



PARVIS MES SMA

Anti-intrusion invisible system

*SMA Technology
RS485 connection*

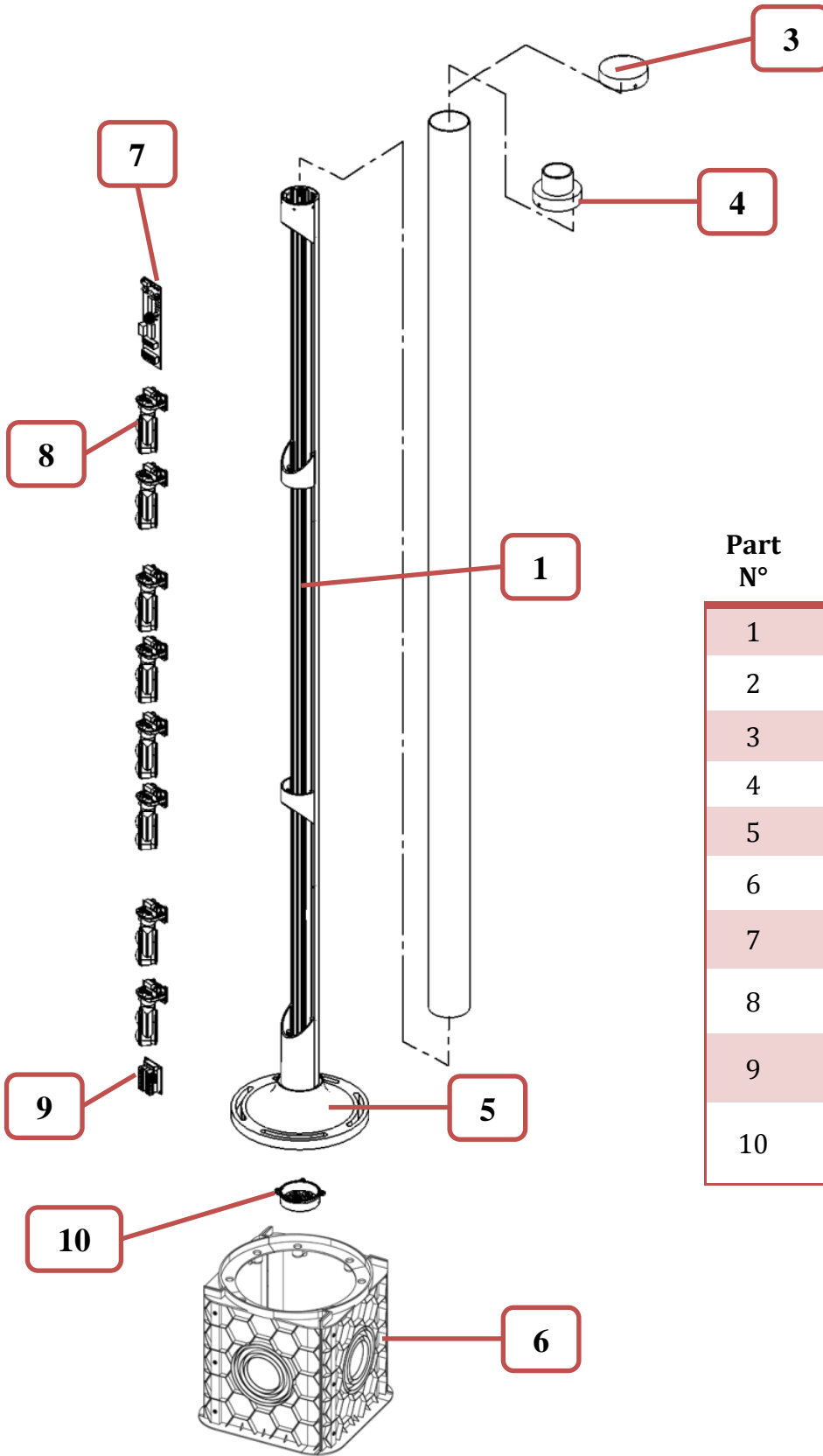
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Installation recommendation

- *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.*

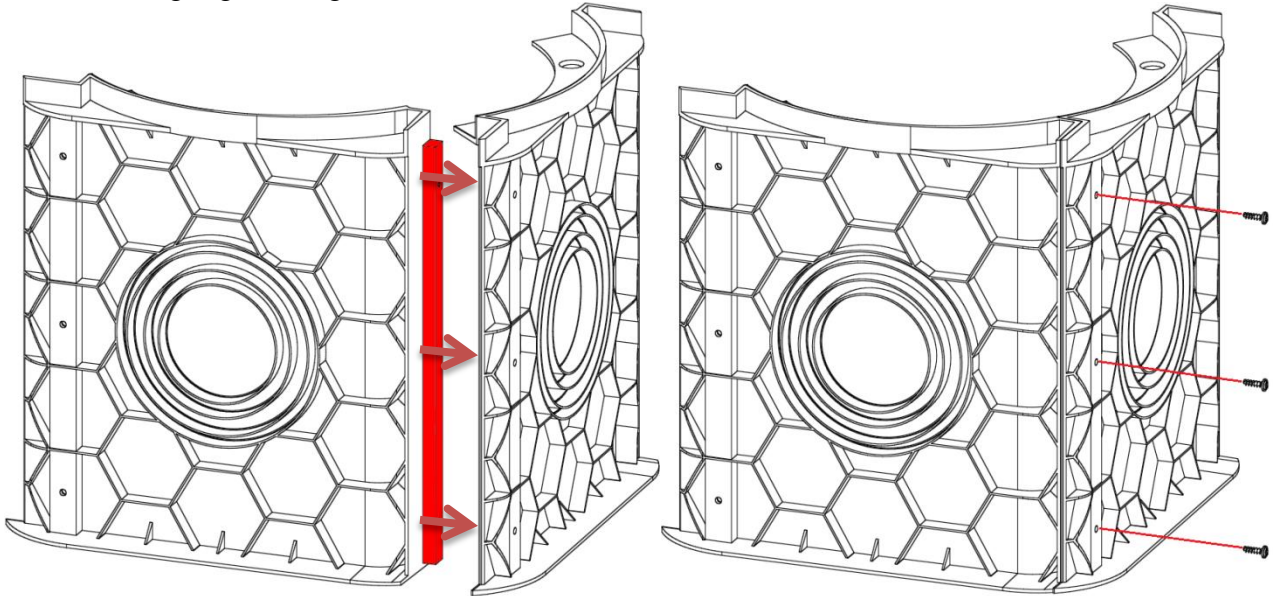
1. MAIN COMPONENT LIST



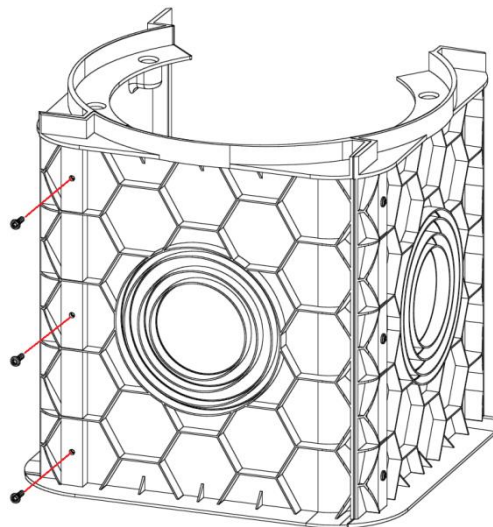
Part N°	Descriptions
1	Aluminum profile
2	IR tube
3	Top cap
4	Lamp adapter cap
5	Base
6	Cable pit
7	Motherboard
8	Optics receiver/transmitter
9	Terminal block
10	Base cap (with cable glands)

2. ASSEMBLING THE CABLEPIT

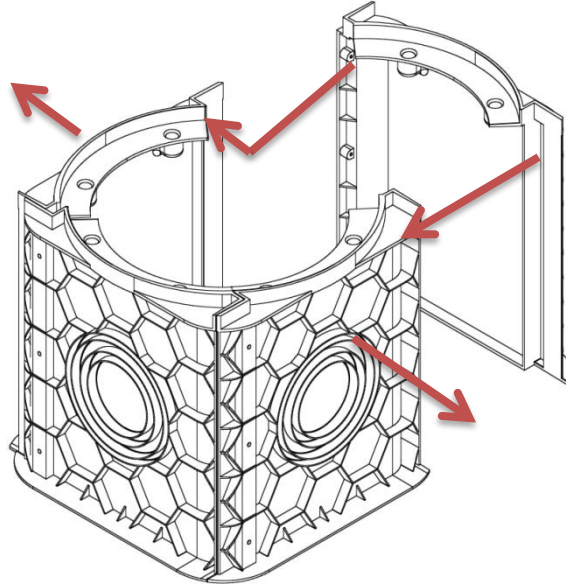
1. Insert the highlighted edge into other section and fix with screws



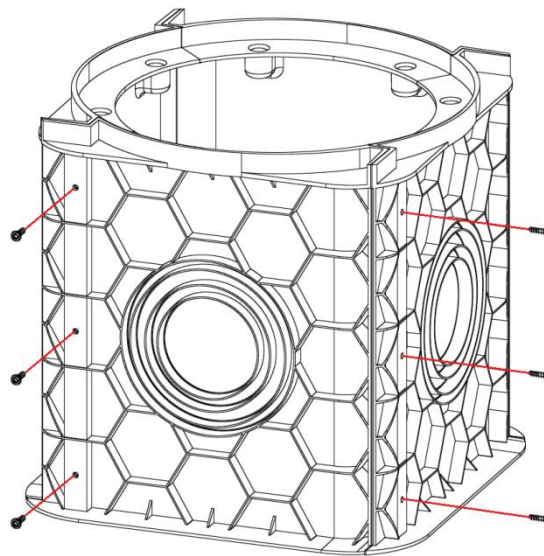
2. Insert the third section in the same way and fix with screws.



3. Enlarge the two opposite walls of cable pit to allow the positioning of last section.

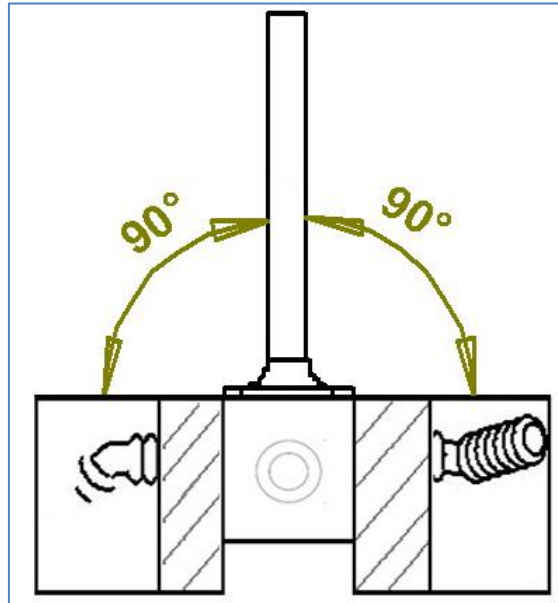


4. Insert and well fix the missing screws.



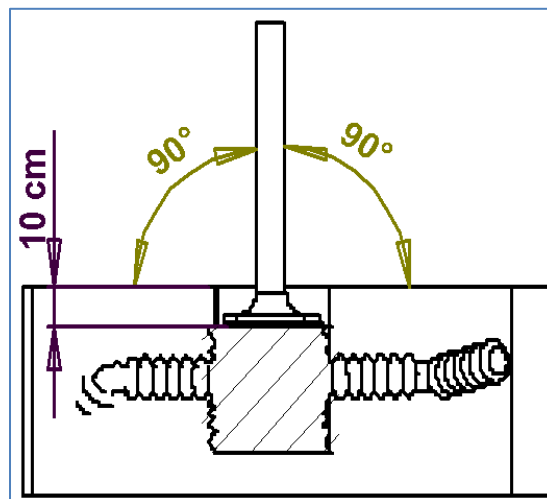
2.1. CABLE PIT POSITIONING

The placement of the cable pit for PARVIS columns, after assembling, have to be done in the following way: cement all around the cable pit keeping the top edge of it at same level of ground.



For PARVIS columns is also possible to keep the top edge ten centimeters below the level of the ground so that it is visible only the IR tube.

This type of placement is possible only when the cable pit is fixed into the ground and not in a concrete pavement.

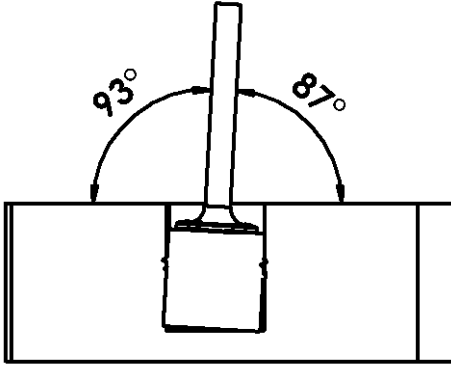


POSSIBLE CORRECTION OF THE INCORRECT POSITIONING

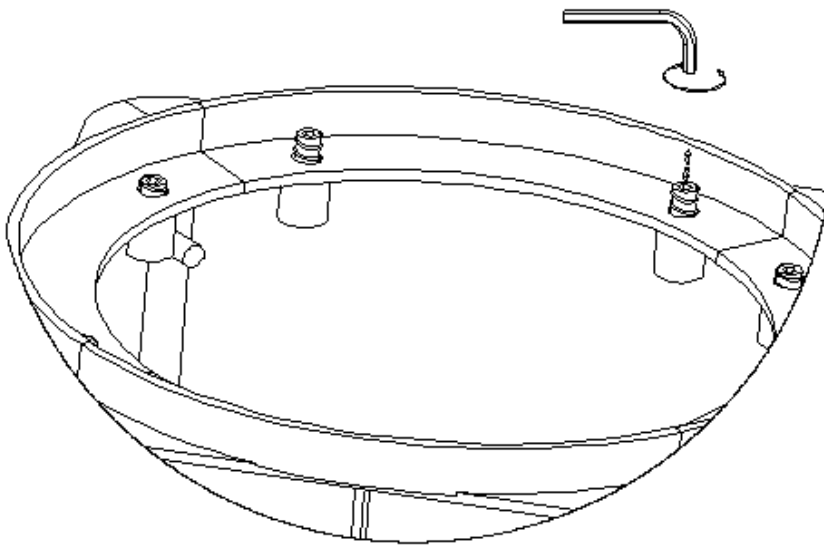
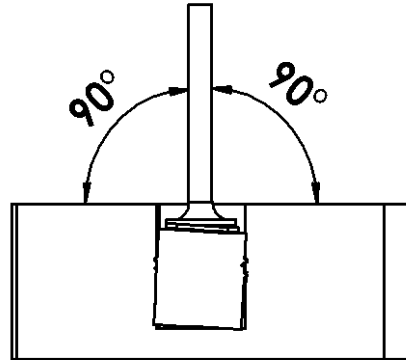
Placement should be perpendicular to the ground. If the base is not perfectly at ground level, is possible to adjust it through the insert regulation of cable pit.

On the side that must be corrected loosen the insert in order to get the right inclination.

WRONG POSITIONING



CORRECT POSITIONING BY
ADJUSTING INSERTS

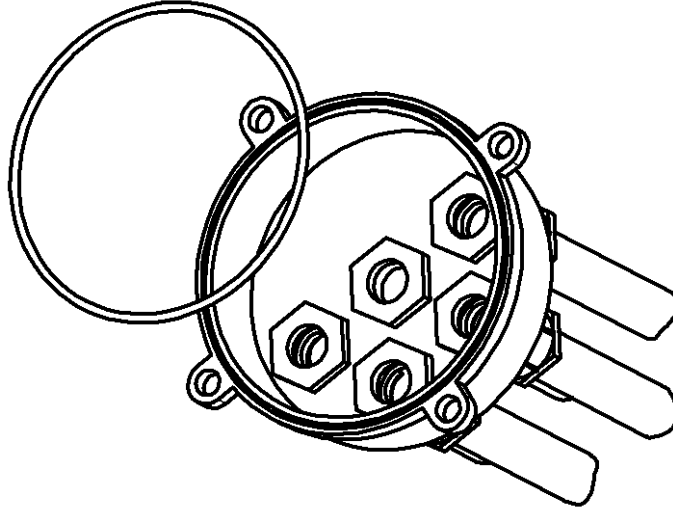


EXAMPLE OF
SETTING

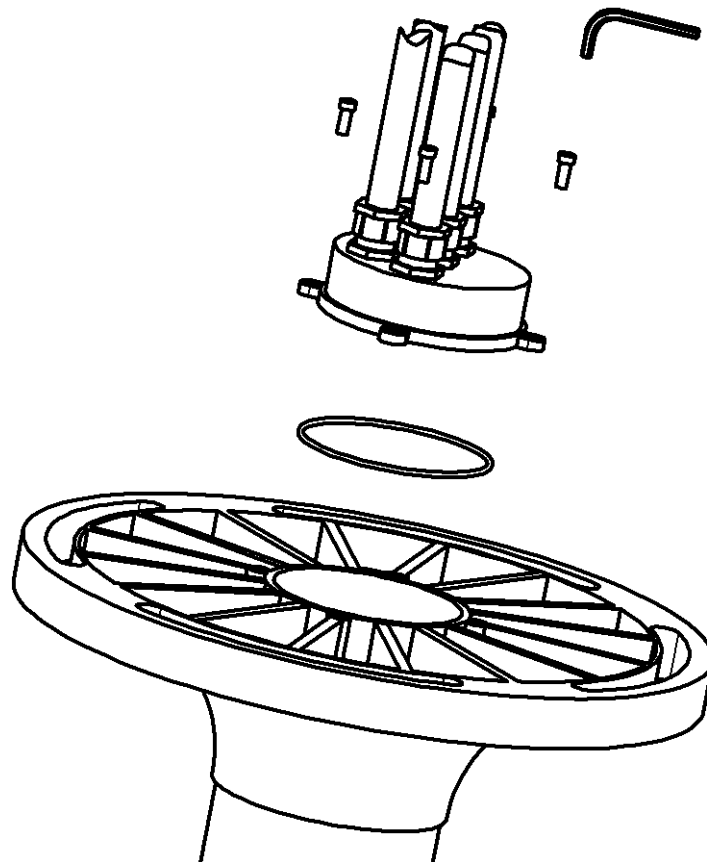
3. BASE INSTALLATION ON CABLE PIT

Ensure that all the cables to and from the PARVIS tower passes through the supplied cable glands inserted into the base cap. Use the central cable gland for lightning cable.

Base cover with the cable glands and O-ring

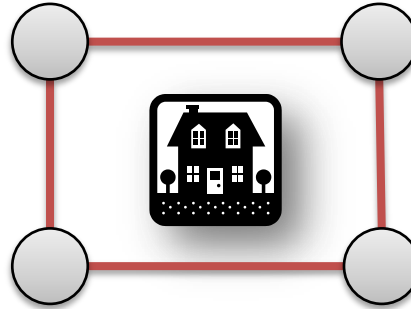


Once the cabling is completed the base cap has to be fixed to the base with relative O-ring.



4. INSTALLATION EXAMPLES

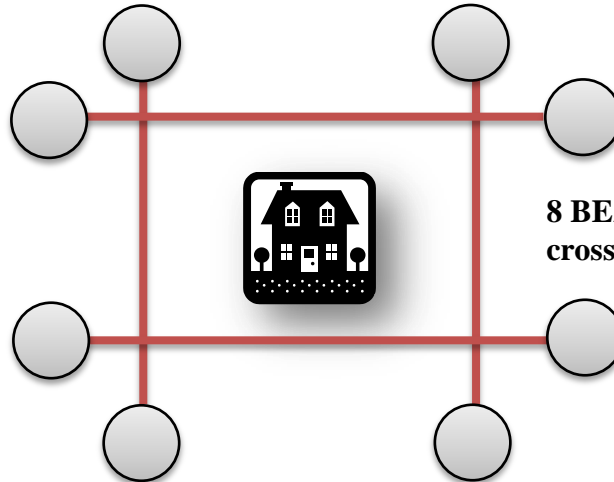
To realize a perimeter protection dispose the towers as below:



4 BEAMS
simple barrier



8 BEAMS
single barrier



8 BEAMS
crossed barrier

Note: if you use the optical sync do not place multiple transmitters on the same line in the same direction

5. 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.

Note: is absolutely necessary to shield the cable that provides 12 Vdc power supply and put the metal braid to ground.



The cable dimension depends on the columns consumption and on the same cable resistance, taking care about installation distances.

In the below table are shown the best cable section for relative distance for which are warranted optimal performances using the LAR22 power supply (12Vcc-2,5A / 24Vac-300W) and one column PARVIS MES SMA (4TX + 4RX).

CABLE SECTION	COMMON BOARDS SUPPLY 12Vdc	COMMON HEATHER SUPPLY 24Vac
0,5 mm ²	165 m	35 m
0,75 mm ²	245 m	50 m
1,5 mm ²	490 m	100 m
2,5 mm ²	820 m	165 m
4 mm ²	1310 m	265 m
6 mm ²	1975 m	400 m

The LAR 22 is able to furnish supplying up to 4 columns (at max configuration 4TX+4RX).

Since the LAR 22 box metallic, it must be installed inside or insert in a supplementary case with an built in IP grade usable for external installation.

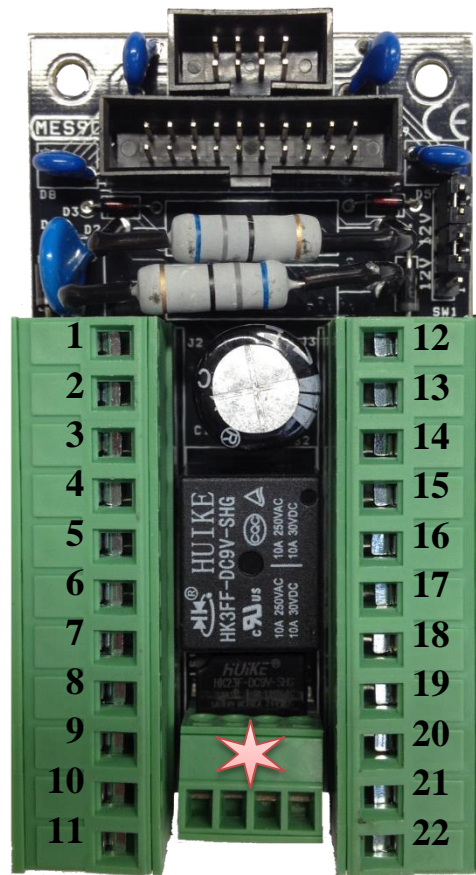
In the box can be placed a battery up to 18Ah.

It is also possible to use the LAR 18 power supply (12Vcc-0,9A / 24Vac-60W) able to supply one single tower (at max configuration 4TX+4RX).

This supplying unit is enclosed in a PVC box with a built in grade protection IP68.

This power supply can also be twinned to LARB4 battery enclosed as well in a waterproof box.

5.1. CONNECTION TO TERMINAL BLOCK (MES9C)

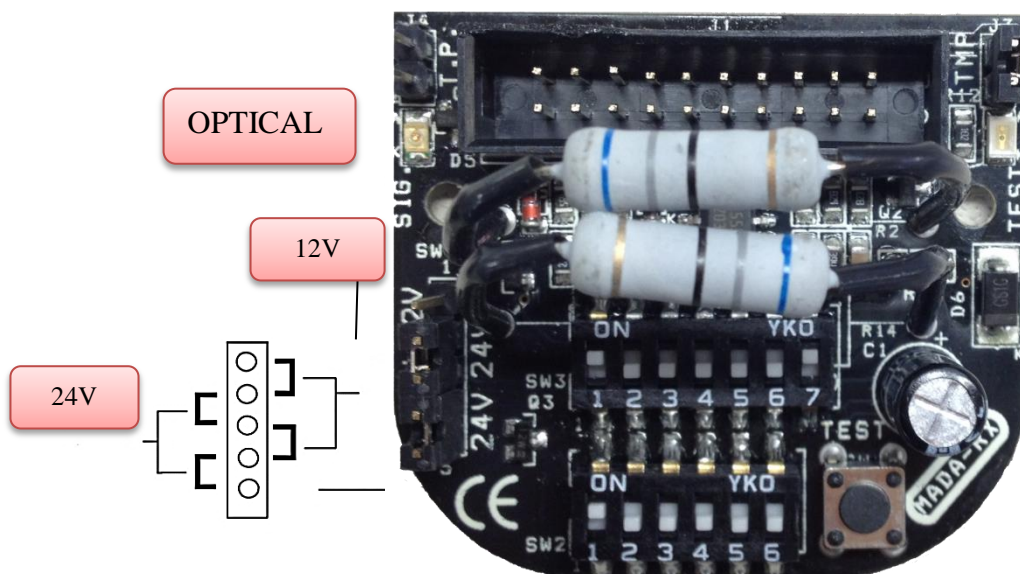
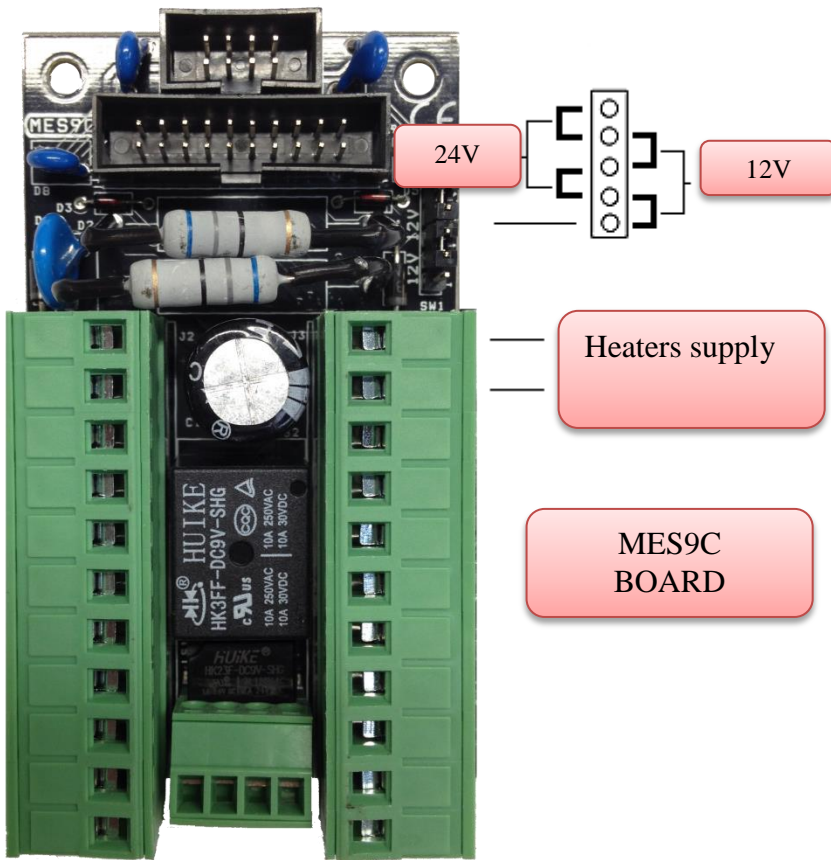


★ Serial connection
ADEBUS (pag. 11)
(pag. 12)

Positive supply	+10 - 30Vdc	1	12	12/24 Vac-cc	Heaters supply
Negative supply	GND	2	13	12/24 Vac-cc	Heaters supply
Tamper output	TMP	3	14	G.IN	Negative input to exclude the barrier for 1 minute
Tamper output	TMP	4	15	AND	+12 Vdc to have AND RX1+RX2
Alarm output (NO)	NA	5	16	BEAM	0V to AND RANDOM
Alarm output (NC)	NC	6	17	S.LOW	+12 Vcc - exclude RX1
Alarm output (C)	COM	7	18	A.MASK	0 V - exclude RX1+RX2
Positive sync input (TX=>RX)	+ S IN	8	19	+ S OUT	NEGATIVE OPEN COLLECTOR
Negative sync input (TX=>RX)	- S IN	9	20	- S OUT	open in case of fog
Not in use		10	21		NEGATIVE OPEN COLLECTOR
Not in use		11	22		open in case of masking

5.2. CONNECTION AND SETTINGS HEATERS

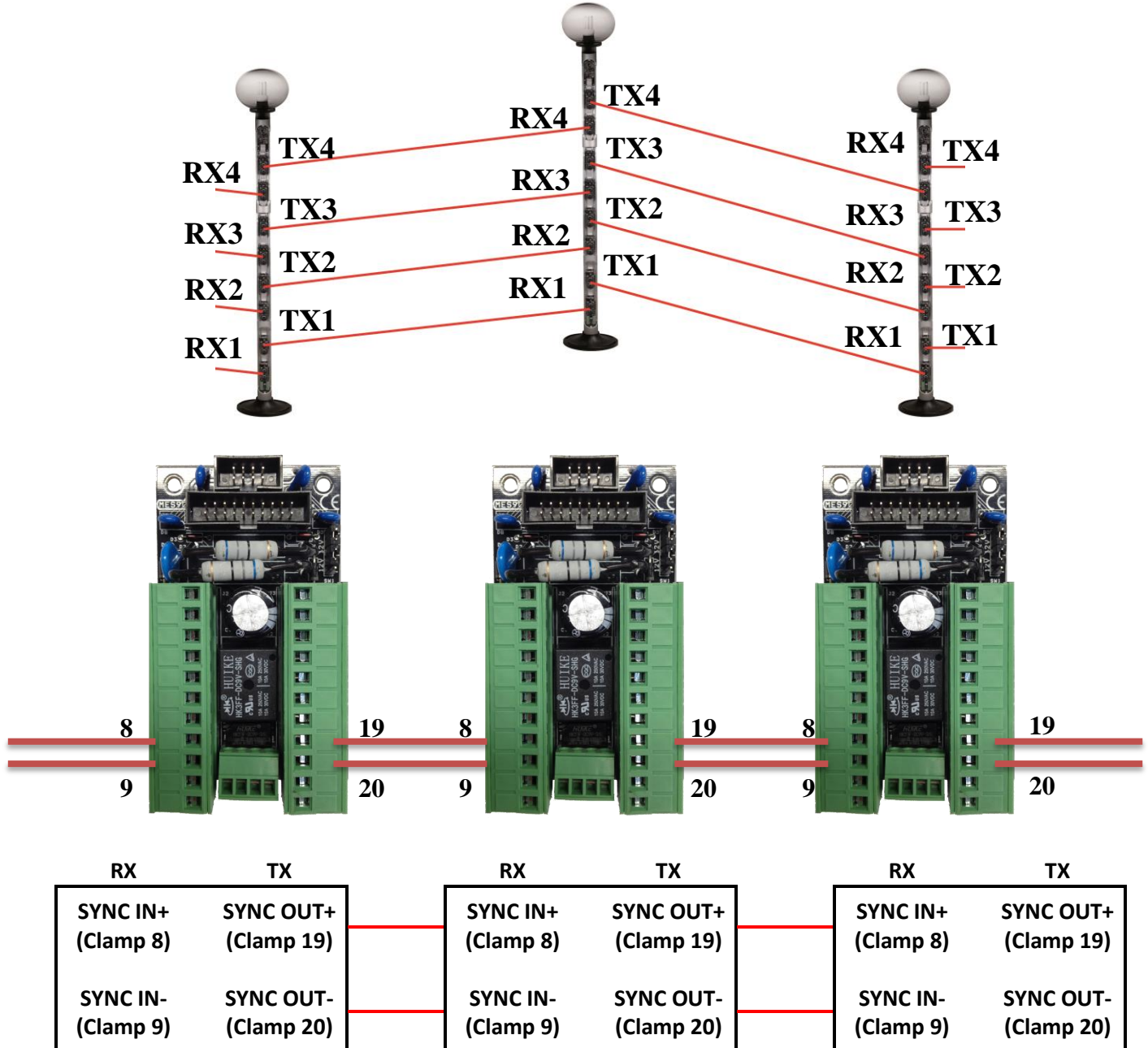
The power of the heaters is by default set to 24 V (ac or dc), but you can set it to 12 VDC repositioning the jumper on MES9C and on each optical as shown.



5.3. SYNCHRONIZATION

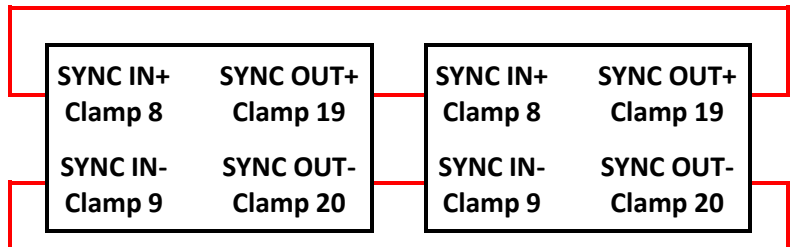
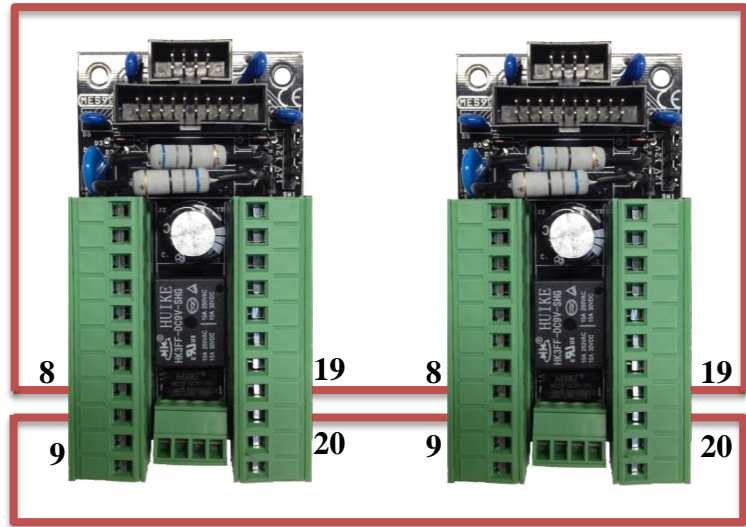
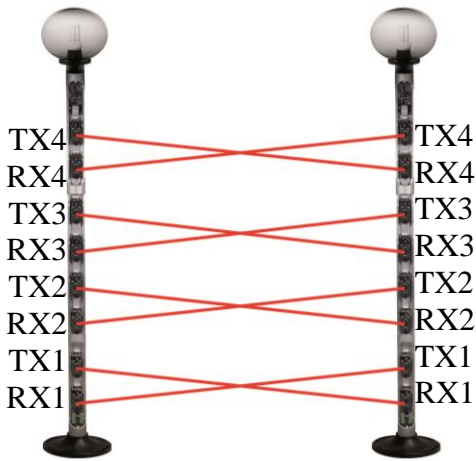
5.3.1. Wired SYNC

Disposition of TX and RX and relative synchronization.

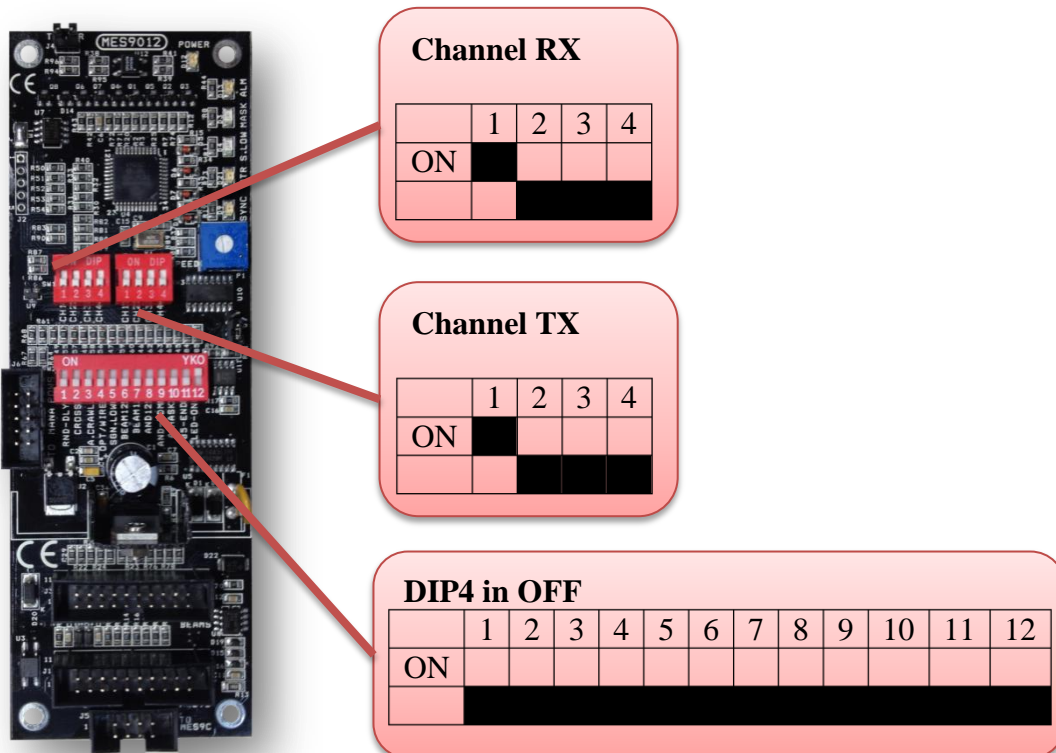


The synchronisms have to be connected according to the diagram above, the **Sync out** corresponds to the TX part of the column and will have to be connected to the **Sync in** on the RX opposite one. You must also connect the negative of power supply in common between the columns; so it is appropriate to use a shielded cable alarm, 2x0, 22, to connect the sync and the screens to negative Vdc of power supply on both columns.

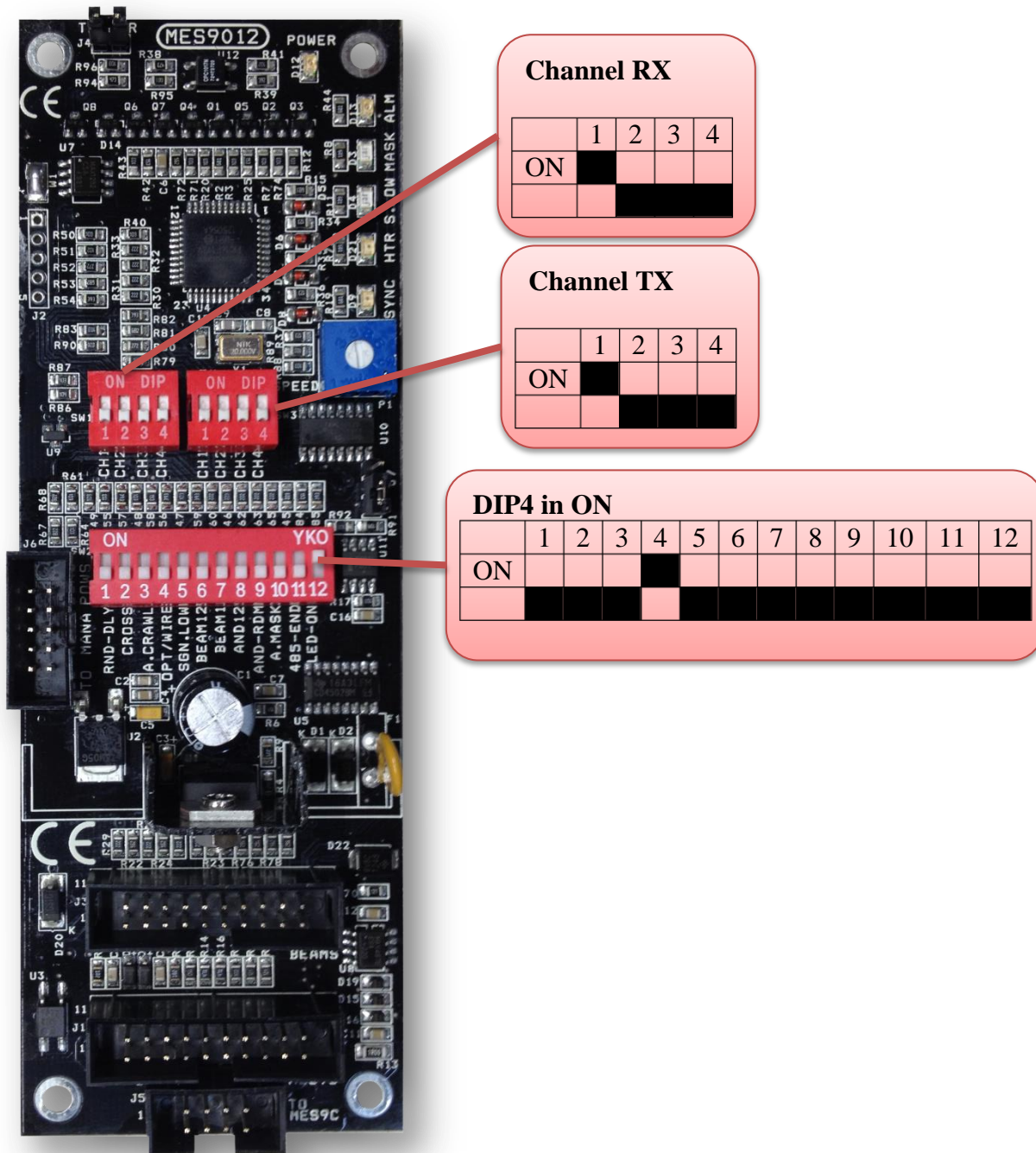
Single barrier cablings.



Note: SYNC OUT- and SYNC IN - should not be connected to ground but to the dedicated clamp (terminal numbers are related to the image of p. 11).



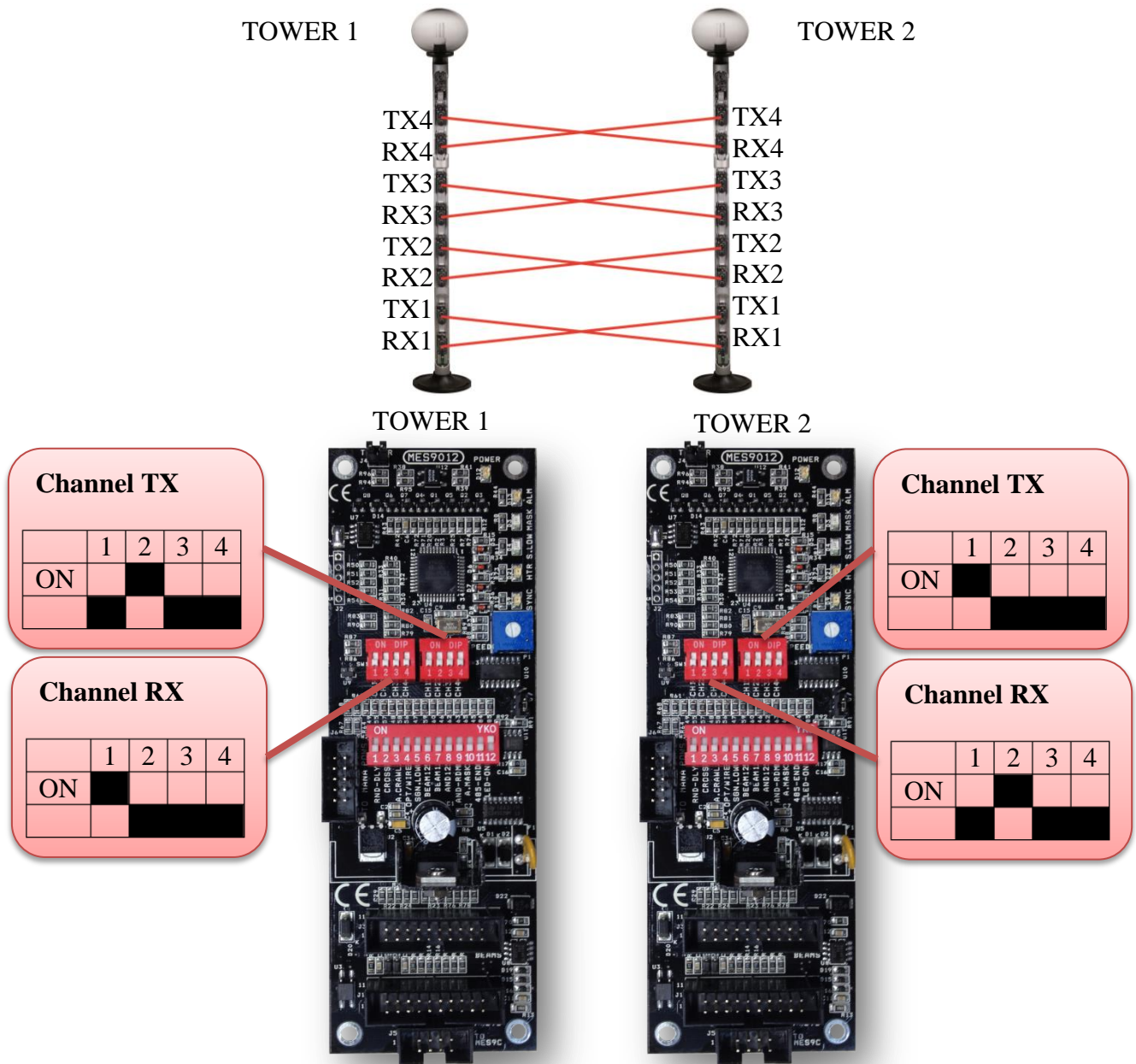
5.3.2. Optical SYNC



Position in ON DIP 4 on the bench of 12 and select the transmission channel 1 to 3 (default is set to channel 1), on the bench of 4; the selected channel must be the same on both TX and RX boards.

Note: for information and for other configuration of MES9012, please check page 27.

In the case of single barrier set the RX channel different than TX channel

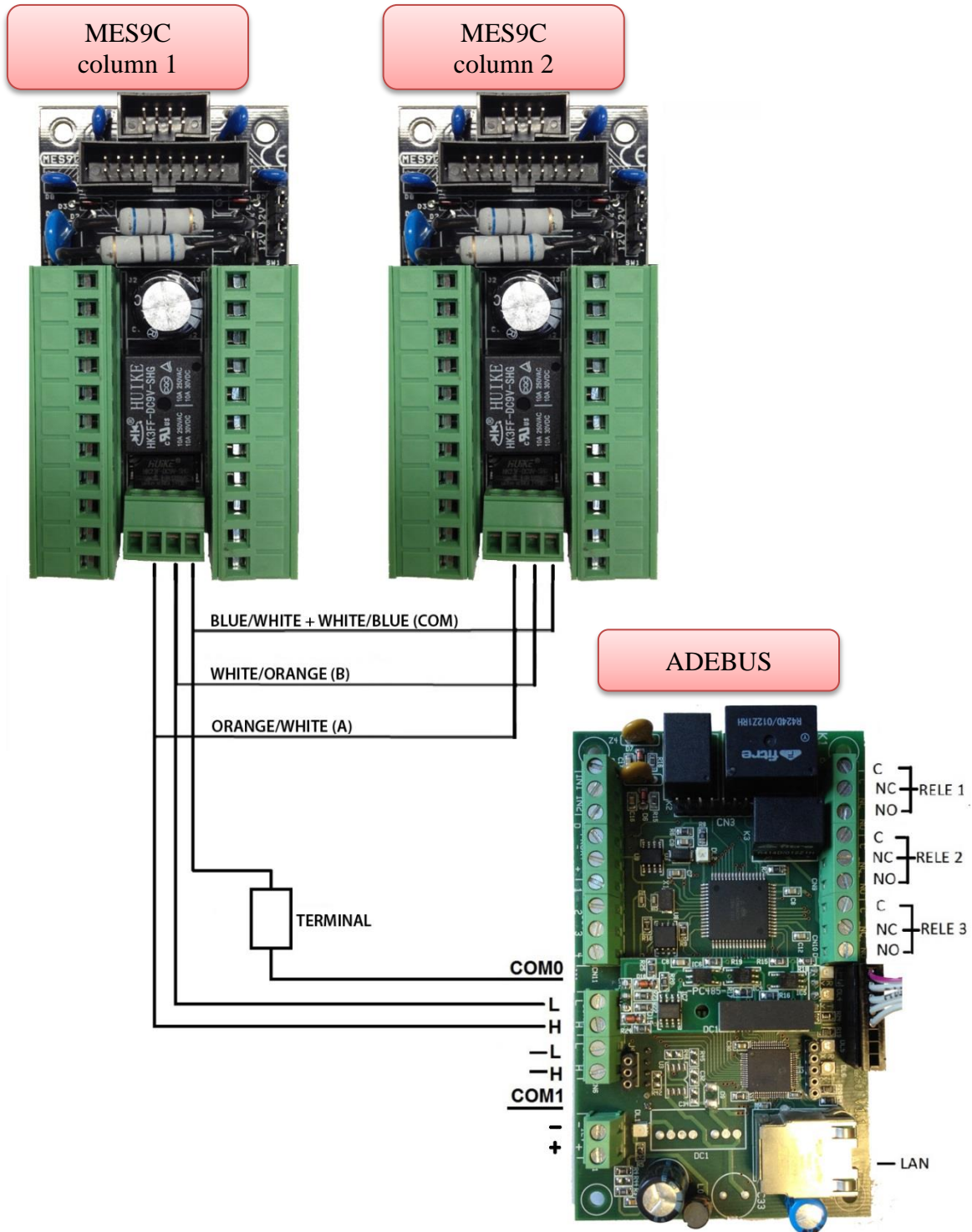


5.4. SERIAL CONNECTION TO ADEBUS

Each column can be connected via the RS485 bus to the control panel ADEBUS for planning, monitoring and managing local or remote system.

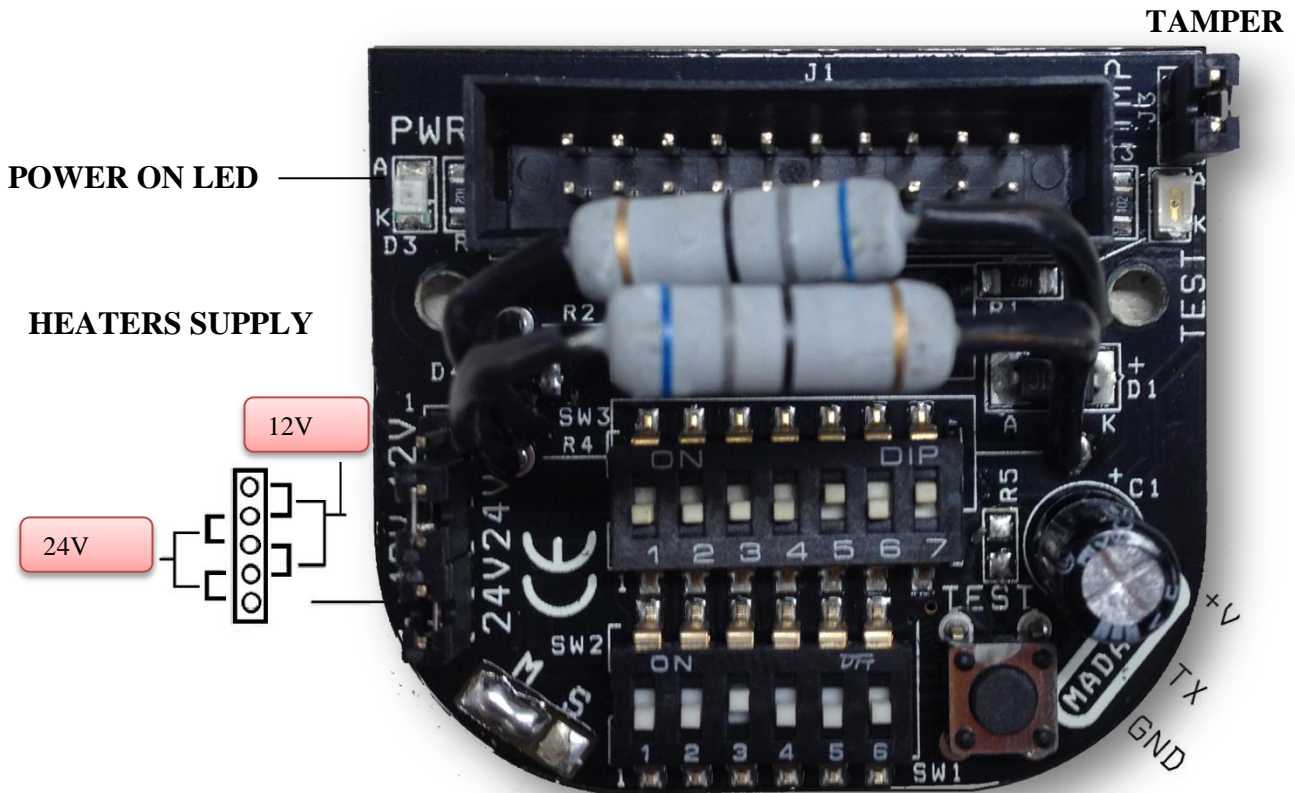
For more information, refer to "Manual ADEBUS EXPLORER"

5.4.1. Connection to serial port for each column

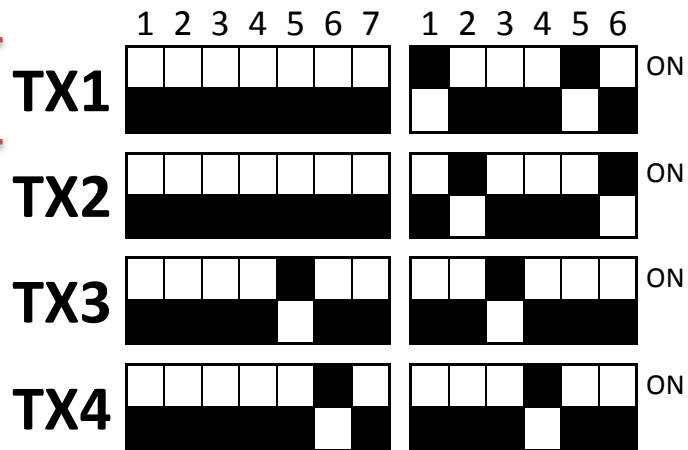


6. OPTICS CONFIGURATION

6.1. OPTICAL TX



TX1: Not in use in the case of column with 3TX

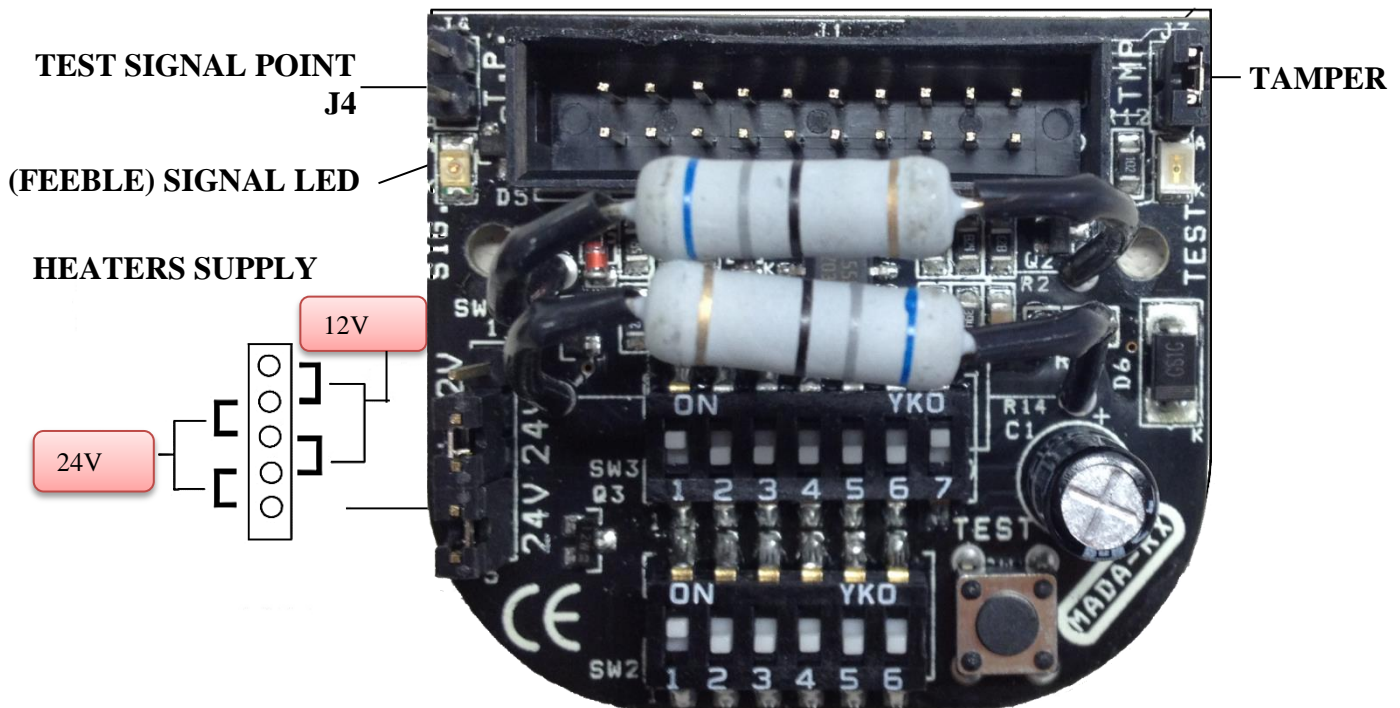


TX1 and TX2: Not in use in the case of column with 2TX

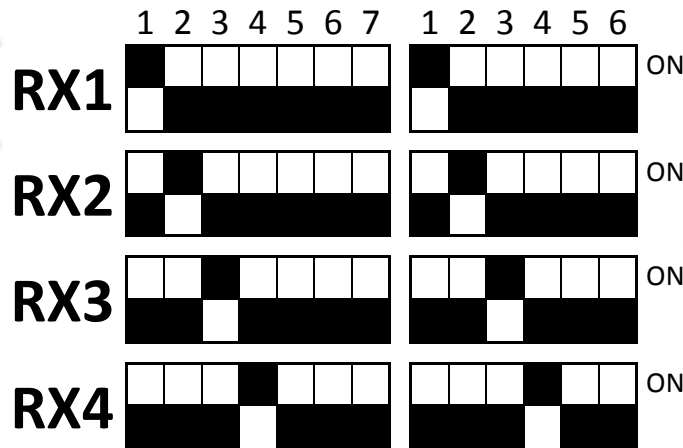
Through DIP 7 in ON (as default) and lighted LED POWER is occur the correct operation of TX optics. The power of the heaters is set by default to 24V; you can use 12V by changing the configuration of the jumper (SW4). The voltage can be both AC and DC.

Note: The settings and relative addresses are already set by Default.

6.2. OPTICAL RX



RX1: Not in use in the case of column with 3RX



RX1 and RX2: Not in use in the case of column with 2RX

Through DIP 7 in ON (as default) and lighted LED POWER is occur the correct operation of RX optics.
The power of the heaters is set by default to 24V; you can use 12V by changing the configuration of the jumper (SW4).
The voltage can be both AC and DC.

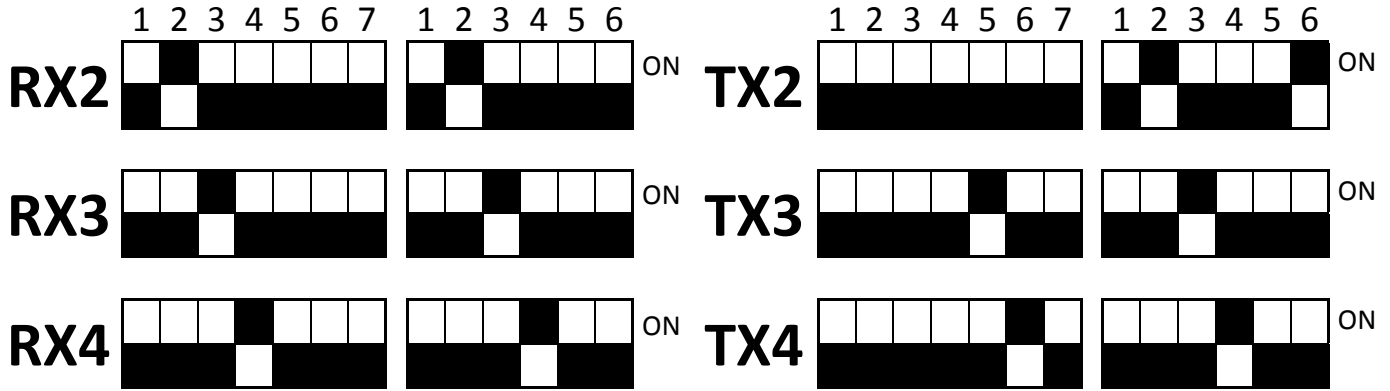
In jumper J4 is possible to read the signal value in volts.

Note: The settings relating to addresses are already set to Default.

Default barriers with 2 or 3 RX are set during testing in the factory. In case you want to change the original number of RX optics in the field it is necessary to set the DIP SWITCH six and seven as follows:

6.3. 3 TX/RX SETTINGS

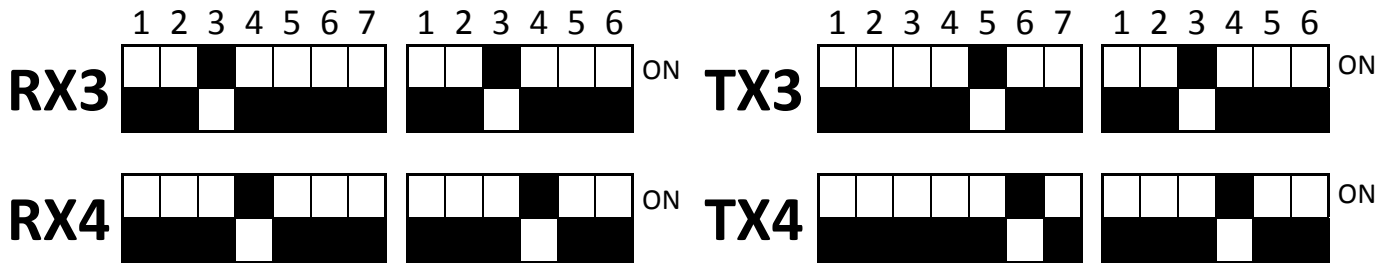
The setting of the DIP SWITCHES on the lenses is set:



It should be set to ON the DIP on the motherboard RX exclusion 1

6.4. 2 TX/RX SETTINGS

The setting of the DIP SWITCHES on the lenses is set:

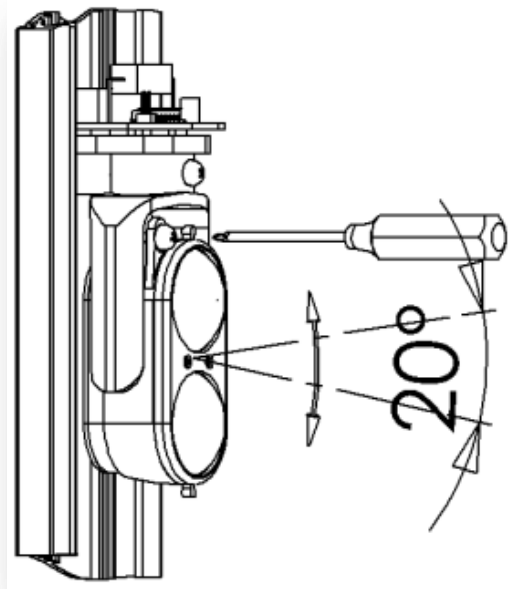


It should be set to ON the DIP on the motherboard RX exclusion 1 + 2

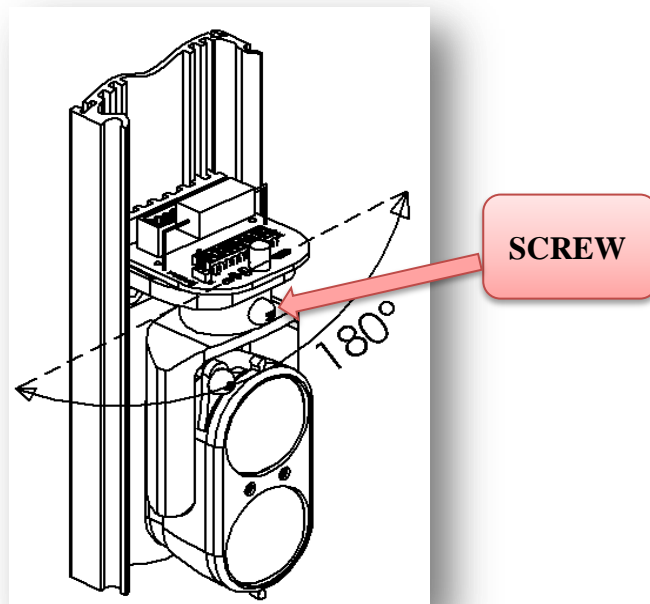
7. COLUMN ALIGNEMENT

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



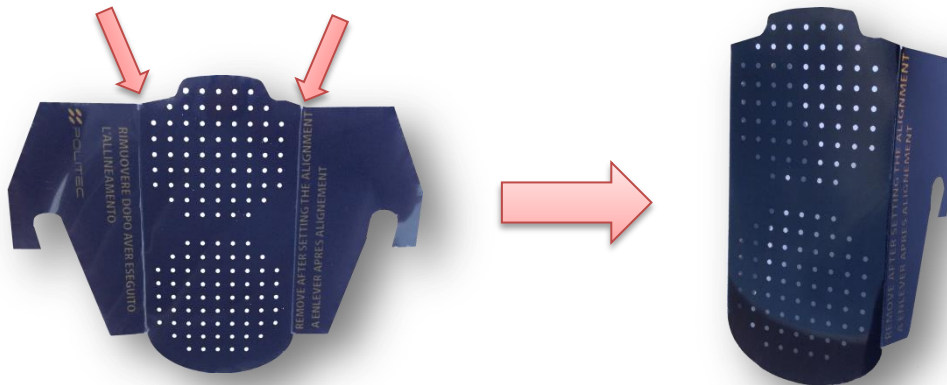
N.B.: FASTEN THE UNLOCKED SCREW AFTER THE ADJUSTMENT

8. CALIBRATION THROUGH SMA SYSTEM

It is possible to improve the alignment using the trough the filter provided



1) Fold the filter along the preset line.

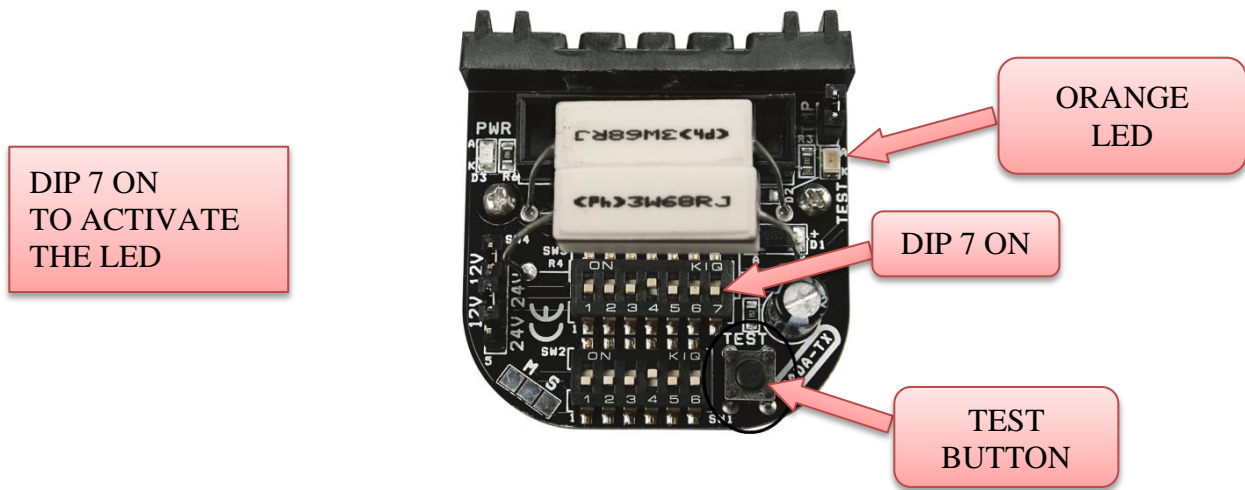


2) Place the filter in front of the optics TX, hooking it to the fork, to improve the effectively search of alignment signal in critical conditions.

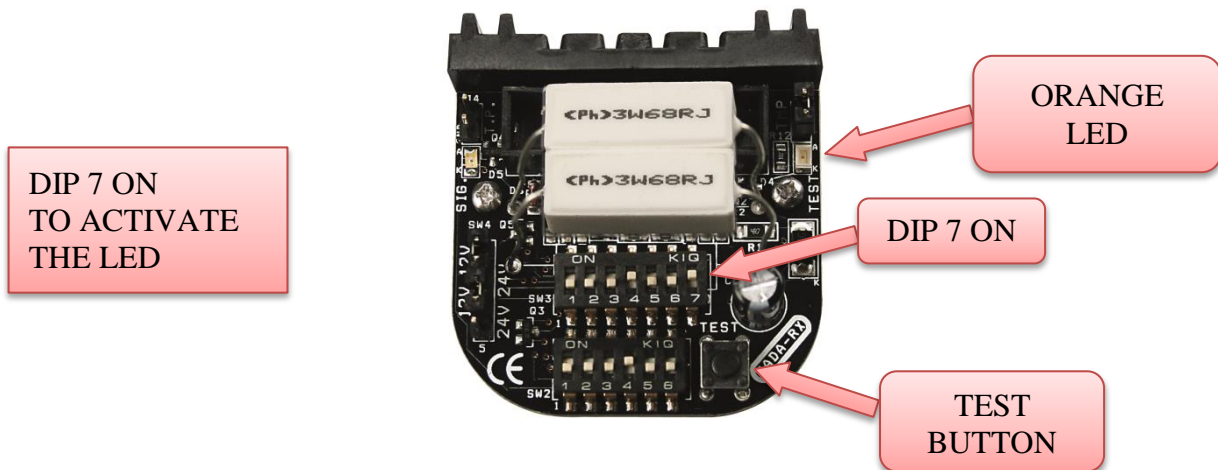


It is enough to apply the filter on TX optic, do not repeat the operation on RX.

- 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.



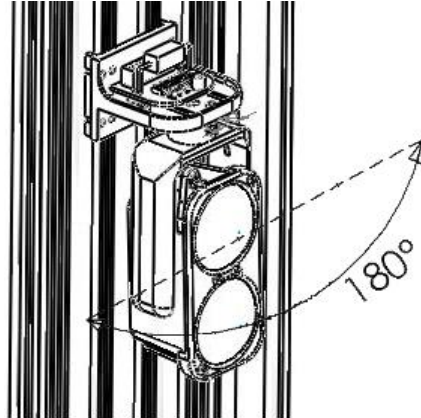
- 4) Place in the corresponding optical TEST (1 or 2 or 3 or 4) on coral receiver, checking the position of the DIP switch 7 to ON and pressing the dedicated button for 3 seconds until the the BUZZER and the LED TEST turns ON, (with high brightness)



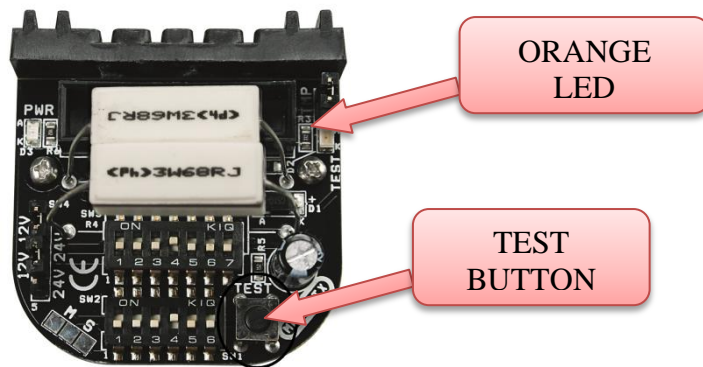
- 5) Through the TRANSMITTER lens shifts, find the maximum optical alignment based on the Buzzer and LEDs (with high brightness), the increase in the frequency of flashing (until the LEDs is fix on and the whistle of the corresponding BUZZER) indicate a better ALIGNMENT.



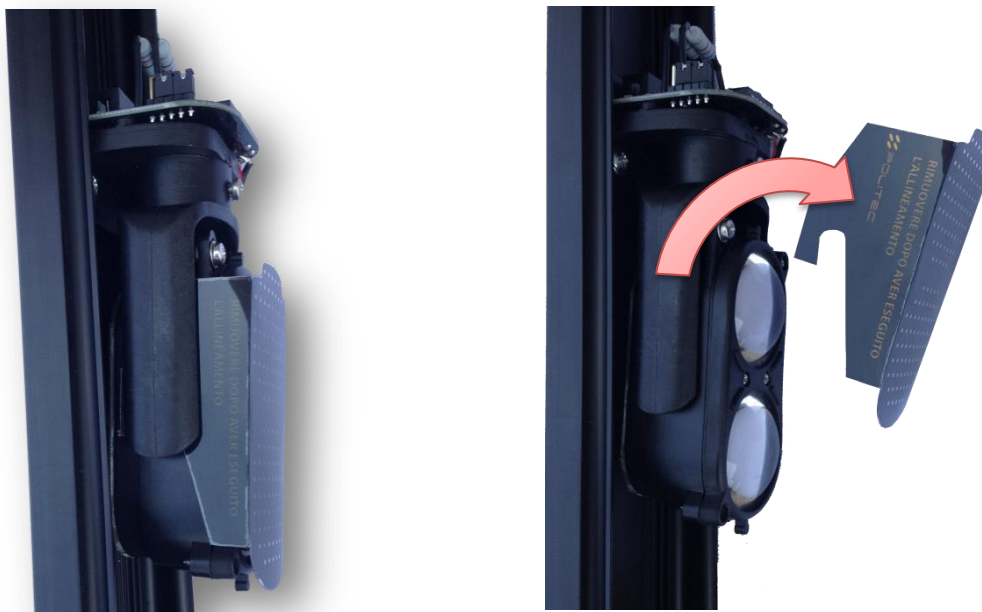
- 6) With a FULL rotation on the horizontal RX lens, is carried out the SCANNING of the optical signal.



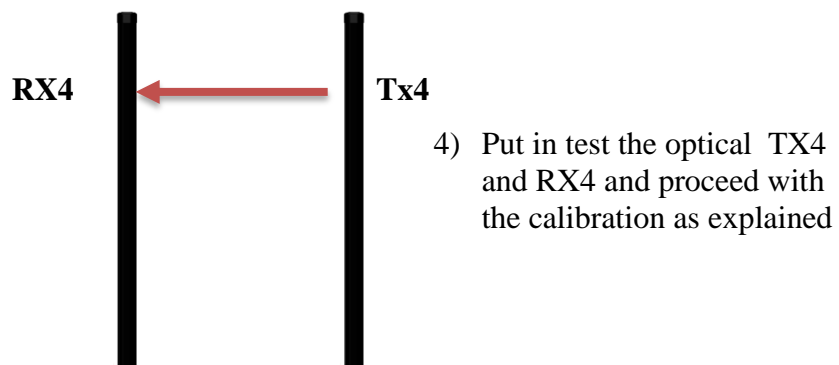
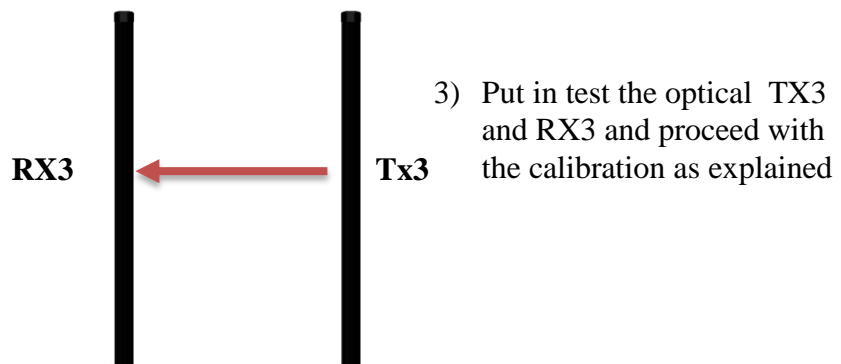
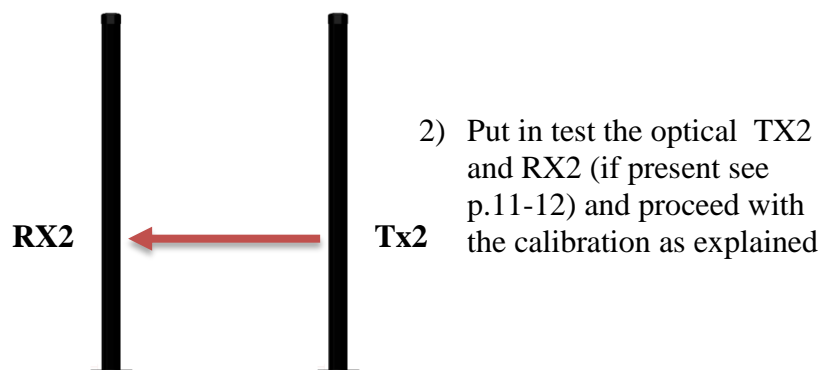
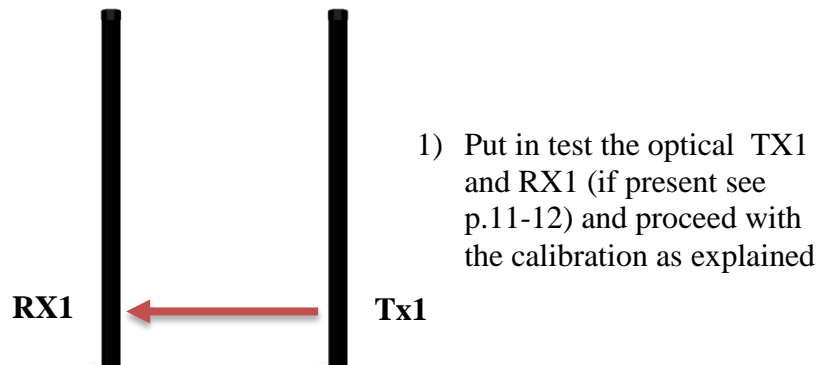
- 7) Rotating the lens RX find the maximum value of ALIGNMENT corresponding to the LEDs (with high brightness) FIXED and the whistle of the BUZZER CONTINUOUS.
- 8) Exit the function of by repressing the ALIGNMENT TEST button for about 3 seconds on both optics (TX-RX) making sure that the orange LED TEST is shown in original condition.



- 9) Once finish the alignment remove from the optic the filter, sure to have achieved the best signal.



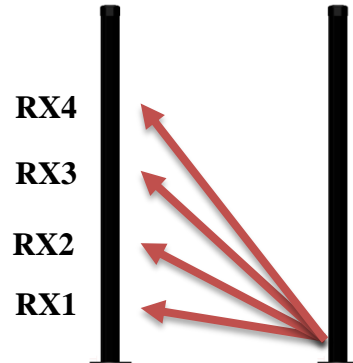
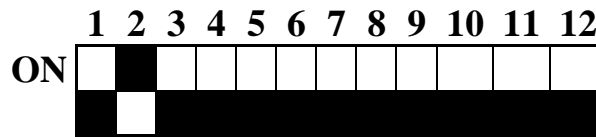
9. CALIBRATION WITH PARALLEL BEAMS



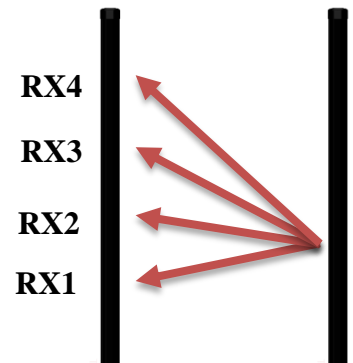
N.B.: during the testing phase of an optical transmitter the other TX not in test are switched off automatically

10. CALIBRATION WITH CROSSED BEAMS

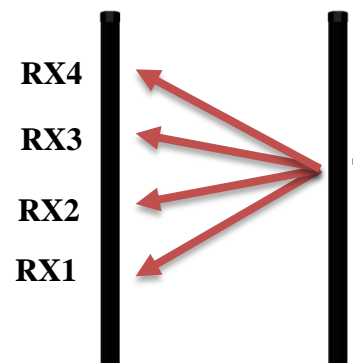
To activate this function move the DIP. 2 bench of 12 DIPSWITCH of MES9012 ON.



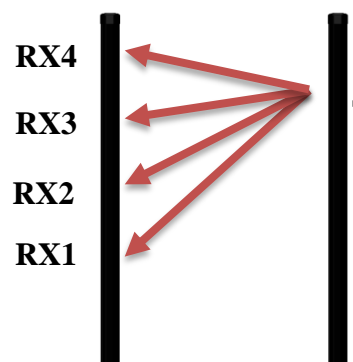
1) Put in test the optical TX1 and RX1 (if present see p.11-12) and proceed with the calibration as explained on p. 13 and 14. REPEAT the setting of RX2, RX3 and RX4. Make sure that it still aligned with RX1.



2) Put in test the optical TX2 and RX1 (if present see p.11-12) and proceed with the calibration as explained on p. 13 and 14. REPEAT the setting of RX2, RX3 and RX4. Make sure that it still aligned with RX1.

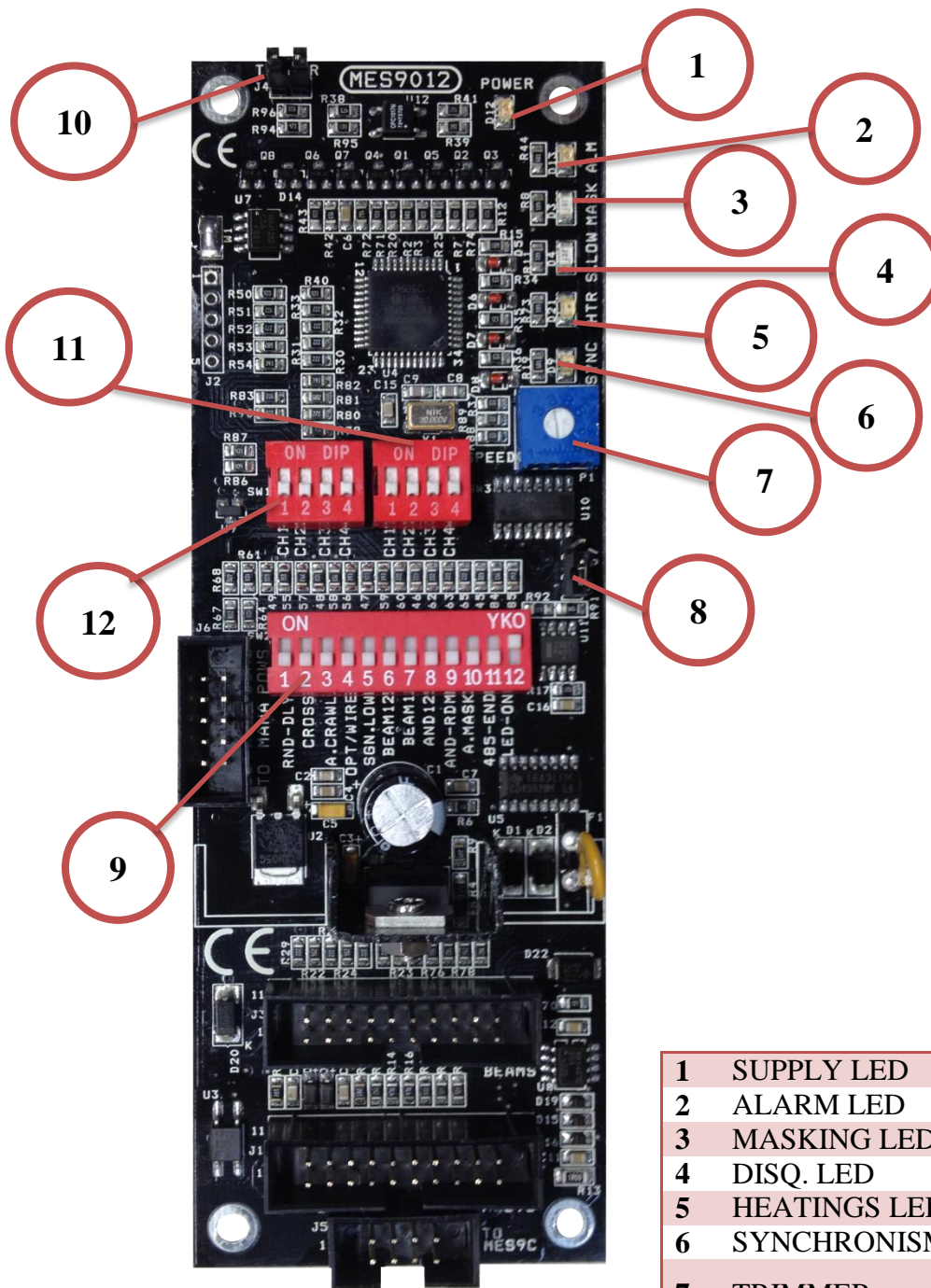


3) Put in test the optical TX3 and RX1 and proceed with the calibration as explained on p. 13 and 14. REPEAT the setting of RX2, RX3 and RX4. Make sure that it still aligned with RX1.



4) Put in test the optical TX4 and RX1 and proceed with the calibration as explained on p. 13 and 14. REPEAT the setting of RX2, RX3 and RX4. Make sure that it still aligned with RX1.

11. SETTING AND PROGRAMMING MOTHER BOARD (MES 9012)



1	SUPPLY LED		Red
2	ALARM LED	ALM	Red
3	MASKING LED	MASK	Green
4	DISQ. LED	S.SLOW	Green
5	HEATINGS LED	HTR	Yellow
6	SYNCHRONISM	SYNC	Yellow
7	TRIMMER	Response time adjustment	
8	TEST	J7	
9	DIP SWITCH 12	Function selector (pag. 23)	
10	TAMPER		
11	DIP SWITCH TX		
12	DIP SWITCH RX		

12. LED FUNCTIONING

The motherboard has six LED signaling and control, which can be activated via the dip switches 12 on the board MES9012S dedicated in the ON position.

It is recommended that at the end of the testing set dip switches in the OFF position, both to avoid a glimpse of the signals, both to reduce consumption of the system.

POWER <i>Supply led</i>	<p>The SUPPLY LED is the only one to always be on in normal conditions of operation, confirm that the card is properly powered.</p>
LED ALM <i>Alarm led</i>	<p>Normally off, in the event of ignition, indicates the alarm status. The alarm condition will depend on the setting of the jumpers composing the board and the delay time set on trimmer SPEED will be adjusted from a minimum of 50 msec to 500 msec. Increasing clockwise.</p>
LED MASK <i>Signals of Masking</i>	<p>The ignition of the MASK LED indicates the presence of an infrared signal modulated not desired. On the terminal, in the presence of an attempt to blindness, it can obtain the signaling ANTIMASK. N.B.: In normal operation the LED should be OFF. In the event that is either on or flashing check the setting of the jumpers for selecting beam on the various transmitters.</p>
LED SIG LOW <i>Indicates the low level of signals (fog presence)</i>	<p>The lighting SIG LOW LED indicates the presence of FOG INTENSE. In the presence of intense fog before having an alarm condition due to lack of signal, the LED SIG LOW lights on the terminal and you can have the message DISQUALIFICATION. N.B.: By placing the jumper SIG LOW in the ON position, and by the intervention of the disqualification is obtained the exclusion of the barrier, which will return to work as soon as the fog lifts.</p>
LED HTR <i>Indicates the heaters functioning</i>	<p>The automatic heating system, electronically controlled to ensure in all climatic conditions an internal temperature between 17 ° C and 22 ° C. Normally off, when turned on the heater is on.</p>
LED SINC <i>Indicates the functioning of the synchronism</i>	<p>The LED SINC continuously flashing indicates the proper operation and wiring of sync both outgoing and incoming.</p>

13. CHARACTERISTICS AND DIP SWITCHES SET

The motherboard has several configurations programmable via dip switches.

DIP SWITCH 12 DIP

1	RND DLY ON	In the ON position the alarm from time to time is generated with a random delay varying from 0 to 1 sec This function serves to confuse and mislead the intruder who wants to identify the detection system
	HEATER TEST	Turn ON and OFF DIP1 for 3 times in order to switch on heaters for 20 min bypassing thermostat.
2	CROSSING	In the ON position activates the detention Crossed beams
3	A.CRAWL	In the OFF position it has the "normal" operation of the barrier, set to ON mode is activated to "ANTI CRAWLING" means that the darkening of the radius RX1 (the first down) for at least 2 sec. causing the alarm condition, regardless of whether it was previously set to OR or AND.
4	SYNC	Irrelevant.
5	DISQ	In the ON position activates the disqualification (with at least two optics that detect a low signal).
6	BEAM OFF 1 + 2	In the ON position you get the exclusion of the first two rays starting from the bottom while the remaining rays continue to operate. The function can also be programmed remotely giving a positive control on the 12V + terminal of the terminal block marked BEAM. If you want to enable this function remotely DIP6 must remain OFF.
7	BEAM OFF 1	In the ON position is obtained the exclusion of the first beam in the bottom, while the remaining continue to function. The function can also be programmed remotely giving a negative command 0 V on terminal marked BEAM ON on the terminal block MES9C. If you want to enable this function remotely DIP7 must remain OFF.
8	AND 1 + 2	In the ON position is obtained the AND function of the first two receivers, that is to say that both must be interrupted to generate the alarm condition, while the remaining Rx remain be alarmed individually. This configuration can be useful in the presence of tall grass or small animals. The function can also be programmed remotely giving a positive command +12V on the terminal marked AND. If you want to enable this function remotely DIP8 must remain OFF.
9	AND RND	In the ON position is obtained the AND between two random Rx, ie that 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 command 0 V on the terminal block labeled AND. If you want to enable this function remotely DIP9 must remain OFF.
10	ANTIMASK	In the ON position the enable function ANTI MASKING (ANTIMASK activating the output on the terminal MES9C.
11	CLOSE RS485	In the ON position closes the RS485 communication. To finish you need to put in ON only the switches of the column as far as the entire line.
12	LEDS	In the ON position activates the LEDs.

4 DIP SWITCH TX

TEST TX	By setting all DIP to OFF will turn off all transmitters of the column; moving all DIP ON transmitters are activated at high frequency in order to allow a first visual contact between transmitter and receiver in case of difficulties at great distances.	
1 CH 1	ON	Wire sync: normal operation of transmitter
	OFF	Optical sync: operation with transmission frequency 1
2 CH 2	ON	Wire sync: not in use
	OFF	Optical sync: operation with transmission frequency 2
3 CH 3	ON	Wire sync: not in use
	OFF	Optical sync: operation with transmission frequency 3
4 CH 4	ON	Wire sync: not in use
	OFF	Optical sync: operation with transmission frequency 4, only 2 transmitter active

4 DIP SWITCH RX

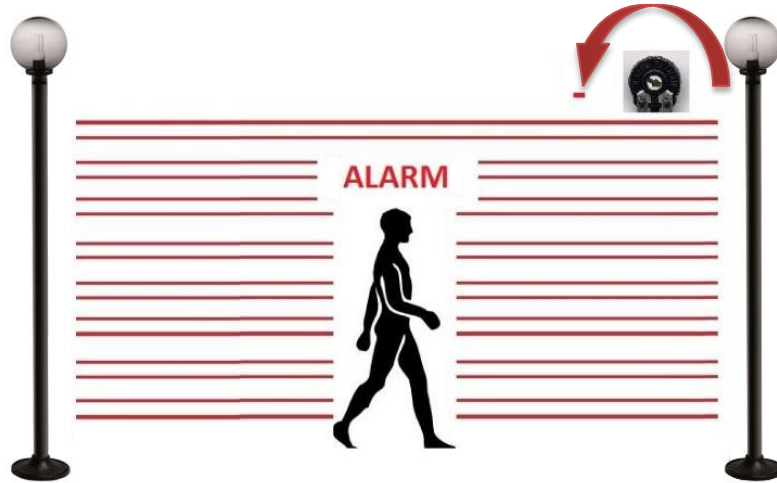
TERMINAL and only TX	All DIP ON: deactivates the alarm relay. This setting is used when the column has only optical transmitter	
1 CH 1	ON	Wire sync: normal operation of receiver
	OFF	Optical sync: operation with transmission frequency 1
2 CH 2	ON	Wire sync: not in use
	OFF	Optical sync: operation with transmission frequency 2
3 CH 3	ON	Wire sync: not in use
	OFF	Optical sync: operation with transmission frequency 3
4 CH 4	ON	Wire sync: not in use
	OFF	Optical sync: operation with transmission frequency 4, only 2 receiver active

JUMPER J7

If the disqualification function is activated, you can increase the sensitivity of the disqualification by jumper J7

13.1. RESPONSE TIME ADJUSTMENT

There is a potentiometer to adjust the TIME OF INTERVENTION. In particular, you can set the barrier for the rapid alert system (cross running) or slow (cross by walk).



By adjusting the potentiometer counterclockwise to increase the trip time up to 500ms. In this condition ensures that the alarm of a person walking through the barrier, with the advantage of excluding the possibility of any false alarms (ex. animals).

Adjusting the potentiometer clockwise decreases the trip time until 50ms. In this condition ensures the alarm of a person crossing the barrier running at maximum speed.



14. TECHNICAL CHARACTERISTICS

MAX RANGE INDOOR	450 m
MAX RANGE OUTDOOR	100 m
SYNCHRONISM	Wired and optics
OPTICS	Impulsive double lenses 950 nm
OPERATION MODE	Parallel or crossed beams
DISQUALIFICATION	Automatic with signaling out, open collector negative
MASKING	Detection of blindness by another infrared signal by signaling out, open collector negative.
OPERATING TEMPERATURE	- 25°C / + 65°C. Available Kit heaters for temperatures down to -50 ° C.
ADJUSTMENT ANGLE	± 10° vertical – 180° horizontal
DETECTION OPTIONS	And/Or on Rx / AND 1° + 2°.
BEAMS EXCLUSION	1° / 1° + 2°
REMOTE CONTROLS	AND Random / AND 1° + 2° beam / exclusion 1° o 1° e 2°
PLASTIC SCREEN	Specific for Infrared with HUV filter.
TOP CAP	With Tamper.
PROTECTION DEGREE	IP 54
LAMP ADAPTER CAP	Standard Ø 60 mm(applicable to all kind of light diffusor)
BASE	Ø 300mm with possibility to be installed on cable pit (POB 30)

<i>STANDARD MODEL</i>	2 TX + 2 RX 9120	3 TX + 3 RX 9160	4 TX + 4 RX 92xx/9300
Total n. optics	2TX + 2RX	3TX + 3RX	4TX + 4RX
Power supply	12-24Vcc.		
Absorption	120 mA	135 mA	150 mA
Heaters in column	30W 24Vca with thermostat	40W 24Vca with thermostat	50W 24Vca with thermostat

<i>TERMINAL MODEL</i>	2TX o 2RX 9120 TX/ 9120 RX	3TX o 3RX 9160 TX/9160 RX	4TX o 4RX 9200 TX/ 9200 RX
Total n. optics	2TX o 2RX	3TX o 3RX	4TX o 4RX
Power supply	12-24Vcc.		
Absorption	80 mA	100 mA	120 mA
Heaters in column	30W 24Vca with thermostat	40W 24Vca with thermostat	50W 24Vca with thermostat

For single barrier or couple (TX and RX) or in case of open perimeter.

15. F.A.Q

I can't calibrate the columns

- Make sure that there are no obstacles whatsoever interposed between RX and TX and that the conformity of the site does not pose an impediment;
- **Note: Remember to enable the optics once finished alignment.**
- Make sure that TX is being tested (orange LED of optic in question switched on and others turned off);
- Make sure the connectors are securely attached and that the configuration of the DIP is correct;
- Ensure that power on the terminal board is enough;
- Use shielded cable for power supply; connecting the shield to the ground (is recommended in case of persistent problem to connect power and alarm / tamper with two separate, shielded cables);
- Check the correct sizing of the power cables;
- Make sure that there are no external light sources that interfere with the correct reading of the signal (photocell gates, other barriers, infrared, ...);
- For barriers with multiple devices positioned on the same line it is necessary to turn off TX on which you are not performing the alignment operation; to do this you must move the four DIP TX (Cap. 11) in the ON position, making sure that the orange LED are off;
- If the system uses a switching power supply replace it with corresponding linear to avoid electrical interference from the network, it is recommended that the power supply **LAR22**.

After precisely aligned sensor (light LED steadily on and continuously BIP sound) system remains in alarm

- Make sure the connectors are securely attached and that the configuration of the DIP is correct;
- Make sure there is synchronism, led SYNC-RX Yellow On (see chap. 11), otherwise the alarm will not be constant, then check the connections (see Sec. 7) making sure that the terminal block is well inserted;
- Verify that optic receiver senses the corresponding transmitter. To do this, set the AND mode, if the barrier is no longer in alarm obscure individually each ray finding one that does not generate the alarm general, this ray is not aligned;
- Make sure that there are no external light sources that interfere with the correct reading of the signal (photocell gates, other barriers, infrared, ...); to do that you can check a masking activating DIP 10 (**antimasking**, see chap. 10 and 12);
- Use two different shielded cables for power and sync, connecting the shield to the ground;
- Check the correct sizing of the power cables;
- If the system uses a switching power supply replace it with corresponding linear to avoid electrical interference from the network, it is recommended that the power supply **LAR22**.

With fog or rain, the system goes into alarm

- Check that the function of disqualification from fog is active (see chap. 12);
- Make sure the power of the heaters is higher than 20 Vac to the **terminal block** of the barrier.
- In case of very thick fog activate DISQ1 (see chap. 12);
- Make sure that the structure is properly sealed and check that there are not already present within disturbing elements as water, insects, ...;
- Verify the accuracy of the alignment of each optic and in case re-perform the procedure possibly making a complete scanning that there are no light sources that can influence the calibration;
- For a more precise alignment position a side of the column cover in front of the lens in order to have two surfaces interposed between TX and RX for doubling attenuation of the beam.

Repeated false alarms

- If they are caused by the passage of animals, use either **AND, BEAM 1** or increase the **intervention time**
- Verify the accuracy of the alignment of each optic and in case re-perform the procedure possibly making a complete scanning that there are no light sources that can influence the calibration;
- Make sure the power of the heaters is higher than 20 Vac to the **terminal block** of the barrier.
- Use two different shielded cables for power and sync, connecting the shield to the ground;
- Check the correct sizing of the power cables;
- If the system uses a switching power supply replace it with corresponding linear to avoid electrical interference from the network, it is recommended that the power supply **LAR22**.
- If you can increase the intervention time;

The system goes into disqualification even without fog

- Make sure the power of the heaters is higher than 20 Vac to the **terminal block** of the barrier..
- Verify the accuracy of the alignment of each optic and in case re-perform the procedure possibly making a complete scanning that there are no light sources that can influence the calibration;
- For a more precise alignment position a side of the column cover in front of the lens in order to have two surfaces interposed between TX and RX for doubling attenuation of the beam.

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