



PRODUCT
NAT

Product code NAT SENSOR

NAT SENSOR



INDOOR AND OUTDOOR CURTAIN SENSOR

INSTALLATION AND MOUNTING MANUAL VERSION 2.1

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1.Introduction

Congratulations on having purchased a Politec curtain sensor.This appliance guarantees long-lasting and reliable operation if installed correctly.For correct and effective use, it is necessary to read this instruction manual carefully.



The system has been designed to detect intrusions and activate the alarm; it is not a device that prevents intrusion.Politec is not responsible for damage, injury or loss caused by accidents, theft, force majeure (including momentary lightning-induced overcurrent), abuse, improper or incorrect use, faulty installation or inadequate maintenance.

2. Product description

This curtain sensor has been designed for the protection of entrances (doors and windows) both for outdoor and indoor use.

Thanks to its small size, it is particularly suitable for protecting doors, windows and shop windows and, thanks to the materials used and advanced technology, it can be used in any outdoor installation where it is necessary to protect well-defined areas.

In order to ensure correct performance, it must be installed on the upper part of the window, door, or French window to detect the movement of a stranger through the entrance.

Before installation, check the following conditions:

- the wall must not have depressions or excessive protrusions;
- avoid positioning the detector near heat sources or in direct sunlight;
- avoid the reflection of electromagnetic energy on large surfaces such as, for example, mirrors, metal walls, etc. ;
- avoid pointing the detector at fluorescent lamps or placing it in their immediate vicinity.

If installed outdoors it must be sheltered (not completely exposed to the elements).

Warnings



Mounting, installation of the sensor and connection to the mains must be carried out by expert and qualified personnel, in compliance with rules and regulations applicable to electrical systems.

3.General warnings

This installation manual contains important information regarding safety for installation: it is necessary to read all the instructions before proceeding with the installation.

Keep this manual for future use.

- If you have any questions or doubts during installation, do not carry out any operations and contact the support service.
- Use of these products for purposes other than those specified in these instructions is prohibited.
- You must not make any change to the components of the product unless stated in the manual in order not to void the warranty; such operations can only lead to malfunctions; Politec assumes no liability for malfunctions or damage due to modified products.
- Depending on the specific situation of use, check for the need for additional devices: detectors or signalling devices.
- During installation, mounting and use of the product, make sure no foreign objects (solids, metals or liquids) are able to penetrate inside the open devices.
- Manufacturer's liability: Politec assumes no liability for failures resulting from incorrect installation; lack of maintenance, incorrect assembly or use.
- Politec is also not liable for incorrect or incomplete operation of the product or failure to detect intrusion.
- Warranty (summary of conditions): Politec guarantees its products for a period of 2 years from the production date. The warranty is applied to those purchasing directly from Politec; there is no warranty for the end user who, in the event of breakdowns or faults, must contact the installer or dealer.
- The warranty excludes aesthetic parts as well as parts subject to normal wear and parts subject to normal consumption such as batteries and accumulators.

3.1 Additional warnings for devices powered by mains voltage

This manual is intended only for technical personnel qualified to install such devices.

- Assessing the hazards that may occur during installation and use of the system, in order to achieve complete safety, it is necessary that installation takes place in full compliance with applicable laws, methods, rules and regulations.
- Before accessing the internal terminals of the product, it is necessary to disconnect all the power circuits.
- If automatic circuit breakers or fuses trip, before resetting them it is necessary to identify the fault and repair it.

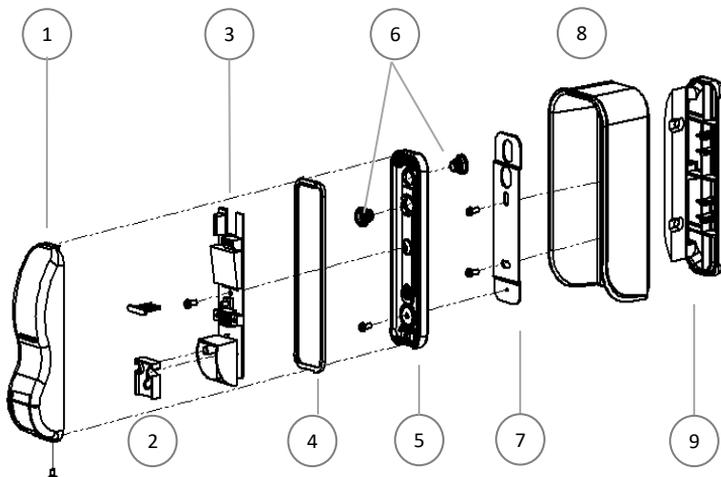
3.2 Installation warnings

- Check that all the material to be used is in excellent condition and suitable for use.
- Before proceeding with the installation, check the environmental class of the products in the "technical specifications" chapter.
- Check, comparing with the values shown in the paragraph "technical specifications", that the range of the devices is correct
- Check that the sensor is positioned in areas protected against potential impact, in flat areas and on fixed supports to avoid movements.
- Do not place the system components close to heat sources as they could be damaged.
- Each sensor has its own operating principle: check the instructions for choosing the right position in the respective instruction manual.



4.List of main components

The package contains the following components and accessories.
When opening the package, check that everything has been included.



No.	COMPONENT
1	Cover
2	PIR LIMITER
3	Circuit board
4	Gasket
5	Base
6	Concentric seals
7	Metal plate
8	Canopy
9	L-shaped bracket

5.Preparation for installation

5.1 Preparation of the sensor parts before installation

Since the communication of the sensors (depending on the family) to the control unit can take place by wire, via wireless, it is advisable to firstly check all the components of the sensors and their possible accessories before beginning the installation.

5.2 It is advisable to carry out:

- device configuration on a table;
- checking device operation
- the permanent fixing of each device;
- the preparation and carrying out of electrical connections.

In order to avoid errors, operating and installation problems, it is advisable to proceed as follows:

- a) Place all the products with the package open on a table;
- b) For the low-consumption sensor version for wireless models with universal circuit board housing, insert and connect the radio transmitter, and connect it to the sensor
- c) Power the sensors and program them
- d) Test sensor operation;
- e) Place (without fixing) the sensors in the planned points;
- f) Place (without fixing) all the other devices at the planned points;
- g) Check for each sensor that there is sufficient field for radio communication (for wireless versions);
- h) Permanently fix the sensors.

Before proceeding with the installation, it is necessary to check the integrity of the product, the adequacy of the model chosen and the suitability of the environment intended for installation:

- Check that all conditions of use fall within the "limits of use" and in the "Technical specifications of the product".
- Check that the environment chosen for the installation is compatible with the total footprint of the product.
- Check that the surface chosen for the installation of the product is sturdy so as to ensure stable fixing and that it is adequately protected against possible impacts or the elements.



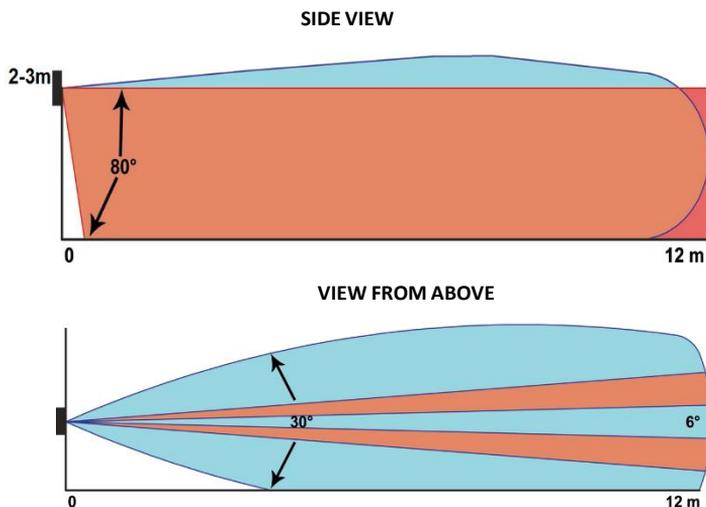
6.Placement and installation

6.1 Placement and installation height

Position the sensor considering the type of surrounding environment and the protection distance for correct and effective operation.

Position it in such a way that there are no obstacles in its range of action (trees/plants or objects that can swing or move with the wind or rain if installed outside).

Position the sensor so that sunlight does not hit it directly near the sensors.



N.B.:The detection zone can vary according to the installation height and the surrounding environment

6.2 Anti-crawl

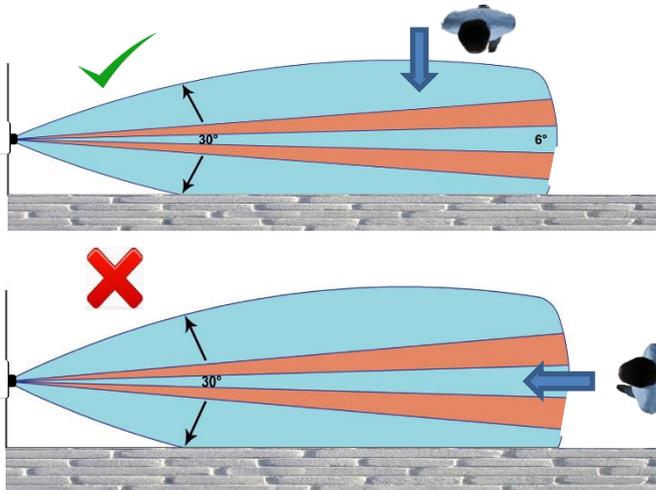
If mounted at a height of less than 3m, the system can also detect the areas underneath the NAT sensor by suitably adjusting the sensitivity of the two technologies.This is thanks to the inclination present on the microwave board and PIR which generate an anti-crawl zone.This solution allows you to limit the detection area even without the use of a bracket.

6.3 Pet Immunity

If mounted at a height between 2 and 3m, the sensor manages to identify a pet with a mass not exceeding 10 kg that walks within the detection area.

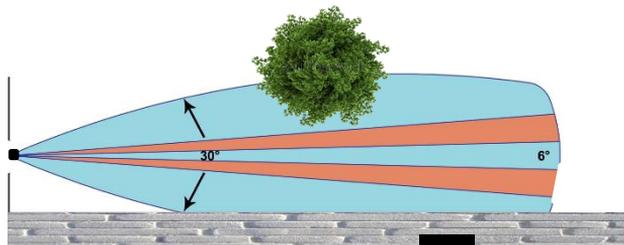
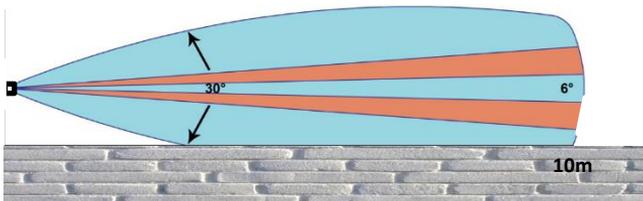
6.4 Type of detection

The sensor is designed for detecting actual crossing of the curtain and not just approaching it. The detection zone is based on the mass of a person of about 70 kg. The sensor could detect objects of higher mass (such as cars, trucks, etc.) having a mass significantly higher than the expected area.



6.5 Wrong installations

The sensor can detect objects such as cars and/or trucks beyond the detection area, therefore avoid installing the sensor facing a vehicle passageway or use the bracket and tilt the sensor downwards in order to reduce the field of view. Avoid the presence of plants, air conditioners and mobile objects in the detection area

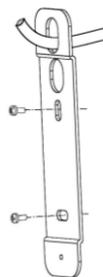


7. Mounting

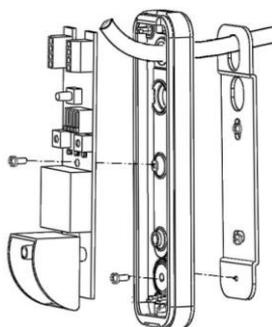
7.1 Direct wall mounting

In any case, it is necessary to take into consideration the specific beam diffusion of each model, to avoid reflection of the beams caused by the ground or by adjacent objects.

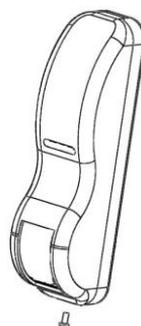
1. Insert the shielded alarm cable in the fixing plate;
Fix the plate to the wall;



2. Drill the rubber grommet and slip in the cable;
Screw the base onto the plate;
Fix the NAT board on the support base and carry out the wiring;



3. After the wiring and the functional test, close the NAT making sure that the gaskets and ORs are present and not deteriorated to guarantee the integrity of the product



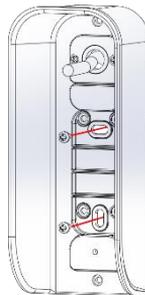
WARNING:

Product warranty is invalid if there is any hole in the sensor or any component

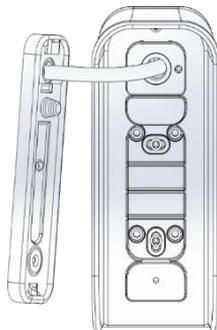
7.2 Wall mounting with canopy

In any case, it is necessary to take into consideration the specific beam diffusion of each model, to avoid reflection of the beams caused by the ground or by adjacent objects.

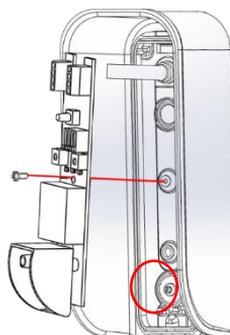
1. Insert the shielded alarm cable in the upper hole of the canopy;
Open the central slots and fix the canopy to the wall



2. Drill the rubber grommet and slip in the cable.
Insert the hook of the Nat base in the canopy compartment as shown in the figure and then fix it with the screw located at the bottom



3. Screw the base onto the canopy;
Fix the NAT board on the support base and carry out the wiring;

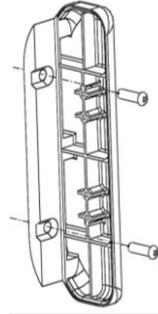


4. After the wiring and the functional test, close the NAT making sure that the gaskets and ORs are present and not deteriorated to guarantee the integrity of the product.

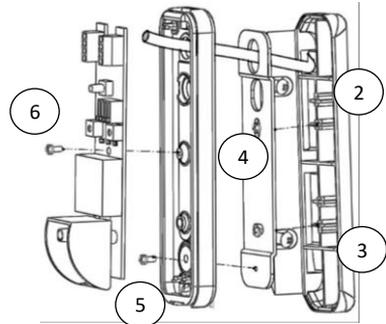


7.3 Mounting with L-shaped bracket

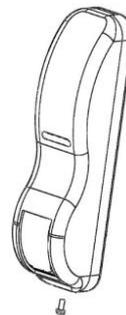
1. Insert the shielded alarm cable in the slots of the angle fixing bracket and fix it to the wall.



2. Insert the cable through the fixing plate;
3. Fasten the plate to the angle fixing bracket;
4. Drill the rubber grommet and slip in the cable;
5. Screw the base onto the plate;
6. Fix the NAT board on the support base and carry out the wiring.

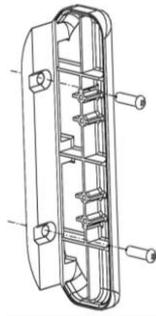


7. After the wiring and the functional test, close the NAT making sure that the gaskets and ORs are present and not deteriorated to guarantee the integrity of the product.

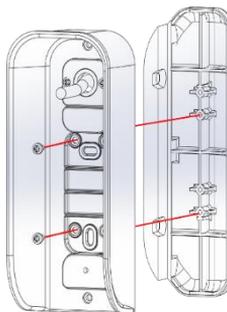


7.4 Mounting with L-shaped bracket and canopy

1. Insert the shielded alarm cable in the slots of the angle fixing bracket and fix it to the wall.

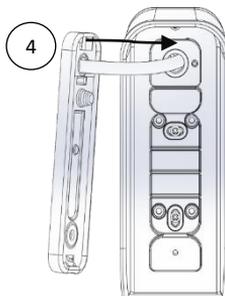


2. Insert the cable through the hole in the canopy;
Open the two side holes, left or right, of the canopy and fix it to the angle fixing bracket;

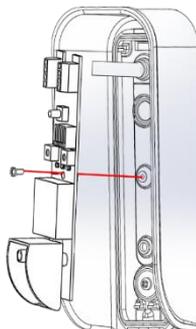


3. Drill the rubber grommet and slip in the cable;

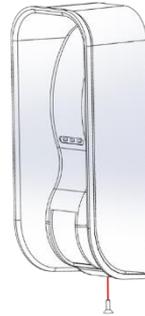
4. Insert the hook of the Nat base in the canopy compartment as shown in the figure and then fix it with the screw located at the bottom



5. Screw the base onto the plate;
Fix the NAT board on the support base and carry out the wiring;



6. After the wiring and the functional test, close the NAT making sure that the gaskets and ORs are present and not deteriorated to guarantee the integrity of the product.

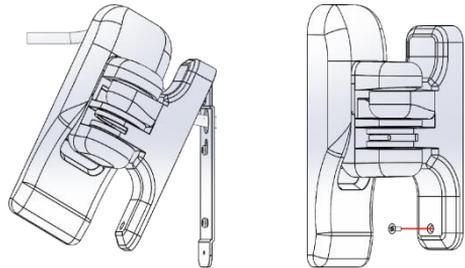


7.5 Mounting with NAT BR bracket (Accessory)

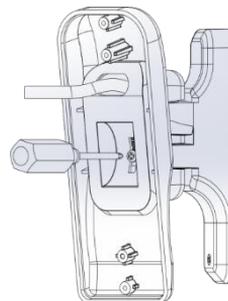
1. Fasten the metal plate to the wall passing the cable through the hole; Pass the cable through the bracket together with that of the tamper



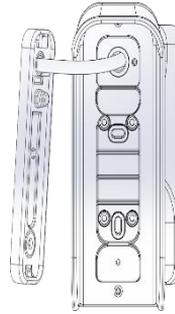
2. Adjust the angle and fix everything with the central screw



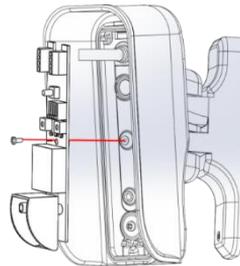
3. Insert the cable in the hole of the canopy and fix it to the bracket with the screws as shown in the figure



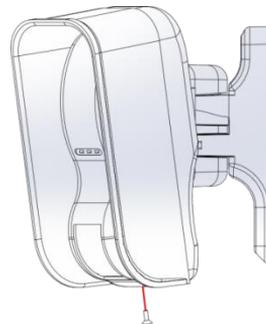
4. Open the NAT BR seal to allow cable insertion; Insert the hook of the NAT BR base into the canopy compartment as shown in the figure and then fix it with the screw located at the bottom



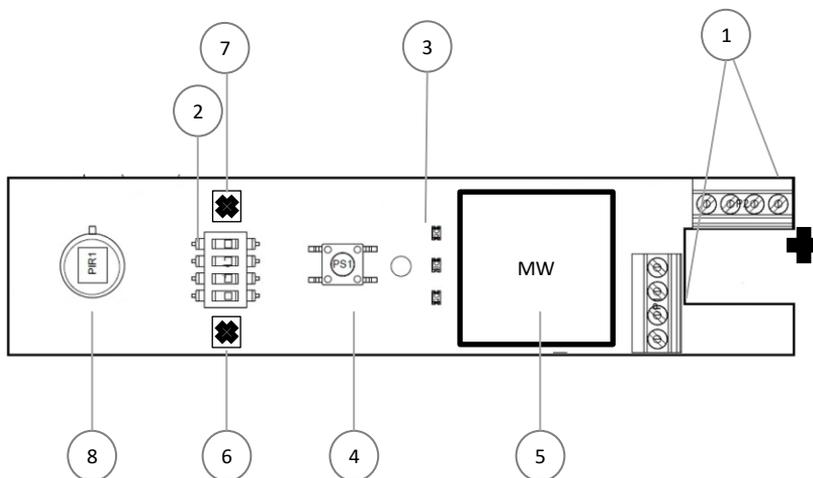
5. Attach the Nat board to the base



6. After performing the calibration, insert the sensor cover and close everything with the screw located under it



8.Circuit board



1	TERMINAL BOARD	1 2	+ / -	12 V power supply
		3 4	AMK LR	OC NC Antimask output (120Ω) Long Range input (positive)
		5 6	A / A	NC alarm
		7 8	T / T	NC tamper
2	CONFIGURATION DIP			
3	LED INDICATOR			
4	TAMPER			
5	24GHZ K-BAND MICROWAVE			
6	IR RANGE ADJUSTMENT TRIMMER			
7	MW RANGE ADJUSTMENT TRIMMER			
8	PIR			

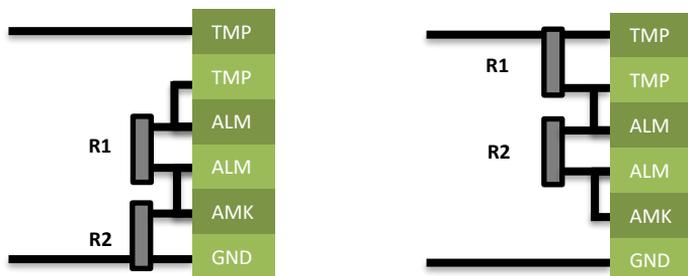
9.Component description

9.1.Terminal board

Tamper and alarm outputs with NC free contacts, with the possibility of balancing on the terminal board. Anti-masking output is NC to ground with 120Ω resistance. In case of masking, the output is high impedance. **LR INPUT**: Provide a positive to activate LONG RANGE function. It increases the sensitivity of IR and MW where it is difficult to achieve the desired coverage.

9.2.Examples of balancing

Here are some examples for balancing on the terminal board



9.3 DIP functionality

Here are some examples for balancing on the terminal board

DIP		
1	OFF	the device is set up for proper operation as part of an installation without protections (canopies, porches etc.) and therefore affected by adverse weather conditions (rain, snow etc.) With this setting active, the system performs the "ENVIRONMENTAL COMPENSATION" function when necessary, adapting its detection parameters and avoiding false alarms
	ON	If DIP2 is activated, by setting DIP1 to ON, the ANTI-MASK function of the microwave is enabled
2	ON	ANTI-MASK. When an object is placed in front of the sensor to mask it and make it ineffective, an active infrared system verifies the presence of this in 15 seconds and signals it via the dedicated anti-mask output. The microwave anti-mask verifies the presence of an object in 20 seconds and signals it via the dedicated anti-mask output. This is enabled by activating also DIP 1. The AMK output closes in the negative with an impedance of 150Ω. <i>It is possible to increase the sensitivity of the antimask sensor by raising and lowering DIP 2 twice. This setting will be confirmed by a flashing of the BLUE and YELLOW sensor LED. To return to standard sensitivity, set DIP2 back to OFF.</i> N.B. If DIP 2-4 is active, when the yellow-blue LED flashes, it switches to the masking mode and warns the opening of the ANTI-MASK contact. WARNING: When DIP 2 is activated before the system is operating, you <u>MUST</u> close the NAT sensor within 5 minutes, or turn the sensor off and on again with the cover closed
3	ON	SECURITY. The sensor goes into alarm in AND, but also in OR counts pulses. If one of the two technologies gives multiple alarms in 30 seconds. The system gives an alarm signal independently of the other technology.
4	ON	The LEDs light up.



9.4 LED indicators

RED LED	Sensor in ALARM (operation in AND between the IR and MW)
BLUE LED	MW sensor in Alarm
YELLOW LED	PIR sensor in Alarm
FLASHING	BLUE-YELLOW simultaneous flashing:Masked sensor (if antimask function active only)

9.5 Adjustment trimmer



MW

Using the trimmer, adjust the range of the MW, carrying out crossing tests. The BLUE LED signal will help to verify the passage detection in different areas (e.g. 0m, 4m, 7m, 12m).

Cross-check coverage quality of the areas concerned, adjusting the PIR part.



PIR

Using the trimmer, adjust the range of the PIR, carrying out crossing tests. The YELLOW LED signal will help to verify the passage detection in different areas (e.g. 0m, 4m, 7m, 12m). Cross-check coverage quality of the areas concerned, adjusting the MW part.

N.B.: Carry out the tests with the cover closed

N.B.: Trimmers will not necessarily have to be adjusted in the same way due to the surrounding environment: e.g. in case of protection of a metal door, the MW will be adjusted lower than the PIR due to the reflections given by the metal.

10. Description of functions

AND Operation

The sensor sends an alarm output signal only if both infrared signals have detected an intrusion signal

ANTI-MASK function

If enabled, the system detects within 20 seconds if even one of the two IR sensors is masked.

Thermal self-compensation

The sensor adjusts its sensitivity dynamically according to the ambient temperature

Anti-blindness

The sensor detects sudden changes in light readjusting its sensitivity

Pet Immunity for animals <10kg (with minimum installation height 2.1m) - MASS detection

The sensor performs a *digital signal processing of the detected mass* in order to identify more precisely the presence of people or animals

Self-diagnostics function

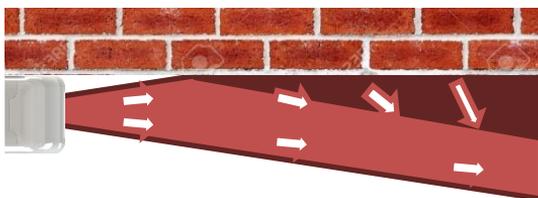
The system checks the functionality of the microwave and PIR system every 50sec. Malfunction of one of the two detection devices is signalled by the constant flashing of the dedicated LED (BLUE for MW and YELLOW for IR). In this condition, the system excludes the functioning of the NOT working technology and the detection will continue to be present in OR mode.

11. PIR LIMITER

It is possible to install the sensor on the wall without the need for brackets using the PIR LIMITER.

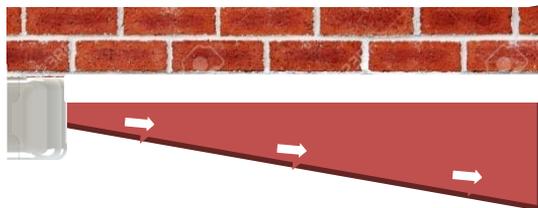
11.1 Application

If the NAT sensor was used without the PIR LIMITER there could be reflections and false detections depending on the type of material or object present along the curtain (e.g. hot metal doors, moving mosquito nets, etc.).

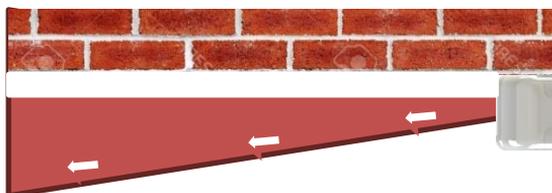


Using the PIR LIMITER eliminates this disturbance zone

LEFT SIDE MASKING OF THE SENSOR



RIGHT SIDE MASKING OF THE SENSOR



11.2 PIR LIMITER mounting

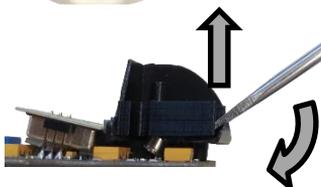
1. Insert the mask device on the side according to the application.



2. Push the mask device all the way in.



3. The device can be removed by levering with the screwdriver underneath.



12. Installation examples

"Curtain" application on window/door frames



"Open field of view" installation



"Double" installation:

N.B.: Position the two sensors at a distance greater than 15m if they face each other.



"Back-to-back" installation.

N.B.:Position the two sensors at a distance greater than 5cm if they are shoulder-to-shoulder



"Horizontal" installation.

N.B.:Avoid that the sensor "looks" at a surface that is hit hard by the sun to avoid reflections



13. Technical specifications

MAXIMUM RANGE OF COVERAGE	Adjustable up to 1-12 m
SENSOR CALIBRATION AND PROGRAMMING	On board, independent DIP and trimmer MW and PIR
LED	3 indicators
MW FREQUENCY	24GHz
IR READING	PIR with Fresnell lens
PIR OPENING ANGLE	80° vertical - 6° horizontal* (without PIR LIMITER)
MW OPENING ANGLE	80° vertical - 30° horizontal
POWER SUPPLY	12 – 24V
CONSUMPTION	35 mA
OUTPUTS	Alarm (NC) Cover anti-removal tamper (NC) Antimask OC (NC @120Ω)
INPUTS	Long Range (LR)
FUNCTIONS	IR and MW antimask adjustable
	RF immunity
	Pet Immunity (10kg)
	Insect Immunity (MW and PIR spaced)
	Digital Signal Processing on MASS
	Thermal Self-Compensation - Blinding
	Security AND + OR configurable pulse counter
TAMPER	Combined anti-pull off and anti-removal
ACCESSORIES SUPPLIED	L bracket, canopy, PIR LIMITER
OPTIONAL ACCESSORIES	Adjustable bracket
DIMENSIONS (WxDxH)	135 X 33 X 40 mm
WEIGHT	150g
INGRESS PROTECTION RATING	IP 65
OPERATING TEMPERATURE	-20°C / +60°C
MOUNTING KIT	Includes screws and metal plate
WARRANTY	2 years



14. Product disposal

All components of this sensor are an integral part of the equipment and must be disposed of together with it.

Just as with installation operations, also at the end of life of these products, the dismantling operations must be carried out by qualified personnel.

These products are made up of various types of materials: some can be recycled and others must be disposed of. Find out about available recycling or disposal systems for this category of products governed by regulations in force in your area.

Warning!- Some parts of the products may contain polluting or dangerous substances which, if dispersed in the environment, could result in harmful effects on the environment itself and on human health.

As indicated by the symbol on the side, it is forbidden to throw these products in domestic waste.

Therefore, carry out "separate collection" for disposal, according to the methods stipulated by the regulations in force in your area or return the products to the seller when purchasing a new equivalent product.

Warning!- Local regulations can impose heavy penalties for incorrect disposal of these products.



For technical support, contact your security systems distributor