

# PARVIS MES SMA

*Anti intrusion invisible system*

*SMA Technology  
RS485 connection*



# Index

---

Introduction	Pag.	3
Main component list	Pag.	4
Cable pit assembly	Pag.	5
Positioning the cable pit	Pag.	6
Correct a badly erected beam tower	Pag.	7
Installing the base	Pag.	8
Terminal connections for and to the MES 9000 C P.C.B.	Pag.	9
Synchronism cabling	Pag.	10
Positioning beam with respect to the others in the perimeter	Pag.	11
Alignment	Pag.	12
Positioning	Pag.	13
Optical alignment checking	Pag.	14
TX BOARD	pag.	15
RX BOARD	pag.	16
Alignment through SMA function	pag.	17
Alignment with parallel beams	pag.	19
Alignment with crossing function	pag.	20
PCB setting and programming	pag.	21
Functional description of the led	pag.	22
Dip switches	pag.	23
Set for models 3TX - 3RX and 2TX – 2RX	pag.	24
Closing the beam tower and assembling the lamp	Pag.	25
Technical specification	pag.	26

## Installation recommendation

- Verify that the beam tower is fully watertight once the cover and end caps have been correctly filled at the end of the installation.
- Use the cable glands supplied on the tower for all cabling must pass through the lower end cap using the cable glands supplied.
- Avoid any type of obstruction between the transmitter and receiver.
- Avoid installing the receivers beams in a position where direct sunlight, at the same angle as the receivers beams, can enter directly into optics especially at sunset and sunrise
- Do not install multiple beams where the transmitter beam can interfere with other receiver beams. It is always better place either transmitter or receivers back to back.
- Do not use switched power supplies which can induce noise on the power supply voltage which can in turn be amplified by the optical sync electronics creating unwanted problems.

# Introduction

**Parvis** is an active infrared beam perimeter intruder detection system for use in any application where a covert detection is required.

Designed for external use, Parvis can be employed in all ambient conditions thanks to the thermostatically controlled heating of the beam tower, high specification optical assemblies, automatic gain control all of which maintain the effectiveness and reliability of the system.

## External installation

It is advisable to take into account any trees, hedges or bushes that are near to the proposed perimeter detection path during the planning stages; these can in the event of strong winds interfere with the beam.

In the same way grass that is permitted to overgrow can obscure the lower beam.

## Hidden kit

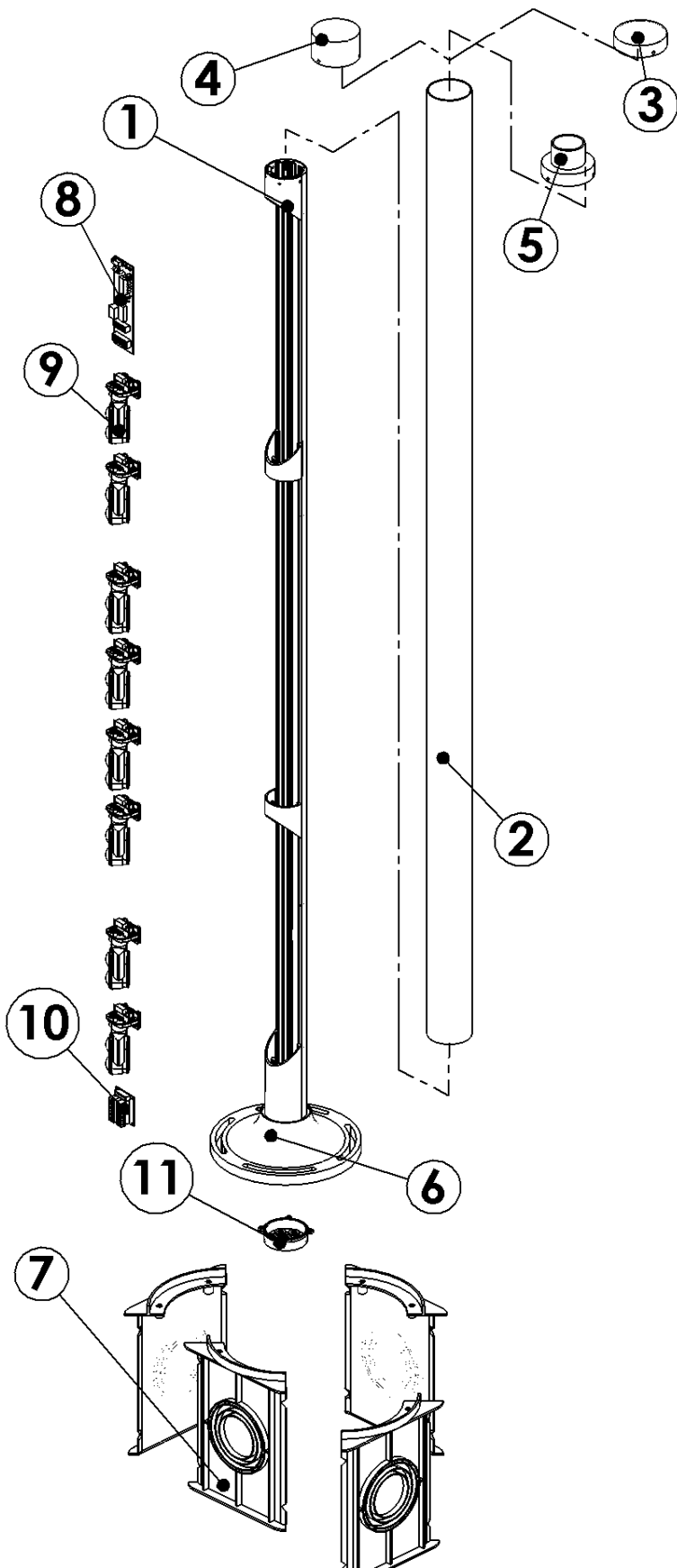
As the Parvis detection system is both covert and camouflaged it is possible to add illumination with or without detection beams.

## RDS

Through the system RDS (Random Delay System) when inserted, the activation of the alarm relay does not take place on the detection line but in a delayed manner randomly from 0.5 sec to 2 sec.

This device increases the difficulty to be identified by a potential intruder.

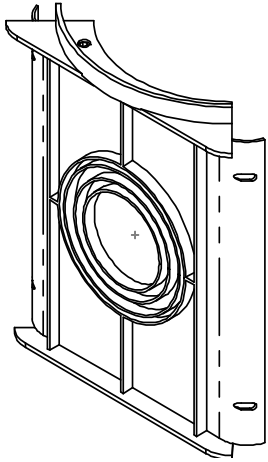
# Main component list



N°	Description
1	aluminum bar
2	IR pipe
3	blind cap
4	Blind cap for camera
5	lamp adapter
6	Base
7	PIT Lateral component
8	Motherboard
9	Optical receiver / transmitter
10	Terminal block Cable entry for motherboard
11	Base cover (with cable glands)

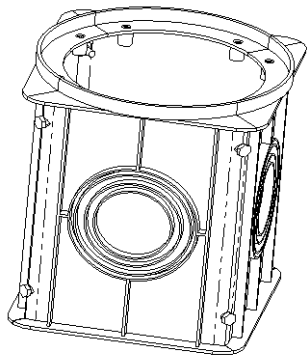
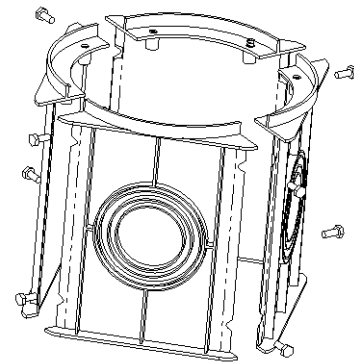
# Assembling the cable pit

The cable pit has two functions; the first is to permit easy connection of all the cable ducting and conduit and secondly as a hold solid base to mount the beam tower.



Single cable pit side panel

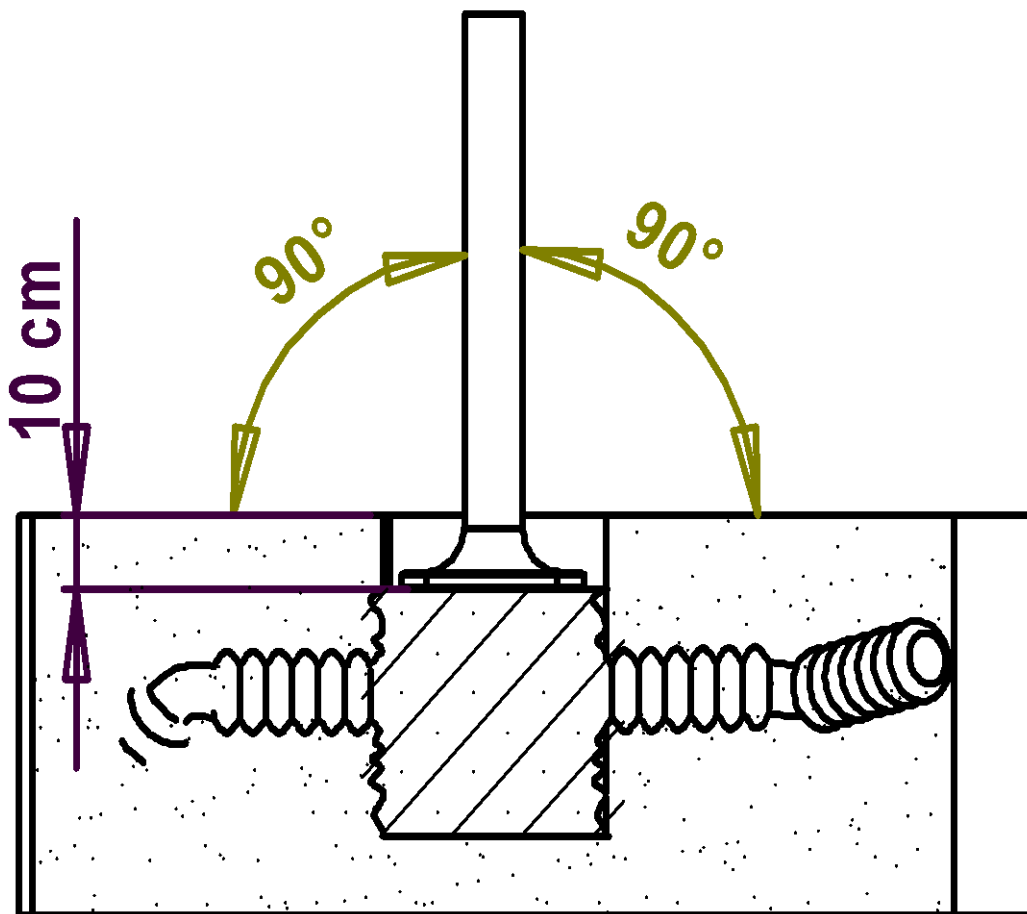
Use the supplied nuts and bolts to assemble the cable pit. Overlap the right-hand edge of one side panel to the left-hand edge of the next.



Assembled cable pit, ensure that the mounting flange is uppermost.

# Positioning the cable pit

Once fully assembled the cable pit is installed ten centimeters below ground level and is embedded in concrete; once correctly installed it can be covered (with turf or suitable decking) so that only the IR beam tower is visible .

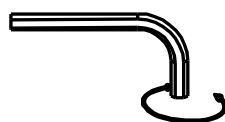
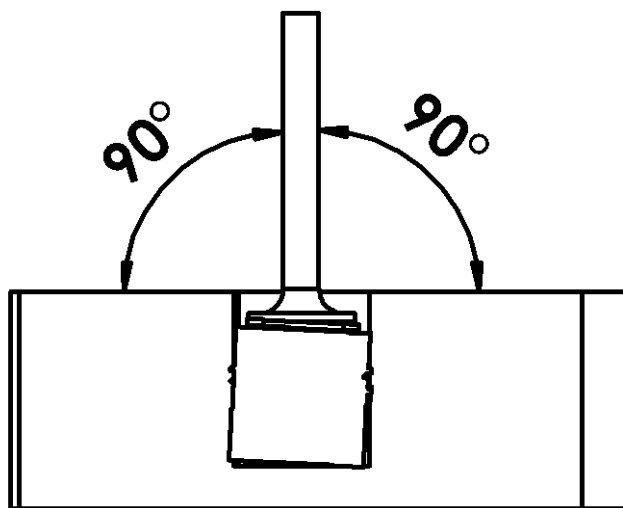
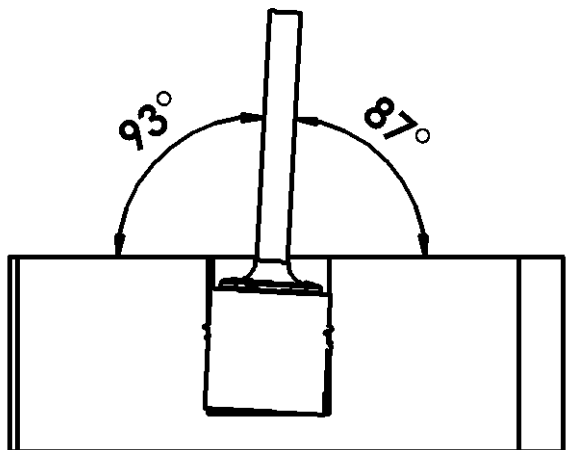


# Correcting a incorrectly installed cable pit

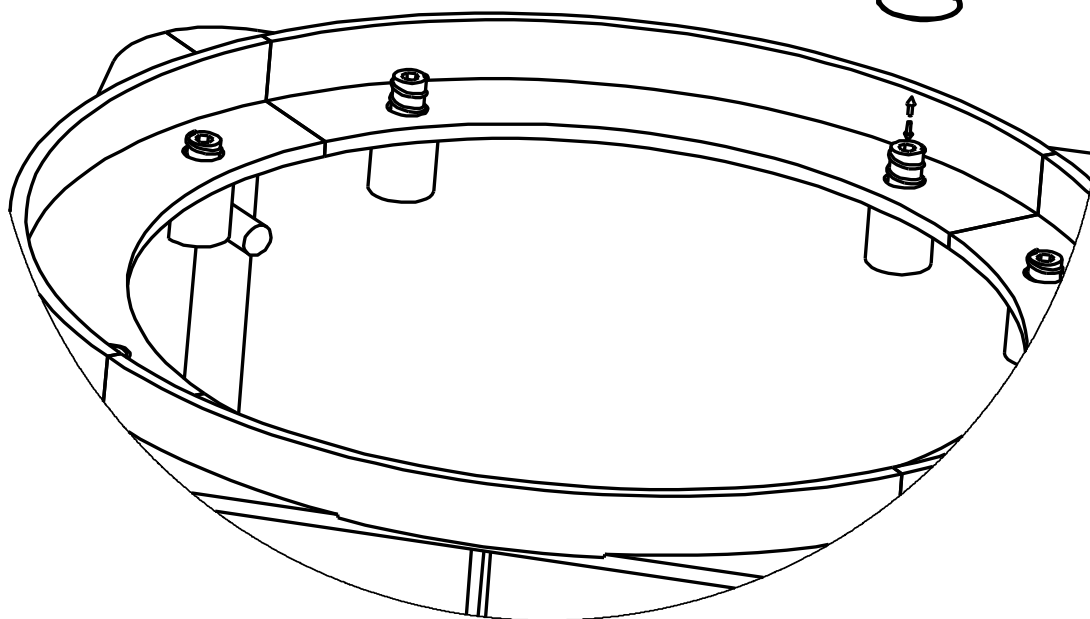
The mounting flange has to be level so that the Parvis beam can be installed correctly. Small adjustments, to make the beam sit perfectly vertically, can be made via inserts in the top face of the cable pit flange. Underscrewing the insert raises it thus raising the base of the tower on that side, adjusting the correct inserts will bring the beam back to the vertical.

Correct installation

Incorrect installation.



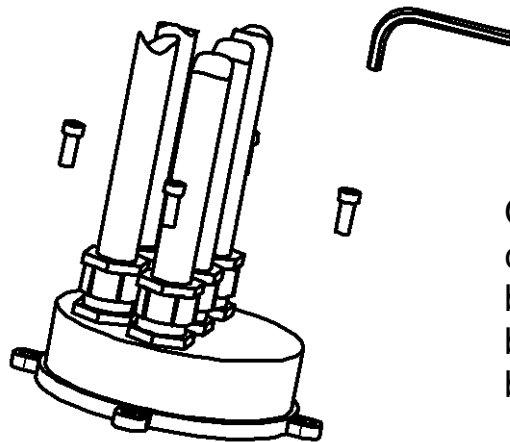
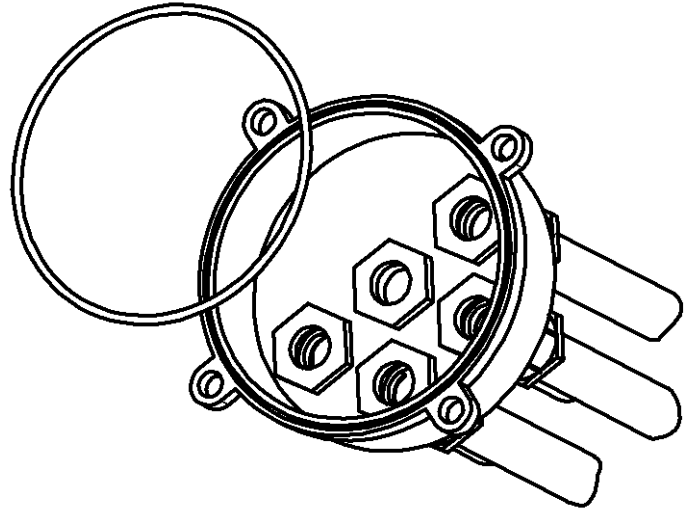
How to make small adjustments



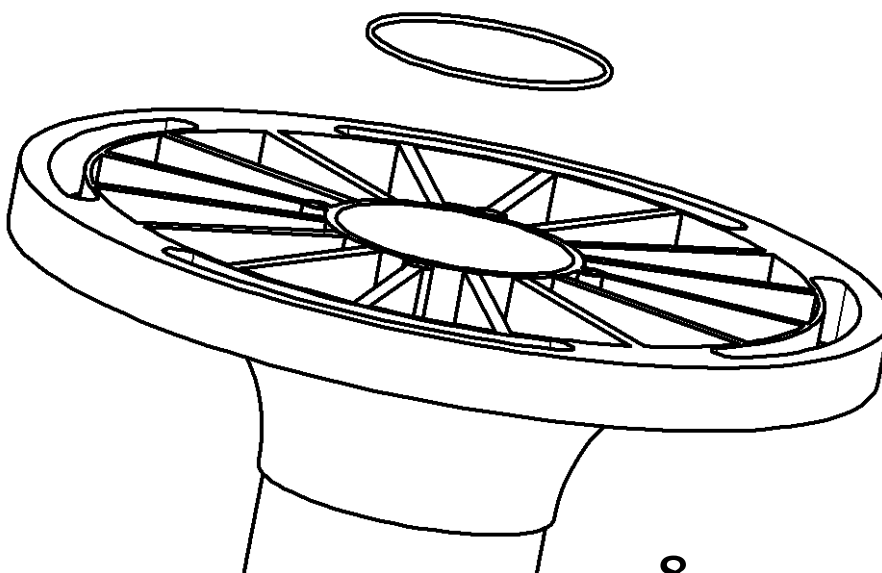
# Installing the base

Ensure that all the cabling to and from the Parvis beam passes through the supplied cable glands that should be fitted to the base of the tower. Use the central cable gland for the pre-wired light cabling.

The base cover fitted with the cable glands

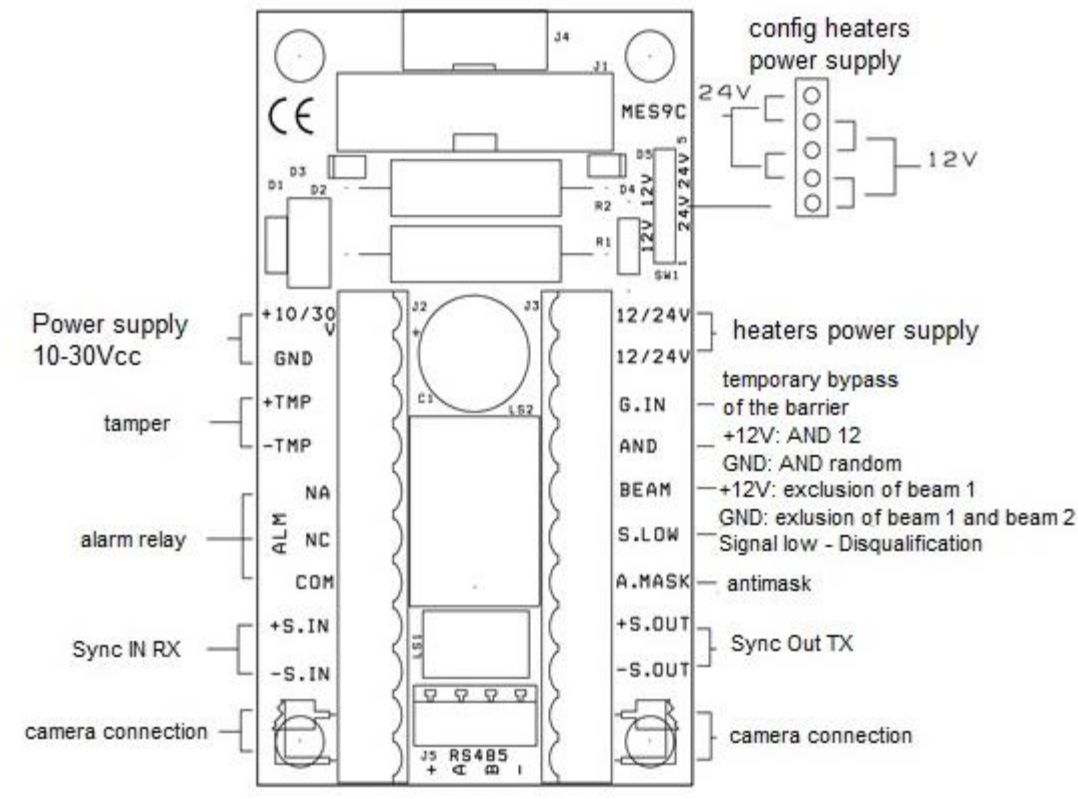


Once the cabling is completed the base cover has to be fixed to the base.





# Cable and wiring to the terminal block MES 9C



Power Supply 10-30 Vcc	Positive	+ 10-30Vdc	12/24 Vac	heater supply	heaters Power supply
	Gnd	gnd	12/24 Vac	heater supply	
tamper	Tamper	+tmp	G. IN	give negative to bypass the barrier for 1 min	Temporary bypass of the barrier
	Tamper	-tmp	AND	+12Vdc for AND 1 & 2 GND for AND random	+12V : AND rays 1 2 GND per AND RANDOM
alarm relay	NO	NA	BEAM	+12VDC exclusion beam 1 GND exclusion 1 & 2	+12VDC - esclusione RX1 GND- esclusione RX1+RX2
	NC	NC	S.LOW	Fog disqualification (negative open collector - it open in case of fog)	disqualifica
	C	COM	A. MASK	antimasking (negative open collector - it open in case masking)	antiaccecamento
Sync IN RX	positive Synch IN	+ S.IN	+ S. OUT	positive Synch OUT (TX=>RX)	Sync Out positive (TX=>RX)
	Negative synch IN	- S.IN	- S.OUT	Negative synch OUT	Sync Out negative
camera connection	Connectors for camera		RS485 + A B -	Connectors for camera	camera connection

**NB: THE NEGATIVE SUPPLY OF THE COLUMN MUST BE CONNECTED IN SERIES WITH THAT OF OTHER COLUMNS.**

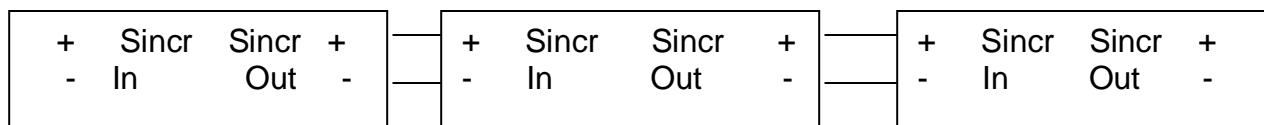
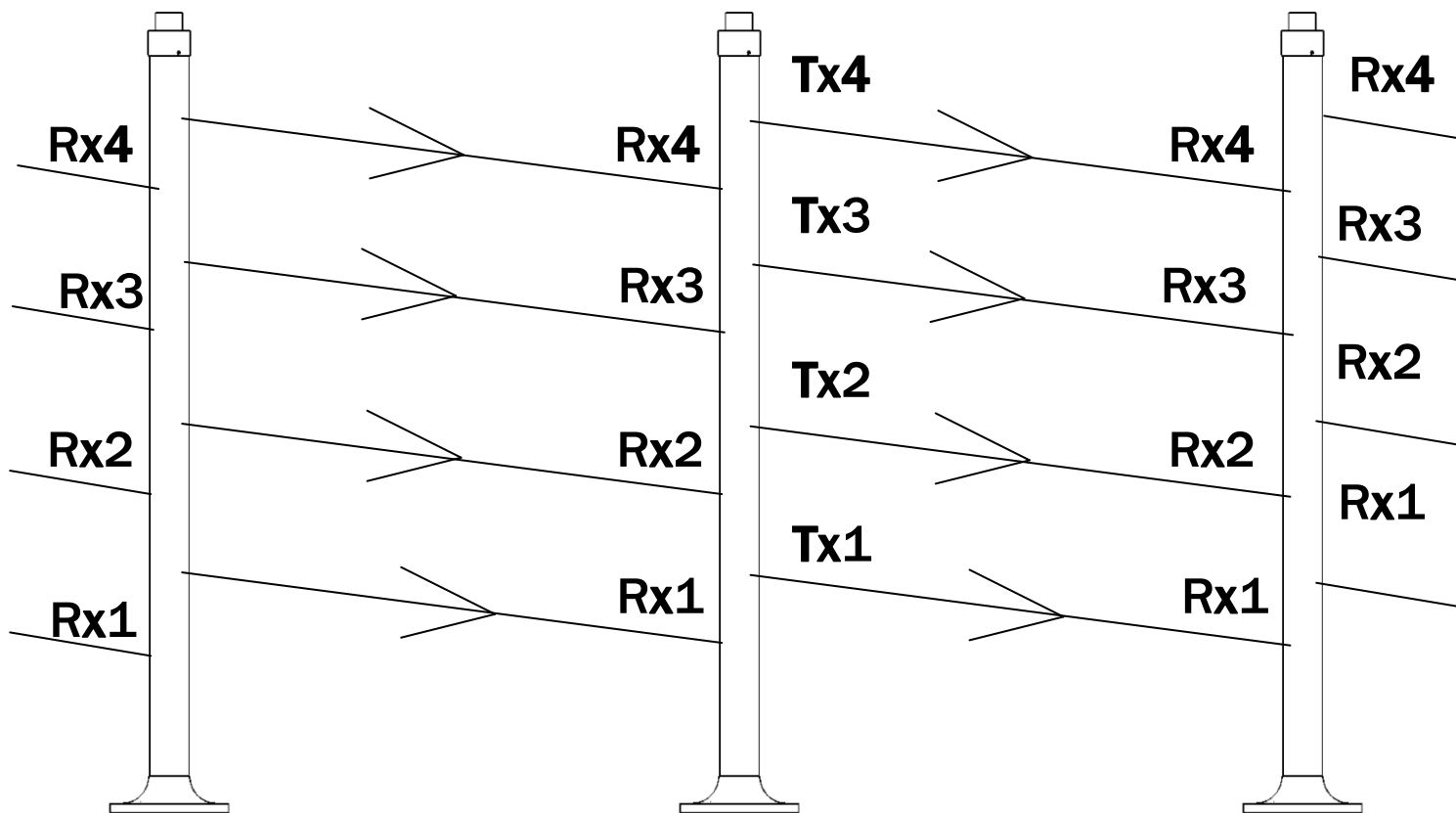
**OUTPUTS S.LOW, A.MASK ARE OPEN COLLECTOR NEGATIVE**

**USE A SHIELDED CABLE ALARM TO SYNC AND THE ALARM CONTACTS.**

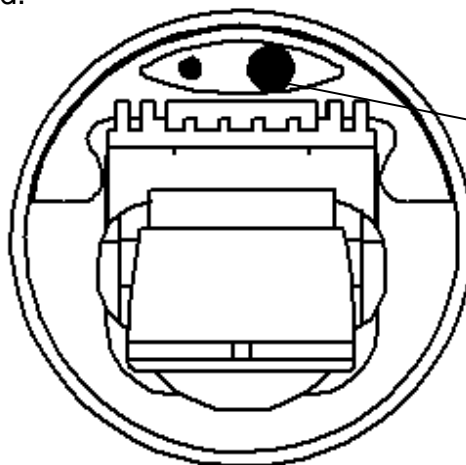
**USE A TWO-PAIR SHIELDED TWISTED PAIR CABLE FOR RS485 FROM 0.50 MM**

# Synchronism cabling

Arrangement Tx/Rx synchronism connection

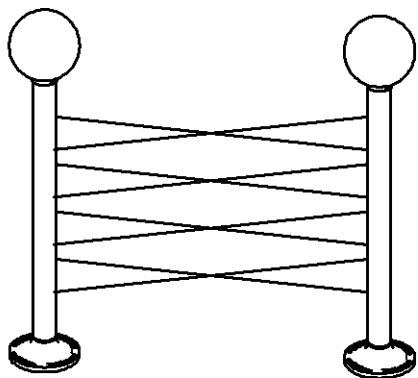


Synchronisms OUT are the transmitters which are connected with receivers to which synchronism IN have to be linked.

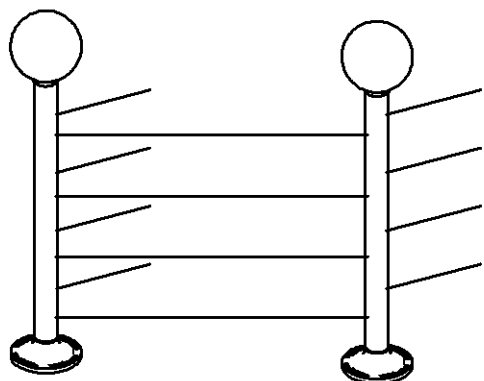
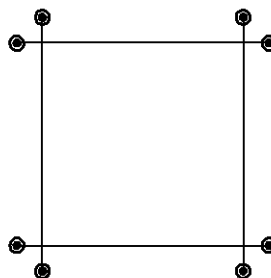


Place for cable 220 VAC connected to the Lamp and/or cable connected to CCTV micro camera

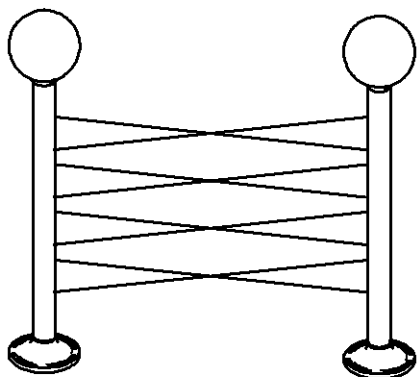
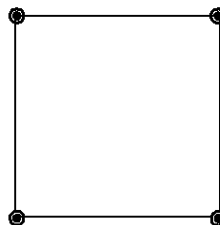
# Positioning beam with respect to others in the perimeter



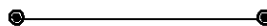
8 beams  
circular  
barrier



4 beams  
circular  
barrier



8 beams  
one barrier



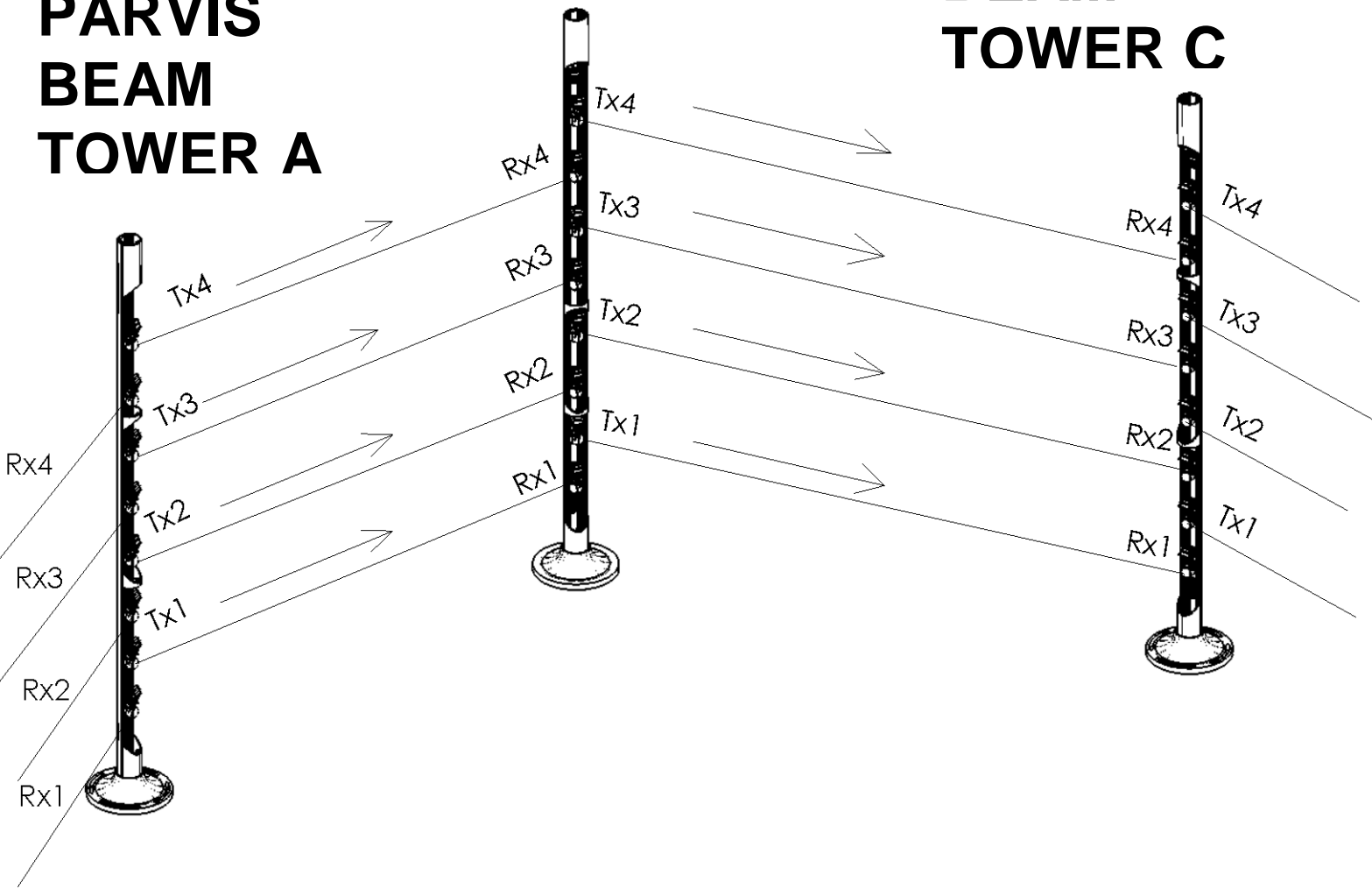
# Alignment

To obtain the best alignment with the previous and following Parvis, the complete structure must be rotated, using the narrow section of each column module as a reference, as shown by the shaded area in the illustration (see figure on page 14).

## PARVIS BEAM TOWER A

## PARVIS BEAM TOWER B

## PARVIS BEAM TOWER C

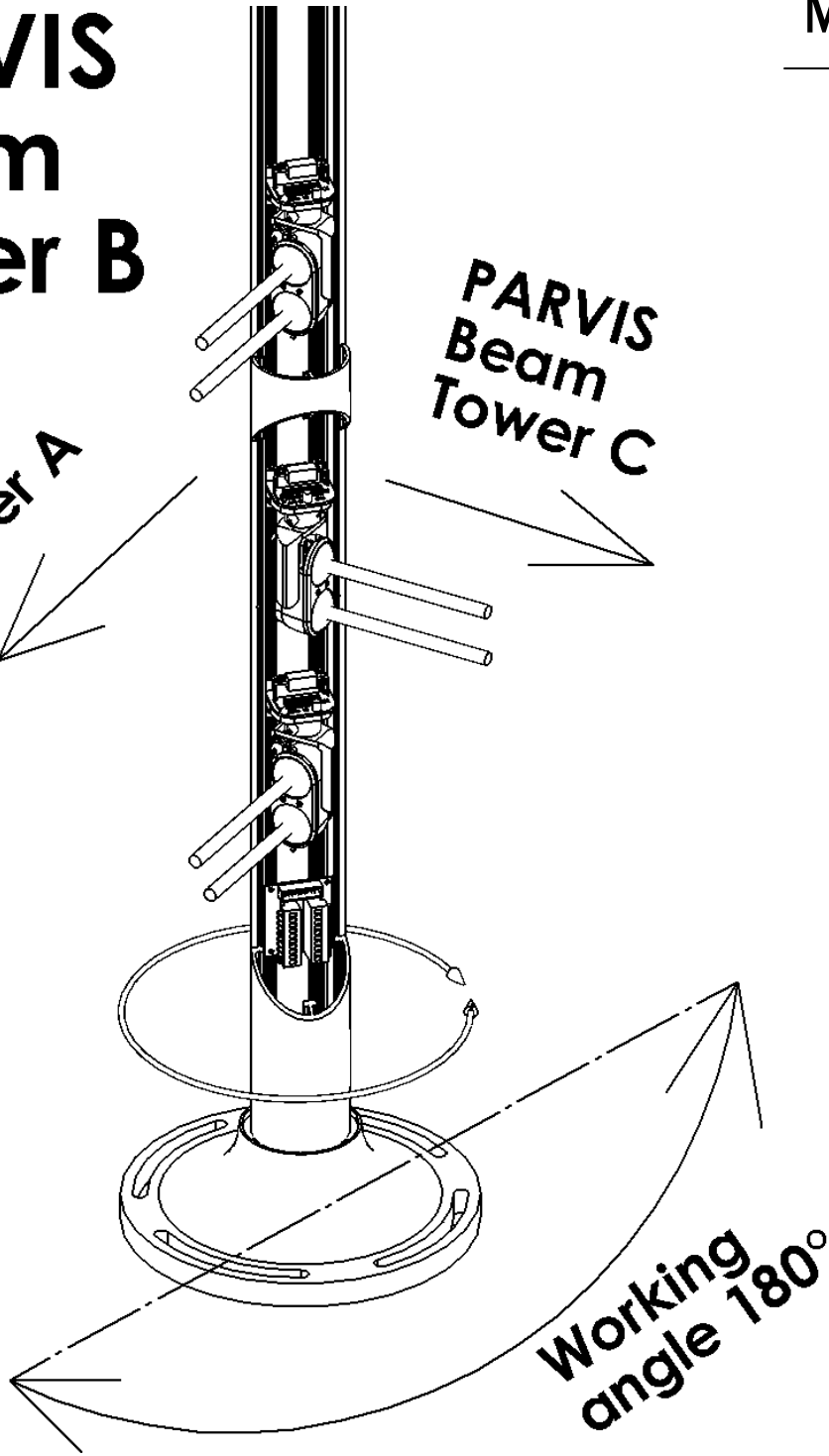


# Positioning

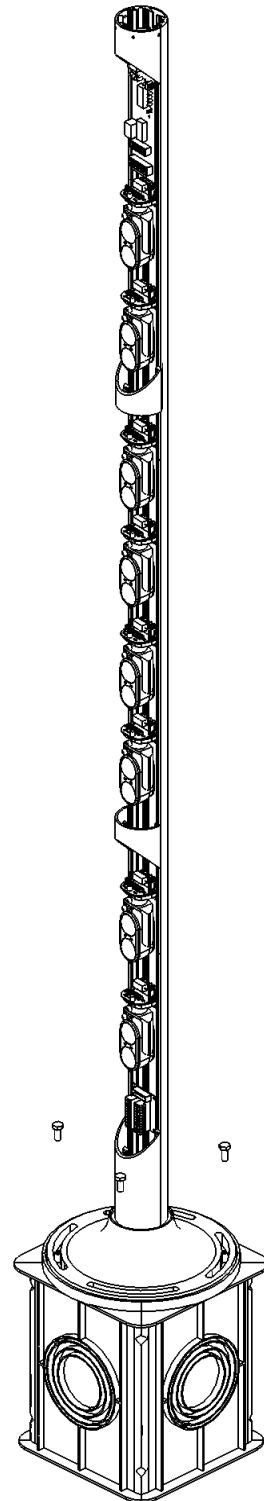
## PARVIS Beam Tower B

PARVIS  
Beam  
Tower A

PARVIS  
Beam  
Tower C



## Mounting the beam

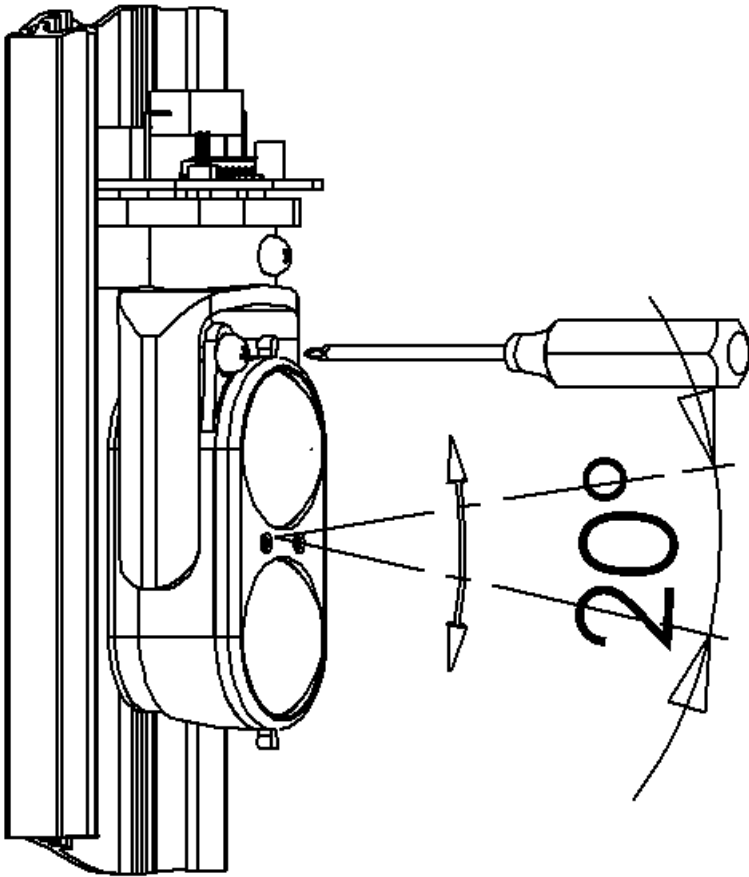


Use the bolts supplied to anchor the base to the cable pit .

# Optical alignment setting

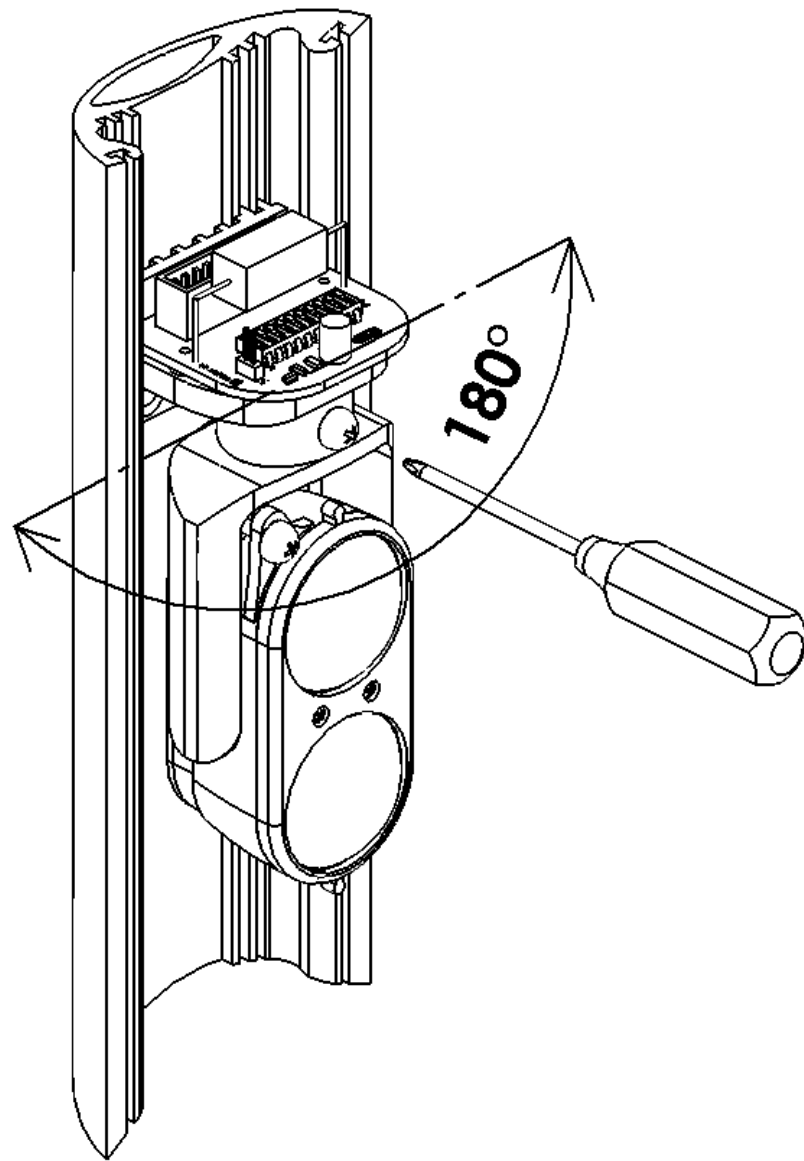
Once beam columns have been correctly installed point the transmitter optics towards its corresponding receiver and vice versa, repeat for all the beam pairs.

This is achieved by manually positioning the lens holder horizontally and vertically using one of the two screws (which ever is more convenient) to be found above the lens.

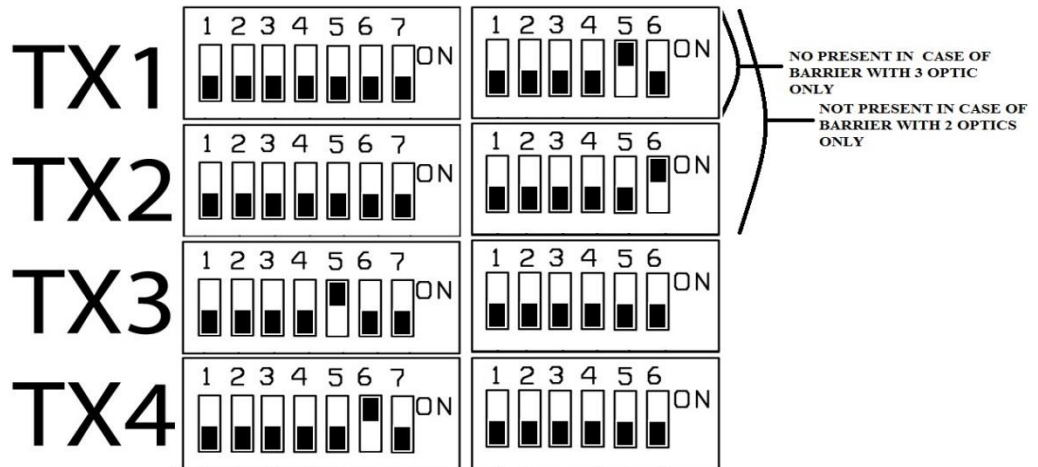
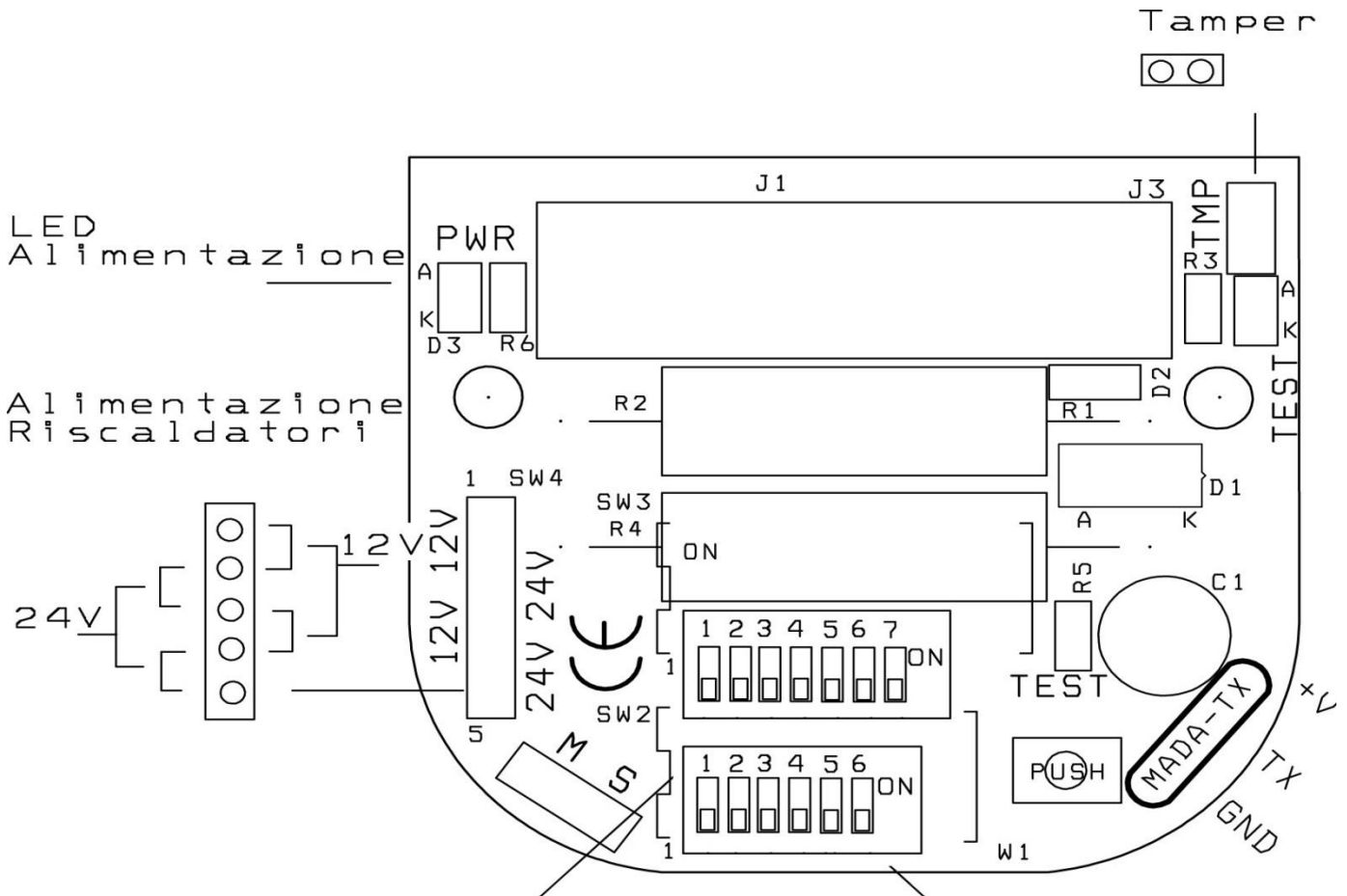


**Vertical alignment**

**Horizontal alignment**



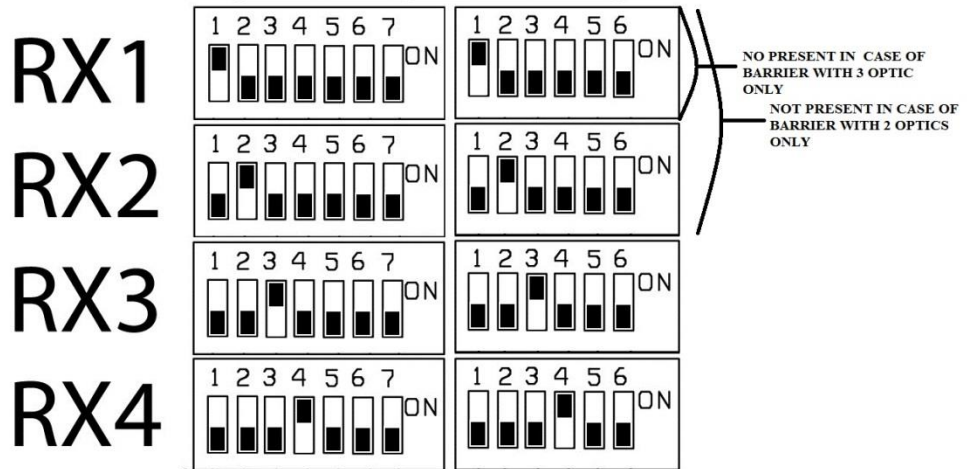
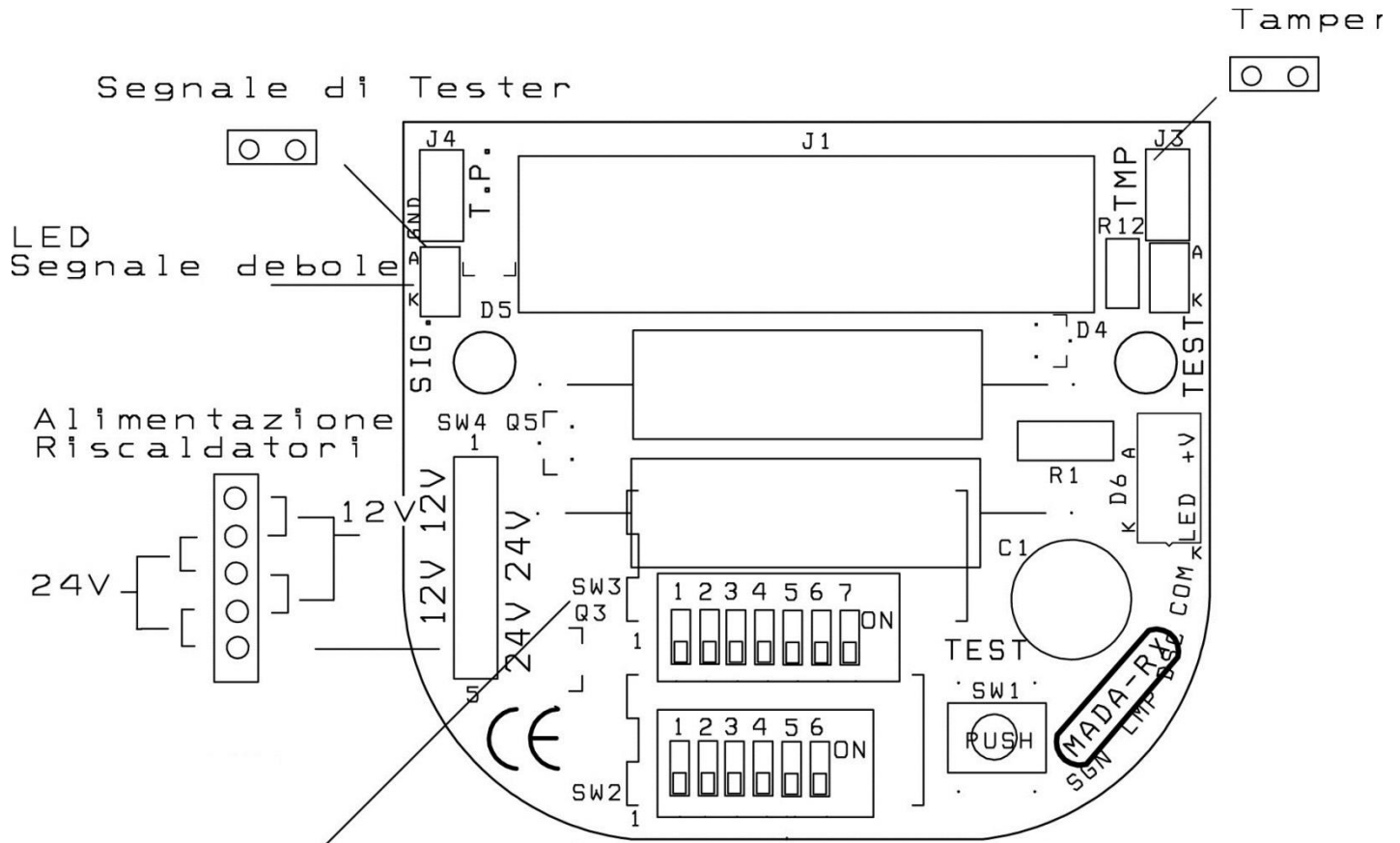
# TX BOARD



To check the functionality of optics TX put ON the DIP 7 and see the activation of the Power LED. Set in SW4 heaters supply 24V (standard) or 12 V. The voltage can be AC or DC.

**NB: The settings relating to the addresses are already set to Default.**

# RX BOARD



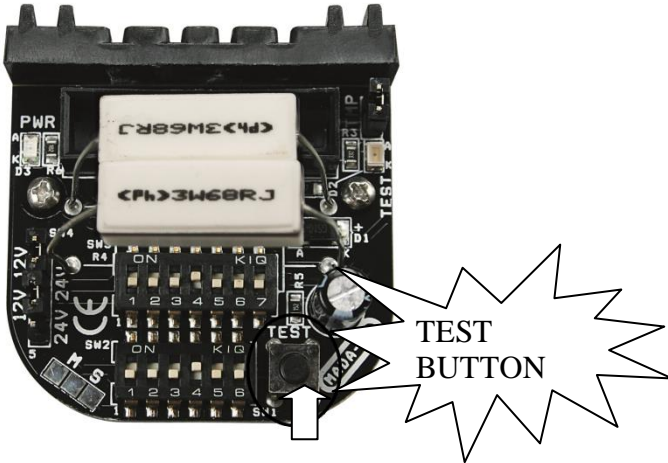
To check the functionality of optics TX put ON the DIP 7 and see the activation of the Power LED. Set in SW4 feeding Heaters 24V (standard) or 12 V. The voltage can be AC or DC.

**NB:**The settings relating to the addresses are already set to Default.



# • Alignment through SMA function

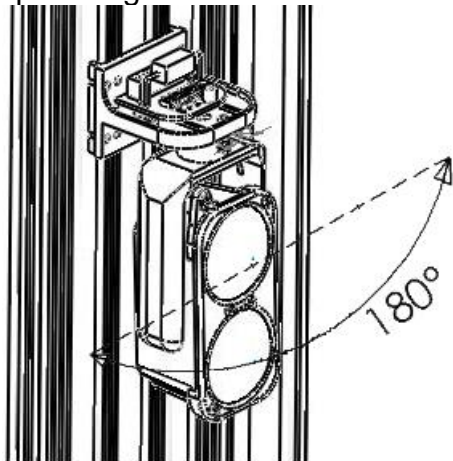
- 1) Start with the alignment of the transmitter by activating the TEST on the TX optics (1 or 2 or 3 or 4), pressing the dedicated button for about 3 seconds until the orange TEST LED turns ON.



- 2) Place in the corresponding RX optical (1 or 2 or 3 or 4) in TEST, pressing the dedicated button for about 3 seconds until the orange LED TEST, the buzzer and the LEDs (high-brightness) will blink.
- 3) Through the movement of the TX optics, find the maximum optical alignment based on the buzzer and LEDs (high-brightness), the 'increase in the frequency of flashing LEDs and the whistle of the corresponding BUZZER will indicate a better ALIGNMENT.



- 4) Using a complete rotation on the horizontal axis of the RX optics the scanning of the optical signal is done

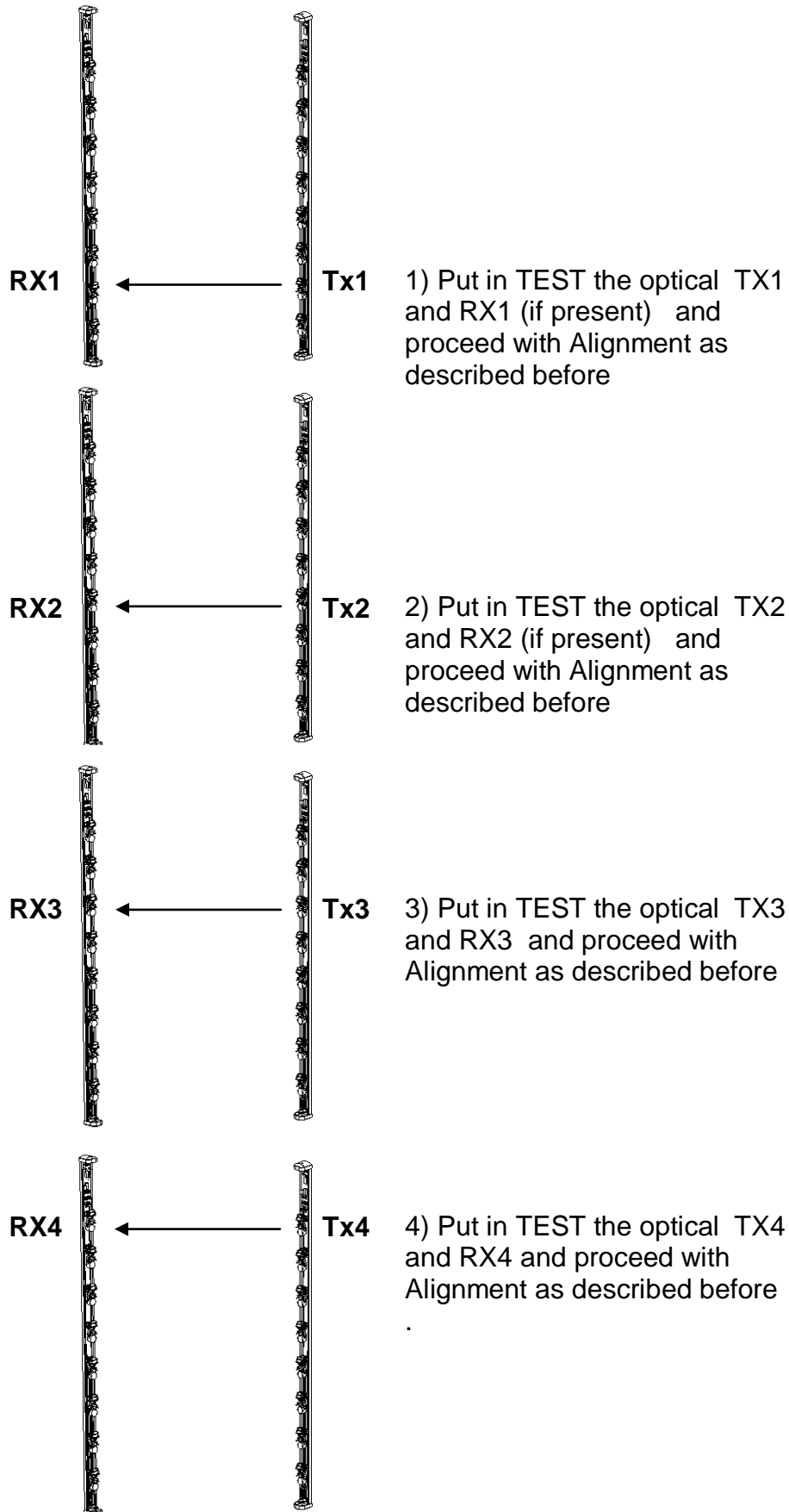


- 5) Turning the RX optic then find the maximum value that corresponds to the LED (high brightness) FIXED ON and the sound of the buzzer CONTINUOUS.
- 6) Exit the TEST function repressing the ALIGNMENT TEST button for about 3 seconds on both optics (TX-RX) making sure that the orange LED TEST return in the original condition.



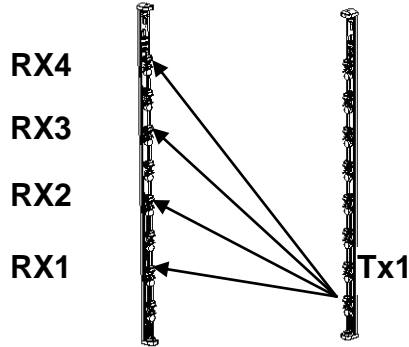
**NB:** It is possible to check the Alignment value through the multimeter in the dedicated terminal on each RX optics. For this procedure, you must have the pair of lenses (TX-RX) in TEST

- Alignment with Parallel Beams

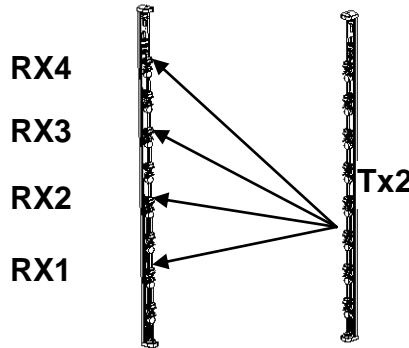


- Alignment with Crossing function active

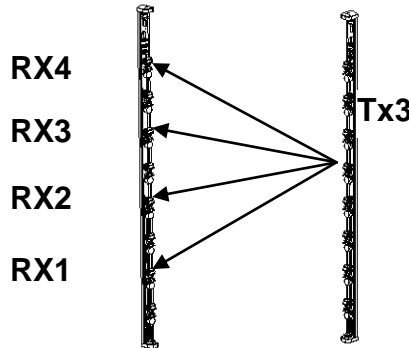
To activate the function move the DIP. 2 of MES9012 to ON.



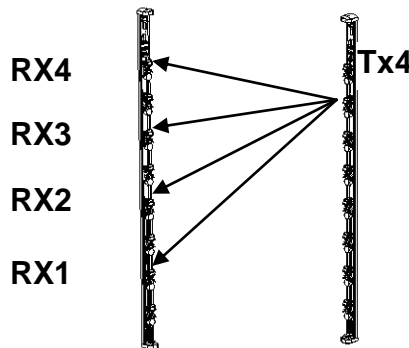
1) Put in TEST the optical TX1 and RX1 (if present) and proceed with Alignment as described before REPEAT the Alignment with RX2, RX3 e RX4.



2) Put in TEST the optical TX2 and RX1 (if present) and proceed with Alignment as described before REPEAT the Alignment with RX2, RX3 e RX4.

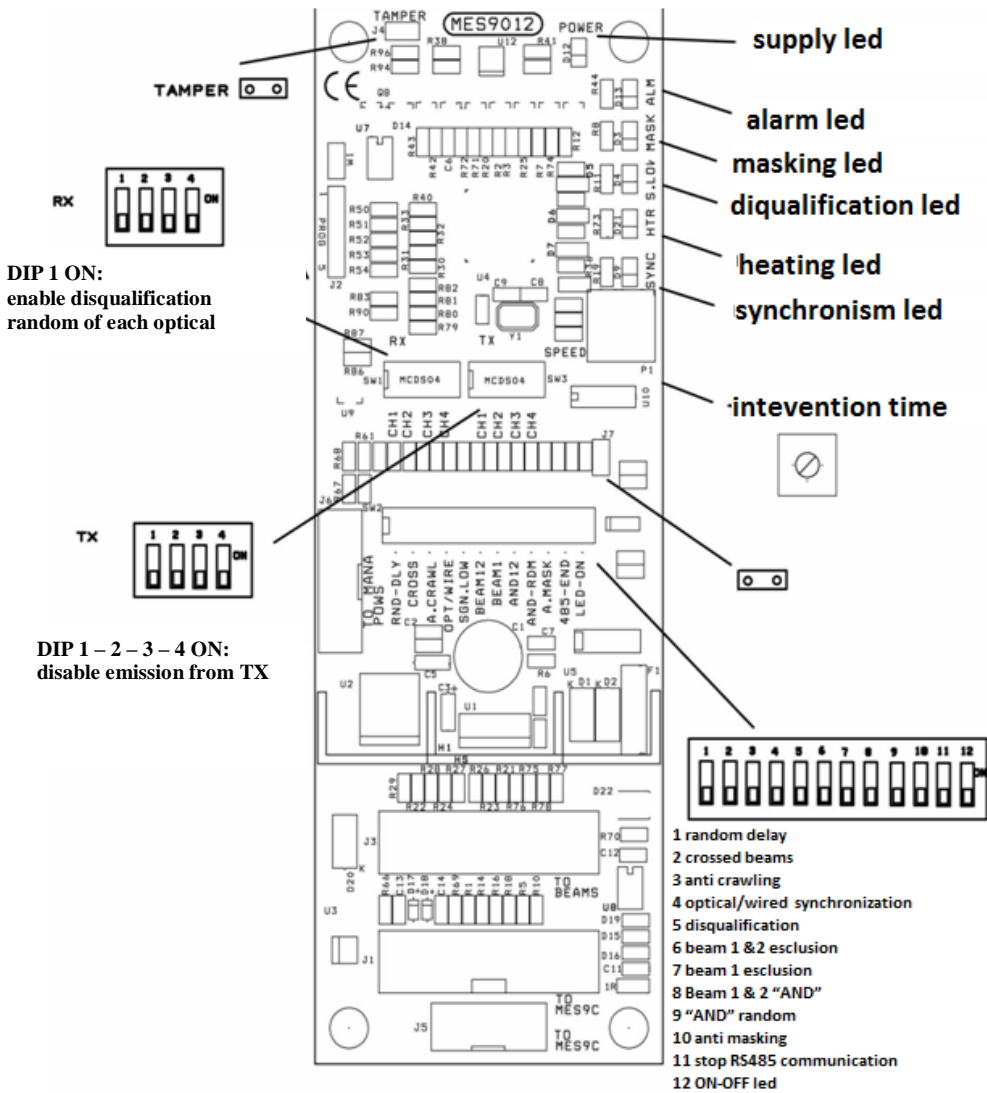


3) Put in TEST the optical TX3 and RX1 and proceed with Alignment as described before REPEAT the Alignment with RX2, RX3 e RX4.



4) Put in TEST the optical TX4 and RX1 and proceed with Alignment as described before REPEAT the Alignment with RX2, RX3 e RX4.

# • P.C.B setting and programming



**Attention: for version 3 RX DIP 7 ON exclusion beam 1**

**Attention: for version 2 RX DIP 6 ON exclusion beam 1 & 2**

# FUNCTIONAL DESCRIPTION OF THE LEDS

The five LED's on the MES-9000 PCB give system status indication.  
Placing the appropriate link into the ON position can enable these LEDs.

It is good practice, to increase security, to place the jumper (link) into the OFF position, once the beams have been set-up.

**LED MASK**            **Indicates BEAM MASKING.** The MASK will light or flash if an extraneous modulated IR source greater than that of the transmitter is detected by receiver electronics. If the ANTIMASK link is in the ON position an alarm condition will be generated when such IR source is detected.

N.B.: the LED should be OFF in the quiescent condition. If it is either on or flashing check the TX beam set-up.

**LOW SIG LED**        **Low signal (ENVIRONMENT DISQUALIFICATION).** When the LOW SIG. led lights up, this indicates the presence of INTENSE FOG. In the case of intense fog, before the missing signal alarm conditions are triggered, the LOW SIG led lights up and the Environment Disqualification output signal will be on the terminal board (*OPEN COLLECTOR*).

N.B.: When the LOW Sig jumper is in ON position, and when the *OPEN* Disqualification intervenes, the barrier is excluded, returning to normal function as soon as the fog lifts.

**LED ALM**            **Alarm confirmation LED.** Normally OFF indicates and alarm when lit. The condition on the card is dependent how the links are set on the RX P.C.B the delay (between 50 mSec and 500 mSec) set on the on target SPEED trim pot.

**LED HTR**            **Confirms that the system heaters are ON.** The PARVIS beam are equipped with automatic electronic thermostatically controlled heaters, which guarantee an operating temperature within the housing between 17°C e i 22°C.  
The Led is normally OFF and ON when the heaters are ON.

**POWER**              **POWER ON LED.** The Power on LED is always ON and indicates that the that the supply voltage to the PCB is correct.

**SINC LED**            **Confirms that synchronism system is ON.** The Sinc LED is always FLASHING and indicates that the synchronism connection is correct.

## • Dip Switches description and function

The motherboard has different configurations programmable via dip switches.

<b>RND DLY ON</b>	The alarm time to time, is generated with a random delay varying from 0 to 1 sec. This function is used to confuse and deceive any intruder who wishes to identify the detection system.
<b>CROSSING</b>	In ON activates the detention in Cross beams
<b>MASTER ON/OFF</b>	Set to ON, you have the "normal" operation of the barrier, instead set to OFF mode is activated to "LOOK DOWN", that is to make sure that the barrier to trip obscuring the RX # 1 this should be stopped for more than 2 seconds.
<b>SYNC</b>	Influential.
<b>DISQ</b>	Activating the disqualification.
<b>BEAM OFF 1 + 2</b>	You get the exclusion of the first two lower beams while the remaining beams continue to operate.
<b>BEAM OFF 1</b>	You get the exclusion of the first beam in the bottom, while the remaining continue to operate.
<b>AND 1 + 2</b>	You get the AND function of the first two receivers, both must be interrupted to generate the alarm condition, while the remaining Rx remain ALARMED individually. This configuration can be useful in the presence of tall grass or small animals. The function can also be programmed through remote control + 12V positive terminal on the terminal block marked BEAM.
<b>AND RND</b>	You get the AND between two random Rx, to have an alarm condition should always be alarmed at least two Rx among all those used. The function can also be programmed remotely giving a negative control - 12V on the terminal marked AND the terminal block.
<b>ANTIMASK</b>	Function antimask is enabled
<b>CLOSE RS485</b>	Closes the RS485 communication. To finish you need to put in ON only on the board of the column as far as the entire line.
<b>LEDS</b>	Set to ON activates the LEDs

- SET FOR MODELS 3 RX 3 TX

Set of the DIP SWITCHES on the Optical must be modified as follows:



On Motherboard set the DIP for exclusion beam 1

## SET FOR MODELS 2 RX 2 TX

---

Set of the DIP SWITCHES on the Optical must be modified as follows:

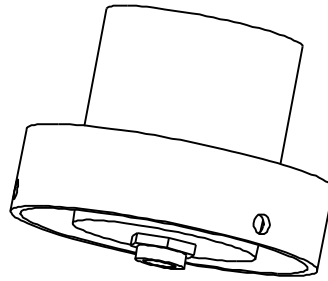
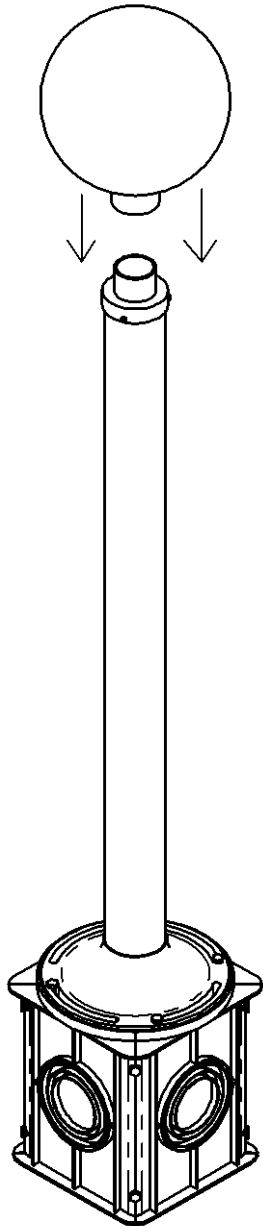


On Motherboard set the DIP for exclusion beams 1 & 2

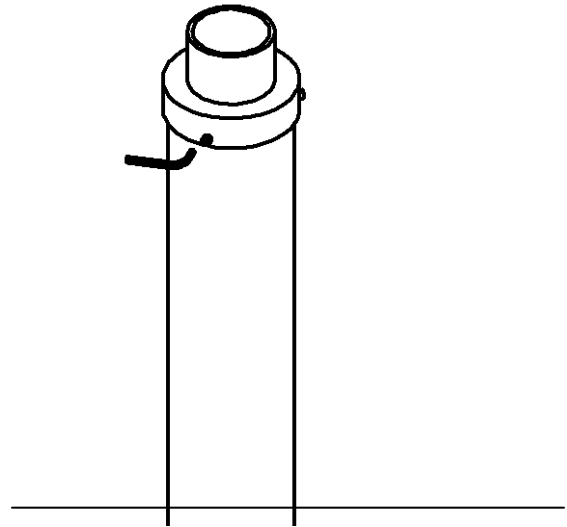


# Closing the beam tower and assembling the lamp

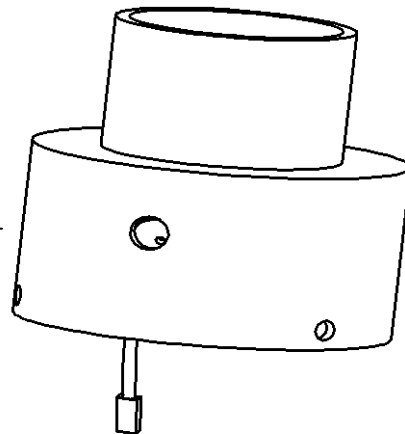
Top cap with a lamp fitting



Mounting the cap onto the beam tower



Installing the CCTV micro camera



Fit as per the normal top cap

## • Technical specifications

Beam column height	1,2 m to 3,00 m
Optical sensors	Synchronised beams, twisted pair connection
Max range	1350 m
Max range indoors	420 m
Max range outdoors	100 m
Power requirements	10-30 Vdc
Environmental Disqualification	Automatic with signal towards exterior.
Masking	masked sensing with another infrared signal, with signaling towards exterior
Current consumption	150 mA (4Tx+4Rx)
Operating temperature	- 25°C / + 65°C (Available KIT heaters for lower temperature operation up to -50°)
Alignment angle	± 10° Vertical – 180° Horizontal
Detection system	And/Or on Tx e Rx / AND 1° e 2° beam
Detection output	Random can be inserted
Internal heaters	Thermostatically controlled 12 -24Vac - Vdc– 50W
Piloting	AND REMOTE / AND 1° e 2° beam
External cover	IR transparent plastic
Top Cap	Tamper protected
Protection rating	IP 54
Lamp fitting	Standard (suitable for styles of lamp)
Base	Mounting pit to be concreted in place





è un prodotto coperto da brevetto europeo

---



Via Adda 66/68 – 20882 – Bellusco (Mi) – Italia  
Tel. + 39.(0)39.6883019 r.a. – Fax + 39.(0)39.6200471  
[www.politecsrl.it](http://www.politecsrl.it) - E mail: [info@politecsrl.it](mailto:info@politecsrl.it)

---

**R 1.2**