

MRX-800Q

MIRROR OPTICS
QUAD
PASSIVE INFRARED &
MICROWAVE DETECTOR



CROW
ELECTRONIC ENGINEERING LTD.

INSTALLATION INSTRUCTIONS
P/N: 7101034 REV.B A.Y.

MRX-800Q DESCRIPTION

The MRX-800Q is a combination of PIR & MW detector, providing protection from intruders by PYRO sensor and MW (based on Doppler concept). This combination assures "false alarm free" operation.

The GAIN potentiometer adjustment changes the MW sensitivity so that the effective pattern will be scaled.

See Fig. 7 for more information about effective MW pattern.

MRX-800Q FEATURES

- Quad element PYRO sensor and full pattern mirror 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 sensitivity adjustment.
- Environmental immunity.
- AND & OR alarm signal selection
- Temperature compensation.

MOUNTING THE DETECTOR

Choose a location most likely to intercept an intruder. See detection pattern in fig.: 5, 6. The quad-element high quality sensor detects motion crossing the beam; it is less sensitive detecting motion towards the detector.
The MRX-800Q performs best when provided with a constant and stable environment.

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 (option: 1.5m to 3.0m).

INSTALLING THE DETECTOR

1. To remove the front cover, unscrew the holding screw. Insert a flat screwdriver in the slot 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 2.
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 via the terminal block located on the PCB. See fig 3.
5. Replace the cover by inserting it back in the appropriate closing.

FIG. 1 - REMOVAL OF FRONT COVER

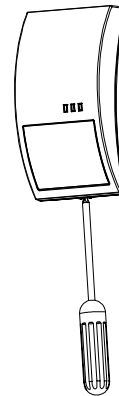
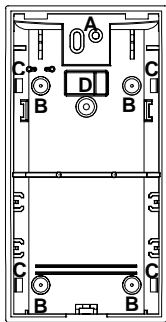


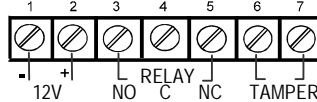
FIG. 2 - OPTIONAL HOLES

The plastic base include different types of knockdown holes:



- A. Wire access holes
- B. Use for flat wall mounting
- C. Corner mounting - use all 4 holes. Sharp left or right angle mounting - use 2 holes
- D. For back tamper mounting

FIG. 3 - TERMINAL BLOCK CONNECTIONS



Terminal 1 - Marked " - " (-12Vgnd)

Connect to the negative Voltage output or ground of the control panel.

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

Connect to a positive Voltage output of 7.8 - 16Vdc source (usually from the alarm control unit)

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

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

Terminals 6 & 7 - 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.

DIP SWITCH SETTING (SEE FIG.4)

AND & OR ALARM SETTING

Dip Switch marked "1".

Position AND (Down) - an alarm signal relay activation is occurred if there are signals from PIR AND MW.

Position OR (Up) - an alarm signal relay activation is occurred if there is signal from PIR OR MW.

For option "AND" the effective detection range is the intersection of both patterns (PIR & MW).

DOPPLER SENSITIVITY SETTING

Position 3 (down) - For normal operation - immediate detection.

Dip Switch marked "2".

Position 40 (up) - High risk of false alarm. (0.2sec. Detection)

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

PATTERN SCALE CALIBRATION

To calibrate the MW pattern scale, You need the size of the room (length and detection angle).

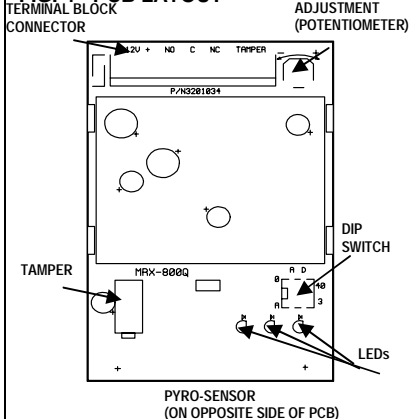
For Doppler pattern see fig.7 and table 1 on Page 17, where H - Doppler pattern max;

- Zone number;
a - angle;
X,Y - appropriate coordinates of Doppler pattern.

The potentiometer (see fig. 4) adjusts the detection pattern scale between 30% and 100% (factory set to 65%). Rotate the potentiometer clockwise to increase pattern scale. Rotate the potentiometer counter-clockwise to decrease pattern scale.

The potentiometer at min. (" - ") is equivalent to a distance of 6m - 8m.

FIG. 4 - PCB LAYOUT



LED INDICATORS (Fig.4)

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

GREEN LED - PIR detection

RED LED - Alarm

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

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

TEST PROCEDURES

Wait one-minute for warm-up time after applying 12 Vdc power.
Conduct testing with the protected area cleared of all people.

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 conducted at least once a year to confirm proper operation and coverage of the detector.

MIRROR PATTERN

COVERAGE	WIDE ANGLE	LONG RANGE CURTAIN
	105°	
	15m x 15m (49ft x 49ft)	30m x 3m (100ft x 9.8ft)
	±10%	±10%
TOTAL DETECTION ZONES	38	12

EFFECTIVE DETECTION PATTERN FOR "AND" MODE WITH WA MIRROR

0m - 7m	7m - 10m	10m - 12.5m	12.5m - 16m	16m - 18m
105°	100°	85°	75°	70°

NOTE:

Detection ranges are specified at 20°C (68°F) ambient temperature. Assuming that the sensitivity set to max.

FIG. 5 - WA PIR + MW DETECTION PATTERN

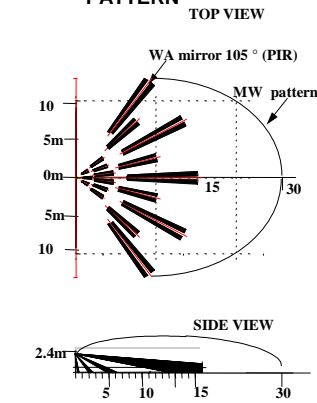


FIG. 6 - LONG RANGE CURTAIN PATTERN

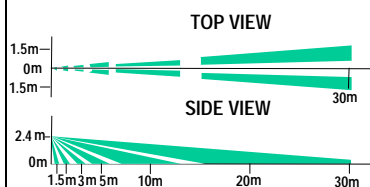


FIG. 7 - MW PATTERN

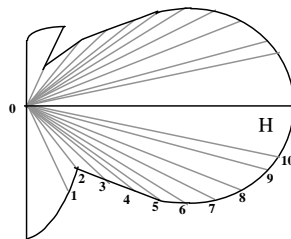


Table 1:

##	0	1	2	3	4	5	6	7	8	9	10
a	180	130	100	84	75	70	60	52	40	30	20
X	0	3	8	9	12	15	18	21	24	27	285
Y	105	609	715	698	801	105	1039	1024	873	723	503

X,Y are corresponds (m) of pattern points when H=30m

REPLACING THE MIRROR (SEE FIG.8)

1. Remove the front cover.
2. Pull out the PCB.
3. Pull out the old mirror from slots.
4. Replace a new WA or LR mirror – insert mirror pins into the slots; please hold the mirror from external side.
5. Replace the PCB.
6. Replace the front cover.

NOTE:

It is very important to keep the mirror clean from dust and fingerprint. (You can clean the mirror with soft cotton)

FIG. 8 - REPLACING THE MIRROR

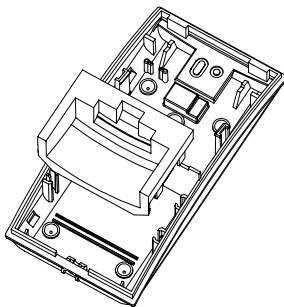
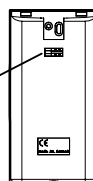


FIG. 9 - PLASTIC BASE WITH BACK TAMPER

BACK TAMPER



BACK TAMPER (OPTION)

Install the mini tamper switch on the external side of plastic base (see fig.9).
Run 2 wires throughout the hole marked D in fig.2.
Connect wire 1 to terminal pin 6 (fig.3).
Connect wire 2 to terminal pin 7 (fig.3).

NOTE:

Block Connector terminals 6 & 7 (marked TAMPER) are used for connection of Tamper and Back Tamper to Control Panel.

TECHNICAL SPECIFICATIONS

Detection Method	Quad 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	7.8 to 16 Vdc
Current Draw	Active : 25.5 mA Standby: 16.5 mA
Bi Directional Temperature	YES
Alarm Period	1.8 +/- 1 sec
Alarm Output	N.C 28Vdc 0.1 A with 10 Ohm series protection resistors 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	1 min

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	137mm x 70mm x 53mm (5.3" x 2.8" x 2.1")
MW harmonic emission	140 gr. (5 oz)
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.
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