
Capacity	Controls up to 48 Wired Vareo® Local Lighting Controls.
Input Voltage	Stand-Alone: 12VAC from power supply in the HWI-LV17-120. Integral: Pre-wired in processor from factory.
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Low-Voltage Wire Type	Processor to D48 wire: Two pair [one pair #18 AWG (1.0mm ²), one pair #18-22 AWG (1.0-0.5mm ²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used. D48 to Wired Vareo Local Lighting Control wire: One pair #22 AWG (0.5mm ²) twisted shielded Class 2 rated wire.
Low-Voltage Wiring Configuration	Between processor and D48s: Daisy-Chain only. Termination required if total cable length exceeds 50 feet (15m). Total length of wire on any link cannot exceed 1,000 feet (305m). Maximum four D48s per processor link that has been configured for Dimmer Interfaces. Between D48 and Wired Vareo Local Lighting Controls: Daisy-Chain NOT required (star, T-tap, daisy-chain, etc. all permitted). Termination not required. Total length of wire on any Vareo bus cannot exceed 500 feet (150m). Maximum four Vareo Local Lighting Controls per D48 Vareo bus. Maximum twelve dimmer buses per D48.
Low-Voltage Connections	Wired Processor: One 4-pin removable terminal block. Each terminal will accept up to two #18 AWG (1.0mm ²) wires. Wired Vareo Local Lighting Control: Twelve 2-pin removable terminal blocks. Each terminal will accept up to two #18 AWG (1.0mm ²) wires.
Addressing	Stand-Alone: Via DIP Switch. Counts as 1 of 4 D48 addresses. <i>See Fig. 2, pg. 114.</i> Integral: Factory-set to address 1.
Diagnostics	Dimmer and Processor Communications, heartbeat, and power LEDs.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Miswire Protection	RS-485 ports are over-voltage protected and miswire-protected against wire reversals and shorts. Vareo buses are miswire-protected against gray-violet shorts and reversals.
Dimensions	5-1/4" (13.3cm) x 11-1/4" (28.6cm)
Mounting	Stand-Alone: Mount inside HWI-LV32-120 or HWI-LV17-120. Integral: Pre-mounted in Wired Processor HWI-PO-D48-120 or HWI-PM-D48-120.
Shipping Weight	1 lb. (.45kg)

D48 Dimmer Interface (cont.)

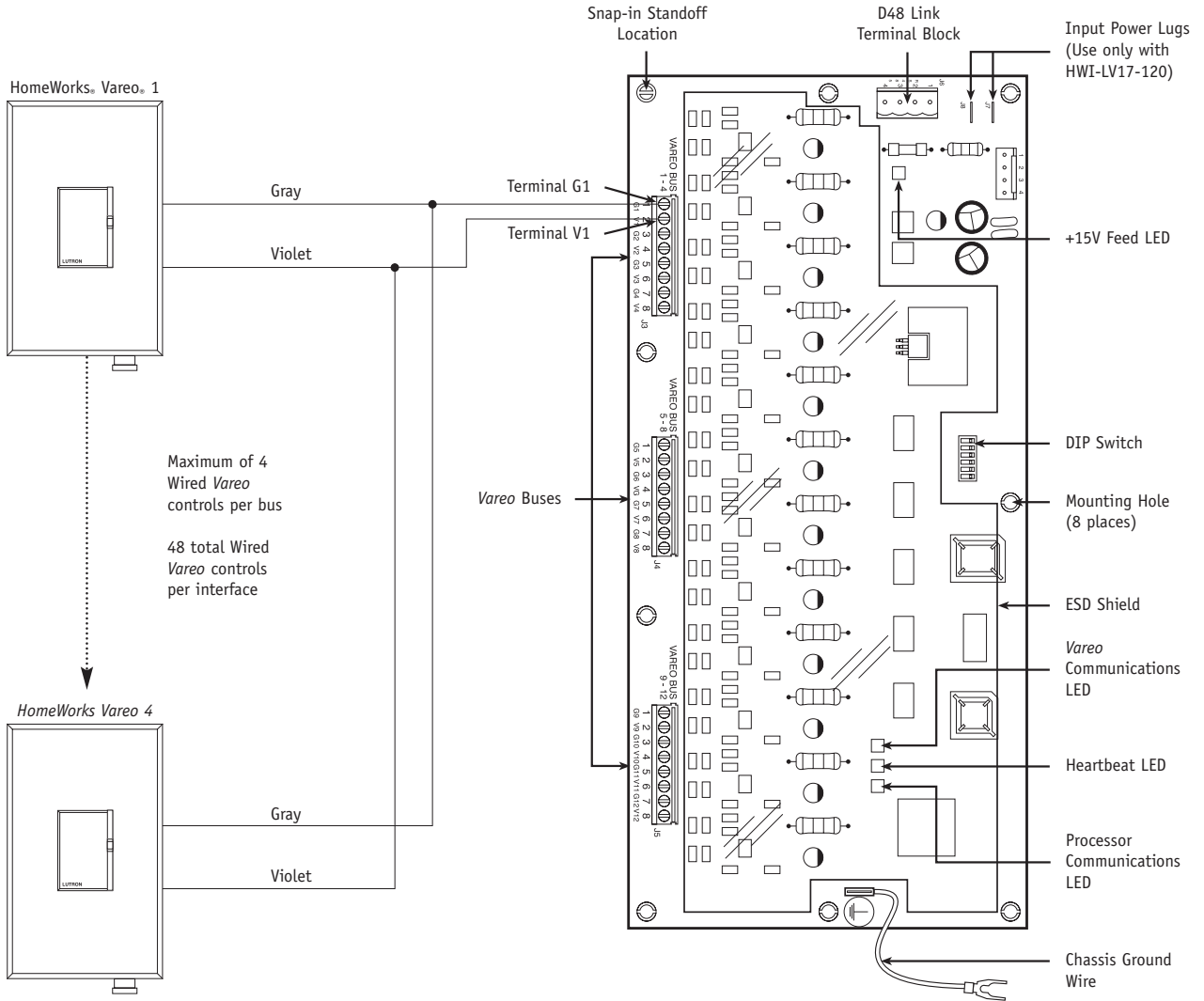


Figure 1 - Wiring and Callouts

Address Number and Switch Setting

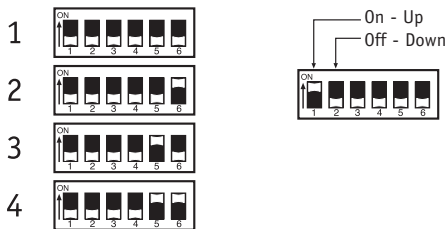


Figure 2 - DIP Switch Settings

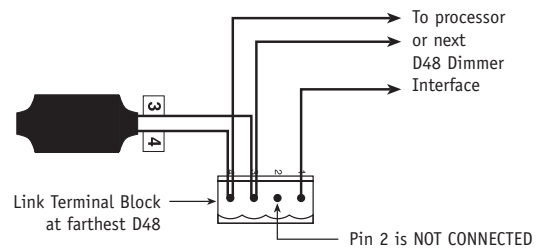


Figure 3 - LT1 Installation

Wired Vareo® Local Lighting Controls

All HomeWorks® Vareo Local Lighting Controls

Model Numbers	HWV-600D: 600W Dimming Control. HWV-1000D: 1000W Dimming Control. HWV-1000NS: 1000W Dimming Control with Neutral Wire. HWV-FDB-8A: Fluorescent Dimming Control. VETS-R: 3- or 4-Way Accessory Control.
Input Voltage	110-130VAC, 60Hz
Regulatory Approvals	UL, CSA, NOM
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Low-Voltage Wire Type	One pair twisted shielded #18-22 AWG (1.0-0.5mm ²) Class 2 wiring.
Low-Voltage Wiring Configuration	Daisy-chain, star, T-tap, home run. Link terminator not required. Total length of wire on any Dimmer Interface bus cannot exceed 500 feet (150m). Maximum of four devices per Dimmer Interface bus.
Low-Voltage Connections	Butt-splice (provided). <i>See Fig. 5, pg. 118.</i>
Addressing	Via DIP switch located on front of unit underneath the wallplate. The device may be addressed without removing it from the wall. Counts as 1 of 4 addresses on a Vareo bus. <i>See Fig. 1, pg. 117.</i>
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Air Gap	FASS™ (Front Accessible Service Switch). <i>See Fig. 4, pg. 118.</i>
Fail-Safe Operation	In the unlikely event that communication with the processor is interrupted, all Vareo Local Lighting Controls will still operate, offering local control.
Dimensions	<i>See Fig. 2, pg. 118.</i>
Mounting	Controls mount in standard US wallboxes. For easier installation, Lutron recommends using 3-1/2" (89mm) deep wallboxes.
Ganging	When ganging Vareo Local Lighting Controls, it is necessary to remove side fins and to derate the control. <i>See Fig. 7, pg. 119</i> for specific derating information. If mounting one control above another, leave at least 4-1/2" (11.4cm) vertical spacing between them.
Auxiliary Controls	Use only Vareo Auxiliary TapSwitches™ (VETS-R); mechanical 3- or 4-way switches will not work. Up to 9 VETS-R Auxiliary TapSwitches may be used with one Vareo Local Dimming or Switching Control.
Shipping Weight	0.6 lb. (0.3kg)

Wired Vareo® Local Lighting Controls (cont.)

HWV-600D • 600W Dimming Control

Load Types ¹	Incandescent, magnetic low-voltage ^{2,3} , tungsten halogen, electronic low-voltage ² (using ELVI-1000 Interface). Output is compatible with Lutron® NGRX-PB-WH and HP 2•4•6™ Power Boosters for dimming applications up to 30,000W per dimmer.
Maximum Load	no fins broken: 600W/VA one fin broken: 500W/VA two fins broken: 300W/VA
Minimum Load Required	40W/VA
Line-Voltage Wiring	See Figs. 10, 12, 13, pg. 120. Standard single-pole and 3-way wiring.

HWV-1000D • 1000W Dimming Control

Load Types ¹	Incandescent, magnetic low-voltage ^{2,3} , tungsten halogen, electronic low-voltage ³ (using ELVI-1000 Interface). Output is compatible with Lutron NGRX-PB-WH and HP 2•4•6 Power Boosters for applications up to 30,000W.
Maximum Load	no fins broken: 1000W/VA one fin broken: 900W/VA two fins broken: 700W/VA
Minimum Load Required	40W/VA
Line-Voltage Wiring	See Figs. 10, 12, 13, pg. 120. Standard single-pole and 3-way wiring.

HWV-1000NS • 1000W Switching Control with Neutral Wire

Load Types ¹	Incandescent, magnetic low-voltage ² , tungsten halogen, electronic low-voltage ² , fluorescent with magnetic ballasts ⁵ .
Maximum Load:	no fins broken: 1000W/VA one fin broken: 700W/VA two fins broken: 550W/VA
Minimum Load Required	5W/VA
Line-Voltage Wiring	See Figs. 11, 14, 15, pgs. 120-121. Single-pole and 3-way wiring. Requires a neutral wire connection in the wallbox.

Wired Vareo® Local Lighting Controls (cont.)

HWV-FDB-8A • 8A Fluorescent Dimming Control

Load Types ⁴	Lutron® Hi-lume® and ECO-10™ Fluorescent Dimming Ballasts.
Maximum Load ⁵	no fins broken: 8A, 20 ballasts one fin broken: 6A two fins broken: 4.5A
Minimum Load Required	1 ballast
Line-Voltage Wiring	See Figs. 16, 17, pg. 122. Requires a neutral wire connection in the wallbox.

VETS-R • 3- or 4-way Accessory Control

Compatible Controls	HWV-600D, HWV-1000D, HWV-1000NS and HWV-FDB-8A.
Maximum Load	See local lighting control.
Minimum Load	See local lighting control.
Line-Voltage Wiring	See Figs. 12, 13, 14, 15, 17, pgs. 120-122. Standard single-pole, 3-way, and 4-way wiring.

(1) To reduce the risk of overheating and possibly damaging other equipment, do not install HWV-600D or HWV-1000D to control receptacles, motor-operated appliances, fluorescent lighting, or electronic low-voltage transformer loads. Do not install HWV-1000NS to control receptacles or motor-operated appliances.

(2) Because low-voltage transformers vary widely in efficiency, the input VA of each transformer should be measured directly. If this is not possible, use the maximum lamp wattage figures, which have a built-in safety margin.

(3) For low-voltage applications using the HWV-600D or HWV-1000D, core and coil (magnetic) low-voltage transformers must be used. Do not use any solid-state electronic low-voltage transformers. Operation of a low-voltage circuit with all lamps inoperative or removed may result in current flow in excess of normal levels. To avoid transformer overheating and premature transformer failure, Lutron strongly recommends the following:

- Do not operate low-voltage circuits without operative lamps in place.
- Replace burned-out lamps as soon as possible.
- Use transformers that incorporate thermal protection or fuse transformer primary windings to prevent transformer failure due to overcurrent.

(4) For proper dimming performance, fluorescent lamps must be operated at full intensity for 100 hours prior to dimming.

(5) To determine the maximum load, add the line currents listed on each ballast connected to this control. The total line current can not exceed the maximum load capacity rating of the control. Warning: Do not exceed a maximum of 20 ballasts per control.

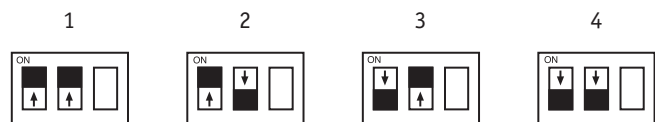
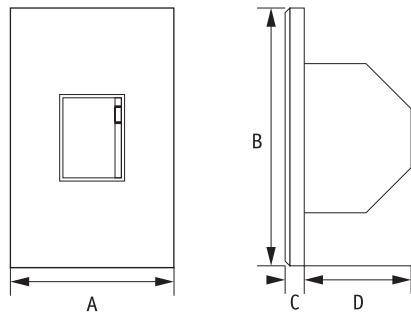


Figure 1 – DIP Switch Settings

Wired Vareo® Local Lighting Controls (cont.)



	Inches	mm
A	2-3/4	70
B	4-1/2	114
C	5/16	7.6
D	1-5/16	32.7

Figure 2 – Dimensions

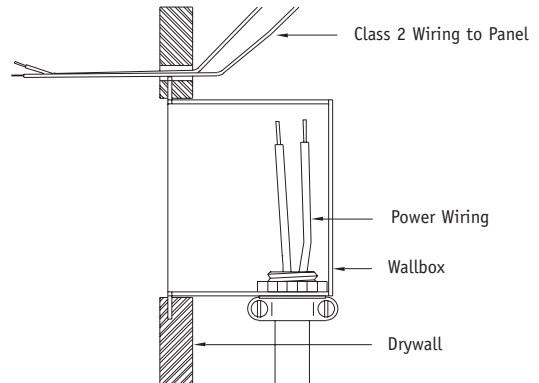


Figure 3 – Wire Installation*

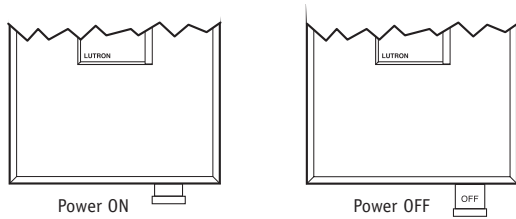


Figure 4 – FASS™ (Front-Accessible Service Switch)

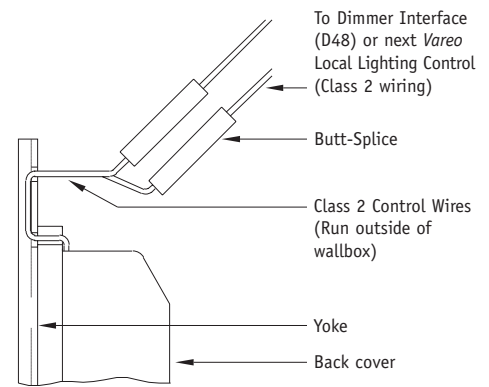


Figure 5 – Class 2 Wire Connection*

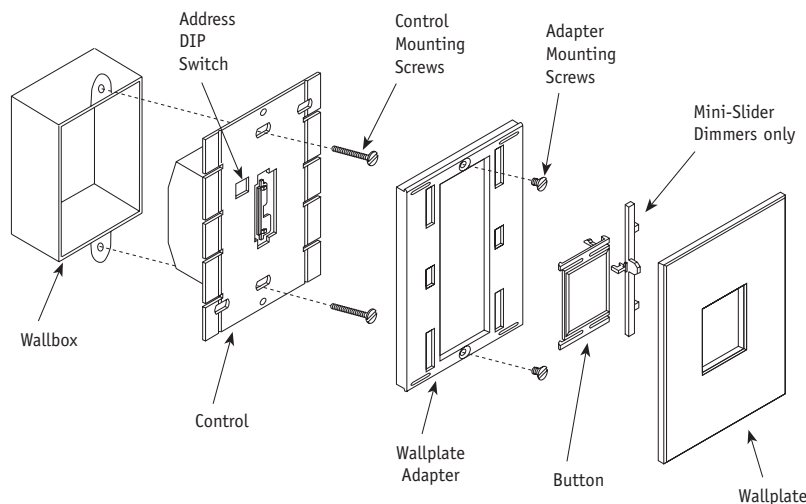


Figure 6 – Mounting and Parts Identification

* Consult HomeWorks application note#38 for alternative wiring methods.

Wired Vareo® Local Lighting Controls (cont.)

Control	Minimum Load	Maximum Load		
	All Cases	Single Gang	End Gang	Middle Gang
HWV-600D	40W/VA	600W/VA	500W/VA	300W/VA
HWV-1000D	40W/VA	1000W/VA	900W/VA	700W/VA
HWV-1000NS	5W/VA	1000W/VA	700W/VA	550W/VA
HWV-FDB-8A	1 Ballast	8A	6A	4.5A
VETS-R	N/A	N/A	N/A	N/A

Table 1 – Minimum and Maximum Load Ratings

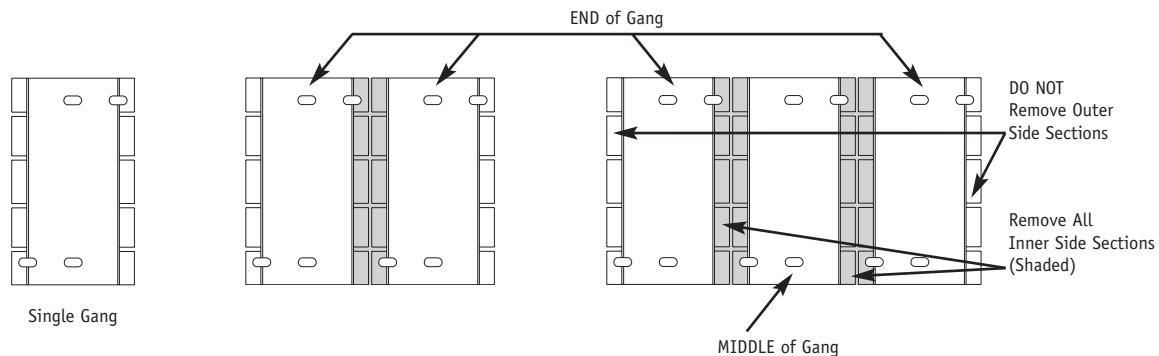


Figure 7 – Ganging Configuration and Derating Information

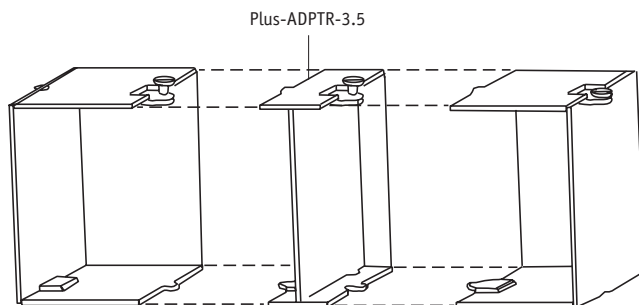


Figure 8 – PLUS-ADPTR-3.5
(Preferred Configuration for +1 boxes)

Wallbox Adapter-Plus sizes (four pieces) only for use with 3-1/2 inch (89mm) Deep Raco (P/N 601) or Steel City (P/N CYWOW) Gangable Wallboxes. Includes Voltage Barrier. Use when ganging configuration calls for plus-size back box (i.e. 1+1, 2+1, etc.).

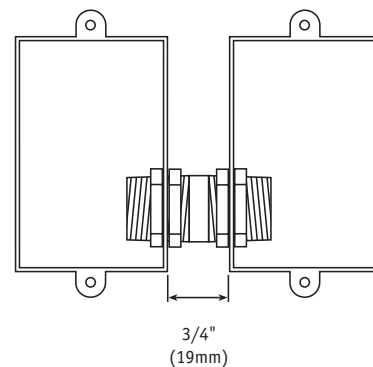


Figure 9 – Alternate 1+1 Backbox Configuration

Wired Vareo® Local Lighting Controls (cont.)

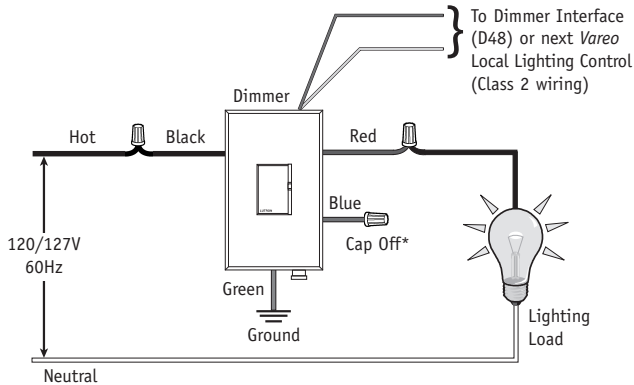


Figure 10 – HWV-600D and HWV-1000D Single-Location Wiring Diagram

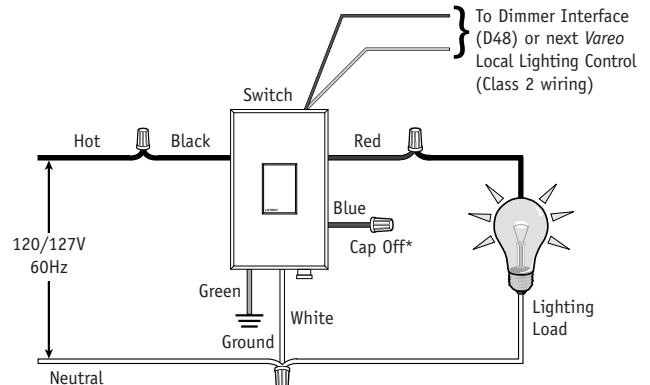


Figure 11 – HWV-1000NS Single-Location with Neutral Wiring Diagram

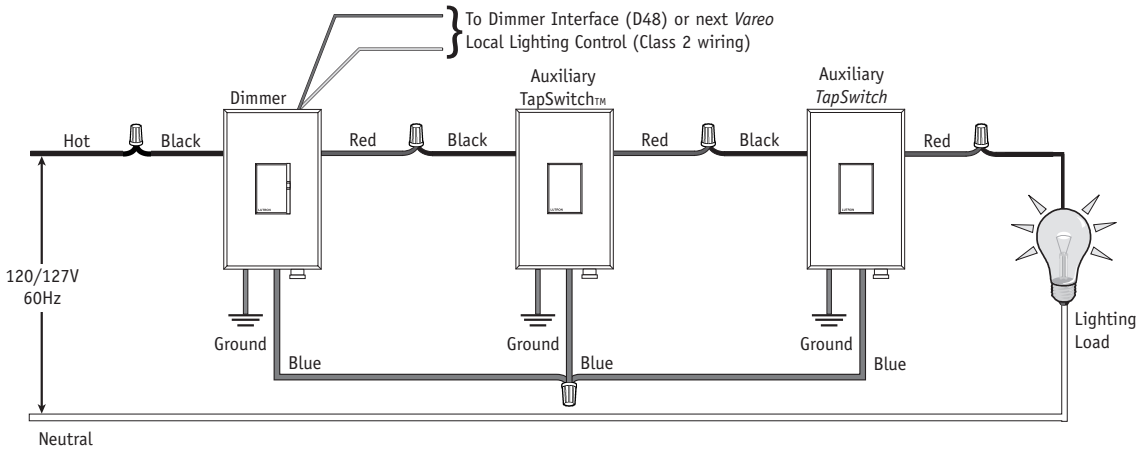


Figure 12 – HWV-600D and HWV-1000D Multi-Location Wiring Diagram (Control Line Side)

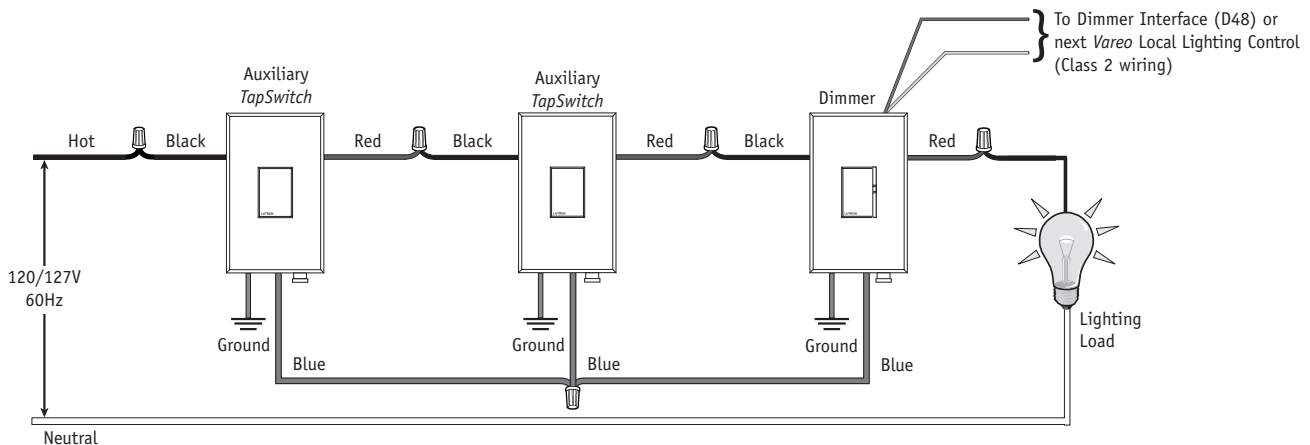


Figure 13 – HWV-600D and HWV-1000D Multi-Location Wiring Diagram (Control Load Side)

* When using controls in single-location installations, cut off the uninsulated portion of the control's multi-location wire (blue wire) and cap off using one of the provided wire connectors. **DO NOT** connect the blue wire to any other wiring or to ground.

Wired Vareo® Local Lighting Controls (cont.)

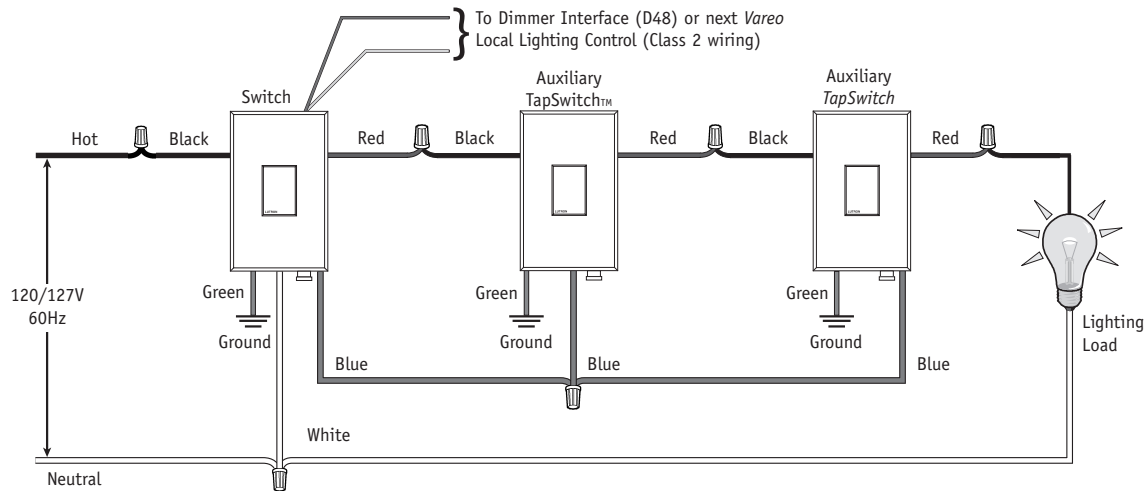


Figure 14 – HWV-100NS Multi-Location with Neutral Wiring Diagram (Control Line Side)

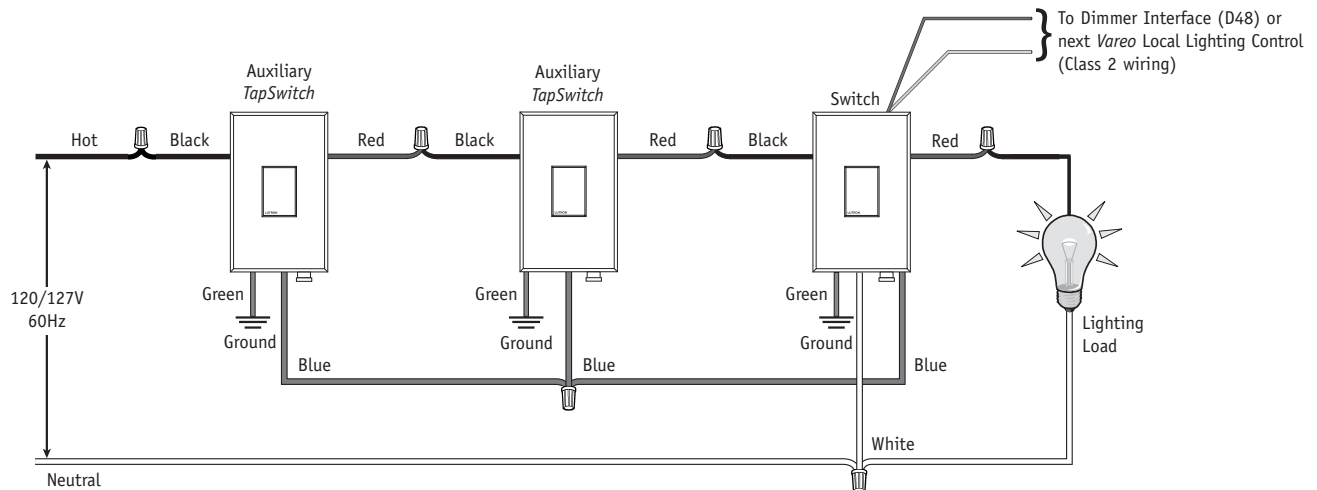


Figure 15 – HWV-100NS Multi-Location with Neutral Wiring Diagram (Control Load Side)

Wired Vareo® Local Lighting Controls (cont.)

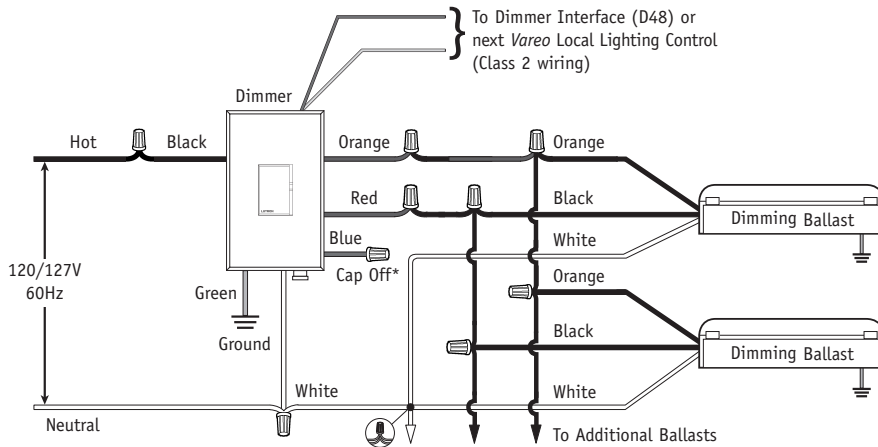


Figure 16 – HWV-FDB-8A Single-Location Wiring Diagram

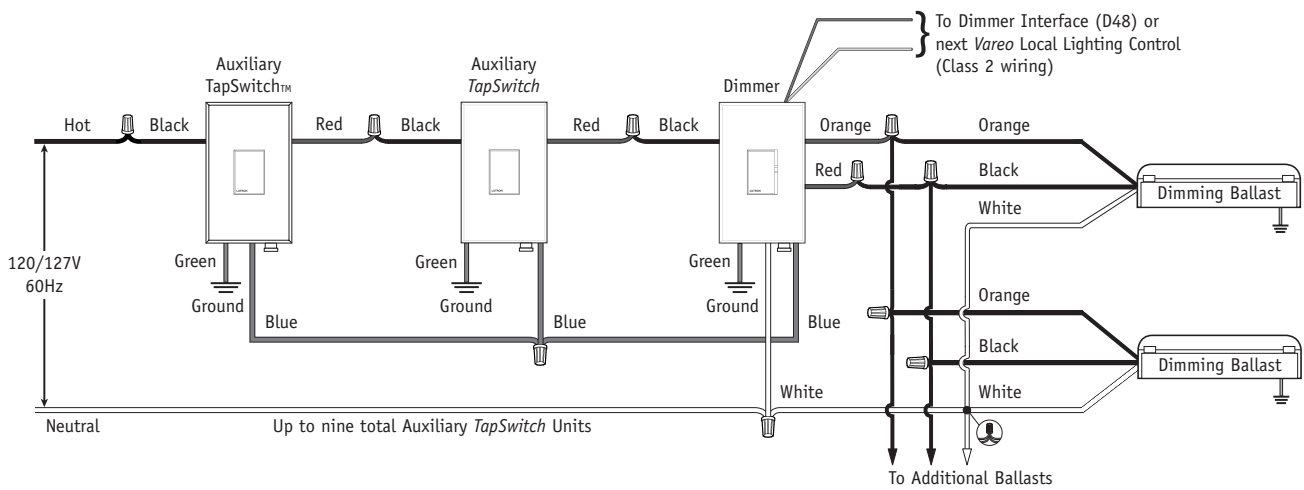


Figure 17 – HWV-FDB-8A Multi-Location Wiring Diagram

* When using controls in single-location installations, cut off the uninsulated portion of the control's multi-location wire (blue wire) and cap off using one of the provided wire connectors. **DO NOT** connect the blue wire to any other wiring or to ground.

H48 Dimmer Interface

Specifications apply to HWI-H48 Stand-Alone Dimmer Interface and to Dimmer Interface integral to processors

Model Numbers	HWI-H48-120: Stand-Alone H48 Dimmer Interface. HWI-PO-H48-120: Wired Processor with integral H48 Dimmer Interface. HWI-PM-H48-120: Wired Processor with integral H48 Dimmer Interface.
Capacity	Controls up to 48 Wired Maestro® Local Lighting Controls.
Input Voltage	Stand-Alone: 12VAC from power supply in the HWI-LV17-120. Integral: Pre-wired in processor from factory.
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Low-Voltage Wire Type	Processor to H48 wire: Two pair [one pair #18 AWG (1.0mm ²), one pair #18-22 AWG (1.0-0.5mm ²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used. H48 to Wired <i>Maestro</i> Local Lighting Control wire: One pair #22 AWG (0.5mm ²) twisted shielded Class 2 rated wire.
Low-Voltage Wiring Configuration	Between processor and H48s: Daisy-Chain only. Termination required if total cable length exceeds 50 feet (15m). Total length of wire on any link cannot exceed 1,000 feet (305m). Maximum four H48s per processor link that has been configured for Dimmer Interfaces. Between H48 and Wired <i>Maestro</i> Local Lighting Controls: Daisy-Chain NOT required (star, T-tap, daisy-chain, etc. all permitted). Termination not required. Each Maestro bus may have a max 500' (152.5m) per wire run but may not exceed 1000' (305m) total per bus. Maximum eight <i>Maestro</i> Local Lighting Controls per H48 <i>Maestro</i> bus. Maximum six dimmer buses per H48.
Low-Voltage Connections	Wired Processor: One 4-pin removable terminal block. Terminal block will accept up to two #18 AWG (1.0mm ²) wires. Wired <i>Maestro</i> Local Lighting Control: Six 2-pin removable terminal blocks. Each terminal will accept up to two #18 AWG (1.0mm ²) wires.
Addressing	Stand-Alone: Via DIP Switch. Counts as 1 of 4 H48 addresses. <i>See Fig. 2, pg. 124.</i> Integral: Factory-set to address 1.
Diagnostics	Dimmer and Processor Communications, heartbeat, and power LEDs.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Miswire Protection	<i>Maestro</i> buses are miswire-protected against gray-violet shorts and reversals. H48 buses are non-polarized.
Dimensions	5-1/4" (13.3cm) x 11-1/4" (28.6cm)
Mounting	Stand-Alone: Mount inside HWI-LV32-120 or HWI-LV17-120. Integral: Pre-mounted in Wired Processor HWI-PO-H48-120 or HWI-PM-H48-120.
Shipping Weight	1 lb. (0.45kg)

H48 Dimmer Interface (cont.)

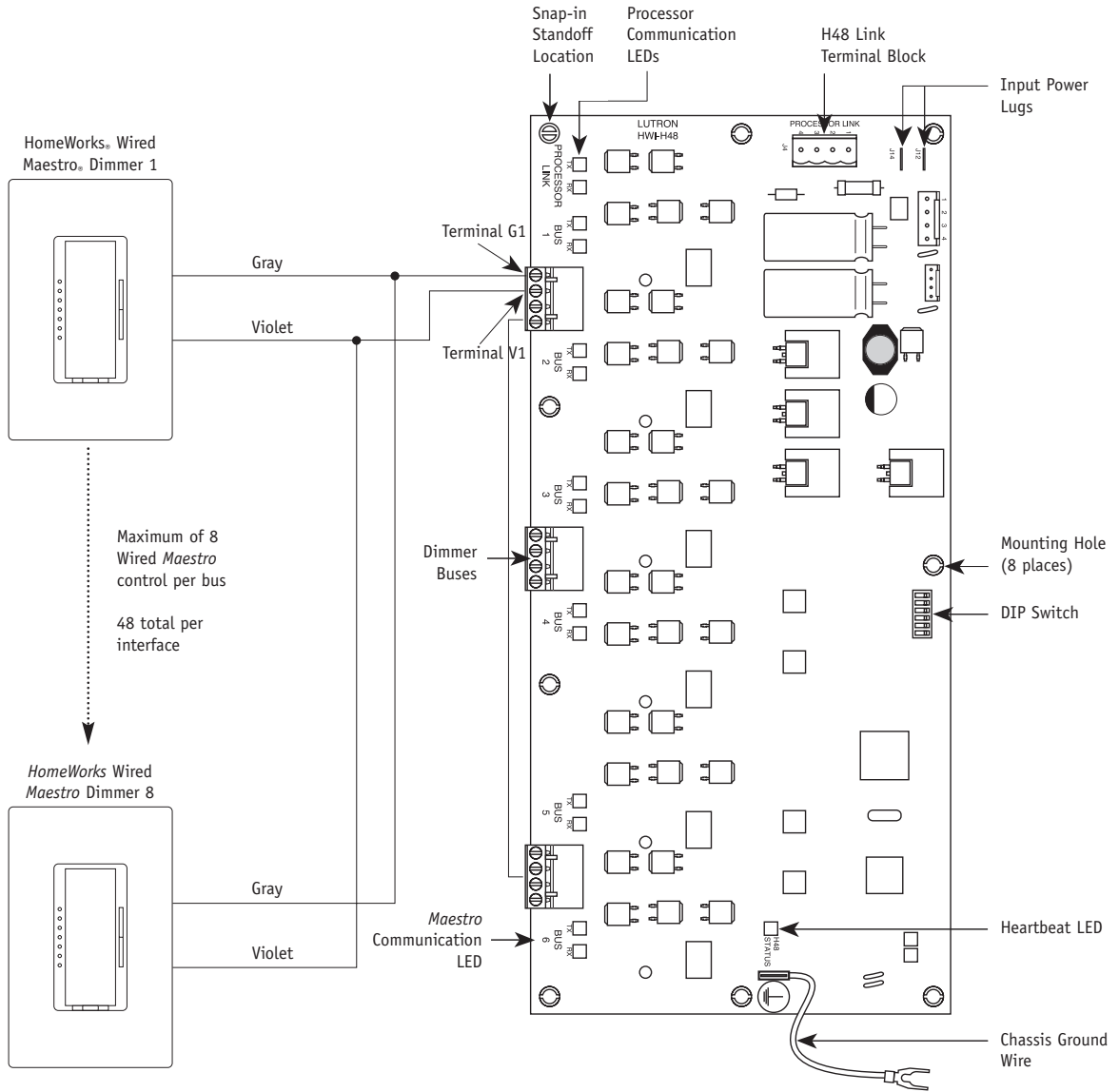


Figure 1 – Wiring Callouts

Address Number and Switch Setting

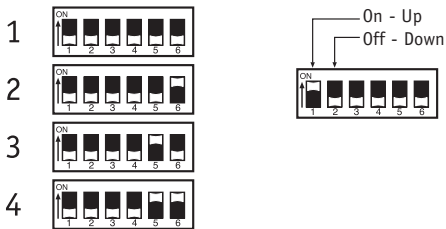
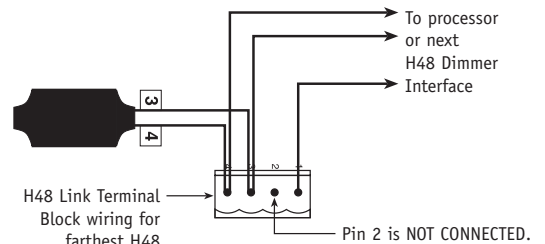


Figure 2 – DIP Switch Settings



Note: Do not use an LT1 on a Dimmer Bus Link.

Figure 3 – LT1 Installation

TECHNICAL SPECIFICATIONS

Wired Maestro® Local Lighting Controls

All HomeWorks® Wired *Maestro* Local Lighting Controls

Model Numbers	HWD-6D: 600W Dimming Control. HWD-6ND: 600W Dimming Control with Neutral Wire. HWD-10D: 1000W Dimming Control. HWD-10ND: 1000W Dimming Control with Neutral Wire. HWD-8ANS: 8A Switching Control with Neutral Wire. HD-RD: Accessory Control/Remote Dimmer. HD-RS: Accessory Control/Remote Switch.
Input Voltage	120/127VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Low-Voltage Wire Type	One pair twisted shielded #18-22 AWG (1.0-0.5mm ²) Class 2 wiring.
Low-Voltage Wiring Configuration	Daisy-chain, star, T-tap, home run. Link terminator not required. Each <i>Maestro</i> bus may have a max 500' (152.5m) per wire run but may not exceed 1000' (305m) total per bus. Maximum of eight devices per Dimmer Interface bus.
Low-Voltage Connections	Butt-splice (provided). <i>See Fig. 4, pg. 129.</i>
Addressing	Via the <i>HomeWorks</i> Utility. Using unique device serial numbers. Units must be installed prior to addressing. Counts as 1 of 8 addresses on a <i>Maestro</i> bus. The device may be addressed without removing it from the wall.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Air Gap	FASS™ (Front Accessible Service Switch).
Fail-Safe Operation	In the unlikely event that communication with the processor is interrupted, all <i>Maestro</i> Local Lighting Controls will still operate, offering local control.
Dimensions	<i>See Fig. 1, pg. 129.</i>
Mounting	Controls mount in standard US wallboxes. For easier installation, Lutron recommends using 3-1/2" (89mm) deep wallboxes.
Ganging	When ganging <i>Maestro</i> Local Lighting Controls, it is not necessary to remove side fins. However, the control must still be derated. See following chart for specific derating information. If mounting one control above another, leave at least 4-1/2" (11.4cm) vertical spacing between them.
Auxiliary Controls	Use only Lutron® <i>Maestro</i> Remote Dimmers or Switches (HD-RD or HD-RS); mechanical 3- or 4-way switches will not work. Up to 9 <i>Maestro</i> Remote Dimmers or Switches may be used with one <i>Maestro</i> Local Lighting Control.
Shipping Weight	0.6 lb. (.3kg)

Wired Maestro® Local Lighting Controls (cont.)

HWD-6D • 600W Dimming Control

Load Types ¹	Incandescent, magnetic low-voltage ^{2,3} , tungsten halogen.
Maximum Load	single-gang: 600W/VA end gang: 500W/VA middle gang: 400W/VA
Minimum Load	50W/VA
Line-Voltage Wiring	See Figs. 7, 9, pgs. 130-131. Standard single-pole, 3-way, and 4-way wiring.

HWD-6ND • 600W Dimming Control with Neutral Wire

Load Types ¹	Incandescent, magnetic low-voltage ^{2,3} , tungsten halogen, electronic low-voltage ³ (using ELVI-1000 Interface), and Lutron® Hi-Lume® and ECO-10™ Fluorescent Dimming Ballasts (using GRX-FDBI-16A-120 or Hi-Power 2•4•6™) ^{4,5} . Output is compatible with <i>Lutron</i> NGRX-PB-WH and <i>Hi-Power</i> 2•4•6 Power Boosters for applications up to 30,000W.
Maximum Load	single-gang: 600W/VA end gang: 500W/VA middle gang: 400W/VA
Minimum Load	10W/VA
Line-Voltage Wiring	See Figs. 8, 10, pgs. 130-131. Single-pole, 3-way, and 4-way wiring. Requires a neutral wire connection in the wallbox.

HWD-10D • 1000W Dimming Control

Load Types ¹	Incandescent, magnetic low-voltage ^{2,3} , and tungsten halogen.
Maximum Load	single-gang: 1000W/VA end gang: 800W/VA middle gang: 650W/VA
Minimum Load	50W/VA
Line-Voltage Wiring	See Figs. 7, 9, pgs. 130-131. Standard single-pole, 3-way, and 4-way wiring.

Wired Maestro® Local Lighting Controls (cont.)

HWD-10ND • 1000W Dimming Control with Neutral Wire

Load Types ¹	Incandescent, magnetic low-voltage ^{2,3} , tungsten halogen, electronic low-voltage ³ (using ELVI-1000 Interface), and Lutron® Hi-Lume® and ECO-10™ Fluorescent Dimming Ballasts (using GRX-FDBI-16A-120 or Hi-Power 2•4•6™) ^{4,5} . Output is compatible with <i>Lutron</i> NGRX-PB-WH and <i>Hi-Power</i> 2•4•6 Power Boosters for applications up to 30,000W.
Maximum Load	single-gang: 1000W/VA end gang: 800W/VA middle gang: 650W/VA
Minimum Load	10W/VA
Line-Voltage Wiring	See <i>Figs. 8, 10, pgs. 130-131</i> . Single-pole, 3-way, and 4-way wiring. Requires a neutral wire connection in the wallbox.

HWD-8ANS • 8A Switching Control with Neutral Wire

Load Types ¹	Incandescent, magnetic low-voltage ^{2,3} , electronic low-voltage, fluorescent with magnetic ballasts ⁵ .
Maximum Load	single-gang: 8A end gang: 6.5A middle gang: 5A
Minimum Load	10W/VA
Line-Voltage Wiring	See <i>Figs. 8, 10, pgs. 130-131</i> . Single-pole, 3-way, and 4-way wiring. Requires a neutral wire connection in the wallbox.

HD-RD • 3- or 4-way Remote Dimmer

Compatible Controls	HRD-6D, HRD-6ND, HRD-10D, and HRD-10ND.
Maximum Load	See local lighting control.
Minimum Load	See local lighting control.
Line-Voltage Wiring	See <i>Figs. 9, 10, pg. 131</i> . Standard single-pole, 3-way, and 4-way wiring.

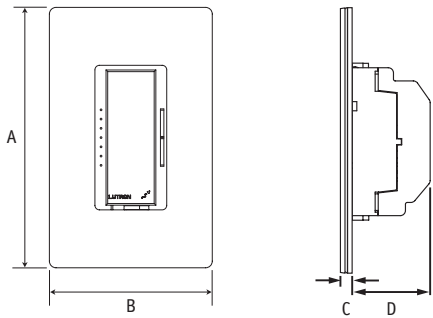
Wired Maestro® Local Lighting Controls (cont.)

HD-RS • 3- or 4-way Remote Switch

Compatible Controls	HWD-8ANS
Maximum Load	See local lighting control.
Minimum Load	See local lighting control.
Line-Voltage Wiring	See Figs. 9, 10, pg. 131. Standard single-pole, 3-way, and 4-way wiring.

- (1) To reduce the risk of overheating and possibly damaging other equipment, do not install HWD-6D, HWD-6ND, HWD-10D or HWD-10ND to control receptacles, motor-operated appliances, fluorescent lighting, or electronic low-voltage transformer loads. Do not install HWD-8ANS to control receptacles or motor-operated appliances.
- (2) Because low-voltage transformers vary widely in efficiency, the input VA of each transformer should be measured directly. If this is not possible, use the maximum lamp wattage figures, which have a built-in safety margin.
- (3) For low-voltage applications using the HWD-6D, HWD-6ND, HWD-10D or HWD-10ND, use with core and coil (magnetic) low-voltage transformers only. Do not use any solid-state electronic low-voltage transformers. Operation of a low-voltage circuit with all lamps inoperative or removed may result in current flow in excess of normal levels. To avoid transformer overheating and premature transformer failure, Lutron strongly recommends the following:
 - a) Do not operate low-voltage circuits without operative lamps in place.
 - b) Replace burned-out lamps as soon as possible.
 - c) Use transformers that incorporate thermal protection or fuse transformer primary windings to prevent transformer failure due to overcurrent.
- (4) For proper dimming performance, fluorescent lamps must be operated at full intensity for 100 hours prior to dimming.
- (5) To determine the maximum load, add the line currents listed on each ballast connected to this control. The total line current can not exceed the maximum load capacity rating of the control. Warning: Do not exceed a maximum of 20 ballasts per control.
- (6) Consult HomeWorks Application Note#38 for alternate wiring methods.

Wired Maestro® Local Lighting Controls (cont.)



	Inches	mm
A	4-11/16	119
B	2-15/16	75
C	5/16	7.6
D	1-3/8	34.8

Figure 1 – Dimensions

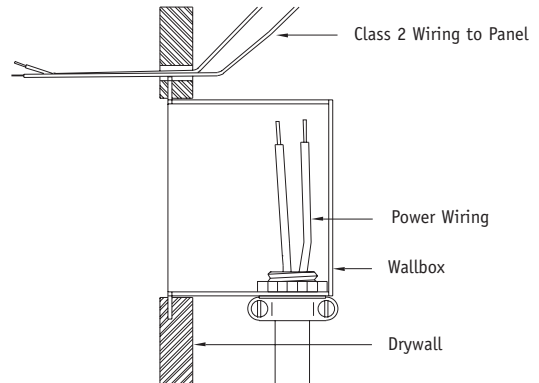


Figure 2 – Wire Installation*

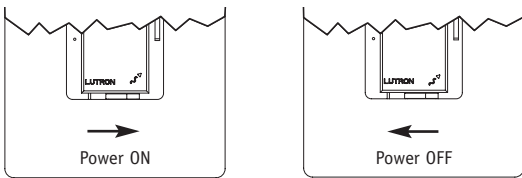


Figure 3 – FASS™ (Front-Accessible Service Switch)

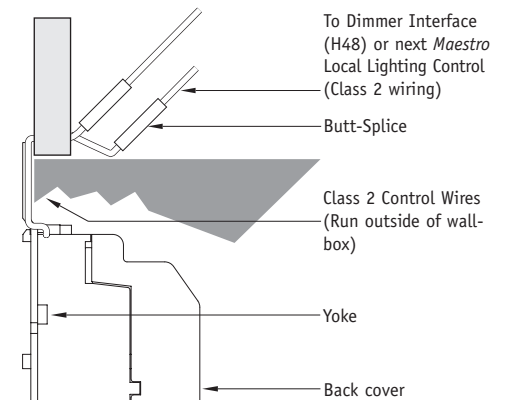


Figure 4 – Class 2 Wire Connection
(For alternate Class 2 wiring, see note 6, pg. 128).

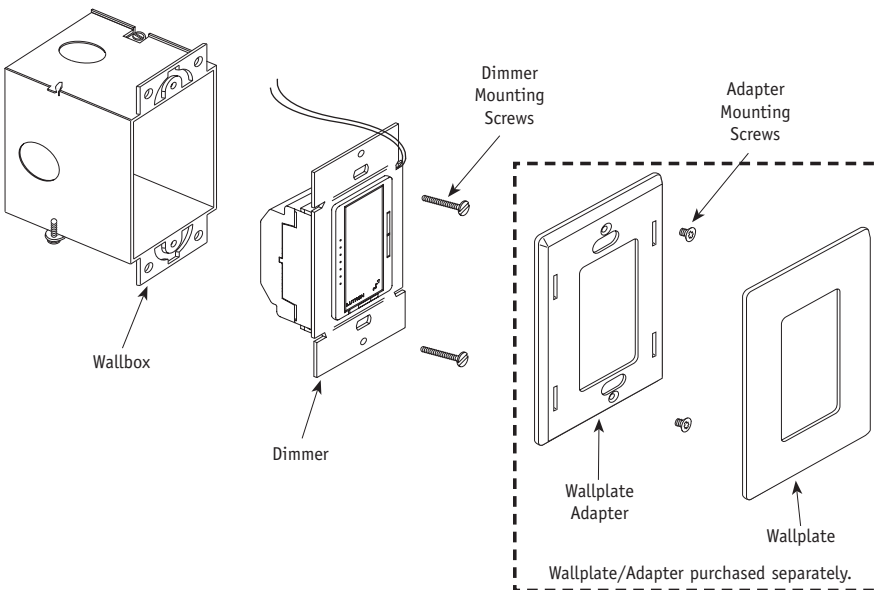


Figure 5 – Mounting and Parts Identification

* Consult HomeWorks Application Note #38 for Alternate wiring methods.

Wired Maestro® Local Lighting Controls (cont.)

Control	Minimum Load	Maximum Load		
	All Cases	Single-Gang	End Gang	Middle Gang
HWD-6D	50W/VA	600W/VA	500W/VA	400W/VA
HWD-6ND	10W/VA	600W/VA	500W/VA	400W/VA
HWD-10D	50W/VA	1000W/VA	800W/VA	650W/VA
HWD-10ND	10W/VA	1000W/VA	800W/VA	650W/VA
HWD-8ANS	10W/VA	8A	6.5A	5A
HD-RD	N/A	N/A	N/A	N/A
HD-RS	N/A	N/A	N/A	N/A

Table 1 – Minimum and Maximum Load Ratings

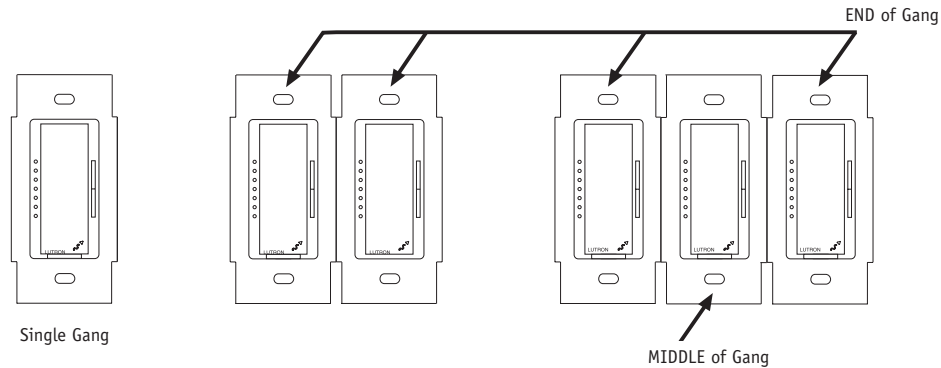


Figure 6 – Ganging Configuration and Derating Information

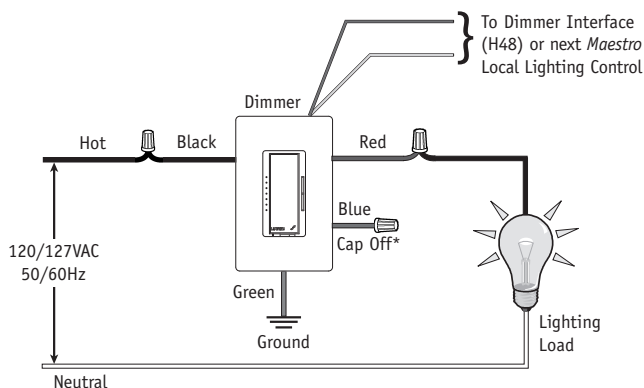


Figure 7 – HWD-6D and HWD-10D Single-Location Wiring Diagram

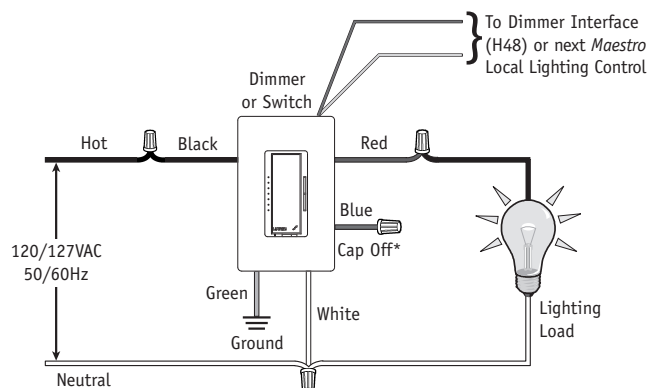


Figure 8 – HWD-6ND, HWD-10ND, and HWD-8ANS Single-Location with Neutral Wiring Diagram

* When using controls in single-location installations, cut off the uninsulated portion of the control's multi-location wire (blue wire) and cap off using one of the provided wire connectors. **DO NOT** connect the blue wire to any other wiring or to ground.

Wired Maestro® Local Lighting Controls (cont.)

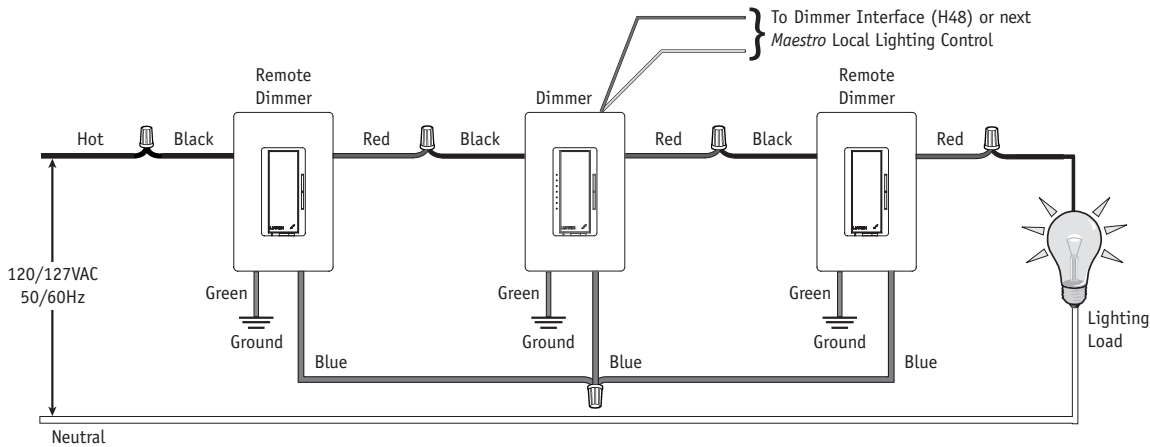


Figure 9 – HWD-6D and HWD-10D Multi-Location Installation¹

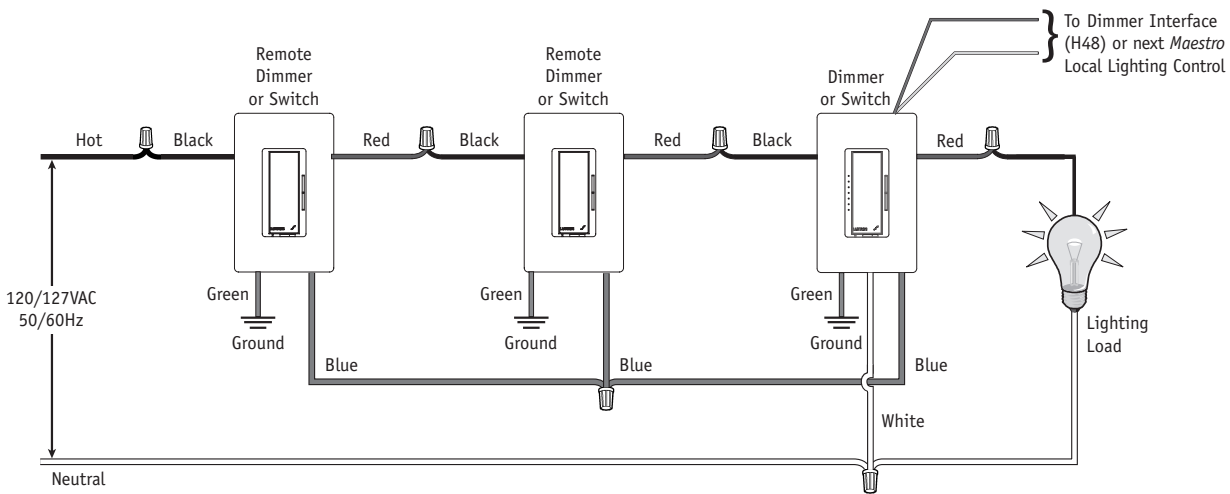


Figure 10 – HWD-6ND, HWD-10ND, and HWD-8ANS Multi-Location Installation with Neutral^{1, 2}

¹ Up to nine HomeWorks® *Maestro* Remote Dimmers or Switches may be connected to the *HomeWorks* Wired *Maestro* Dimmer or Switch. Total Blue wire length may be used up to 250 feet (76m).

² Neutral wire Dimmers or Switches must be connected on the lighting load side of a multi-location installation.

RF Maestro® Local Lighting Controls

All HomeWorks® RF Maestro Local Lighting Controls

Model Numbers	HRD-6D: 600W Dimming Control. HRD-6ND: 600W Dimming Control with Neutral Wire. HRD-10D: 1000W Dimming Control. HRD-10ND: 1000W Dimming Control with Neutral Wire. HRD-8ANS: 8A Switching Control with Neutral Wire. HD-RD: Accessory Control/Remote Dimmer. HD-RS: Accessory Control/Remote Switch.
Input Voltage	110-130VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM, FCC, IC
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Air Gap	FASS™ (Front Accessible Service Switch). <i>See Fig. 2, pg. 135.</i>
Addressing	Via the <i>HomeWorks</i> Utility, using unique device serial numbers. Units must be installed prior to addressing. Counts as 1 of the 64 dimmer addresses on the RF Processor.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Fail-Safe Operation	In the unlikely event that communication with the processor is interrupted, all <i>Maestro</i> Local Lighting Controls will still operate, offering local control.
Dimensions	<i>See Fig. 1, pg. 135.</i>
Mounting	Controls mount in standard US wallboxes. For easier installation, Lutron recommends using 3-1/2" (89mm) deep wallboxes. If mounting one control above another, leave at least 4-1/2" (11.4cm) vertical spacing between them. Unit must be placed within 30 feet (9m) of an RF Signal Repeater or an RF Processor.
Ganging	When ganging RF <i>Maestro</i> Local Lighting Controls, it is necessary to remove side fins and to derate the control. <i>See Fig. 4, pg. 136</i> for specific derating information.
Auxiliary Controls	Use only <i>Maestro</i> Remote Dimmers or Switches (HD-RD or HD-RS); mechanical 3- or 4-way switches will not work. Up to nine <i>Maestro</i> Remote Dimmers or Switches may be used with one <i>Maestro</i> Local Dimming or Switching Control.
Shipping Weight	0.6 lb. (0.3kg)

RF Maestro® Local Lighting Controls (cont.)

HRD-6D • 600W Dimming Control

Load Types ¹	Incandescent, magnetic low-voltage ^{2,3} , and tungsten halogen.
Maximum Load	single-gang: 600W/VA end gang: 500W/VA middle gang: 400W/VA
Minimum Load	50W/VA
Line-Voltage Wiring	See Figs. 5, 7, pgs. 136-137. Standard single-pole, 3-way, and 4-way wiring.

HRD-6ND • 600W Dimming Control with Neutral Wire

Load Types ¹	Incandescent, magnetic low-voltage ^{2,3} , tungsten halogen, electronic low-voltage ³ (using ELVI-1000 Interface), and Lutron® Hi-Lume® and ECO-10™ Fluorescent Dimming Ballasts (using GRX-FDBI-16A-120 or Hi-Power 2•4•6™) ^{4,5} . Output is compatible with <i>Lutron</i> NGRX-PB-WH and <i>Hi-Power 2•4•6</i> Power Boosters for applications up to 30,000W.
Maximum Load	single-gang: 600W/VA end gang: 500W/VA middle gang: 400W/VA
Minimum Load	10W/VA
Line-Voltage Wiring	See Figs. 6, 8, pgs. 136-137. Single-pole, 3-way, and 4-way wiring. Requires a neutral wire connection in the wallbox.

HRD-10D • 1000W Dimming Control

Load Types ¹	Incandescent, magnetic low-voltage ^{2,3} , and tungsten halogen.
Maximum Load	single-gang: 1000W/VA end gang: 800W/VA middle gang: 650W/VA
Minimum Load	50W/VA
Line-Voltage Wiring	See Figs. 5, 7, pgs. 136-137. Standard single-pole, 3-way, and 4-way wiring.

RF Maestro® Local Lighting Controls (cont.)

HRD-10ND • 1000W Dimming Control with Neutral Wire

Load Types ¹	Incandescent, magnetic low-voltage ^{2,3} , tungsten halogen, electronic low-voltage ³ (using ELVI-1000 Interface), and Lutron® Hi-Lume® and ECO-10™ Fluorescent Dimming Ballasts (using GRX-FDBI-16A-120 or Hi-Power 2•4•6™) ^{4,5} . Output is compatible with <i>Lutron</i> NGRX-PB-WH and <i>Hi-Power</i> 2•4•6 Power Boosters for applications up to 30,000W.
Maximum Load	single-gang: 1000W/VA end gang: 800W/VA middle gang: 650W/VA
Minimum Load	10W/VA
Line-Voltage Wiring	See Figs. 6, 8, pgs. 136-137. Single-pole, 3-way, and 4-way wiring. Requires a neutral wire connection in the wallbox.

HRD-8ANS • 8A Switching Control with Neutral Wire

Load Types ¹	Incandescent, magnetic low-voltage ² , electronic low-voltage, and fluorescent with magnetic ballasts ⁵ .
Maximum Load	single-gang: 8A end gang: 6.5A middle gang: 5A
Minimum Load	10W/VA
Line-Voltage Wiring	See Figs. 6, 8, pgs. 136-137. Requires a neutral wire connection in the wallbox.

HD-RD • Remote Dimmer

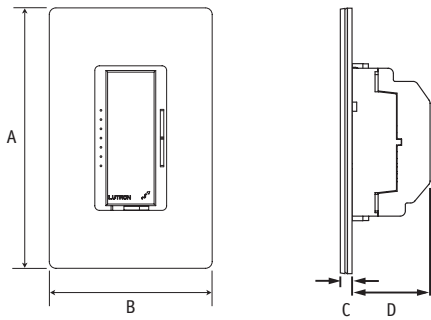
See pg. 127.

HD-RS • Remote Switch

See pg. 128.

- (1) To reduce the risk of overheating and possibly damaging other equipment, do not install HRD-6D, HRD-6ND, HRD-10D, and HRD-10ND to control receptacles, motor-operated appliances, fluorescent lighting, or electronic low-voltage transformer loads. Do not install HRD-8ANS to control receptacles or motor-operated appliances.
 - a) Do not operate low-voltage circuits without operative lamps in place.
 - b) Replace burned-out lamps as soon as possible.
 - c) Use transformers that incorporate thermal protection or fuse transformer primary windings to prevent transformer failure due to overcurrent.
- (2) Because low-voltage transformers vary widely in efficiency, the input VA of each transformer should be measured directly. If this is not possible, use the maximum lamp wattage figures, which have a built-in safety margin.
- (3) For low-voltage applications using the HRD-6D, HRD-6ND, HRD-10D, and HRD-10ND use with core and coil (magnetic) low-voltage transformers only. Do not use any solid-state electronic low-voltage transformers. Operation of a low-voltage circuit with all lamps inoperative or removed may result in current flow in excess of normal levels. To avoid transformer overheating and premature transformer failure, Lutron strongly recommends the following:
 - (4) For proper dimming performance, fluorescent lamps must be operated at full intensity for 100 hours prior to dimming.
 - (5) To determine the maximum load, add the line currents listed on each ballast connected to this control. The total line current can not exceed the maximum load capacity rating of the control. Warning: Do not exceed a maximum of 20 ballasts per control.

RF Maestro® Local Lighting Controls (cont.)



	Inches	mm
A	4-11/16	119
B	2-15/16	75
C	5/16	7.6
D	1-3/8	34.8

Figure 1 – Dimensions

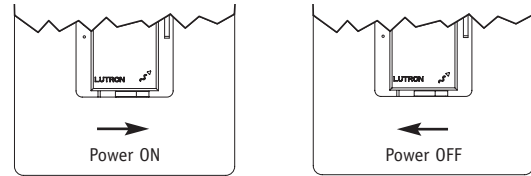


Figure 2 – FASS™ (Front-Accessible Service Switch)

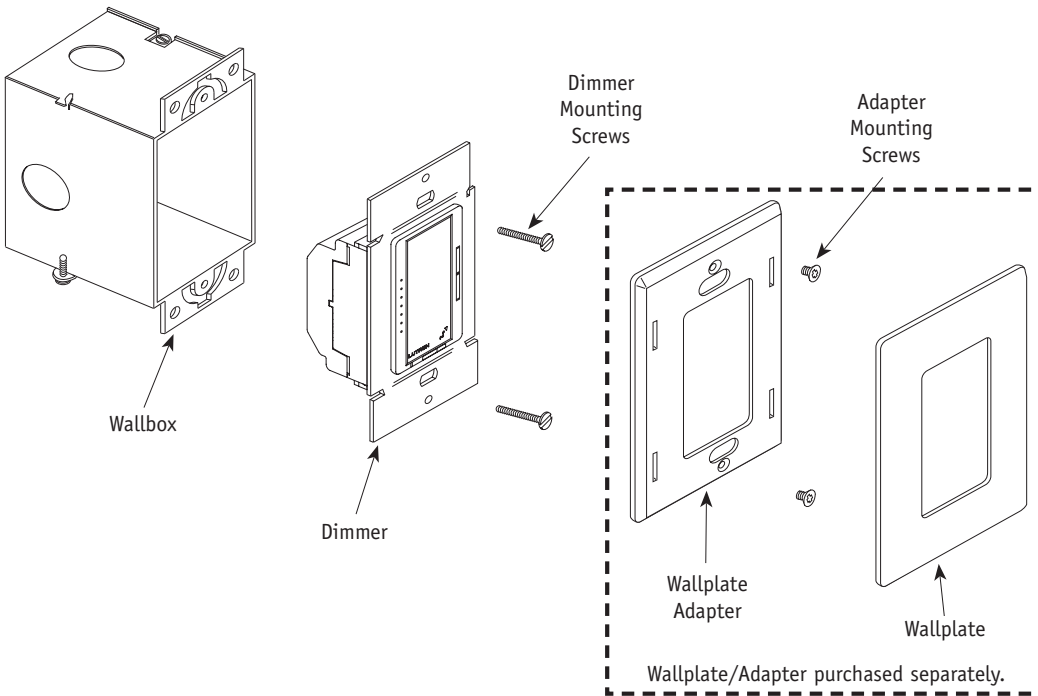


Figure 3 – Mounting and Parts Identification

RF Maestro® Local Lighting Controls (cont.)

Control	Minimum Load	Maximum Load		
	All Cases	Single Gang	End Gang	Middle Gang
HRD-6D	50W/VA	500W/VA	500W/VA	400W/VA
HRD-6ND	10W/VA	500W/VA	500W/VA	400W/VA
HRD-10D	50W/VA	1000W/VA	800W/VA	650W/VA
HRD-10ND	10W/VA	1000W/VA	800W/VA	650W/VA
HRD-8ANS	10W/VA	8A	6.5A	5A
HD-RD	N/A	N/A	N/A	N/A
HD-RS	N/A	N/A	N/A	N/A

Table 1 – Minimum and Maximum Load Ratings

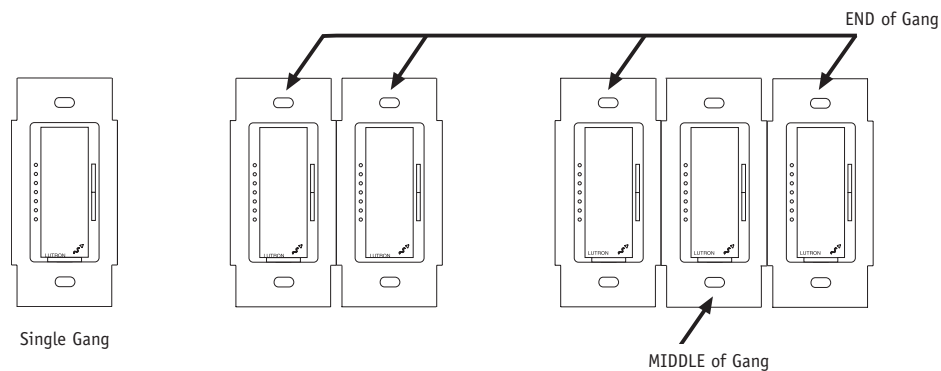


Figure 4 – Ganging and Derating Information

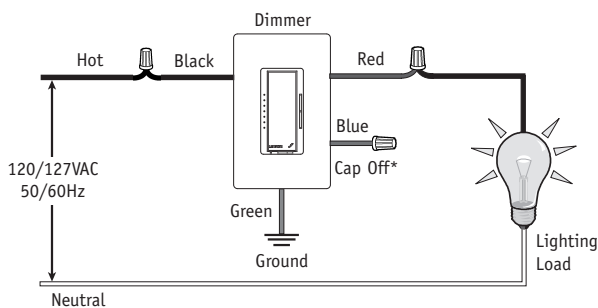


Figure 5 – HRD-6D and HRD-10D Single-Location Installation

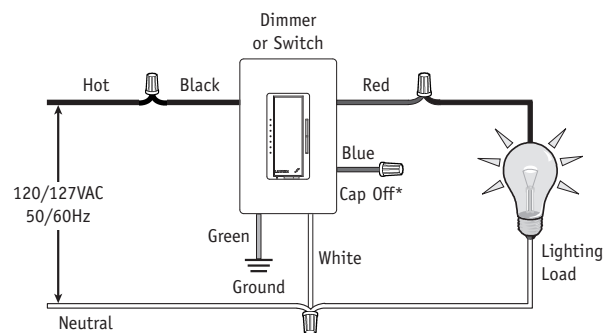


Figure 6 – HRD-10ND, HRD-6ND, and HRD-8ANS Single-Location Installation with Neutral

* When using controls in single-location installations, cut off the uninsulated portion of the control's multi-location wire (blue wire) and cap off using one of the provided wire connectors. **DO NOT** connect the blue wire to any other wiring or to ground.

RF Maestro® Local Lighting Controls (cont.)

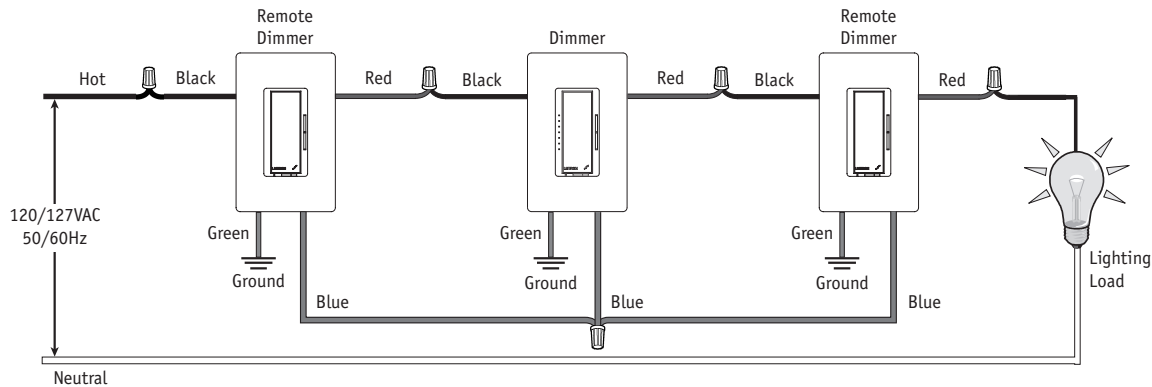


Figure 7 – HRD-6D and HRD-10D Multi-Location Installation¹

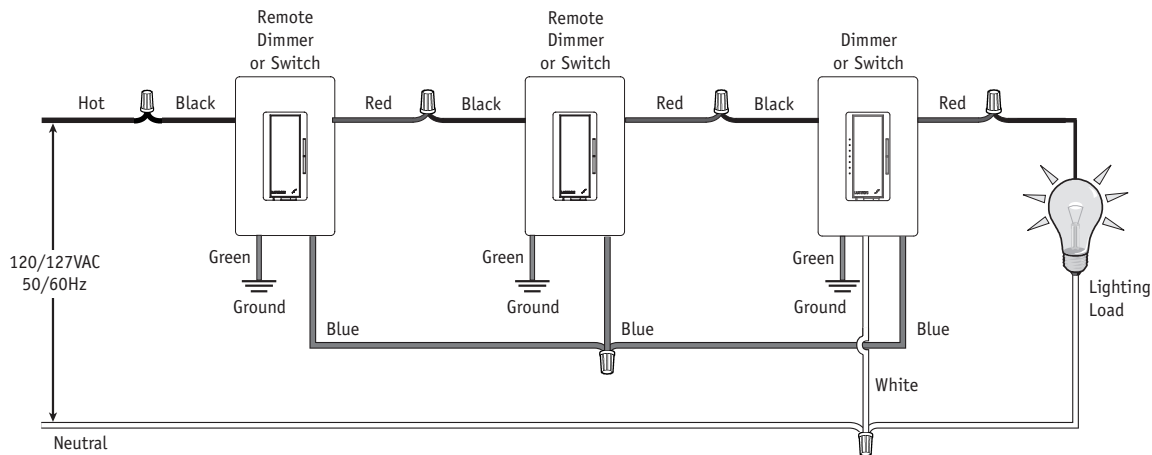


Figure 8 – HRD-10ND, HRD-6ND, and HRD-8ANS Multi-Location Installation with Neutral^{1,2}

¹ Up to nine HomeWorks® *Maestro* Remote Dimmers or Switches may be connected to the *HomeWorks* RF *Maestro* Dimmer or Switch. Total Blue wire length may be used up to 250 feet (76m).

² Neutral wire Dimmers or Switches must be connected on the lighting load side of a multi-location installation.

Power Boosters and 120V Interfaces

Model Numbers	NGRX-PB-WH: Power Booster. ELVI-1000: Electronic Low-Voltage Interface. GRX-FDBI-16A-120: Fluorescent Dimming Ballast Interface.
Input Voltage	120VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM
Load Types	NGRX-PB-WH ¹ : Incandescent, magnetic low-voltage, neon/cold-cathode. ELVI-1000 ^{1,2} : Electronic low-voltage Max. GRX-FDBI-16A-120 ¹ : Lutron® Hi-lume® or ECO-10™ Fluorescent Dimming Ballasts.
Maximum Load	NGRX-PB-WH ¹ : 1920W/VA ELVI-1000 ^{1,2} : 1000W GRX-FDBI-16A-120 ¹ : 1920W/VA
Minimum Load	25W/VA
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Heat Generated Fully Loaded	200 BTUs per hr.
Line-Voltage Connections	See Figs. 2, 3, 4, 5, 6, 7, pgs. 139-141.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Dimensions	See Fig. 1, pg. 138.
Mounting	2-gang US wallbox, 2-3/4" (70mm) deep minimum, 3-1/2" (89mm) deep recommended for easier wiring.
Terminals	Each terminal will accept two #12 AWG (2.5mm ²) wires.
Shipping Weight	1 lb. (.5kg)

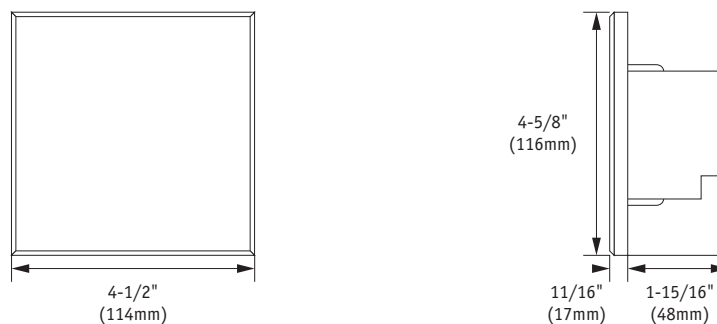


Figure 1 – Dimensions

¹ Power Boosters cannot be controlled by non-system Vareo® Controls, non-system Maestro® Controls and non-neutral wire HomeWorks® Maestro Controls.

² It is permissible to power both incandescent and electronic low-voltage loads together on the same zone through the ELVI-1000. Up to 300W of the interface's 1000W capacity can be incandescent.

Power Boosters and 120V Interfaces (cont.)

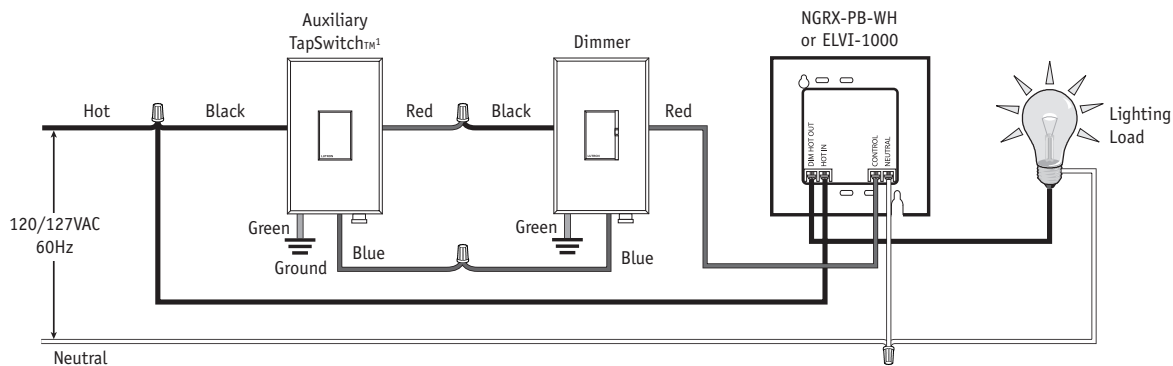


Figure 2 – NGRX-PB-WH and ELVI-1000 Installation with HomeWorks® Vareo.

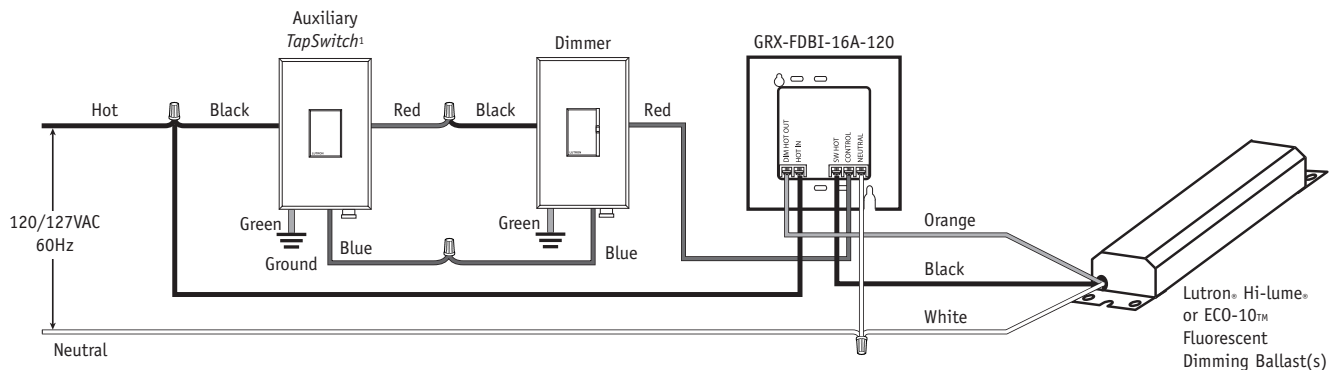


Figure 3 – GRX-FDBI-16A-120 Installation with HomeWorks Vareo

¹ Up to nine HomeWorks Vareo Remote Switches may be connected to the HomeWorks Vareo Dimmer. Total Blue wire length may be used up to 250 feet (76m).

Power Boosters and 120V Interfaces (cont.)

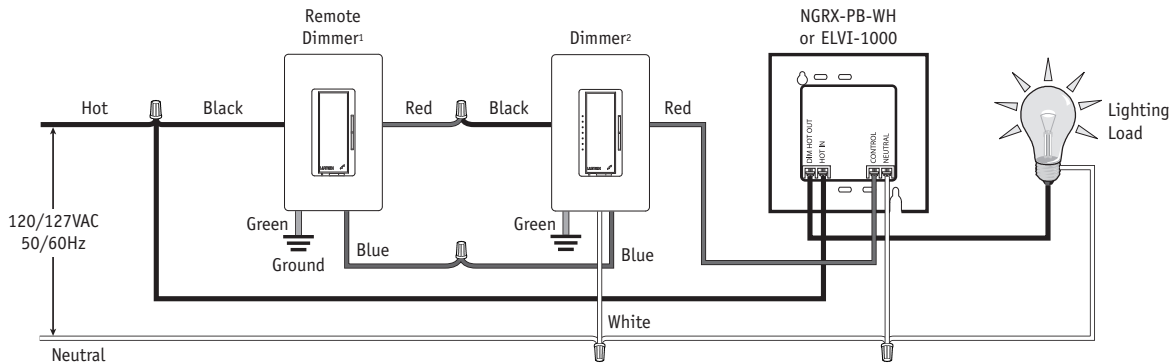


Figure 4 – NGRX-PB-WH and ELVI-1000 Installation with HomeWorks[®] Maestro[®]

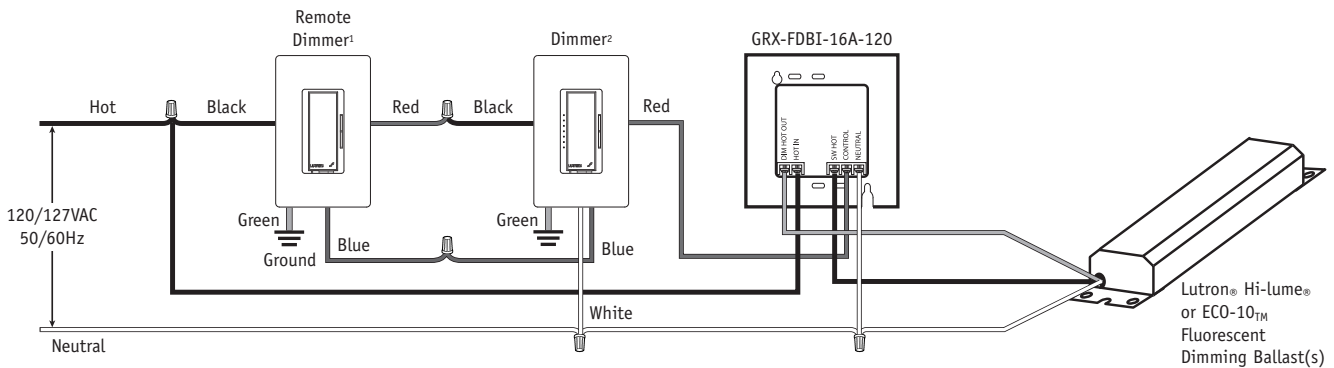


Figure 5 – GRX-FDBI-16A-120 Installation with HomeWorks[®] Maestro[®]

¹ Up to nine HomeWorks Maestro Remote Dimmers may be connected to a HomeWorks Maestro Dimmer. Total Blue wire length may be used up to 250 feet (76m).

² Neutral wire dimmers must be connected on the lighting load side of a multi-location installation.

Power Boosters and 120V Interfaces (cont.)

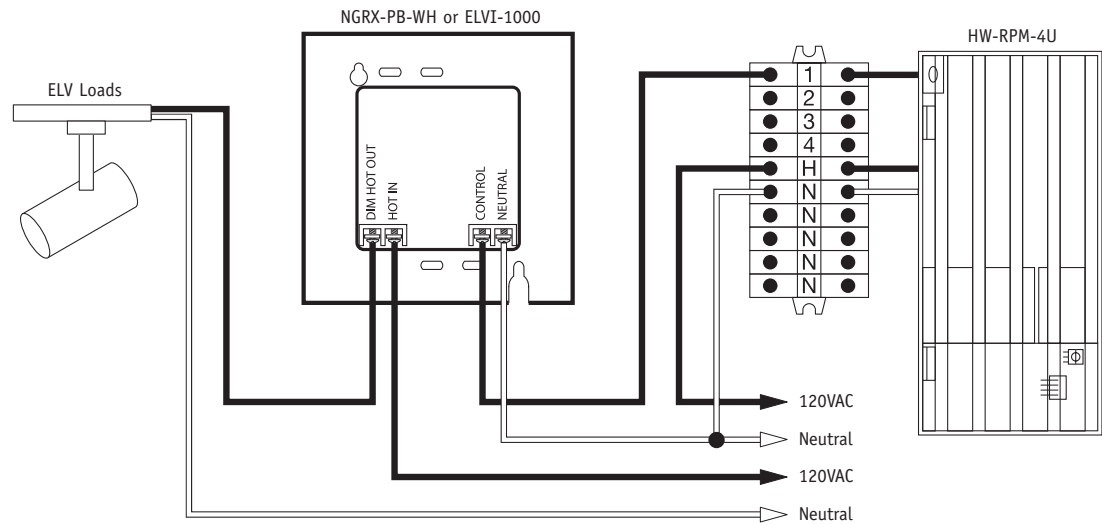


Figure 6 – NGRX-PB-WH or ELVI-1000 Installation with Remote Power Modules

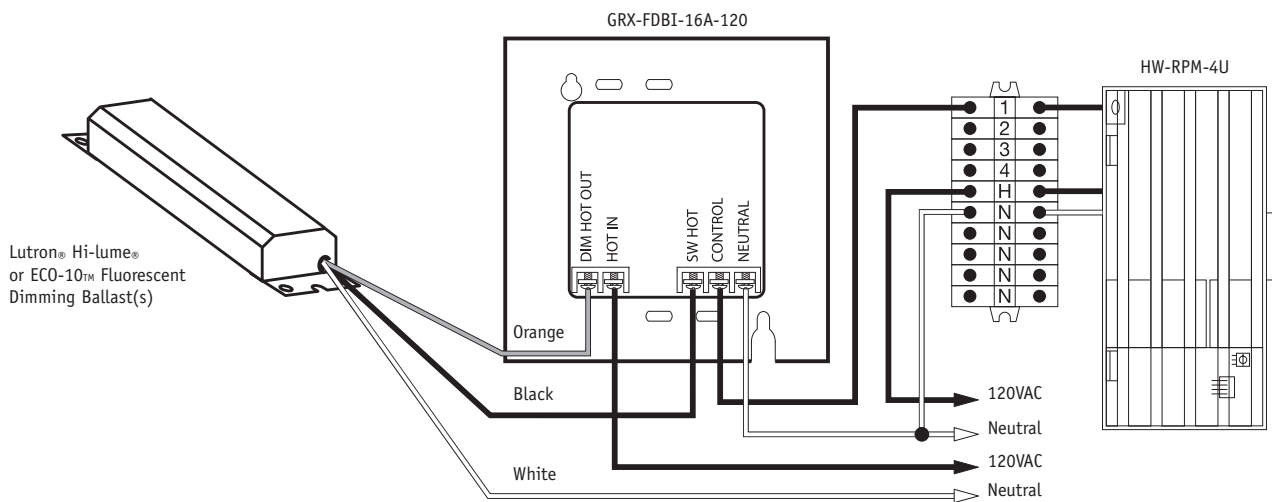


Figure 7 – GRX-FDBI-16A-120 Installation with Remote Power Modules

Power Boosters and 120V Interfaces (cont.)

Hi-Power 2•4•6™ Hi-Power Modules

Model Numbers	HP-2: Hi-Power Module with 1 output. HP-4: Hi-Power Module with 2 outputs. HP-6: Hi-Power Module with 3 outputs.
Input Voltage	Control Circuit: 120VAC, 20A per Hi-Power Booster Module Load Circuit ¹ , 120VAC or 277VAC ² , 50/60Hz
Regulatory Approvals	UL, CSA, NOM
Load Types	Incandescent, magnetic/electronic low-voltage, neon/cold cathode ³ Hi-lume®, ECO-10™, and Tu-Wire® Fluorescent Dimming Ballast, Fluorescent non-dimmed (non-capacitive), and metal halide.
Maximum Load Per Output	Dimmed: 16A, 1920W/VA or 20 ballasts. Switched: 10A, 1200W/VA or 20 ballasts.
Minimum Load Per Output	25W/VA or 1 ballast.
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Heat Generated Fully Loaded	200 BTUs per hour per output.
Line-Voltage Connections	See Figs. 3, 4, 5, 6, pgs. 143-145.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Dimensions	10-3/8" (259mm) x 9-1/4" (231mm) x 14-3/4" (368mm). See Fig. 1, pg. 143.
Mounting	Modules must be surface-mounted with adequate air space as indicated in Fig. 2, pg. 143.
System Capacity	Up to five HP-6 Modules per zone for a maximum of 30,000W/VA.
Shipping Weight	16 lbs. (7.3kg)

¹ Any load circuit can be connected to any phase. Each load circuit may be connected to a different load type; however, load types cannot be mixed on the same circuit.

² 277V Hi-Lume® FDB or ECO-10® fluorescent, 277V magnetic low-voltage, or 277V switched loads only.

³ For neon/cold cathode light sources, consult Application Note No. 25, available on Lutron Website or by using fax-on-demand, (800) 523-9466.

Power Boosters and 120V Interfaces (cont.)

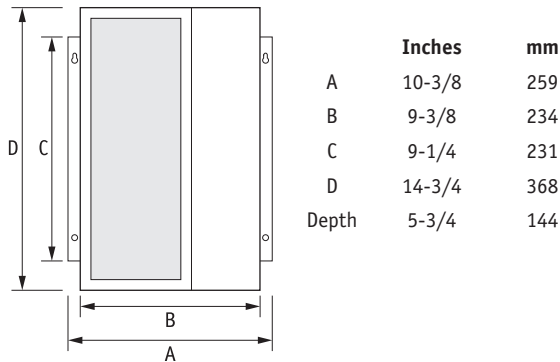


Figure 1 – Dimensions

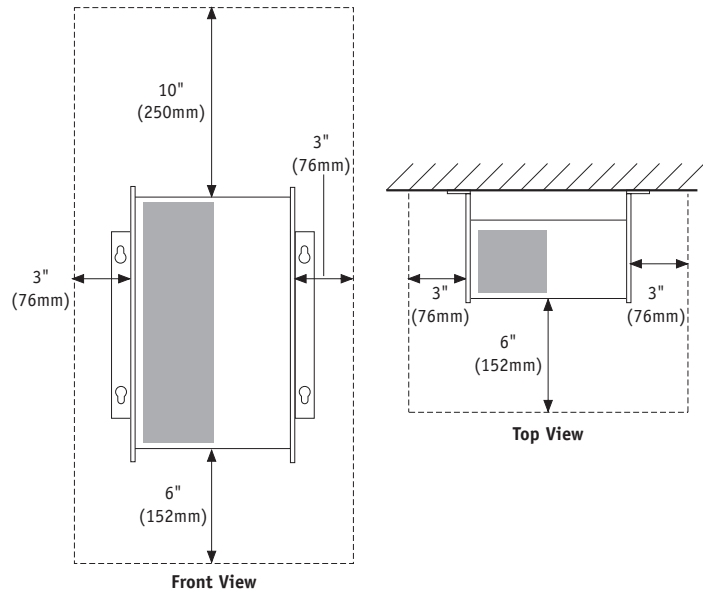


Figure 2 – Required Mounting Clearance

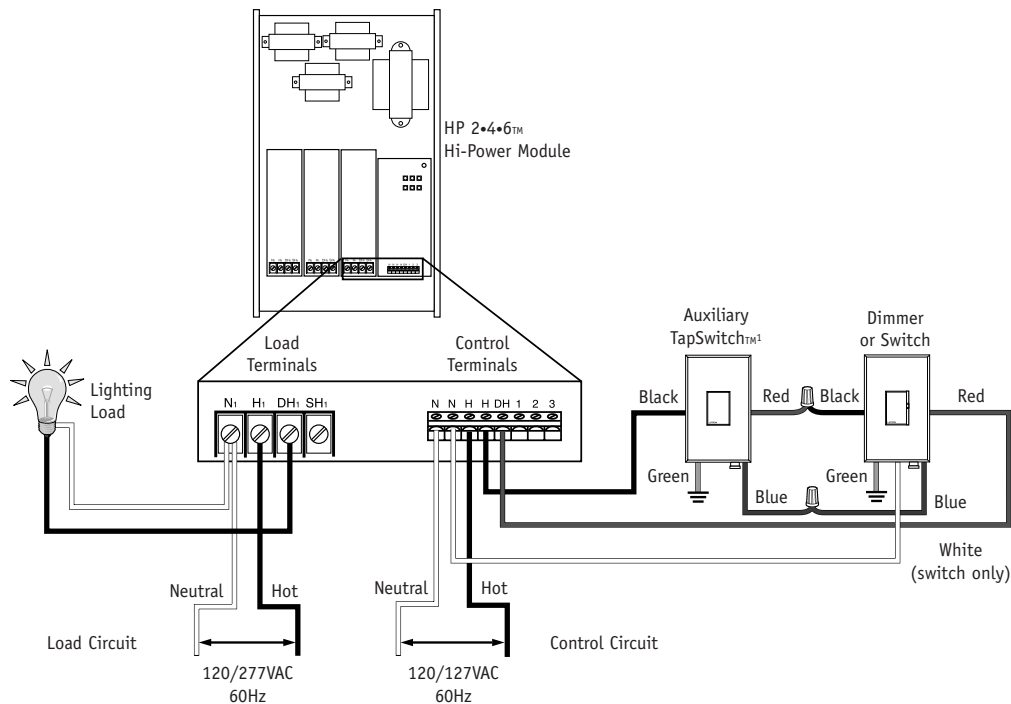


Figure 3 – HP 2•4•6 Installation with HomeWorks® Vareo®

¹ Up to nine HomeWorks Vareo Remote Switches may be connected to the HomeWorks Vareo Auxiliary TapSwitches™. Total Blue wire length may be used up to 250 feet (76m).

Power Boosters and 120V Interfaces (cont.)

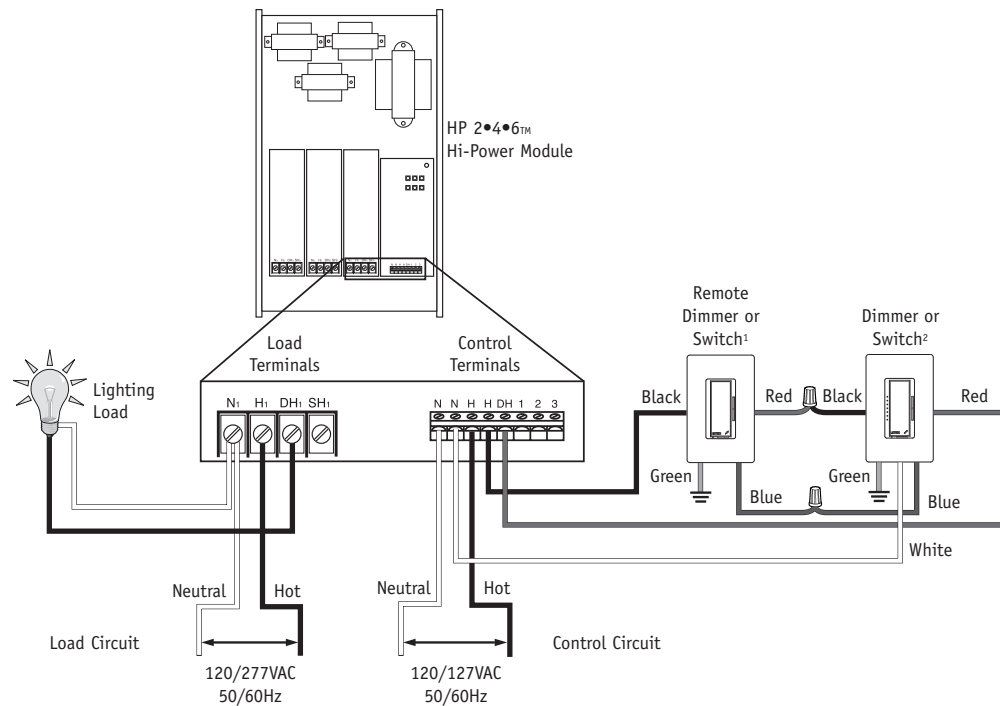


Figure 4 – HP 2•4•6 Installation with HomeWorks[®] Maestro[®].

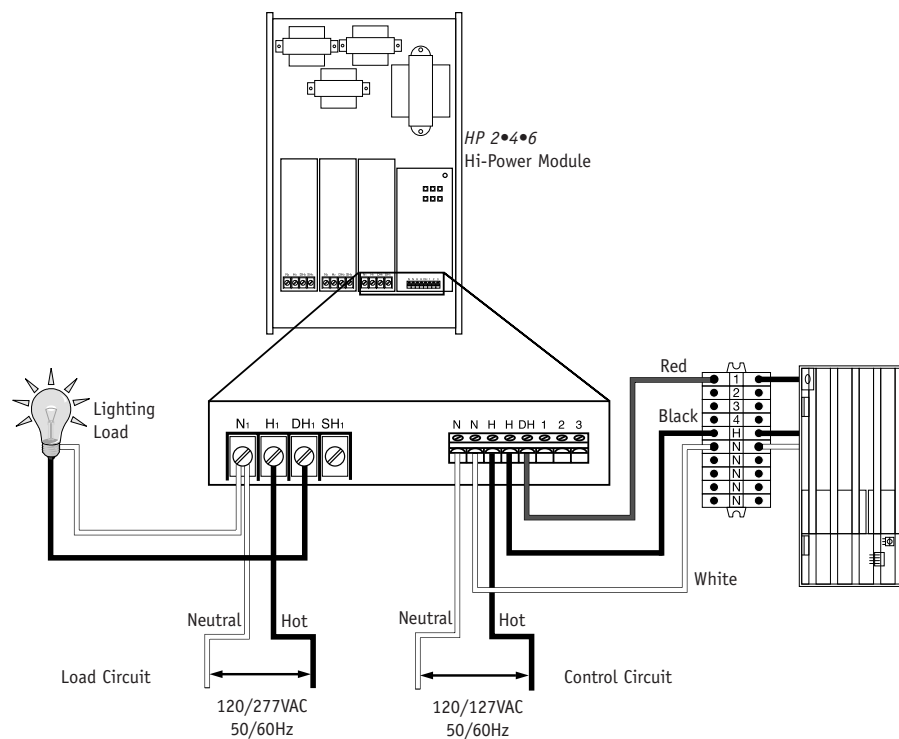


Figure 5 – HP 2•4•6 Installation with Remote Power Modules

- ¹ Up to nine HomeWorks Maestro Remote Dimmers or Switches may be connected to the HomeWorks Wired Maestro Dimmer or Switch. Total Blue wire length may be used up to 250 feet (76m).
- ² Neutral wire Dimmers or Switches must be connected on the lighting load side of a multi-location installation.

Power Boosters and 120V Interfaces (cont.)

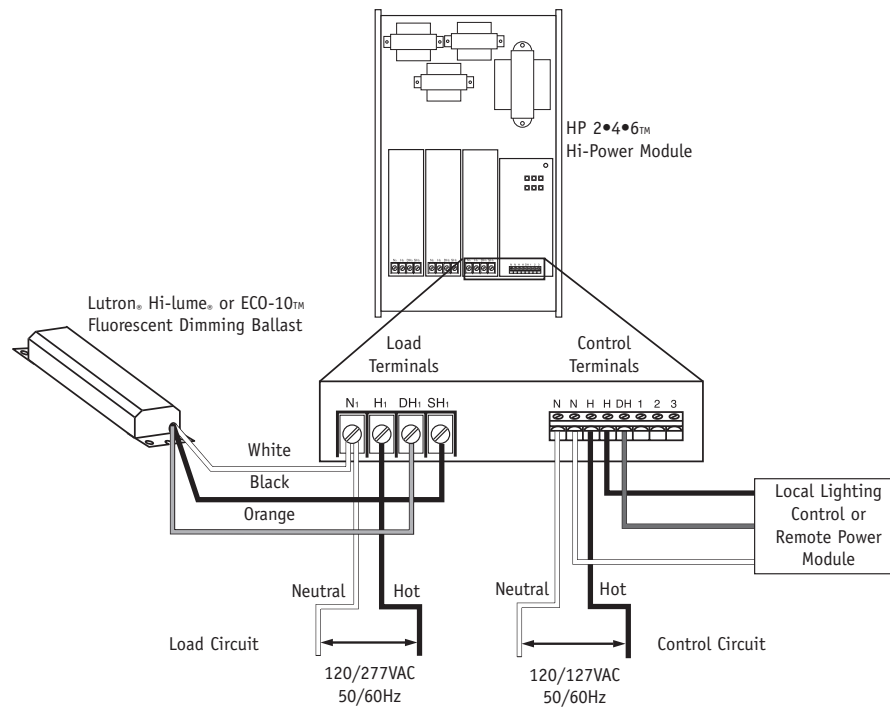


Figure 6 – HP 2•4•6 Installation with a Fluorescent Dimming Ballast

Wired Keypads

Model Number	All Wired Keypads.
Input Voltage	15VDC Class 2
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Low-Voltage Wire Type	Two pair [one pair #18 AWG (1.0mm ²), one pair #18-22 AWG (1.0-0.5mm ²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used.
Low-Voltage Wiring Configuration	Daisy-chain, star, T-tap. Termination not required. Total length of wire on any link cannot exceed 1,000 feet (305m) per wire run. Total length of wire on that link cannot exceed 4,000 feet (1220m). Maximum of 32 devices per processor link that has been configured for keypads.
Low-Voltage Connections	One 4-pin removable terminal block. Terminal block will accept up to four #18 AWG (1.0mm ²) wires.
Addressing	Via DIP switch located on unit. Units should be addressed before mounting in wall.
Diagnostics	LEDs provide diagnostics for troubleshooting.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Miswire Protection	All terminal block inputs are over-voltage and miswire-protected against wire reversals and shorts.
Mounting	See Table 1, pg. 148.
Engraving	Engraving of keypads and/or keypad buttons available.
IR Keypads	Compatible with Lutron IR transmitters: GRX-IT-WH, and GRX-8IT-WH.
Shipping Weight	0.4 lbs. (0.1kg)
Keypad Link LED Count	See Table 1, pg. 148.

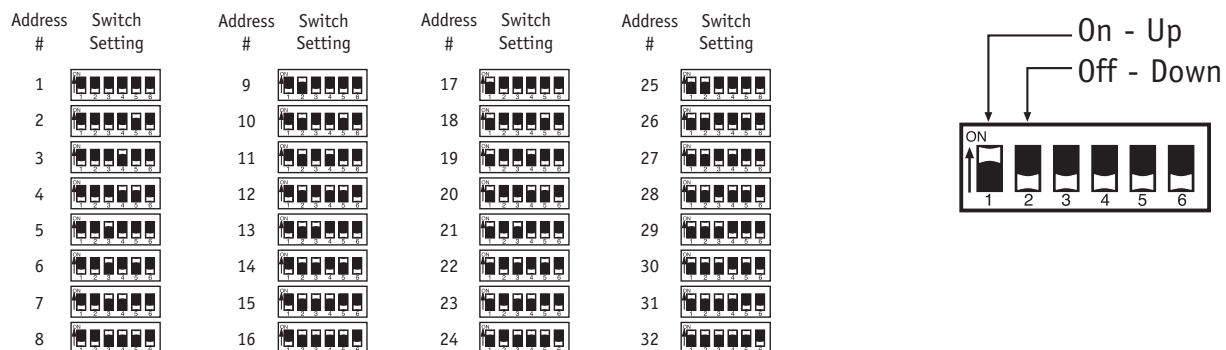


Figure 1 –Addressing DIP Switches

Wired Keypads (cont.)

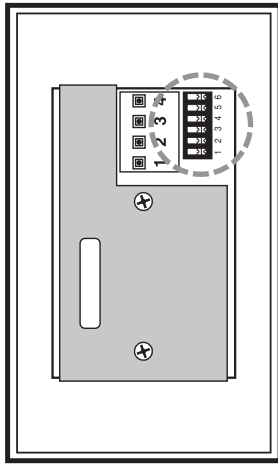


Figure 2 – All Slim and Large Button (Non-Insert) Keypads Rear View

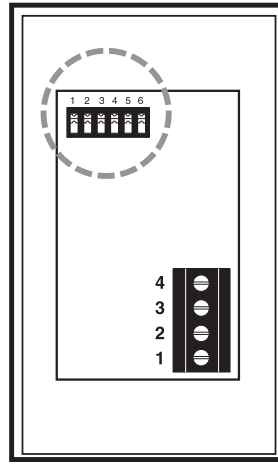


Figure 3 – All Slim Button Insert Keypads Rear View

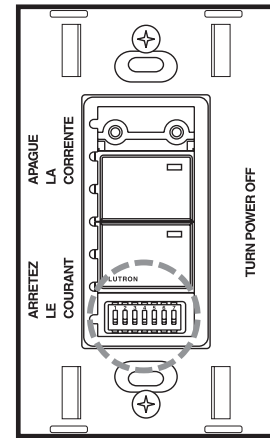


Figure 4 – 2-Button Keypad Front View

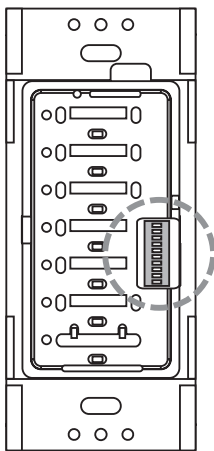


Figure 5 – All seeTouch™ Keypads Front View

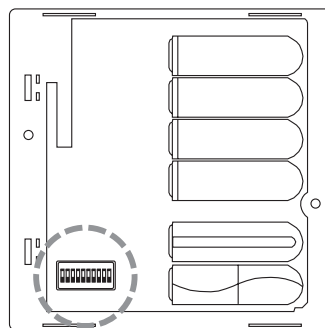


Figure 6 – All European-style Keypads Front View

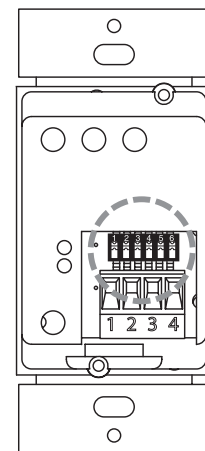


Figure 7 – All Wired Designer-style Keypads Rear View

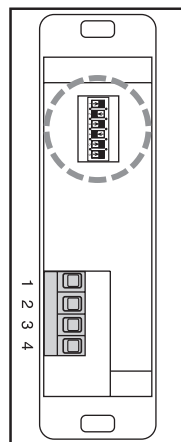


Figure 8 – All Architrave™ Keypads Rear View

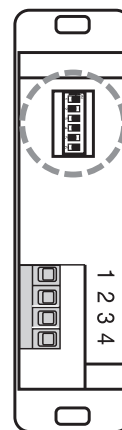


Figure 9 – All Signature Series™ Keypads Rear View

Wired Keypads (cont.)

Control	LED Count ¹	Wallboxes Required
HWI-KP5	5	1-gang US wallbox
HWI-KP10	10	1-gang US wallbox
HWI-KP15	15	2-gang US wallbox
HWI-LB6	6	1-gang US wallbox
HWI-LB9	9	2-gang US wallbox
HWI-KP5-DN	5	Not Required
HWI-KP5-DW	5	Lutron® # 241-399
HWI-5S-M	5	1-gang US wallbox
HWI-5S-NM	5	1-gang US wallbox
HWI-5S-IR	5	1-gang US wallbox
HWI-2B	10	1-gang US wallbox
seeTouch™ All models	15	1-gang US wallbox
HWI-2SE	3	EEB-15-SQ
HWI-4SE	4	EBB-15-SQ
HWI-8SE	8	EBB-15-SQ
HWD-5KP	5	1-gang US wallbox
HWD-5RL	5	1-gang US wallbox
HWD-10KP	10	2-gang US wallbox
HWD-10RL	10	2-gang US wallbox
HWS-3B-G	10	WBOX-SA1-Q1
HWS-4B-G	10	WBOX-SA1-Q1
HWS-3B-B	10	WBOX-SA1-Q1
HWS-4B-B	10	WBOX-SA1-Q1
HWI-CCI-8	10	HWI-ENC-CC
HWI-CCO-8	10	HWI-ENC-CC
HWI-TEL9	15	N/A
HWI-HHP-LD	45	N/A

Table 1 – Keypad LED Count and Wallbox Information

¹ A single HomeWorks® Processor can support 300 keypad LEDs. This includes all keypads on the three configurable links (link 4 + link 5 + link 6). If more than 300 LEDs are placed on a single processor, an HWI-PS-120 Power Supply must be used to power the additional units (above 300). Each HWI-PS-120 Power Supply can support an additional 350 LEDs.

RF Keypads

Model Numbers	HRD-5KP: 5-Button Keypad with master on/off. HRD-5RL: 5-Button Keypad with raise/lower. HRD-10KP: 10-Button Keypad with master on/off. HRD-10RL: 10-Button Keypad with master on/off and raise/lower.
Input Voltage	120/127VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM, FCC, IC
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Addressing	Via the <i>HomeWorks</i> Utility, using unique device serial numbers. Units must be installed prior to addressing. Counts as 1 of the 32 dimmer addresses on the RF Processor.
Diagnostics	LEDs provide diagnostics for troubleshooting.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Mounting	HRD-5KP, HRD-5RL: 1-gang US wallbox HRD-10KP, HRD-10RL: 2-gang US wallbox
Engraving	Engraving of keypads and/or keypad buttons available.
Shipping Weight	0.3 lbs. (0.1kg)
Keypad Link LED Count	0

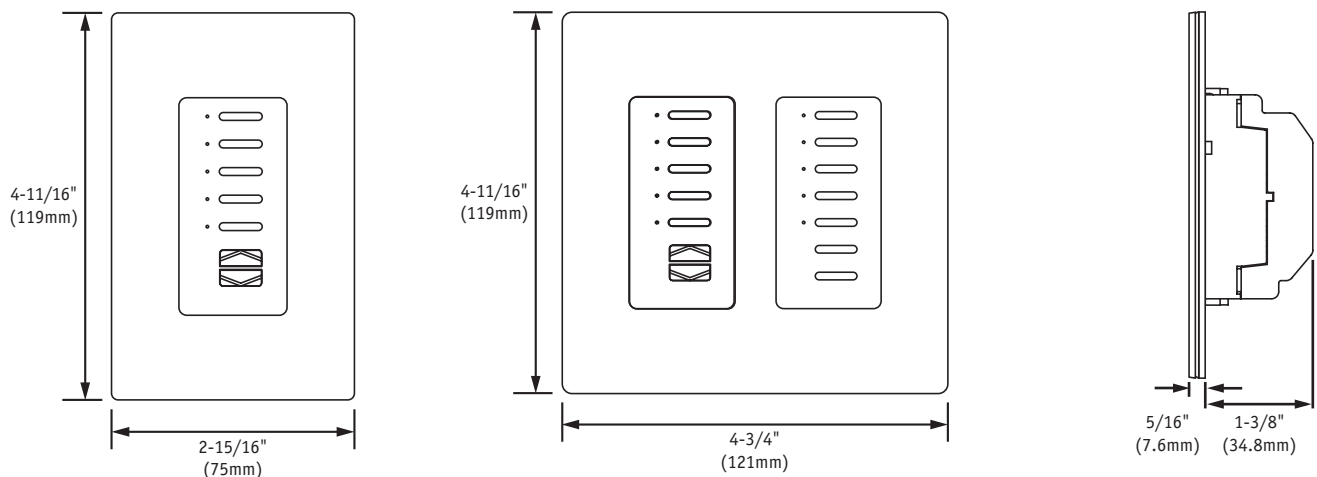


Figure 1 – Dimensions

RF Tabletop Keypads

Model Numbers	All RF Tabletop Keypads.
Input Voltage	120/127VAC, 50/60Hz (with plug-in low-voltage transformer). 3VDC (with two AAA batteries, -C units only).
Regulatory Approvals	UL, CSA, NOM, FCC, IC
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Addressing	Via the HomeWorks [®] Utility, using unique device serial numbers. Units must be installed prior to addressing. Counts as 1 of the 32 keypads addresses on the RF Processor.
Diagnostics	LEDs provide diagnostics for troubleshooting.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Dimensions	See Fig. 1, pg. 151.
Mounting	Units powered by plug-in transformer must be located within 5 feet (1.5m) of a 120V receptacle. Unit must be placed within 30 feet (9m) of an RF Signal Repeater or an RF Processor.
Shipping Weight	0.3 lbs. (0.1kg)
Keypad Link LED Count	0

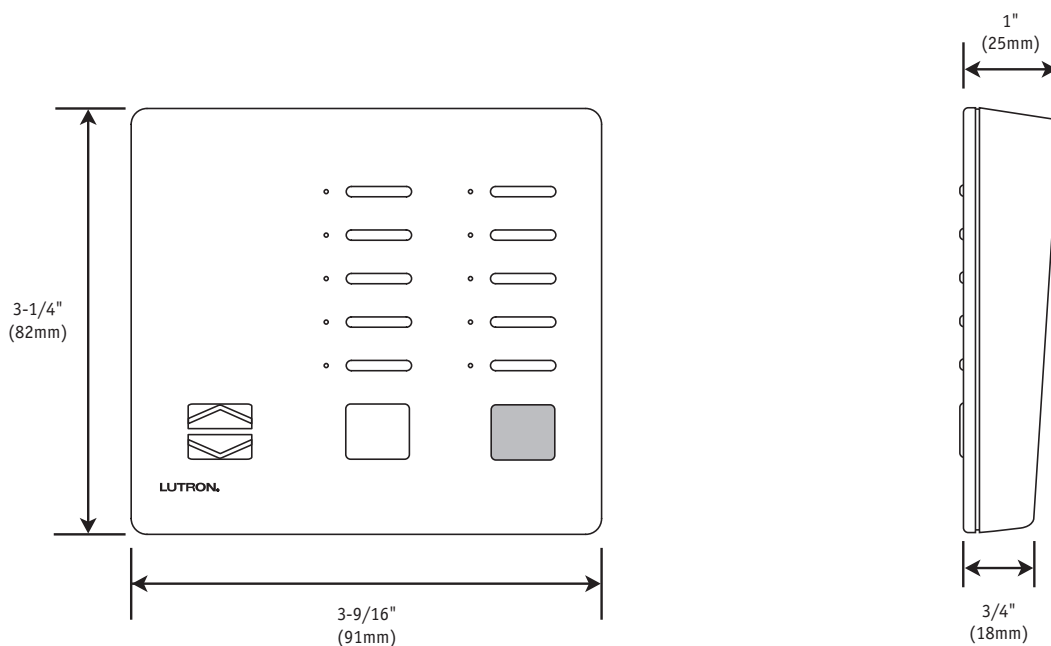


Figure 1 – Dimensions

RF Lamp Dimmer

Model Number	HRT-3LD: Lamp dimming control.
Input Voltage	120/127VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM, FCC, IC
Load Types	Incandescent, magnetic low-voltage ^{1,2} , tungsten halogen.
Maximum Load	300W/VA
Minimum Load	50W/VA
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Addressing	Via the HomeWorks® Utility, using unique device serial numbers. Units must be installed prior to addressing. Counts as 1 of the 64 dimmer addresses on the RF Processor.
Diagnostics	LEDs provide diagnostics for troubleshooting.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Fail-Safe Operation	In the unlikely event that communication with the processor is interrupted, all Maestro® Local Lighting Controls will still operate, offering local control.
Dimensions	2-15/16" (75mm) x 4-11/16" (119mm) x 15/16" (24mm)
Shipping Weight	0.75 lbs. (0.34kg)

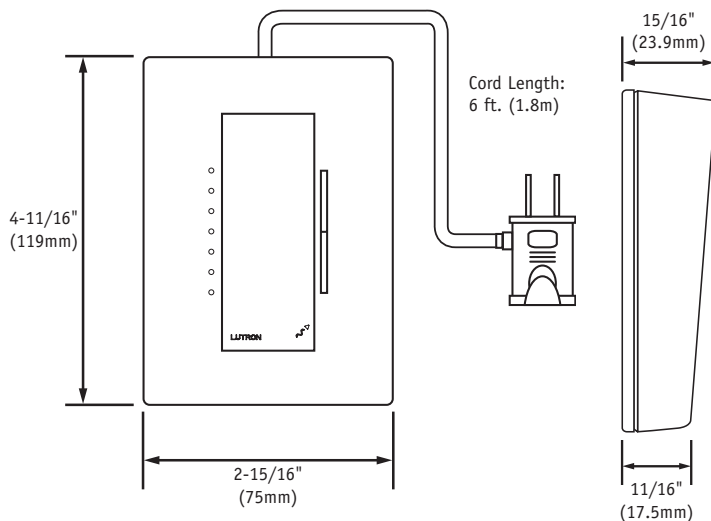


Figure 1 – Dimensions

Plug lamp cord into back of RF Lamp Dimmer plug. Plug RF Lamp Dimmer plug into any standard wall outlet.

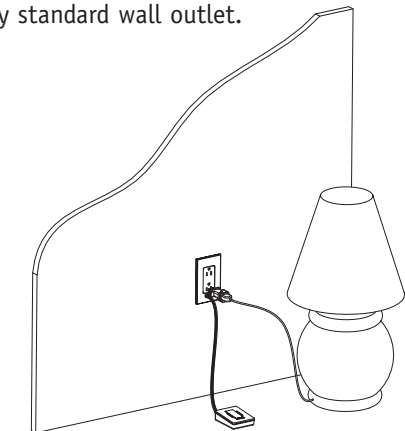


Figure 2 – Installation

(1) Because low-voltage transformers vary widely in efficiency, the input VA of each transformer should be measured directly. If this is not possible, use the maximum lamp wattage figures, which have a built-in safety margin.

(2) For low-voltage applications using the HRT-3LD use with core and coil (magnetic) low-voltage transformers only. Do not use any solid-state electronic low-voltage transformers. Operation of a low-voltage circuit with all lamps inoperative or removed may result in current flow in excess of normal levels. To avoid transformer overheating and premature transformer failure, Lutron strongly recommends the following:

- Do not operate low-voltage circuits without operative lamps in place.
- Replace burned-out lamps as soon as possible.
- Use transformers that incorporate thermal protection or fuse transformer primary windings to prevent transformer failure due to overcurrent.

RF Visor Controls

Receiver

Model Number	HR-VCRX-SW: Visor Control Receiver
Input Voltage	120/127VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM, FCC, IC
Line-Voltage Connections	Lutron provides a plug-in low-voltage transformer.
Mounting	Mount with wall bracket (provided) or place on tabletop. <i>See pg. 91.</i>
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Outputs	Four low-voltage dry contacts. Max. voltage: UL Class 2 Max. current: 1A @ 30VDC

Transmitter

Model Number	HR-VCTX-SW: Visor Control Transmitter.
Input Voltage	6VDC, two CR2032 coin cell batteries (included).
Regulatory Approvals	NOM, FCC, IC
Function	Provides up to seven functions from three buttons.
Mounting	Removable visor clip.
Range	150 feet (46m) (typical)
Environment	Ambient operating temperature: -40-113°C, -40-235°F Ambient operating temperature: 0-90% humidity, non-condensing. Meets Society of Automotive Engineers (SAE) Standards.

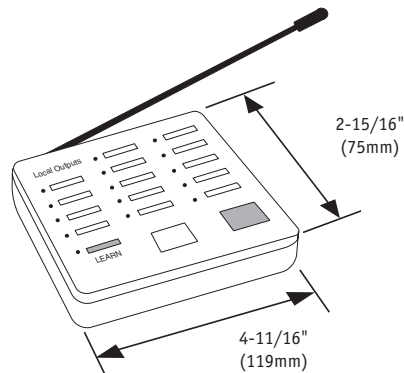


Figure 1 – HR-VCRX-SW Dimensions

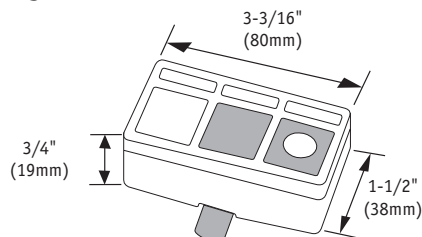


Figure 2 – HR-VCTX-SW Dimensions

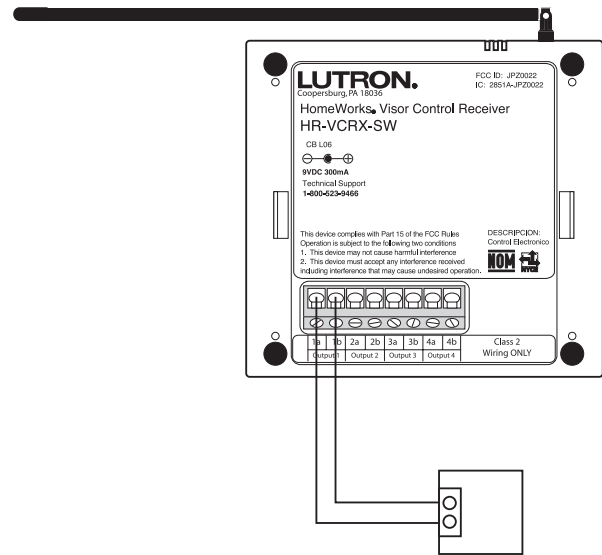


Figure 3 – Wiring

Contact Closure Interfaces

Model Number	HWI-CCI-8: Wired Contact Closure Input Interface.
Input voltage	15VDC (from HomeWorks® Processor Keypad Link).
Input Types	Inputs can be used with ground-referenced, solid-state outputs if the outputs have an on-state saturation voltage of less than 2VDC at 10 milliamps and an off-state leakage of less than 50 microamps. Dry contact or solid-state outputs must be capable of switching 15VDC at 10 milliamps. If there is any question as to whether a device is compatible with these specifications, contact the manufacturer of the device.
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Contact Closure Input Connections	Eight 2-terminal removable connectors, one per input. Each terminal will accept up to four #18 AWG (1.0mm ²) wires.
Low-Voltage Wire Type	Two pair [one pair #18 AWG (1.0mm ²), one pair #18-22 AWG (1.0-0.5mm ²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used.
Low-Voltage Wiring Configuration	Daisy-chain, star, T-tap. Termination not required. Total length of wire on any link cannot exceed 1,000 feet (305m) per wire run. Total length of wire on that link cannot exceed 4,000 feet (1220m). Maximum of 32 devices per processor link that has been configured for keypads.
Low-Voltage Connection	One 4-pin removable terminal block. Terminal block will accept up to two #18 AWG (1.0mm ²) wires.
Addressing	Via DIP switch. Units should be addressed before mounting. Counts as 1 of 32 addresses on the keypad link.
Diagnostics	Link LED for troubleshooting communications with <i>HomeWorks</i> Processor. IR receiver has a talk back LED that flashes when IR is received. IR receiver also has an LED that flashes when a valid <i>Lutron</i> IR command has been received. Each input has a feedback LED that turns on when the input is shorted.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Dimensions	3" (76mm) x 8-1/2" (216mm)
Keypad Link LED Count	10
Mounting	Mounts in the following enclosures: HWI-LV32-120, HWI-LV17-120 and HWI-ENC-CC.
IR Receiver	Are compatible with <i>Lutron</i> IR transmitters only: GRX-IT-WH, and GRX-8IT-WH. An IR flasher can be mounted directly to the clear plastic shield over the IR receiver. <i>See Fig. 2, pg. 154.</i>
Shipping Weight	0.5 lb. (0.3kg)

Contact Closure Interfaces (cont.)

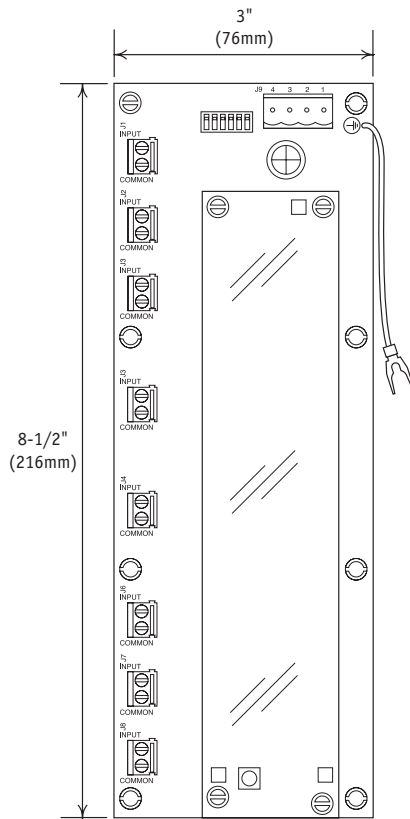


Figure 1 – Dimensions

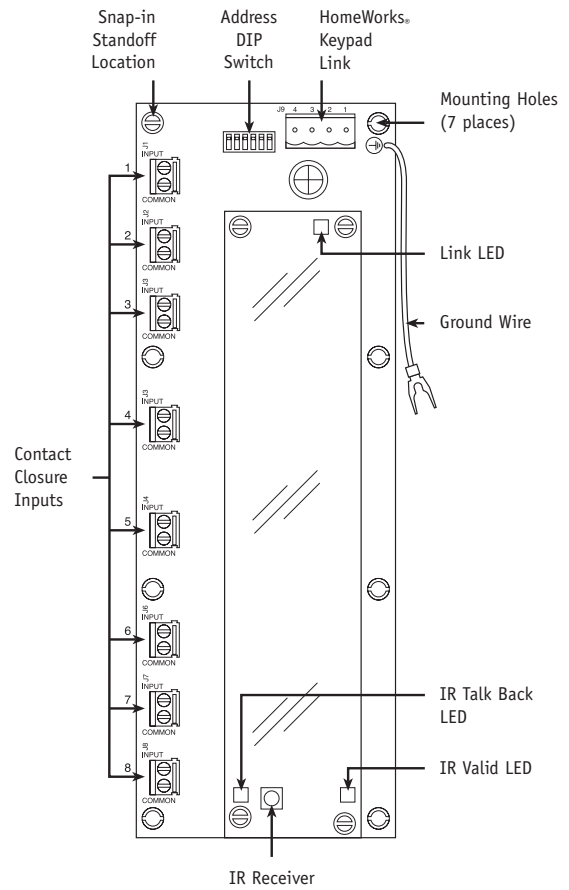


Figure 2 – Parts Identification

Contact Closure Interfaces (cont.)

Model Number	HR-CCI-6-SW: RF Contact Closure Input Interface.
Input Voltage	120/127VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM, FCC, IC
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Line-Voltage Connections	Lutron provides a plug-in low-voltage transformer.
Input Types	Inputs can be used with ground-referenced, solid-state outputs if the outputs have an on-state saturation voltage of less than 1VDC at 2 milliamps and an off-state leakage of less than 10 microamps at 12VDC. Dry contact or solid-state outputs must be capable of switching 15VDC at 10 milliamps. Outputs must stay in the open or closed state for at least 40 milliseconds to be recognized by the interface. If there is any question as to whether a device is compatible with these specifications, contact the manufacturer of the device.
Contact Closure Input Connections	8 position terminal block, 6 input connections, 2 common connections. Each terminal will accept up to two #18-22 AWG (1.0 -0.5mm ²) wires.
Addressing	Via the HomeWorks [®] Utility. Units must be installed prior to addressing.
Diagnostics	Six buttons allow you to test each contact closure input's programming from the front of the control. Each dry contact closure input has an LED indicator that shows the state of the connected device.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Dimensions	See Fig. 1, pg. 156.
Mounting	Unit must be located within 5 feet (1.5m) of a 120V receptacle. Unit must be placed within 30 feet (9m) of an RF Signal Repeater or an RF Processor.
Shipping Weight	1.5 lbs. (0.7kg)

Note: Available second quarter 2003.

Contact Closure Interfaces (cont.)

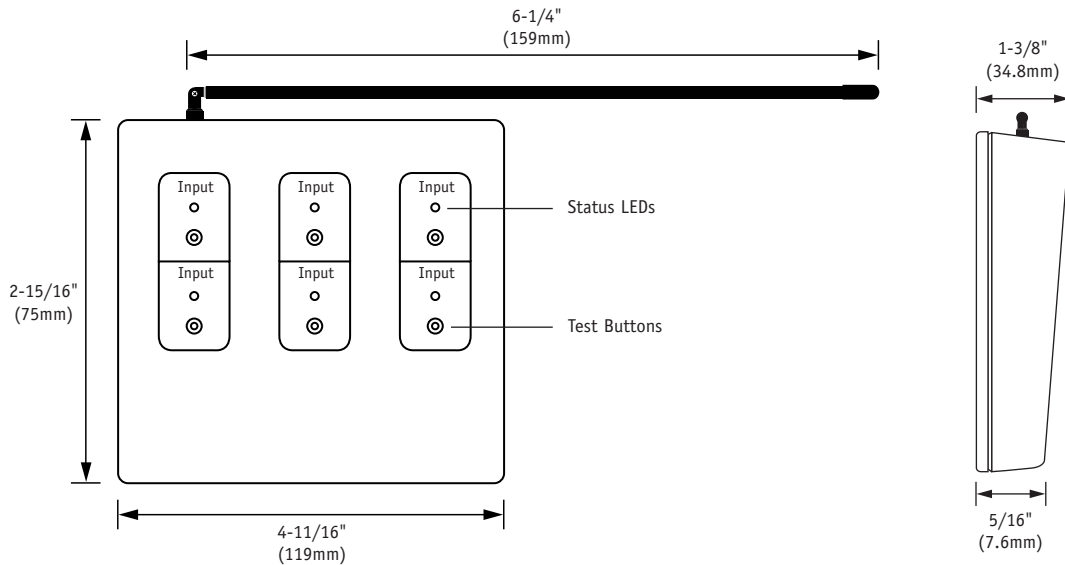


Figure 1 – Dimensions

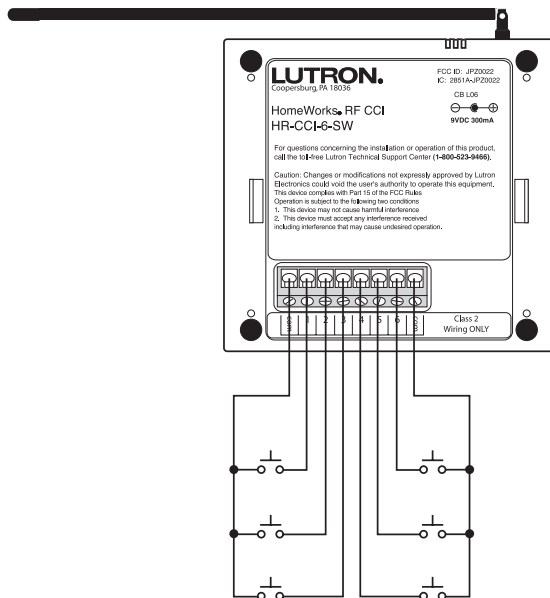


Figure 2 – Wiring

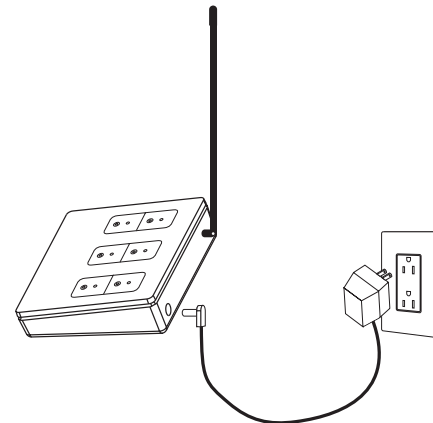


Figure 3 – Installation

For mounting information, see pg. 91.

Contact Closure Interfaces (cont.)

Model Number	HWI-CCO-8: Wired Contact Closure Output Interface.
Input Voltage	15VDC (from HomeWorks® Processor Keypad Link).
Relay Contact Ratings	See Table 1, pg. 158.
Relay Outputs	Each output can be normally-open (NO) and normally-closed (NC). Outputs can be programmed to provide either momentary (pulsed) or maintained (latching) functionality.
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Contact Closure Output Connections	Eight 3-terminal (normally-open, normally-closed, common) non-removable connectors, one per output. Each terminal will accept up to four #18 AWG (1.0mm ²) wires.
Low-Voltage Wire Type	Two pair [one pair #18 AWG (1.0mm ²), one pair #18-22 AWG (1.0-0.5mm ²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used.
Low-Voltage Wiring Configuration	Daisy-chain, star, T-tap. Termination not required. Total length of wire on any link cannot exceed 1,000 feet (305m) per wire run. Total length of wire on that link cannot exceed 4,000 feet (1220m). Maximum of 32 devices per processor link that has been configured for keypads.
Low-Voltage Connections	One 4-pin removable terminal block. Terminal block will accept up to two #18 AWG (1.0mm ²) wires.
Addressing	Via DIP switch. Units should be addressed before mounting. Counts as 1 of 32 addresses on the keypad link.
Diagnostics	Link LED for troubleshooting communications with processor IR receiver has a talk back LED that flashes when IR is received and a valid IR LED that flashes when a valid Lutron IR command has been received. Each output has a feedback LED that turns on when the normally-open contact is connected to common. Using one of the DIP switches, the HWI-CCO-8 can be placed into manual control mode. While in manual control mode, the state of each relay can only be toggled by pressing the corresponding button.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Dimensions	3" (76mm) x 8-1/2" (216mm)
Keypad Link LED Count	10
Mounting	Mounts in the following enclosures: HWI-LV32-120, HWI-LV17-120 and HWI-ENC-CC. Compatible with Lutron IR transmitters only: GRX-IT-WH, and GRX-8IT-WH. An IR flasher can be mounted directly to the clear plastic shield over the IR receiver. See Fig. 2, pg. 158.
Shipping Weight	0.5 lb. (0.3kg)

Contact Closure Interfaces (cont.)

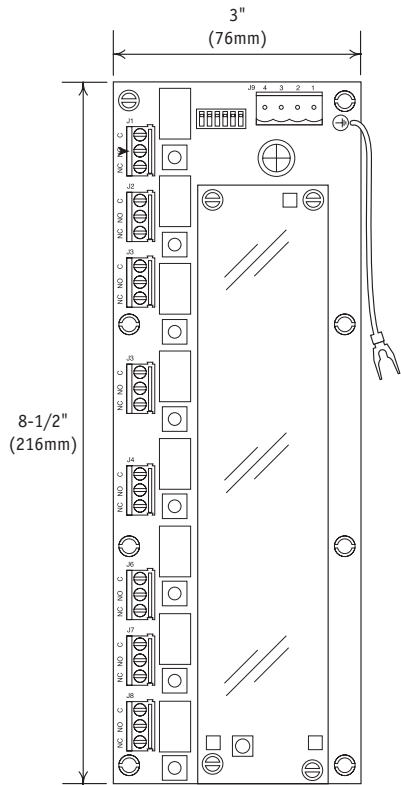


Figure 1 – Dimensions

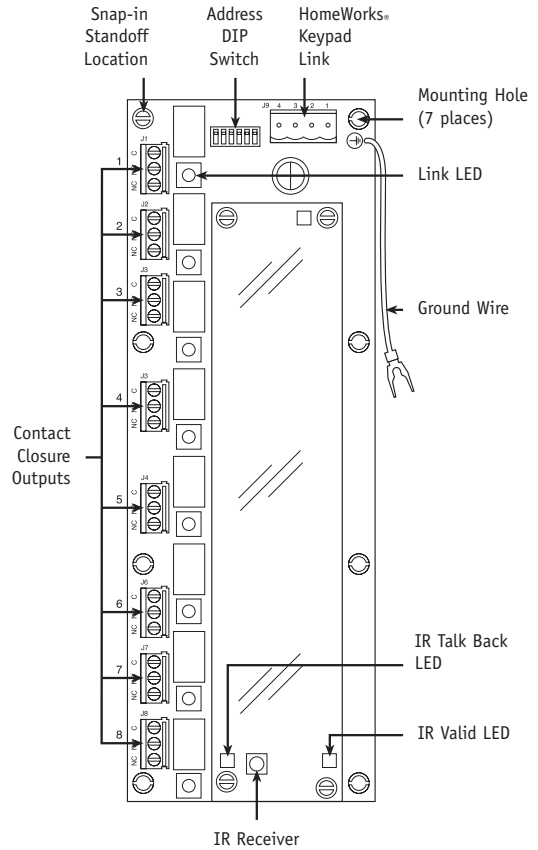


Figure 2 – Parts Identification

Voltage	Resistive Load	Inductive Load
Up to 30 VDC	1A	0.2A
Up to 30 VAC	0.5A	0.1A
Up to 60 VDC	1A	Do not use HWI-CCO-8
Up to 42.4 VAC	0.5A	Do not use HWI-CCO-8

Table 1 – Relay Contact Ratings

Low-Voltage Enclosures

Model Number	HWI-LV32-120: 32" Low-Voltage Enclosure.
Capacity	One HomeWorks® Processor, one Dimmer Interface (HWI-H48 or HWI-D48), three Wire Landing Boards (HWI-WLB). <i>See Fig. 2, pg. 160.</i> One HomeWorks Processor, two Contact Closure Boards (HWI-CCI-8 or HWI-CCO-8), two Wire Landing Boards (HWI-WLB). <i>See Fig. 3, pg. 160.</i> One Contact Closure Board Subplate (HWI-SUB32-CC9). <i>See Fig. 2, pg. 161.</i>
Input Voltage	120/127VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Line-Voltage Connections	Use copper wire only, supply conductors 60/75°C. DIN rail-mounted terminal blocks for power feed for HomeWorks Processor (located at top left corner of panel). Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57nM).
DIN Rail Terminal	Terminal blocks will accept one #18-10 AWG (1.0-2.5mm ²) wire or two #18-16 AWG (1.0-1.5mm ²) wires. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57nM).
Dimensions	14-3/8" (36.5cm) x 33" (81cm) x 3-7/8" (9.8m)
Mounting	Enclosure can be surface-mounted or flush-mounted. Enclosure fits between standard 16" (406mm) on-center stud framing. Mount the enclosure so that line-voltage wiring will be at least 6 feet (1.8m) from audio or electronic equipment and its wiring. <i>See Fig. 1, pg. 160.</i>
Construction	Enclosure: 16-gauge galvanized sheet metal (unpainted). Cover: Painted (black) metal cover with ventilation holes. Cover is attached using four phillips-head screws.
Shipping Weight	18 lbs. (8.2kg)

Low-Voltage Enclosures (cont.)

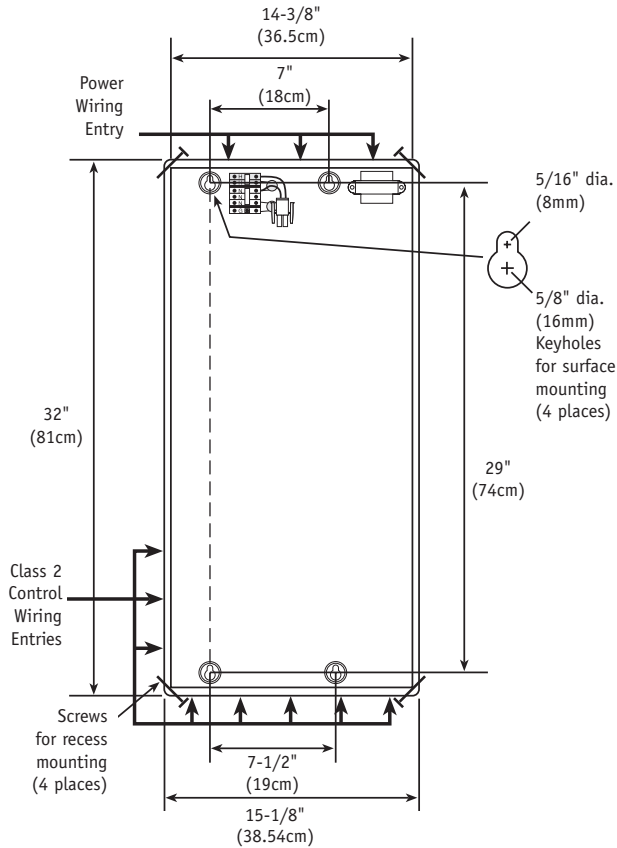


Figure 1 – Dimensions and Mounting

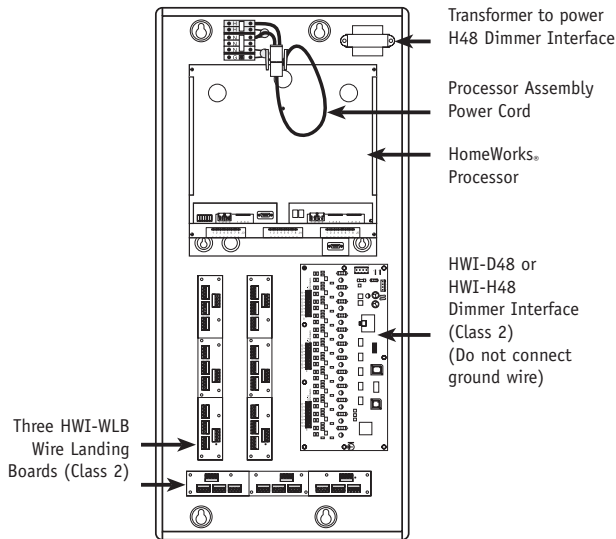


Figure 2 – Dimmer Interface Configuration

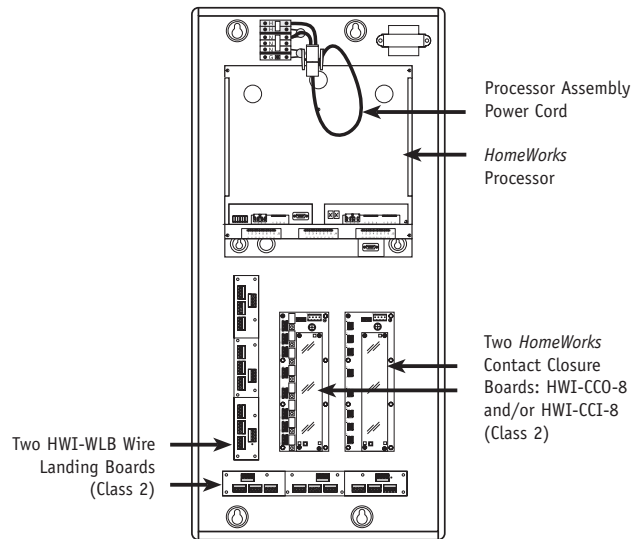


Figure 3 – Contact Closure Board Configuration

Low-Voltage Enclosures (cont.)

Model Number	HWI-SUB32-CC9: Contact Closure Interface Subplate.
Capacity	Up to nine Contact Closure Boards (HWI-CCO-8 or HWI-CCI-8) can be installed on the subplate.
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Dimensions	14" (35.5cm) x 27" (68.9cm)
Mounting	This subplate can only be installed in the HWI-LV32 Enclosure.
Construction	Galvanized sheet metal (unpainted).
Shipping Weight	7 lbs. (3.2 kg)

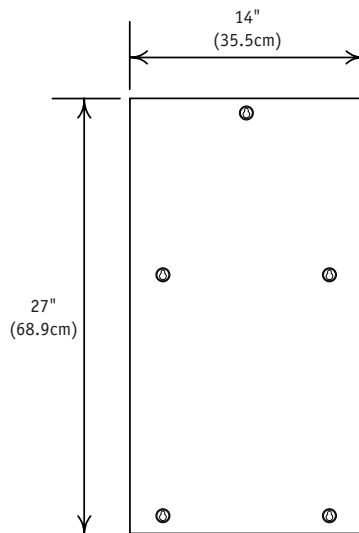


Figure 1 – Dimensions

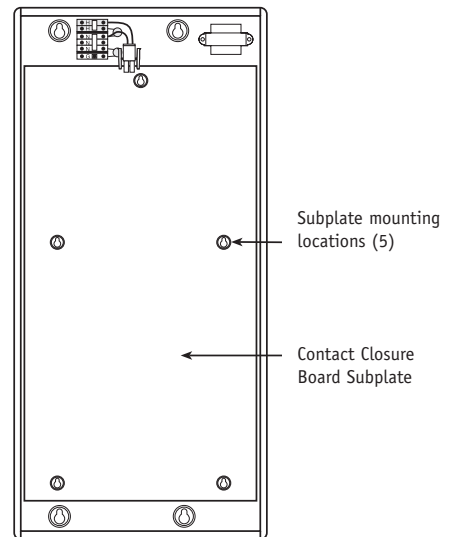


Figure 2 – Mounting

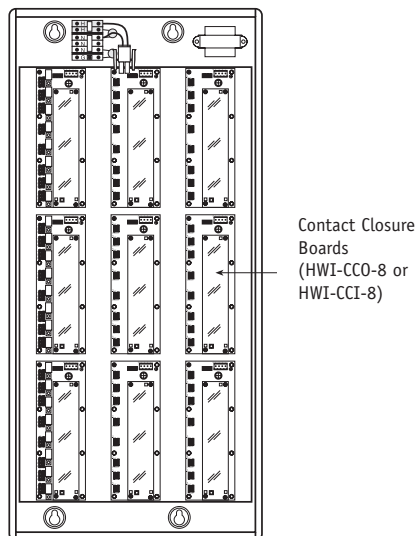


Figure 3 – Contact Closure Configuration

Low-Voltage Enclosures (cont.)

Model Number	HWI-LV17-120: 17" Low-Voltage Enclosure.
Capacity	One Dimmer Interface (HWI-H48 or HWI-D48) and one Wire Landing Board (HWI-WLB). <i>See Fig. 2, pg. 163.</i> One Contact Closure Board (HWI-CCI-8 or HWI-CCO-8) and one Wire Landing Board (HWI-WLB). <i>See Fig. 4, pg. 163.</i> Two Contact Closure Boards (HWI-CCI-8 or HWI-CCO-8). <i>See Fig. 3, pg. 163.</i>
Input Voltage	120/127VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Line-Voltage Connections	Use copper wire only, supply conductors 60/75°C, 120V-12V transformer mounted in top left corner for powering a Dimmer Interface (HWI-D48 or HWI-H48). Terminal blocks will accept one #18-10 AWG (1.0-2.5mm ²) wire or two #18-16 AWG (1.0-1.5mm ²) wires. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57nM). <i>See Fig. 1, pg. 163.</i>
Dimensions	9-1/4" (23cm) x 17-1/4" (44cm) x 3-7/8" (9.8cm)
Mounting	Enclosure may be surface-mounted or flush-mounted. Enclosure fits between standard 16" (406mm) on-center stud framing. Mount the enclosure so that line-voltage wiring will be at least 6 feet (1.8m) from audio or electronic equipment and its wiring. <i>See Fig. 1, pg. 163.</i>
Construction	Enclosure: 16-gauge galvanized sheet metal (unpainted). Cover: Painted (black) metal cover with ventilation holes. Cover is attached using four phillips-head screws.
Shipping Weight	16 lbs. (7.3kg)

Low-Voltage Enclosures (cont.)

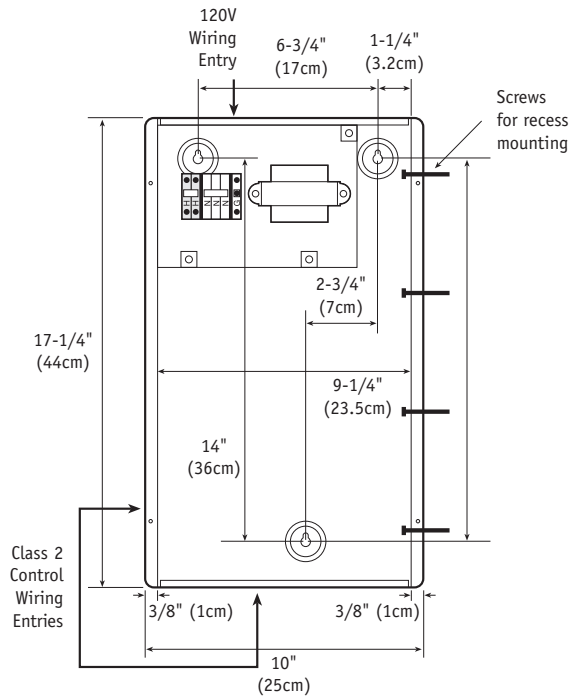


Figure 1 – Dimensions and Mounting

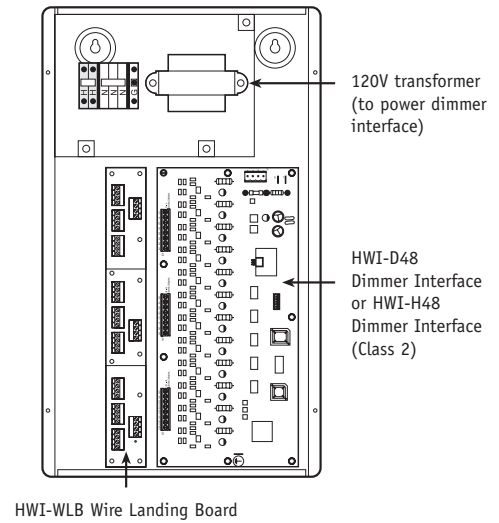


Figure 2 – Dimmer Interface Configuration

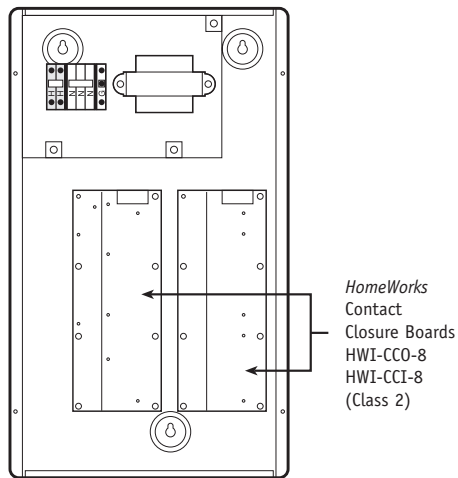


Figure 3 – 2 Contact Closure Board Configuration

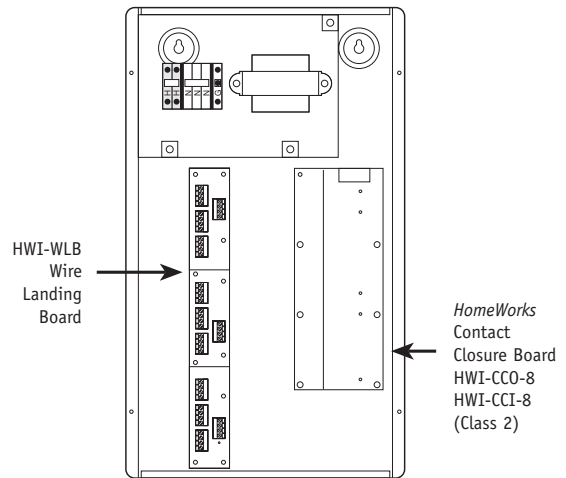


Figure 4 – 1 Contact Closure Board Configuration

Wire Landing Board

Model Number	HWI-WLB: Wire Landing Boards facilitate wire management of the various links.
Low-Voltage Connections	Three groups of 4-position removable terminal blocks. Terminal blocks will accept up to two #18 AWG (1.0mm ²) wires. <i>See Fig. 2.</i>
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Mounting	Mounts in the following enclosures: HWI-LV32-120 and HWI-LV17-120.
Shipping Weight	0.5 lbs. (0.3kg)

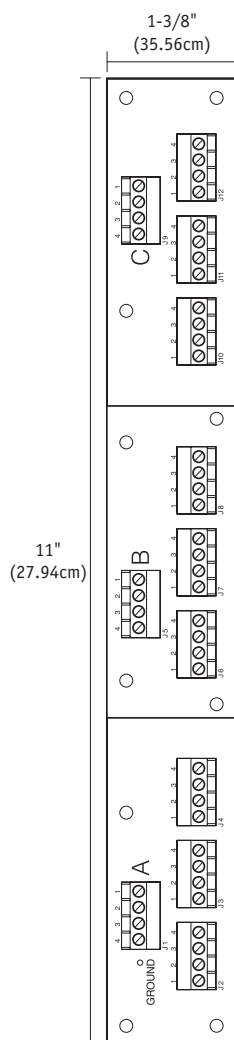


Figure 1 – Dimensions

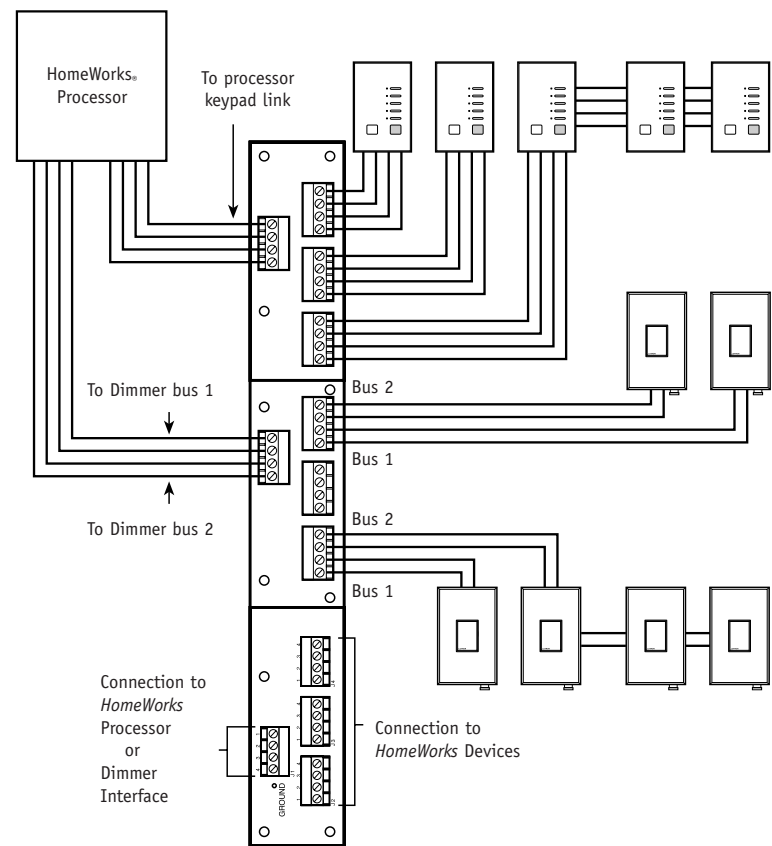


Figure 2 – Wiring Diagram

Telephone Interface

Model Number	HWI-TEL9: Activate lighting scenes and system functions from any touchtone telephone.
Input Voltage	120/127VAC, 50/60Hz
Regulatory Approvals	UL, CSA, NOM, FCC, IC
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Line-Voltage Connections	Lutron provides a plug-in low-voltage transformer.
Low-Voltage Wire Type	Two pair [one pair #18 AWG (1.0mm ²), one pair #18-22 AWG (1.0-0.5mm ²) twisted shielded] Class 2 wire. Lutron® wire model # GRX-CBL-346S-500 may be used.
Low-Voltage Connections	The HWI-TEL9 is wired to a keypad link on a HomeWorks® Processor. Follow the wiring guidelines for other <i>HomeWorks</i> Keypads. <i>See pg. 50.</i>
Low-Voltage Wiring Configuration	Daisy-chain, star, T-tap. Termination not required. Total length of wire on any link cannot exceed 1,000 feet (305m) per wire run. Total length of wire on that link cannot exceed 4,000 feet (1220m). Maximum of 32 devices per processor link that has been configured for keypads.
Phone Wiring	RJ-14 connector for single phone line from phone company. RJ-14 connector for phones inside the home, <i>see Fig. 1, pg. 167.</i> The HWI-TEL9 may share a phone line with household phones and answering machines. It is compatible with voice mail services provided by local telephone companies.
Addressing	HWI-TEL9 always occupies keypad link address 32.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Miswire Protection	Over-voltage protected and miswire protected against wire reversals and shorts.
Dimensions	12-1/2" (318mm) x 6-1/8" (152mm) x 3-5/16" (83mm)
Mounting	Telephone Interface must be surface-mounted. It should be located near the phone line point of entry and within 6 feet (1.8m) of a 120V receptacle. <i>See Fig. 1, pg. 167</i> for mounting hole locations.
Shipping Weight	6.9 lbs. (3.2kg)
Keypad Link LED Count	15 LEDs
Ringer Equivalent Number (REN)	0.6A

Telephone Interface (cont.)

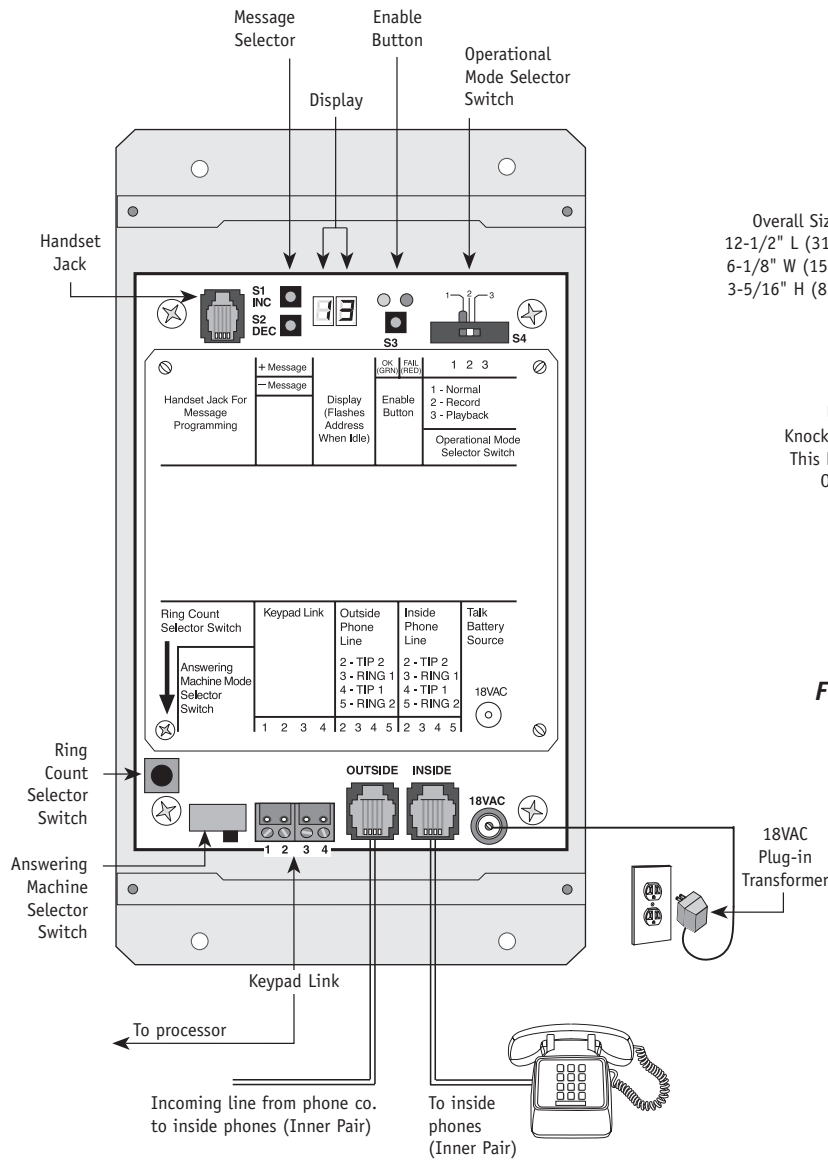


Figure 1 – Parts Identification

Overall Size:
 12-1/2" L (318mm)
 6-1/8" W (152mm)
 3-5/16" H (83mm)

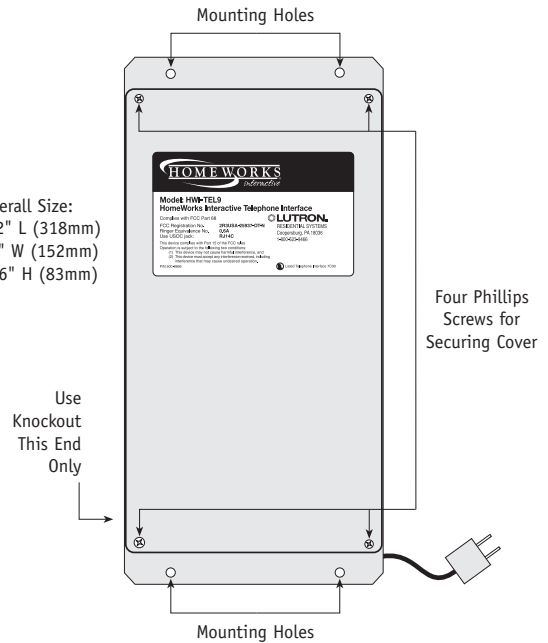


Figure 2 – Dimensions and Mounting

TECHNICAL SPECIFICATIONS

Auxiliary Power Supply

Model Number	HWI-PS: An enclosure-mounted power supply used to support an additional 350 LEDs on a keypad link.
Input Voltage	110-130VAC input.
Regulatory Approvals	UL, CSA, NOM
Line-Voltage Connections	Use copper wire only, supply conductors 60/75°C. DIN rail-mounted terminal blocks for power supply feed located at top left corner of panel. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57nM). <i>See Fig. 1.</i>
DIN Rail Terminal Blocks	Terminal blocks will accept one #18-10 AWG (1.0-2.5mm ²) wire or two #18-16 AWG (1.0-1.5mm ²) wires. Terminal blocks should be tightened to 3.5-5.0 in.-lbs. (.40-.57nM).
Output Voltage	15VDC
Output Current	2A Max.
Dimensions	9-1/4" (23cm) x 17-1/4" (44cm) x 3-7/8" (9.8cm)
Mounting	Enclosure may be surface-mounted or flush-mounted. <i>See Fig. 1.</i>
Construction	Enclosure: 16-gauge galvanized sheet metal (unpainted). Cover: Painted (black) metal cover with ventilation holes attached using four phillips-head screws.
Shipping Weight	13 lbs. (5.9kg)

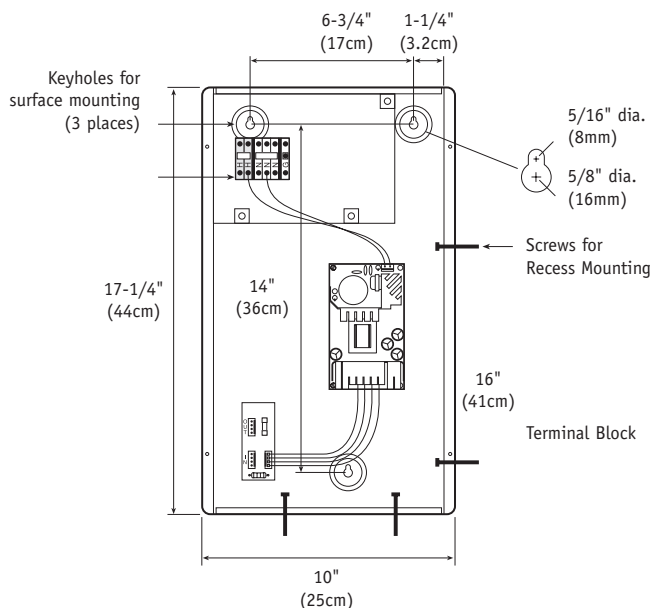


Figure 1 – Dimensions and Mounting

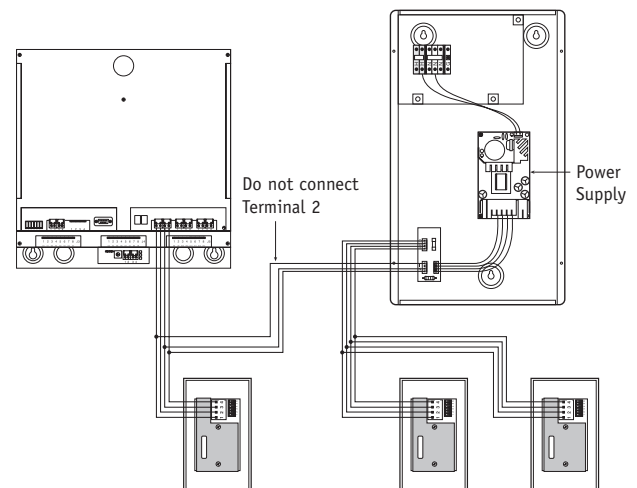


Figure 2 – HWI-PS Low-Voltage Wiring

Link Extender

Model Number	LUT-LINK-EXT: Extends the total cable length allowed for use on the Inter-Processor and Module Interface links from 1,000 feet (305m) to 2,000 feet (610m).
Input Voltage	100/120, 220/240VAC, 50/60Hz (line-voltage input not to be used in CE countries).
Regulatory Approvals	UL, CSA, NOM
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Line-Voltage	Use copper wire only, supply conductors 60/75°C.
Low-Voltage Wire Type	One pair twisted shielded #18-22 AWG (1.0-0.5mm ²) Class 2 wiring. <i>See Fig. 3, 4, pg. 170.</i>
Low-Voltage Wiring Configuration	Inter-Processor link: <i>See Fig. 3, pg. 170.</i> Module Interface link: <i>See Fig. 4, pg 170.</i>
Low-Voltage Connections	One 4-pin removable terminal block. Each terminal will accept up to four #18 AWG (1.0mm ²) wires.
Addressing	This unit does not require an address.
Diagnostics	LEDs provide diagnostics for troubleshooting communication on the links.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Dimensions	7-3/4" (197mm) x 5" (127mm) x 2-1/2" (64mm)
Mounting	Mounts on a standard 4" X 4" junction box. <i>See Fig. 1.</i>
Shipping Weight	2.4 lbs. (1.1kg)
Using Special Cable	Special Class 2 communication cable can be used to extend the total cable length allowed for use on the Inter-Processor and Module Interface links from 1,000 feet (305m) to 4,000 feet (1220m) without the use of a Link Extender, and from 2,000 feet (610m) to 8,000 feet (2240m) with the use of a Link Extender. Refer to HomeWorks Application Note #62 for details and special cable specifications.

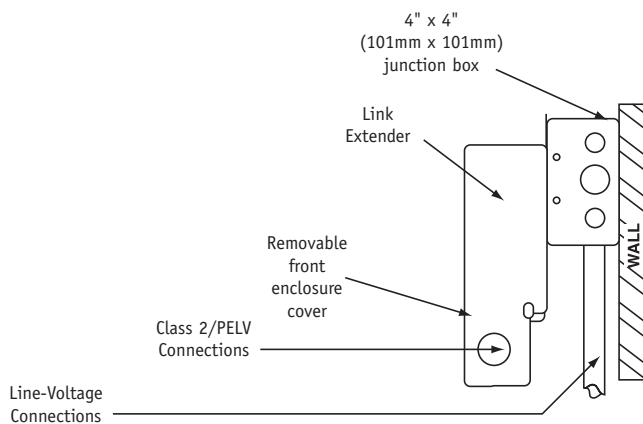


Figure 1 – Mounting Diagram

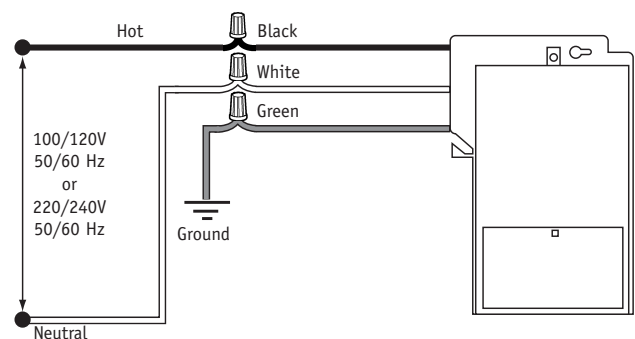


Figure 2 – Line-Voltage Wiring Diagram

Link Extender (cont.)

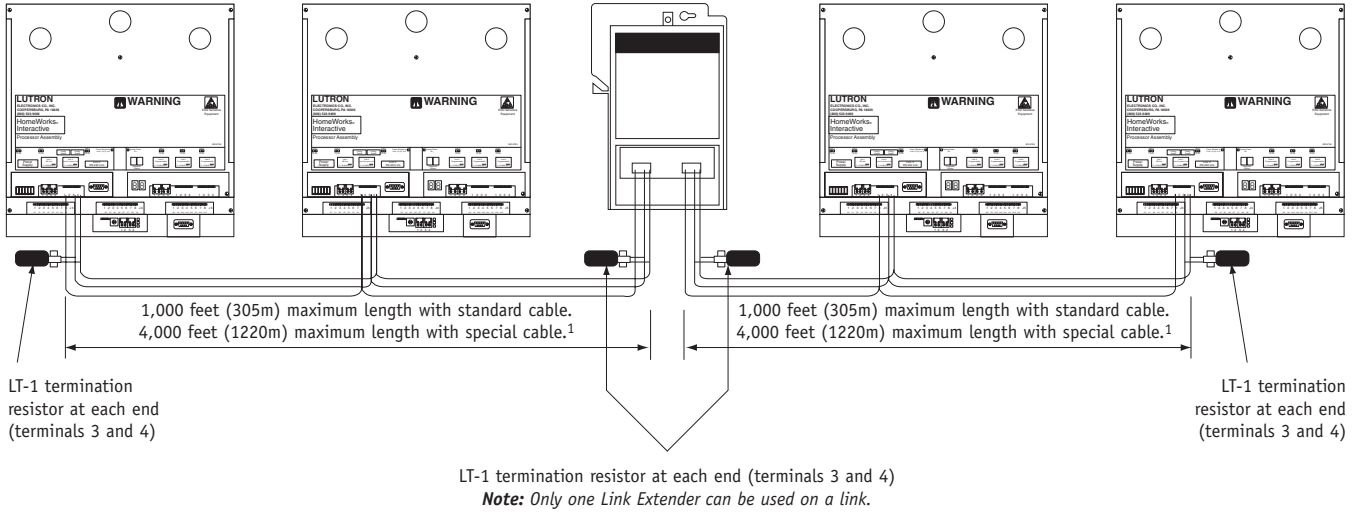


Figure 3 – Inter-Processor Link Wiring Diagram with LUT-LINK-EXT

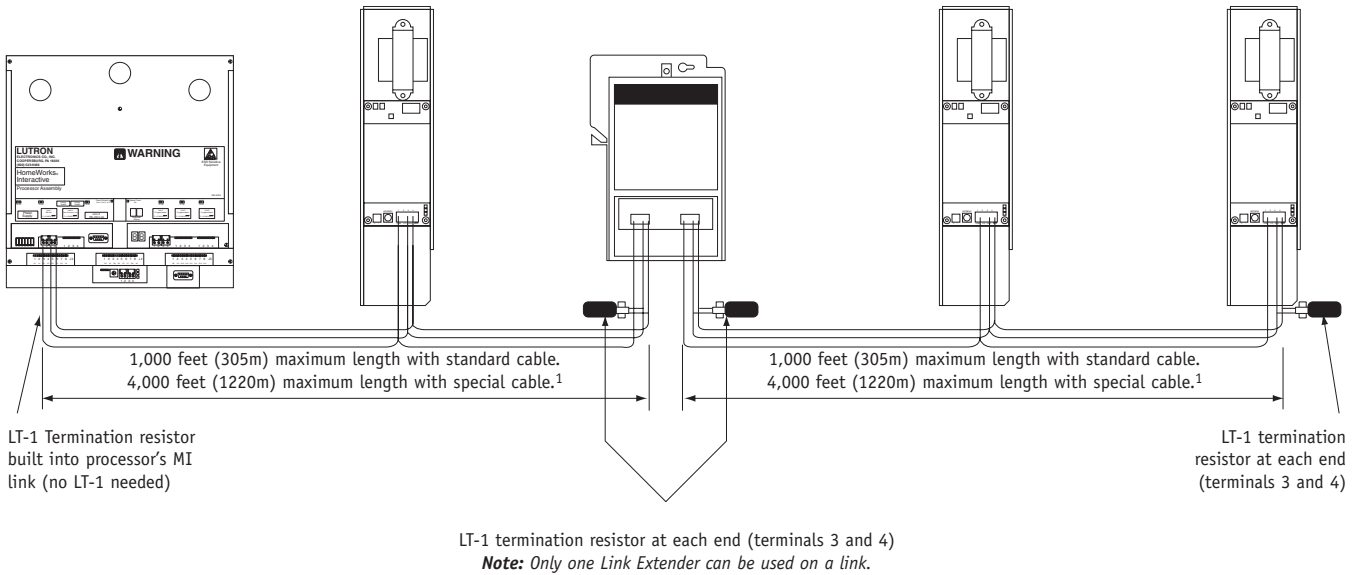


Figure 4 – Module Interface Link Wiring Diagram with LUT-LINK-EXT

¹ For information on special cable applications, see HomeWorks Application Note # 62.

Filter Choke

Model Number	HW-HIFC-10-2: High Inductance Filter Choke.
Input Voltage	120/127VAC, 50/60Hz
Regulatory Approvals	UL, CSA
Maximum Load	10A, 2 chokes may be connected in parallel for up to 20A capacity.
Environment	Ambient operating temperature: 0-40°C, 32-104°F Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Cooling	Passive cooling.
Mounting	Mounts in upper portion of HWI-PNL-8. Note: RPM number 8 cannot be used in panels with an HW-HIFC-10-2.
Shipping Weight	1 lb. (0.45kg)
Chokes per Assembly	2
Max. Number of Assemblies per Panel	1
Current Rise	320 microseconds or greater, measured from 10% to 90% of total current rise for a 1250W load at 90% conduction. Current rise time shall be 315 microseconds or greater for a 650W load at 90% conduction. At any point on the waveform, the current rise rate shall not exceed 45 milliamps per microsecond with a 650W load.

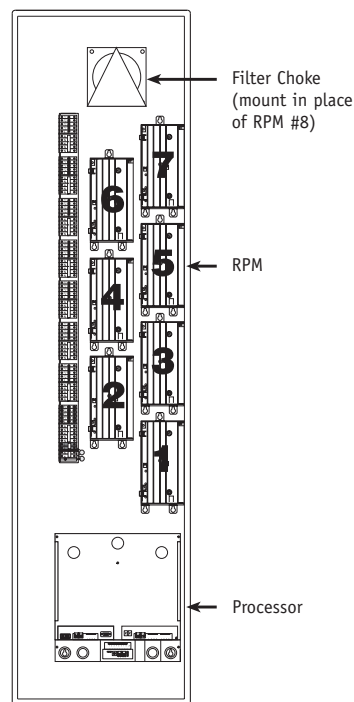


Figure 1 – Mounting Location

Handheld Programmer and Accessories

Model Numbers	<p>HWI-HHP-LD: Handheld Programmer (matte silver finish)</p> <p>HWI-HHP-REPLCORD: Replacement cable for use with Handheld Programmer - 50 feet (15m)</p> <p>HWI-HHP-EXTCORD: Extension cable - 50 feet (15m). Extends total cable reach to 100 feet (30m). <i>See Cord Specification below.</i></p> <p>HWI-HHPJ-Q1: Handheld Programmer Jack - Quantity 1</p> <p>HWI-HHPJ-Q4: Handheld Programmer Jack - Quantity 4</p>
Input Voltage	15VDC Class 2
Environment	<p>To maintain acceptable screen performance, operation of the Handheld Programmer in temperatures between 50-95°F (10-35°C) is recommended. To avoid damage and to maximize the life of the battery and the display, do not expose unit to extreme heat or cold.</p> <p>Ambient storage temperature: 0-40°C, 32-104°F.</p> <p>Ambient storage humidity: 0-90% humidity, non-condensing. Indoor use only.</p>
Low-Voltage Wiring Type	Programming Jacks use two pair [one pair #18 AWG (1.0mm ²), one pair #18-22 AWG (1.0-0.5mm ²) twisted shielded]. Lutron® wire model # GRX-CBL-346S-500 may be used.
Low-Voltage Wiring Configurations	Programming Jacks (HWI-HHPJ) may be wired in any configuration (star, daisy-chain, etc.), similarly to how keypads are wired. There is no limitation to the number of Programming Jacks on a link. However, since up to ten keypads may occupy a single home run, any home run that has one or more Programming Jacks on it must consider the Handheld Programmer as three of the ten keypads. Meets or exceeds the IEC 61000-4-2 standard.
Low-Voltage Wiring Connections	The Programming Jack is connected to the HomeWorks® Keypad Link using a four-position removable terminal block. Each position will accept up to one #18 AWG (1.0mm ²) wire. The Programming Jack is installed in a single-gang wallbox.
Addressing	Only one Handheld Programmer may be connected to the system at any time. The Handheld Programmer does not get addressed nor does it take up any addresses on the keypad link. Up to 32 keypads can still be connected to the link as long as wire length and power supply limitations are not exceeded.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Miswire Protection	All terminal block inputs are over-voltage and miswire-protected against wire reveals and shorts.
Shipping Weight	<p>HWI-HHP-LD: 8 lbs. (3.6 kg)</p> <p>HWI-HHP-REPLCORD: 1.5 lbs. (0.68 kg)</p> <p>HWI-HHP-EXTCORD: 1.5 lbs. (0.68 kg)</p> <p>HWI-HHPJ-Q1: 0.5 lbs. (0.23kg)</p> <p>HWI-HHPJ-Q4: 1 lb. (0.45kg)</p>
Cord	The Handheld Programmer is equipped with a 50-foot (15m) cord. This will help determine the locations and spacing of the Programming Jacks (HWI-HHPJ). For extended reach, one 50-foot (15m) extension (HWI-HHP-EXTCORD) may be added. The Programming Jack locations that require the use of a 50-foot (15m) extension must be wired as a single home run to the processor with no additional keypads on that home run.
Keypad LED Count	45

Handheld Programmer and Accessories (cont.)

Care and Cleaning	Use only a damp cloth with a mild soap solution to clean the Handheld Programmer. Do not use any chemical or abrasive cleaners.
Service Life	The Handheld Programmer is designed to have a minimum life of five years. The expected life for a unit that is stored in and used at normal room temperatures exceeds ten years.
Storage	The Programming Jacks (HWI-HHPJ) connect to a keypad link on the <i>HomeWorks</i> Processor. The Handheld Programmer connects to the Programming Jacks distributed throughout the residence.

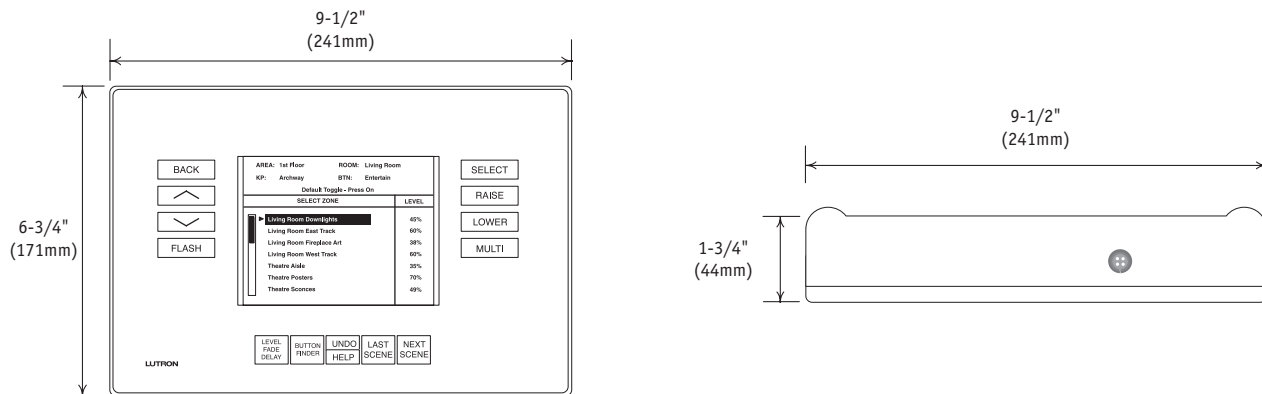


Figure 1 – Handheld Programmer Dimensions

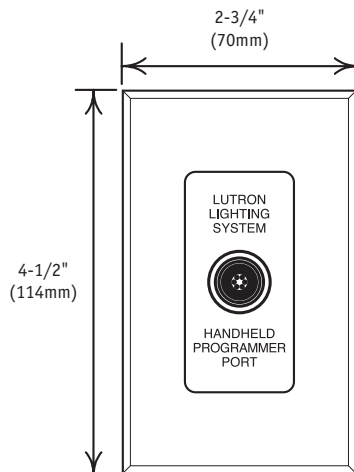


Figure 2 – Handheld Programmer Jack Dimensions

Patent and Trademark Information

Patents	These products may be covered by one or more of the following US patents:				
	4,689,547	4,745,351	4,783,581	D310,349	D311,170
	4,797,599	4,803,380	4,833,339	D311,371	D311,382
	4,835,343	4,889,999	4,893,062	D311,485	D311,678
	4,924,151	4,924,349	5,038,081	D313,738	D337,755
	5,170,068	5,191,265	5,237,207	D344,068	D344,264
	5,248,919	5,309,068	5,399,940	D353,798	D364,141
	5,430,356	5,463,286	5,510,679	D370,663	D378,814
	5,530,322	5,633,540	5,637,930	D387,736	D389,461
	5,736,965	5,798,581	5,838,226	D389,805	D395,037
	5,848,054	5,905,442	5,949,200	D404,013	D412,491
	5,982,103	5,990,635	6,046,550	D421,246	D421,399
	6,091,205	6,188,181	6,347,028	D422,567	D422,969
	6,380,692			D428,855	D431,199
				D436,579	D436,930
				D437,834	D439,220
				D441,723	D442,558
				D453,742	D456,783
				D461,782	D465,460
				D465,770	D466,090
				D466,091	D466,484
				D475,024	D475,025

and corresponding international patents. US and international patents pending.

Registered Trademarks The following are registered trademarks of Lutron Electronics Co., Inc.:

Lutron, Claro, Diva, GRAFIK Eye, HomeWorks, Hi-lume, Maestro, Nova, Nova T☆, Spacer, T☆, Tu-Wire, Vareo and US trademark registrations 1,617,349, 1,624,489, 1,624,490, 1,626,714 and 1,638,913 for the designs of the Nova and Nova T☆ dimmers.

Trademarks The following are trademarks of Lutron Electronics Co., Inc.:

Architrave, Classico, Diva Satin Colors, ECO-10, FASS, Hi-Power 2•4•6, HomeServe, Lustra, Monaco, Monterey, Piedra, RTISS, Satin Colors, Signature Series, seeTouch, TapSwitch, and Vibrato.

