



MRX-300N

Outdoor PIR + MW Detector
with Double Dual Mirror Optics

INSTALLATION INSTRUCTIONS & USER MANUAL

P/N 7101297 Rev. A Y.S/A.Y

The MRX-300N is unique PIR and Microwave detector for outdoor and harsh environment applications.

It comprises Double Dual Mirror Optics and advanced Doppler detector inside stylist rigid plastic body.

The Mirror DOUBLE DUAL optics improves the focus and the level of energy received by the Pyro Sensor.

This special mirror optics combined with state of the art MW Doppler sensor assures eliminating of “false alarms” while maintaining high security standards for the detection of human intruders into a protected area.

The detection sensitivity and range is controlled by digital rotary switch allowing 16 calibration levels, so that the effective pattern will be set for every installation environment and protection site.

The MRX-300N is designed to protect large areas and can easily be installed on any type of wall in order to provide a solid protection of the area while rejects interferences of birds and small animals due to patented “PET MASK” optics.

The MRX-300N is designed for continuous round-the-clock operation and keeps its characteristics within a wide temperature and humidity range.



MRX-300N FEATURES

- DOUBLE DUAL PYRO sensor.
- Full pattern double mirrors optics.
- MW detection based on Doppler concept.
- FET based DRO with strip line 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
- Pet Immunity up for pet and small animals up 40kg.
- 16 levels of MW and PIR sensitivity adjustment.
- Environmental immunity.
- Temperature compensation.
- Micro controller signal processing.
- Tamper and tilt full protection.
- Walk test and detection sound indication.
- Unique waterproof and seal plastic design.
- Detection Range: Up to 40m (with LR Mirrors)
- Detect human intruders walking, running or crawling.
- No maintenance required.
- High RFI/EMI Immunity.
- Protection from: direct sunlight, wind up to 30 m/sec, snow and rain, small animals, removing the top cover, housing pulling out or destruction.

Selecting mounting location

The installation of the MRX-300N requires straight and solid base for the detector and setting of front panel against the center of protected area.

Local conditions of the protected zone must be free from obstacles like walls, fences, trees and ditches or other microwave detectors and systems of anti-intrusion surveillance.

The bracket provides MRX-300N installation on the wall, allows changing the installation angle (vertically and horizontally) in wide range (FIG.2).

The wall should be leveled with a maximum slope angle of 10°.

Choose a location most likely to intercept an intruder according to detection pattern in FIG.: 6.

Avoid the following Installation Locations:

- Facing direct sunlight.
- Facing areas subject to rapid temperature changes.
- Wall angle of more than 10° from perpendicular line.
- Mounting at more than 10° Deviation from horizontal line.
- Facing metal doors.
- Avoid installation of MRX-300N on the following type of ground: Thick vegetation, Grass (un-mown), Water, Sand and a Metal.

NOTE:

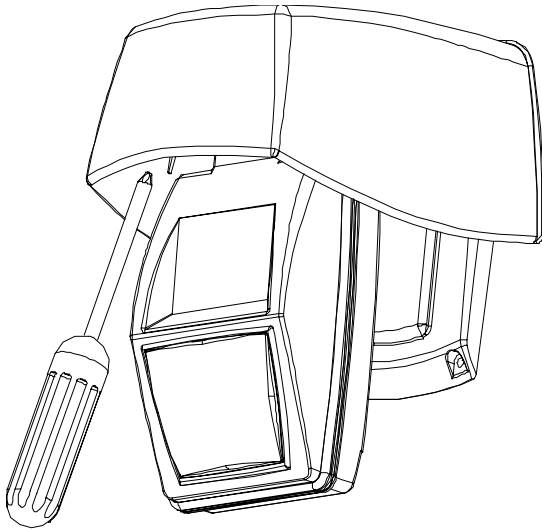
Recommended installation height is 3m.

The DOUBLE DUAL high quality sensor detects motion crossing the beam; it is less sensitive detecting motion towards the detector.

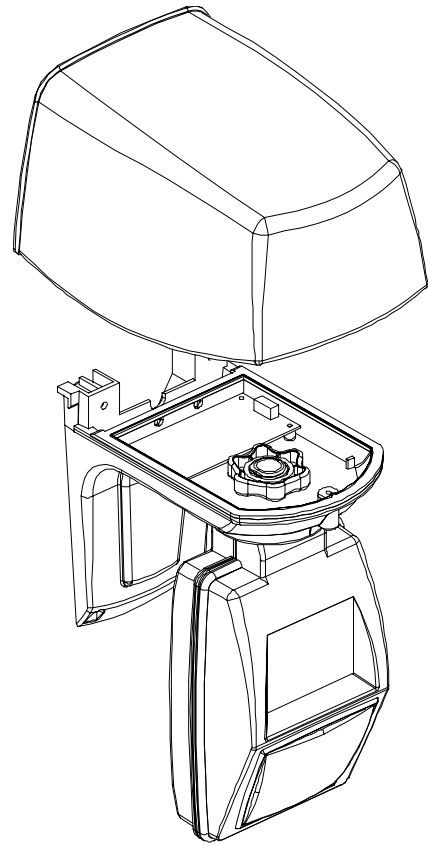
The MRX-300N performs best when provided with a constant and stable environment.

In order to ensure suitable operation of the MRX-300N type of ground should be one of the following: Asphalt, Cement, Soil, Clay, Gravel or Grass (mown).

Mounting the detector



**Fig.1. Cover opening
and Installation**



**Fig.2. Wiring and
positioning**

Use the MRX-300N back bracket for wall installation.

Remove top cover by unscrew the holding screw at the bottom side of the bracket.

Attach bracket to the wall using 4 screws and anchors (See fig. 1).

Insert the wire through the “line/hole wire bracket” under silicon gasket (See fig. 2).

Access for wiring connections is easy via the terminal block located on the PCB.

See fig. 3.

For detector alignment, unscrew the plastic wing nut, adjust the detector facing against the center of protected area and straighten the nut.

Replace the detector top cover.

Screw the holding screw.

TERMINAL BLOCK CONNECTIONS

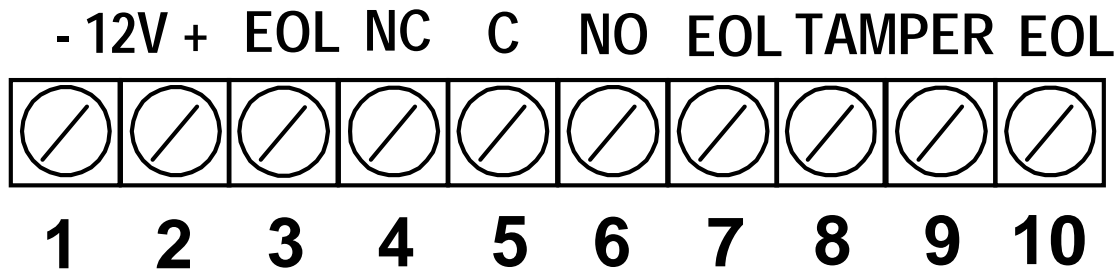


Fig.3. Wiring connections

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 4,5 & 6 - 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. When an intruder is detected, alarm relays (N.O. and N.C.) will switch for 1.8 sec.

Terminals 8 & 9 - 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 top cover of the detector is opened or the detector is detached from installation wall, an immediate alarm signal will be sent to the control unit.

Terminals 3,7 & 10 - Marked “ EOL ” - End of line – optional terminals for end of line resistors connections.

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

TOP PCB LAYOUT

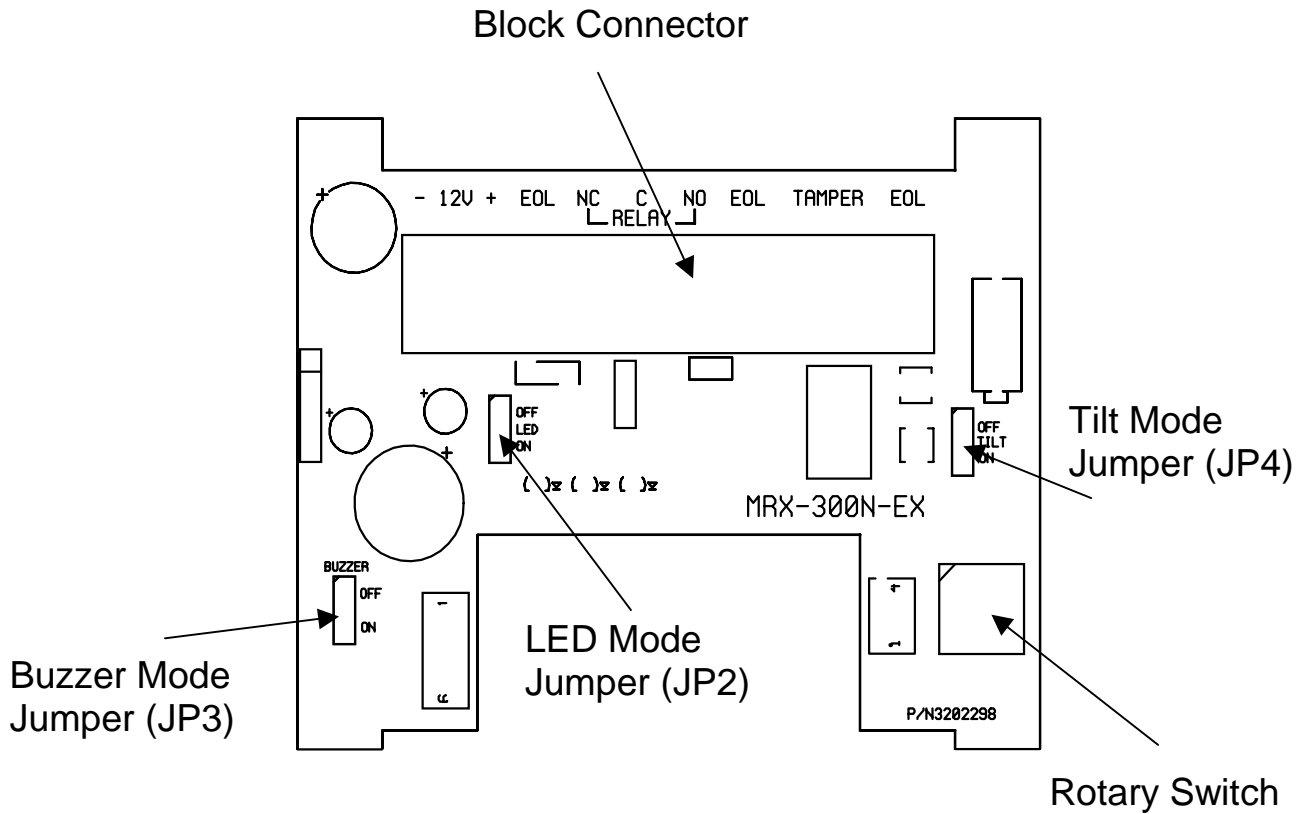


Fig.4. Interface PCB layout

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LED INDICATORS

- YELLOW LED - MW detection, is blinking during warm up period and self testing
- GREEN LED - PIR detection
- RED LED - Alarm

TEST AND TUNING

SENSITIVITY AND RANGE ADJUSTMENT

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

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

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

The sensitivity levels values changed upon the mirror optic type.

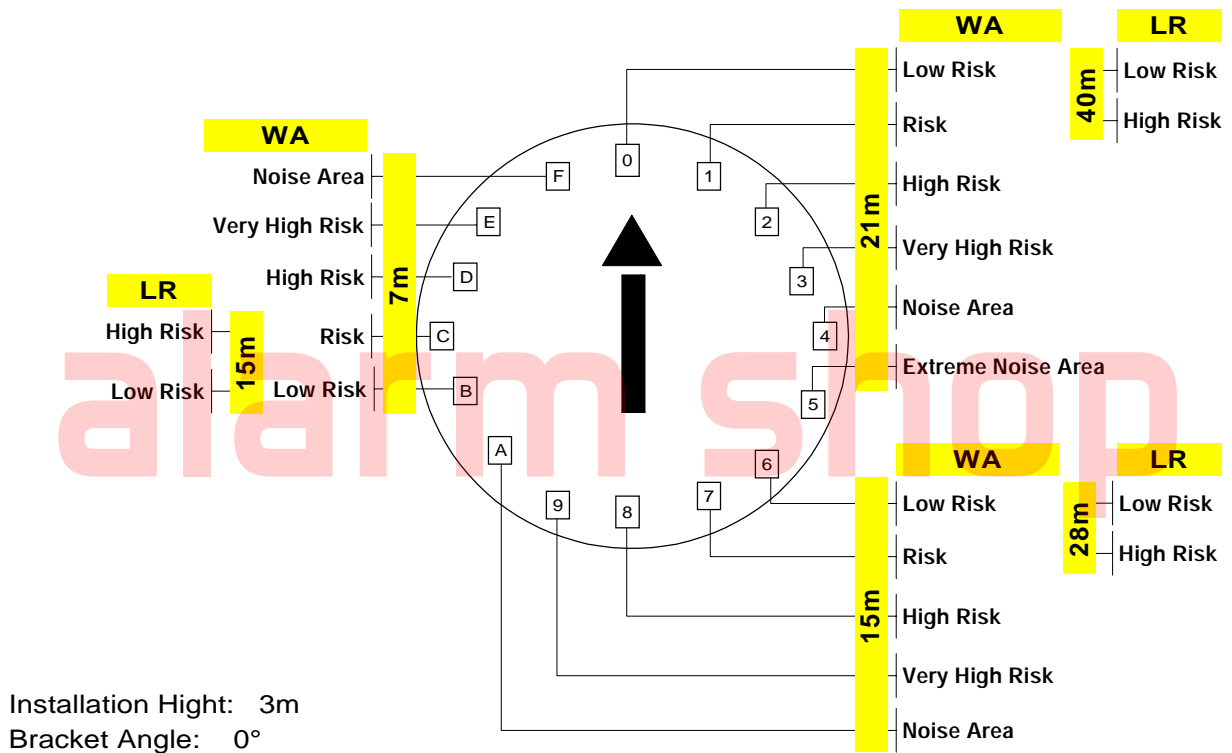


Fig.5. Rotary switch setting

For WA (Wide Angle) mirror optic

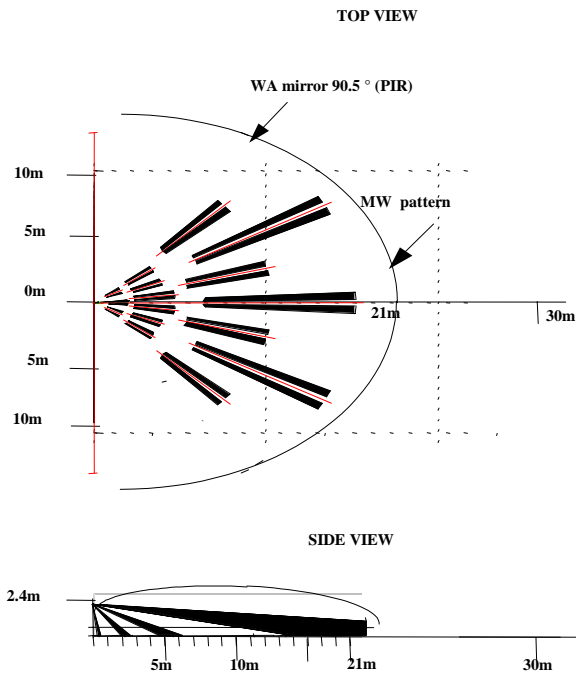


Fig.6. WA PIR + MW Detection Pattern

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 (optional Model MRX-300N-LR)

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

Each range group includes 5 or 6 setting levels according to environmental condition risk.

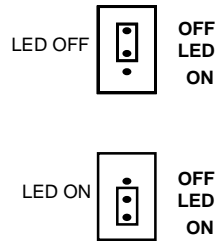
For example:

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

JUMPERS SETTING

LED Mode Jumper (JP2)

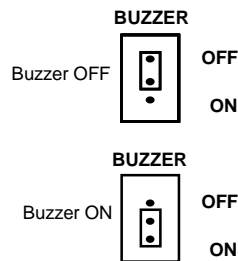
Connect a jumper between the marked terminals to enable or disable the LED (ON or OFF).



Buzzer Mode Jumper (JP3)

Buzzer provides the sound indication of Alarm signal.

If a buzzer function is required, connect a jumper in position ON, if it is not required – in position OFF.



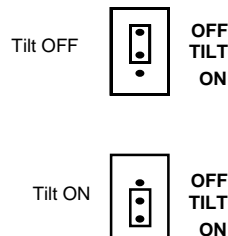
The buzzer function is useful during walk test when sunlight dazzling the LED.

Tilt Mode Jumper (JP4)

Two tilts protect detector from undesirable attempts to pull off from installation place.

Tilts fix position change also in horizontal and vertical directions and send signal to Tamper terminals.

If a tilt function is required, connect a jumper in position ON, if it is not required – in position OFF.



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

Test procedure

Walk Test

After tuning the sensitivity, connect 12Vdc power to the system.

Allow 2 minute warm-up time.

Make sure that the protected area is cleared of all people.

1. Start walking slowly across the detection zone.
2. Listen to ALARM sound whenever motion is detected (The red LED lights also whenever motion is detected).
3. Allow 5 sec. between each test for the detector to stabilize.

NOTE: *Walk Test procedure should be conducted, at least once a year, to confirm proper operation and coverage of the detector.*

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SPECIFICATIONS

Optic Detection Method	DOUBLE DUAL element PIR & MW
WA Mirror Pattern	90.5° with 30 zones detection
Microwave Frequency	10.525 GHz +/-3MHz
Microwave Output Power	Min. + 13dBm IERP
Microwave Harmonic emission	- 7.3dBm
Scope (Length of protection zone)	Max. 21m (WA mirror) max10. 40m (LR mirror)
Power Supply Voltage	8.2...16 V
Current consumption	Active: 27mA ± 3mA Standby: 17mA ± 3mA
Relay contacts values	N.C 28Vdc 0.1 A with 10 Ohm protection resistors N.O 28Vdc 0.1 A with 10 Ohm protection resistors
Warm up Period	120 Sec (Max.)
Alarm Period	1.8 Sec (Max.)
Tamper Switch	N.C 28 Vdc Maximum current 0.1 A - open when cover is removed
Detection Speed (Target velocity)	0.3 ... 3 m/sec
Dimensions of unit with bracket	192mm x 153mm x 251mm
Weight	0.55 Kg
Operating temperature range	-20°C ~ +60°C
Weatherproofing	<ul style="list-style-type: none"> • All openings with gasket and sealed • IP 65 compatible
RFI Protection	30V/m 10 – 1000 MHz
EMI Protection	50,000V of electrical interference from lightning or power through
Visible Light Protection	Stable against halogen light, sunlight or reflecting light

* Specifications are subject to change 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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