

MRX-220N

**OUTDOOR DOUBLE DUAL
MIRROR OPTICS
PASSIVE INFRARED &
MICROWAVE DETECTOR**



CROW
ELECTRONIC ENGINEERING LTD.
INSTALLATION INSTRUCTIONS
P/N: 7101296 REV.A A.Y.

MRX-220N DESCRIPTION

The MRX-220N is a combination of DOUBLE DUAL PIR with MIRROR optics & MW detectors, specially designed for outdoor and harsh environment applications. The Mirror DOUBLE DUAL detector MRX-220N uses varifocal mirror that improves the focus and the level of energy received by the Pyro Sensor. This combination assures "false alarm free" operation.

The 16 position rotate switch changes the MW and PIR sensitivity so that the effective pattern will be scaled.

MRX-220N FEATURES

- DOUBLE DUAL PYRO sensor and full pattern mirrors for outstanding detection performance and elimination of false alarms.
- MW detection based on Doppler concept.
- FET based DRO with stripline antenna.
- VLSI based electronics with movement speed spectrum analysis.
- N.O. & N. C. Relays switched at the same time.
- Height installation calibrations free from 1.5m to 3.0m (5ft to 10ft).
- Pet Immunity up to 10, 20, 30 or 40kg – Selectable
- MW and PIR sensitivity adjustment.
- Environmental immunity.
- Temperature compensation.

MOUNTING THE DETECTOR

Choose a location most likely to intercept an intruder. See detection pattern in FIG.: 7. The DOUBLE DUAL high quality sensor detects motion crossing the beam; it is less sensitive detecting motion towards the detector.

The MRX-220N performs best when provided with a constant and stable environment. The bracket provides MRX-220N installation on the wall and on the pole, allows changing the installation angle (vertically and horizontally) in wide range (FIG.2).

AVOID THE FOLLOWING LOCATIONS

- * Facing direct sunlight.
- * Facing areas subject to rapid temperature changes.
- * Areas with air ducts or substantial air flows.
- * Facing metal doors.

NOTE:

Recommended installation height is 2.4m.

INSTALLING THE DETECTOR

1. To remove the front cover, unscrew the holding screw. Insert a screwdriver between the front and the bottom and pull gently, until the front cover is disengaged. (FIG 1)
2. Break out the desired holes for proper wiring as per FIG 6.
3. Insert the wire through the wire access hole, and mount the detector base to the wall with the necessary number of screws.
4. Access for wiring connections is very easy with the terminal block located on the PCB. See FIG 3.
5. Replace the cover by inserting it back in the appropriate closing, screw the holding screw.

FIG. 1 - REMOVAL OF FRONT COVER

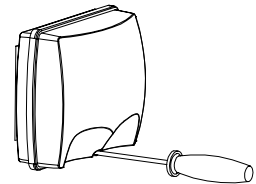


FIG. 2 – BRACKET ASSEMBLY

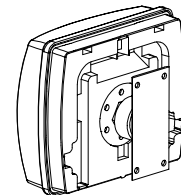
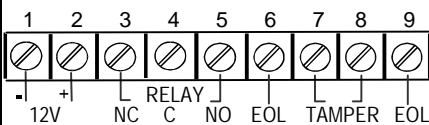


FIG. 3 - TERMINAL BLOCK CONNECTIONS



Terminal 1 - Marked " - " (GND)

Connect to the ground of the control panel.

Terminal 2 - Marked " + " (+12V)

Connect to a positive Voltage of 8.2 -16Vdc source (usually from the alarm control unit)

Terminals 3,4 & 5 - Marked " NC C NO "

These are the output relay contacts of the detector. Connect to a normally closed or normally opened zone in the control unit.

Terminals 7 & 8 - Marked " TAMPER "

If a Tamper function is required connect these Terminals to a 24-hour normally closed protective zone in the control unit.

If the front cover of the detector is opened, an immediate alarm signal will be sent to the control unit.

Terminals 6 & 9 - Marked " EOL "

End of line - options.

When an intruder is detected, alarm relays (N.O. and N.C.) will switch for 1.8 sec.

WIRE SIZE REQUIREMENTS

Use #22 AWG or larger wires. Use the following table to determine required wire gauge and length.

Wire Gauge: #	22	20	18	16
Wire Length: m	205	310	510	870
Ft.	800	1200	2000	3400

LED INDICATORS

YELLOW LED - MW detection, is blinking during warm up period and self testing

GREEN LED - PIR detection

RED LED - Alarm

SENSITIVITY AND RANGE ADJUSTMENT

The calibration of range and sensitivity is performed by single digital 16 positional rotary switch.

There are 3 groups of switch setting according to detection range.

Each group is divided to levels of sensitivity according to installation environment.

The value of sensitivity level is changed according to optic

For WA (Wide Angle) mirror optic

Group A - positions 0 – 5 – set sensitivity for 21m detection range

Group B - positions 6 – A – set sensitivity for 15m detection range

Group C - positions B – F – set sensitivity for 7m detection range

For LR (Long Range) mirror optic
Group A - positions 0 and 1 – set sensitivity for 40m detection range
Group B - positions 6 and 7 – set sensitivity for 28m detection range
Group C - positions B and C – set sensitivity for 15m detection range

The 5 or 6 levels in each group are used to set up the sensitivity according to environment. Each range group includes 5 or 6 setting levels according to environmental condition risk.

For example:

If detector is used for 15m range in open space with sunlight – set switch to position 8 or 9.

FIG.4 - ROTARY SWITCH SETTING

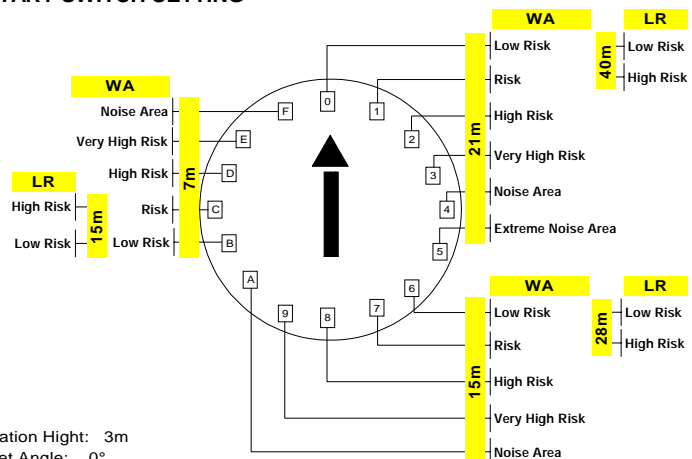


FIG.5 - PCB LAYOUT

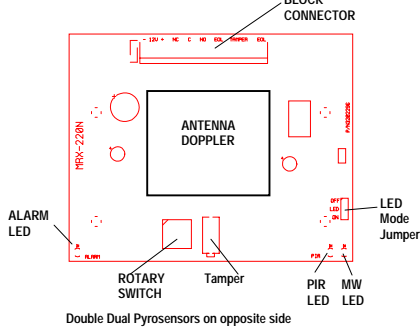
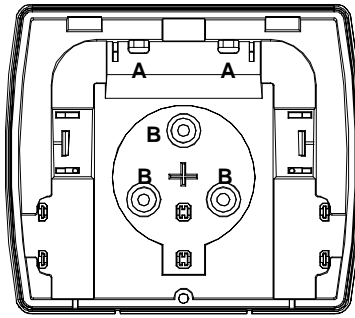


FIG. 6 - OPTIONAL HOLES



- A. Wire access holes
B. Use for flat wall mounting or for mounting with the help of bracket

FIG. 7 - WA PIR + MW DETECTION PATTERN

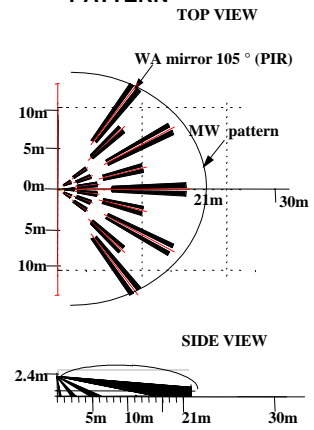


FIG. 8 - LONG RANGE CURTAIN PATTERN

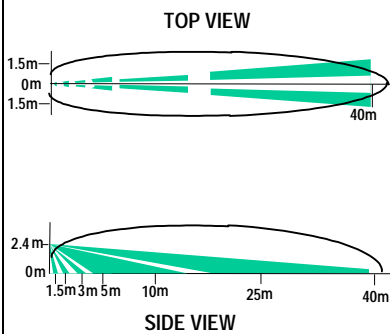


FIG. 9 – REPLACING MIRRORS

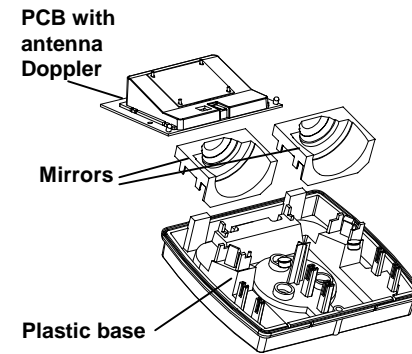
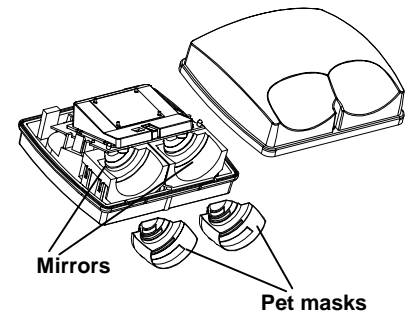


FIG. 10 –ASSEMBLY OF PET IMMUNITY MASKS



REPLACING MIRRORS (FIG.9)

1. Remove the front cover.
2. Pull out the PCB.
3. Pull out the old mirrors from slots.
4. Replace a new mirrors – insert mirror pins into the slots; don't touch the mirror from internal side.
5. Replace the PCB.
6. Replace the front cover.

ASSEMBLY AND REPLACING OF PET IMMUNITY MASKS (SEE FIG.10)

1. Remove the front cover.
2. Put pet masks on the mirrors or replace them.
3. Replace the front cover.

TEST PROCEDURES

Wait one-minute for warm-up time after applying power.
Make the test at the protected area free of moving people. LED should be in enable position.

Walk test

1. Start walking slowly across the detection zone.
2. Observe that the red LED lights whenever motion is detected.
3. Allow 5 sec. between each test for the detector to stabilize.

NOTE:

Walk tests should be done at least once a year to confirm proper operation of the detector.

You must reset the detector from Control Panel before the new settings will take effect

TECHNICAL SPECIFICATIONS

Detection Method	DOUBLE DUAL element PIR & MW
Detection Speed	0.3 - 1.5 m/sec (1 - 5 ft/sec)
Maximum ripple	2.4Vdc peak to peak at 12Vdc
Power Input	8.2 to 16 Vdc
Current Draw	Active : 27mA ± 3mA Standby: 17mA ± 3mA
Bi Directional	YES
Temperature	1.8 sec
Alarm Period	N.C 28Vdc 0.1 A with 10 Ohm series protection resistors
Alarm Output	N.O 28Vdc 0.1 A with 10 Ohm series protection resistors
Tamper Switch	N.C 28Vdc 0.1A with 10 Ohm series Protection resistor - open when cover is removed
Warm Up Period	30 sec

TECHNICAL SPECIFICATIONS (CONT.)

Operating Temperature	-20°C to +50°C (-4°F to +122°F)
RFI Protection	30V/m 10 - 1000MHz
EMI Protection	50,000V of electrical interference from lightning or power through stable against halogen light 2.4 m (8ft.) or reflected light min + 13 dBm IERP
Visible Light Protection	10.525 GHz +/-3MHz
MW output power	-7.3 dBm
MW center frequency	154mm x 114mm x 74mm (6.1" x 4.5" x 2.9")
MW harmonic emission	290gr. (10.23oz)
Dimensions	
Weight	

CROW reserves the rights to change specifications without prior notice

CROW LIMITED WARRANTY

(Crow) warrants this product to be free from defects in materials and workmanship under normal use and service for a period of one year from the last day of the week and year whose numbers are printed on the printed circuit board inside this product. Crow's obligation is limited to repairing or replacing this product, at its option, free of charge for materials or labor, if it is proved to be defective in materials or workmanship under normal use and service. Crow shall have no obligation under this Limited Warranty or otherwise if the product is altered or improperly repaired or serviced by anyone other than Crow.

There are no warranties, expressed or implied, of merchantability or fitness for a particular purpose or otherwise, which extend beyond the description on the face hereof. In no case shall Crow be liable to anyone for any consequential or incidental damages for breach of this or any other warranty, expressed or implied, or upon any other basis of liability whatsoever, even if the loss or damage is caused by Crow's own negligence or fault.

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