

Modular Room Control MRC19-PIR Series Motion Detector Sensors

Application

The MRC19-PIR is a Passive Infrared (PIR) motion detector sensor (wall mount or ceiling mount). The device adds occupancy sensing capability to the Modular Room Control (MRC) integrated room control system. It is used in conjunction with a door contact device and a room controller to determine occupancy in the guest room. This determination contributes to enhanced security, energy management, and overall operating efficiency for a hotel.

Mounting

Location Considerations

MRC19-PIRW (Wall Mount)

Place the motion detector on the wall, as close to the ceiling as possible, and preferably in a corner of the room that overlooks the bed and the entrance area. The field of view for the sensor is 90° horizontal and 45° vertical. Mount at a slight downward angle to maximize coverage. The down side of the PIR is the end with the small window in it.

**CAUTION: Risk of Shock.**

Disconnect the power supply before mounting the motion detector to prevent electrical shock or possible damage to the equipment.

To mount the motion detector:

1. Remove the cover of the motion detector.
2. Drill a hole in the top part of the plastic, and fish the four-conductor cable through the hole.
3. Mount the detector on the wall using two screws. These screws can be pushed through the two marked circles in the plastic housing. Tighten the screws.

MRC19-PIRC (Ceiling Mount)

Mount the motion detector on a firm section of ceiling, at a height of between 8 and 15 feet and well away from Neon or Fluorescent lights. Keep cables for the PIR away from electrical wires by a minimum of 12 in. (305 mm).

Select the mounting position for optimum coverage, noting that the coverage provided by the detector is slightly elliptical. The field of view is 360° horizontal and 45° vertical. The Light-Emitting Diode (LED) position and the keyhole on the circuit board can identify the correct position.

**CAUTION: Risk of Shock.**

Disconnect the power supply before mounting the motion detector to prevent electrical shock or possible damage to the equipment.

To mount the motion detector:

1. Remove the motion detector cover by turning the cover in a counterclockwise direction.
2. Screw the base to the ceiling at the required location, passing the wire through the cable entry hole. If the circuit board was removed, replace it at this time.
3. Use a silicon gel to seal any holes. This prevents air drafts and foreign matter, which may cause false alarms, from entering the PIR.

Wiring

MRC19-PIRW (Wall Mount)

**CAUTION: Risk of Equipment Damage.**

Before applying power, make all wiring connections and check the connections. Short-circuited or improperly connected wires may result in permanent damage to the unit.

IMPORTANT: Make all wiring connections in accordance with the National Electrical Code (NEC) and all local regulations.

Refer to Figure 1 for wiring connections and dimensions. To wire the motion detector:

1. Use a four-conductor, 24-gauge cable from the location of the motion sensor to the MRC thermostat. Strip the insulation from the four wires 1/4 in. (6.35 mm).
2. Turn the four screws on the detector's terminal strip counterclockwise to open them to accept the wires (see Figure 1).
3. Allow at least 4 in. (102 mm) of slack on the cable from the motion detector at the detector's end, to allow for ease of maintenance in the future.
4. Connect the two leads, bringing the 12 VDC power to the terminals marked + and -. Observe polarity. Tighten the screws and tug on the wires to verify that a good connection has been made. Do not exert excessive force when tightening the screws, as this will deform the terminals.
5. Connect the second pair of leads to the terminals marked C and NC. There is no need to observe polarity. Tighten the screws and tug on the wires to verify that a good connection has been made. Do not exert excessive force when tightening the screws, as this will deform the terminals.
6. The onboard LED has a dual function. It will show a short flash for a pre-alarm condition and a long flash (5 seconds) for an alarm condition. If the flashing is not desirable, removing the LED (LK3) link will disable the LED.
7. Install the detector cover.
8. Apply power.
9. Perform a walk test as described in the *Setup and Adjustments* section.

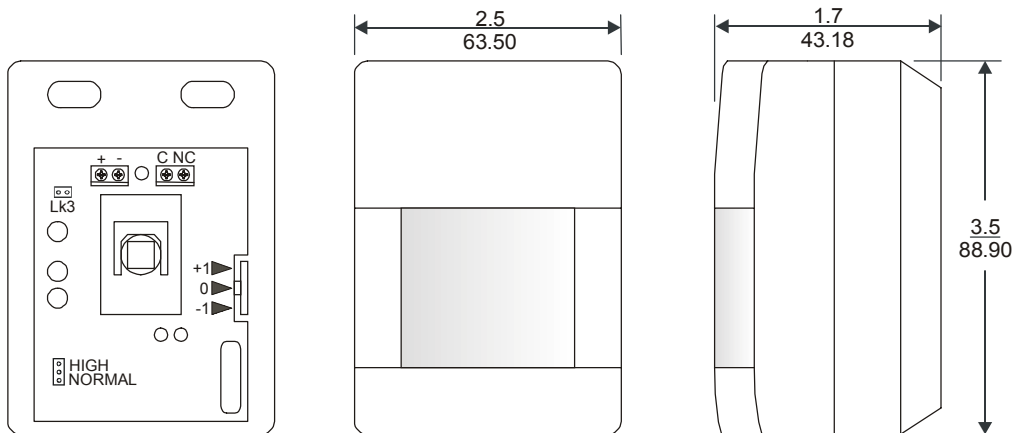


Figure 1: MRC19-PIRW Wiring Connections and Dimensions, in. (mm)

MRC19-PIRC (Ceiling Mount)



CAUTION: Risk of Equipment Damage.

Before applying power, make all wiring connections and check the connections. Short-circuited or improperly connected wires may result in permanent damage to the unit.

IMPORTANT: Make all wiring connections in accordance with the National Electrical Code (NEC) and all local regulations.

Refer to Figure 2 for wiring connections and dimensions. To wire the motion detector:

1. Use a four-conductor, 24-gauge cable from the location of the motion sensor to the MRC thermostat. Strip the insulation from the four wires 1/4 in. (6.35 mm).
2. Allow at least 4 in. (102 mm) of slack on the cable from the motion detector at the detector's end, to allow for ease of maintenance in the future.
3. Connect the two leads, bringing the 12 VDC power to the terminals marked 12 V and 0 V. Observe polarity. Tighten the screws and tug on the wires to verify that a good connection has been made. Do not exert excessive force when tightening the screws, as this will deform the terminals.
4. Connect the second pair of leads to the terminals marked N/C. There is no need to observe polarity. Tighten the screws and tug on the wires to verify that a good connection has been made. Do not exert excessive force when tightening the screws, as this will deform the terminals.
5. These are normally closed relay contacts that open when motion is detected. Do not wire the Tamper (not used in this application).
6. Set the range and pulse links according to the required application. It is recommended that the pulse link be in the On position and the range link in the Off position under normal circumstances.
7. Replace the cover.
8. Apply power and wait for the LED to extinguish (approximately 30 seconds).
9. Perform a walk test as described in the *Setup and Adjustments* section.

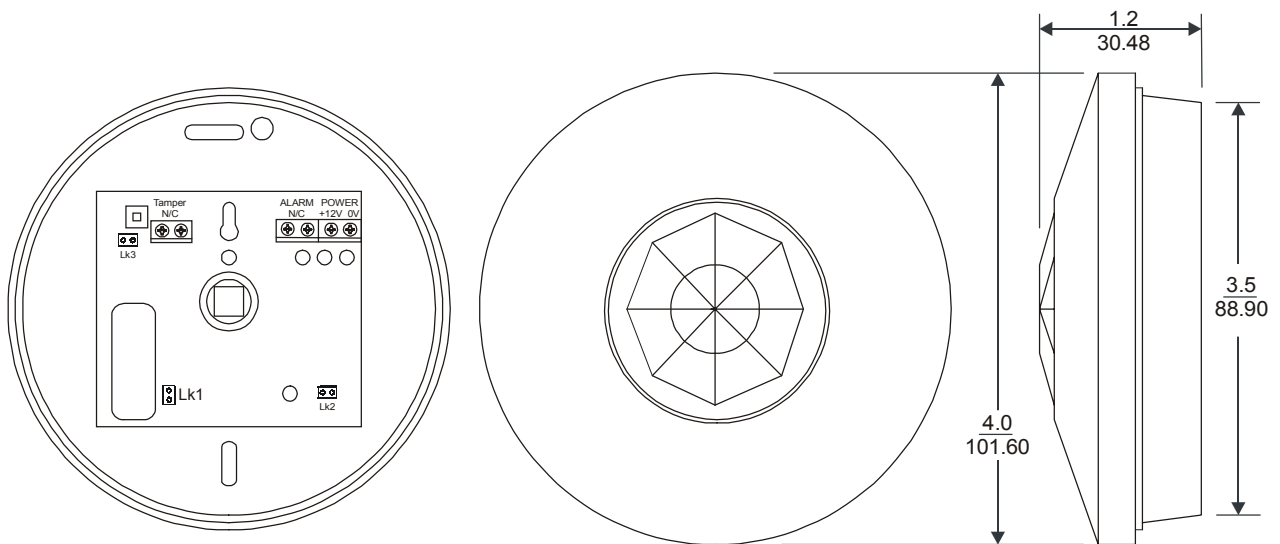


Figure 2: MRC19-PIRC Wiring Connections and Dimensions, in. (mm)

Ceiling Mount PIR Options

Alarm LED LK3

The onboard LED is dual function. It will show a short flash for a pre-alarm condition and a long flash (5 seconds) for an alarm condition.

If the flashing LED is not desirable, removing the LED link will disable the LED.

Pulse Count LK2

It may be unavoidable to install the detector in a bad environment. Pulse count is a means of adjusting the number of pulses received before an alarm is generated. In a normal environment with the jumper on, 1-2 pulses should cause an alarm. For harsher environments, remove the jumper and 3-4 pulses will cause an alarm.

Range LK1

The range link is a means of setting the level of infrared required to generate a pulse from the detector, which will directly affect the detector's sensitivity. The correct setting will depend on the size of the area to be covered.

- With the range link on, the detector will detect the full range of motion.
- With the range link removed, the detector will detect a much smaller area.

Note: The range of the PIR is determined by height of mounting and whether LK1 is on or off.

Setup and Adjustments

Walk Test

By walking throughout the room and observing the LED on the PIR, the covered range and pattern can be verified (see Figure 3 and Figure 4). An alarm should occur at a maximum of 3 to 4 normal steps.

Stop and wait for the LED to turn off before continuing the walk test, continuous motion in the protected area will keep the alarm LED activated.

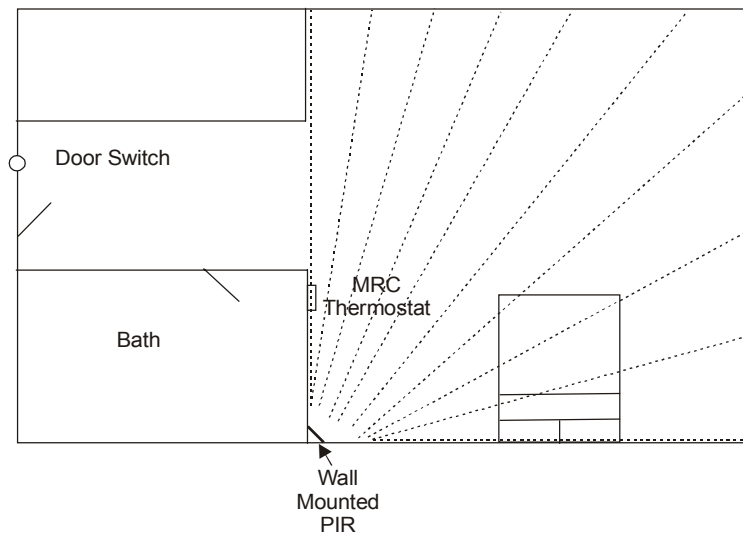


Figure 3: Wall Mounted PIR Field of Coverage

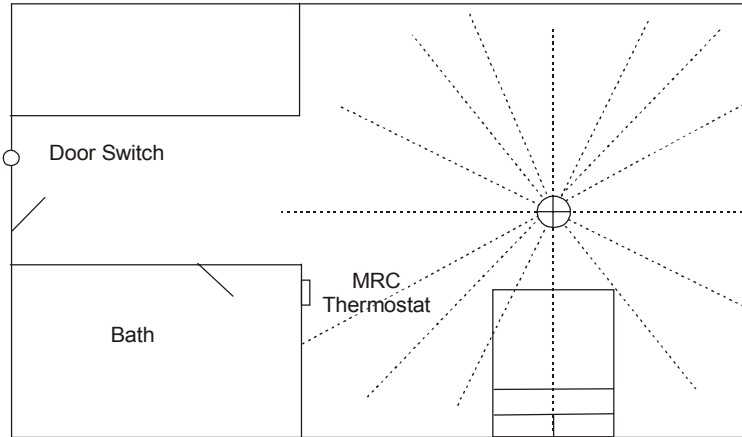


Figure 4: Ceiling Mount PIR Field of Coverage

Technical Specifications

Product	MRC19-PIRW Motion Detector Sensor	MRC19-PIRC Motion Detector Sensor
Power Input	12 VDC	12 VDC
Dimensions: H x L x W	See Figure 1.	See Figure 2.
Shipping Weight	2.8 ounces	2.5 ounces

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



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