PRODUCT

NAT WS

Product code NAT WS
NAT WS FLAT

NAT WS

LOW-CONSUMPTION INDOOR AND OUTDOOR CURTAIN SENSOR

INSTALLATION AND MOUNTING MANUAL VERSION 2.0

Table of contents

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.

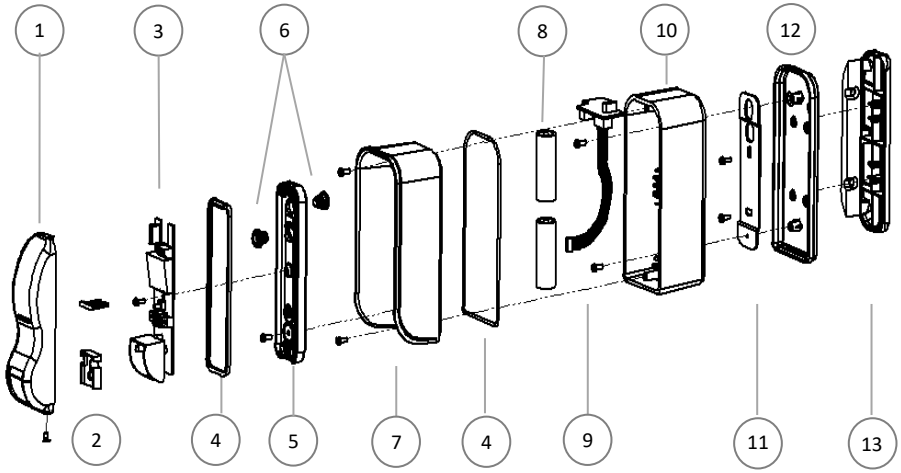
- Assessing the hazards that may occur during installation and use of the system, in order to achieve complete safety, it is necessary that installation takes place in full compliance with applicable laws, methods, rules and regulations.
- Before accessing the internal terminals of the product, it is 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	No.	COMPONENT
1	Cover	8	3.6V lithium batteries
2	PIR LIMITER	9	Interface board + cable
3	Circuit board	10	Radio transmitter port
4	Gaskets	11	Metal plate
5	Base	12	Outer cover
6	Concentric seals	13	L-shaped bracket
7	Canopy		

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:

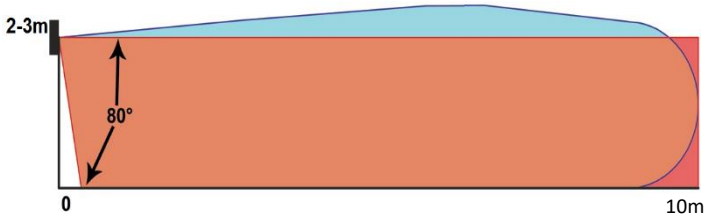
• Check that all conditions of use fall within the "limits of use" and in the "Technical specifications of the product".
• Check that the environment chosen for the installation is compatible with the total footprint of the product.
• Check that the surface chosen for the installation of the product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

6.Placement and installation

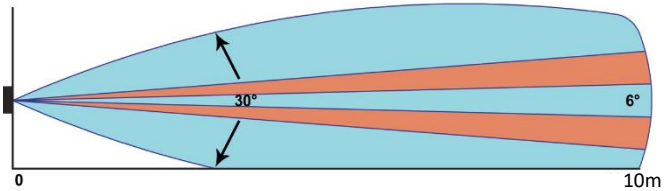
6.1 Placement and installation height

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.

SIDE VIEW



VIEW FROM ABOVE



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

6.2 Anti-crawl

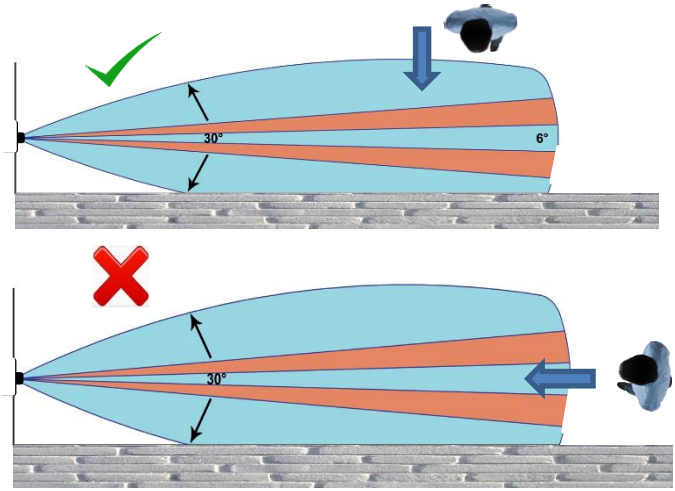
If mounted at a height of less than 3m, the system can also detect the areas underneath the NAT sensor by suitably adjusting the sensitivity of the two technologies.This is thanks to the inclination present on the microwave board and PIR which generate an anti-crawl zone.This solution allows you to limit 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.

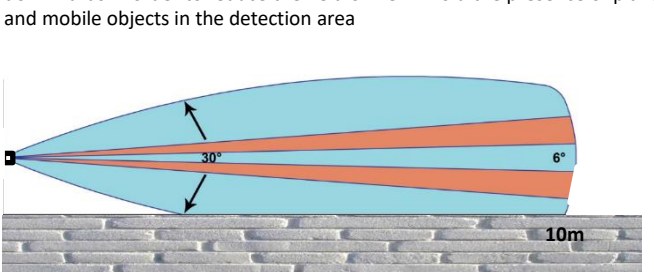
6.4 Type of detection

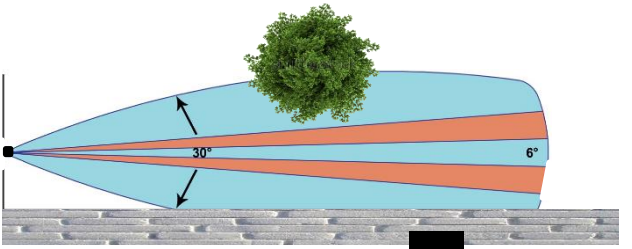
The sensor is designed for detecting actual crossing of the curtain and not just approaching it.The detection zone is based on the mass of a person of about 70 kg.The sensor could detect objects of higher mass (such as cars, trucks, etc.) having a mass significantly higher than the expected area.



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

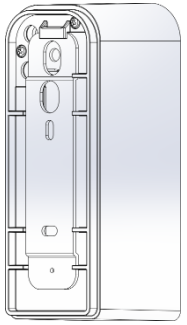
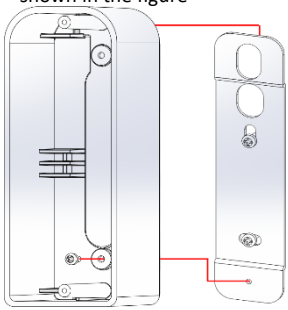
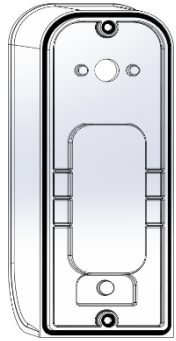




7.Mounting

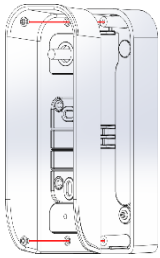
In any case, it is necessary to take into consideration the specific beam diffusion of each model, to avoid reflection of the beams caused by the ground or by adjacent objects.

7.1 Direct wall mounting

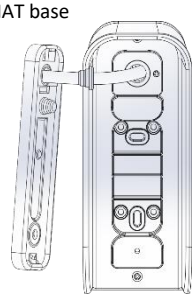
1. Remove the metal plate from the back of the transmitter holder 	2. Fasten the metal plate to the wall: 
3. Position the battery holder by inserting the upper hook and tighten the screw located at the bottom as shown in the figure 	4. Check that the seals in the canopy are inserted correctly 

<u>WARNING:</u>
Product warranty is invalid if there is any hole in the sensor or any component

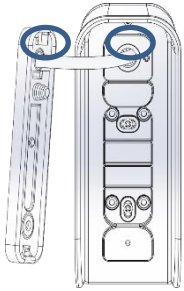
5. Fasten the canopy to the transmitter holder passing through the power cables



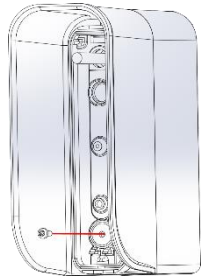
6. Make a hole in the concentric seal to allow the passage of the cable and insert it into the NAT base



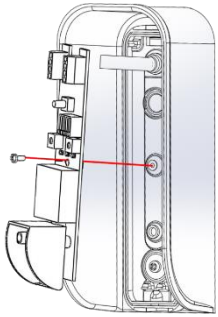
7. Insert the hook of the Nat base in the canopy compartment as shown



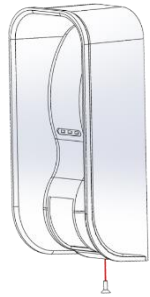
8. Secure the NAT base with the screw located at the bottom



9. Fix the Nat board to the base

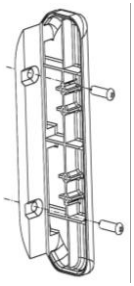


10. After performing the calibration, insert the sensor cover and close everything with the screw located under it

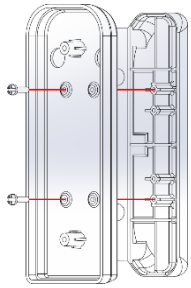


7.2 Mounting with L-shaped bracket

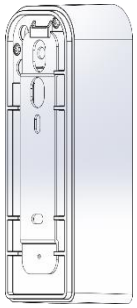
1. Fasten the L-shaped plate to the wall



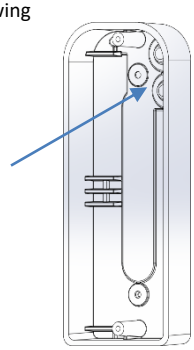
2. Mount the plastic plate on the L-plate



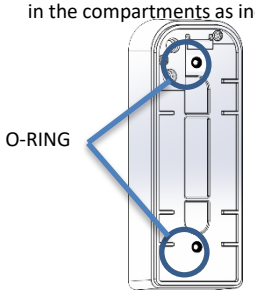
3. Remove the metal plate from the back of the transmitter holder



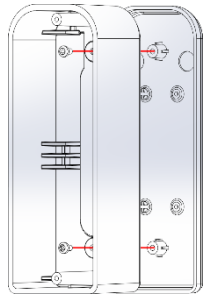
4. Drill the hole for the screw indicated in the drawing



5. Replace the metric screw with those present in the bag and insert the seals in the compartments as indicated

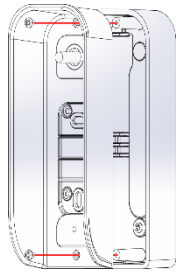


6. Screw the transmitter holder to the plate

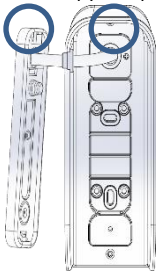


7. Check that the seals in the canopy are inserted correctly

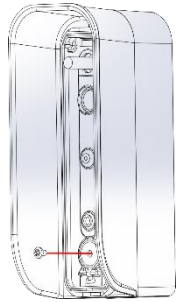
8. Fasten the canopy to the transmitter holder passing through the power cables



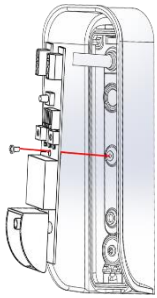
9. Make a hole in the seal to allow the passage of the cable and insert it into the NAT base.Insert the hook of the Nat base in the canopy compartment as shown



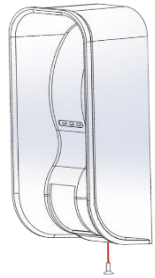
10. Secure the NAT base with the screw located at the bottom



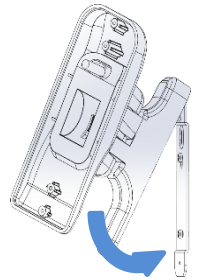
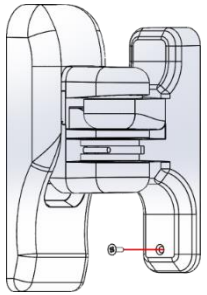
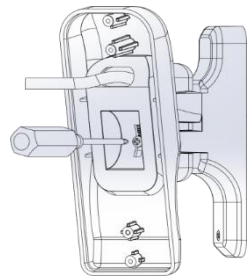
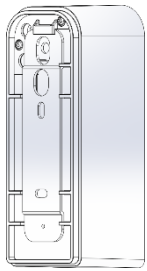
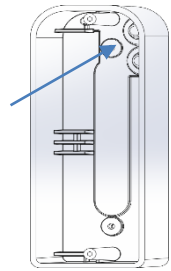
11. Attach the Nat board to the base



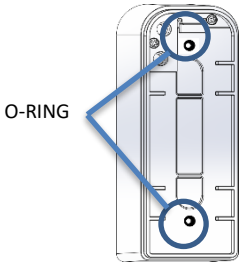
12. After performing the calibration, insert the sensor cover and close everything with the screw located under it



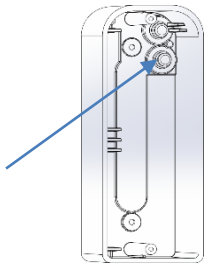
7.3 Mounting with NAT BR bracket - Accessory

1. Fasten the metal plate to the wall 	2. Position the bracket by inserting the upper hook 
3. Tighten the screw located at the bottom 	4. Adjust the inclination (from 0° to -30°) and the horizontal rotation (180°) and fix everything with the central screw 
5. Remove the metal plate from the back of the transmitter holder 	6. Drill the hole for the screw indicated in the drawing 

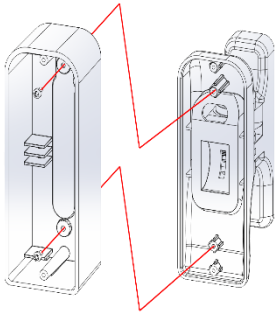
7. Replace the metric screw with those present in the bag and insert the seals in the compartments as indicated



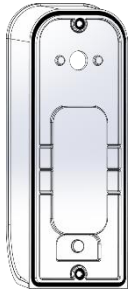
8. Drill the concentric seal and pass through the tamper cable



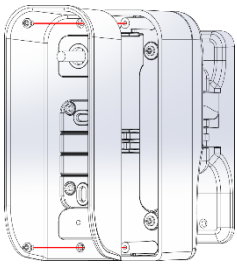
9. Fasten the transmitter holder to the bracket



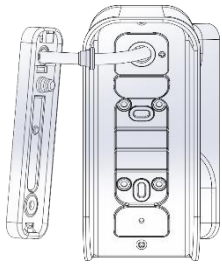
10. Check that the canopy seals are inserted correctly

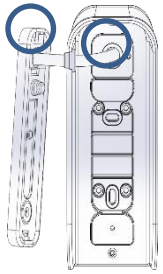
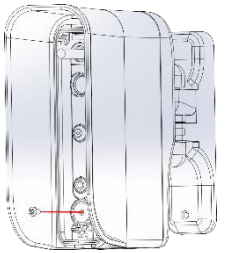
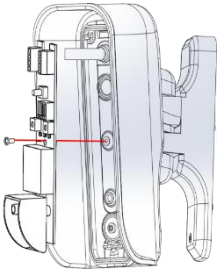
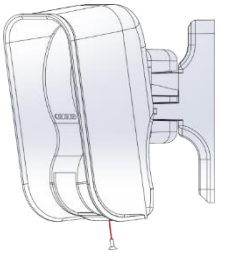


9. Fasten the canopy to the transmitter holder passing through the power cables



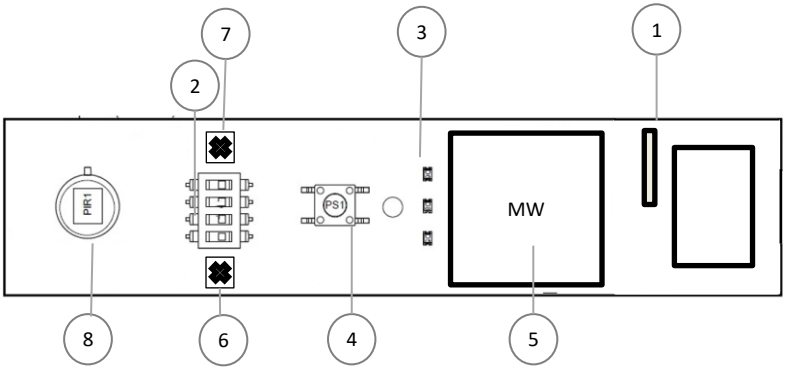
10. Drill the concentric seal to allow the passage of the cable and insert it into the NAT base



13. Insert the hook of the NAT base in the canopy compartment as shown 	14. Secure the NAT base with the screw located at the bottom 
15. Attach the Nat board to the base 	16. After performing the calibration, insert the sensor cover and close everything with the screw located under it 

8.Circuit board

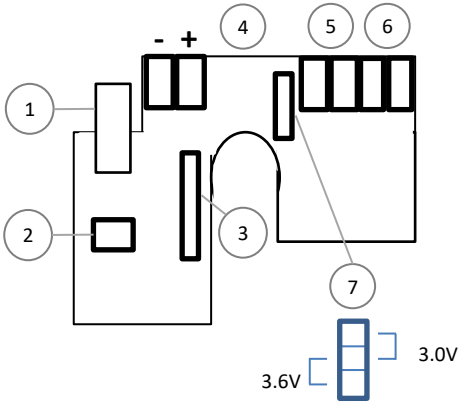
8.1 NAT WS Motherboard



1	INTERFACE CONNECTOR
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

8.2 NAT CW Interface board

Connect the battery power supply through a special connector and the interface connector to the NAT WS board respecting the polarity.It is possible to power the 3.6V/3V radio transmitter using the same power supply as the NAT WS.



1	BATTERY CONNECTOR
2	EXTERNAL AUXILIARY TAMPER
3	NAT WS BOARD CONNECTOR
4	RADIO TX POWER OUTPUT
5	ALARM OUTPUT
6	TAMPER OUTPUT
7	OUTPUT POWER CONFIGURATION

9.Component description

9.1 DIP functionality

Here are some examples for balancing on the terminal board

DIP		
1	**OFF**	**Microwave always on**, at the expense of slightly higher consumption, in this mode it is possible to easily detect a **person running**.It is possible to activate the anti-masking function also with microwave and the security function
	ON	If DI1 is activated, the energy saving function is enabled.With this function active the system enters low consumption mode, in particular the microwave is activated as soon as the IR technology registers a pre-alarm.In this mode the sensor consumes 0.1mA on and 1.5mA in alarm.There is no standby time.If this function is not active, the sensor has the microwave always on with a constant consumption independent of the number of alarms of 0.3mA.In this case the maximum range is about 8m depending on the application.
2	**ON**	ANTI-MASK.When an object is placed in front of the sensor to mask it and make it ineffective, the system activates the masking signal via the dedicated output in series with the Tamper. The anti-mask verifies the presence of an object in 20 seconds and signals it via the dedicated anti-mask output.To activate the ANTI-MASK function also of the microwave section, lower and raise dip 2 a second time.Once this procedure has been carried out, the sensor will confirm the activation of this function by flashing the BLUE LED.This function can only be used if the Energy function is OFF. **N.B.**If DIP 2 (anti-mask) and 4 (LED) are activated, when entering the masking mode a blue-yellow LED flashes notifying the opening of the ANTI-MASK contact. **WARNING**:When DIP 2 is activated before leaving the system working, the NAT sensor MUST be closed within 2 minutes.
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**	Lighting of the LED indicators.However, the LEDs will turn off after 5 minutes to reduce battery consumption.

9.2 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)

9.3 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, 10m).
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, 10m).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 an *analysis 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.

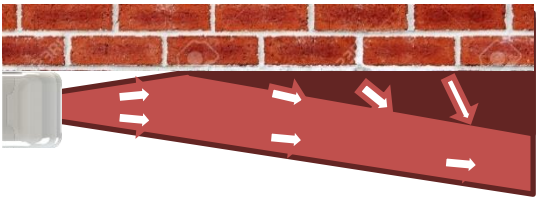
Low energy consumption
The system has very low energy consumption which guarantees a battery life of about 2 years without the use of standby times.In detail, system consumption is:340 uA with ENERGY OFF function regardless of the alarm signal.Average battery life 2 years.
150 uA at rest and 1.5mA in alarm with ENERGY ON function.Average battery life 3 years with 3000 alarms per day.

11.PIR LIMITER

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

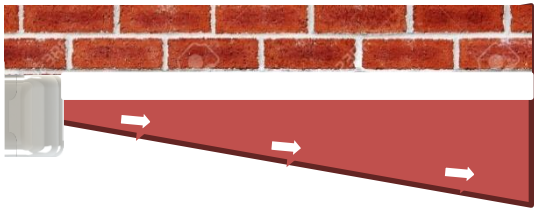
11.1 Application

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.).

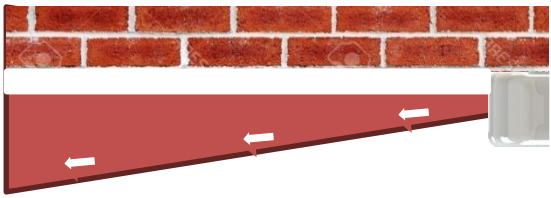


Using the PIR LIMITER eliminates this disturbance zone

LEFT SIDE MASKING OF THE SENSOR



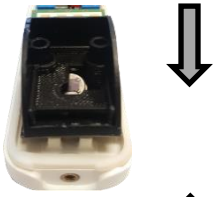
RIGHT SIDE MASKING OF THE SENSOR



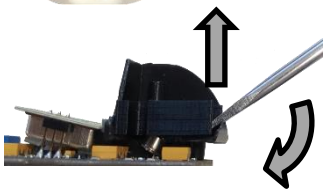
11.2 PIR LIMITER mounting

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 1-10 m
SENSOR CALIBRATION AND PROGRAMMING	On board, DIP and trimmer
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	3.6V / 2 lithium batteries
ENERGY OFF CONSUMPTION	0.35 mA
ENERGY ON CONSUMPTION	0.015 mA + 1.5mA in alarm
OUTPUTS	Alarm (NC) Cover anti-removal tamper (NC) Antimask in series with the tamper
RADIO TX POWER OUTPUT	3.6V / 3V selectable
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 (LxWxD)	NAT WS:150x60x100 mm NAT WS FLAT:150x60x80 mm
MAX TX RADIO DIMENSIONS	NAT WS FLAT:18x48x107 mm / 18x32x107 mm / 18x20x113 mm NAT WS:21x48x107 mm / 26x32x107 mm / 26x20x113 mm
WEIGHT	170g
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.

POLITEC
Perimeter protection

For technical support, contact your security systems distributor

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