

## MegaRed® 180 Dual Range detector Model LRP 180QH

### Installation and Set-up Instructions

*(Please keep for future reference)*

### DESCRIPTION

Model LRP 180QH is designed to detect human movement at ranges of up to 180 metres. The rugged housing contains two separate detectors. One detector is similar to the popular REDWALL LRP 100Q quad sensor which has a detection range up to 100 metres. The other detector is also a 'quad' sensor system with a long focal length optical system specifically designed to detect movement at ranges between 80 and 180 metres.

The LRP 180QH is ideal for use with CCTV surveillance systems which have multi-cameras or domes with pan, tilt and zoom facilities. The two outputs (near and far) may be used to automatically activate camera pan or zoom controls to precisely locate an intruder over the full detection range. Alternatively, the two outputs may be used to direct an operator to a specific area of interest or to activate local floodlighting.

The LRP 180QH comprises two units, the detector head and the control unit which contains three relays for 'near', 'far' and tamper signalling. The control unit may be located remote from the detector head, for instance at a control/monitoring area, or may be located close to the detector or camera where direct automatic pan or zoom is used.

Connection between head and control unit is 4-core screen cable which may be up to 1400 metres. (See cable chart Fig. 6). Alarm signalling between the detector head and the control unit is by means of simple line current monitoring which is highly immune to radio and electrical interference.

Fig. 1 shows the coverage patterns of the two detectors. At the recommended mounting height of 8 feet (2.5 metres) there will be an area directly below the unit extending some 6 metres where an Passive Infrared

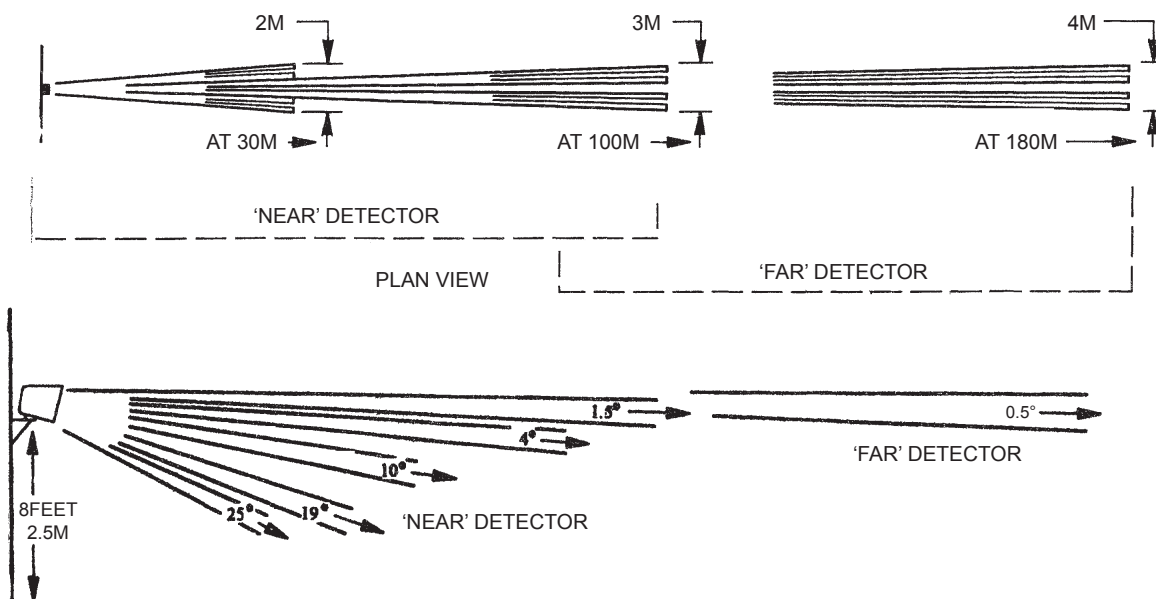


Fig. 1

detectors ultimate detection range will vary according to the background temperature and the size, speed and clothing of the intruder. The LRP 180QH is designed and tested to detect a normally clothed, normal size adult, moving at slow or medium walking pace across the zones. Variations in size and clothing, background temperature, speed and direction of motion may result in the ultimate detection range being less (or more) than 180 metres.

Fig. 2 shows the schematic principles of the system. Note that both 'near' and 'far' systems use dual-channel signal processing and event-memory circuits which require intruder detection to occur in both channels within a time period in order to be accepted as an alarm condition.

An alarm condition in either 'near' or 'far' systems sets the line interface to provide various levels of line current which are translated into relay activation at the control unit. An open-circuit (zero line current) or removal of the control unit lid will activate the tamper relay.

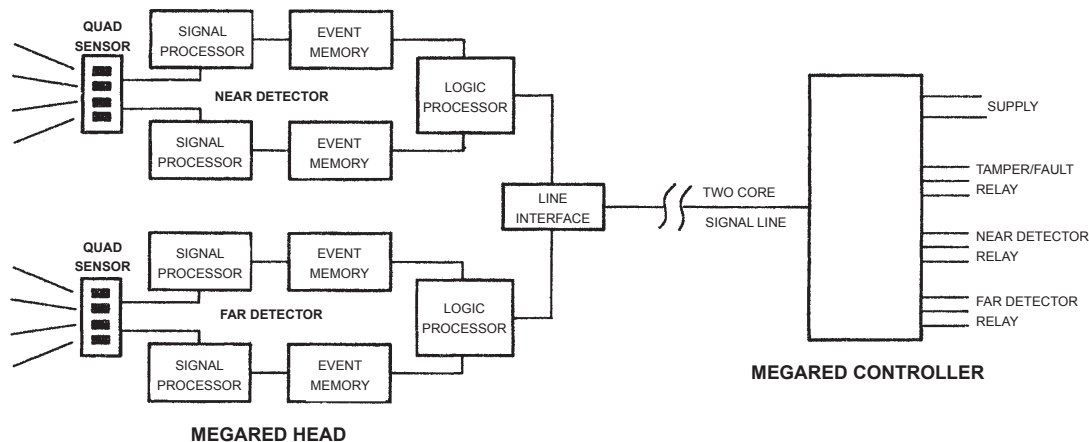


Fig. 2

## **INSTALLATION**

**Important:** The LRP 180QH contains fragile optical components and must be handled with care. Before installation, check that the unit is free from damage and that no loose objects are rattling around inside.

When planning the location, remember that all PIR detectors respond best when the intruder crosses the zones.

IF THE GROUND IS NOT LEVEL AND HAS DIPS, INTRUDERS MAY CROSS BELOW THE ZONES WHEN WALKING IN THESE DIPS AND NOT BE DETECTED. CAREFUL SYSTEM PLANNING IS STRONGLY RECOMMENDED.

The detector head **MUST** be securely mounted on a firm vertical surface using all four holes in the wall bracket. It is recommended that the expansion bolts (supplied) be used when wall mounting. If the detector head or its mounting surface moves during high winds, false alarms may result. (Even a half degree movement left and right will mean that the furthest zones will pan over 3 metres.)

The top surface of the head unit should be parallel with the ground. If the ground is level a spirit level may be used to set the head ready for walk-testing. (See Fig. 3+4)

When fixing the control unit, fix to a vertical surface with the cable glands at the bottom.

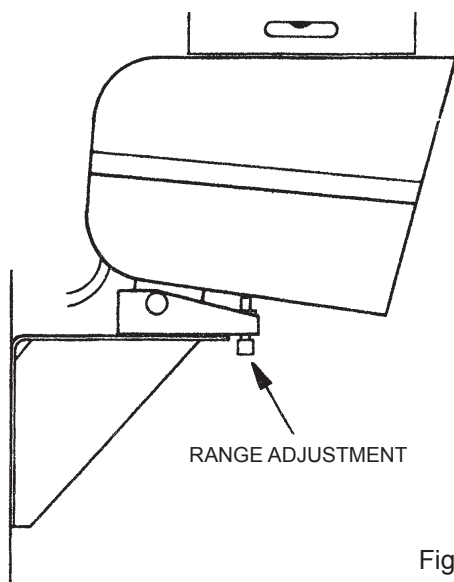


Fig. 3

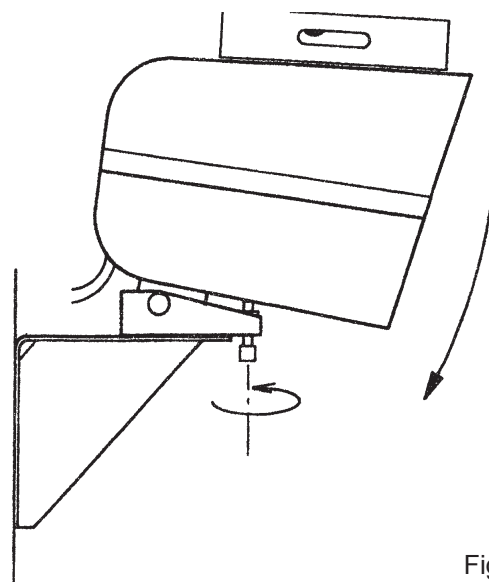


Fig. 4

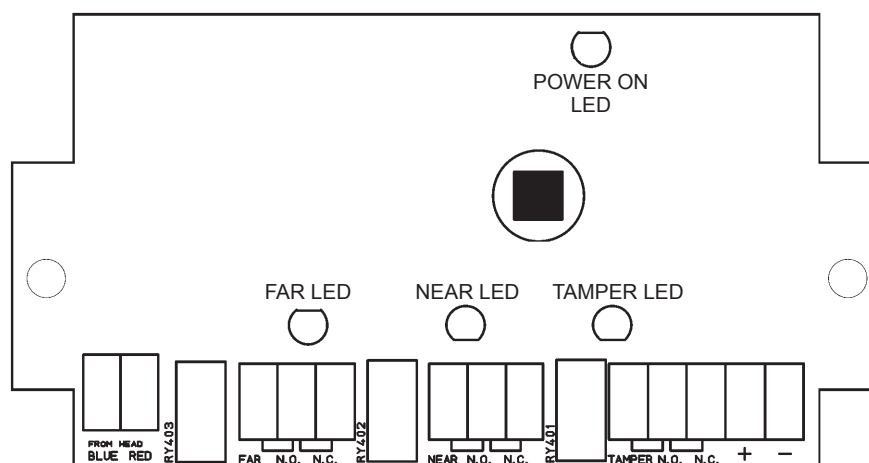


Fig. 5

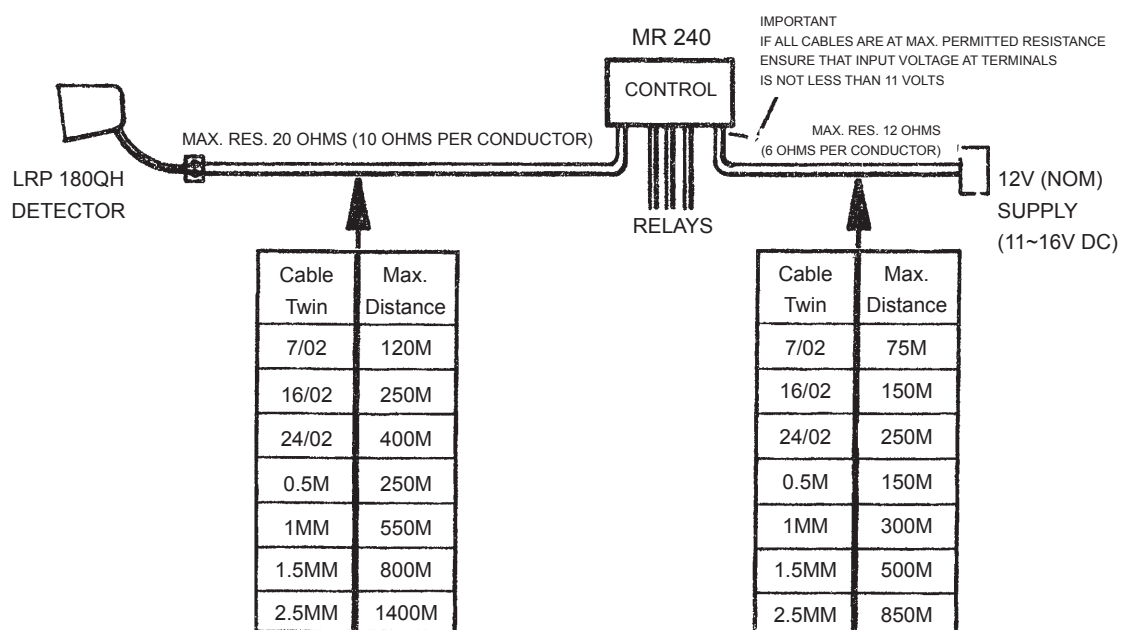


Fig. 6

## **CONNECTIONS**

Fig. 5 shows the terminal layout of the control unit. The three relays provide voltage-free change-over (form C) (S.P.D.T.) contacts rated 1 Amp. at 30V MAX.

### **WARNING!!! DO NOT CONNECT MAINS POWER TO ANY TERMINALS.**

If the control unit is located a long way from the head and heavy (1.5 or 2.5mm) cables are used, it is recommended that the cables are terminated in a separate junction box and smaller gauge cables are taken into the control unit terminals.

The 12volt input should preferably be from a float maintained battery/power pack capable of providing at least 100mA. with less than 0.25volt p-p ripple.

**NOTE:** The 12volt supply negative terminal of the control unit is connected to the case as is the negative terminal of the head input cable so the power supply negative will be grounded. Under normal quiescent conditions (no movement and control box lid fitted) all relays should be energised.

Cutting or disconnecting the head cable will activate (de-energise) the tamper relay.

Detection by the 'near' (6-100M) detector will activate the 'near' relay.

Detection by the 'far' (80-180M) detector will activate the 'far' relay.

Detection by both near and far detectors (mid-range) will activate the far relay only.

(The 'far' relay will override the 'near' relay).

Fig. 6 is a guide to maximum distances allowable for a selection of popular cable sizes. **NOTE** that the maximum allowable resistance between the head and control unit is 20 ohms (10 ohms per conductor) and the maximum resistance between the control unit and the D.C. power source is 12 ohms (6 ohms per conductor).

## **INITIAL TESTING**

Double check that the power supply input is the correct polarity (negative on the right). The control unit has a 'shunt' diode across the input terminals and the reverse connection will blow the power supply fuse (if fitted) or may damage the control unit if not fitted. With power applied, check that the voltage at the supply terminals is between 11.5 and 16volts. (with a float charged battery/power pack the voltage should be around 13.5V). If an oscilloscope is available, check that ripple is less than 0.25volt p-p. Check that the head signal cables are the correct way round (negative on the left) and that a voltage of between 9 and 12 is present. If no voltage is present, the head leads may be reversed. The supply LED should be lit.

Allow at least 60 seconds for the detector head to settle. The relays and associated LED indicators may switch rapidly during this period. With no movement in the protective zones the near and far relays should be energised and the indicators out. The tamper relay and light will be in alarm, pressing the tamper switch extension should energise the relay and extinguish the light. If it does not, the head signal cable is open-circuit.

Where the head is located some distance away from the control unit, a quick way of checking that the system is working is to connect a meter (set for 100 milliamps range) in series with the positive signal lead to the control unit terminal. When the system is first energised the head currents will fluctuate between 20 and 50 milliamps for some thirty seconds then should settle to around 7.5mA. Movement within the 'near' zones should cause the current to rise to around 19mA. Movement within the 'far' zones should register around 31mA and movement midway, with both detectors activated should register around 42mA.

**NOTE:** Waving a hand close to the front of the detector may not cause an alarm because the hand will be out of focus. For initial system testing it is better to angle the head down and walk across the zones a few metres away.

## **RANGE SETTING USING THE AUDIO WALK-TESTER OPM-WT**

The OPM-WT converts the voltage fluctuations at the detector into a changing audio tone. The tone pitch rises and falls as a zone is crossed. When the unit trips into alarm, the tone pitch suddenly rises. If there is no further movement the unit will re-set after some 10 seconds and the tone drop back to a lower pitch.

The OPM-WT has a switch allowing selection of either the 'near' or 'far' detector signals. It is plugged into the jack socket on the head underside next to the cable outlet. To avoid confusion, only one channel of the two dual channel processors are monitored. This means that crossing the zones one way may give a fluctuating tone followed by a trip, whereas crossing in the other direction may give a trip first.

Where the control unit is located close to the detector head, both the walk-tester and the alarm LEDs may be observed. (See Fig. 7). Where the control unit is remotely located, the walk-tester is the main means to assist with alignment.

If the control unit is remotely located and a walk-tester is not available, it is possible to observe the near and far alarm conditions by means of a milliamp meter connected in series with the red (+ve) signal cable. It is even possible to align the heads without any connection to the control unit by use of a 12volt battery and a milliamp meter. Fig. 8 shows this method and the chart shows the current flows to be expected for the various alarm conditions.

The above method only shows alarm trip conditions, it cannot show background fluctuations of the sensor signals which may be excessive. The OPM-WT walk-tester is strongly recommended since it is easy to hear any fluctuations which may be caused by unwanted motion of the sensor or objects within the zones. It also clearly shows where the zone boundaries are and where the ultimate range of the zones are.

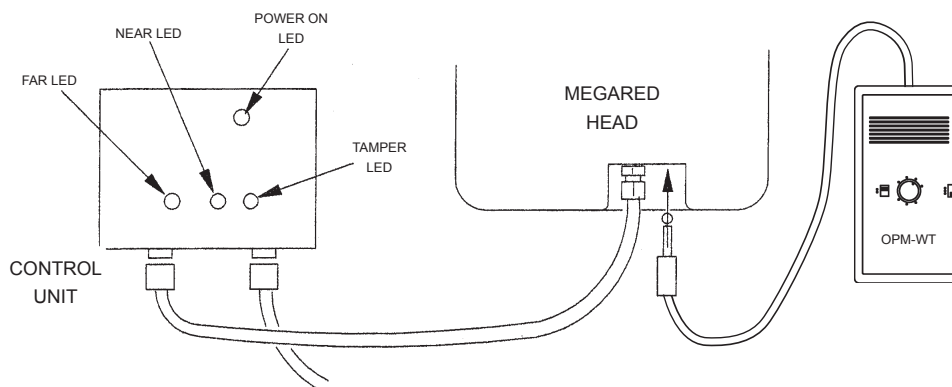


Fig. 7

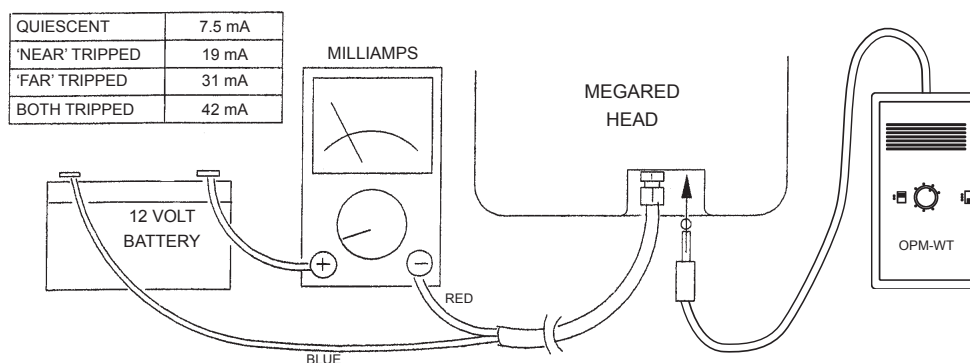


Fig. 8

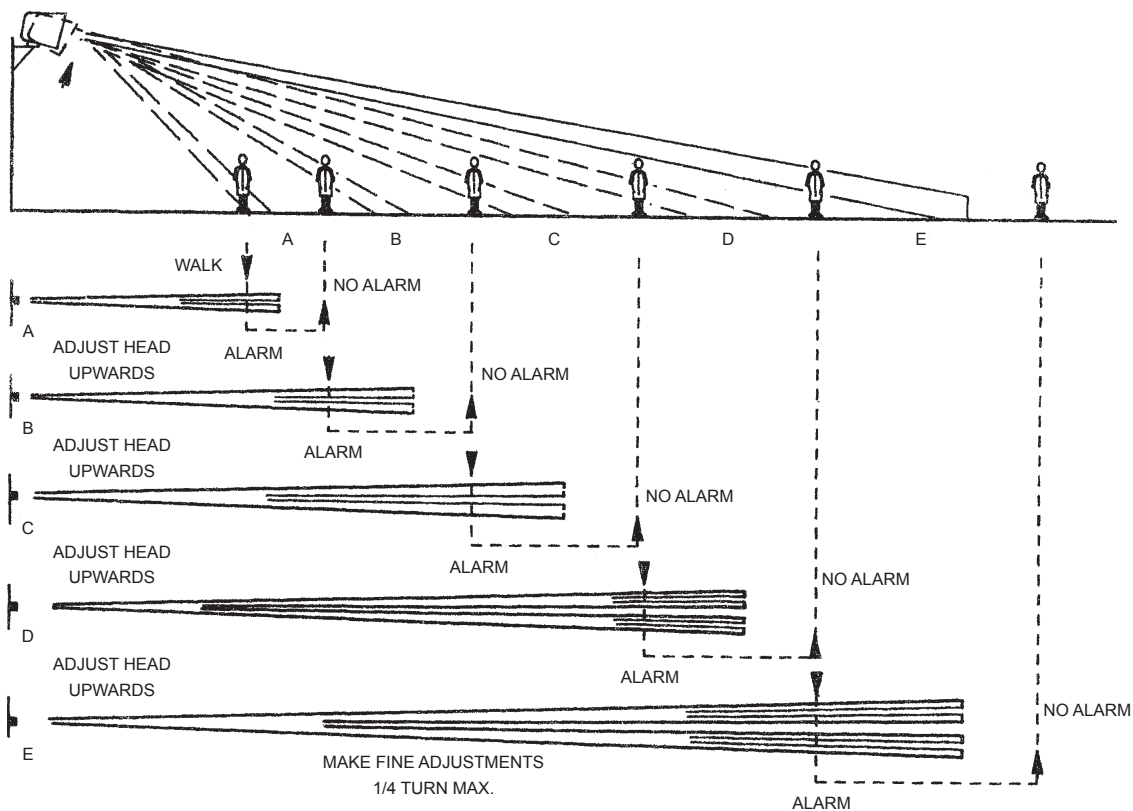
## **FINAL ALIGNMENT**

The recommended procedure is as follows:

- Check that the mounting bracket is firm then slacken the pan bolts and pan the head to the desired direction. Firmly tighten both bolts.
- Slacken the two tilt bolts and adjust the range adjustment screw to ensure that the top surface of the head is parallel to the ground.
- Assuming level horizontal ground, use a spirit level as shown in Fig. 3.
- Unscrew the range screw 3 turns causing the head to tilt downwards. (See Fig. 4&9)
- Plug in and switch the walk tester to 'far'
- Walk across the zones at progressively further distances until detection stops.
- Raise the head by turning the range screw by 1/2 turn.
- Repeat the cross walk until no detection.
- Raise head and repeat until desired range is achieved.
- (NOTE that only small adjustments are required when the range reaches 100 metres or more).
- Carefully tighten the two tilt bolts and lightly lock the range screw with the locknut,

**THEN RE-TEST AT MAXIMUM RANGE TO ENSURE THAT THE HEAD HAS NOT MOVED.**

Reverse the walk test procedure by crossing the zones progressively nearer the head until detection ceases, then switch walk-tester to 'near'. Detection should occur to within 6 or 8 metres of the detector.



## **MAINTENANCE**

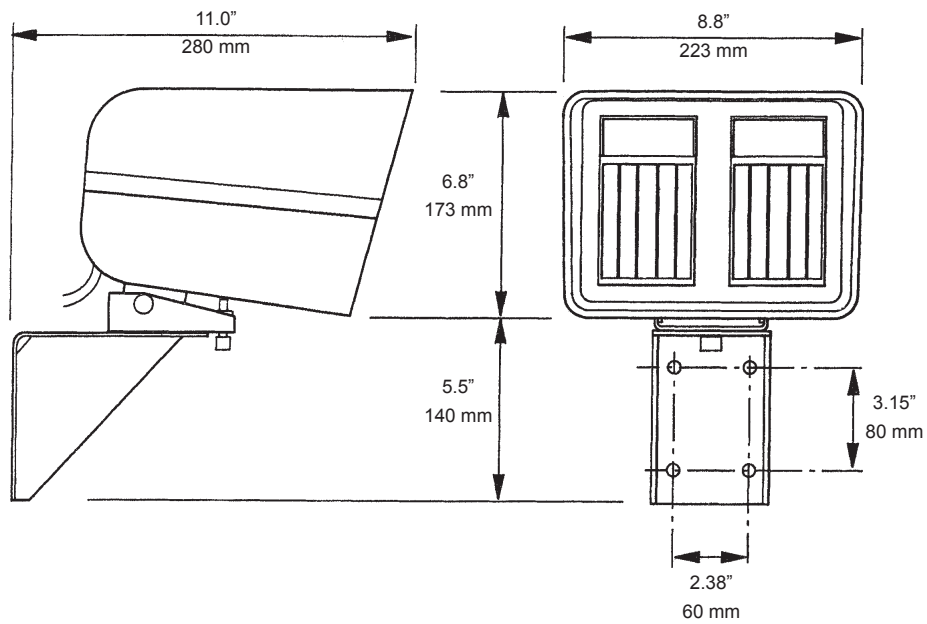
In addition to regular 'walk-test', periodically check that the unit is firmly fixed to the mounting surface. Check the front windows for build-up of dust, sand, animal or insect debris and CAREFULLY REMOVE BY VACUUM OR BLOWING. AVOID RUBBING OR BRUSHING THE WINDOW MATERIAL.

The frequency of these checks will depend on the environment, but should not be less than twice per year.

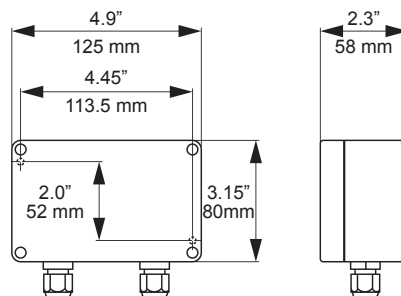
**The detector head is factory sealed and no attempt should be made to open it.**

## **DIMENSIONS**

### **MEGARED HEAD**



### **CONTROL UNIT**



## **ACCESSORIES**

OPM-WT      Audio Walk-tester for Mege Red and REDWAVE.

LRP Mega Hood      Sun/Snow Hood.

LRP Mega Guard      Cage.

## **Product Specification Sheet**

Model	LRP-180QH
Power Input	11-16VDC
Current Draw	80mA (max) at 12VDC
Detection Method	Passive Infrared
Range	180m x 4m (500' x 12')
Detection zones	24 Zones, 6Quad Layers
Mounting Height	2.5m (8')
Alarm Period	Approx. 2 sec
Alarm Output	Form C 30VDC 1A x 2 (Far, Near)
Tamper Output	N.C opens when cover removed 28VDC 0.1A
Warm-up Period	Approx. 60 sec
Walk test Indication	Visual : LED x 3 (Far, Near, Tamper) Audio : Sounder Available (OPM-WT) Optional
Operating Temperature	-40 to +60°C
Weight	Head : 4.7kg, Controller : 0.6kg
IP Rating	IP 65
Finish	White (Powder Coated)

### **NOTE**

These units are designed to detect movement of an intruder and activate an alarm control panel.  
Being only part of a complete alarm system, we cannot accept responsibility for any damages or other consequences resulting from an intrusion. These products conform to the EMC Directive 89/336 EEC.



#### **OPTEX CO., LTD. (JAPAN)**

(ISO 9001 Certified by LRQA)  
(ISO 14001 Certified by JET)  
5-8-12 Ogoto  
Otsu, Shiga, 520-0101  
Japan  
Tel : +81-77-579-8670  
Fax: +81-77-579-8190  
URL <http://www.optex.co.jp/e>

#### **OPTEX INCORPORATED (USA)**

13661 Benson Ave., Bldg. C  
Chino, CA 91710-5266  
U.S.A.  
Tel: (909)993-5770  
Fax: (909)628-5560  
URL <http://www.optexamerica.com>

#### **OPTEX (EUROPE) LTD. (UK)**

(ISO 9001 Certified by NQA)  
Clivemont Road, Maidenhead,  
Berkshire, SL6 7BU  
UK  
Tel: +44-1628-631000  
Fax: +44-1628-636311  
<http://www.optexeurope.com>

#### **OPTEX SECURITY SAS (FRANCE)**

475, Rue Piani  
69780 Amberieux d'Azergues  
France  
Tel: +33.4.37.55.50.50  
Fax: +33.4.37.55.50.59  
<http://www.optex-security.com>

#### **OPTEX SECURITY SPZ.O.O. (POLAND)**

ul. Bitwy Warszawskiej 1920 r.  
7B 02-366 Warszawa  
POLAND  
main: +48-22- 598-06-60  
Fax: +48-22-598-06-61