

CROW SCIENTIFIC RESEARCH™

# SRX-1000M

PROFESSIONAL  
PASSIVE INFRARED &  
MICROWAVE DETECTOR  
(WITH N.O. & N.C. RELAYS)  
(AND & OR ALARM SIGNAL)



ELECTRONIC ENGINEERING LTD.  
INSTALLATION INSTRUCTIONS  
P/N: 7101032

## SRX - 1000M FEATURES

A new generation of professional movement spread spectrum analyzing PIR & MW detectors.

- Unique dual element PYRO sensor and hard spherical lens for outstanding detection performance and elimination of false alarms.
- Microwave detection based on Doppler concept.
- FET based DRO with microstrip patch antenna.
- VLSI based electronics with movement speed spectrum analysis.
- N.O. & N.C. Relays switched at the same time.
- AND & OR alarm signal selection by jump. JP2
- Height installation calibrations free from 1.5m to 3.0m (5ft to 10ft).
- User friendly installation with or w/o swivel bracket.
- Microwave sensitivity adjustment.
- BI directional temperature compensation.
- Diffractive reflection mirror for Creep Zones.

The SRX-1000M is a combination of PIR & MW detectors, providing protection from intruders by PYRO sensor element and MW (based on Doppler concept).

Using microcontroller for analyzing PIR & MW signals to assure "false alarm free" operation. The spectrum analysis is embedded in the VLSI based electronics of the detector assuring high reliability.

## JUMPER "JP2" SETTING (SEE FIG. 4)

**Position "UP" "Marked" "OR"**

The alarm signal (relays activation) occurred when one of the sensors (PIR & MW) is present.

**Position "DOWN" "Marked" "AND"** - The alarm signal occurred only when both sensors (PIR & MW) are present at the same time.

**Note: You must reset the detector from Control Panel before the new settings will take effect.**

The effective detection range is the range of which the patterns (PIR & MW) are intersected. The GAIN potentiometer (P1) adjustment changes the MW sensitivity so that the effective pattern will be scaled.

## MOUNTING THE DETECTOR

Choose a location most likely to intercept an intruder. (Our recommendation is a corner installation). See detection pattern in Fig.: 5 - 9. The dual-element high quality sensor detects motion acrossing the beam; it is slightly less sensitive detecting motion toward the detector. The SRX-1000M performs best when provided with a constant and stable environment. AVOID THE FOLLOWING LOCATIONS

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

**NOTE:** recommended installation height is 2.1m (option: 1.5m to 3.0m).

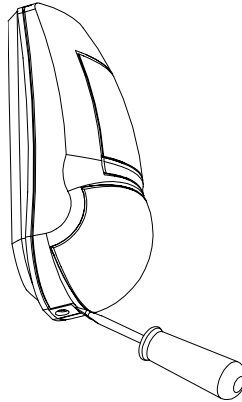
LED INDICATORS (Fig.4)

YELLOW LED - MW detection's

GREEN LED - PIR detection's

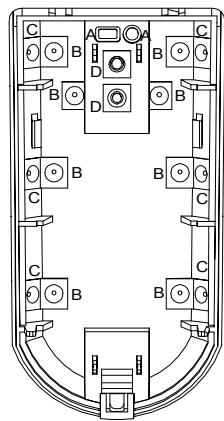
RED LED - Alarm

FIG. 1 - REMOVAL OF FRONT COVER



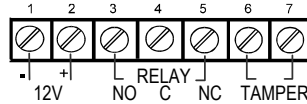
1. To remove the front cover, insert a flat screwdriver in the slot between the front and the bottom above the holding screw hole and push gently, until the front cover is disengaged and the opening click is heard. (Fig. 1)
2. Remove the printed circuit board by spread out the two tabs, which are located on the either side of the lower half of the board.
3. Break out the desired holes for proper wiring.
4. Insert the wire through the wire access hole, and mount the detector base to the wall, corner or ceiling with the necessary number of screws and the suitable bracket.
5. Reinstall the PC board by place it on the lower stoppers and push the PCB toward the bottom cover.
6. Access for wiring connections is easy via the terminal block located on the PCB. See fig. 3.
7. Replace the cover by inserting it back in the appropriate closing pin until the closing click is heard.

FIG. 2 - KNOCKOUT HOLES



- A. Wire access holes
- B. Use for flat wall mounting
- C. Corner mounting - use all 6 holes. Sharp left or right angle mounting - use 3 holes (top, middle and bottom)
- D. For bracket mounting

FIG. 3 - TERMINAL BLOCK CONNECTIONS



**Terminal 1 - Marked " - " ( GND )**  
Connect to ground of the control unit.

**Terminal 2 - Marked " + " (+12V )**  
Connect to a positive Voltage output of 7.8 - 16Vdc source (usually from the alarm control unit)

**Terminals 3 & 4 - Marked " NO C "**  
These are the normally open output relay contacts of the detector. For all uses that need no more than 100mA.

**Terminals 4 & 5 - Marked " C NC "**  
These are the output relays contacts of the detector. Connect to a normally closed 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.

## WIRE SIZE REQUIREMENTS

Use the following table to determine required wire gauge and length.

Wire Diameter	mm	.5	.75	1.0	1.5
Wire Gauge:	#	22	20	18	16
Wire Length:	m	205	310	510	870
	Ft.	800	1200	2000	3400

## JUMPER "JP1" SETTING (SEE FIG. 4)

JP1 Provides control on the **DOPPLER** for normal or high risk operating environments.

**Position "DOWN" 3 PULSES**

For normal operation - immediately detection.

**Position "UP" 40 PULSES**

For harsh environments. This setting enables special software to modify detection speed.

## PATTERN SCALE CALIBRATION

To calibrate the MW pattern scale, You need the size of the room (length and detection angle). According the length and the detection angle, find in table 1 the bar with the appropriate angle, then select the reference X/H (related length to the max length = 30m), then use the following formula:

$$T = ((s/x - 6) / 2.4) + 1$$

T - potentiometer clock position (by hour)

s - length of the room (detection area)

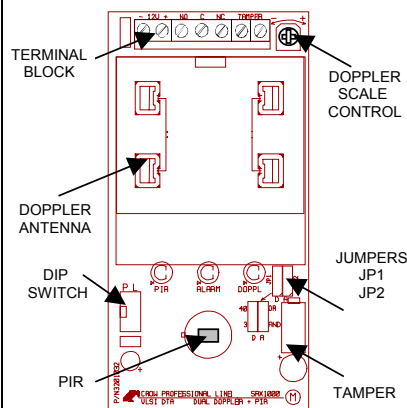
x - reference X/H from MW pattern (table 1)

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



## DIP SWITCHS SETTING (SEE FIG.4)

**PULSE COUNT - Dip Switch marked "P".**

Provides control of PIR for normal or high risk operating environments.

**Position Off (down)**

For stable environments.

**Position On (up)**

For harsh environments. This setting enables special software to modify detection speed.

**LED CONTROL - Dip Switch marked "L".**

**Position On (up) - LED ENABLE**

The RED LED will activate when the SRX-1000M is in alarm condition.

**Position Off (down) - LED DISABLE**

The LEDS are disabled.

**Note:** the state of the DipSwitch "L" does not affect the operation of the relay.

When an intrusion is detected, the LED will activate and the alarm relay will switch into alarm condition (N.O. or N.C.) For 1.6 sec.

### TEST PROCEDURES.

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

#### Walk test

1. Remove front cover.
- Set pulse switch to OFF position (down), and Set LED switch to ON position (up).
2. Reassemble the front cover.
3. Start walking slowly across the detection zone.
4. Observe that the red LED lights whenever motion is detected.
5. Allow 5 sec. between each test for the detector to stabilize.
6. After the walk test is completed, You can set the LED switch to OFF position.

#### NOTE:

Walk tests should be conducted, at least once a year, to confirm proper operation and coverage of the detector.

### LENSES-INTERCHANGEABLE HARD TYPE SPHERICAL LENSES PATTERNS

COVERAGE	WIDE ANGLE	LONG RANGE CURTAIN	ANIMAL ALLEY, 105°	CURTAIN
	105°	30m x 2m (100ft x 6.3ft)	18m x 18m (60ft x 60ft)	15m x 1m (50ft x .3ft)
	±10%	±10%		

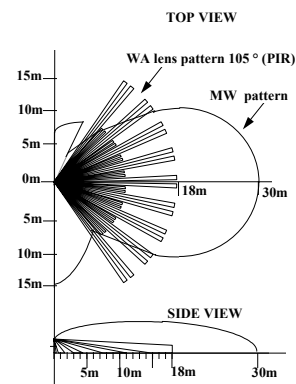
TOTAL DETECTION ZONES	52°	12	18	22
* 18 long range, 16 intermediate, 10 short range, 6 nearest range, 2 creep zones.				

### WA & AA LENSES EFFECTIVE DETECTION PATTERNS

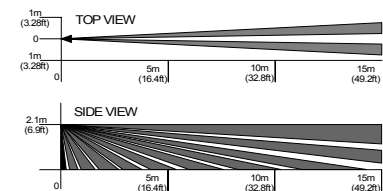
0m - 7m	7m - 10m	10m - 12.5m	12.5m - 16m	16m - 18m
105°	100°	85°	75°	70°

**NOTE:** DETECTION RANGES ARE SPECIFIED AT 20° C (68° F) AMBIENT TEMPERATURE. ASSUMING THAT THE SENSITIVITY SET TO MAX.

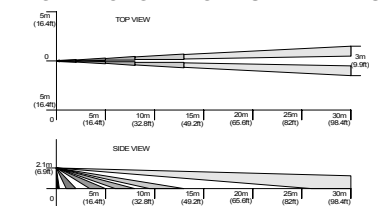
**FIG. 5 - WA PIR + MW DETECTION PATTERN**



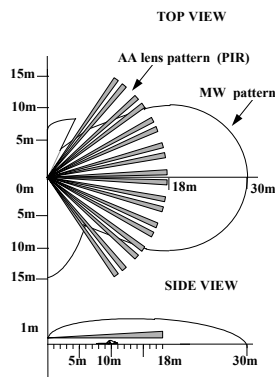
**FIG. 6 - CURTAIN LENS**



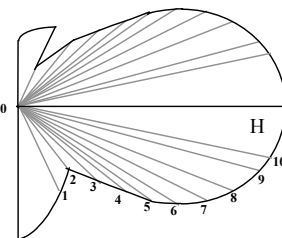
**FIG. 7 - LONG RANGE CURTAIN LENS**



**FIG. 8 - ANIMAL (PET) ALLEY PIR + MW DETECTION PATTERN**



**FIG. 9 - MW PATTERN**



**Table 1:**

##	0	1	2	3	4	5	6	7	8	9	10
X/H	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.95
a	180°	130°	100°	84°	75°	70°	60°	52°	40°	30°	20°

IF H=30m, COORDINATES OF POINTS ARE FOLLOWING

X	0m	3m	6m	9m	12m	15m	18m	21m	24m	27m	30m
Y	10.5	6.09	7.15	6.98	8.01	10.5	10.39	10.24	8.73	7.23	5.03

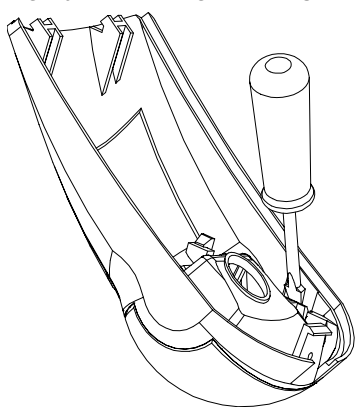
### CHANGING THE LENS

1. Remove the front cover by inserting a flat screwdriver in the appropriate slot.
2. Using a small flat screwdriver, press on left or right side of the installed lens, which will then pop out, from its side right and left holding pins.
3. Select the desired lens and hold it while making sure its upper holding pin is pointed upwards.
4. Snap the lens to its place by pressing again from outside of the front cover until a click is heard, confirming the new lens is tightly inserted. See fig. 10.
5. Replace front cover.

#### IMPORTANT

When using animal alley lens, the mirror should be removed with a flat screwdriver and replaced by a black dummy mirror (supplied with animal (pet) alley lens).

**FIG. 10 - REPLACING THE LENS**



### TECHNICAL SPECIFICATIONS

Detection Method	Dual element PIR & microwave pulse Doppler
Sensitivity	Δ1.6°C (Δ3°F) at 0.6 m/sec (2 ft/sec)
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	2 +/- 1 sec
Alarm Output	N.C 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
LED Indicator	Yellow LED is blinking during warm up period and self testing. Red LED is ON during alarm Red LED: UNIT ALARM Green LED: PIR CHANNEL Yellow LED: MW CHANNEL

### 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)
Visible Light Protection	or reflected light
MW output power	min + 13 dBm IERP
MW center frequency	
USA FCC PART 15	10.525 GHz
MPT 1349	10.687 GHz
French PTT	9.9 GHz
MW harmonic emission	
USA FCC PART 15	-7.3 dBm
MPT 1349	-30 dBm
French PTT	-20 dBm
Microwave frequency setting accuracy	±3MHz
Dimensions	137mm x 70mm x 53mm (5.3" x 2.8" x 2.1")
Weight	130 gr. (4.6 oz)

**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 five years 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.

Crow does not represent that this product can not be compromised or circumvented; that this product will prevent any person injury or property loss or damage by burglary, robbery, fire or otherwise; or that this product will in all cases provide adequate warning or protection. Purchaser understands that a properly installed and maintained product can only reduce the risk of burglary, robbery or other events occurring without providing an alarm, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss or damage as a result. Consequently, Crow shall have no liability for any personal injury, property damage or any other loss based on claim that this product failed to give any warning. However, if Crow is held liable, whether directly or indirectly, for any loss or damage arising under this limited warranty or otherwise, regardless of cause or origin, Crow's maximum liability shall not in any case exceed the purchase price of this product, which shall be the complete and exclusive remedy against Crow.



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These instructions supersede all previous issues in circulation prior to May 2001