RadioRA® 2 Repeaters

RadioRA® 2 Repeaters extend the range of Radio Frequency (RF) signals that are sent between devices. Repeaters ensure error-free communication between system components and prevent interference from neighboring systems.

For systems that extend up to 30 ft (9 m), one (1) Main Repeater is required to set up the system. Up to four (4) Auxiliary Repeaters can be added to extend the RF range for larger system applications. Each Repeater has an RF range of 30 ft (9 m), covering a total area of approximately 2500 ft² (232 m²).

### Models

<table>
<thead>
<tr>
<th>Model Number*</th>
<th>Repeater Type</th>
<th>Frequency</th>
<th>Antenna Length</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>RR-MAIN-REP-WH</td>
<td>Main</td>
<td>434 MHz</td>
<td>6.25 in (158.8 mm)</td>
<td>North America, Brazil (BA models only)</td>
</tr>
<tr>
<td>RR-MAIN-REP-WHBA</td>
<td>Main</td>
<td>434 MHz</td>
<td>6.25 in (158.8 mm)</td>
<td>North America, Brazil (BA models only)</td>
</tr>
<tr>
<td>RR-AUX-REP-WH</td>
<td>Auxiliary</td>
<td>434 MHz</td>
<td>6.25 in (158.8 mm)</td>
<td>North America, Brazil (BA models only)</td>
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<td>RR-AUX-REP-WHBA</td>
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<td>434 MHz</td>
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<tr>
<td>RRK-MAIN-REP-WH</td>
<td>Main</td>
<td>868 MHz</td>
<td>3.13 in (79.4 mm)</td>
<td>Europe</td>
</tr>
<tr>
<td>RRK-AUX-REP-WH</td>
<td>Auxiliary</td>
<td>868 MHz</td>
<td>3.13 in (79.4 mm)</td>
<td>Europe</td>
</tr>
</tbody>
</table>

* Available only in White (WH)
RadioRA® 2 Repeaters

Specifications

Model Numbers

Power
Main / Auxiliary Repeater: 9 V 300 mA
See Low-Voltage Transformer spec (Lutron® P/N 369561)

Typical Power Consumption
Main Repeater: 3.1 W
Test conditions: one LED on, Ethernet cable plugged in, powered by the 9 V adapter
Auxiliary Repeater: 0.6 W
Test conditions: one LED on, powered by the 9 V adapter

Regulatory Approvals
Main / Aux (-WH only): cULus listed; FCC certified; Industry Canada certified; COFETEL certified; INDOTEL certified; SUTEL certified
Main / Aux (-WHBA only): ANATEL certified
Main / Aux (RRK only): CE marked
Adapter (T120-9DC-3-BL): cULus listed; NOM certified

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

Low-Voltage Wire Type
Two pairs:
one pair 18 AWG (1.0 mm²),
one pair 22 AWG to 18 AWG (0.5 mm² to 1.0 mm²) twisted shielded – IEC PELV/NEC® Class 2 cable

Communications
Repeaters communicate with the system through RF. All devices must be located within 30 ft (9 m) of a Repeater. All Repeaters must be within 60 ft (18 m) of another Repeater. System devices operate on frequencies between 431.0 MHz to 437.0 MHz or 868.125 MHz to 869.850 MHz

ESD Protection
Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.

Surge Protection
Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits

Power Failure
Power failure memory: should power be interrupted, the Repeater will return to its previous state when power is restored

Mounting
Mount on a wall, ceiling, or level surface using the two #6 (M3) screws provided

Connections
Main Repeater: Ethernet, RS232 and RS485

Warranty

Design Features

• Test button: enters the system diagnostic mode.
• Can be programmed from a PC.
• RS485 port to connect to other Repeaters through a wired link (daisy-chain).
• Main Repeaters allow configuration and integration to the system through Ethernet or RS232 ports (see chart to the right).
• System with 2 Main Repeaters must be connected via Ethernet.

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet</td>
<td>✓</td>
</tr>
<tr>
<td>RS232</td>
<td>✓</td>
</tr>
</tbody>
</table>
RadioRA® 2 Repeaters

Dimensions

All dimensions are shown as: in (mm)

Mounting Hole Detail

<table>
<thead>
<tr>
<th>Model</th>
<th>Antenna Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>RR-MAIN-REP-WH</td>
<td>6.25 (158.8)</td>
</tr>
<tr>
<td>RR-MAIN-REP-WHBA</td>
<td></td>
</tr>
<tr>
<td>RR-AUX-REP-WH</td>
<td>3.13 (79.4)</td>
</tr>
<tr>
<td>RR-AUX-REP-WHBA</td>
<td></td>
</tr>
<tr>
<td>RRK-MAIN-REP-WH</td>
<td>4.25 (108)</td>
</tr>
<tr>
<td>RRK-AUX-REP-WH</td>
<td></td>
</tr>
</tbody>
</table>

Mounting

Vertical

Horizontal
RadioRA® 2 Repeaters

Operation

Repeater Status

- M 1 2 3 4

Communication

RF Wired

Setup

Test Add

Repeater Status LEDs
Display the status of the Repeaters in the system while in Test mode.

RF and Wired LEDs
Display the Tx / Rx activity on the RF and wired links. (Green = Tx; Orange = Rx)

Test and Add Buttons
Press and hold to enter the system into Test mode or Add mode.

Test and Add LEDs
Flash green to indicate that the system is in Test mode or Add mode.

Wired and RF Configuration

Main or Auxiliary Repeater

RF Link 60 ft (18 m) maximum

30 ft (9 m) maximum

30 ft (9 m) maximum

Wired Link (Daisy-chain)
1000 ft (305 m) maximum IEC PELV / NEC® Class 2 cable.
Two pairs:
one pair 18 AWG (1.0 mm²),
one pair 22 AWG to 18 AWG (0.5 mm² to 1.0 mm²) twisted shielded.
RadioRA® 2 Repeaters

Using Two Main Repeaters for Qualified Dealers/Installers Only

Qualified Level 2 (L2) dealers/installers can upgrade their software to provide support for a 200 device system by enabling the addition of a second main repeater subnet to the system.

*Note: To learn how you can become a qualified L2 dealer/ installer, please contact your local Lutron® representative.*

1. The two main repeaters must be connected by Ethernet during and after PC programming. The two main repeaters do not communicate over the RF link.

2. The two main repeaters may be connected over Ethernet by one of the following:
   a. Router
   b. HUB or switch (only if static IP addresses are being used)
   c. After PC programming is complete, direct Ethernet connection without a router, HUB, or switch (only if static IP addresses are being used)

3. Auxiliary repeaters and main repeaters on the same subnet can be optionally connected by RS485 wired links when the repeater RF range is exceeded.
   a. The RS485 wired link cannot be connected between the two main repeater subnets
   b. The RS485 wired link cannot be connected between two main repeaters.
   c. RS485 wired links can be used between any combination of main and auxiliary repeaters on the same subnet.
RadioRA® 2 Repeaters

Connections

Main Repeater

Top View

RF range
To Repeater: 60 ft (18 m)
To other devices: 30 ft (9 m)

Bottom View

Power Jack (to adapter)*
IEC PELV / NEC® Class 2

Wired Link (Daisy Chain)
maximum 1000 ft (305 m)

RS232 and Ethernet Pin Numbering

<table>
<thead>
<tr>
<th>RS232</th>
<th>Pin #</th>
</tr>
</thead>
<tbody>
<tr>
<td>T × D</td>
<td>2</td>
</tr>
<tr>
<td>R × D</td>
<td>3</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethernet</th>
<th>Pin #</th>
</tr>
</thead>
<tbody>
<tr>
<td>T + Ve</td>
<td>1</td>
</tr>
<tr>
<td>T – Ve</td>
<td>2</td>
</tr>
<tr>
<td>R + Ve</td>
<td>3</td>
</tr>
<tr>
<td>R – Ve</td>
<td>6</td>
</tr>
</tbody>
</table>

Auxiliary Repeater

Top View

RF range
To Repeater: 60 ft (18 m)
To other devices: 30 ft (9 m)

Bottom View

Power Jack (to adapter)*
IEC PELV / NEC® Class 2

Wired Link (Daisy Chain)
maximum 1000 ft (305 m)

* See Low-Voltage Transformer spec (Lutron® P/N 369561)