



**Passive Infrared Motion Detector
User Manual**



Model: IRM90-R

ISO 9001:2000



**Part Number: MAN-0042 Rev 05
October 2008**

IMPORTANT INFORMATION

This manual is for informational purposes only. Although every effort has been made to ensure the correctness of the information, technical inaccuracies may occur and periodic changes may be made without notice. Net Safety Monitoring Inc., assumes no responsibility for any error contained within this manual.

This manual is a guide for use of the Infrared Motion Detector and the data and procedures contained within this document have been verified and are believed to be adequate for the intended use of the detector. If the detector or procedures are used for purposes other than as described in the manual without receiving prior confirmation of validity or suitability, Net Safety Monitoring Inc. does not guarantee the results and assumes no obligation or liability.

No part of this manual may be copied, disseminated or distributed without the express consent of Net Safety Monitoring Inc.

Net Safety Monitoring Inc. products are carefully designed and manufactured from high quality components and can be expected to provide many years of trouble free service. Each product is thoroughly tested, inspected and calibrated prior to shipment. Failures can occur which are beyond the control of the manufacturer. Failures can be minimized by adhering to the operating and maintenance instructions herein. Where the absolute greatest of reliability is required, redundancy should be designed into the system.

WARRANTY

Net Safety Monitoring Inc warrants this detector against defective parts and workmanship for a period of for 36 months from date of purchase. No other warranties or liability, expressed or implied, will be honoured by Net Safety Monitoring Inc.

Contact Net Safety Monitoring Inc. or an authorized representative for details.

We welcome your input at Net Safety Monitoring Inc. If you have any comments please contact us at the telephone number or address below or visit our web-site, www.net-safety.com, and complete our on-line customer survey.

CONTACT INFORMATION

Net Safety Monitoring Inc
Corporate Headquarters
2721 Hopewell Place NE
Calgary, AB Canada T1Y 7J7

Direct: (403) 219-0688
Facsimile: (403) 219-0694
E-mail: nsmsales@net-safety.com
Web-site: www.net-safety.com

Table of Contents

SECTION 1: Introduction	4
Description	4
Features	4
Check Package.....	4
Figure 1: Dimensional Drawing.....	5
SECTION 2: Installation and Start Up	6
Figure 2: View of Detection (Active) and “Dead” Zones.....	6
SECTION 2: Installation and Start Up (cont’d).....	7
2.1 Wiring.....	7
Figure 3: Wiring Diagram for the IRM90-R	7
2.2 Installation Checklist	8
2.3 Start Up	8
2.4 Troubleshoot	8
2.5 Maintenance	8
2.6 Spare Parts / Accessories	8
2.7 How to Return Equipment	9
Appendix	10
Appendix A: Electrostatic Sensitive Device (ESD)	10
Appendix B: Technical Data and Specifications	11

SECTION 1: Introduction

Description

The IRM90-R is a passive infrared (PIR) motion detector in an explosion proof housing designed to provide maximum safety and security in Hazardous locations. The detector monitors infrared radiation in the 8 to 15 micrometer range and looks for changes in this radiation such as an intruder walking through its 65 degree cone of vision.

The IRM90-R comes with a swivel mount to make mounting and angle adjustments fast and easy. The explosion proof housing is factory sealed to further reduce the labour involved with installation. Normally Open Energized fail safe relay contacts allow for connection to alarm circuitry, annunciation panels or other devices. The electronic circuitry does not require any adjustments by the user.

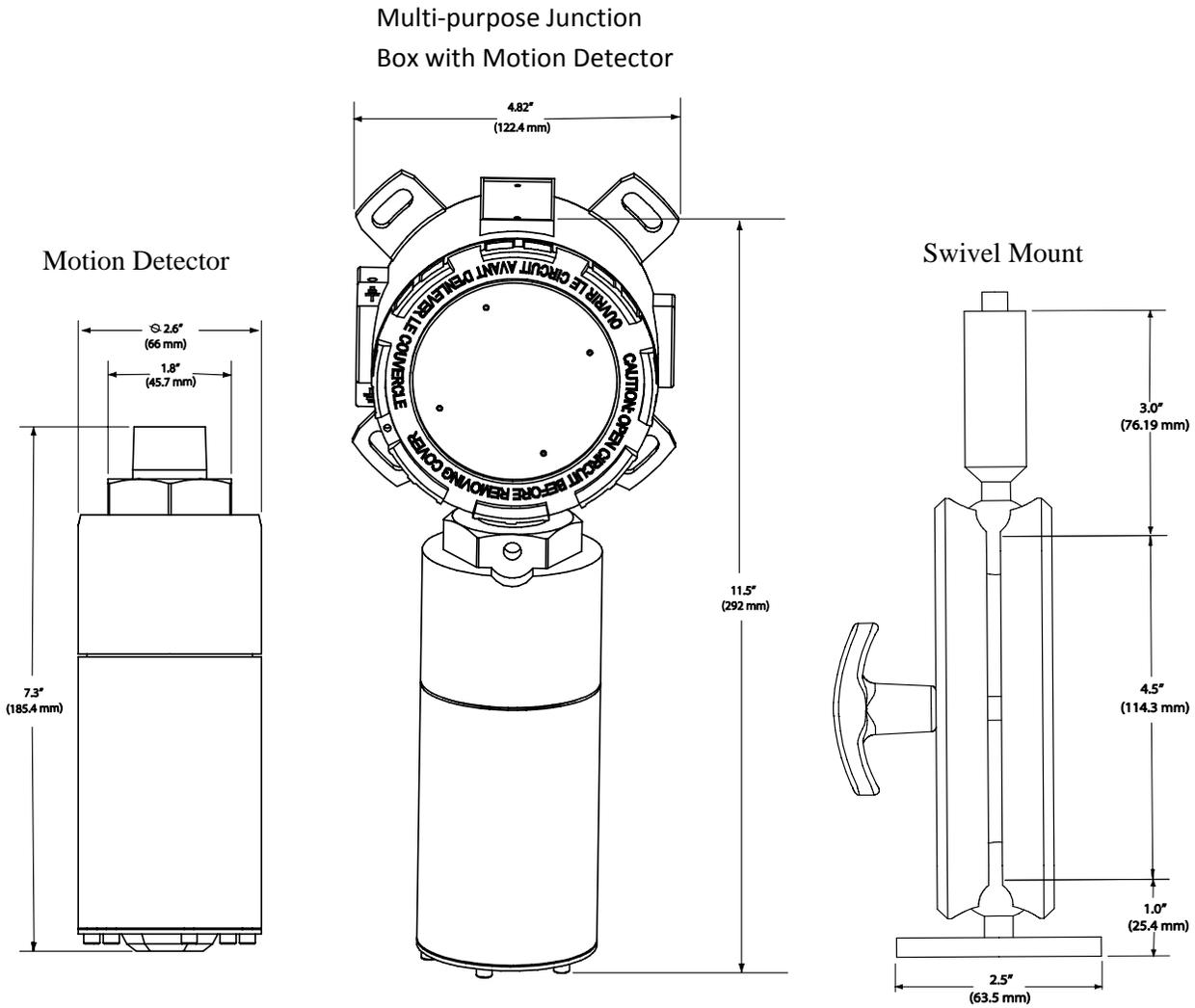
Features

- 3/4 NPT conduits fitting for easy installation.
- Factory sealed enclosure eliminating the need for conduit seals in the field.
- Normally Open Energized, fail safe relay contacts for connection to alarm circuitry or other devices. Relay Contacts will close upon power up and open when motion is detected or power is lost to the detector.
- One meter of 16 AWG cable is connected to the sensor for easy installation.
- Flexible 15 to 28 VDC operating voltage.
- Swivel mount provided to further simplify installation.

Check Package

Remove all the components from the packaging carefully, check components against the packing list. Inspect all components for obvious damage and broken or loose parts. Notify the carrier and distributor immediately of any damaged or missing parts.

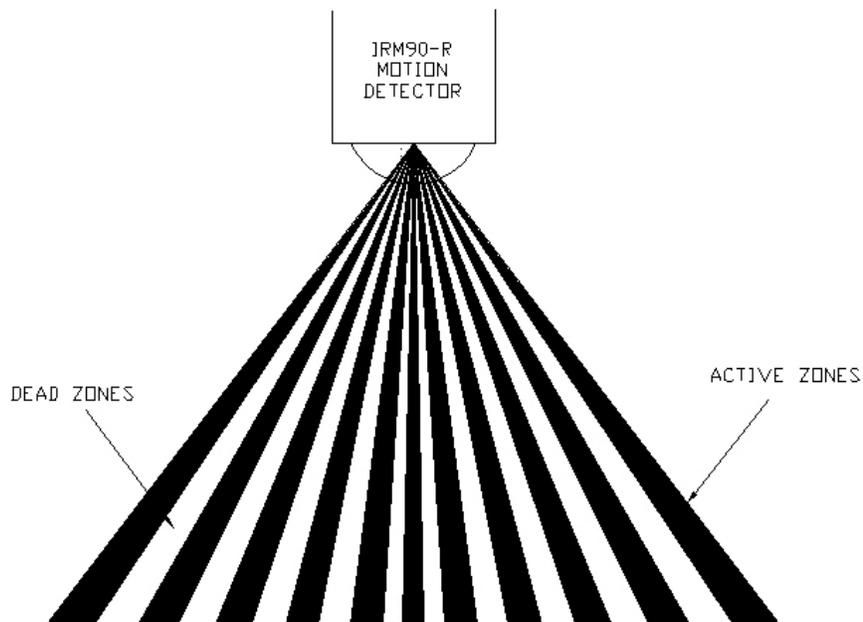
Figure 1: Dimensional Drawing



SECTION 2: Installation and Start Up

The IRM90-R Motion Detector is designed to be used for monitoring in Hazardous areas. The unit should be wall mounted, using the swivel mount provided. The detector housing should be angled downward at a 45 degree angle. It should be mounted so that it doesn't detect changes in Infrared from heaters, light sources, windows which receive direct sunlight, or moving machinery. The Fresnel lens attached to the end of the detector provides a 65 degrees cone of vision. This cone of vision has 'dead' zones (areas where the detector will not see motion), but these are dispersed throughout the field of view. The dead zones should not cause detection problems. It would be very difficult for an intruder to move around within the detectors field of view and not come in contact with active regions. See Figure 2.

Figure 2: View of Detection (Active) and "Dead" Zones



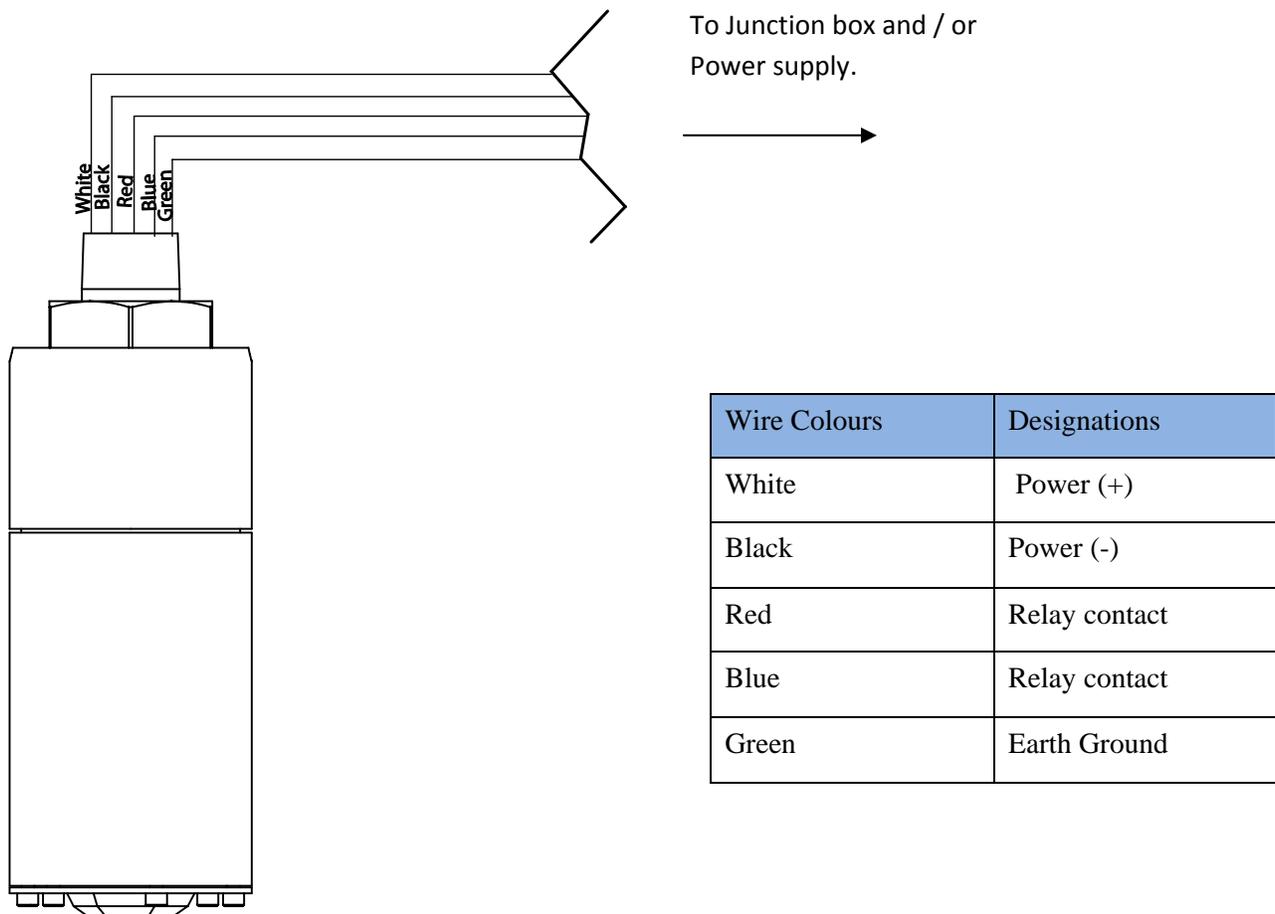
SECTION 2: Installation and Start Up (cont'd)

2.1 Wiring

Warning:  Do not open the Motion Detector's housing or junction box in a Hazardous area.

One meter of wiring cable has been connected to the detector and the unit has been sealed. There are five wires connected to the unit. The White wire is designated for power and should be connected to the positive terminal of the power supply. The Black wire is to be connected to the negative of the power supply. The unit operates between 15 and 28 VDC. It is recommended that a 24 VDC power supply be used. The Red and Blue wires are connected to the internal relay contacts with an 18 ohm resistor connected in series. The relay contacts are rated at 24 VDC with maximum current rating of 100mA resistive. The Green wire should be connected to Earth Ground. If the Net Safety Multi-purpose Junction Box is being used, see MAN-0081 for General Termination Board (JB-MPG-A/S).

Figure 3: Wiring Diagram for the IRM90-R



2.2 Installation Checklist

The following checklist is provided for the user to double check the system to be sure that all phases of the system installation are completed and have been performed correctly.

- Motion Detector (IRM90-R) is securely mounted.
- All wiring and cables are properly connected.
- Power source is operational.

2.3 Start Up

Once wiring has been completed and checked, the detector can be powered up. The detector will have a short warm up period (usually about one minute). Since the relay is set for energized and normally open, the contacts will close on power up. After the detector is warmed up and functioning normally, a walk-through should be performed to ensure the detector is functioning correctly and the field of view is covering the area desired. Monitor the relay contacts when the walk-through is performed. The contacts will open when the unit detects motion (keep in mind that dead zones are present throughout the field of view). If the field of view does not cover the desired area, adjust the angle or position of the detector until the desired area is covered.

A walk-through should be performed regularly to ensure that the desired coverage area is still within the field of view of the detector. The period of time between “walk-throughs” will vary depending on the plant conditions and experience.

2.4 Troubleshoot

The Motion Detector is not designed to be repaired in the field. If the detector does not respond to the walk-through tests, check wiring and repeat the tests. If the problem persists, please contact our service department to try and resolve the issue over the phone. If the issue cannot be solved over the phone, the Motion Detector may have to be returned to the factory for repair. Refer to “How to Return Equipment”.

2.5 Maintenance

Net Safety Monitoring’s Motion Detector (IRM90-R) does not require any calibration by the user. The external Fresnel lens should be cleaned regularly to ensure maximum sensitivity. Rubber O-rings are used on the detector’s housings to ensure watertight integrity of the detector. The housing should be opened periodically and the O-rings inspected for breaks, cracks or dryness. If cracks are visible, the O-ring should be replaced. If the O-ring feels dry to the touch, a thin coating of polyalphaolefin grease should be applied on it. When re-installing the O-ring, be sure it is seated properly in the groove of the housing. A coating of lubricant should also be applied to the threads of the housing before reassembling the detector. This will both lubricate the threads and help to prevent moisture from entering the detector’s housing.

2.6 Spare Parts / Accessories

Net Safety	Description
SNS-036-00	Motion Detector Electronic Module
HSG-0050-00-B	Housing Base
HSG-0051-00-B	Housing Top with lens
ORG-0005	O-Ring
Swivel-7	Swivel Mount

2.7 How to Return Equipment

A Material Return Authorization number is required in order to return equipment. Please contact Net Safety Monitoring at **(403) 219-0688**, before returning equipment or consult our Service Department to possibly avoid returning equipment.

If you are required to return equipment, include the following information:

1. A Material Return Authorization number (provided over the phone to you by Net Safety).
2. A detailed description of the problem. The more specific you are regarding the problem, the quicker our Service Department can determine and correct the problem.
3. A company name, contact name and telephone number.
4. A purchase order, from your company, authorizing repairs or request for quote.
5. Ship all equipment, prepaid to:
**Net Safety Monitoring Inc.,
2721 Hopewell Place NE,
Calgary, Alberta, Canada, T1Y 7J7**
6. Mark all packages: **RETURN for REPAIR.**
7. Waybills, for shipment outside Canada, must state: **Equipment being returned for repair
All charges to be billed to the sender**

Ensure a duplicate copy of the packing slip is enclosed inside the box indicating item 1 – 4 along with the courier and account number for returning the goods.

Pack items to protect them from damage and use anti-static bags or aluminum-backed cardboard as protection from electro-static discharge.

ALL equipment must be shipped prepaid. Collect shipments will not be accepted.

Appendix

Appendix A: Electrostatic Sensitive Device (ESD)

Definition: Electrostatic discharge (ESD) is the transfer, between bodies, of an electrostatic charge caused by direct contact or induced by an electrostatic field.

The most common cause of ESD is physical contact. Touching an object can cause a discharge of electrostatic energy—**ESD!** If the charge is sufficient and occurs near electronic components, it can damage or destroy those components. In some cases, damage is instantaneous and an immediate malfunction occurs. However, symptoms are not always immediate—performance may be marginal or seemingly normal for an indefinite period of time, followed by a sudden failure.

To eliminate potential ESD damage, review the following guidelines:

- Handle boards by metal shields—taking care not to touch electronic components.
- Wear grounded wrist or foot straps, ESD shoes or heel grounders to dissipate unwanted static energy.
- Prior to handling boards, dispel any charge in your body or equipment.
- Ensure all components are transported and stored in static safe packaging
- When returning boards, carefully package in the original carton and static protective wrapping
- Ensure **ALL** personnel are educated and trained in ESD Control Procedures

In general, exercise accepted and proven precautions normally observed when handling electrostatic sensitive devices. A warning label is placed on the packaging, identifying product using electrostatic sensitive semiconductor devices.



Appendix B: Technical Data and Specifications

Specification	Motion Detector (IRM90-R)
Operating Voltage Range	(15 to 28) VDC
Power consumption at 24VDC	21 mA nominal, 30 mA /510mW maximum
Operating Temperature Range	-10° C to +50° C (+14F to 122F)
Relay Output	Normally Open, Energized, fail safe relay contacts (relays contacts will close on power up) with an 18 ohm resistor in series. Rated 24 VDC, 0.1 Ohms resistive. The relay contacts will open when motion is detected. It reverts to a closed state 2 to 3 seconds after motion is no longer detected. The relay will also open if power to the detector is disrupted (lost).
Spectral Sensitivity Range	Responds to changes in infrared radiation levels between 8 and 15 micrometers.
Cone of vision	Nominal cone of vision of 65° provided by the Fresnel lens attached. The maximum range of the detector is 6 meters.
Approvals	
Approvals	 Housing is CSA certified for hazardous locations. Class 1, Division 1, Groups B, C and D. NEMA 4X for environmental protection.

Net Safety Monitoring Inc.
2721 Hopewell Place NE, Calgary, AB Canada T1Y 7J7
1-866-FIREGAS (347-3427) | ph. (403) 219-0688 | fx. (403) 219-0694
<http://www.net-safety.com> | Email: nsmsales@net-safety.com

PRODUCT SERVICES CONTACT INFORMATION
Telephone [8am - 5pm MDT]: (403) 769-6074 | (403) 717-8219
Fax: (403) 219-0694 Email: productservices@net-safety.com
http://www.net-safety.com/service/product_services.html

