

## Installation Instructions

Please Read Before Installing

## RF Processor

H-RFP-1P, H-RFP-2P

120/127VAC, 50/60Hz (15VDC/0.9A adapter)

### Overview

HomeWorks RF Processors comprise the major communication hub of a HomeWorks radio frequency system. Each RF Processor will support up to 32 RF Keypads and up to 64 RF Dimmers or RF Switches.

Each RF Processor covers approximately 2500 square ft. (232m<sup>2</sup>) of living space.

Up to 4 RF Signal Repeaters may be used with each processor to extend the communications range of the system.

A maximum of 16 RF Processors may be connected together in a system to support a total of 1024 RF dimmers/switches and 512 RF keypads.

### Important Notes

**Codes:** Install in accordance with all local and national electrical codes.

**Power:** Use only the adapter provided by Lutron with the RF Processor (Lutron model # T120-15DC-9-BL).



**Caution** - Using an adapter not rated for the following specifications could damage the processor and possibly overheat the adapter.

- Input: 120/127VAC, 50/60Hz
- Output: 15VDC/0.9A Class 2

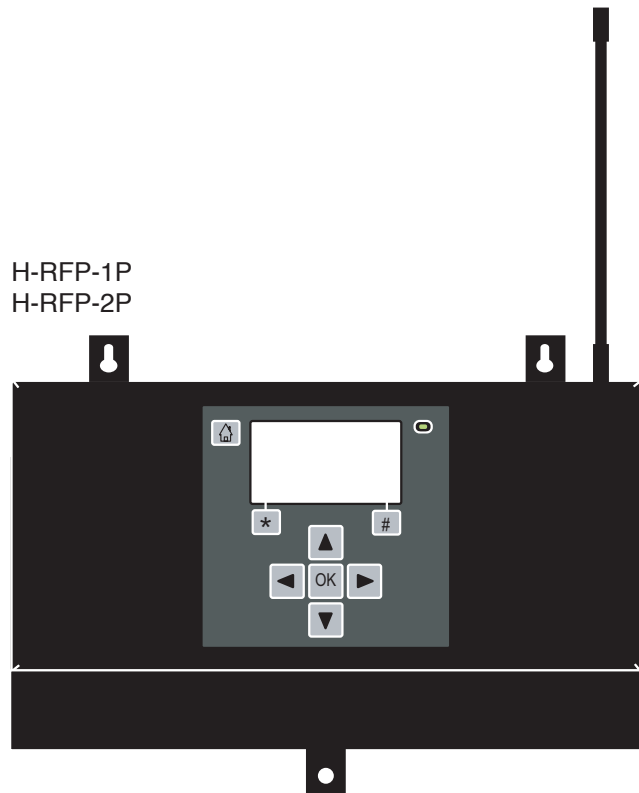
**Environment:** Ambient operating temperature: 0-40°C, 32-104°F, 0-90% humidity, non-condensing. Indoor use only.

**Cleaning:** To clean, wipe with a clean damp cloth. **DO NOT** use any chemical solutions. Do not paint the RF Processor.

**Mounting:** **DO NOT** ground the RF Processor. **DO NOT** mount the RF Processor in a metal enclosure.

**RF Device Placement:** RF devices that are to be controlled by the RF Processor must be located within 30 ft. (9m) of the RF Processor or an RF Signal Repeater.

**Setup:** RF Processors will not function until they are addressed and programmed. See the HomeWorks Utility online help.



## Installation

### 1. Find a suitable location for the RF Processor.

Place the RF Processor in a convenient and accessible location. See RF Coverage Diagrams on page 5 and 6.

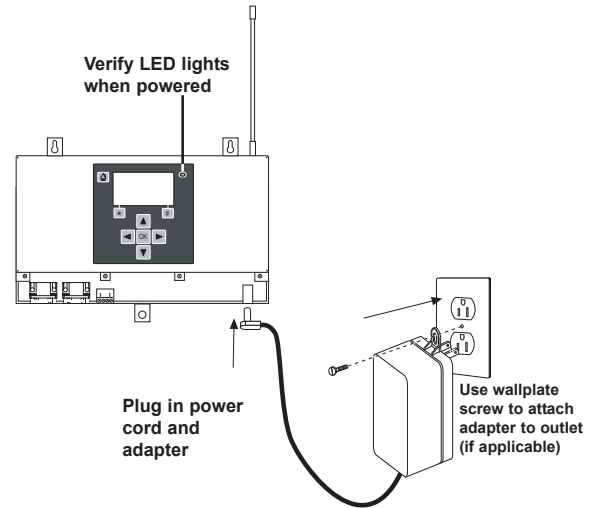
### 2. Mount the RF Processor.

Mount RF Processor to wall using the appropriate mounting hardware provided (see Mounting Diagram). Orient the processor's antenna for optimal performance. For most installations, the antenna should be oriented vertically. **Note: DO NOT** ground the RF Processor. **DO NOT** mount the RF Processor in a metal enclosure.

### 3. Connect inter-processor link (if applicable).

The inter-processor link is used for communication between multiple HomeWorks® processors. Connect control wiring to the Inter-Processor link (4-position terminal block), if required. Do not connect the +15V terminal (terminal 2). If this processor is to be the first or last processor in the daisy chain, attach one of the LT-1 link terminators provided across the MUX and MUX (terminals 3 and 4). (See Low-Voltage (Class 2/PELV) Wiring Diagram, page 3). If LT-1s are unavailable, a 1/2 W resistor between 100 and 150 Ohms may be placed across terminals 3 and 4 to provide termination. **Important:** Use only the blue terminal block connector that Lutron provided with the RF Processor.

### 4. Apply power to the RF Processor.



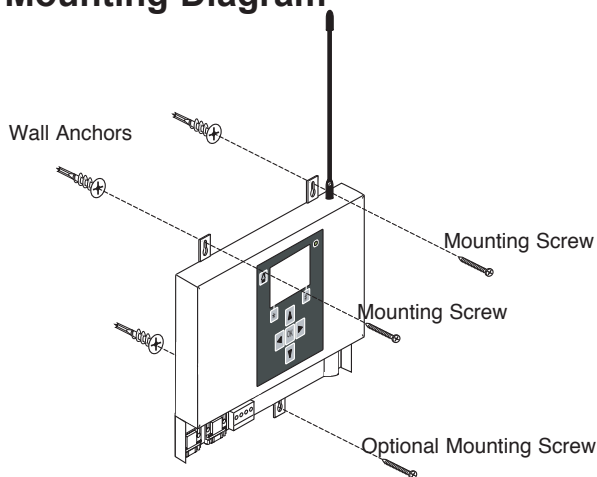
### 5. Address the RF Processor.

Use the RF Processor display to set address.

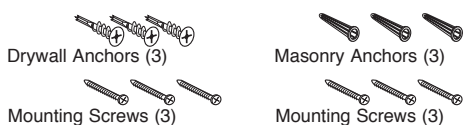
### 6. Connect Serial Link (if applicable).

Connect a standard DB9 male connector to the Link 3 or 7 RS-232 connector on the RF Processor for system programming or communications with other equipment. A cable with all 9 pins straight through (not a null modem) is required for programming the system using a laptop. If, at a later date, the RF Processor is connected to a modem, a null modem adapter will be needed between the processor and the attached modem.

## Mounting Diagram

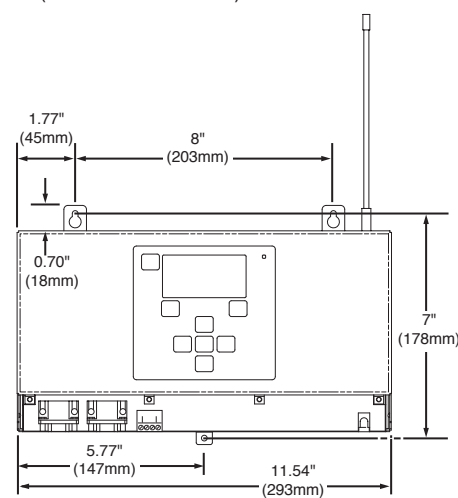


Included:

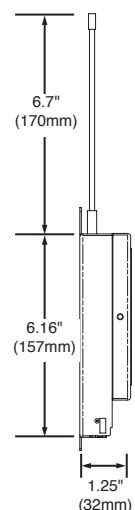


## Dimensions

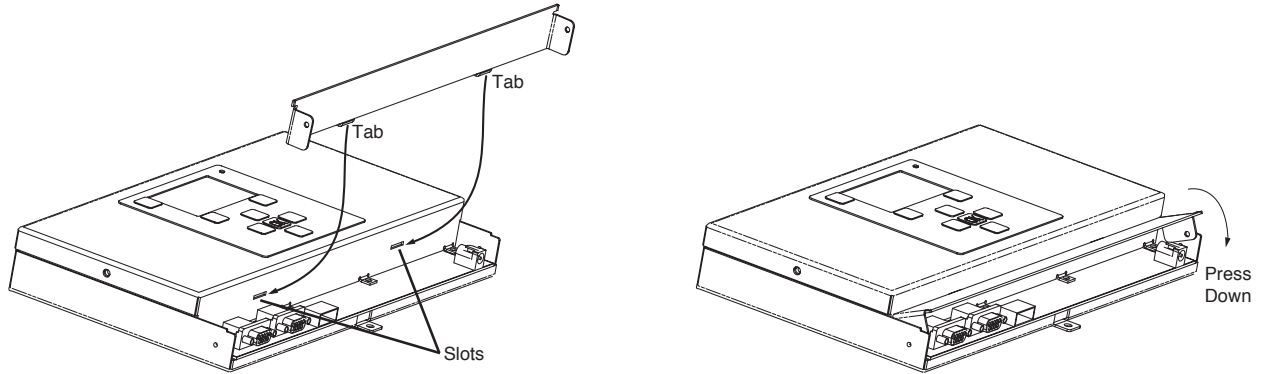
Front View  
(Port Cover removed)



Side View

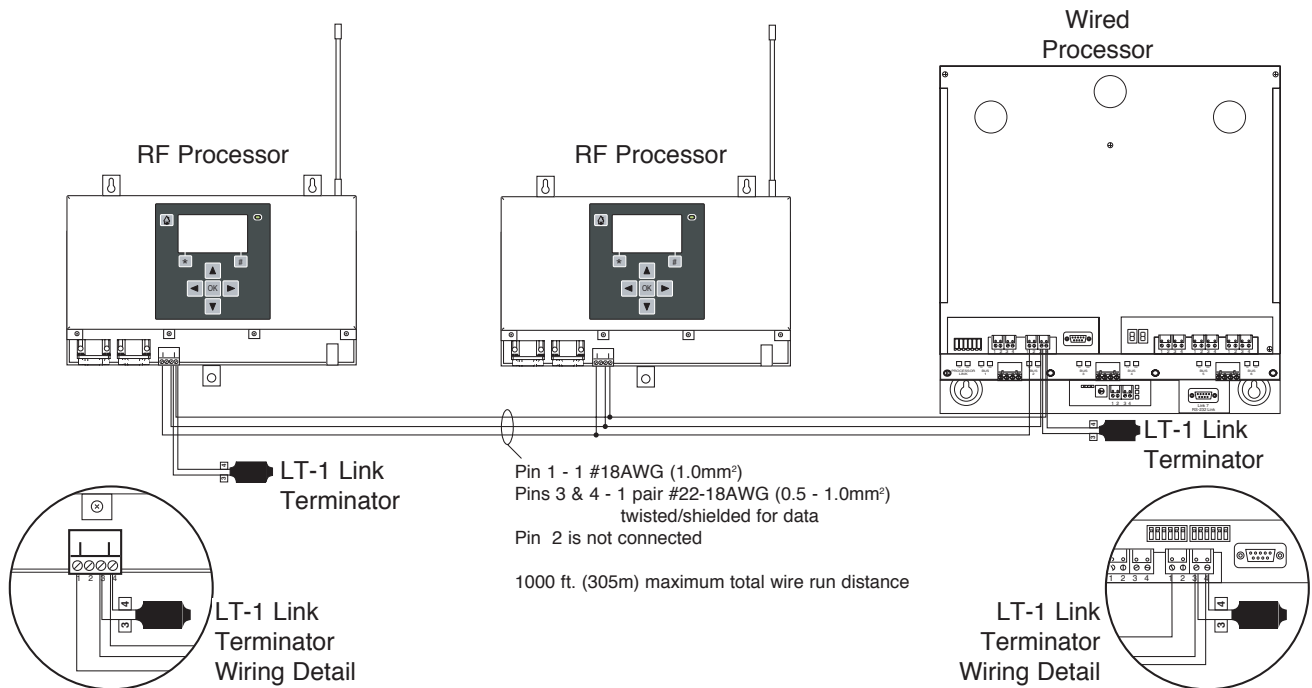


## Port Cover Installation

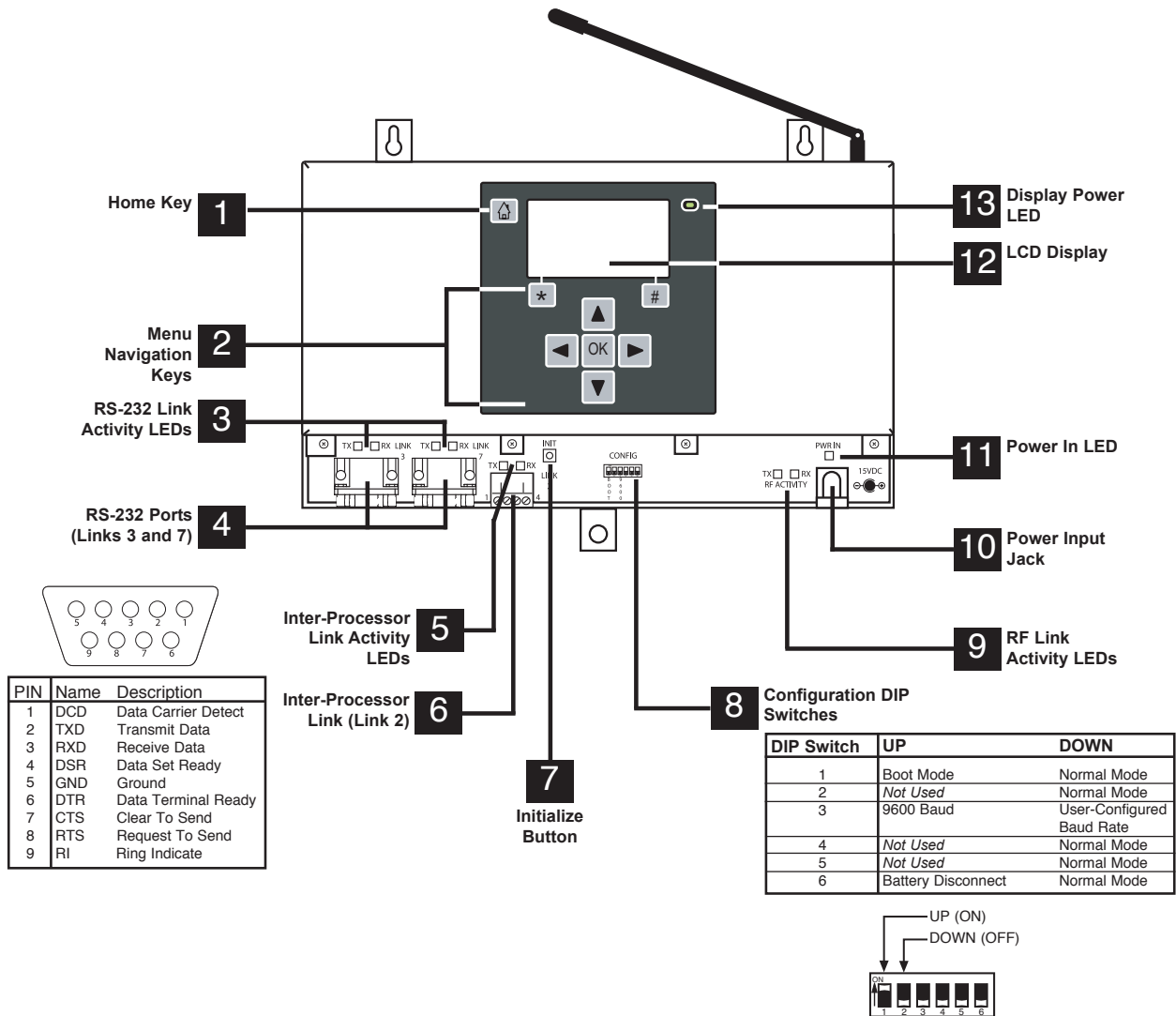


The Port Cover can be removed for access to the Initialize Button, Configuration DIP Switches, and Diagnostic LEDs. The cover is removed by gently pulling up on the front edge to disengage the snaps. Replace the cover by inserting the two tabs on the back of the cover into the slots on the processor. Gently press down on the front edge to engage the snaps.

## Low-Voltage (Class 2/PELV) Wiring Diagram



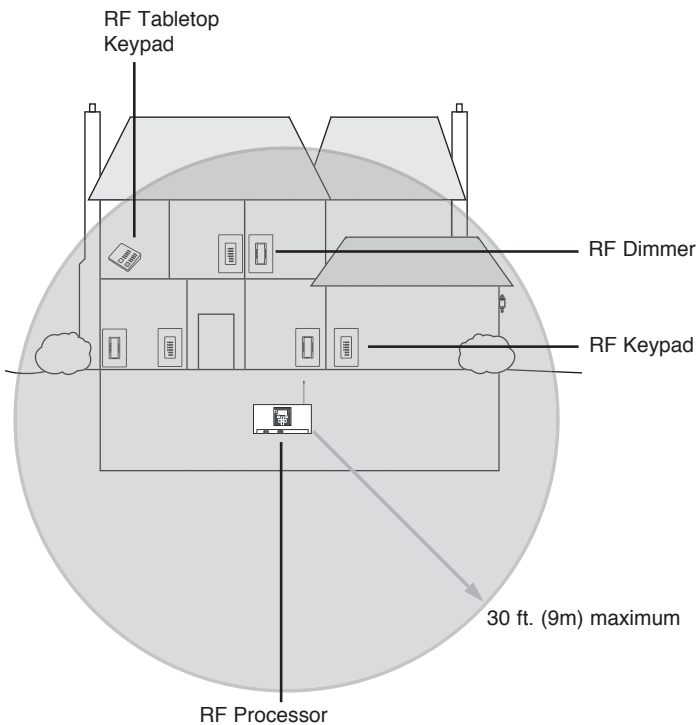
# Operation



- Home Key:** Returns the user to the Home Screen.
- Menu Navigation Keys:** Used to navigate the various menus and screens for the processor.
- RS-232 Link Activity LEDs:** The LEDs will illuminate when there are any RS-232 signals being transmitted (TX LED) or received (RX LED) on that link.
- RS-232 Ports (Link 3 and Link 7):** Standard 9-Pin male connectors for connecting to a computer for programming, to a modem for remote programming, or to an external control system (A/V system, HVAC, etc.).
- Inter-Processor Link Activity LEDs:** The LEDs will illuminate when there are any processor communication signals being transmitted (TX LED) or received (RX LED) on that link.
- Inter-Processor Link:** Allows up to 16 processors (both RF and Wired) to be connected together.
- Initialize Button:** Used to reset the processor.
- Configuration DIP Switches:** All DIP switches should be placed in the DOWN position for normal operation. The HomeWorks® Utility will prompt the programmer if any subsequent changes to the DIP switches are required.
- RF Link Activity LEDs:** The LEDs will illuminate when there are any RF signals being transmitted (TX LED) or received (RX LED) on that link.
- Power Input Jack:** Input jack for the 15VDC adapter. Center pin is positive.
- Power In LED:** This LED illuminates when power from the adapter is present at the Power Input Jack.
- LCD Display:** Displays programming and diagnostic information. The LCD Display will shut off after 45 minutes of inactivity. To restore the display, simply press any key.
- Display Power LED:** This LED will illuminate when the LCD Display has power.

## RF Coverage Diagrams

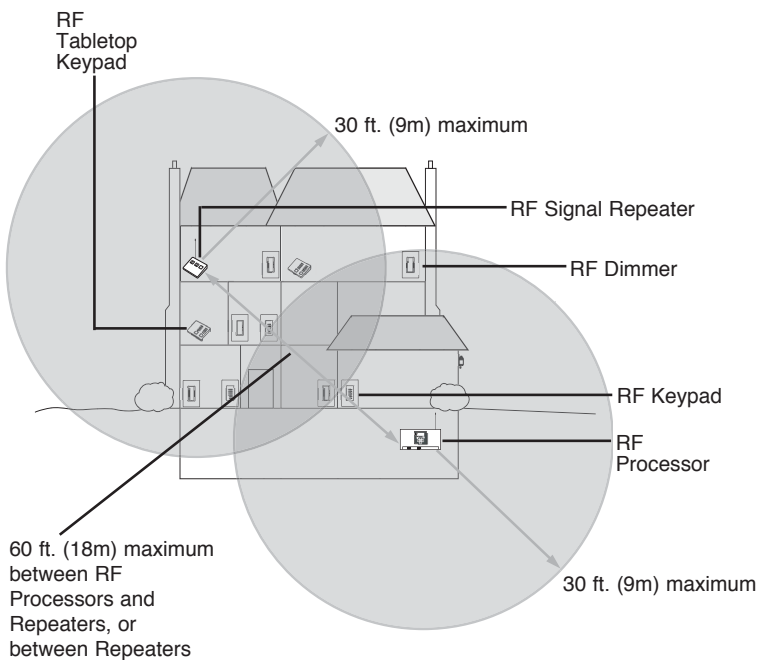
**Home A: 2500 sq. ft. (232m<sup>2</sup>) or less - all RF devices within 30 ft. (9m) of RF Processor**



### System Communication Notes

- RF Dimmers and Keypads must be located within 30 ft. (9m) of an RF Signal Repeater or an RF Processor.
- RF Signal Repeater must be located within 60 ft. (18m) of an RF Processor or another RF Signal Repeater.
- Multiple processors or repeaters may be necessary to provide adequate coverage. Up to 16 processors (with up to 4 repeaters each) may be connected together in a system.
- RF Dimmers cannot be controlled by the system and RF Keypads do not function until they are addressed and programmed. See the HomeWorks® Utility online help.

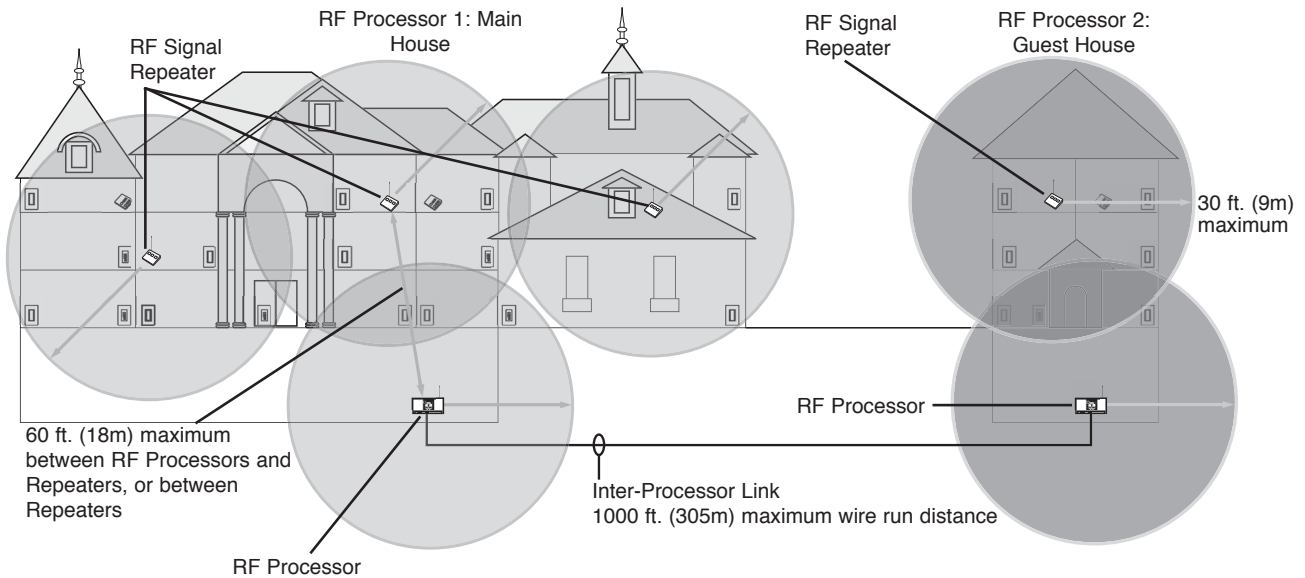
**Home B: 2500 sq. ft. (232m<sup>2</sup>) or greater - some RF devices more than 30' (9m) from RF Processor**



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## RF Coverage Diagrams - Continued

Home C: 10000 sq. ft. (928m<sup>2</sup>) or greater - or multiple structures/buildings



### System Communication Notes

- RF Dimmers and Keypads must be located within 30 ft. (9m) of an RF Signal Repeater or an RF Processor.
- RF Signal Repeater must be located within 60 ft. (18m) of an RF Processor or another RF Signal Repeater.
- Multiple processors or repeaters may be necessary to provide adequate coverage. Up to 16 processors (with up to 4 repeaters each) may be connected together in a system.
- RF Dimmers cannot be controlled by the system and RF Keypads do not function until they are addressed and programmed. See the HomeWorks® Utility online help.

## Troubleshooting Guide

Symptom	Cause and Action
LCD Display is blank	<p>LCD is shut off.</p> <ul style="list-style-type: none"> <li>• Press any key to restore the LCD.</li> </ul> <p>No power available to RF Processor.</p> <ul style="list-style-type: none"> <li>• Make sure adapter is plugged in.</li> <li>• Faulty adapter.</li> <li>• Check to make sure circuit breaker is not tripped or OFF.</li> </ul>
RF controls not communicating with RF Processor	<p>No power available to unit.</p> <ul style="list-style-type: none"> <li>• Make sure adapter is plugged in.</li> <li>• Faulty adapter.</li> </ul> <p>RF Processor not within 30 ft. (9m) of controls.</p> <ul style="list-style-type: none"> <li>• Place processor within 30 ft. (9m) of RF controls.</li> </ul>
RF Processor functions intermittently	<p>RF Processor not within 30 ft. (9m) of controls.</p> <ul style="list-style-type: none"> <li>• Place processor within 30 ft. (9m) of RF controls.</li> </ul> <p>RF Processor in boot mode.</p> <ul style="list-style-type: none"> <li>• All configuration DIP switches should be in the OFF (down) position for normal operation.</li> </ul> <p>No power to RF Control</p> <ul style="list-style-type: none"> <li>• Check circuit breaker.</li> <li>• Check FASS™ on RF Dimmers/Switches and their Accessory Controls.</li> <li>• Replace batteries in battery-powered controls.</li> </ul> <p>RF Controls not addressed.</p> <ul style="list-style-type: none"> <li>• See the HomeWorks® Utility online help for addressing details.</li> </ul> <p>RF Processor has no database.</p> <ul style="list-style-type: none"> <li>• Upload database to RF Processor.</li> </ul>
RF Processor not communicating with other processors on Inter-Processor Link	<p>Link miswired.</p> <ul style="list-style-type: none"> <li>• Check wiring to make sure it agrees with installation instructions and wiring diagrams.</li> <li>• Be sure to use only the blue terminal block provided with the processor.</li> </ul> <p>Link Terminator missing or miswired.</p> <ul style="list-style-type: none"> <li>• Make sure that a Link Terminator has been installed across terminals 3 and 4 on the first and last processors on the Inter-Processor Link. If LT-1s are not available, a 1/2 Watt resistor (100-150 Ohms) may be used. See Low-Voltage (Class 2/PELV) Wiring Diagram (page 3).</li> <li>• Check to make sure that the numbers on the link terminator agree with the terminal numbers they are wired to.</li> </ul>
RF Processor will not accept uploads	<p>RF Processor in boot mode.</p> <ul style="list-style-type: none"> <li>• All configuration DIP switches should be in the OFF (down) position for normal operation.</li> </ul> <p>Inter-Panel Link miswired.</p> <ul style="list-style-type: none"> <li>• Check wiring to make sure it agrees with installation instructions and wiring diagrams.</li> <li>• Be sure to use only the blue terminal block provided with the processor.</li> </ul> <p>Faulty RS-232 connection.</p> <ul style="list-style-type: none"> <li>• Make sure cable is a standard serial cable with all 9 pins straight through.</li> </ul> <p>COM Port settings incorrect.</p> <ul style="list-style-type: none"> <li>• Verify COM Port settings in the <i>HomeWorks</i> Utility.</li> </ul>
RF Processor does not respond in <i>HomeWorks</i> Utility Terminal Menu	<p>Terminal prompt has been disabled.</p> <ul style="list-style-type: none"> <li>• Type "prompton" (without quotes) in the <i>HomeWorks</i> Utility Terminal Menu to enable the prompt.</li> </ul>
Programming is lost when power to RF Processor is cycled or interrupted	<p>Battery Disconnect DIP Switch is UP.</p> <ul style="list-style-type: none"> <li>• All configuration DIP switches should be in the OFF (down) position for normal operation.</li> </ul>

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## FCC Information

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**Caution:** Changes or modifications not expressly approved by Lutron Electronics Co. could void the user's authority to operate this equipment.

## Industry Canada Information

The term "IC:" before the radio certification number only signifies that Industry Canada technical specifications were met.

## Technical and Sales Assistance

If you need assistance, call the toll-free **Lutron Technical Support Center**. Please provide exact model number when calling.

(800) 523-9466 (U.S.A., Canada and the Caribbean)

Other countries call:

Tel: (610) 282-3800

Fax: (610) 282-3090

Visit our Web site at [www.lutron.com](http://www.lutron.com)

## LIMITED WARRANTY

Lutron will, at its option, repair or replace any unit that is defective in materials or manufacture within two years after purchase. For warranty service, return unit to place of purchase or mail to Lutron at 7200 Suter Rd., Coopersburg, PA 18036-1299, postage pre-paid. Telephone the Lutron Technical Support Center toll free at 800-523-9466. After the two year period, a pro-rated warranty applies to this product until eight years after the purchase. For more information regarding this warranty contact your Lutron representative.

**THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES, AND THE IMPLIED WARRANTY OF MERCHANTABILITY IS LIMITED TO TWO YEARS FROM PURCHASE. THIS WARRANTY DOES NOT COVER THE COST OF INSTALLATION, REMOVAL OR REINSTALLATION, OR DAMAGE RESULTING FROM MISUSE, ABUSE, OR IMPROPER OR INCORRECT REPAIR, OR DAMAGE FROM IMPROPER WIRING OR INSTALLATION. THIS WARRANTY DOES NOT COVER INCIDENTAL OR CONSEQUENTIAL DAMAGES. LUTRON'S LIABILITY ON ANY CLAIM FOR DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE MANUFACTURE, SALE, INSTALLATION, DELIVERY, OR USE OF THE UNIT SHALL NEVER EXCEED THE PURCHASE PRICE OF THE UNIT.**

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This product may be covered by one or more of the following U.S. patents: 4,889,999; 5,170,068; 5,237,207; 5,736,965; 5,838,226; 5,848,054; 5,905,442; 5,982,103 and corresponding foreign patents. U.S. and foreign patents pending. Lutron and HomeWorks are registered trademarks, and FASS is a trademark of Lutron Electronics Co., Inc.  
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