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TLC-S FEATURES

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

- Dual element PYRO sensor and hard lens for outstanding detection performance and elimination of false alarms.
- Microwave detection based on Doppler concept.
- Unique Microwave Motion Sensor Module with microstrip patch antenna.
- VLSI based electronics with movement speed spectrum analysis.
- AND & OR alarm signal selection.
- Height installation calibrations free.
- User-friendly installation with or w/o swivel bracket.
- 2-way Microwave sensitivity adjustment.
- 2-way PIR sensitivity adjustment.
- BI directional temperature compensation.
- Environmental immunity.

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

Using micro controller for PIR & MW signal analyzing, with special ASIC technology for PIR pulse processing, assure "false alarm free" operation.

MOUNTING THE DETECTOR

Choose a location most likely to intercept an intruder. (Our recommendation is a corner installation). See detection pattern in Fig.: 5, 6. The dual-element high quality sensor detects motion crossing the beam; it is slightly less sensitive detecting motion toward the detector. The TLC-S performs best when provided with a constant and stable environment.

NOTE: recommended installation height is 2.4m (option: 1.5m to 3.0m).

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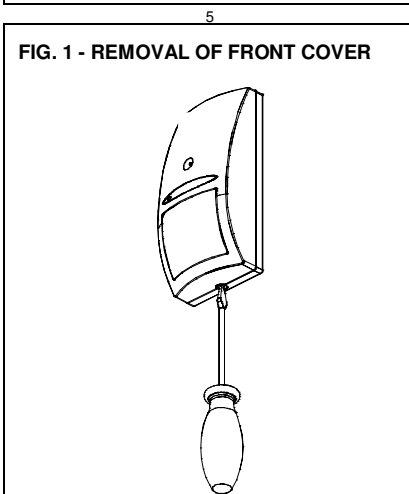
AVOID THE FOLLOWING LOCATIONS

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

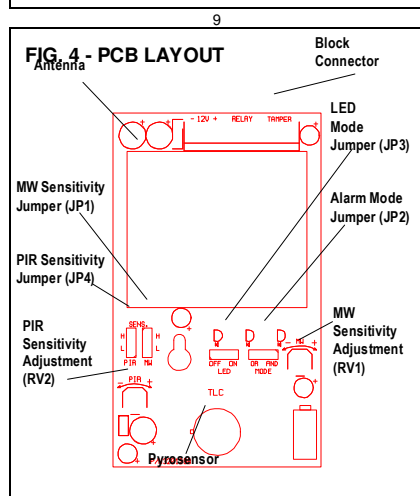
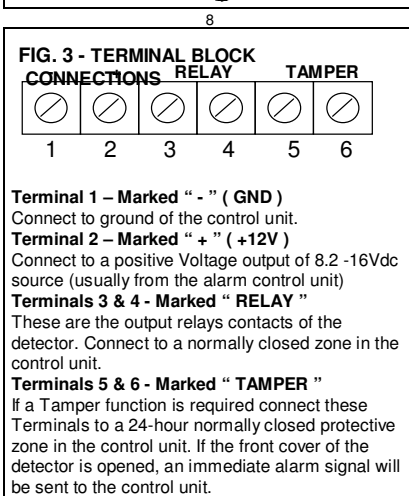
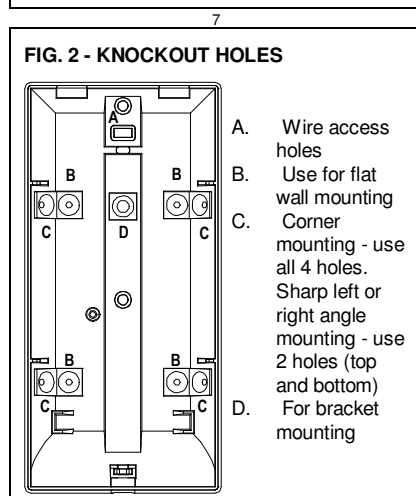
WIRE SIZE REQUIREMENTS

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



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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 PC board (unscrew holding screw)
 3. Break out the desired holes for proper wiring as per fig. 2.
 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.
 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.



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MW SENSITIVITY ADJUSTMENT

JUMPER “JP1” - provides sensitivity control of MW (DOPPLER) according to the environment.
Position Up – “H” – High sensitivity
For normal operation – immediately detection.
Position Down – “L” – Low sensitivity
For harsh environments.

POTENTIOMETER “RV1” – adjusts the detection pattern scale between 30% and 100% (factory set to 70%). 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.

Dimension change according to installation location and room size

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PIR SENSITIVITY ADJUSTMENT

JUMPER “JP4” - provides sensitivity control of PIR according to the environment.
Position Up – “H” – High sensitivity
For stable environments.
Position Down – “L” – Low sensitivity
For harsh environments.

POTENTIOMETER “RV2” – adjustment according to protected area range.
Use RV2 to adjust the detection range between 68% and 100% (factory set to 84%). Rotate the potentiometer clockwise to increase range, counter-clockwise to decrease range.

After adjusting the sensitivity perform a walk test to verify optimum correct sensitivity in the protected area.

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ALARM MODE SETTING

JUMPER “JP2” OR - AND
Position Left “OR”
The alarm signal (relays activation) occurred when one of the sensor's signals - PIR **OR** MW - is present.
The effective detection range is the range of the PIR pattern **OR** MW pattern correspondently.

Position Right “AND”
The alarm signal occurred only when both sensors (PIR **AND** MW) are present at the same time.
The effective detection range is the range of which the PIR patterns **AND** MW lobe are intersected.

You must reset the detector from Control Panel before the new settings will be effective.

LED ENABLE/DISABLE SETTING - JUMPER "JP3" (FIG.4)

Position Right "On" - LED ENABLE
The RED LED will activate when the SR-X is in alarm condition.

Position Left "Off" - LED DISABLE
The LEDS are disabled.

Note: the state of the Jumper "JP3" 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 for 1.6 sec.

LED INDICATORS (Fig.4)

YELLOW LED - MW detection's
GREEN LED - PIR detection's
RED LED - Alarm

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 LED to ON position.
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 to OFF position.

NOTE:

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

FIG. 5 - WA PIR + MW DETECTION PATTERN TOP VIEW

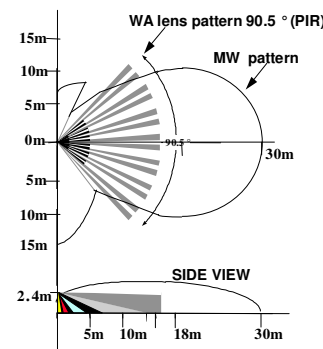
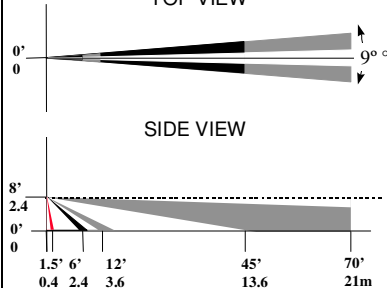


FIG. 6 - LONG RANGE CURTAIN LENS TOP VIEW



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 table1 on

Page 18, where H – Doppler pattern max;

- zone number;

a – angle;

X,Y – appropriate coordinates of

Doppler pattern.

The potentiometer RV1 (Fig. 4) adjusts according to protected area range.

The potentiometer at mid-scale is equivalent to a distance of 15m, at min-scale – 7m and max-scale - is used with LR lens only.

FIG. 7 - MW PATTERN

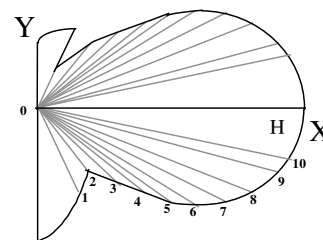


Table 1:

##	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	6	9	12	15	18	21	24	27	28.5
Y	195	609	715	698	801	105	1029	1024	873	723	503

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

LENSES-INTERCHANGEABLE HARD TYPE LENSES PATTERNS

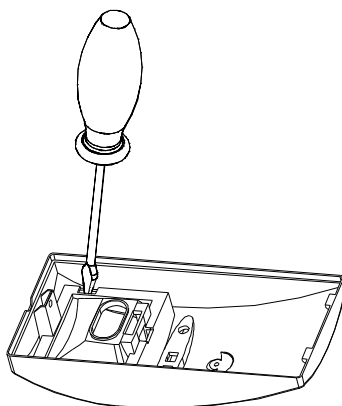
COVERAGE	Standard	Options
WIDE ANGLE	90.5°	9°
	15m x 21m (50ft x 70ft)	21m x 3.5m (70ft x 11ft)
TOTAL ZONES	18 (36°)	5(10)

*7 (14) long range, 5 (10) intermediate, 6 (12) short range.

REPLACING THE LENS

1. Remove the front cover by inserting a flat screwdriver in the appropriate slot (fig.1).
2. Using a small flat screwdriver, press on left, right and middle snaps of the lens and pull the lens out from its place (front cover side) (fig.8).
3. Replace a new WA or LR lens.
4. Push the lens to its place by pressing again from outside of the front cover until a click is heard (fig.8).
5. Replace front cover.

FIG. 8 - REPLACING THE LENS



TECHNICAL SPECIFICATIONS

Detection Method	Dual element PIR & microwave pulse Doppler
Maximum ripple	2.4Vdc peak to peak at 12Vdc
Power Input	8.2 to 16 Vdc
Current Draw	Active : 25.5 mA Standby: 16.5 mA
Temperature Compensation	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
Visible Light Protection	stable against halogen light 2.4 m (8ft) or reflected light
MW output power	min + 5 dBm IERP
Microwave frequency	2.45 GHz
MW harmonic emission	-20dBm
Dimensions	137mm x 65mm x 49mm (5.3" x 2.6" x 1.9")
Weight	130 gr. (4.6 oz)

CROW reserves the rights to change specifications without prior notice

CROW ELECTRONIC ENGINEERING LTD. ("Crow") - WARRANTY POLICY CERTIFICATE
This Warranty Certificate is given in favor of the purchaser (hereunder the "Purchaser") purchasing the products directly from Crow or from its authorized distributor.
Crow warrants these products to be free from defects in materials and workmanship under normal use and service for a period of 24 months from the last day of the week and year whose numbers are printed on the printed circuit board inside these products (hereunder the "Warranty Period").
Subject to the provisions of this Warranty Certificate, during the Warranty Period, Crow undertakes, at its sole discretion and subject to Crow's procedures, as such procedures are from time to time, to repair or replace, free of charge for materials and/or labor, products proved to be defective in materials or workmanship under normal use and service. Repaired products shall be warranted for the remainder of the original Warranty Period.
All transportation costs and in-transit risk of loss or damage related, directly or indirectly, to products returned to Crow for repair or replacement shall be borne solely by the Purchaser.
Crow's warranty under this Warranty Certificate does not cover products that are defective (or shall become defective) due to: (a) alteration of the products (or any part thereof) by anyone other than Crow; (b) accident, abuse, negligence, or improper maintenance; (c) failure caused by a product which Crow did not provide; (d) failure caused by software or hardware which Crow did not provide; (e) use or storage other than in accordance with Crow's specified operating and storage instructions.
There are no warranties, expressed or implied, of merchantability or fitness of the products for a particular purpose or otherwise, which extend beyond the description on the face hereof.
This limited Warranty Certificate is the Purchaser's sole and exclusive remedy against Crow and Crow's sole and exclusive liability toward the Purchaser in connection with the products, including without limitation for defects or malfunctions of the products. This Warranty Certificate replaces all other warranties and liabilities, whether oral, written, (non-mandatory) statutory, contractual, in tort or otherwise.
In no case shall Crow be liable to anyone for any consequential or incidental damages (inclusive of loss of profit, and whether occasioned by negligence of the Crow or any third party on its behalf) for breach of this or any other warranty, expressed or implied, or upon any other basis of liability whatsoever. Crow does not represent that these products can be compromised or circumvented; that these products will prevent any person injury or property loss or damage by burglary, robbery, fire or otherwise, or that these products will in all cases provide adequate warning or protection.
Purchaser understands that a properly installed and maintained product may in some cases reduce the risk of burglary, fire, 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 these products failed to give any warning.

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