



# SANDOR DUAL SMA

DUAL OPTICS

INSTALLATION MAUAL

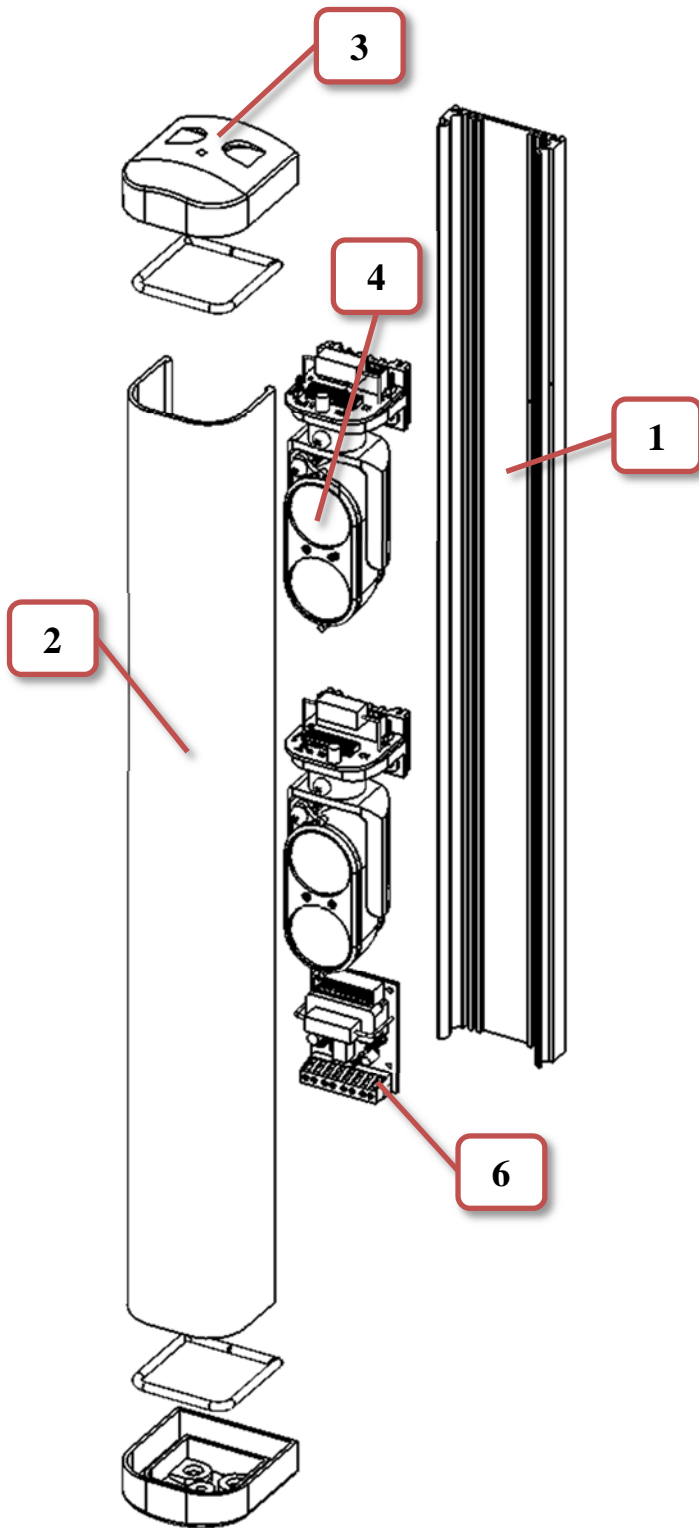
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### *Installation recommendation*

- *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. The missed used of proper accessories decrease the IP grade protection of the tower.*
- *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.*

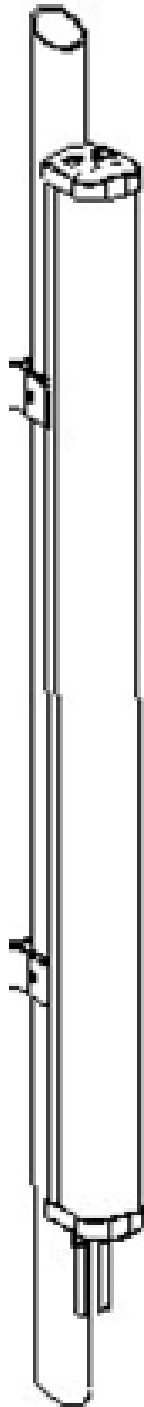
# 1 MAIN COMPONENTS LIST



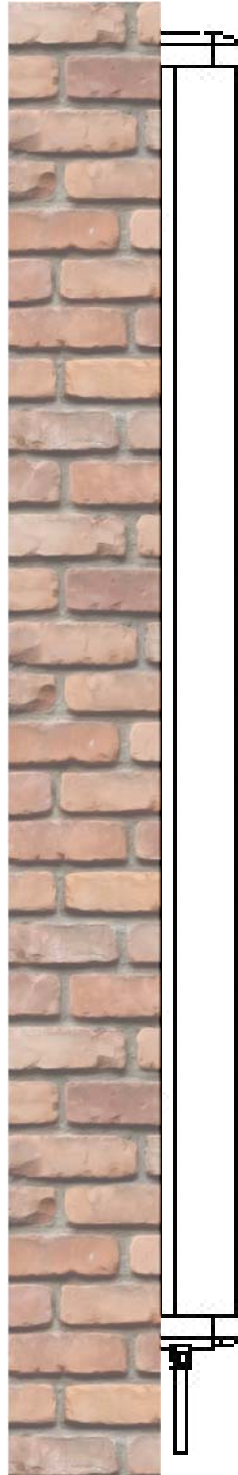
## DESCRIPTION

1	Aluminium profile
2	Plastic profile
3	Caps
4	Opticals RX/TX
5	Flat cable
6	Mother board

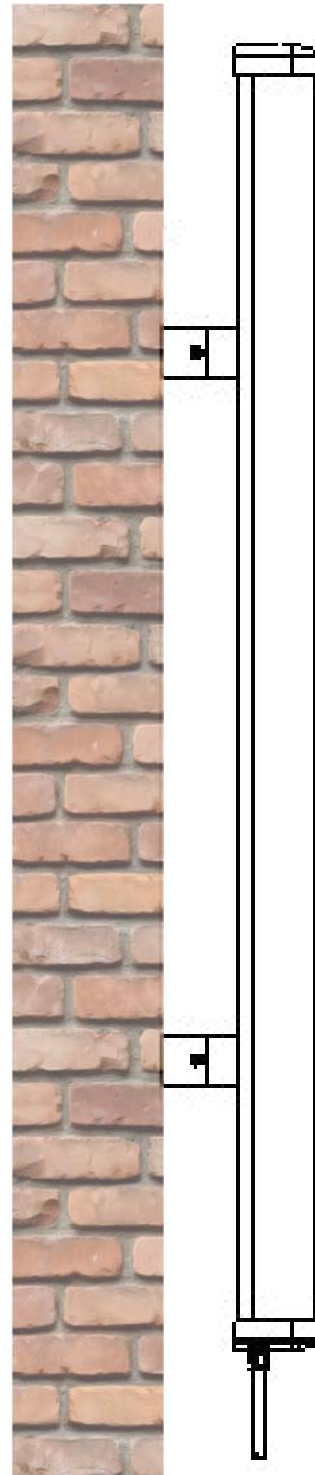
## 2 MOUNTING SAMPLES



**Pole  
mounting  
with  
SAN/PL**



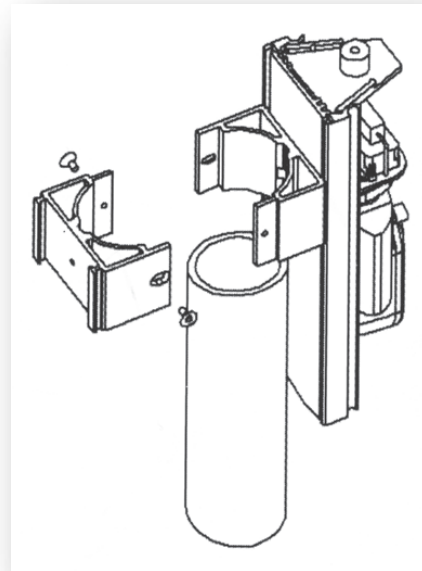
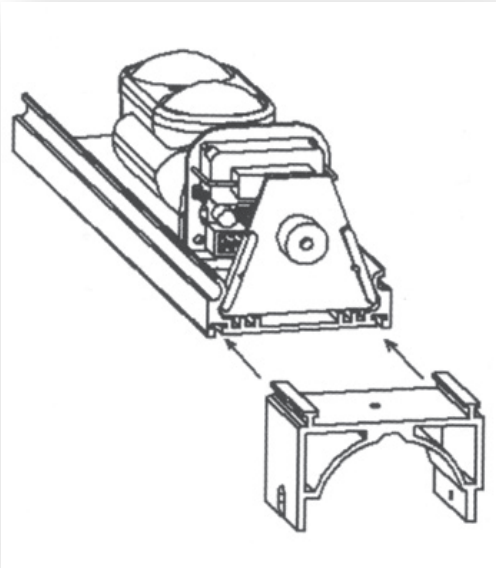
**Wall  
mounting  
with  
SAN/SD**



**Wall  
mounting  
with  
SAN/PL**

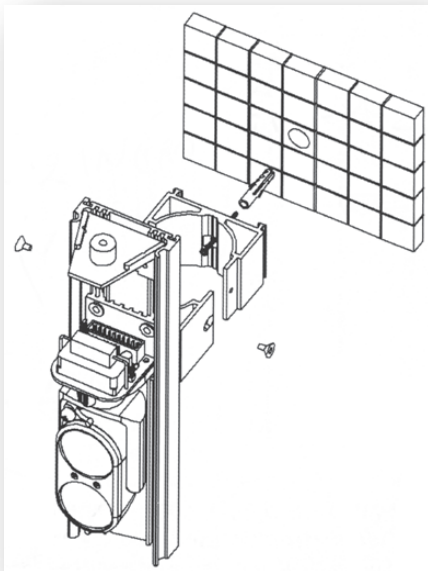
## MOUNTING WITH BRACKETS

**Insert the bracket  
on the back**

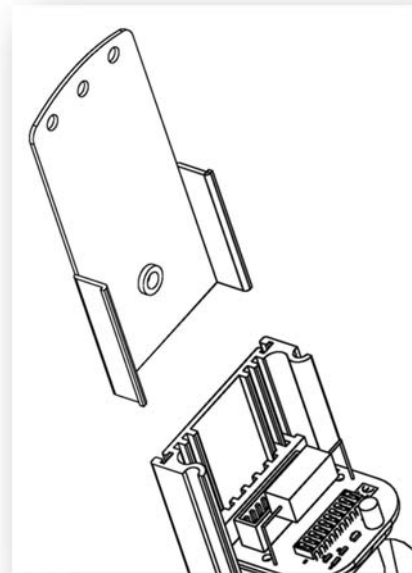


**Pole  
mounting  
with  
SAN/PL**

**Diameter pole  
max 48 mm**



**Wall mounting with  
SAN/PL**

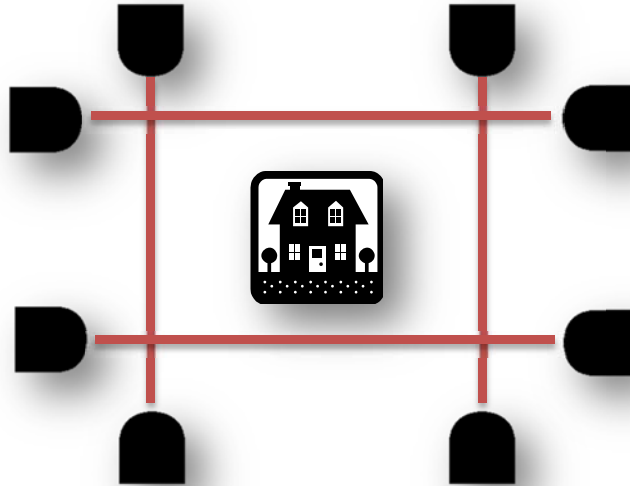


**Wall mounting with  
SAN/SD**

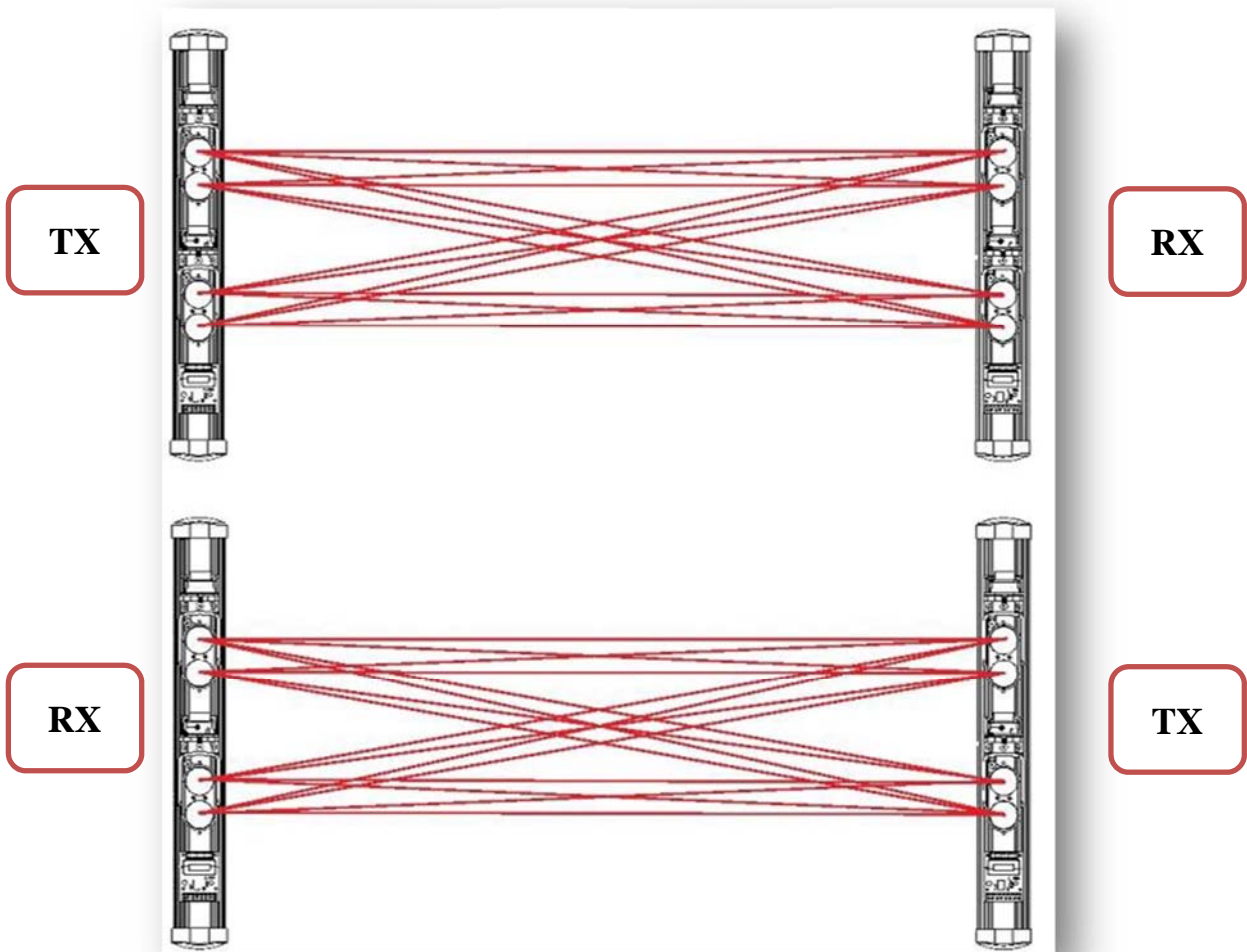
**N.B.:** è consigliato l'utilizzo delle staffe SAN/PL a parete quando si effettua la protezione di varchi (finestre, porte, ...) lungo la parete, onde evitare piccoli ostacoli (cerniere, bordi dei davanzali, ...) che potrebbero trovarsi tra i raggi creando un'attenuazione del segnale.

### 3 INSTALLATION SAMPLES

For an installation to control the perimeter install the barriers as shown:



For an installation of barriers overlapped position the barriers as well as in the figure:



## 4 CABLES AND WIRING

The wiring requires to SEPARATE the power cable 12Vdc (ex. 2x0.5 + Nx0.22), to the power cable for heaters 24Vac (ex. 2x0.75) to prevent input of disorders of the AC voltage on the barrier.

**N.B. is absolutely necessary to shield the cable that provides 12 Vdc power supply and put the metal braid to ground.**



The cable size depends on the consumption of the columns and the resistance of the cable to the distances involved.

The table shows the cable sections and the relative distances to which they provide optimum performance using the supplier LAR22 (12Vdc - 2,5A / 24V AC-300W) and a barrier SANDOR DUAL SMA.

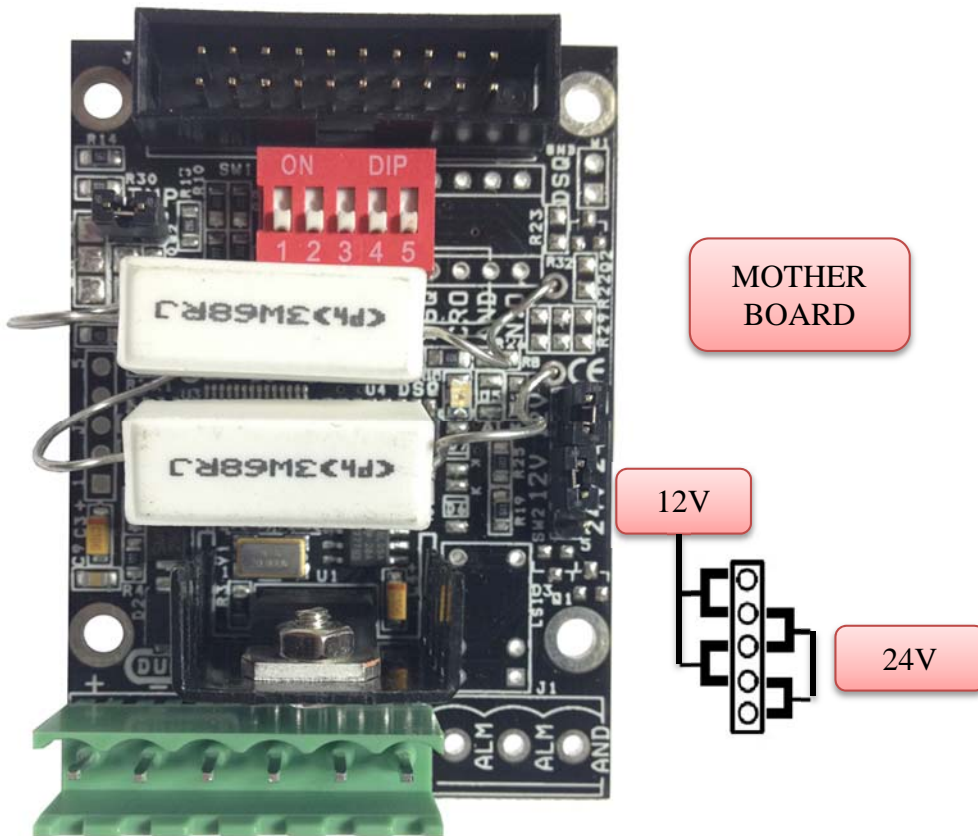
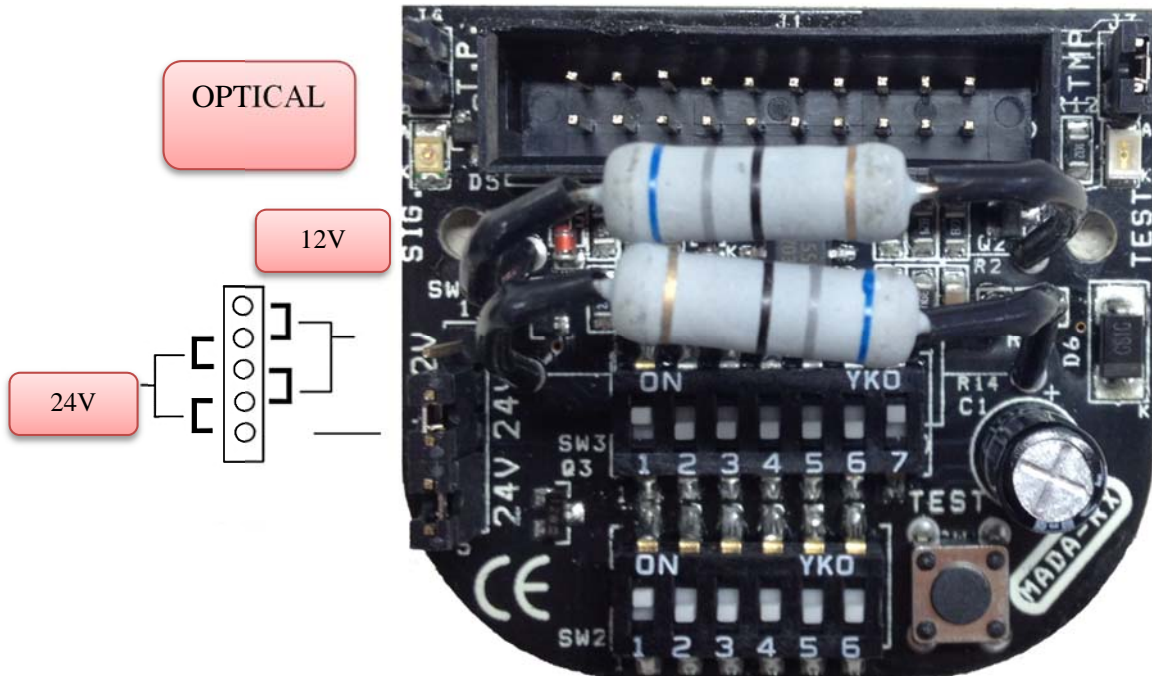
Cable section	12Vdc	24Vac
0,5 mm <sup>2</sup>	165 m	35 m
0,75 mm <sup>2</sup>	245 m	50 m
1,5 mm <sup>2</sup>	490 m	100 m
2,5 mm <sup>2</sup>	820 m	165 m
4 mm <sup>2</sup>	1310 m	265 m
6 mm <sup>2</sup>	1975 m	400 m

**N.B. THE LAR22 IS NOT WATERPROOF, MUST BE PLACED INSIDE A LOCAL OR PLACED IN A SEALED CONTAINER FOR USE OUTSIDE.**

Is possible use the power supplier LAR18 (12Vdc – 0,9A / 24VAC-60W) to supply a single column.

## CONNECTION AND HEATING SETTING

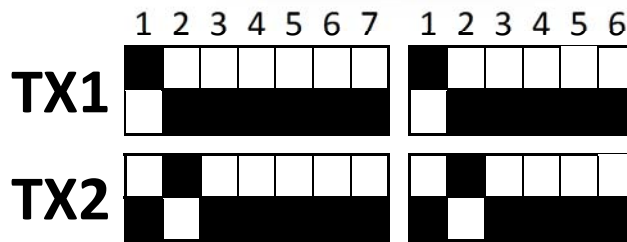
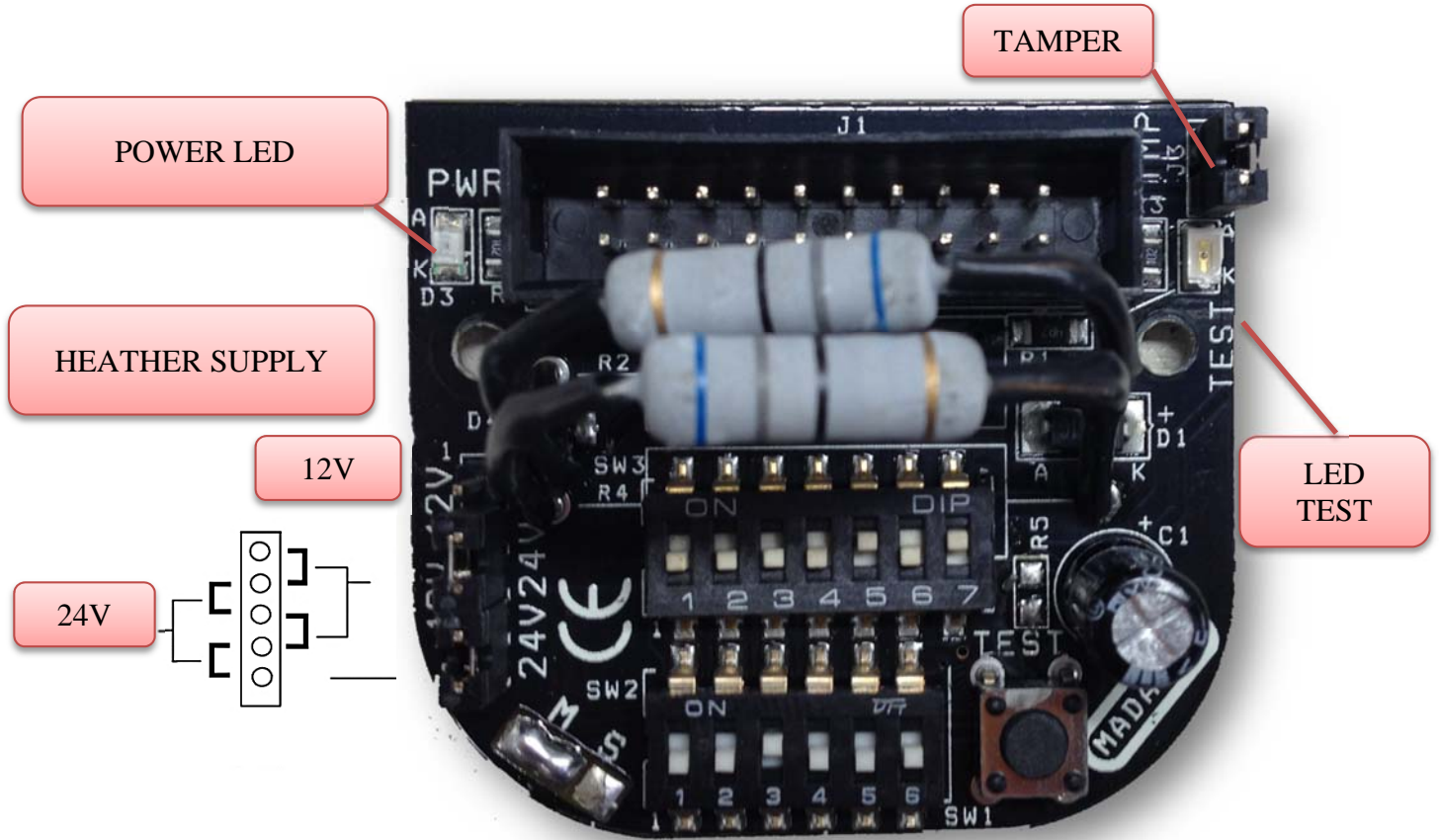
The power of the heaters is by default set to 24 Vac, but you can set it to 12 Vdc repositioning the jumper on both RX and TX mother boards and on each optical as shown.





## 5 OPTICAL CONFIGURATION

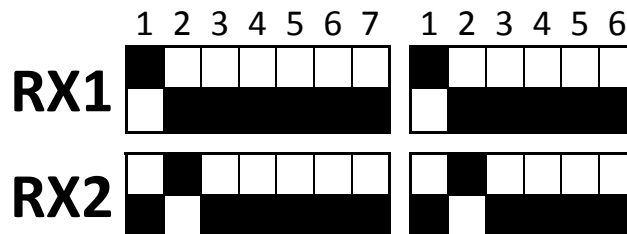
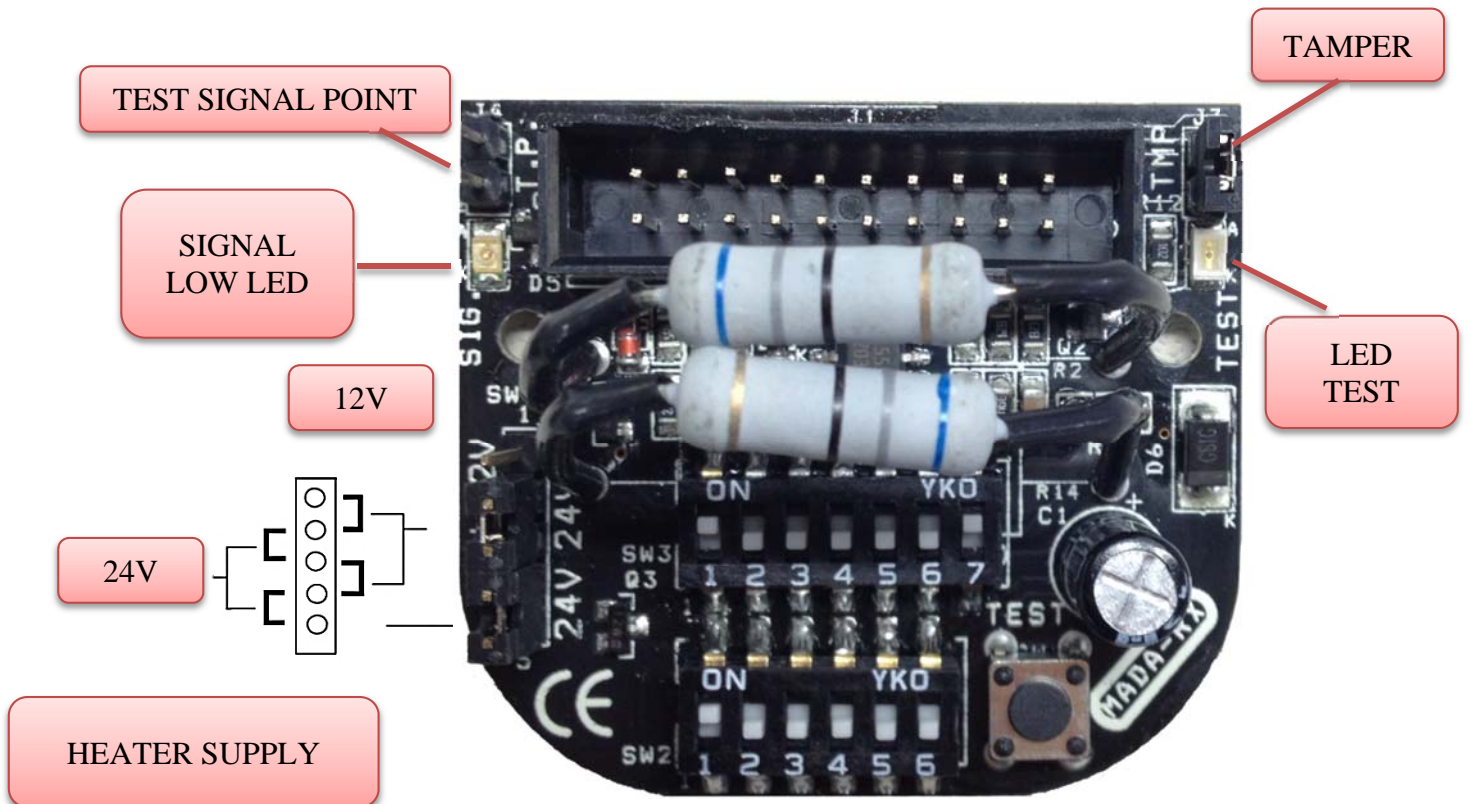
### TX OPTICAL



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

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

## RX OPTICAL



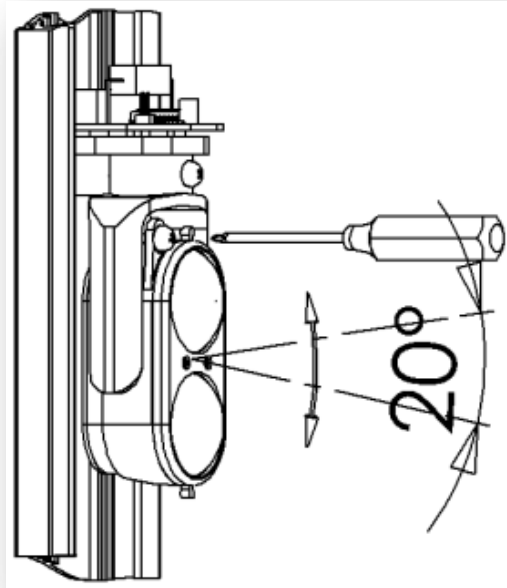
To test the functionality of optics TX put ON the DIP 7 and see the activation of the power LED. Set SW4 to supply of the heaters. 24V (standard) or 12V. The voltage can be AC or DC. In the J4 jumper reads the value of the signal in volts.

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

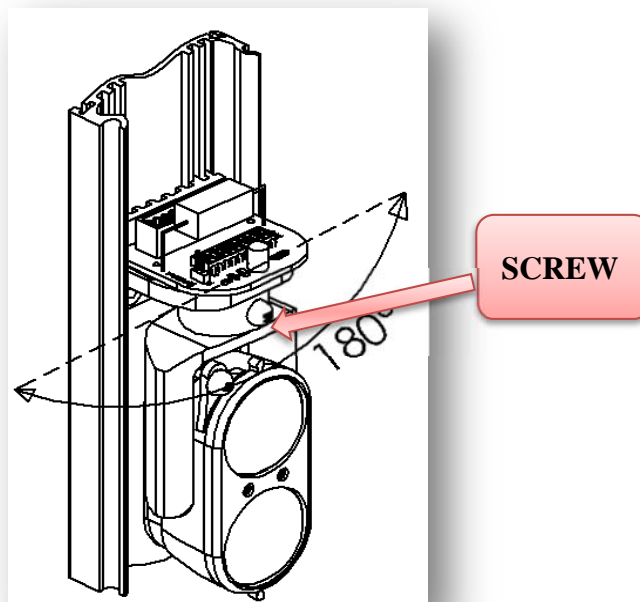
## 6. COLUMN ALIGNEMENT

For proper alignment, once the barriers are installed, orient the optical of transmitters and receivers in the direction of each other by adjusting the lens holder horizontally through the manual movement after loosening the locking screw on the joint, and vertically through the front screw on the left side of the lens.

### Vertical adjustment



### Horizontal adjustment



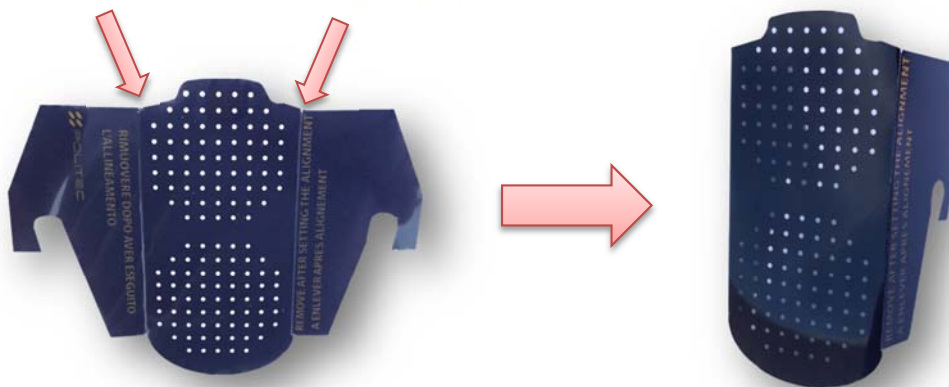
**N.B.: FASTEN THE UNLOCKING SCREW AFTER THE ADJUSTMENT**

## 7 CALIBRATION THROUGH SMA SYSTEM

You can improve the calibration by using of the supplied filter



- 1) Bend the device according to the preset bends

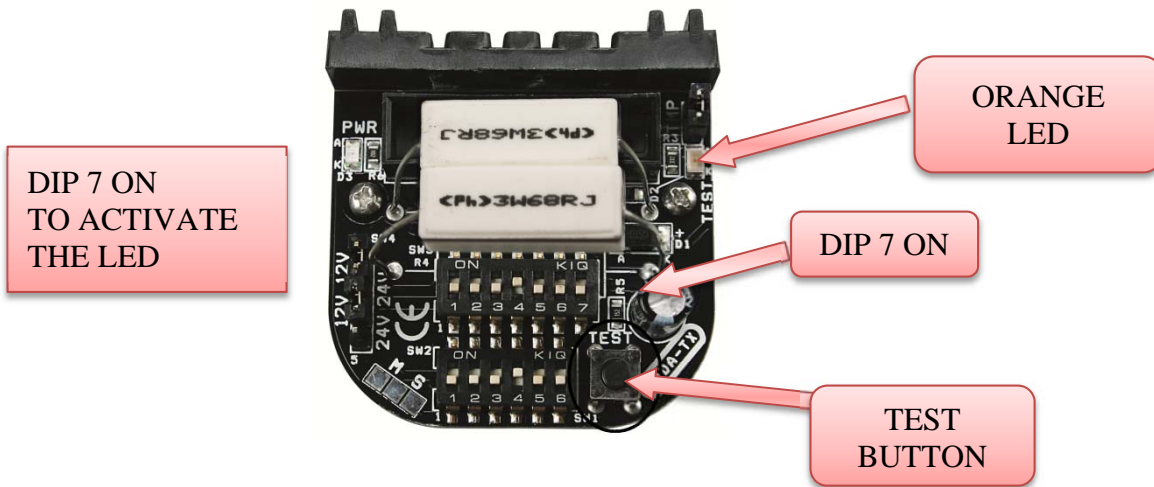


- 2) Place the filter in front of the optics TX placing the two hooks on the pins of the fork optics to improve the search for the signal alignment with critical conditions.

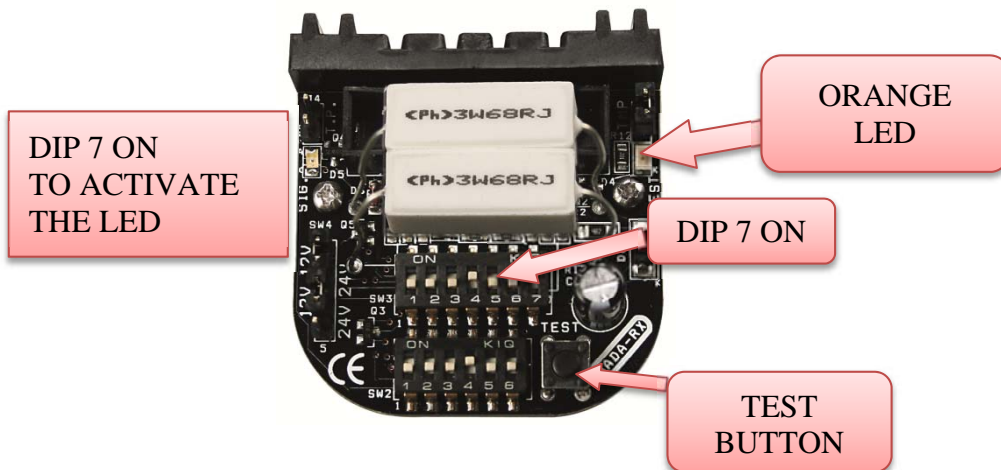


You simply apply the filter only on the TX, it is not necessary to repeat the operation on the RX too.

- 3) Start the alignment of the transmitter is on the barrier by checking the position of the DIP switch 7 to ON and activating the TEST optics TX (1 or 2 or 3 or 4), by pressing the dedicated button for about 3 seconds until the orange LED TEST will lit up.



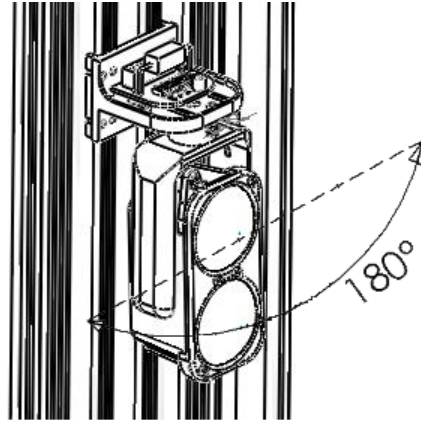
- 4) Place in the corresponding optical TEST (1 or 2 or 3 or 4) on coral receiver, checking the position of the DIP switch 7 to ON and pressing the dedicated button for 3 seconds until the the BUZZER and the LED TEST turns ON, (with high brightness)



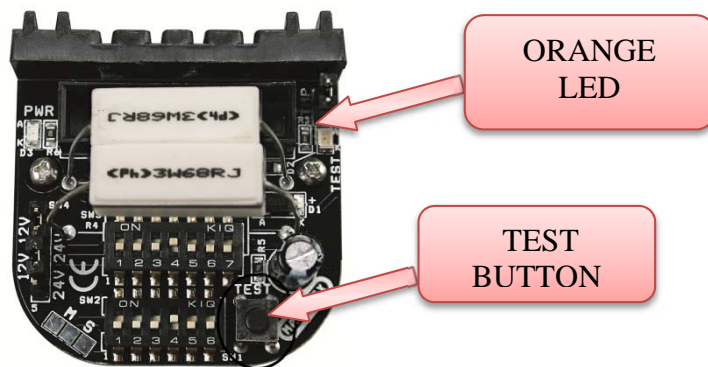
- 5) Through the TRANSMITTER lens shifts, find the maximum optical alignment based on the Buzzer and LEDs (with high brightness), the increase in the frequency of flashing (until the LEDs is fix on and the whistle of the corresponding BUZZER) indicate a better ALIGNMENT.



- 6) With a FULL rotation on the horizontal RX lens, is carried out the SCANNING of the optical signal.



- 7) Rotating the lens RX find the maximum value of ALIGNMENT corresponding to the LEDs (with high brightness) FIXED and the whistle of the BUZZER CONTINUOUS.

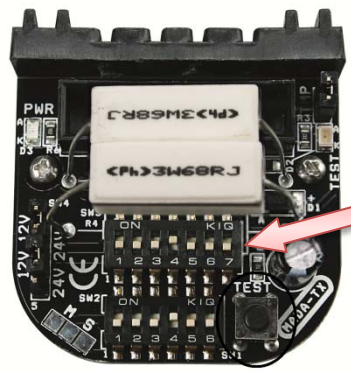


- 8) Exit the function of by repressing the ALIGNMENT TEST button for about 3 seconds on both optics (TX-RX) making sure that the orange LED TEST is shown in original condition.
- 9) When finished remove the shade disk that acts as a attenuator, having the certainty of having found the optimum value.



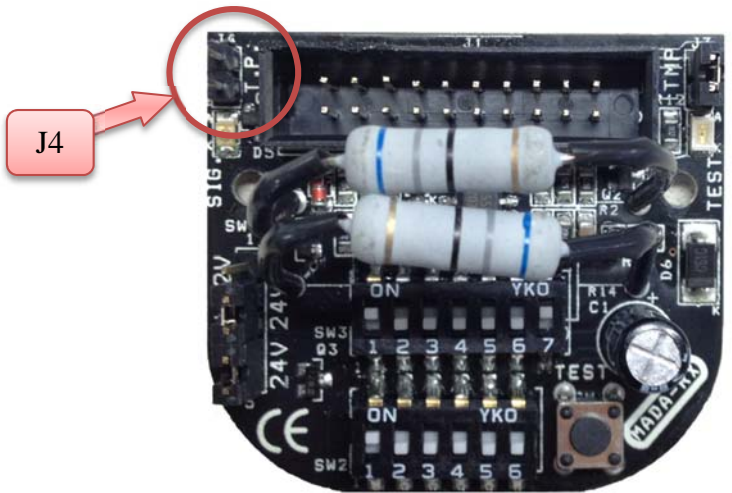
10) Set the DIP switch 7 to OFF to ALL OPTICAL if you want to turn off the LEDs.

DIP 7 OFF  
TO SWITCH  
OFF THE LED



DIP 7 OFF

**NB:** you can SEE the calibration value through the multimeter on each optical receiver. For this procedure, you must have the pair of lenses (TX-RX) in TEST.



J4

## 8 CALIBRATION WITH PARALLEL BEAMS

Put in test the optical TX1 and RX1 and proceed with the calibration as explained



Put in test the optical TX2 and RX2 and proceed with the calibration as explained

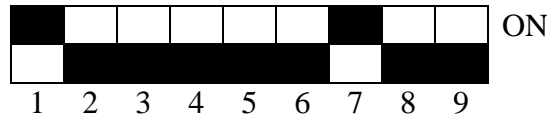


**N.B.:** during the testing phase of an optical transmitter the other TX not in test are switched off automatically.



## 9 CALIBRATION WITH CROSSED BEAMS

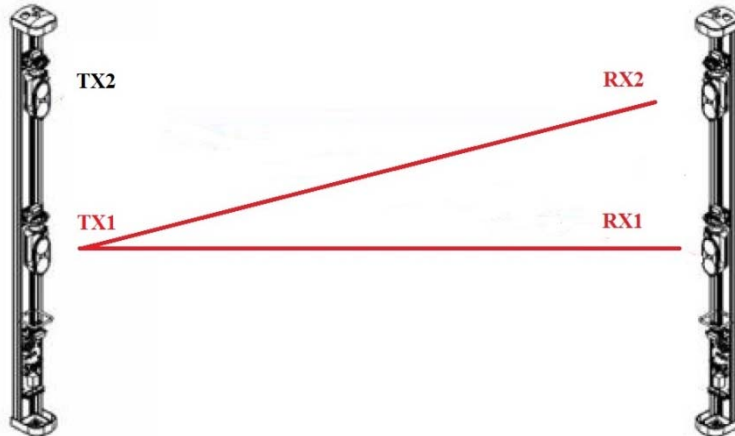
To activate the function move the DIP. 7 of RX DUAL ON



Effettuare l'allineamento mandando in test un'ottica alla volta.

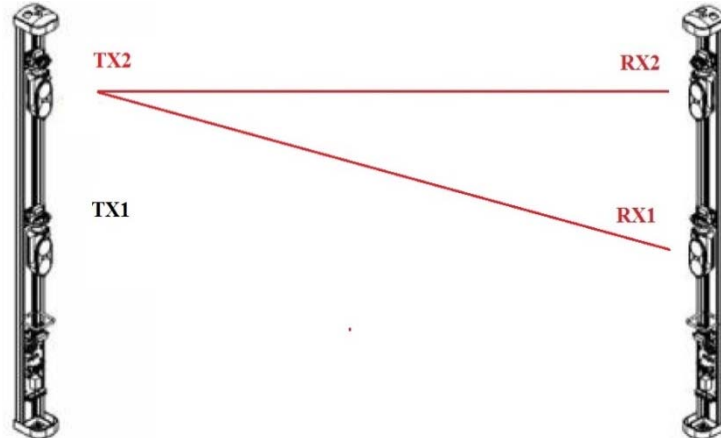
Put in test the optical TX1 and RX1 and proceed with the calibration as explained.

REPEAT the setting of RX2



Put in test the optical TX2 and RX1 and proceed with the calibration as explained.

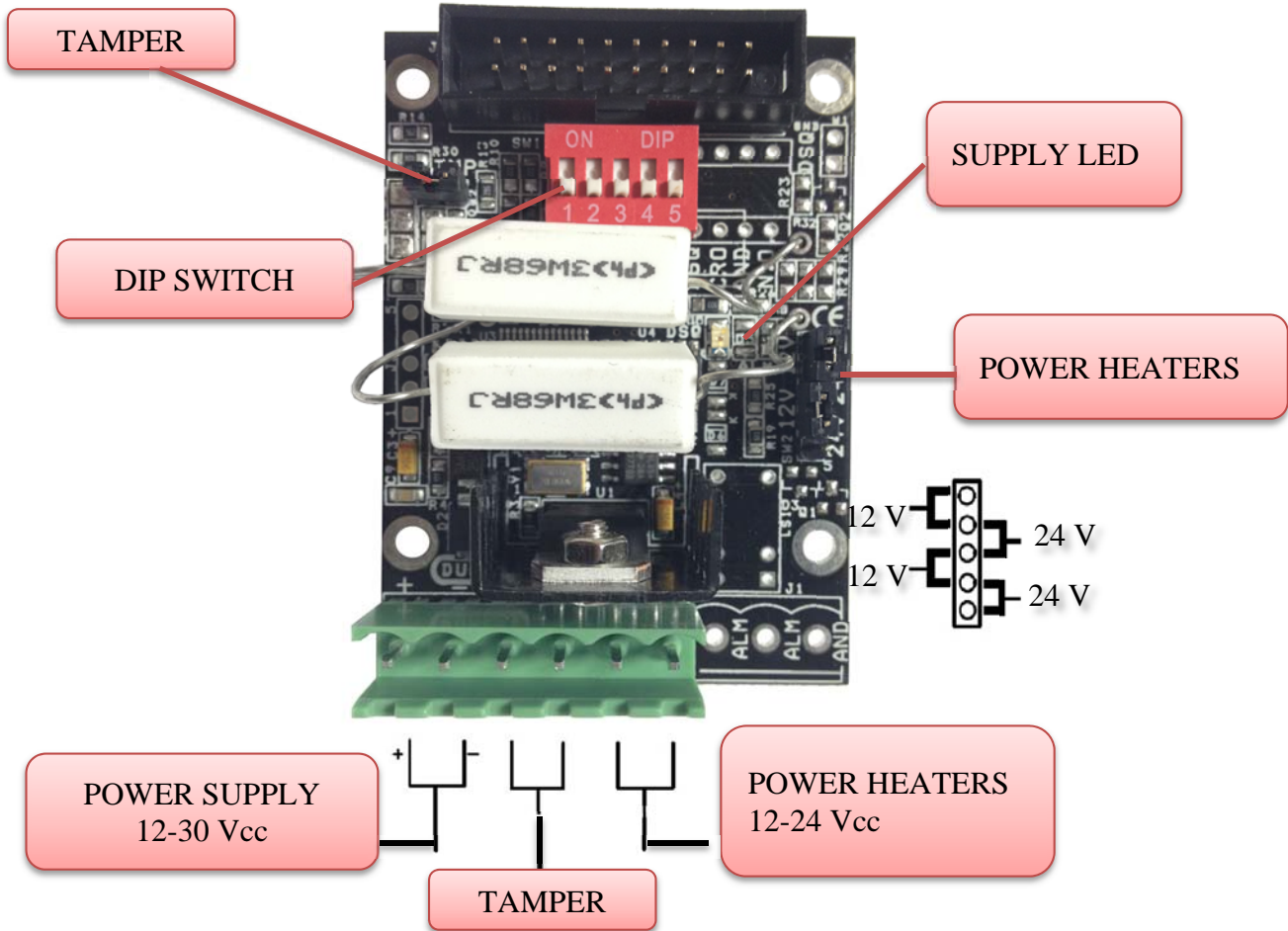
REPEAT the setting of RX2



Make sure that it still aligned with RX1

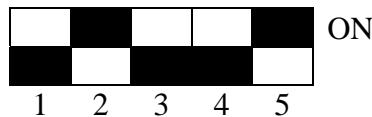


# 10 SETTING AND PROGRAMMING MOTHER BOARD TX



## CHARACTERISTICS AND DIP SWITCH SET

The system provides a single dip switch for the configuration of the transmitter, in particular, you can choose 4 different transmission channels. In addition there is the possibility to activate the single LED on the board flashes DUAL TX power of the barrier.



## CONNECTORS DESCRIPTION

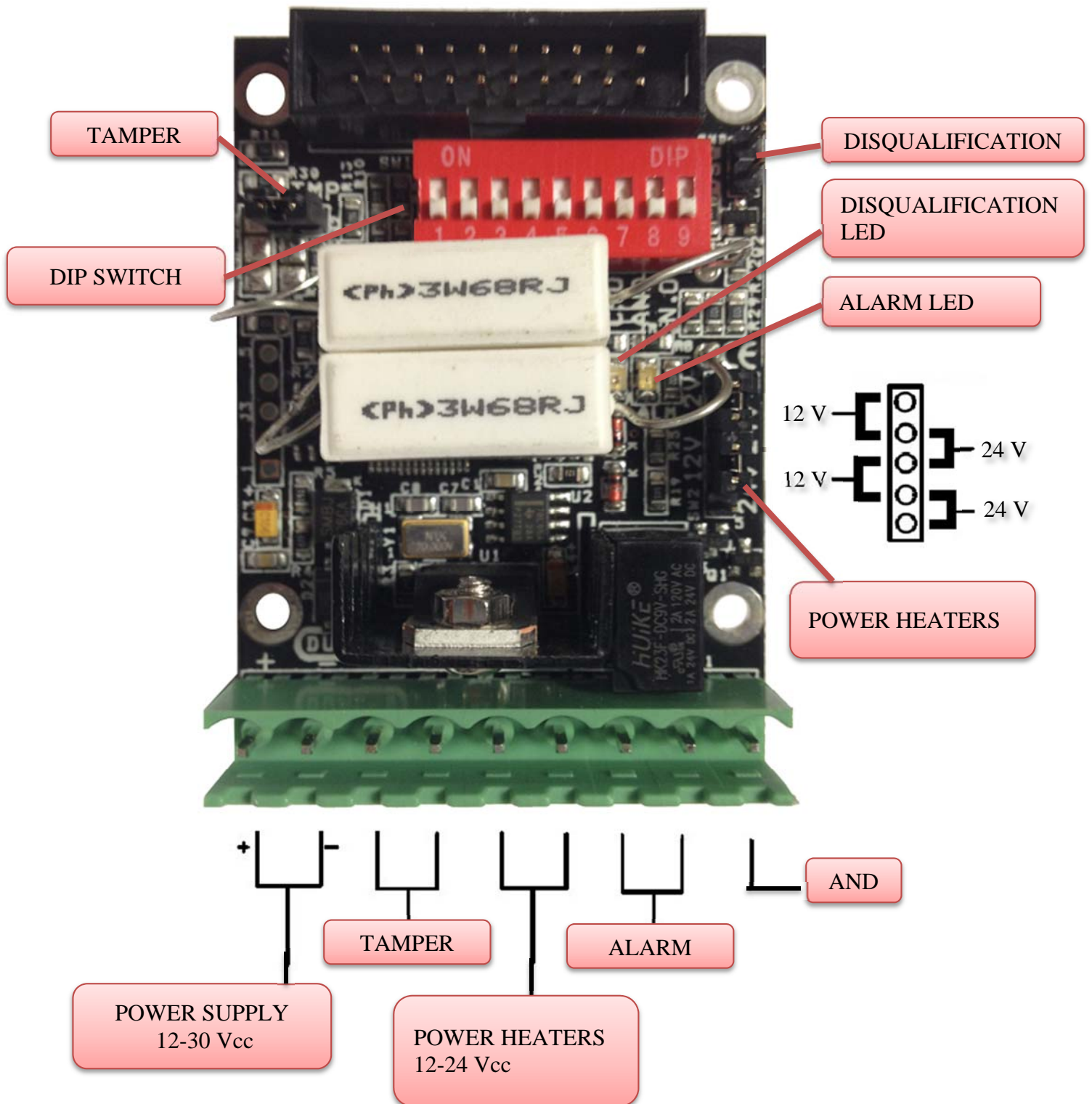
The connector has:

- Power supply: 10-30VDC;
- Tamper output;
- Power supply 12-24V AC-DC: For the heaters on board DUAL and optics. Depending on the type of power supply position the jumpers dedicated as in the figure;

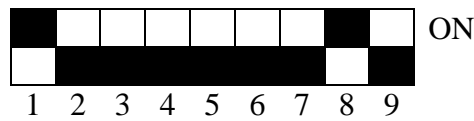
On the card is provided an input for the tamper. In case of absence of the latter close the entrance with a jumper.

**NB: This does not include the thermostat, you can use the accessory SANDOR TS which is a kit made for additional thermostat SANDOR DUAL.**

# 11 SETTING AND PROGRAMMING MOTHER BOARD RX



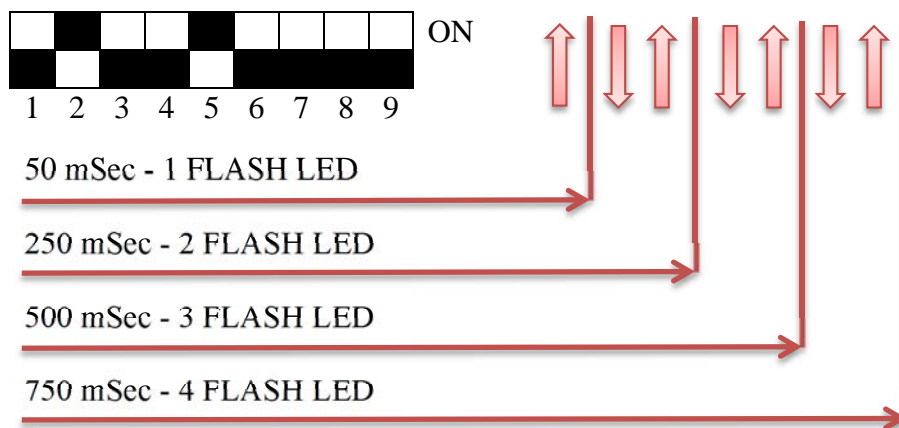
## DIP SWITCH DESCRIPTION



- |            |  |
|------------|--|
| <b>1-4</b> | it is possible to choose a single receiving channel (1 to 4). It will be the same as the column corresponding transmitter.                             |
| <b>5</b>   | You can enable or disable the LEDs on the card DUAL RX; LED alarm and disqualification.  |
| <b>6</b>   | Activation of disqualification which provides inhibition of the barrier in case of fog in a few seconds. It will be restored as soon as the fog lifts. |
| <b>7</b>   | Cross mode   |
| <b>8</b>   | Inserting the configuration AND, it provides the alarm of the barrier only in the case in which both optical receiving devices are obscured.           |
| <b>9</b>   | If placed in the ON position, the alarm relay will be in a position of NA Otherwise the relay will be in a position of NC                              |

## DELEY TIME

You can increase the delay time of the barrier lowering and raising the DIP selected transmission channel 1 once to set the delay time of 50 msec., 2 times for 250 msec., 3 times for 500 msec. and 4 times for 750 msec.; the selected setting is highlighted by the corresponding number of times the LED flashes orange.



## • LED DESCRIPTION

- **DISQUALIFICATION LED** (orange) indicates the status of the system in the area of disqualification cause fog. In this condition, the alarm relay is inhibited regardless of the alarm LED. During the lighting of the LED column disqualification flashes for a few seconds.
- **ALARM LED (red)**: shows the alarm status of the barrier.

## • CONNECTORS DESCRIPTION

- **Power supply:** 10-30Vcc;
- **Tamper output;**
- **Power heaters 12-24Vac-dc:** for the heaters on board DUAL and optics. Depending on the type of power supply position the jumpers dedicated as in figure;
- **Alarm output:** refers to the dedicated relay that can be in a state of NA or N.C. depending on the setting chosen;
- **AND remote:** applying a positive signal the system enters setup AND..

On the board is provided an input for the tamper. In case of absence of the latter close the entrance with a jumper.

There OPEN COLLECTOR output NEGATIVE for the disqualification by a dedicated connector.

**NB: This does not include the thermostatore, you can use the accessory SANDOR TS which is a kit made for additional thermostat SANDOR DUAL.**

## 12 TECHNICAL CHARACTERISTICS

MODEL	DUAL SMA	QUAD SMA	ESA SMA
<b>MAX RANGE INDOOR</b>		4500 m	
<b>MAX RANGE OUTDOOR</b>		120 m	
<b>MIN RANGE</b>		4 m	8 m
<b>COULOMN HEIGHT</b>	35 cm	1 m	1,5 m - 2,0 m
<b>SYNC</b>		optical	
<b>TOTAL RAYS</b>	4 cross	16 cross	36 cross
<b>SUPPLY</b>		12Vcc	
<b>POWER COMSUMPTION</b>	Tx 30 mA+Rx 60 mA	Tx 30 mA+Rx 50 mA	Tx 80 mA+Rx 80 mA
<b>HEATING</b>	10W + 10W 24Vca	20W +20W 24Vca termostated	30W+30W 24Vca termostated

**OPERATING TEMPERATURE -25° / +65°**  
**AVAILABLE KIT HEATERS FOR TEMPERATURES DOWN -50°C**

**ADJUSTMENT VERTICAL ANGLE 20°**

**ANDJUSTMENT HORIZONTAL ANGLE 180°**

**AND/OR SU Tx E Rx**

**AND REMOTE**

**USCITA TAMPER CONTATTO NC**

**OUTPUT DISQUALIFICATION OPEN COLLECTOR**

**IP 65**

**WALL MOUNTING**

**POLE MOUNTING**

**GUARANTY 2 YEARS**

## 8 F.A.Q.

### **NON RIESCO AD ALLINEARE**

- Verificare che non sono presenti ostacoli di nessun tipo interposti tra RX e TX e che la conformità del sito non rappresenti un impedimento;
- Verificare l'alimentazione sulla morsettiera;
- Utilizzare il cavo schermato per l'alimentazione collegando la calza alla massa (è consigliato, in caso di problema persistente, collegare allarme e alimentazione/tamper con due cavi schermati separati);
- Controllare il corretto dimensionamento dei cavi di alimentazione;
- Assicurarsi che non ci siano fonti di luce esterne che interferiscano con la corretta lettura del segnale (fotocellule dei cancelli, altre barriere, infrarossi,...);
- Se l'impianto utilizza un alimentatore switching sostituirlo con il corrispettivo lineare per reiettare disturbi elettrici proveniente dalla rete.

### **DOPO AVER ALLINEATO CON PRECISIONE IL SENSORE (LUCE DEL LED ACCESA FISSA E BIP CONTINUO) IL SISTEMA RIMANE IN ALLARME**

- Assicurarsi che i canali di trasmissione siano gli stessi;
- Verificare che non ci siano fonti di luce esterne che interferiscano con la corretta lettura del segnale (fotocellule dei cancelli, altre barriere, infrarossi,...);
- Utilizzare il cavo schermato per l'alimentazione collegando la calza alla massa (è consigliato, in caso di problema persistente, collegare allarme/tamper e alimentazione con due cavi schermati separati);
- Controllare il corretto dimensionamento dei cavi di alimentazione;
- Se l'impianto utilizza un alimentatore switching sostituirlo con il corrispettivo lineare per reiettare disturbi elettrici provenienti dalla rete.

**CON NEBBIA O PIOGGIA IL SISTEMA VA IN ALLARME**

- Assicurarsi che la funzione di disqualifica da nebbia sia attiva (vedi punto 11);
- Assicurarsi che la struttura sia ben sigillata e controllare che non siano già presenti all'interno (acqua, insetti,...);
- Verificare la precisione dell'allineamento ed eventualmente ri-effettuare la procedura compiendo uno scanning completo assicurandosi che non ci siano fonti di luce che possano influenzare la taratura;
- Per un allineamento più preciso posizionare un fianco della copertura della SANDOR davanti alle lenti in modo da avere due superfici interposte tra TX e RX per raddoppiare l'attenuazione del fascio;
- Per grandi distanze è consigliato l'utilizzo del termostato esterno aggiuntivo garantendo un'alimentazione sufficiente.

**FALSI ALLARMI RIPETUTI**

- Se sono causati dal passaggio di animali, utilizzare le funzioni **AND** (vedi punto 11);
- Utilizzare il cavo schermato per l'alimentazione collegando la calza alla massa (è consigliato, in caso di problema persistente, collegare allarme/tamper e alimentazione con due cavi schermati separati);
- Controllare il corretto dimensionamento dei cavi di alimentazione;
- Se l'impianto utilizza un alimentatore switching sostituirlo con il corrispettivo lineare per reiettare disturbi elettrici provenienti dalla rete.