PRODUCT

SANDOR SL

Product code SANDOR SL SMA

SANDOR SOLAR SMA

DOUBLE OPTIC PERIMETER BARRIER

INSTALLATION AND MOUNTING MANUAL VERSION 3.1

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1.Introduction

Congratulations on having purchased the Politec perimeter barrier.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**

The double optic infrared perimeter barrier consists of an infrared receiver and transmitter.
Operation is based on "AND" logical operations: in other words, the alarm is activated only in the event of simultaneous interruption of two superimposed beams.
N.B.:These barriers use optical synchronism.The receiver must see ONLY and exclusively its transmitter.MUST NOT see signals from other barriers, IR lights such as photocells or flashing lights.It is not recommended for use in indoor applications where there are many reflections and light sources

This barrier is ideal for perimeter protection of internal and external areas.
The main features of this barrier are:

- Adjustable intervention time which allows you to adapt to the characteristics of the site to be protected;
- Protection beam angle adjustment both vertically and horizontally;
- Set-up for mounting on a wall, on a pole and on aluminium columns;
- Optical alignment with SMA function;
- Adjustable configuration for managing each individual optic
- Contact signalling barrier opening.

Warnings
Mounting, installation of the barrier 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 distributor's support service.
- Use of these products for purposes other than those specified in these instructions is prohibited.
- You must not make any changes 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.

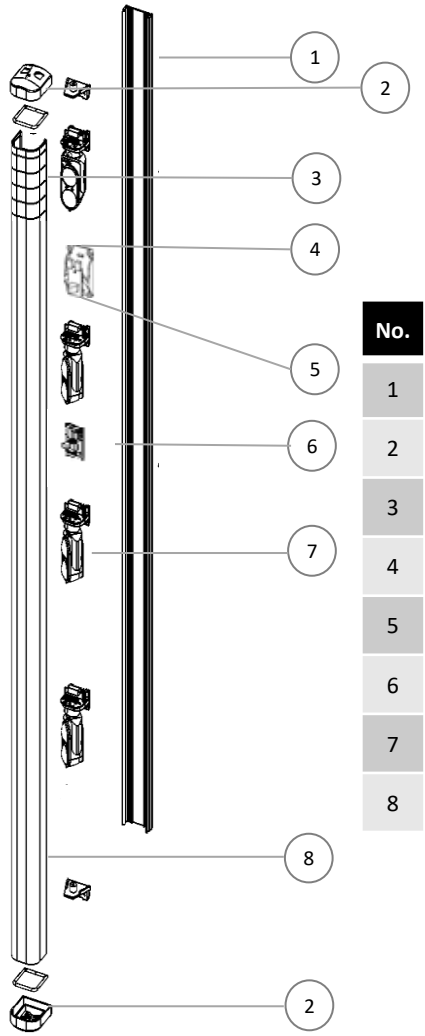
- Assessing the hazards that may occur during installation and use of the system, in order to achieve complete safety, it is necessary that installation takes place in full compliance with applicable laws, methods, rules and regulations.
- Before accessing the internal terminals of the product, it is 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, by comparing with the values shown in the paragraph "technical specifications", that the range of the devices is equal to or lower than the physical distance between the barriers.
- Check that the barrier is positioned in areas protected against potential impact, in flat areas and on fixed supports to avoid oscillations.
- Do not place the system components close to heat sources as they could be damaged.
- Each barrier 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	Aluminium profile
2	Caps
3	Solar Panel
4	Inverter board power supply 3.6 Vdc
5	3.6 V 1.8 Ah rechargeable battery
6	SK WS RX / TX motherboard
7	Transmitter\Receiver optics
8	Black polycarbonate cover

5.Preparation for installation

5.1 Preparation of the barrier parts before installation
Since the communication between the barriers can take place wired, via wireless and their alignment can be done optically, it is advisable to firstly check all the component parts of the barriers and any accessories before beginning the installation.

5.2 It is advisable to carry out:

- device configuration on a table;
- a check on the operation of the optical and acoustic alignment
- 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 barrier version for wireless models with universal circuit board housing, insert and connect the radio transmitter, and connect it to the barrier receiver board
c) Power up the barriers and program them
d) Test barrier operation;
e) Place (without fixing) the barriers at the planned points;
f) Place (without fixing) all the other devices at the planned points;
g) Check for each barrier that there is sufficient field for radio communication (for wireless versions);
h) Permanently fix the barriers.

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.Examples of mounting/fixing

6.1 Placement and installation height

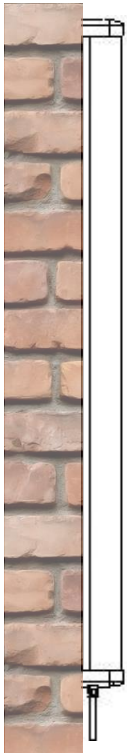
Position the barrier considering the type of surrounding environment and the protection distance for correct and effective operation.

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).

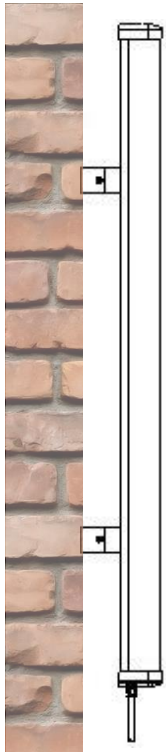
Position the barrier so that sunlight does not hit it directly near the RX sensors.

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.

Pole mounting with SAN/PL brackets



Wall mounting with SAN/SD brackets



Wall mounting with SAN/PL pole brackets (recommended for protection of sections along the wall)

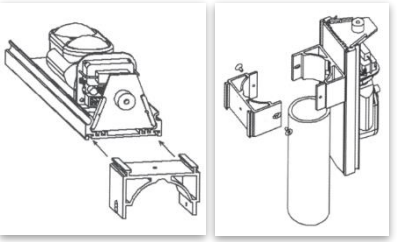
6.2 Placement and mounting

It is highly recommended to always request and use the accessory brackets for fixing the columns, avoiding to drill the aluminium structure**.**

Pole mounting with SAN/PL

SAN/PL brackets allow fixing on poles type SAN/TB1 and SAN/TB2 with a diameter of 48 - 50mm in a very simple way as seen in the figure.

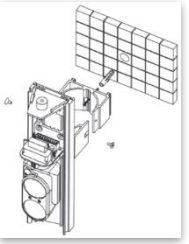
- Each column requires a minimum of 2 brackets or more if the column is very tall.
- The poles are equipped with a base for fixing to the floor or to the POB30 cable pit to be cemented into the ground, also with the function of branch junction box.
- The connection cables enter from the lower cover of the column, equipped with O rings and cable glands.



Wall mounting with SAN/PL

The SAN/PL brackets also allow fixing to the wall, in a very simple way as seen in the figure.

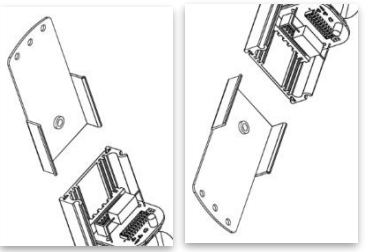
- It is recommended to use these, when protecting windows, doors, etc., along the wall, in order to avoid small obstacles, such as hinges, edges of the windowsills, which could be in the beams creating an attenuation of the signal.
- Each column requires a minimum of 2 brackets or more if the column is very tall.



Wall mounting with SAN/SD

The SAN/SD brackets supplied in a kit of 2 pieces allow wall mounting and are invisible, as seen in the figure.

- These brackets are recommended when the columns are placed in front of each other or the internal optics are rotated to less than 90° horizontally.
- Each column requires a kit consisting of two brackets, which are fixed to the ends of the column, leaving only the holes for wall fixing visible.
- Once all the installation and functional operations have been completed, the two covers will hide the part with the fixing holes.



WARNING:

Product warranty is invalid if there is any hole in the aluminium profile or any component.

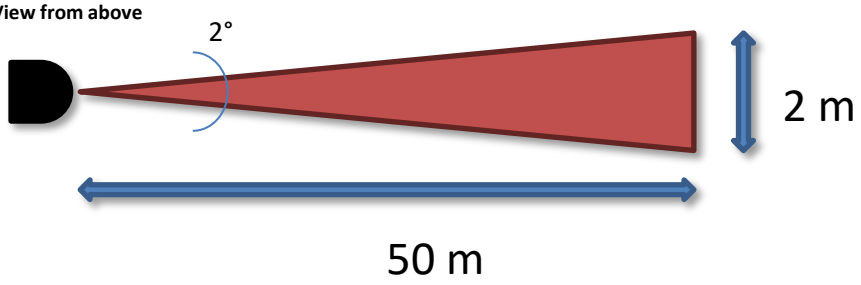
7.Evaluations before installation

7.1 Introduction to barriers

This type of Active Infrared Beam barriers is always made up of a pair of columns, one is a TX transmitter only and the other a RX receiver only, with **a** CODED **OPTICAL type SYNCHRONISM**.The barrier is self-powered with rechargeable batteries, already included, from a small solar panel and its own Inverter power supply, and must be combined with a radio transmitter of any brand of Wireless systems on the market.

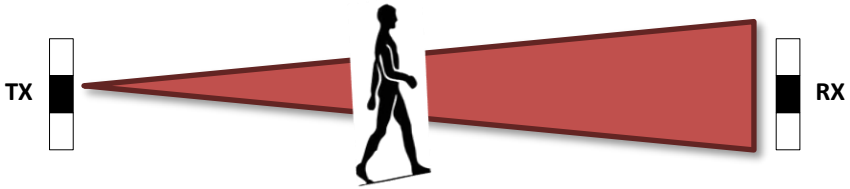
Each protection side of a perimeter, which is composed of a single section or more sections, based on the length, is characterised by one or more barriers, capable of generating a kind of barrier invisible to the human eye.

View from above



Signal interruption:ALARM

An active infrared barrier can contain multiple transmitting and receiving stages inside specific columns.The infrared barriers have multiple controls that significantly limit false alarms, and the genuine alarm signal is given by the complete interruption of one or more beams.



HEATERS

In conditions of high humidity, the absence of powered heaters can lead to a significant decrease in the IR signal up to the alarm.For obvious reasons, for battery powered barriers, there is no thermostat control even if set up, therefore to minimise the problem, it is necessary to reduce the working distance between TX and RX, thereby ensuring a good amount of signal constantly, even in case of particular climatic conditions.

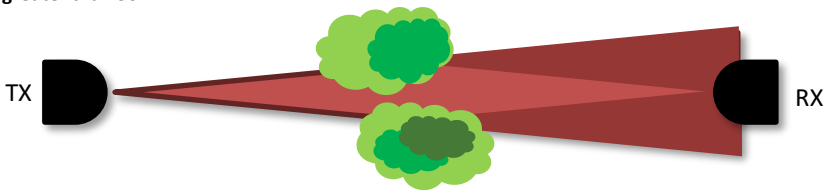
8.Barrier positioning

8.1 Precautions before installation

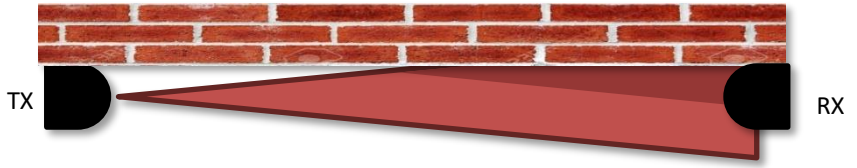
Before placing the barriers outdoors, you must bear in mind that the infrared beam has a conical shape: the greater the distance between the column, the greater the diameter of the cone when it arrives.

In order to avoid false alarms, it is advisable to place the barriers away from reflecting surfaces, such as walls or anything that can attenuate the signal.

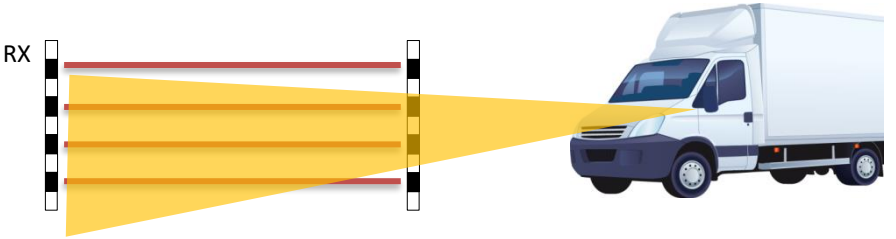
DO NOT place the barriers if there are plants, bushes or fixed objects in the range that obstruct the signal and create "grey areas".Leave a corridor of 50cm for distances between columns greater than 50m



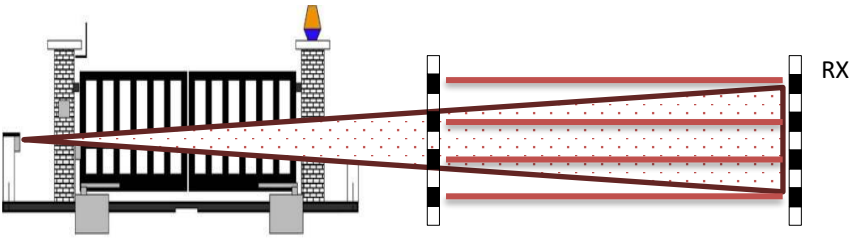
DO NOT place the barriers close to walls, without spacing the columns with adequate brackets, as the signal quality may decrease



DO NOT place barriers close to roads: vehicle lights directed towards the RX could create disturbances



DO NOT place barriers near automatic gates: photocell signals can create interference.



9.Installation examples

9.1 Barrier positioning

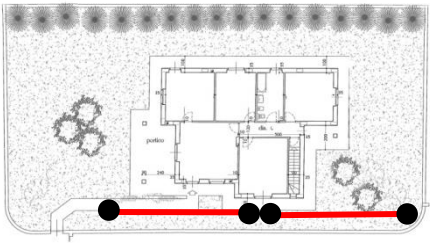
All Politec products can be customised according to the installation needs, including column height and consequently the number of beams inside which can vary in different ways and work in parallel or crossing.

This is a type of barrier that lends itself very well to single barrier systems and for the protection of facades, as well as in the open field, following the recommended distances.

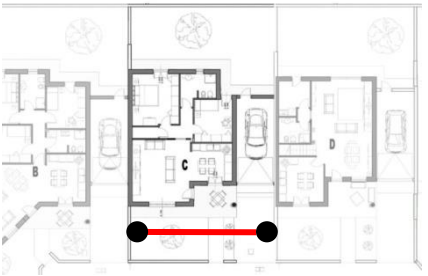
To avoid interference between barriers, position the columns so that each receiver only sees its transmitter.

N.B.:Use this layout also for barriers on facades on surfaces at different heights

Arrangement of barriers according to protection needs.

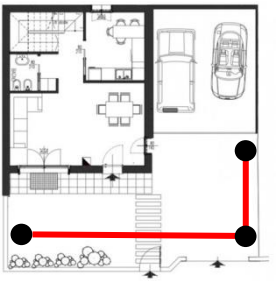


Contiguous single barrier system

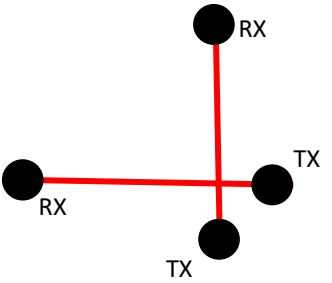


Single barrier system

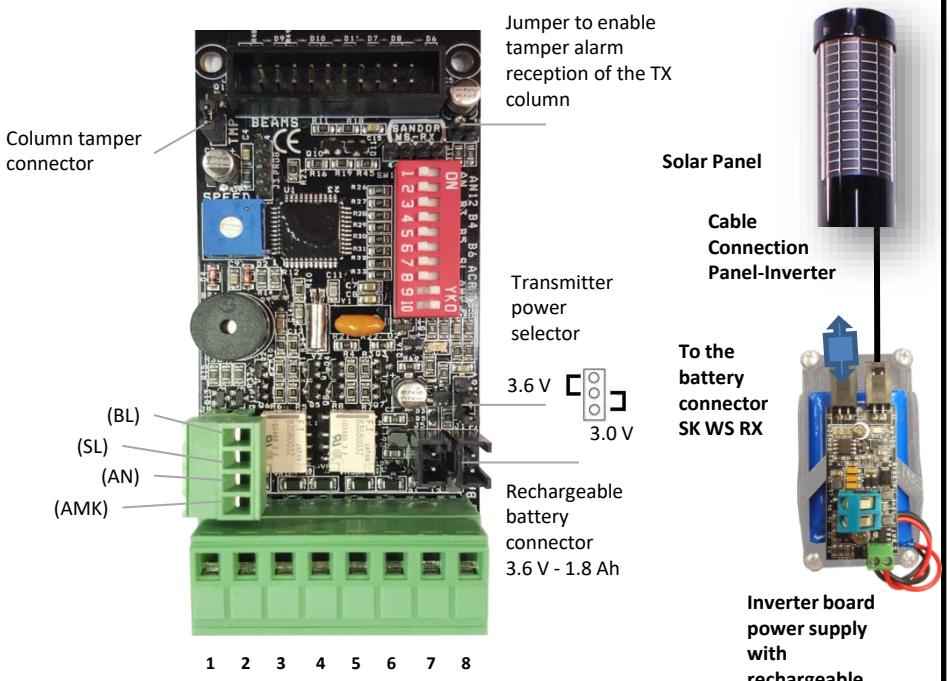
Superimposed single barrier systems



Crossed single barrier systems



10.SK WS RX motherboard connections



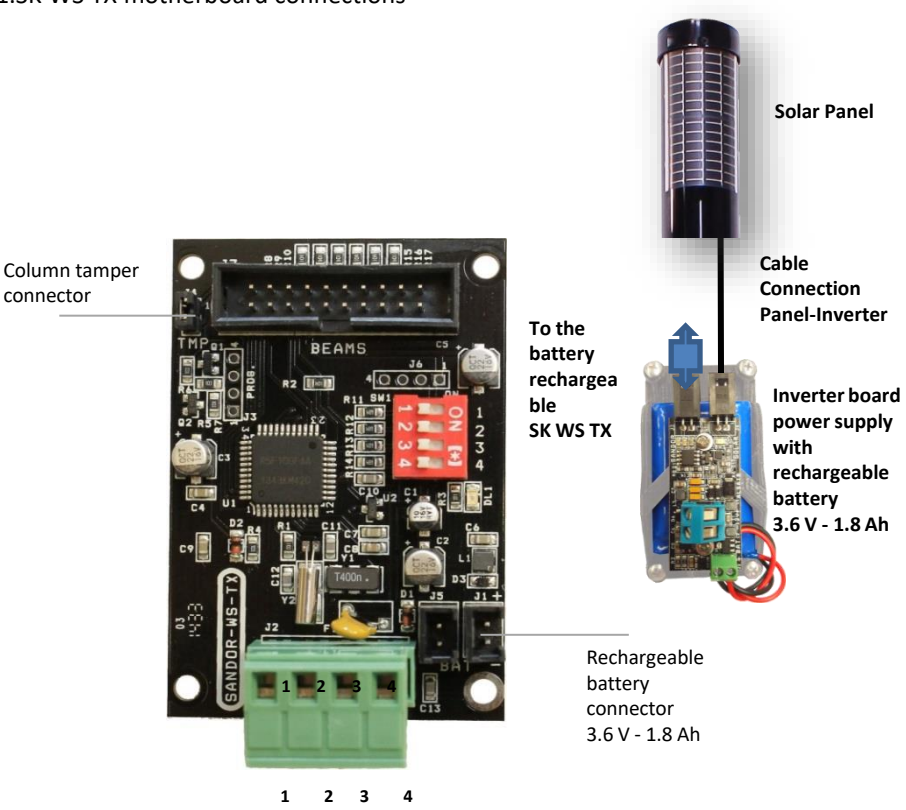
TERMINAL BOARD with 8 ports

1 / 2	**HTR**	Heater power supply 24V / 12V **(only from external source)**
3/4	**ALARM**	NC alarm output
5 / 6	**TAMPER**	NC Tamper output
7 / 8	**OUTPUT POWER SUPPLY**	Output to power the radio transmitter with the voltage of 3.0 V or 3.6 V via the selector

TERMINAL BOARD with 4 ports

BL	**BATTERY LOW**	Low battery signal output due to the opening from the negative of an open collector (NC)
SL	**SIGNAL LOW**	Fog disqualification signal output given by the closing to negative of an open collector (NO)
AN	**AND FROM REMOTE**	By connecting a 3.6 V positive, the AND function is activated by remote control
AMK	**ANTIMASK**	Output of masking signal given by the closing to negative of an open collector (NO)
TAMPER TX		Removing the jumper disables the optical reception of the tamper alarm of the transmitter barrier, in case of tampering

11.SK WS TX motherboard connections



TERMINAL BOARD with 4 ports

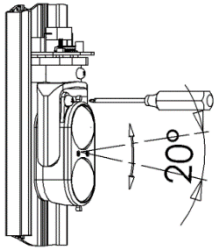
1 / 2	**HTR**	Heater power supply 24V / 12V **(only from external source)**
3/4	**NN**	Not used

The tamper opening information of the transmitter column is sent optically to the receiver column after 30 ''; as well as low battery information.

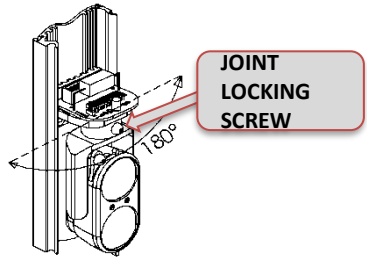
12.Barrier alignment

For correct alignment, once the barriers are installed, orient the optical units of the transmitters and the optical units of the receivers towards each other, adjusting the lens holder horizontally manually, after having loosened the locking screw on the joint and vertically through the front screw located to the left of the lens.

Vertical orientation



Horizontal orientation

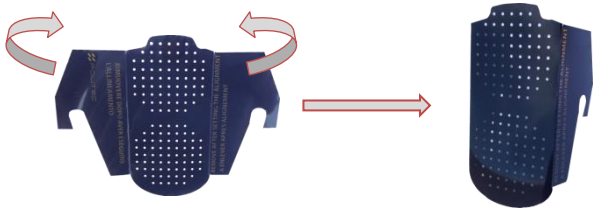


N.B.:Tighten the joint locking screw after the adjustment

12.1 Calibration using SMA system

It is possible to improve the calibration by using the supplied filter.

1. Fold the device following the pre-set folds



2. Position the filter in front of the TX optic inserting the two hooks on the pins of the optic fork.The filter is designed to refine the search for the alignment signal under adverse conditions.

It is sufficient to apply the filter only on the TX, there is no need to repeat the operation also on the RX.

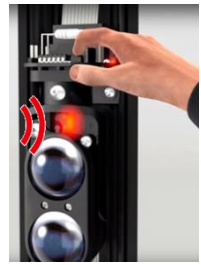
12.2 Alignment

N.B.: once the boards are powered by the batteries, the TEST LED will flash.

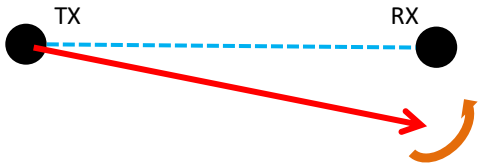
- Set DIP 10 on the receiver motherboard and DIP 1 on the transmitter motherboard to ON, to activate the programming phase, indicated by the flashing of the test LED.

- Start the alignment phase by pressing the TEST button on the first TX optic for about 3 seconds or until the orange TEST LED lights up.

- Press the TEST button on the corresponding RX optic for about 3 seconds or until the orange TEST LED lights up, in addition to the intermittent acoustic signal of the BUZZER, accompanied by the intermittent flashing of the long-range high-intensity LEDs for alignment.



- Orient the TX optic towards the RX optic, vertically and horizontally acting as explained above, until you find the maximum alignment.

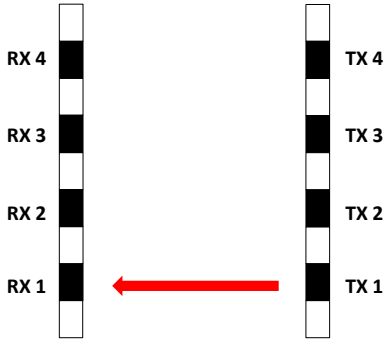


- The maximum alignment condition will be reached when the high-intensity LEDs are on steady and the buzzer will emit a continuous sound, for this reason, it may be necessary to make minor adjustments also on the RX optic.

N.B.: the fixed buzzer sound has a maximum duration of 3 minutes.To obtain a good alignment it is necessary to complete a FULL rotation on the horizontal axis of the RECEIVER optic, thereby performing the SCANNING of the optical signal.This operation is very useful to understand if the alignment of the optics is taking place directly on the same axis and not through reflection, therefore deceptive, because the signal value is much lower, despite having reached the hypothetical maximum alignment signal.

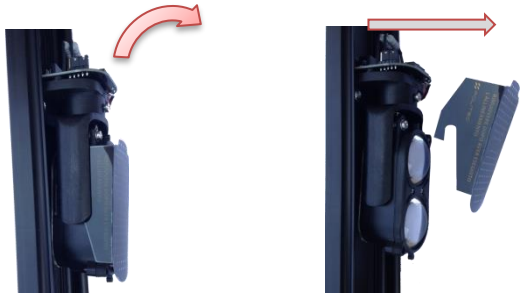
- The partial or total misalignment condition is signalled by the infrequent flashing of the LEDs and by the non-continuous whistle of the buzzer.
- After calibration, tighten the horizontal adjustment screw, and exit the test function by pressing the TEST button on the TX and RX optics for 3 seconds.
- Repeat all the operations on each beam of the barrier.

- After aligning all the optics, set DIP 1 on the transmitter motherboard and DIP 10 on the receiver motherboard to OFF, to automatically activate the **WALK TEST** phase for 60 seconds, the barrier will emit a continuous acoustic signal, in case of interruption of a beam (two if configured in AND) to indicate the correct operation of all the optics.At the end of the time the barrier is ready for its normal operation.



N.B.:During the alignment test phase, the activation of a TX transmitter determines the automatic shutdown of the other TX optics in the column.

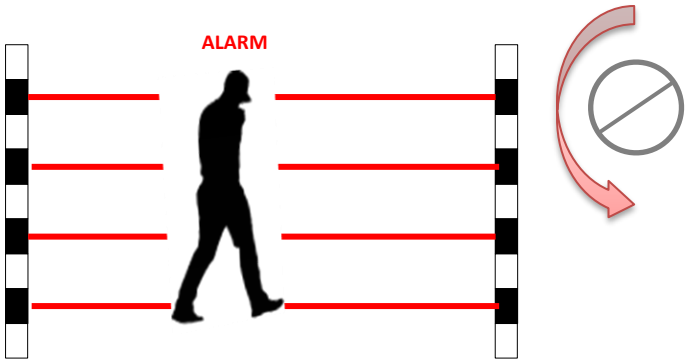
At the end of the operation, remove the screen which acts as an attenuator, making sure to have found the optimal value.



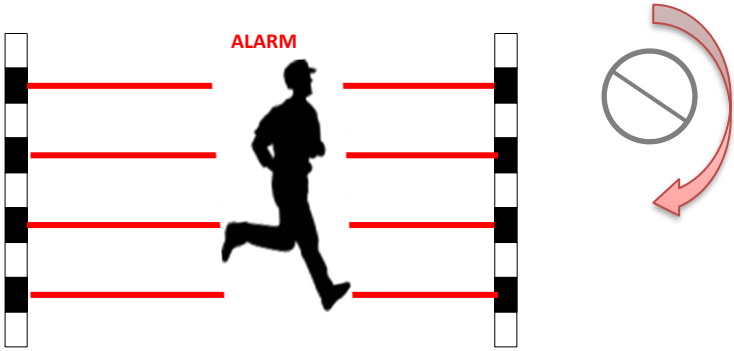
N.B.:Optical synchronism requires greater attention during the installation phases, in particular, that the receiving column is not affected by other sources of IR light.
To be absolutely certain that the alignment of the optics is correct (and therefore no false alignments due to the transmission of other infrared sources, such as other barriers of the same system as well as gate photocells) cover the TRANSMITTER optic with your hand: if the RECEIVER continues to give a continuous beep, it means that it sees another infrared source that must be turned off and eliminated.

13.Intervention time adjustment

On the SK WS RX motherboard there is a potentiometer to adjust the INTERVENTION TIME.
In particular, it is possible to set the barrier for rapid (crossing while running) or slow (crossing while walking) alarms.



By adjusting the potentiometer anticlockwise, the intervention time is increased up to 500ms.In this condition, the alarm of a person crossing the barrier while walking is guaranteed, with the advantage of excluding the possibility of any false alarms (e.g. animal crossing).
By adjusting the potentiometer clockwise, the intervention time decreases down to 50ms.In this condition, the alarm of a person crossing the barrier running at maximum speed is guaranteed.



14.Details of settings and functions

14.1 SK WS TX motherboard

On the SK WS TX motherboard, it is possible to configure different functional conditions, using the 4 DIP SWITCH unit.

4 DIP SWITCH UNIT

1	**TEST**	In the ON position, you enter the test phase to perform the alignment.The TEST LED starts flashing
2	**/**	Not used
3	**BEAM ON**	Activates all transmitters in test during the alignment phase (DIP 1 ON).Steady TEST LED
4	**BEAM OFF**	Deactivates all the transmitters during the alignment phase (DIP 1 ON).Steady TEST LED

14.2 SK WS RX motherboard

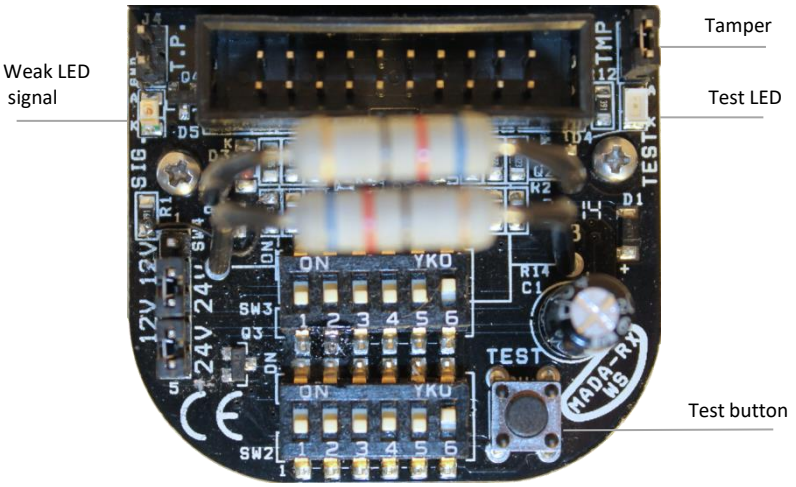
On the SK WS RX motherboard, it is possible to configure different functional conditions, using the 10 DIP SWITCH unit.

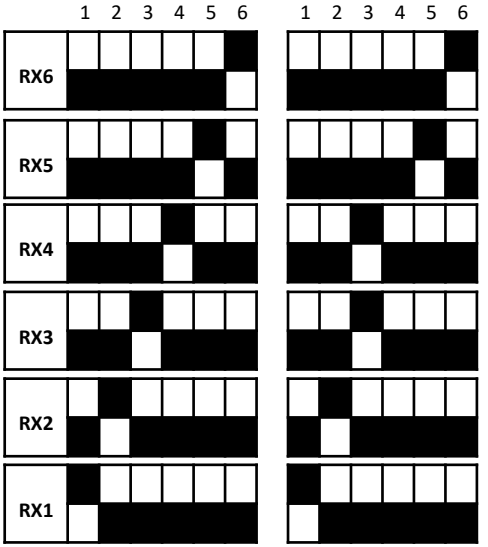
N.B.The barriers are configured and set during the factory testing phase, based on the model with the required number of optics.If it is necessary to change the original number of beams in the field, it is necessary to correctly set the DIP SWITCHES from 3 to 6 on the 10 unit of the SK WS RX motherboard, as shown in the table.

10 DIP SWITCH UNIT

1	**AND**	In ON the barrier goes into alarm with at least 2 interrupted RX beams
2	**AND 1 - 2**	In ON the barrier goes into alarm in AND with the two lower beams and in OR with the remaining ones. WARNING: DIP 1 and 2 cannot be both active
3	**BEAM 3**	In ON the first 3 RXs are active
4	**BEAM 4**	In ON the first 4 RXs are active
5	**BEAM 5**	In ON the first 5 RXs are active
6	**BEAM 6**	In ON the 6 RXs are active
7	**S. SLOW**	In ON the fog "DISQUALIFICATION" function is activated.In case of fog the barrier is inhibited, blocking the alarm relay.It self-restores as soon as the fog has cleared.The condition information can be transferred from the output of the dedicated terminal.
8	**A.CRAWL**	When ON, the "ANTI-CRAWL" function is activated, meaning that the blocking of the RX1 beam (the first at the bottom) for at least 2 sec. causes the alarm condition, regardless of whether it was previously set to OR or AND.
9	**AMK**	In ON the "ANTIMASK" function is activated, therefore in case of masking the alarm is inhibited for the duration.The condition information can be transferred from the output of the dedicated terminal.
10	**TEST**	In ON the programming and test phase is activated.

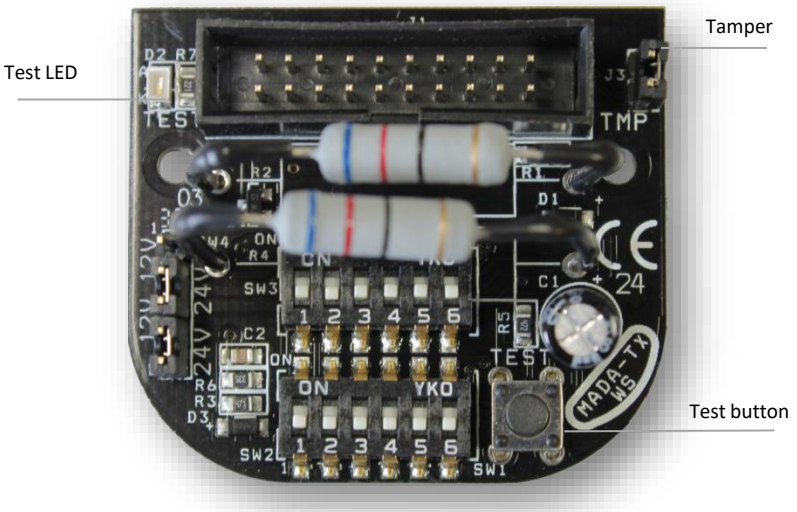
14.3 Receiver optic

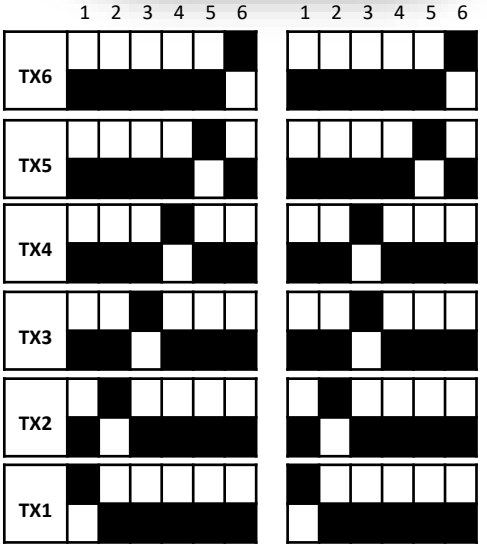




N.B.:The settings relating to the addresses are already set by default, and shown here in the maximum configuration.
N.B.:The barrier can result in an alarm even if the WEAK LED SIGNAL is off.The cause may be the lack of synchronism or a misaligned transmitter.

14.4 Transmitter optic





N.B.:The settings relating to the addresses are already set by default, and shown here in the maximum configuration.

15.Technical specifications

OUTDOOR RANGE	0-50 m
INDOOR RANGE	0-100 m
SYNCHRONISATION	Optical
OPTICAL SENSORS	Double optics with pulsed beams 950 nm
TOTAL BEAMS	From 2 to 6 parallel
POWER SUPPLY	3.6 V 1.8 Ah rechargeable battery from solar panel
AUTONOMY	2-3 years depends on the number of beams
OPERATING TEMPERATURE	- 10°C / + 70°C. Power heaters for temperatures down to -25°C.
ALIGNMENT ANGLE	20° Vertical - 180° horizontal
DETECTION SYSTEM	OR / AND 1st and 2nd Beam / AND Random
REMOTE CONTROL	AND Random
ALARM OUTPUT	NC relay contact
DISQUALIFICATION OUTPUT	Automatic, if enabled, with external signalling, O.C.: NO to GND
ANTIMASK OUTPUT	Automatic, if enabled, with external signalling, O.C.:NO to GND
BARRIER TAMPERING OUTPUT	Tamper on columns with NC relay contact on RX board, the TX Tamper optically transmitted on RX after 30 seconds
LOW BATTERY	Buzzer acoustic signalling on alarm and external signalling, O.C.:NO to GND
EXTERNAL SCREEN	Infrared with UV filter
PROFILE DIMENSIONS WxDxH	60mm x 60mm x from 1000mm to 4000mm
INGRESS PROTECTION RATING	IP 54 or 65 on request
WARRANTY	2 YEARS

16.FAQ

I can't align	Check that there are no obstacles of any kind interposed between RX and TX and that the conditions of the site do not represent an impediment;
	Make sure that the TX is in the test phase (orange LED of the optic in question on and the others off);
	Make sure that the connectors are well inserted and that the DIP configuration is correct;
	Make sure there are no external light sources that interfere with the correct reading of the signal (gate photocells, other barriers, infrared etc.);
After accurately aligning the sensor (LED light on steady and continuous BEEP) the system remains in alarm	Check which receiver optic does not pick up the corresponding transmitter.To do this set the AND mode, if the barrier is no longer in alarm, obscure each beam individually finding the one that does not generate the general alarm, this beam is not aligned;
	Make sure that the connectors are well inserted and that the DIP configuration is correct;
	Make sure there are no external light sources that interfere with the correct reading of the signal (gate photocells, other barriers, infrared etc.);
The system goes into alarm with fog and rain	Check the alignment accuracy of each individual optic and, if necessary, carry out the procedure by performing a complete scan, making sure that there are no light sources that can influence the calibration;
	Check that the fog disqualification function is active.
	Make sure that the structure is well sealed and check that there are not already elements inside which could create disturbance (water, insects etc.);
	For more precise alignment, position one side of the column cover in front of the lenses in order to have two surfaces interposed between TX and RX to double the attenuation of the beam.

Repeated false alarms	If they are caused by the passage of animals, use the AND, BEAM 1 functions or increase the intervention time.
	Check the alignment accuracy of each individual optic and, if necessary, carry out the procedure by performing a complete scan, making sure that there are no light sources that can influence the calibration.
	To avoid radio disturbances, use a shielded cable with the braid to the negative of the terminal board as the connection between the wireless transmitter and the barrier;
The system goes into disqualification even in the absence of fog	Check the alignment accuracy of each individual optic and, if necessary, carry out the procedure by performing a complete scan, making sure that there are no light sources that can influence the calibration;
	For more precise alignment, position one side of the column cover in front of the lenses in order to have two surfaces interposed between TX and RX to double the attenuation of the beam.

17.Product disposal

All components of this barrier 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.

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