

PrecisionLine™ RCR-90 Dual Technology Motion Sensor

Preliminary
August 7, 2003

Installation Instructions

Description

The RCR-90 combines range-controlled radar (RCR) technology with a passive infrared (PIR) system to increase false alarm immunity by allowing it to sense human-sized objects within a specified range. Both the RCR and PIR systems must be triggered to set off an alarm, unless in radar-only mode.

The detector is designed to use a 12VDC power supply provided by a UL Listed alarm control panel.

Features

The detector provides the following features:

- **High-security (radar-only) mode** - Internal jumper allows you to disable the PIR, and use the radar-only mode to detect intruders faster. This mode can be used for covert installations (mounted behind ceiling panels or walls).
- **Selectable range up to 90 feet (27.4m)** - Internal jumper allows radar range selection to optimize coverage.
- **LED indicator** - A multi-color LED provides detector status.
- **Tamper switch** - Activated when the pins on the circuit board are removed from the terminal sockets on the base.

Selecting a Location for the Detector

The detector can be mounted in a corner or on a flat wall. Use the following guidelines to determine the best location to install the detector:

- Mount the detector so the expected movement of an intruder is across the detection pattern. See Figure 2.
- Mount the detector on a stable surface 8 to 12 feet (2.4 to 3.7m) high.
- DO NOT mount the detector within 2 feet (0.6m) of metallic objects or within 5 feet (1.5m) of florescent lights.
- DO NOT place objects in front of the detector that may prevent a clear line of sight. (Not applicable in radar-only mode.)
- Avoid locations that expose the detector to possible false alarm sources such as:
 - Moving or vibrating objects (fans, pulleys, conveyor belts)
 - Electronic fields (electric motors, high voltage equipment)
 - Water spray or corrosive environments
 - Heat sources in the field of view (heaters, radiators)
 - Windows in the field of view
 - Strong air drafts on the detector (fans, air conditioners)

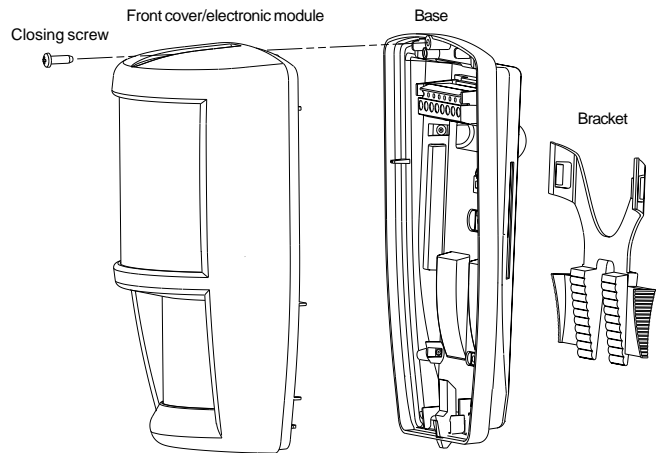


Figure 1. Detector (Exploded)

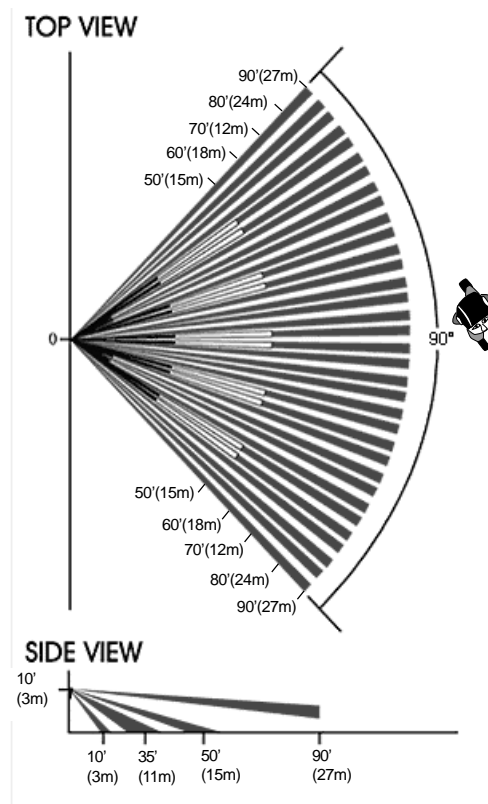


Figure 2. Coverage Pattern

- When installing multiple detectors:
 - DO NOT mount detectors facing each other.
 - Mount detectors at least 20 feet (6.1m) apart.
 - Use shorter range settings to avoid overlapping radar coverage.

Installing the Detector

All wiring must conform to the National Electric Code (NEC) and/or local codes having jurisdiction.

Important: DO NOT use this device for safety interlock applications.

To install the detector:

1. Run the security system wiring to the detector location.
2. To remove the front cover/electronic module, remove the closing screw. See Figure 1. Then pull out on the top of the front cover and lift off.



CAUTION

You must be free of all static electricity before handling sensor circuit boards. Touch a grounded, bare metal surface before touching circuit boards or wear a grounding strap.

3. If necessary, set the jumpers on the circuit board. See *Setting the Jumpers*.
4. Remove the appropriate wiring and mounting knockouts from the back cover. The detector can be mounted on a flat wall or in a corner. See Figure 4.
5. Pull the wires through the knockout holes and strip 1/4 inch (6.4mm) of insulation from each wire.
6. Run each wire through the strain relief (see Figure 4) and under the appropriate screw terminals (see Figure 3) on the base and tighten the screws.
7. Use screws to attach the base to the wall. Use screw anchors if necessary. See *Mounting Adjustments*.
8. Line up the tabs on the bottom of the front cover/electronic module with the corresponding tabs on bottom of the base and push the front cover/electronic module firmly down onto the base.
9. Tighten the closing screw. See Figure 1.
10. Apply power. The green LED should light for approximately 25 seconds and then go out.
11. Walk test the coverage pattern as follows:
 - Walk throughout the intended coverage area.
 - Verify the detector alarms. See *Understanding the LED*.

Note

Most units walk test more accurately if the person testing waits 10 seconds between tripping the unit and walking again. This allows the detector to stabilize between trips.

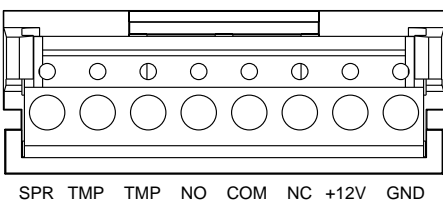


Figure 3. Wiring

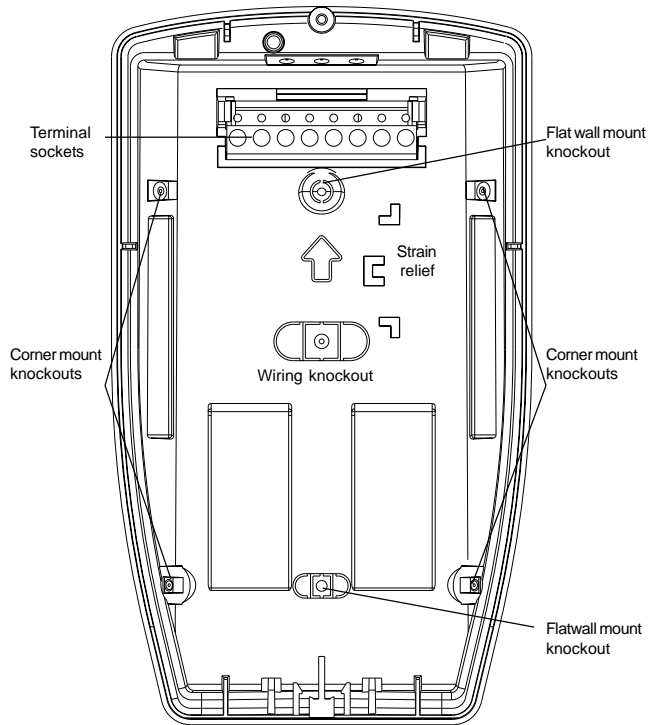


Figure 4. Detector Base

Mounting Adjustments

Flat Wall Mount

Mount the unit using the two flat wall mount knockouts (see Figure 4) Use the bracket to adjust the angle of coverage for mounting on a flat wall. See Figure 5 for the best initial bracket setting for the mounting height used. Make sure the mounting screws are tightened before testing the unit. If you need to make further adjustments, loosen the bottom screw, adjust the bracket, tighten the bottom screw, and test the unit.

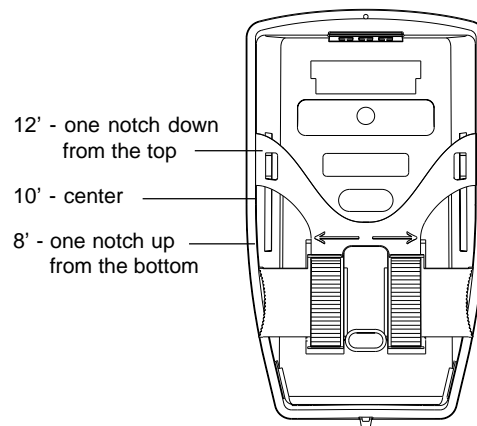


Figure 5. Mounting Adjustment Bracket

Corner Mount

Mount the unit using two corner mount knockouts (see Figure 4) on one vertical side of the unit. The top corner mount knockouts are designed with room to adjust the coverage pattern. Mount and tighten both corner mount screws. Test the unit. If you need to make further adjustments, loosen the top corner mount screw, adjust the unit, tighten the top corner mount screw, and test the unit.

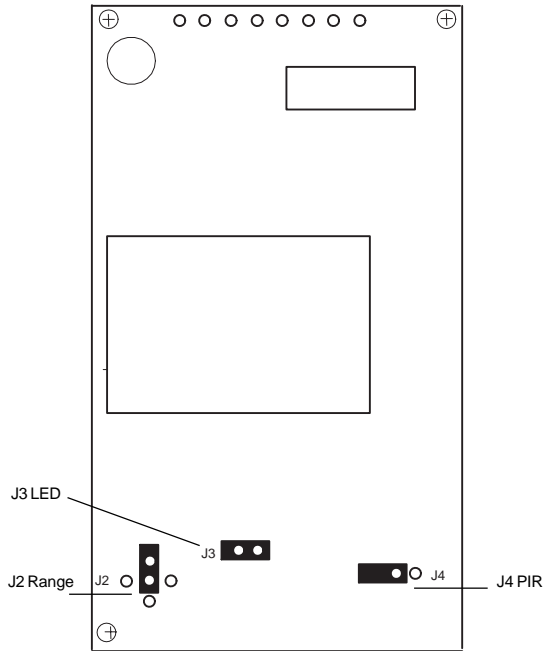


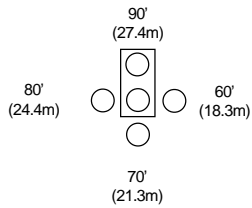
Figure 6. Circuit Board

Setting the Jumpers

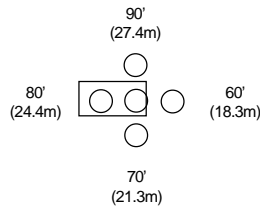
The detector provides jumpers to select the detection range and PIR and LED operation. See Figure 6.

J2 Range - Use the jumper to cover the center pin and the pin indicating the desired range. No jumper = 90 feet (27.4m) and under.

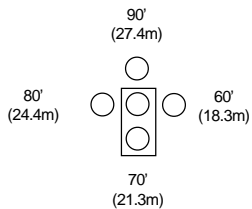
90 feet (27.4m) and under
(factory default)



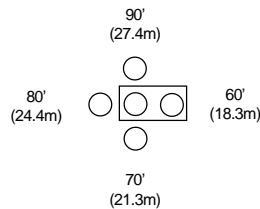
80 feet (24.4m) and under



70 feet (21.3m) and under



60 feet (18.3m) and under



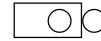
Note

You need to set J2 as close to the intended coverage range as possible. Overshooting the coverage area may cause false alarms.

J3 LED -



ON = LED enabled (factory default)



OFF = LED disabled

J4 PIR -



ON = Radar only enabled



OFF = PIR and Radar enabled (factory default)

Understanding the LED

The multi-color LED located on the bottom of the detector indicates the status of the unit as described in the following table.

LED	Status
Red	PIR and Radar detection. The detector is in alarm and the relay has switched.
Green	PIR detection only (no alarm).
Yellow	Radar detection only (no alarm).

In Radar-only mode:

LED	Status
Red	Radar detection.

Maintaining the Detector

When installed and used properly, the detector provides many years of service with minimal maintenance. You should walk test the detector annually to ensure proper operation.

Clean the inside of the unit with a soft-bristled brush or compressed air. Clean the outside with a damp (water) cloth as needed to keep it free of dust and dirt. **Always test the unit after cleaning.**

When the cover is removed, power is interrupted to the sensor. Once the cover has been replaced, the green LED will illuminate for 25 seconds while the sensor warms up. After the green LED goes off, wait one minute and walk test the sensor.

Specifications

Input voltage	8.5 to 18VDC (UL: 10 to 16VDC)
Typical current	23mA (LEDs off)
Maximum current	35mA
Electrical configuration	Form C
Relay rating	28VDC, 100mA max.
Tamper	100ma, 40VDC
Detection range	90' (37m) x 90°
Target velocity	0.5 ft/sec to 5 ft/sec
Alarm duration	5 sec ± 10%
Mounting height	8' to 12' (2.4m to 3.7m)
Operating temperature	32° F to 122° F (0° C to 50° C)
Relative humidity	5 to 93% non-condensing
Dimensions:	3.5" (89mm) W 6.1" (155mm) H 3.1" (79mm) D
Weight	6.8 oz (193g)
Color	white
Field wiring size	12-24 AWG
Microwave frequency	5.8GHz

Product Ordering

Model Number	Description
RCR-90	Dual technology, range-controlled radar, passive infrared detector with form C relay, stealth mode, tamper contacts, 90 foot (27.4m) maximum range

