

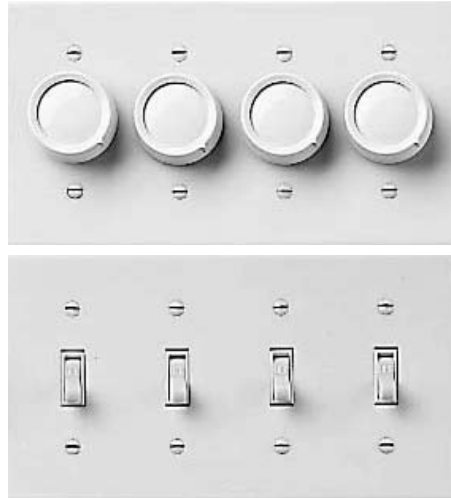
What is a Lighting Control System?

The most common form of lighting control today is a single switch or dimmer controlling a light or group of lights (a zone of lighting). While this historic standard certainly works, it is cumbersome relative to the ease of a lighting control system, especially in larger homes. Think of the time and effort expended turning the lights on in the morning, off when you go to work, back on in the evening, and finally off again at bedtime. When you think of the quantity of the dimmers and switches that you need to walk around turning on and off throughout the day, the convenience of a lighting control system quickly becomes apparent.

A lighting control system creates the ability for all of a home's lighting to be controlled together. For instance, one button press can turn on six dimmers, each to the ideal brightness for the task at hand, whether it is relaxing with a book, watching a movie, or cleaning. The picture at the right depicts how a single keypad can replace a bank of switches or dimmers, while still providing all the functionality—in a much smaller space. And a lighting control system is not just limited to controlling lights in a single room or area—the lights in an entire home can be controlled with the press of a single button. Imagine the time and effort that can be saved by hitting one button when you go to bed to turn the lights off rather than trudging around the house going from room to room manually turning off each dimmer or switch.

Convenience is the primary benefit of owning a lighting control system, but there are several other important benefits. Home security systems can be enhanced by controlling the lights during an alarm situation, turning on to full brightness inside the home and flashing outside to quickly identify the troubled home for authorities. Built-in time-clock capabilities allow all of the lighting in your home to be automatically controlled to simulate occupancy while you are away, deterring potential intruders.

But automation isn't just for security. Occupancy sensors, photosensors, and timeclock capabilities provide the greatest convenience, controlling your lights for you. Energy savings can also be realized when unnecessary lights are turned off or dimmed for you, such as when you leave the room or the sun begins to rise. And the elegance of dimming is only amplified when all of the lights you need are adjusted perfectly for you.



Replace large banks of switches with one elegant keypad



A lighting control system makes the repeated task of adjusting lights much simpler. Automated lighting changes on its own, and convenient keypads can be used to change the lighting anywhere in the home quickly and simply. The combination of these features in a lighting control system makes any home more convenient and its lighting more elegant.

Introduction to HomeWorks®

HomeWorks is a full-featured whole-home lighting control system that can be installed in any new or existing home. This is an introduction to the features and benefits that make *HomeWorks* the best residential lighting control system in the world.

CONVENIENCE

Convenience is the most obvious benefit of a lighting control system, but *HomeWorks* strives to offer you the ultimate in lighting control convenience. You only need to press one button when you want to change the lighting in the room you are in, or when it is time to retire for the evening. However, *HomeWorks* offers many ways to integrate with other systems and devices for full automation of your lighting, so that the lights change when you need them to without you ever having to lift a finger. The built-in timeclock allows your lights to automatically turn on or off at predetermined times, or even relative to the changing sunrise and sunset. For instance, you may want your landscape lights to turn on at sunset and turn off at midnight.

HomeWorks also offers convenient product features. Keypad backlighting enables you to read text on each keypad button in the dark. Portable tabletop keypads allow you to adjust the lights from anywhere in your home, whether you are in your favorite chair or on your outside patio. Car visor controls allow you to turn your lights on as you arrive and off as you leave—from your car.

SECURITY & SAFETY

The ability to integrate *HomeWorks* with a home's alarm systems is very important. When an alarm is tripped, whether it is the security system or a fire alarm, the lights should react with it. In the event of an intrusion, *HomeWorks* can force the home's interior lights to full brightness and cause the exterior lights to flash. This makes it easy for the police to identify which home is in trouble. In a fire, *HomeWorks* can again flash the exterior lights and dimly light a path that allows occupants to exit safely (bright light with smoke can cause a fog-like blinding effect). In the event of a medical emergency, the outside lights can be flashed, once again allowing help to find your home as fast as possible, saving precious time.



ELEGANCE

HomeWorks provides precise control over each light's brightness, allowing finely-tuned lighting scenes to be repeated as often as desired. Whether it is brightly lit landscape lighting, or a dimly glowing chandelier in the dining room, *HomeWorks* allows you to create the perfect lighting to maximize the beauty of your home and its furnishings. Your lighting can change as fast or as slow as you like, allowing you to create beautiful transitions that demand admiration.

HomeWorks has many unique control styles to fit your lifestyle and décor. There are many colors and finishes from which to choose as well (Appendix F). If you need a color *HomeWorks* does not offer, Lutron can quote custom painting or special materials to meet your goals.

Introduction to HomeWorks® (cont.)

TOTAL LIGHT CONTROL

With *HomeWorks*, you can control all of the light in a home—both electric and natural. While a traditional lighting control system only controls the electric lighting in a home, *HomeWorks* also uses shades and draperies to control the sunlight entering the home. During the hours of direct sunlight, closing window treatments protects a home's furnishings from damaging ultraviolet light. When daylight is available but not direct, opening window treatments brightens the home without the damaging effects of direct sunlight. Different shade fabrics are available for various needs—complete blackout, privacy, and semi-transparent.

Lutron® Sivoia QED® (Quiet Electronic Drive) shades and draperies are the quietest electronically controlled window treatments on the market. The precision with which multiple shades are controlled is unprecedented, ensuring that everything controlled by your *HomeWorks* system transitions elegantly.

ENERGY SAVINGS

The tendency for most homeowners is to turn lights on throughout the home when it gets dark outside, then turning them off when they go to bed. In a large residence, many lights may be left on unnecessarily for many hours. Keypads make it simple to turn off lights in unoccupied areas of the home, or, better yet, occupancy sensors can turn those lights off for you. The timeclock or photosensors can be used to turn off landscape lighting when it is no longer needed. This reduces utility bills and benefits the environment.



Sivoia QED Roller Shade Example

RELIABILITY

Lutron has been innovating with high quality products ever since its founder, Joel Spira, invented the world's first solid-state dimmer in 1961. Lutron continues to innovate with many high quality products, including *HomeWorks* and *Sivoia QED*. Lutron leads the industry in product design and quality. Our extensive experience is focused solely on the advancement of light control technologies. All Lutron products are engineered to the highest standards and are rigorously tested before being introduced to the field. All Lutron products are 100% end-of-line tested before they are shipped.

HomeWorks® Technology

When you press a button on a *HomeWorks* keypad, the lights change. But how? There are actually several components working together in order to accomplish this feat and others. There are typically three types of components communicating for any given task: an input device, a processor, and an output device.

The role of the input device (e.g., keypad) is to trigger a system event. A system event could be lights turning on and/or control of third-party devices, such as turning on a spa or a fountain. Inputs are either user-controlled, such as a button press from a keypad or car visor control, or they are automatic, such as a timeclock event, an RS-232 or ethernet command from another system, or a contact closure input from a sensor. The input device is the keypad or interface that communicates with the processor to signal that an event has been triggered.

The role of the processor is to listen to the input devices, process the input signal, and then tell the output devices what to do. The processor can be programmed to respond to the same input differently, depending on the time of day or the state of other sensors. For example, when the homeowner enters his driveway, sensors tell the processor that the homeowner has arrived. The processor can check the timeclock or an outdoor photosensor to determine whether the lights should be turned on. All of this hap-

pens in a fraction of a second, allowing the homeowner to enjoy the convenience of automated lighting control without noticing all of the intelligence behind the scenes.

The role of the output devices (e.g., a dimmer) is to produce the desired effect (the system event), such as turning on a light or opening a shade. Outputs can also cause other systems to perform certain tasks through interfaces, using contact closure outputs, RS-232, or ethernet. HomeWorks can be used to control home theater equipment, a spa, or shades—just to name a few.

Figure 1 shows the basic signal flow of what happens when a keypad button is pressed. (1) The keypad sends a message to the processor indicating which button has been pressed. (2) After receiving the keypad button press, the processor tells the appropriate dimmers what to do. (3) The dimmers each send a command back to the processor informing it the lights are on. (4) The processor then tells the keypad when all of the lights have turned on, so that it can provide feedback on the keypad in the form of a lit LED (next to the button of the scene that was activated). In the unlikely event that communication is interrupted, this sequence will be repeated multiple times to always ensure reliable communication.

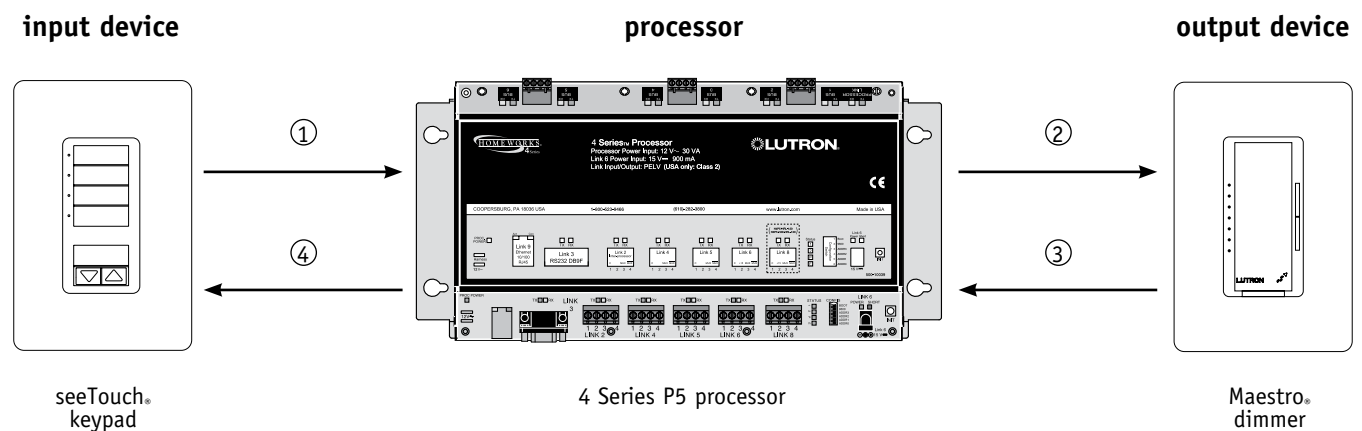


Figure 1 – HomeWorks Device Communication

System Overview

For system wiring details, see Appendix A

RF COMPONENTS



Switches



Dimmers



Lamp Dimmers



Hybrid Repeaters



Fan-speed Controls



RF Processors



Sivoia QED® Shades



Visor Controls

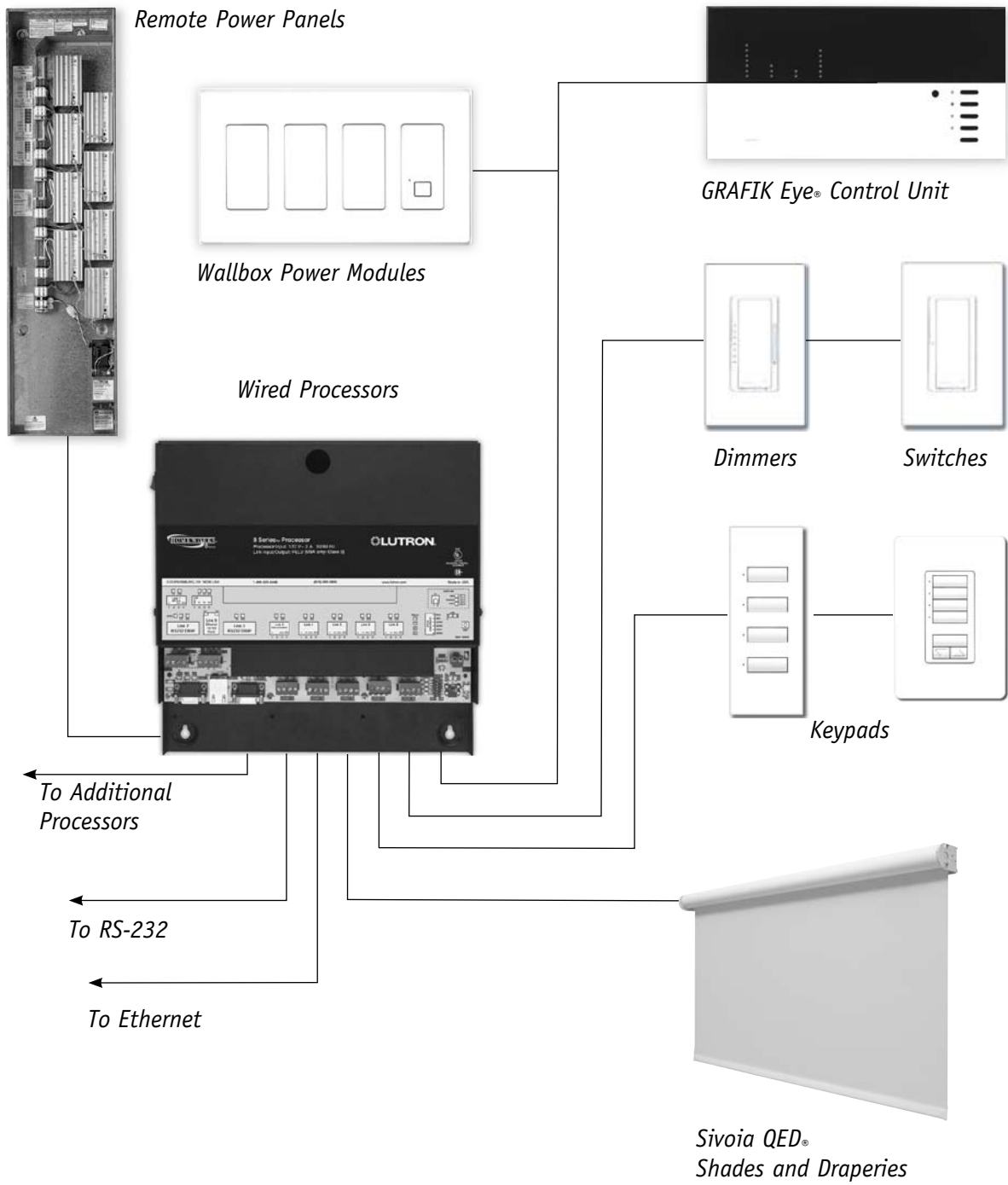


Keypads



Tabletop Keypads

WIRED COMPONENTS



Using This Guide

This guide is divided into two main product sections: front room equipment and back room equipment. Front room equipment includes devices that homeowners will interact with on a daily basis, such as dimmers and keypads. Back room equipment is comprised of all the other components typically hidden from view in a HomeWorks® system, such as processors and remote power panels.

At the beginning of each product's section, there will be a small table to allow designers to quickly identify whether a particular product can be used in the system layout chosen. The table includes four categories:

SERIES

Indicates with which series a product is compatible. Wireless series products can be added to 4 or 8 Series projects using hybrid RF/wired repeaters. (8 Series, 4 Series, wireless series)

EQUIPMENT TYPE

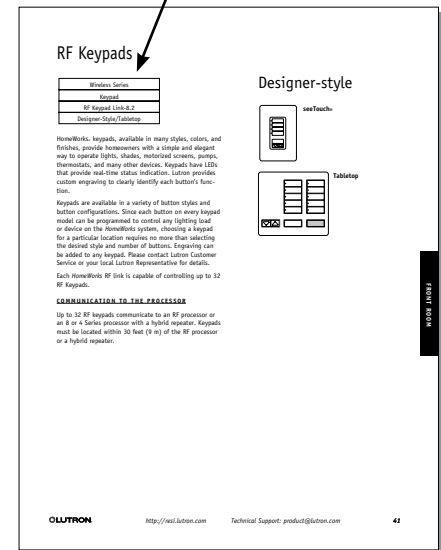
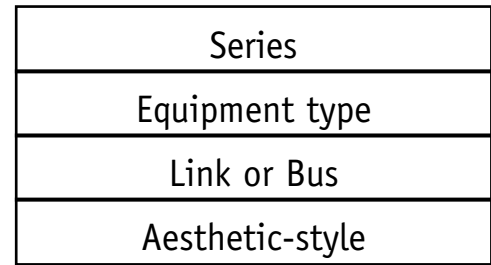
This indicates a general category for what type of equipment a particular device is. Use this to help identify the main function of a product with which you are unfamiliar. (keypad, processor, enclosure, etc.)

PROCESSOR LINK

This indicates to which type of processor link or interface bus the device will be connected. If it is not a direct connection, the interface in between will be noted. (keypad, inter-processor, H48 dimmer, etc.)

AESTHETIC STYLE

This is only used for visible front room equipment. Wall-mounted controls are either designer style or architectural style. As a rule, these two styles should not be mixed on a single job. Tabletop devices can be mixed with either style of wall-mounted controls (architectural-style, designer-style, tabletop).



System Specification & Design

Specifying a HomeWorks® System

The key elements to consider while specifying a *HomeWorks* system are: the construction type, system design, *HomeWorks* series, and aesthetic style. A system designer must understand all these elements—and their customers' requirements—to select the proper system components.

Here is the suggested series and aesthetic style for each combination of construction type and system design. Note that existing construction only uses a localized system design, because localized is the only design that uses a standard electrical wiring layout.

NEW CONSTRUCTION, LOCALIZED SYSTEM DESIGN

4 Series provides the most cost-effective solution for a localized system design. 4 Series uses Maestro® dimmers, which are designer-style.

NEW CONSTRUCTION, CENTRALIZED SYSTEM DESIGN

8 Series is the only system with the remote dimming panels that are used in a centralized system design. Keypads of either style may be used, but architectural-style has the most options. No local dimmers are used.

NEW CONSTRUCTION, OPTIMIZED SYSTEM DESIGN

8 Series is the only system with the remote dimming panels that are used in an optimized system design. Dimmers and keypads of either style may be used, but architectural-style has the most options.

EXISTING CONSTRUCTION (Open Walls), LOCALIZED SYSTEM DESIGN

4 Series provides the most cost-effective solution in a retrofit situation where low-voltage wiring can be pulled through most of the home. Use a 4 Series processor with hybrid RF/wired repeaters to add wireless devices for lamp control and tabletop keypads or to reach areas of the home where pulling wire may be difficult. 8 Series may also be used if Vareo® dimmers and other architectural-style controls are desired.

EXISTING CONSTRUCTION (No Open Walls), LOCALIZED SYSTEM DESIGN

Wireless Series is the simplest retrofit solution that *HomeWorks* offers, because it does not require any special wiring. Wireless Series uses *Maestro* dimmers and designer-style keypads.

The following pages provide more detail on each of the key elements:

Construction Type, pg. 11

System Design, pg. 12

HomeWorks Series, pg. 16

Aesthetic Styles, pg. 17

Construction Type

HomeWorks® can be used in both new and existing homes. Many system components are available in either wired or RF versions for maximum flexibility during installation. If low-voltage wiring can be run, wired components are more economical than RF components. However, RF components are the easiest to install in existing homes, because they do not need any communication wires.

NEW CONSTRUCTION

New construction is the most desirable time to install a *HomeWorks* system, since it allows all *HomeWorks* options to be considered. Before the electrical wiring has been done, any of the three system designs may be chosen. Low-voltage wiring may be run throughout the home, making wired components the best choice for in-wall devices. Both architectural and designer aesthetic styles are available.

EXISTING CONSTRUCTION (Open Walls)

Open wall access allows low-voltage wiring to be easily run throughout the home, making wired components the best choice for in-wall devices. Localized system design is typically the best option, since it is the only design that uses a standard layout for the electrical wiring. However, if dimmers are not wanted on the wall, minor electrical changes can allow wallbox power modules to dim remotely throughout the home, so that only keypads are used for the lighting. Wired components are available in either architectural-style or designer-style, but if wireless components are being used in some areas of the home, designer-style is the only option.

EXISTING CONSTRUCTION (No Open Walls)

Without open walls, wireless series is the best option. Wireless series still offers wall-mounted dimmers and keypads, but does not require low-voltage wiring. Localized system design is the only wireless option, since it is the only design that uses a standard layout for the electrical wiring. Wireless series components are designer-style.

System Design

The flexible HomeWorks® architecture accommodates three basic system designs for laying out a HomeWorks system. The system design and controls used are based on the construction type and customer requirements. The main difference among these three designs is the dimming equipment used.

LOCALIZED SYSTEM DESIGN (pg. 13)

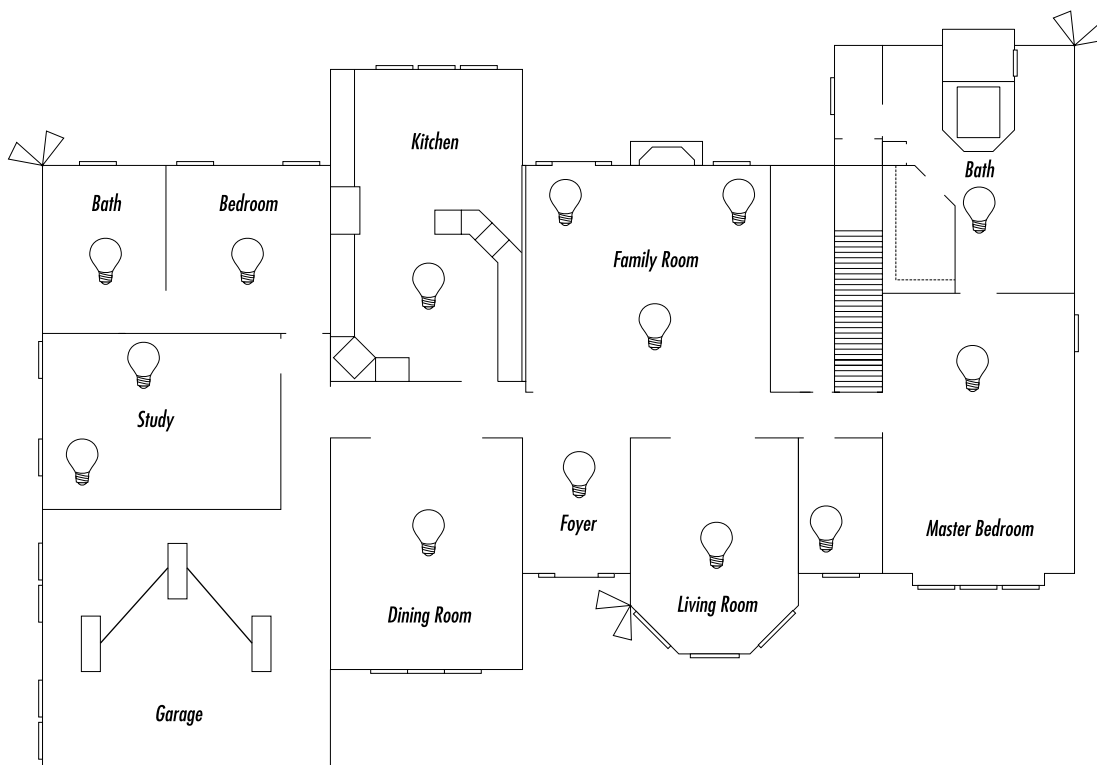
In a localized design, each zone of light has its own local switch or dimmer. Using a traditional approach to lighting control by placing familiar, easy-to-use switches and dimmers throughout the home. The localized system design is usually the simplest to understand—especially for guests. Keypads are added in key areas of the home for simplified control of multiple lights. The localized design is the only fully compatible configuration for retrofit or pre-wired whole-home lighting control.

CENTRALIZED SYSTEM DESIGN (pg. 14)

Centralized designs use wall-mounted keypads in each room, instead of traditional dimmers or switches. In a centralized design, there are no wall-mounted dimmers, because all dimming is done through remotely mounted panels. A single keypad can take the place of several dimmers or switches, creating less clutter on the wall. Keypads also offer maximum controllability everywhere, allowing control of both local lights and lights throughout the rest of the home. A centralized design requires the electrical wiring for all lighting in the home to be routed through remote dimming panels, before being run to the lights. These panels are installed out of sight (e.g., equipment room or utility closet).

OPTIMIZED SYSTEM DESIGN (pg. 15)

An optimized design combines both localized and centralized system designs, using each design where it is best suited. Local dimmers are installed in areas where familiar, easy-to-use operation is desired (e.g., guest bedrooms, bathrooms, and kids' rooms). Keypads are installed instead of dimmers in rooms or areas where several lights are controlled (e.g., front door, kitchen, and master bedroom). As in a centralized design, lights in those areas must be wired through remote dimming panels.



Localized System Design

In a localized design, each zone of light has its own switch or dimmer. This traditional approach to lighting control places familiar, easy-to-use switches and dimmers throughout the home. The localized system design is usually the simplest to understand—especially for guests. Keypads are added in key areas of the home for simplified control of multiple lights.

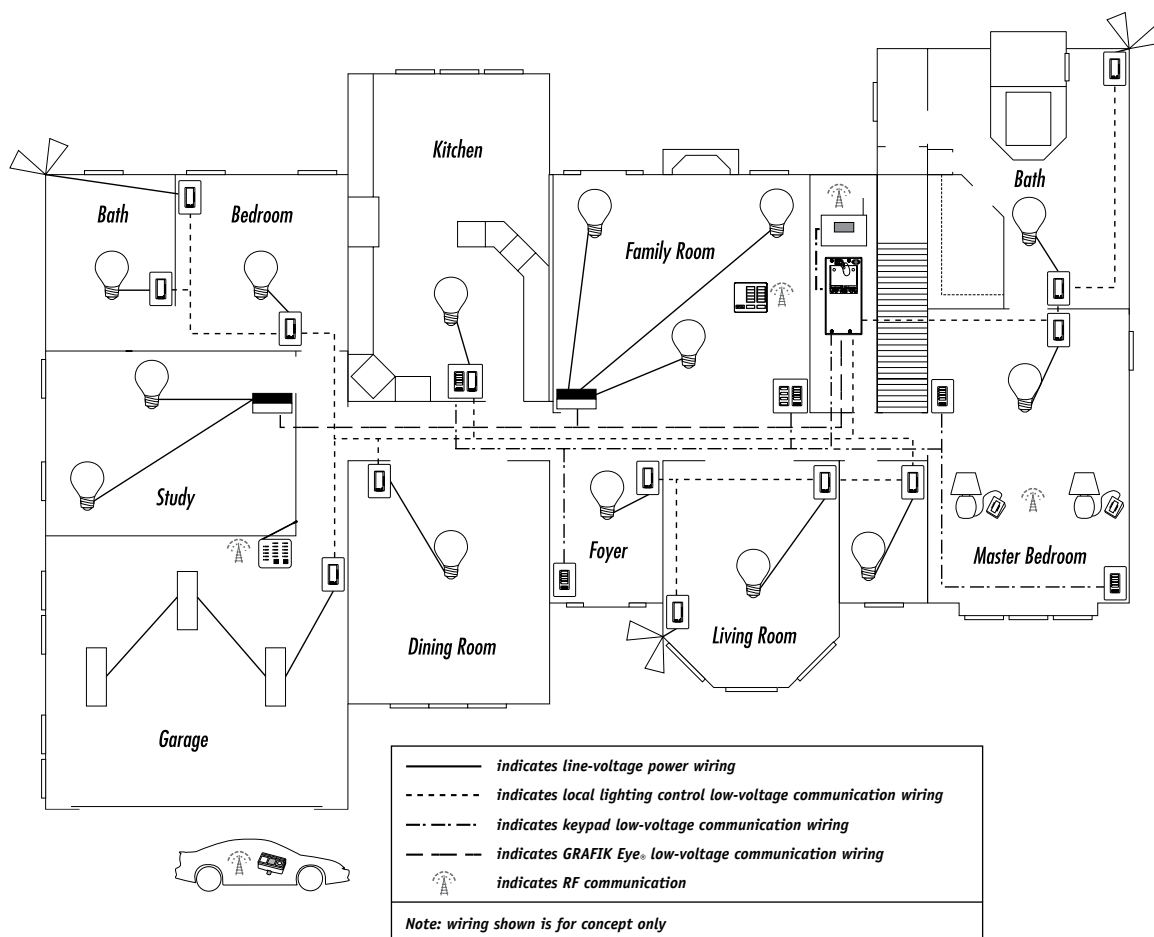
HomeWorks® local lighting controls directly control all lighting loads in a localized design. Local lighting controls allow the homeowner to dim and switch loads without requiring communication to the processor, providing “fail-safe” operation of all lights—in the unlikely event that communication is interrupted.

Keypads provide control of multiple lights within one area or all of the lights throughout the home. In this design, keypads (wall-mounted and tabletop) are typically installed in locations such as entryways, master bedrooms, and key entertaining areas. Visor controls are used to control house lighting from the homeowner’s vehicles.

The localized design is the only fully compatible configuration for retrofit or pre-wire whole-home lighting control. It is the only system design that uses the same standard line-voltage wiring plan used in homes without control systems. This design is ideal for the homeowner who wants to add a control system at any time, with or without pre-wiring.

LOCALIZED DESIGN SUMMARY:

- Dimmers and switches provide familiar control and operation in every room
- Local lighting controls provide individual “fail-safe” operation of every light in the home
- Standard line-voltage wiring allows a whole-home lighting control system to be added at any time



Centralized System Design

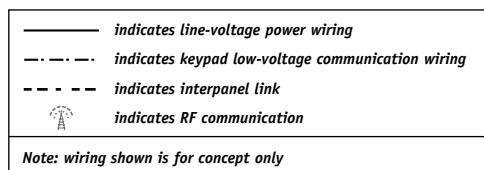
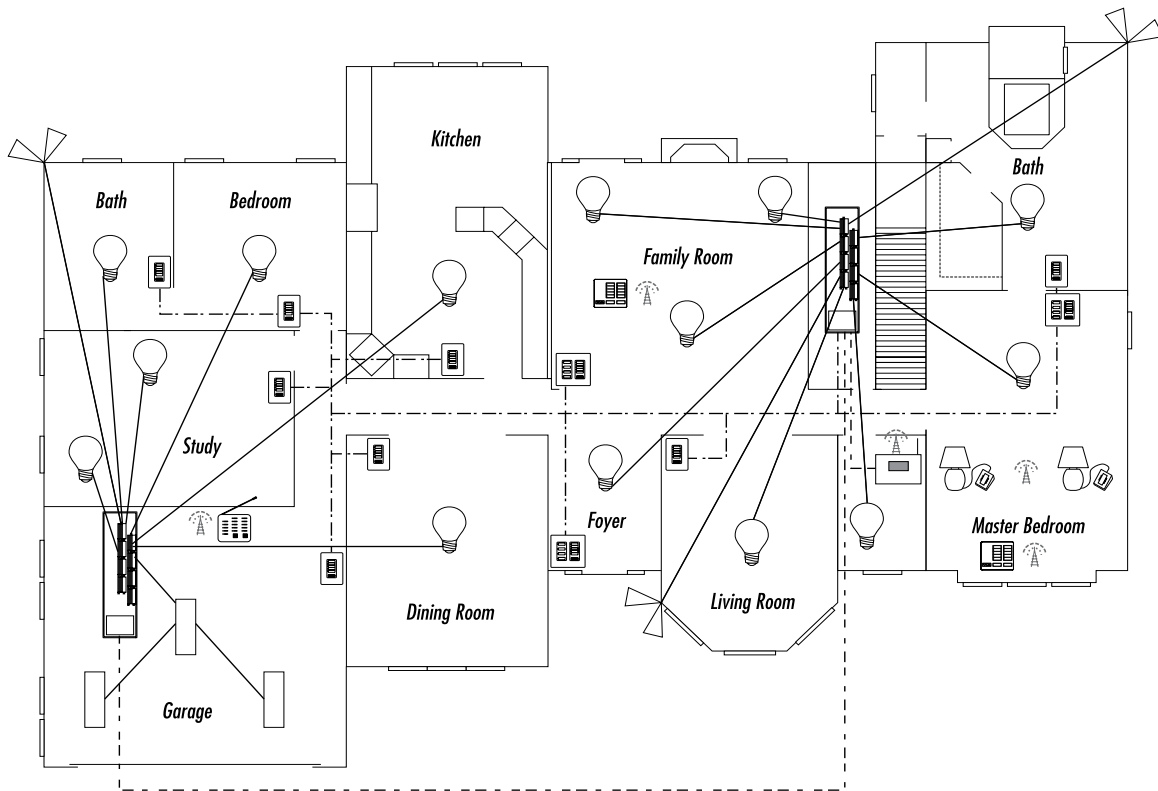
Centralized designs use wall-mounted keypads in each room, instead of traditional dimmers or switches. In a centralized design, there are no traditional dimmers, because all dimming is done through remote power modules installed in panels. A centralized design requires the electrical wiring for all lighting in the home to be routed through the remote power panels before being run to the lights (home run wiring). These panels are installed out of sight (e.g., equipment room or utility closet).

In this design, all lights are controlled from keypads, providing 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. A single keypad on the wall can take the place of several dimmers or switches, creating less clutter on the wall. Tabletop keypads can be added in rooms where lighting control is desired from a sitting area or bedside. Visor controls are added for control of house lighting from the homeowner's vehicles.

Remote power modules support larger wattage loads and a wide range of load types than local lighting controls, reducing the need for power boosters or specialized interfaces. Modules can also control fans, motors, and relays in addition to lighting. Dimmable receptacles or RF lamp dimmers can be installed wherever lamps will be on the HomeWorks® system. Each panel has manual override control, providing "fail-safe" operation—in the unlikely event communication to the processor is interrupted.

CENTRALIZED DESIGN SUMMARY:

- Remote power panels power all home lighting rather than local dimmers and switches
- Keypad-only design minimizes wall clutter and provides maximum programming flexibility
- Remote power panels minimize the need for power boosters or interfaces, and can also control fans, motors, and relays



Optimized System Design

An optimized design combines both localized and centralized system designs, using each design where it is best suited. Local lighting controls are installed 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 high-profile areas are wired to remote power panels—instead of dimmers or switches—reducing wall clutter. Keypads are then distributed throughout the home, for control in rooms with no dimmers, and for additional control in other areas.

In this design, lights are controlled from keypads in high-profile areas to minimize wall clutter, and in other areas for additional control (e.g., master bedroom). Tabletop keypads can be added in rooms where lighting control is desired from a sitting area or the bedside. Visor controls are added for control of house lighting from the homeowner's vehicles.

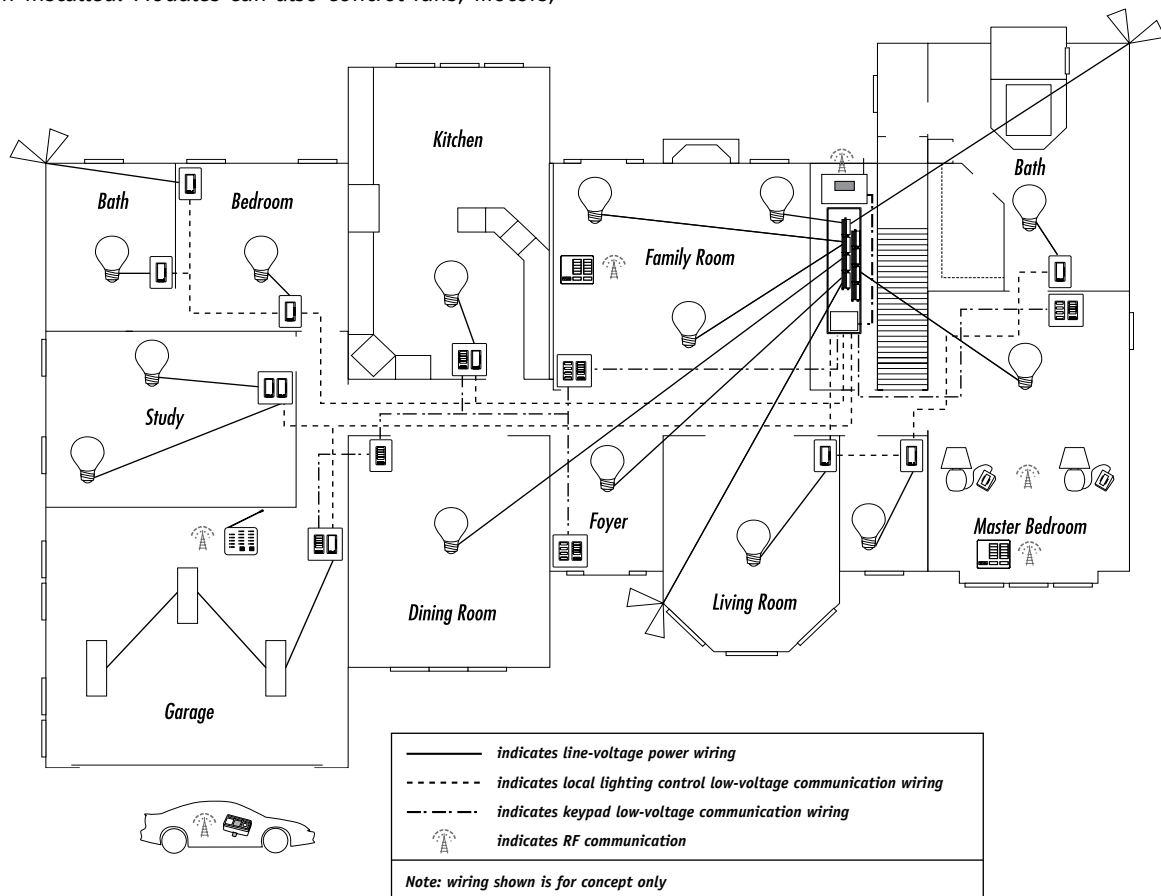
Remote power modules support larger wattage loads and a wider range of load types than local lighting controls. This reduces the need for power boosters or specialized interfaces in the high-profile areas that these lighting loads are often installed. Modules can also control fans, motors,

and relays, in addition to lighting. Dimmers provide manual control, and each panel has manual override control, providing “fail-safe” operation—in the unlikely event communication to the processor is interrupted.

The optimized design allows retrofit or pre-wiring for later expansion, using local lighting controls. This design is ideal for the homeowner who would like to start with a basic system and expand it later.

OPTIMIZED DESIGN SUMMARY:

- Keypad-only design is used in main areas of the home to reduce wall clutter
- Dimmers and switches are used in areas with less lighting to provide simple operation of individual lights
- Remote power panels minimize the need for power boosters or interfaces, and can also control fans, motors, and relays
- Compatibility with standard line-voltage wiring allows for system expansion at a later time



HomeWorks® Series

HomeWorks is broken into three series to simplify specification—8 Series, 4 Series, and Wireless Series. Each series is focused on a particular line of matching products, but it is important to note that all *HomeWorks* series can be interconnected.

8 SERIES—Our Premier System

The 8 Series features the widest selection of control styles and finishes. In addition to the dimmers and switches offered in the other series, 8 Series offers remote power modules to control lighting, without using a dimmer or switch on the wall. Remote power modules can also control fans, motors, and relays.

8 Series is best suited for new construction or major renovation projects with open walls because low-voltage communication wiring must be pulled throughout the home. A special electrical wiring layout is also required for any lighting or other device controlled by remote power modules.

4 SERIES—Our Most Economical System

The 4 Series focuses on the high-value products in the *HomeWorks* line to offer the most cost-effective lighting control solution. The high-value products are designer-style wired devices. Maestro® dimmers and other designer-style products use standard designer opening wallplates. This eliminates the cost associated with custom or specialized wallplates, such as the varied openings associated with architectural-style products. A standard electrical wiring layout can be used, since 4 Series only uses local lighting controls to control its lighting loads.

WIRELESS SERIES—Our Most Versatile System

The Wireless Series features our RF products, which do not require communication wiring. RF wall-mounted products include *Maestro* dimmers and designer-style keypads. Tabletop keypads, car visor controls and lamp dimmers are exclusive to the wireless series. Wireless Series components may be used with 4 or 8 Series by adding hybrid repeaters or a Wireless Series processor. An exclusively wireless series system is intended for projects where pulling low-voltage wiring is not a reasonable option. A standard electrical wiring layout can be used, including an existing one, since Wireless Series only uses local lighting controls to control its lighting loads.

Aesthetic Styles

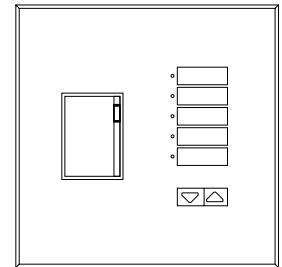
HomeWorks® wall-mounted products are available in two aesthetic styles—architectural-style and designer-style. Both styles offer keypads, local controls, and accessories. The differences between the two styles are the colors available and the faceplate design.

ARCHITECTURAL-STYLE

Architectural-style has the widest range of keypad choices available. It also includes Vareo® lighting controls and GRAFIK Eye® multi-zone lighting controls. Architectural-style products are only available as wired devices, and Vareo lighting controls are only compatible with an 8 Series system.

Aesthetic Features

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

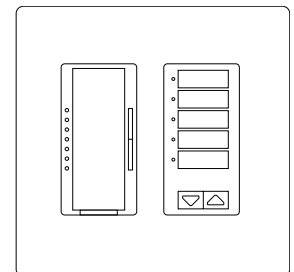


DESIGNER-STYLE

Designer-style products are available for any HomeWorks series. There are Maestro® local controls and two choices of designer-style keypads.

Aesthetic Features

- Rounded corners and square edges
- Fashionable aesthetics intended to complement environment
- Designer gloss and satin finishes
- All products use standard decorator opening, eliminating the need for custom faceplates



General HomeWorks® Specifications

Wired Processor Communication Link Specifications

| Link Type | Max. links per Processor | | Baud Rates | Wiring Configuration | Termination Required |
|------------------------|--------------------------|----------|-----------------|----------------------|--|
| | 4 Series | 8 Series | | | |
| Module Interface | 0 | 1 | 125 K | Daisy-Chain | Yes, at last MI on link ¹ |
| Inter-Processor | 1 | 1 | 125 K | Daisy-Chain | Yes, at both ends of link ¹ |
| GRAFIK Eye® | 3 | 4 | 31.25 K | Daisy-Chain | No |
| RS-232 | 1 | 2 | 9600-115.2 K | Point-to-Point | No |
| Keypad | 3 | 4 | 10.42 K-41.67 K | Any | No |
| Dimmer Interface (D48) | 0 | 4 | 62.5 K | Daisy-Chain | Yes, at both ends of link ¹ |
| Dimmer Interface (H48) | 1 | 1 | 125 K | Daisy-Chain | Yes, at both ends of link ¹ |
| Hybrid Repeater | 1 ² | 1 | 125 K | Daisy-Chain | Yes, at both ends of link ¹ |
| Q96 | 3 | 4 | 9600 | Daisy-Chain | Yes, at both ends of link ¹ |
| Ethernet | 1 | 1 | 10/100 Base-T | Point-to-Point | No |

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

² For 4 series processors with "HRL" in the model number.

RF Processor Communication Link Specifications

| Link Type | Max. links per Processor | Baud Rates | Wiring Configuration | Termination Required |
|---------------------------|--------------------------|---------------|----------------------|----------------------|
| | | | | |
| RS-232 | 2 | 9600-115.2 K | Point-to-Point | No |
| RF Keypads | 1 ² | N/A | RF | N/A |
| RF Dimmers | 1 ² | N/A | RF | N/A |
| Hybrid RF/Wired Repeaters | 1 ² | N/A | RF | N/A |
| Ethernet | 1 | 10/100 Base-T | Point-to-Point | No |

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

² Virtual link (no physical/wired link present).

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 | 2048 |
| Max. number of RPM zones per system | 4096 |

GRAFIK Eye® Capacities

| | 4 series | 8 series |
|--|----------|----------|
| Max. number of GRAFIK Eye Control Units per GRAFIK Eye link | 8 | 8 |
| Max. number of GRAFIK Eye Accessory Controls per GRAFIK Eye link | 15 | 15 |
| Max. number of GRAFIK Eye links per processor | 3 | 4 |
| Max. number of GRAFIK Eye Control Units per processor | 24 | 32 |
| Max. number of GRAFIK Eye Accessory Controls per processor | 45 | 45 |
| Max. number of processors per system | 16 | 16 |
| Max. number of GRAFIK Eye Control Units per system | 384 | 384 |
| Max. number of GRAFIK Eye Accessory Controls per system | 720 | 720 |

General HomeWorks® Specifications (cont.)

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 | 4096 |

Wired Maestro® Local Controls Capacities

| | |
|---|------|
| Max. number of <i>Maestro</i> Local Controls per Dimmer Interface (H48) bus | 8 |
| Number of buses per H48 | 6 |
| Max. number of <i>Maestro</i> Local per H48 | 48 |
| Max. number of H48 Dimmer Interface per processor H48 link | 4 |
| Max. number of <i>Maestro</i> Local Controls per processor H48 link | 192 |
| Max. number of H48 links per processor | 1 |
| Max. number of <i>Maestro</i> Local Controls per processor | 192 |
| Max. number of processors per system | 16 |
| Max. number of <i>Maestro</i> Local Controls per system | 3072 |

RF *Maestro* Local Controls / RF Shades Capacities

| | RF |
|---|------|
| Max. number of RF <i>Maestro</i> Local Controls / RF Shades per Processor | 64 |
| Max. number of Processors per system | 16 |
| Max. number of RF <i>Maestro</i> Local Controls / RF Shades per system | 1024 |

Q96 Capacities

| | |
|--|------|
| Max. number of Sivoia QED® EDUs per Q96 | 96 |
| Max. number of Q96 per processor H48 link | 4 |
| Max. number of Sivoia QED® EDUs per processor H48 link | 256 |
| Max. number of H48 links per processor | 1 |
| Max. number of processors per system | 16 |
| Max. number of Sivoia QED® EDUs per system | 4096 |

Keypad Capacities

| | RF | 4 series Wired | 8 series Wired |
|--|-----|-------------------|-------------------|
| Max. number of devices per keypad link | 32 | 32* | 32* |
| Max. number of keypad links per processor | 1 | 3 | 4 |
| Max. number of keypads per processor | 32 | 96* | 128* |
| Max. number of tabletop keypads per system | 32 | N/A | N/A |
| Max. number of processors per system | 16 | 16 | 16 |
| Max. number of keypads per system | 512 | 1536* | 1536* |

* Wired keypad capacities based on maximum number of available addresses. For maximum capacities based on number of keypad LEDs, see Table 1 on pgs. 40 and 91.

