TECHNICAL MANUAL

STRIXO

Indoor/outdoor advanced double-technology detector with vertical curtain protection

090011029

IMQ-SISTEMI DI SICUREZZA

EL.MO. SPA

FOREWORD

FOR THE INSTALLER:

Comply strictly with current standards governing the installation of electrical systems and security systems, and with the manufacturer's directions given in the manuals supplied with the products.
Provide the user with full information on using the system installed and on its limitations, pointing out that there are different levels of security performance that will need to suit the user's requirements within the constraints of the specific applicable standards. See that the user looks through the warnings given herein.

FOR THE USER:

Check the system's operation thoroughly at regular intervals, making sure the equipment can be armed and disarmed properly.
Make sure the system receives proper routine maintenance, employing the services of specialist personnel who meet the requirements prescribed by current regulations.
Ask your installer to check that the system suits changing operating conditions (e.g. changes in the extent of the areas to be protected, change in access methods, etc...).

This device has been designed, built and tested with the utmost care and attention, adopting test and inspection procedures in accordance with current legislation. Full compliance of the working specifications is only achieved in the event the device is used solely for its intended purpose, namely:

Indoor/outdoor advanced double-technology detector with vertical curtain protection.

The device is not intended for any use other than the above and hence its correct functioning in such cases cannot be assured.
Consequently, any use of the manual in your possession for any purpose other than those for which it was compiled - namely for the purpose of explaining the product's technical features and operating procedures - is strictly prohibited.
Production processes are closely monitored in order to prevent faults and malfunctions. However, the componentry adopted is subject to an extremely modest percentage of faults, which is nonetheless the case with any electronic or mechanical product.
Given the intended use of this item (protection of property and people), we invite you to adapt the level of protection offered by the system to suit the actual situation of risk (allowing for the possibility of impaired system operation due to faults or other problems), while reminding you that there are specific standards for the design and production of systems intended for this kind of application.

We hereby advise you (the system's operator) to see that the system receives regular routine maintenance, at least in accordance with the provisions of current legislation, and also check on as regular a basis as the risk involved requires that the system in question is operating properly, with particular reference to the control unit, sensors, sounders, dialler(s) and any other device connected. You must let the installer know how well the system seems to be operating, based on the results of periodic checks, without delay.

Work involved in the design, installation and maintenance of systems incorporating this product should be performed only by personnel with suitable skills and knowledge required to work safely so as to prevent any accidents. It is vital that systems be installed in accordance with current legislation. The internal parts of certain equipment are connected to the mains and therefore there is a risk of electrocution when maintenance work is performed inside without first disconnecting the primary and emergency power supplies. Certain products include batteries, rechargeable or otherwise, as an emergency backup power supply. If connected incorrectly, they may cause damage to the product or property, and may endanger the operator (explosion and fire).

EU DECLARATION OF CONFORMITY

Hereby, EL.MO. Spa declares that the radio equipment STRIXO is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following Internet address: elmospa.com – registration is quick and easy.

DISPOSAL INSTRUCTIONS - INFORMATION FOR THE USER

In accordance with Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), please be advised that the EEE was placed on the market after 13 August 2005 and must be disposed of separately from normal household waste.

IT08020000001624

1. GENERALS

The STRIXO detector is an advanced miniaturized double-technology detector. This high-performance device has been designed for indoor and outdoor installation and it provides vertical curtain protection for walls, window openings or rolling shutters. It can be installed on a wall (in vertical position) or on the ceiling, using the optional kits of accessories.

In order to make the installation process easier, STRIXO is equipped with input terminals in its back cover and in the joint; protection gaskets are provided to avoid water infiltration when wiring the device to the control unit.
The detector functions and control can be configured using the internal dipswitch.

One of the key features of this detector is the use of a digital PIR sensor that allows to achieve very high immunity against interferences and detection precision.

The appealing look of the STRIXO detector supports its installation in any kind of setting.
STRIXO is IMQ-Security Systems certified.

2. FEATURES

2.1 General features

- High-performance miniaturized double technology detector.
- Provided with relay output for connection to traditional control units.
- Extremely compact dimensions and pleasing design of the plastic case, geared for wall mounting.
- Suitable for vertical or horizontal installation.
- Can be used to protect any combination of windows or French doors with regular or rolling shutters, and to realize a protection parallel to the external wall, etc.
- IR section includes a digital high-immunity PIR sensor and a silicon anti-blinding filter. The lens is sealed in order to prevent insect entrance and thus reduce false alarms.
- Fully microprocessor-based detector management.
- Can be configured through specific internal dipswitch.
- Configurable parameters: sensitivity, integration, AND/OR operation, functional LED enabling, anti-masking, anti-blinding, look-down function, MW section exclusion while the system is disarmed.
- Advanced firmware implementing an analysis of the noise detected by the IR and MW sections and a thermal compensation of the IR section, in order to allow the detector operation even in critical conditions.
- The environmental monitoring circuit employs a sophisticated calculation algorithm; microprocessor conversion executed at the IR stage.
- Anti-blinding circuit in the IR section with codified RXTX IR; anti-masking circuit in the MW section.
- IR lens providing vertical curtain protection with 7° beam horizontal opening and 90° vertical opening, 8 m range for the highest protection of the door, window or wall area.
- MW section with small-dimensioned, low-noise 24 GHz planar antenna, ETSI EN300440 certified; pulsed circuitry with neon light filter, 80° horizontal and 32° vertical beam opening.
- Protection against disturbances applied to the power supply terminals.
- Orientation change detection through two-axes accelerometer sensor, always active, and consequent generation of tamper alarm.
- The back cover is ready for cable feeding, with protection grommet.
- Accessories: mod. ANGSGX angle mount wall bracket, mod. CUPSGX protection sunshield for outdoor installation and mod. SNDSGX joint for angled mounting.

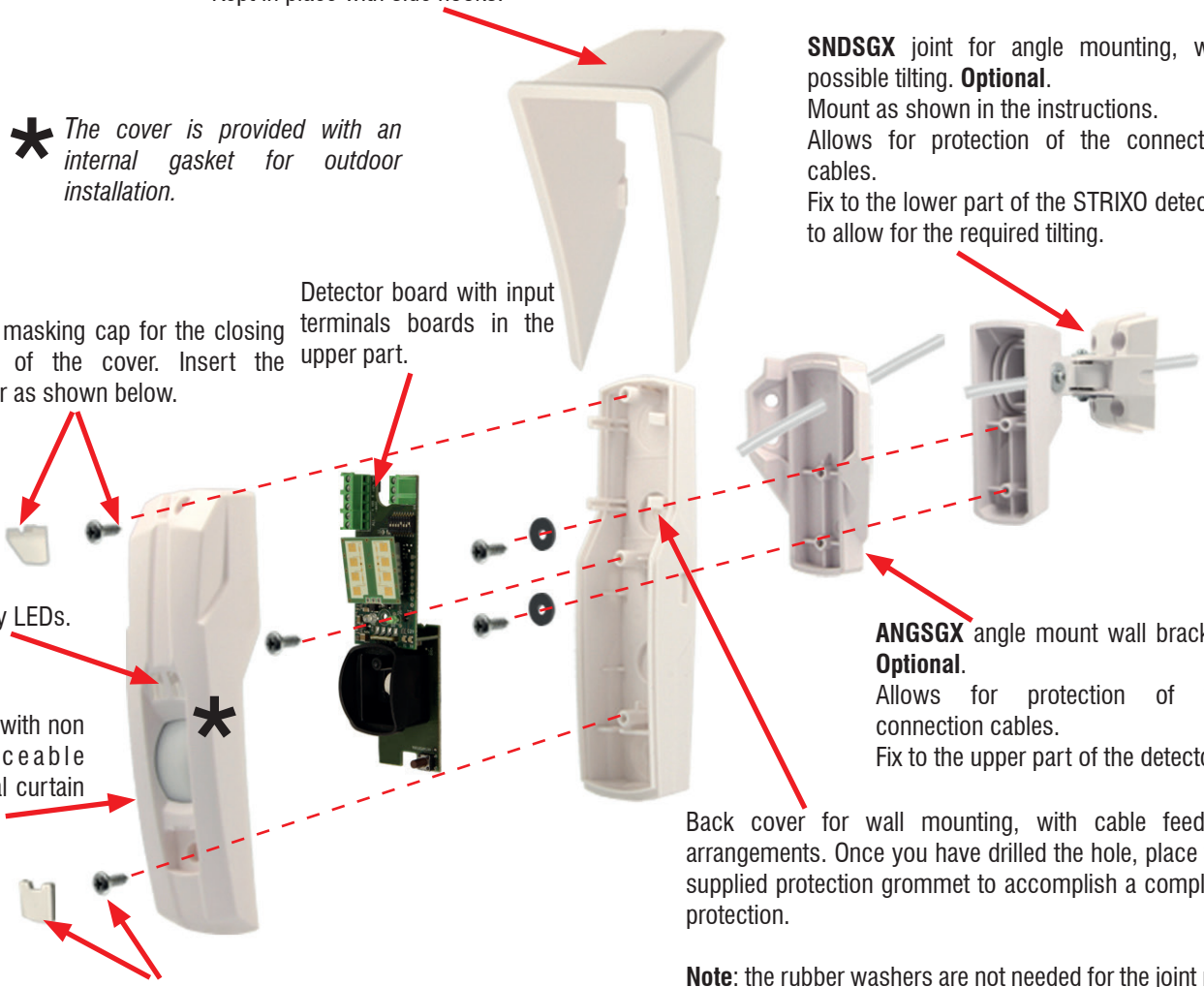
2.2 Technical features

Model	STRIXO		
Protection class	IP55 with mandatory use of protection grommets (provided as standard equipment).		
IMQ certified	EN-50131-2-4: grade 3.		
Environmental class	4.		
Power supply voltage	12 V (from 7.7 (8) to 15 V).		
Tolerated ripple	200 mVpp		
Minimum operating voltage	7.7 V with failure event generation upon MASC output terminals state variation.		
Function selections	Via internal dipswitch (8 selectors).		
Detector consumption @12 V			
Idle	31 mA		
During alarm, blinding and orientation change	25 mA		
With MW exclusion	21 mA		
Operation timers			
First turn-on	20 s		
Alarm and 24H	5 s for each output.		
Blinding alarm	Until the cause persists.		
Integration	5 s for integration of the alarm from single section (IR/MW).		
Prealarm between MW and IR	10 s for confirmation from the other technology.		
Inhibition time after alarm:	1 s		
MW Section		**IR Section**	
Noise filter	**For neon lights.**	**Lens type**	**Vertical curtain lens.**
Tx Frequency	**24.125 GHz**	**No. of sensitive areas**	**2 beams.**
Range	**8 m max, adjustable in steps by using the internal selector.**	**Coverage area**	**see installation diagrams.**
		Range	**8 m max; see installation diagrams.**
Sensitivity	**1 IR pulse + 2 pulses**	**PIR sensor**	**Digital with high immunity against RF noise. Silicon anti-blinding filter supplied.**
		IR stage gain	**Optimized with temperature.**
Visual indicators:	Blue LED: power-on, alarm, MW section, alarm and tamper with different flashing. Green LED: power-on, alarm, IR section.		
Visual indicator examples	Both LEDs ON for first power-on; Both LEDs ON for alarm during operation; Green LED single flash for IR detection during operation; Blue LED single flash for MW detection during operation.		
Connections	Terminal board for connection of power supply, alarm, tamper and masking.		
Protection	Protection against housing opening.		
Operating temperature and moisture	-10 / +55 °C—93 % Ur.		
Dimensions	W 155 × H 39 × D 44 mm.		
Weight	104 g without accessories.		
Parts supplied	Screws, rubber washers, dowels, technical manual, cable protection grommet, rubber washers for the front screws, S4 dowel for protection against removal		

3. VIEW OF THE DETECTOR

Exploded diagram of the detector, including accessories.

CUPSGX sunshield for outdoor installations. **Optional**.
Kept in place with side hooks.



* *The cover is provided with an internal gasket for outdoor installation.*

SNDSGX joint for angle mounting, with possible tilting. **Optional**.
Mount as shown in the instructions.
Allows for protection of the connection cables.
Fix to the lower part of the STRIXO detector to allow for the required tilting.

Upper masking cap for the closing screw of the cover. Insert the washer as shown below.

Detector board with input terminals boards in the upper part.

Activity LEDs.

Cover with non replaceable vertical curtain lens.

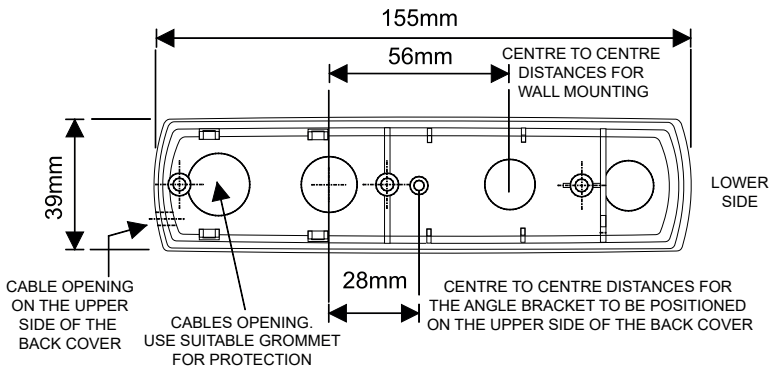
ANGSGX angle mount wall bracket. **Optional**.
Allows for protection of the connection cables.
Fix to the upper part of the detector.

Back cover for wall mounting, with cable feeding arrangements. Once you have drilled the hole, place the supplied protection grommet to accomplish a complete protection.

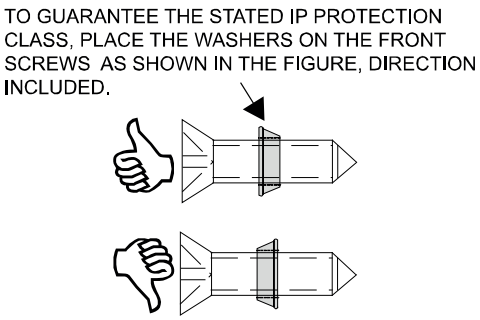
Note: the rubber washers are not needed for the joint nor for the bracket.

Lower masking cap for the closing screw of the cover. Insert the washer as shown below.

View of the back with fixing centre to centre distances.



Detail for front screws washers.



WARNING:
The detector is suitable for outdoor installations if the indicated washers and gaskets are used. For a better sealing, apply a line of silicone around the screw holes.

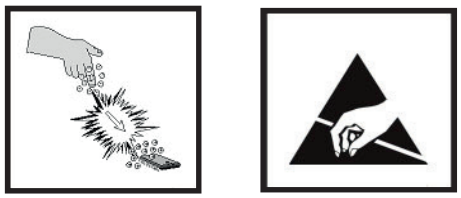
4. INSTALLATION

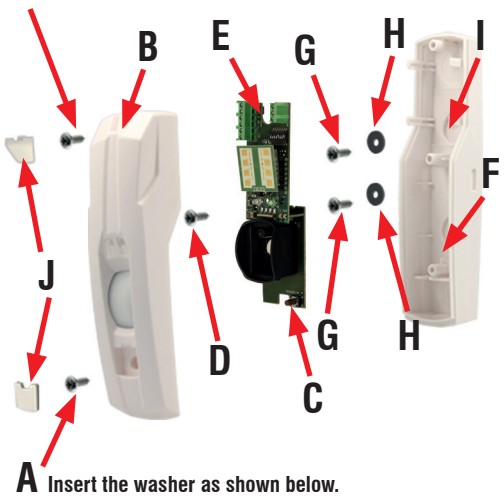
4.1 General installation suggestions

- Do not touch the PIR sensor with your fingers while installing or touching the board.
- Place the detector between the door/window and its shutter. The protection area is approximately 90° wide and 7° deep.
- The device can be mounted horizontally or vertically: horizontal mounting is suggested for protection of doors or windows, vertical mounting for front gates or wall protection.
- Select the appropriate range according to the chosen installing position.
- When installing the device:
  A) for a vertical mount, have the lens face down and the detector in contact with the ceiling. If used for front door protection, mount the detector on a tilted joint.
  B) for an horizontal mount, have the lens face the centre of the door/window frame.
- In both cases, look at the installation examples for a better understanding.
- We advise you against installing two detectors next to each other (see pictures on page 10).

4.2 Housing opening, fixing and closing operations

The electronic board can be damaged by electrostatic discharge. The installer shall free himself of electrostatic charges before opening the housing and he shall keep free from electrostatic charges during the whole installation or maintenance process.

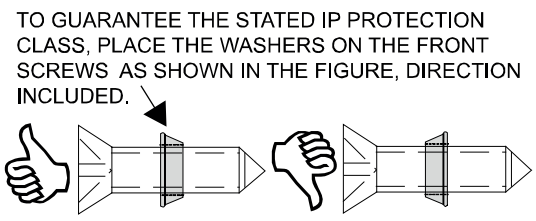




Housing opening/closing operations:
1. Unscrew the fixing screws with washer from the upper and lower part of the cover (A).
2. Remove the front cover (**B**).
3. To close the cover, perform the above operation in reverse order. Take the utmost care to ensure that the closing spring of the Tamper protection microswitch (**C**) is seated correctly. Conclude the fixing operation by screwing the self-tapping screw of the cover, and then by placing the cover taps **J** to hide the heads of the screws.

Removing/reinstalling the board:
1. Remove the fixing screw of the board, **D**.
2. Pull the circuit board **E** out by gently twisting it and moving it upwards to release it from the lower hook indicated with **F** (also see the details for hooking on page 13).
3. To hook the board to the bottom of the case, execute the previous operations in reverse order.

Wall installation and hole drilling:
Remove the front cover and the board, then use the holes of the back cover seen on page 5 (centre distance 56 mm) as a drilling template. Place the supplied **H** washers around the **G** screws (see above and read the warning note below).
To use the optional angle joint or bracket, see their leaflet. Secure the detector only after analysing the installation options and **after understanding** the limitations and warnings described in this manual.

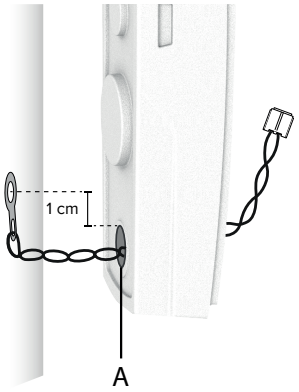


Cable feeding:
Feed the cables through the **I** hole using the provided gasket (especially if the cable is fed through the joint), or through the suitable hole on the upper edge of the back cover.

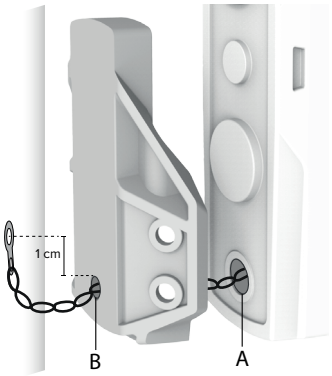
WARNING: The detector is suitable for outdoor installations if the indicated washers and gaskets are used. For a better sealing, apply a line of silicone around the screw holes.

4.3 Protection against removal from the mounting surface

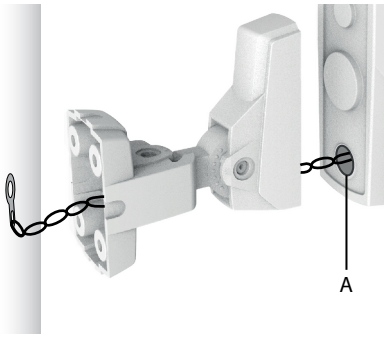
Compliance with EN 50131 regulation grade 3 requires that the device is protected against removal from the mounting surface. Install the proper kit for protection against removal before fixing the detector base, the ANGSGX bracket or the SNDSGX joint to the wall.



KSAS1013 kit (GREEN)

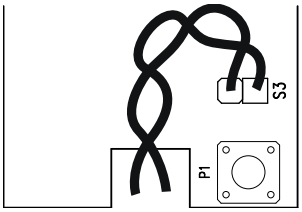


KSAS1013 kit (GREEN)

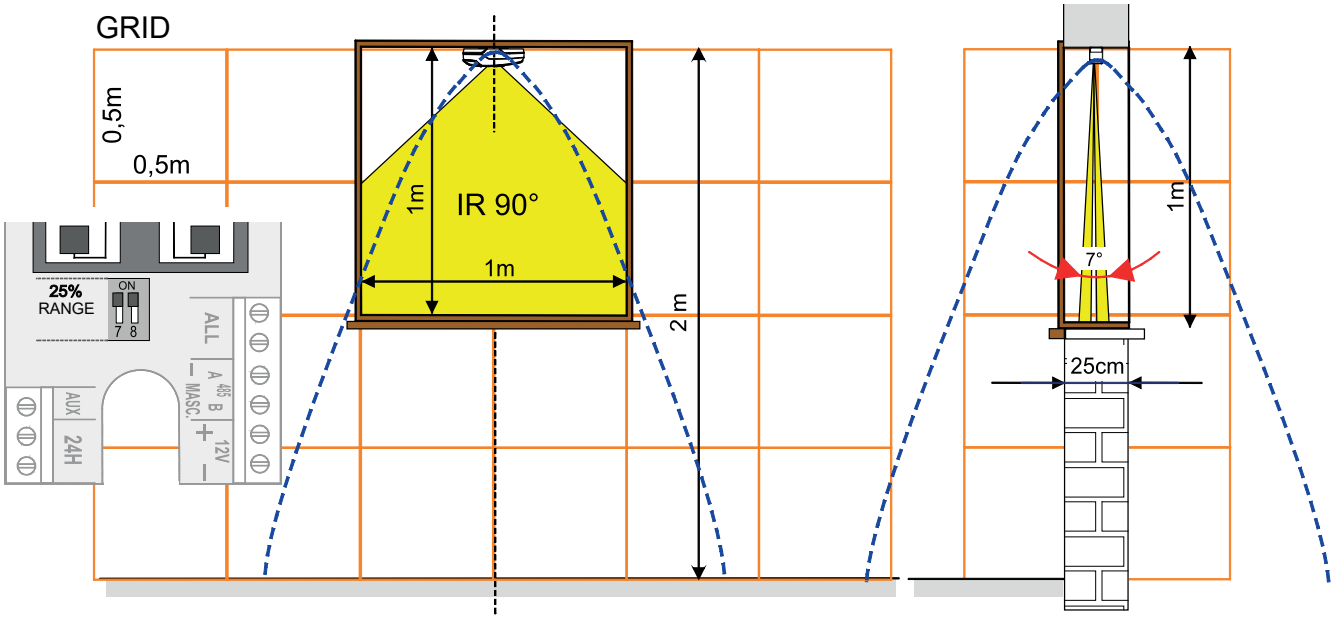


KSAS1032 kit (WHITE)

1. drill a hole (diameter: 6,5 mm) on the detector base (A). If you are using the ANGSGX, drill a hole on it as well (B).
2. feed the cable in the hole, from the eyelet end. If you are using the ANGSGX bracket or the SNDSGX swivel mount, feed the cable as illustrated above.
3. fix a S4 dowel to the wall at a height of 1 cm from the hole
4. fix the eyelet to the dowel
5. fix the detector base (and also the bracket/swivel mount if this is the case) to the wall
6. open jumper S3 on device board
7. wire the cable connector to S3

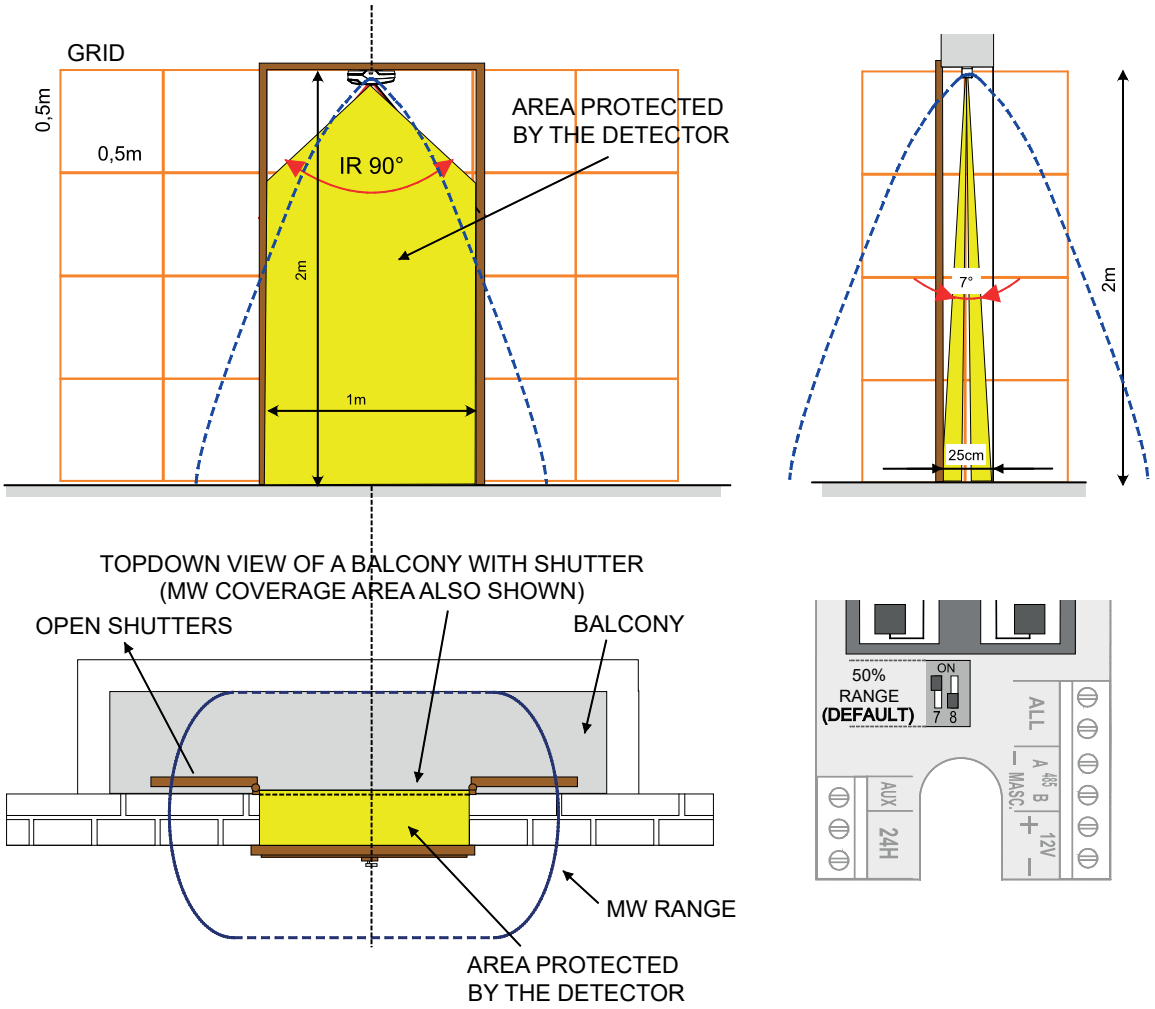


7.1 Installation to protect a window and covering diagram



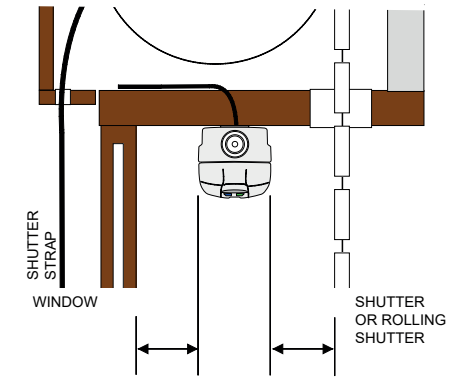
For window protection, we suggest that you set a 25% range: set dip switches 7 and 8 as indicated.

7.2 Installation to protect a door and covering diagram



For door protection, we suggest that you set a 50% range: set dip switches 7 and 8 as indicated.

7.3 Securing the detector - Suggestions

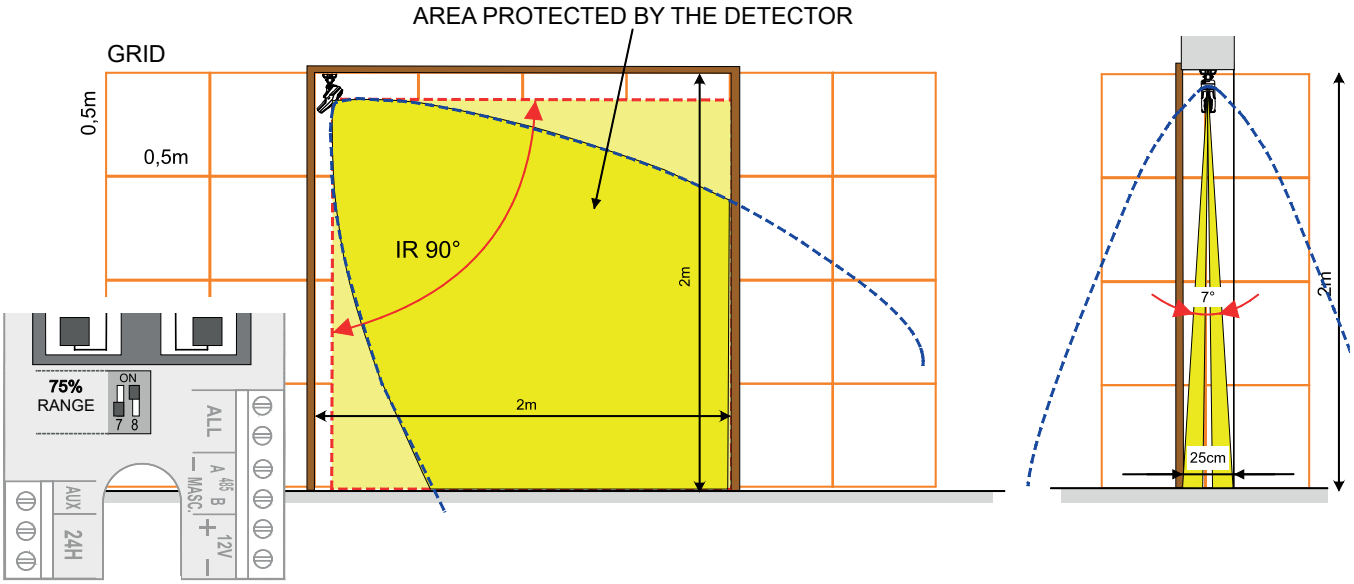


INSTALL THE DETECTOR IN CENTRAL POSITION,
OR LEAVING A CLEARANCE DISTANCE OF AT LEAST 3 cm
FROM THE WINDOW OR FROM THE SHUTTER.
SEE COVERAGE DIAGRAMS.

For the horizontal mounting, it is mandatory to mount the detector with the lens placed in the middle of the lintel. Leave at least 3 cm from the window and from the shutter, except for what is described in the coverage diagrams.

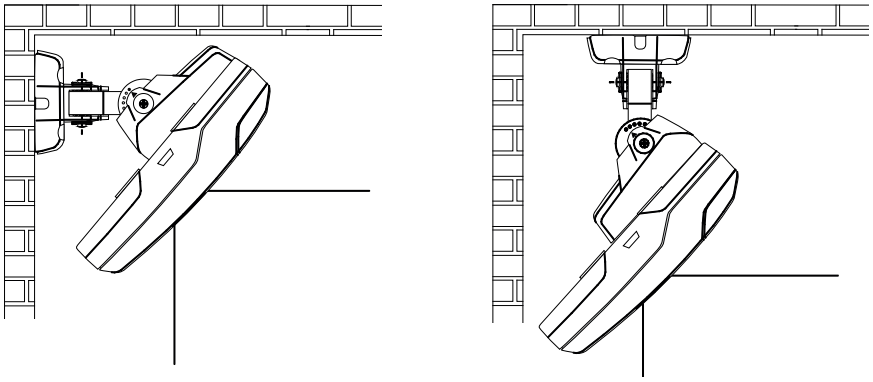
Note: We strongly advise you against mounting the detector with metal Venetian blinds and metal rolling shutters.

7.4 Installation to protect a gate and covering diagram

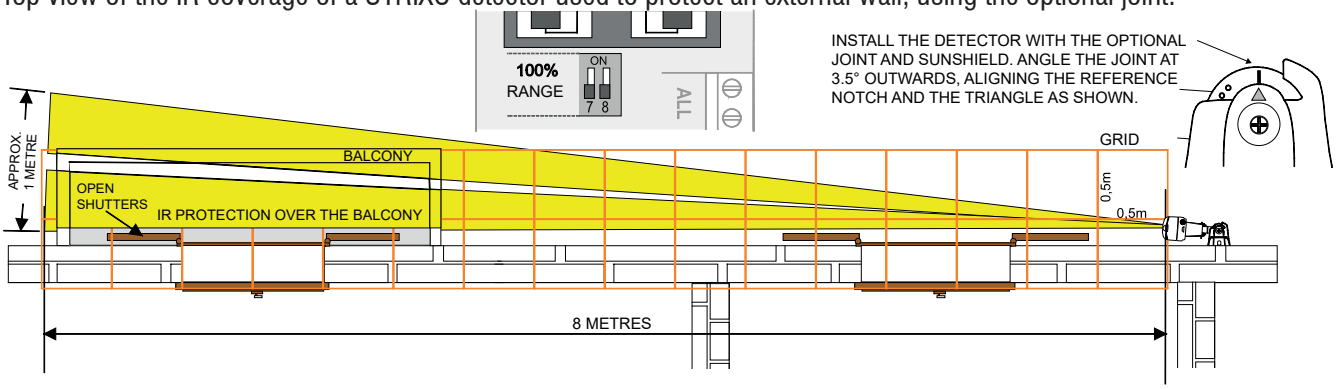


Note: to realise a vertical curtain protection for gates and French doors up to 2 meters large, it is possible to mount STRIXO with the (optional) joint **at a 45° tilt** as shown below (choose one according to the possible wiring).

For gate protection, we suggest that you set a 75% range: set dip switches 7 and 8 as indicated.



Top view of the IR coverage of a STRIXO detector used to protect an external wall, using the optional joint.



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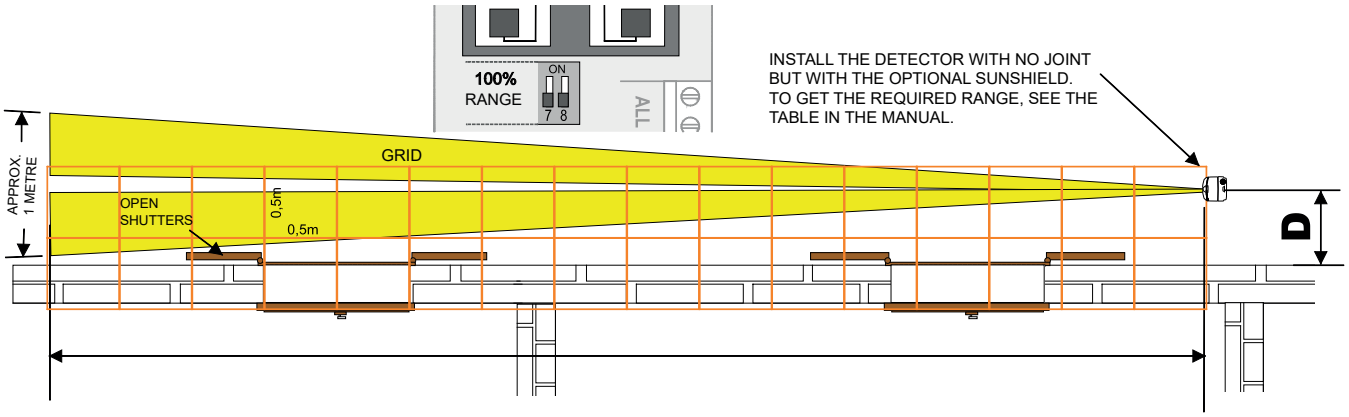
elmospa.com

Top view of the IR coverage of a STRIXO detector used to protect an outer wall, screwed to a nearby wall. This kind of installation can also be used for indoor walls, without the optional sunshield:



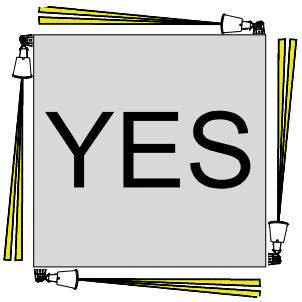
Note: for protecting windows, the optimal height without the joint is approximately 1.5 m from the ground.

For protection of a 8-metre wall, we suggest that you set a 100% range: set dip switches 7 and 8 as indicated.

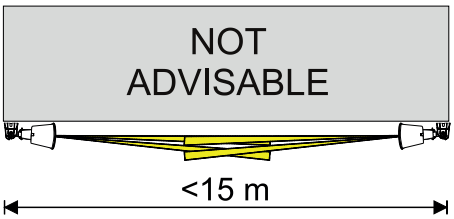
If mounted perpendicular to the wall as in the image above, keep a minimum distance “D” from the protected wall, according to the covered area set with the dip switches:

D = distance from the wall	L = covering length
18 cm	2 m
35 cm	4 m
70 cm	8 m

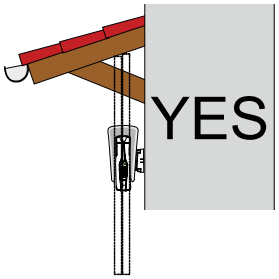
For more details on outdoor installations, with optional sunshield and joint, see the following images:



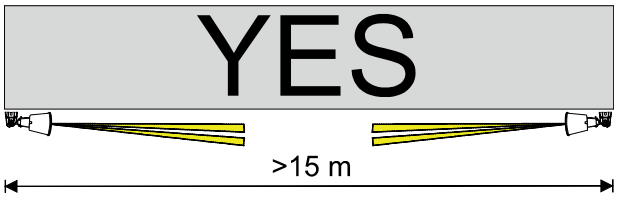
Protection of outdoor walls, with 3.5° tilted joint and sunshield.



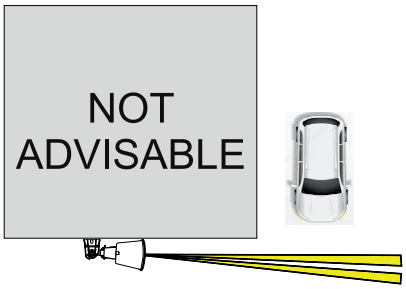
Protection of outdoor walls, counterposed devices at less than 15 m.



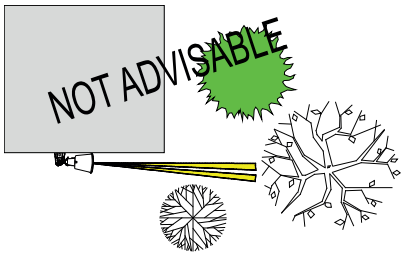
Outdoor, protected by a porch or a balcony, with 3.5° tilted joint and sunshield.



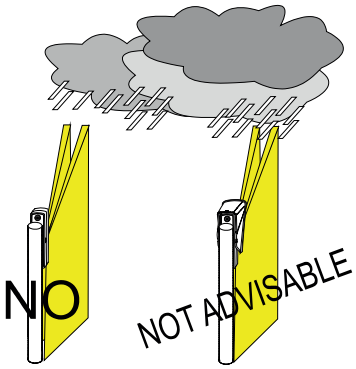
Protection of outdoor walls, counterposed devices at more than 15 m.



Outdoor, at less than 8 m from an alley/road with vehicle passage.

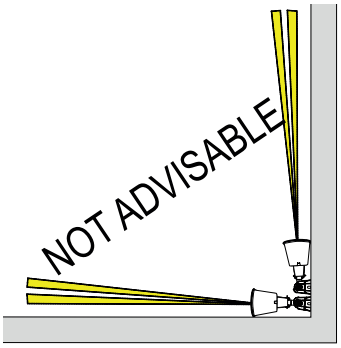


Outdoor, at less than 8 m from trees or shrubs.

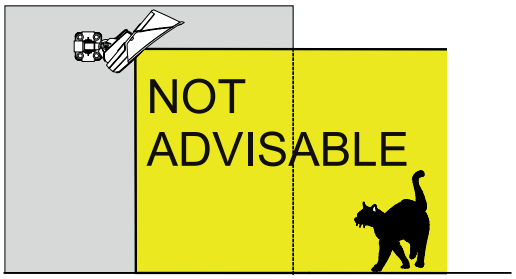


Outdoor, on a pole, with or without sunshield.
Bad weather (such as heavy rain, hail, etc.) can cause false alarms.

Protection of outdoor walls, with close basis and opposite orientations.



Protection of outdoor walls, with close basis and angular orientations (90° in the picture).

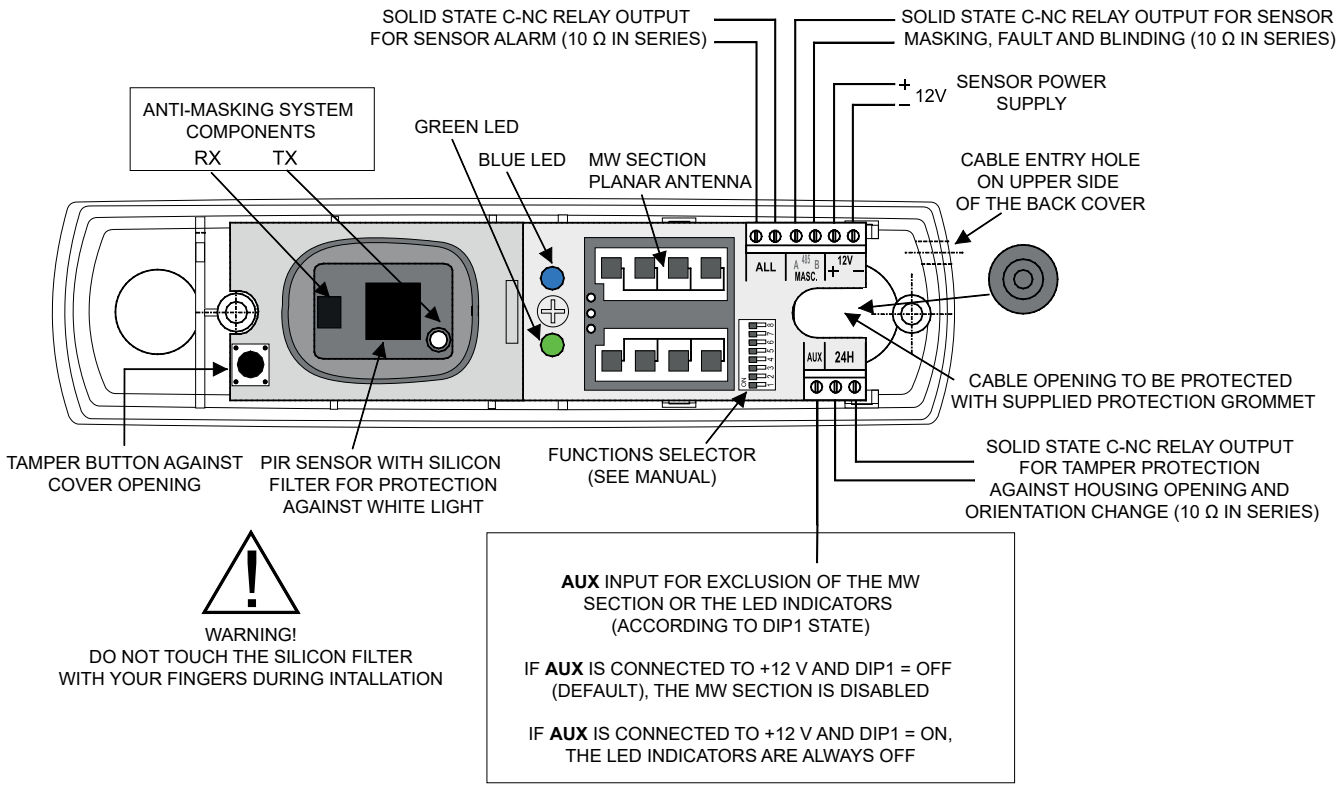


Outdoor installation with animal passage may cause false alarms.

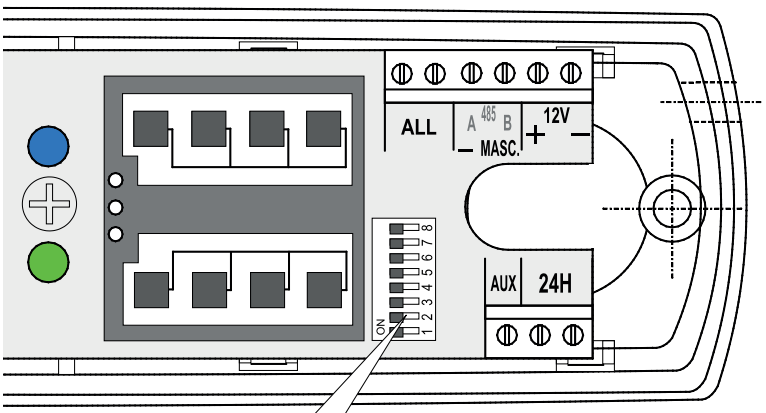
IMPORTANT: do not head the detector directly towards the sun.

8. ELECTRICAL WIRINGS

Internal view of the board.



Meaning of the single dips of the internal selector.



MEANINGS OF THE SINGLE DIPS

MW/LED EXCL.

- ON 1 — LED EXCL.
- ON 1 — MW EXCL. (**DEFAULT**)

(SEE MANUAL)

ANTI-MASKING ANTI-BLINDING

- ON 2 3 — ANTI-MASK. AND ANTI-BL.
- ON 2 3 — ANTI-BL. ONLY
- ON 2 3 — ANTI-MASK. ONLY
- ON 2 3 — BOTH FUNC. DISABLED (**DEFAULT**)

SENSITIVITY

- ON 4 — MIN
- ON 4 — MAX (**DEFAULT**)

AND/OR

- ON 5 — AND MODE (**DEFAULT**)
- ON 5 — OR MODE

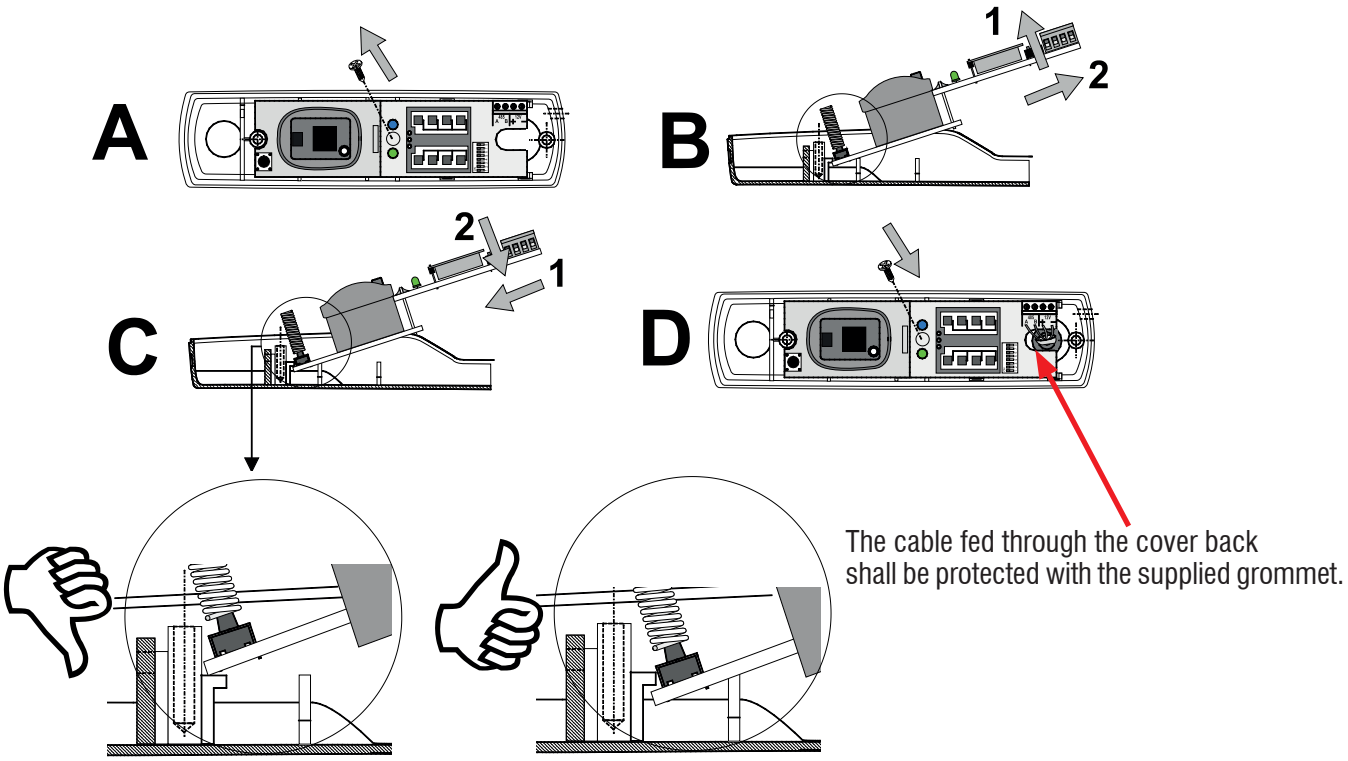
LOOK-DOWN FUNCTION

- ON 6 — FUNCTION ACTIVE (DEFAULT)
- ON 6 — FUNCTION NOT ACTIVE

MW RANGE

- ON 7 8 — 25% RANGE
- ON 7 8 — 50% RANGE (**DEFAULT**)
- ON 7 8 — 75% RANGE
- ON 7 8 — 100% RANGE

Sequence of operations for board removal and insertion during detector wiring.

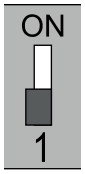


9. FUNCTIONS

9.1 Environmental monitoring

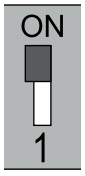
The IR section of the STRIXO detector includes a sophisticated device that performs 3D environmental monitoring for in-depth control of the thermal perturbations of the environment itself. The microprocessor analyses the signals coming from the PIR sensor. This feature has been designed in order to get an accurate motion analysis and thus to reduce false alarms.

9.2 MW section exclusion



It is possible to disable the STRIXO MW section in order to reduce power consumption when the control unit is disarmed. The MW section can be excluded by setting dip 1 OFF (default) and applying a +12 V voltage to the AUX terminal (coming from a control unit output set to follow the status of this detector's zone): in this condition, the PIR performs the detection alone and the operation mode switches to **OR.**
When the control unit/area is armed, the MW section will switch on again and the AND mode will be restored.
Note: if the MW section is disabled, the anti-masking function will be disabled too; only the anti-blinding function will be active. The anti-masking function will be enabled again upon arming of at least one of the sectors associated to the detector.

9.3 Front LED indicators exclusion

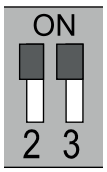


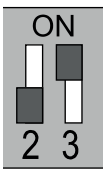
When the control unit/area is disarmed, the front LED indicators (giving indications on the detector operation) can be excluded by setting dip 1 ON and applying a +12 V voltage to the AUX terminal (coming from a control unit output set to follow the status of this detector's zone): the detector will seem not to react to the detected motion.
When the control unit/area is armed, the indicators will be enabled.

9.4 Anti-masking/anti-blinding functions

The STRIXO detector features an anti-masking and anti-blinding device. The anti-masking function can be enabled by properly setting dip switches 2 and 3 (see the picture on the right), only if the detector is fully operative and in AND mode, and only if the "MW section exclusion" function is not active. The condition of masking is marked by the MW blue LED slowly blinking.
The condition of blinding is marked by the IR green LED slowly blinking.
The normal operation mode will be recovered upon the first motion detected by both the sections, or upon removal of the anomaly cause.

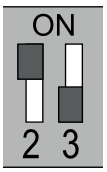
Anti-masking and anti-blinding both enabled.

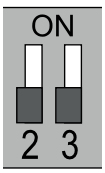




Anti-masking only.

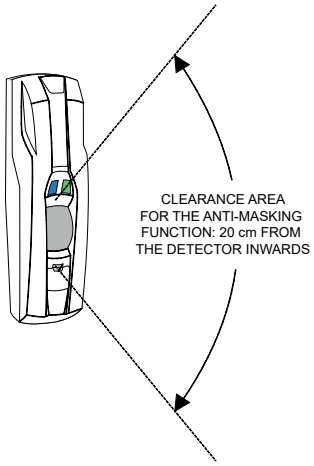
Anti-blinding only.





Anti-masking and anti-blinding both disabled. **Default**.

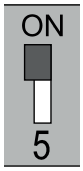
Note: the anti-masking function can be enabled only if the MW section is enabled (AUX terminal not connected to +12 V, dip 1 in OFF position).
Note: the anti-blinding function detects blinding attempts made using a reflector in close proximity to the lens. The anti-masking function detects an interfering body placed close to the detector.
Note: the activation of the anti-masking function (dip 2 OFF and dip 3 ON) can be visually checked during the power supply stabilization phase after detector power on. Within this phase, when a person approaches the detector at a lower distance than 30 cm, the green and blue LEDs will turn off for a moment.
Note: upon the triggering of the masking/blinding event, both the MASC and the ALARM relays will be activated.
For further indications, see the "4.1 General installation suggestions" section on page 6.



WARNING:
- If you need to install a STRIXO detector in locations where continuous people motion occurs, especially at distances lower than 30 cm, we suggest that you disable the anti-masking function by setting dip 2 ON and dip 3 OFF (anti-blinding only).
- If the distance is even lower than 20 cm, we suggest that you disable the anti-blinding function too by setting both dip 2 and 3 to OFF.

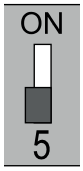
9.5 AND mode

By default, the STRIXO detector is set to operate in AND mode (dip 5 ON).
In this mode, an alarm is triggered only when **both sections** (IR and MW) generate an alarm within a defined maximum time (set via software application; the default time is 10 s).
If this is not the case, the section that has generated the single alarm is reset after the set time.



9.6 OR mode

If you set dip 5 OFF, the STRIXO detector will operate in OR mode.
In this mode, an alarm is triggered if either technology (PIR or MW) generates an alarm (the output terminals of the alarm relay switch from C-NC to C-NO due to motion within the controlled area).

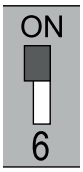


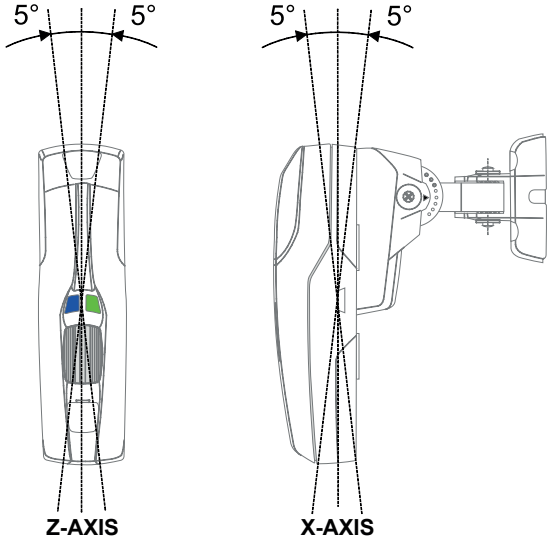
9.7 3D function

The 3D function is the combined set of circuits that perform the temporal integration of the motions detected by the PIR sensor and by the MW section. The result is the activation of the alarm relay with terminal outputs.

9.8 Look-down function

The STRIXO detector is provided with circuitry that implements protection against orientation change. An accelerometric sensor detects orientation changes on 2 axes.
If STRIXO is subjected to a rotation of 5° on the Z or on the X axis with respect to the initial installing position, a 5-second tamper alarm is triggered, with a consequent status variation of the 24H output terminals. The alarm is marked by the green and blue LEDs slowly and simultaneously blinking.
The look-down function can be set through dip 6 (ON by default).





WARNING: the circuitry features an high degree of immunity against random vibrations.
Nevertheless, the following precautionary measures shall be taken:

- The wall where the detector will be installed must be solid and stable.
- The joint, if used, must be fixed properly. Firstly set the detector in position, then turn it on. During installation, the detector can be moved even after the system power up: this will inevitably trigger a 24H alarm, therefore we suggest that you disable the signalling devices before performing test or maintenance sessions.
- Avoid making holes or hitting the surface in the close proximity of the detector, unless you have previously disabled the system.
- You can use the software application to disable the look-down circuit.

9.9 Low supply voltage detection

Upon this detection, only the “Failure” event will be triggered, with the state variation of the MASC output terminals.
The alarm and 24H circuits are inhibited.

10. OPERATION

10.1 Precautions before arming

- It is suggested to close the shutter before arming the system.
- When arming the system with open shutters, make sure that there is no risk of someone passing near to the protected areas (especially to the doors). Even if the detection towards the outside is greatly limited, people or animals passing at less than 20 cm from the protected frame might be detected anyway.
- **The inner window or French door shall be closed** before arming the system (no vibrations due to the wind or inside/outside air passage shall occur).
- If the detector is installed with an existing insect screen, it is suggested to roll it up before arming the system.

11. VISUAL INDICATIONS

The following operating states are displayed through the LED indicators:

Green LED = in operating mode, this LED flashes each time the IR section detects any motion (prealarm state). It turns on together with the blue LED of the MW section to signal the alarm state.

Blue LED = in operating mode, this LED flashes each time the MW section detects any motion (prealarm state). It turns on together with the green LED of the IR section to signal the alarm state.

Indications given by the LEDs in detail:

Blue and Green LEDs steadily on = stabilization during the first power-on.
Blue and Green LEDs single flash = MW masking test during power-on.
Blue and Green LEDs fast blinking = low supply voltage failure.
Alternate slow blinking = orientation change.
Both LEDs on for approx. 2 s = alarm.
Green LED fast blinking = PIR fault.
Green LED slow blinking = blinding.
Blue LED fast blinking = MW fault.
Blue LED slow blinking = masking.
Green LED steadily on = prealarm from IR section.
Blue LED steadily on = prealarm from MW section.
Green LED single flash = motion detection from IR section.
Blue LED single flash = motion detection from MW section.

12. TABLE OF CONTENTS

STRIXO Indoor/outdoor advanced double-technology detector with vertical curtain protection - TECHNICAL MANUAL
August 2018 Edition 090011029

Product specifications as described above do not bind the manufacturer and may be altered without prior notice.

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