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## INSTALLATION & USER GUIDE

MODEL

# PR810

REPEATER

### Description

The Isaacs PR810 repeater continuously monitors the radio frequency band and forms a link between transmitter(s) and receiver(s) that must operate beyond normal signal range or operate with obstacles in their line-of-sight. The PR810 repeater will respond to any Isaacs 800 Series transmitter or 800 Series repeater signal by duplicating the signal(s) in a new transmission. To allow full supervision of the wireless system, the repeater can be programmed to send periodic status signals to the receiver(s).

### Specifications PR810 Repeater

**Power Requirement:** 12 – 16.5 VDC or VAC; 100 mA  
**Operation:** 902 – 928 MHz frequency-hopping, spread spectrum  
**Typical Maximum Range to Receiver:** 5 miles, open Line-of Sight  
**Physical:** Weatherproof molded plastic enclosure; 7 in. x 7 in. x 3 in. (178 mm x 178 mm x 77 mm)  
**Weight:** Repeater in Enclosure 1.7 lb. (770 g); AC power supply 1.0 lb. (455 g)

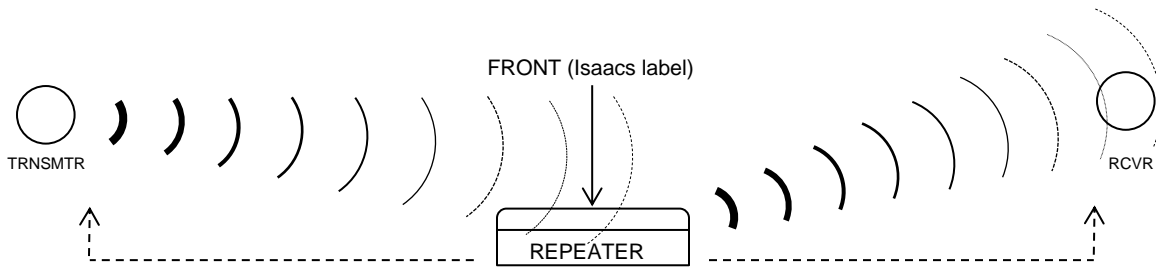
### Site considerations

The repeater, like all other Isaacs wireless system components, has maximum range when used as line-of-sight communications. The repeater should be mounted high enough to allow a minimum ten feet of clearance between its line of sight to all transmitter(s) and receiver(s) and the terrain below and also any intervening foliage. All repeater lines of sight should be clear of all metal buildings and chain-link fences and preferably clear of all buildings and foliage. Failure to maintain these clearances may affect performance. Also note that large vehicles, such as rail cars, may on occasion obstruct a line-of-sight.

Operational tests of the system with a repeater powered at its proposed location will help to determine the best placement. The repeater requires a source of continuous power and may be powered with a solar power supply if another source is not available. Please call Isaacs & Associates for assistance in selecting the correct solar power system.

For best performance the PR810 repeater unit should be situated and turned (oriented) so that the assisted transmitter(s) and receiver(s) are located within the 180 degree arc on the front (the Isaacs label side) of the repeater enclosure. Refer to Fig. 1 on the next page.

## Best repeater location relative to the transmitter and receiver



POSITION REPEATER SO THAT TRANSMITTERS AND RECEIVERS ARE TO THE REPEATER FRONT SIDE

**Fig. 1**

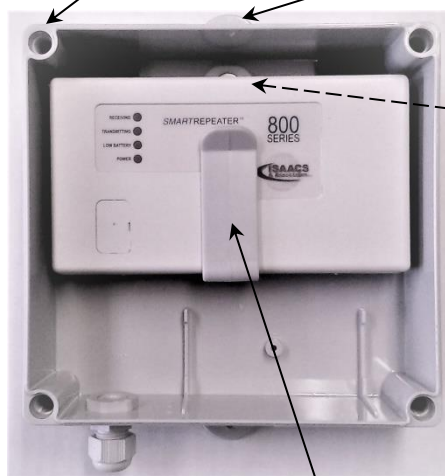
## Installation

Mount the repeater and enclosure unit at least ten feet above grade on a solid structure such as a post or conduit. The enclosure may be attached with the two mounting lugs, or by using #6 tapping screws through the holes located in the bottom of the four cover-screw receptacles. (Do not break the weatherproof integrity by drilling through the back of the enclosure). Installation on a post or pole may require a rigid mounting board behind the enclosure to prevent wind stress that could break the enclosure mounting lugs. The repeater and enclosure may be mounted on the side of a building, but observe the positioning recommendations (refer to fig. 1).

MOUNTING HOLES ARE LOCATED IN THE BOTTOM OF THE FOUR COVER-SCREW RECEPTACLES

MOUNTING LUGS (2) TOP AND BOTTOM

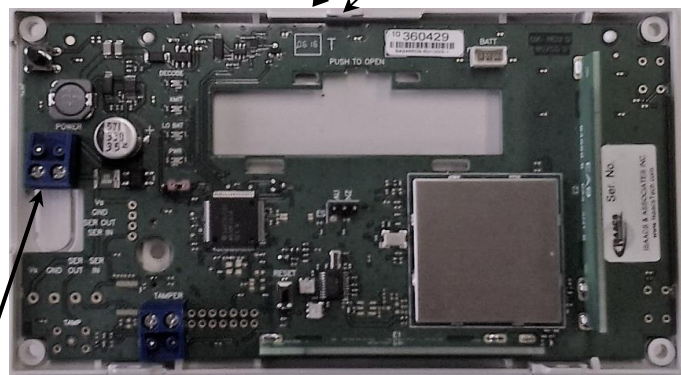
TO REMOVE THE COVER, INSERT A SMALL FLAT SCREWDRIVER INTO THE CASE JOINT HERE, THEN PRESS AND LIFT GENTLY.



**Fig. 2**

RETAINING CLIP

TYPICAL STRAIN RELIEF INSTALLATION



**Fig. 3**

REPEATER POWER TERMINAL BLOCK

## !! SAFETY FIRST !!

DISCONNECT ALL POWER SOURCES BEFORE INSTALLING THE ISAACS SYSTEM.  
The installer and user are responsible to ensure safe and effective application of these products.

### Connection

The PR810 repeater requires continuous power. The repeater will use either 14 VAC (60Hz) or 12 VDC. Do **NOT** connect 120VAC directly to the repeater power terminals. The power can be supplied by a wall-receptacle AC transformer, by a regulated DC power supply (Isaacs part TS0340B), or by a battery or solar supply. The power supplied must be free of voltage surges and spikes, and capable of continuously supplying the repeater's full operating current. If the repeater is powered by a battery or other source that may lose voltage, a low-voltage disconnect (Isaacs part TS0331) should be added. (See the Isaacs power components available on page 4.)

When routing the power wiring or cable into the repeater enclosure, use a small weatherproof strain relief to penetrate the enclosure surface on the bottom side, as mounted (see figure 2). If conduit is used, at least the last two feet into the enclosure should be a flexible type to prevent stressing the rigidly mounted enclosure.

Remove the repeater from the enclosure by lifting it off the retaining clip (see figure 1). Remove the repeater cover by inserting a small flat screwdriver at the point shown on the top edge (see fig. 2 & 3) and gently pressing and lifting.

Connect power to the PR810 repeater at the terminal block indicated in figure 3. To avoid damaging the board connections, pull the terminal block straight up and off the board pins and connect the power wires from the transformer or the DC source under the two screw terminals, then slide the block back onto the board pins. The receiver power input circuitry is designed so that DC polarity does not matter. Use a wire size (usually #18, #20, or #22) that will provide good mechanical strength and maintain voltage at full repeater load. Use care in making any wire splices as poor splices are a common source of problems.

When the repeater is properly connected, apply power (plug in the wall transformer, or turn on the DC source). Verify that the receiver indicator LEDs are working: the **POWER** LED will be on continuously; the **RECEIVING** and **TRANSMITTING** LEDs will blink alternately when the repeater is relaying a transmission.

If the repeater was ordered with the optional backup battery it will have been shipped with the battery disconnected. When the repeater is connected to power, connect the battery cable to the board as shown in fig. 4.

Re-install the repeater cover. The LEDs should be visible through the translucent cover apertures. Install the repeater into the retaining clip in the enclosure, and install the enclosure cover.

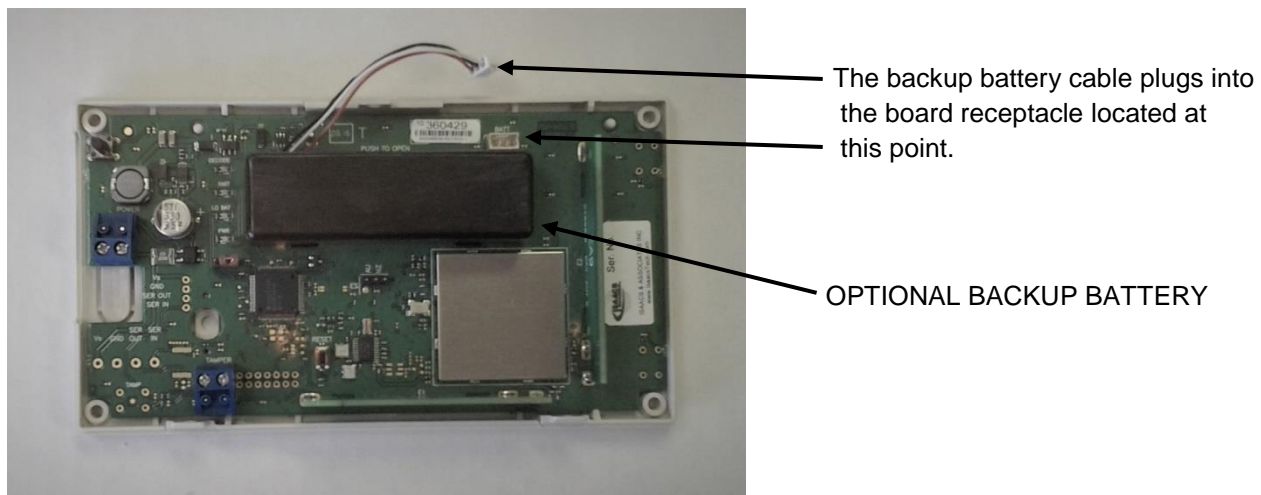


Fig. 4

## Repeater power components



120VAC to 14VAC Transformer

TS0340B Power Supply

T0331 Low volt disconnect

Isaacs & Associates can supply solar power systems if needed. These are all special order components and the solar supply capacity needs to be sized according to the geographical location of the repeater or other units that are to be connected to the solar supply. Call Isaacs at 509-529-2286 for assistance in ordering the correct power supply.

## Operation and Maintenance

When powered, the PR810 repeater operation is continuous and automatic. The repeater will recover after a power failure and resume operation without any manual reset necessary.

The PR810 repeater requires no routine maintenance, but whenever the repeater enclosure cover is removed check the condition of the seal in the cover.

Refer to the Isaacs Wireless Troubleshooting Guide if operational problems occur.

## Limited Warranty and Disclaimer

Isaacs & Associates, Inc. (Isaacs) warrants goods of its manufacture to be free of defective materials and faulty workmanship when used under normal and proper use and service. Commencing upon the date of shipment, the Isaacs warranty is valid for 12 months. To obtain warranty service, obtain an RGA number from Isaacs and send the product to Isaacs freight prepaid. Isaacs will repair or replace, at its discretion, those items deemed warrantable. This Limited Warranty does not apply in cases of improper installation or operation, misuse, alteration, abuse, accidental damage, tampering, repair by anyone other than Isaacs & Associates, Inc., or damage by, but not limited to, low voltage, voltage surges, or lightning. This Limited Warranty applies to Isaacs manufactured goods only. All other products, accessories or attachments used in conjunction with Isaacs manufactured goods, including batteries, will be covered solely by their own warranty, if any. Isaacs will not be liable for any direct, incidental, consequential, or accidental damage or loss whatsoever, caused by the malfunction of its manufactured goods due to products, accessories, or attachments of other manufacturers, including batteries, used in conjunction with Isaacs goods. Isaacs & Associates, Inc. will not be liable for any direct, incidental, consequential, or accidental damages resulting from use of Isaacs products or caused by any defects, failure or malfunction, whether a claim for damages is based on warranty, product design, system engineering, contract negligence or otherwise. It is the sole responsibility of the purchaser to consider and analyze the product and its design for fitness for a particular purpose. Isaacs & Associates, Inc. does hereby disclaim any liability for damages due to failure of the goods or system to perform as anticipated. Isaacs & Associates, Inc. does not authorize any person to act on its behalf to modify, vary or extend this warranty.

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