CE

OTT100H
Triple technology detector for outdoor use
Installation and programming manual

GameOver

inim®
ELECTRONICS

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Copyright

GENERAL INFORMATION 1

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DCMIINIEOTT100H **MANUAL CODE**

1.20 **VERSION**

Manufacturer's details 1-2

Manufacturer:	INIM ELECTRONICS S.R.L.
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The persons authorized by the manufacturer to repair or replace the parts of this system, hold authorization to work on INIM Electronics brand devices only.

Description of the product 1-3

- Triple technology detector for outdoor use
- Two PIR and one microwave (MW) programmable sensors
- MW frequency 24 GHz
- Low consumption infrared sensors double element with UV filter
- Programmable infrared sensitivity
- Low PIR beam precision adjustment (patented system)
- AND/OR selectable function
- Mechanism for horizontal coverage adjustment
- UV rays resistant Fresnel lens
- UV resistant polycarbonate case
- Stainless steel wall fixing bracket
- Stainless steel pole fixing brackets (available on request)
- "Antimasking" function
- 4 signalling LEDs
- "Test" function to signalling each alarm by LED blinking; auto power off after 4 minutes
- Anti-tamper and anti-dislodgement system

Table 1: OTT100H technical features

Power-supply	from 9 to 15 V===
Maximum current	20mA
Microwave frequency	K band
Detection range	from 3 to 18m
Horizontal coverage angle	85°
Horizontal coverage adjustment	+/- 45°
Alarm, masking contacts	MOS FET relay 100 mA 35 V, 2 Ohm max.
Alarm time	1 s
Antimasking	Active-IR
IP protection degree	IP44
Security grade	3
Environmental class	IV
Working temperature	from -25° to 55°C
Dimensions	189x81x70 mm
Weight (with wall fixing bracket)	370g

Table 2: Mechanical parts description

A	"U" shaped bracket
B	Stainless steel wall fixing bracket
C	Electronic holder
D	Cover with Fresnel lens
E	Lower PIR range adjustment knob
F	Anti tamper microswitch
G	Electronics and sensors
H	Wall fixing bracket enclosure screw
I	Cover enclosure screw
J	External screw for "U" brackets fixing
K	Inner screw for "U" brackets fixing
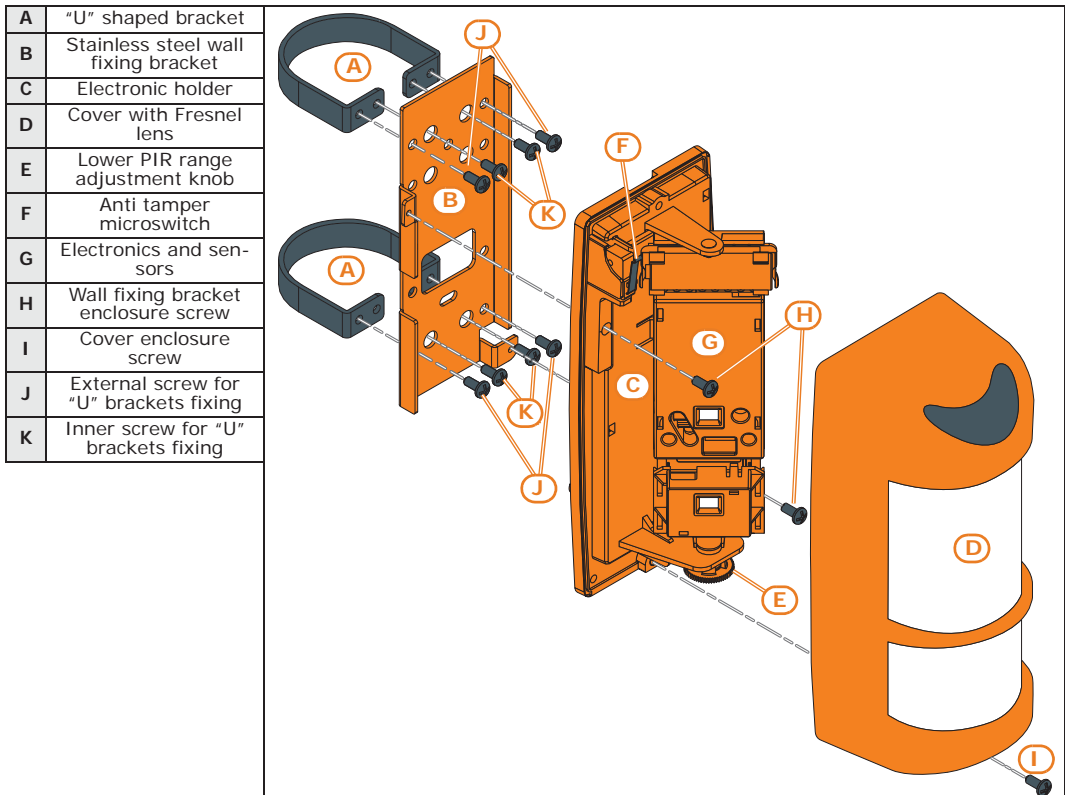
Table 3: Electronic part description

L	Terminal board for wire connection
M	Red LED 1 for general alarm
N	Yellow LED 2 for MW
O	Green LED 3 for higher PIR detection
P	Green LED 4 for lower PIR detection
Q	Microwave sensitivity adjustment trimmer
R	Higher infrared sensor (PIR 1)
S	Lower infrared sensor (PIR 2)
T	DIP switches
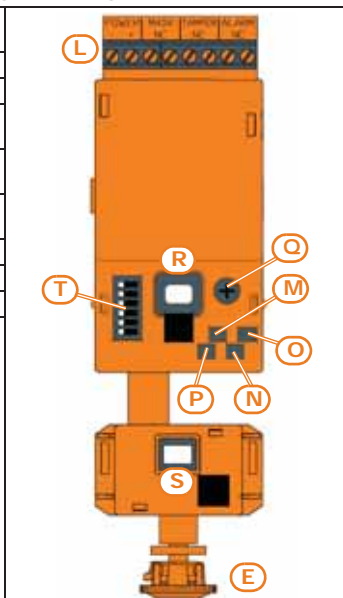
Table 4: Terminal board

POWER	+	Power supply 12 V⎓
	-	(from 10 to 15 V)
MASK	NC	Anti-mask output
TAMPER	NC	24 h anti tamper output
ALARM	NC	Alarm output

MASK	NC	Anti-mask output
TAMPER	NC	24 h anti tamper output
ALARM	NC	Alarm output

Normally closed contact in standby

Package contents   1-4

Inside the package you will find:
- OTT100H detector
- Stainless steel wall fixing bracket
- Installing manual (this)
- Plastic bag containing:
    - • 2 stainless steel metric screw M3 x 8
    - • 2 anchor screws and plugs for wall mounting

"U" shaped brackets are not included in the package (accessory items to be purchased separately).

FUNCTIONING 2

Detection range 2-1

Table 5: Top view

|	
A	Zones that can not be covered
B	Zones that can be covered by electronic holder rotation
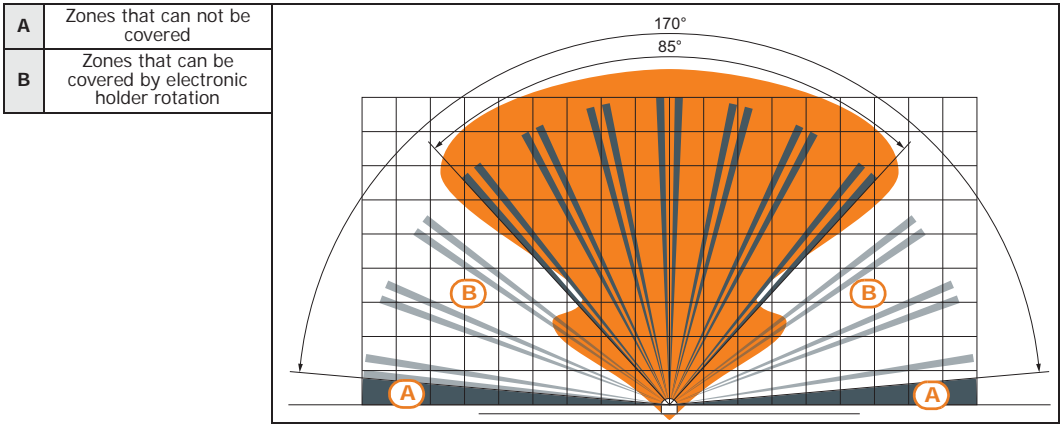
Use the trimmer "MW" (*table 3, Q*) to adjust the microwave sensitivity (the sensitivity is increased turning it clockwise). **ADJUSTMENT**

Adjust the microwave sensibility in relationship to the needed detection range.

By using the knob (*table 2, E*) it is possible to move the PIR2 (lower) in order to obtain different ranges from 3m to 18m.

The knob moves vertically the RIP along the marked positions on the holder. Each position corresponds to a distance:

Table 6: Side view

PIR2 position	Distance
A	3 m
B	5 m
C	8 m
D	16 m
E	18 m
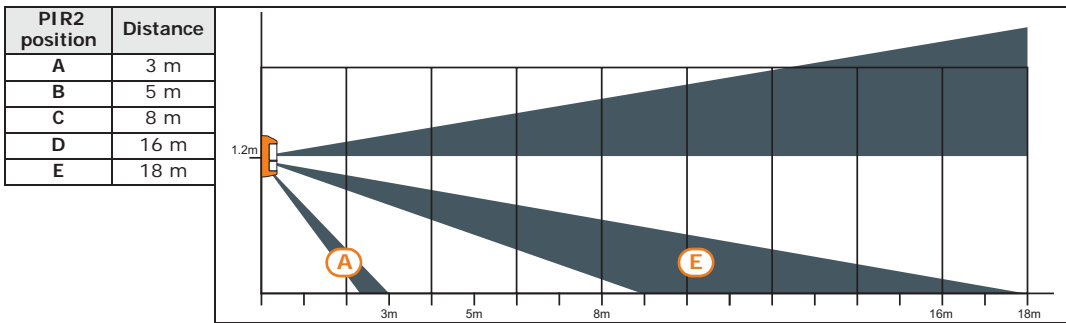
These distances are reached when the detector is installed at about 120cm (height).

If the object in motion is very large (for example a car) there is possibility that the detector can detect its presence even if it's farther than 18 m.

Operating principles 2-2

The detector works on the combined action of two PIRs and a microwave sensors.

The figures below shows some of most relevant working examples.

Table 7: Working examples

A	Detector	
B	Protected area limit	
C	The pet is detected only by two of the three sensors (lower PIR and MW).	**No alarm**
D	The person is detected by all three sensors (upper PIR, lower PIR, MW).	**Alarm**
E	The person is detected by two sensors (upper PIR and MW).	**No alarm**

F	If the detector is installed on a tilted wall, or pole, the detection range will be reduced. Both, upward as downward.	**Uncorrected installation No alarm**

"Antimasking" function   2-3

The detector is equipped with an active IR anti-masking function to protect the PIR. It emits a tampering signal within 3 minutes. The output of this function is the **MASK** terminal block.

In a standard configuration, this terminal block can be connected to a 24h active line or to a control unit input appropriately programmed to send fault messages. When the detector identifies a masking attempt, the four LEDs flash simultaneously until the masking condition is resolved.

To enable the correct operation of the masking detection system (Anti-masking), allow the detector to study and analyse the environmental conditions of the area to be protected. This procedure is mandatory to guarantee the correct operation of the anti-masking channel.

Follow the procedure below:

1. Make the connections to the detector terminal box, leaving the DIP switch 5 (*table 3, T*) set to OFF.
2. Once powered, close the cover and run all the detection tests required.
3. Open the cover and set the DIP switch 5 to ON.
4. Close the cover immediately (maximum within 10 seconds).
5. Stay at least 1 meter from the front part of the detector for at least 4 minutes.

LEDs enabling   2-4

LED signalling activations can be enabled via the DIP switch 6 (*table 3, T*):
- OFF set - LEDs enabled
- ON set - LED disabled

INSTALLATION   3

WARNING

- The wall does not have any pronounced depressions or protrusions.
- Install the detector on rigid surfaces, free of vibrations.
- Avoid to fix the detectors near to heat sources or at direct sunlight.
- Avoid electromagnetic energy reflection on wide surfaces such as mirrors, metal walls, etc.
- Avoid to fix the detector in front of fluorescent lamps or in proximity of them.
- Connections shielded cable is suggested and one cable per detector is preferred.
- Separate the alarm system cables from the mains cables.

The detector can be installed outdoors (according to the Class IV EN 50131-1).
- Avoid to direct the detector towards moving objects or, if impossible, please take care in adjusting the detector in order to avoid false alarms.
- Be sure to install the cover with Fresnel lens before the detector testing. Without cover, the detector doesn't work.

Placement   3-1

Environmental conditions are important elements to be evaluated during the installation. Bump, bottomland or slops can modify the performances of the detector.

If into the detection area any medium size animal can walk, it is suggested to choose carefully the installation height in order to avoid false alarms.

Installation height must be between 1 m and 1.30 m (not tilted ground).

Note

The maximum coverage range, 18m, is reached when the detector is installed at about 120cm (height).
Do not obscure partially or completely the detector's field of view.

COVERAGE TESTS

Once the detector has been powered, wait 3-4 minutes before running the coverage test (the IR sensors need to be stabilised).

In order to obtain a real simulation, free the protected area, preventing more people from moving inside the same area.

After 30-40 seconds of quiet, try to access the detection area by moving perpendicularly to the beams, thus avoiding a frontal approach.

Check the operation of the two PIRs with the two green LEDs and the operation of the microwave with the yellow LED.

Run the operation test, making sure to break the IR beams (*table 5 "Top view"* e *table 6 "Side view"*) by moving perpendicularly to them.

Once detection has been achieved, wait for at least 7-8 seconds before trying to be detected again.

Mounting   3-2

1. Unscrew the screw for the cover enclosure (*table 2, I*).
2. Remove the cover with lens (*table 2, D*).
3. Set up for the steel bracket fixing (*table 2, B*) on the wall, or on a pole (be sure the pole is stable and ripple free).

4. Position the two "U" (*table 2, A*) shaped bracket around the pole.

POLE FIXING

5. Block them with the inner screws (*table 2, K*) and the external screws (*table 2, J*).

4. Perforate the wall in correspondence of the holes on the casing.
5. Insert the wall plugs into the holes.
6. Pull the wires through the wire entry on the steel bracket.
7. Fix the steel bracket on the wall or on the pole.

Fix the metallic support on the wall perpendicularly to the ground.

8. Pull the wires trough the entry on the electronic holder (*table 2, C*). Perforate the cable passage knockout using a sharp point tool, as a screwdriver or similar.
9. Screw up the detector on the support using the 2 provided screws (*table 2, H*).
10. Connect the wires to the terminals (*table 3, L*).
11. Run the range settings (PIR 2 position adjustment, MW sensitivity, PIRs sensitivity). See *paragraph 2-1 Detection range*.
12. Close the detector with the front cover with Fresnel lens as shown opposite.
13. Screw up the metric screw (*table 2, I*).

WALL FIXING

Note
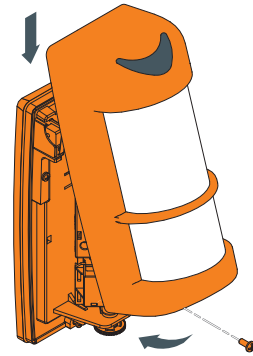
PROGRAMMING   4

In order to make the detector suitable for outdoor applications, a single sensor adjustment system has been implemented.

In the tables below are shown the DIP switch configurations (*table 3, T*):

Table 8: Infrared sensitivity adjustment

		DIP 1	
		OFF	ON
DIP 2	OFF	High sensitivity	Medium-high sensitivity
	ON	Medium-low sensitivity	Low sensitivity

Table 9: Sensor programming

		DIP 3	
		OFF	ON
		PIR 1 AND PIR 2 AND MW	PIR 1 AND PIR 2
DIP 4	OFF	Alarm output active only when all three technologies detect the presence. It can be used in most outdoor installations.	Alarm output active when both PIRs detect a presence. The MW is not managed. The detection of the MW does not affect the performance of the detector.
		(PIR 1 OR PIR 2) AND MW	PIR 1 OR PIR 2 OR MW
	ON	Output alarm active when the MW and one of the two PIR detect a presence. Not recommended in particularly hostile environments.	Alarm output active when a single technology (one of the two PIRs or the MW) detects a presence. Not suitable for outdoor applications.

If the detector is set in triple AND (DIP 3 and DIP 4 in OFF position) configuration, the maximum distance of detection is the one setted through the Adjustment of the PIR2.

Table 10: Antimasking and LEDs

	OFF	ON
DIP 5	Antimasking function disabled	Antimasking function enabled
DIP 6	LEDs enabled	LEDs disabled

TROUBLE SHOOTING   5

Table 11: Possible solutions

Trouble	Solution
LEDs fail to switch on	Check wiring connection.
	Check the presence of current and if the voltage is between 9.5 and 16 V.
	Make sure that DIP switch 6 is set to OFF.
False alarms	The detector is not perpendicular to the ground.
	Check if the lower detection area is wider than your planning.
	Check if there are objects in movement in the detection area.
	MW adjustment is set at maximum level.
No detection, sometimes	The lower PIR is not properly adjusted.
	MW adjustment is set at minimum level.
Continuous alarms of MASK output	Medium-sized obstacles close to the detector.
	Open the cover, disconnect the detector (wait about 5 seconds), re-power and close the cover immediately (within 10 seconds).

MAINTENANCE AND PERIODIC CHECKS   6

Keep the lens clean to guarantee proper operation of the detector.

A lens which is not perfectly clean may cause detection problems and/or problems to the anti-mask function.

The cleaning must be done when necessary or when clearly dirty.

Clean the lid and the lens with a cloth dampened with water.

Wipe with a dry cloth.

CLEANING PROCEDURE

Do not use chlorine-based or abrasive products or alcohol to remove particularly noticeable dirt.

ATTENTION!

DISPOSAL AND SCRAPPING   7

1. Unscrew the screws that fasten the front lid and remove it.
2. Disconnect the detector; disconnect all the terminals on the terminal block.
3. Divide the parts by type and dispose of them in accordance with applicable laws.
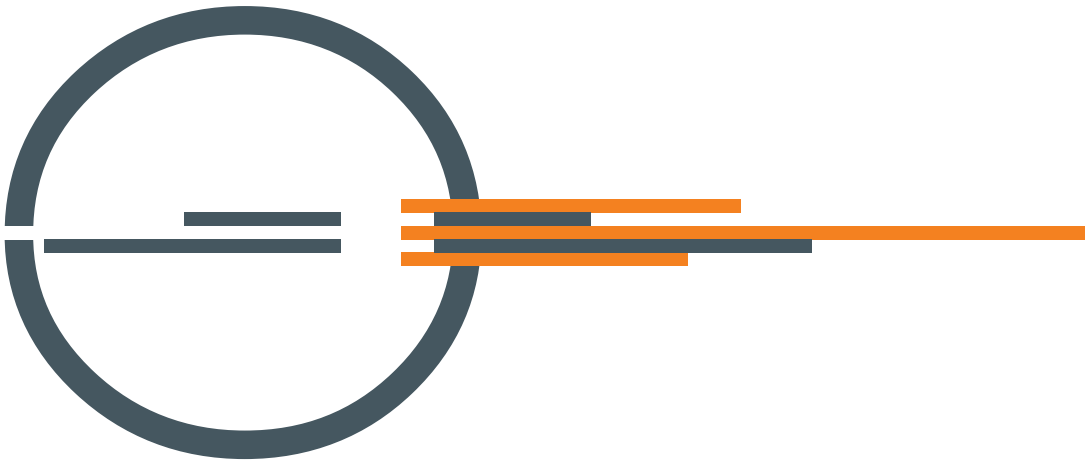
DISMANTLING

Do not dispose of the components or any other product material in the environment.
Seek the assistance of companies authorised to dispose of and recycle waste materials.

ATTENTION!

Notes

ISO 9001 Quality Management
certified by BSI with certificate number FM530352

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