MITECH®

LEADING PERIMETER SECURITY

TOWER IR

IR BARRIERS

Available in terminal and bi-directional versions

Installation and user manual

MADE IN ITALY

Index

Introduction and warnings

INTRODUCTION

TOWER IR are the perimeter barriers with crossed beams and double lens. In combination with the appropriate accessories, they can be camouflaged in a lighting pole that combines aesthetics and functionality with a reliable safety device. Both pre-cabled and ready for installation they are composed of a transmitting and a receiving unit. The transmitter emits a coded sequence of infrared beams which are detected by all the receivers. The barriers are supplied with optical synchronization because each beam is recognized by means of differentiated optical codes (optical synchronization). TOWER IR are more suitable for harsher environments and weather situations (low temperatures, fog, humidity, wind gusts) thanks to the built-in automatic temperature control device, the disqualification system and sturdy aluminum structure.

WARNINGS

- **Use shielded cables.**
- **Observe the minimum distances between the TX and RX barriers (see table on page 20).**
- **In areas subject to intense fog, for distances longer than 80 m, it is advisable to break the barrier path with an extra barrier.**
- **Power the device using the 13.8 Vdc stabilised voltage only.**
- **It is mandatory to switch on the temperature control system for both internal and external installations (24Vac).**
- **The installation should be performed by qualified personnel.**

MITECH is not responsible for damages and / or barrier malfunctions caused by incorrect installation and / or improper use.

Components

Part	Quantity	Description
1	1	Aluminum support bar
2	1	IR polycarbonate tube
3	1	Upper cap
4	1	Lower cap
5	1	Tamper
6	1	Power supply (optional)
7	1	Ground fixing base (GAR GR) or wall fixing bracket (GAR WL)

Boards, optical groups and heating system	
Terminal version RX or TX	
Motherboard	1 (RX or TX)
Expansion boards	From 1 to 4 (RX or TX)
Tamper boards	1 (RX or TX)
Optical groups	From 2 to 5 (RX or TX)
Heating resistors	From 2 to 5

Bi-directional version	
Motherboard	1 couple (1 RX + 1 TX)
Expansion boards	From 1 to 4 couples (max 4 RX + 4 TX)
Tamper boards	1 couple (1 RX + 1 TX)
Optical groups	From 2 to 5 couples
Heating resistors	From 2 to 5 couples

Accessories

IMAGE	CODE	DESCRIPTION
	**GAR GR (standard)**	Base for ground fixing 200 x 210 mm Ø 33 cm
	**GAR WL**	Bracket for wall mounting (200 x 210 mm)
	**GARPOW**	Dual power supply, 1 for barrier (if required it is installed up)
	**GAR LAMP CO or WH**	Globe light fixture with lamp holder (E27) Diameter: 32 cm Available colours: white (WH) and cognac (CO)
	**GAR LUMYA**	Embedded light fixture (white colour) with lamp holder Height: 25 cm - E27
	**GAR PRCAP**	Anti-climbing pressure cap
	**TW CAMCAP**	Universal camera support

General installation instructions

1. After installing the barrier, make sure that it is perfectly closed with the watertight covers supplied.
2. Make sure that the path between the sensors is free and that there are no obstacles that could affect the communication between the optical groups of the transmitters and receivers (i.e. branches, plants, leaves, etc. that could interfere with the beams).
3. Verify that the optics of the transmitter and receiver units are not exposed to direct sunlight at dawn and sunset.
4. Do not use switching power supplies that might cause electrical disturbances .

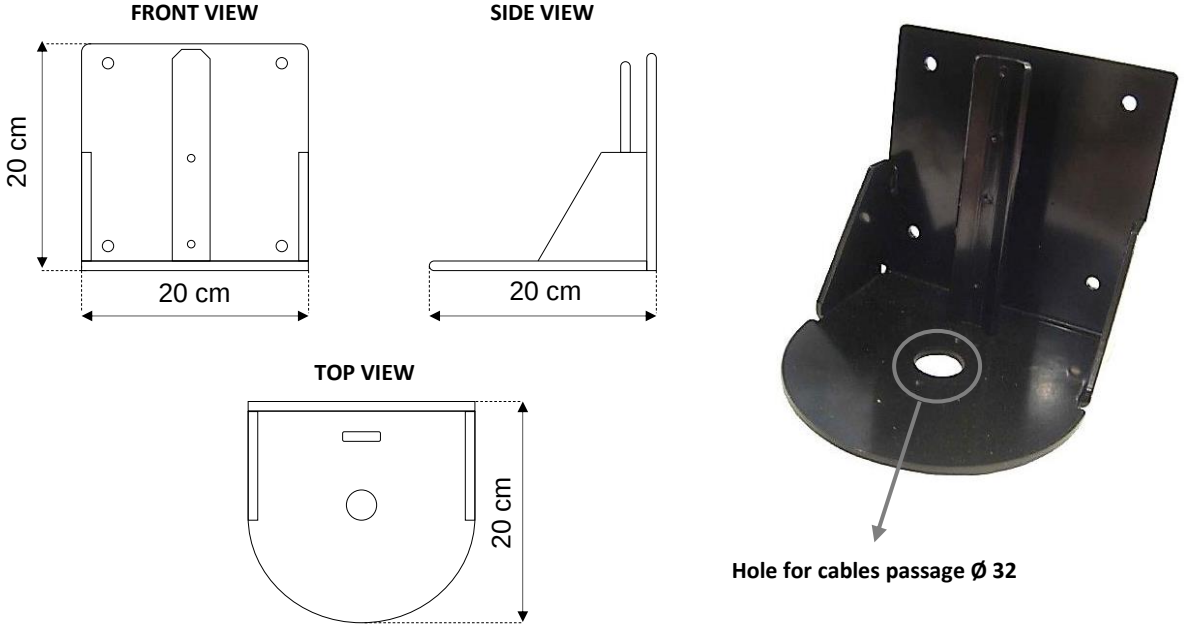
Mounting options

barriers may be mounted in two ways:

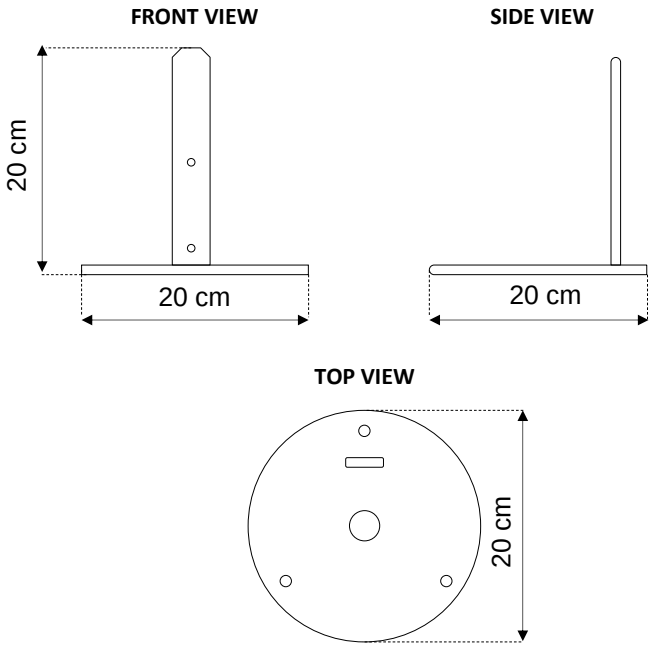
- with a specific wall mounting bracket (code: GAR WL)
- with a specific ground mounting base (code: GAR GR)

Wall mounting (GAR WL bracket)

Drill 4 holes of Ø 8 mm in the wall, level with the bracket fixing holes.
Insert M8 steel gussets (not supplied) and fix the bracket.



Ground mounting (GAR GR base)



Cables insertion hole Ø 32

FIXING WITH CLAMPS

This fixing method is the most secure.
Make a cement base in which to anchor the clamps provided.
It is necessary to use a corrugated pipe Ø 20 mm for passage of cables.

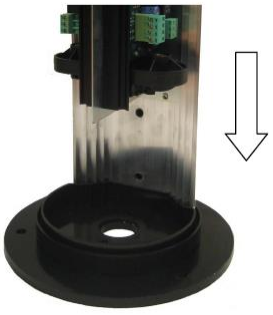
FIXING WITH GUSSETS

Drill 3 holes of Ø 8 mm in the ground, level with the base fixing holes.
Insert M8 steel gussets (not supplied) and fix the base.

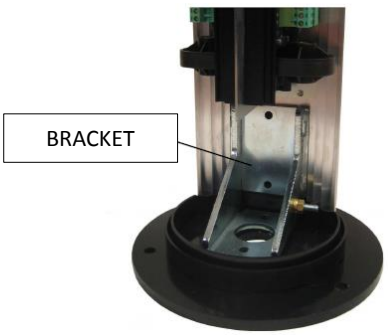
Fixing the barrier

Insert the lower cap into the base guide.

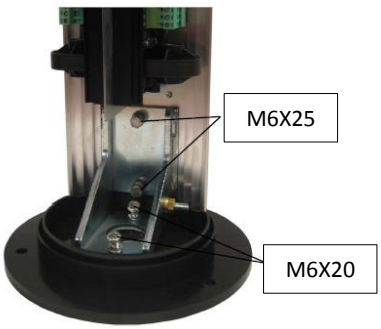
Insert the aluminium bar into the base guide and into the relevant slot in the lower cap.



Insert the connecting bracket between the lower cap and the aluminum bar.



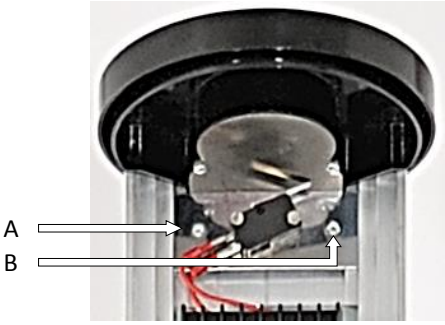
Screw 2 M6x20 screws through the bracket and the base and 2 M6x25 screws through the bracket and the bar.



Tamper height adjustment, inserting the tube and closing the barrier

Tamper height adjustment

Adjust the tamper height using the two jagged edge washers A and B (see image).

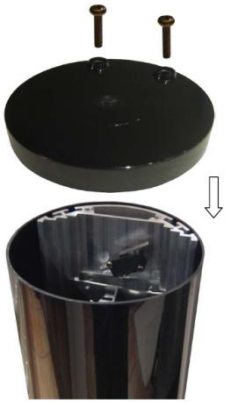


Inserting the tube

Insert the polycarbonate tube from above, making it slide down into the slot and inserting it into the lower cap.

Closing the barrier

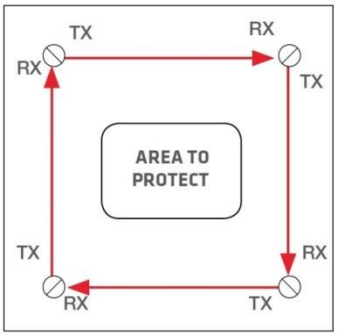
Position the top cover and screw it to the barrier using the supplied screws provided with o-ring.



Installation solutions

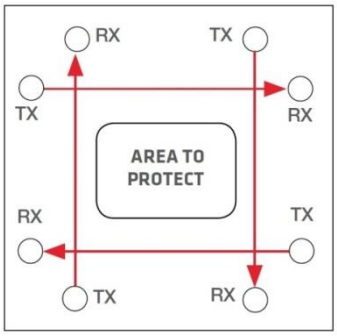
4 SIDES PERIMETER PROTECTION

With bi-directional barriers



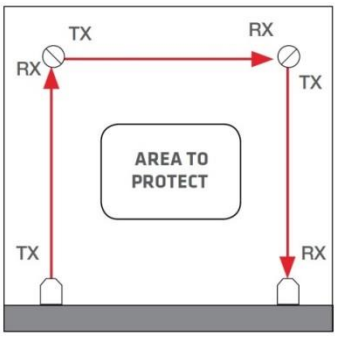
4 SIDES PERIMETER PROTECTION

With terminal barriers



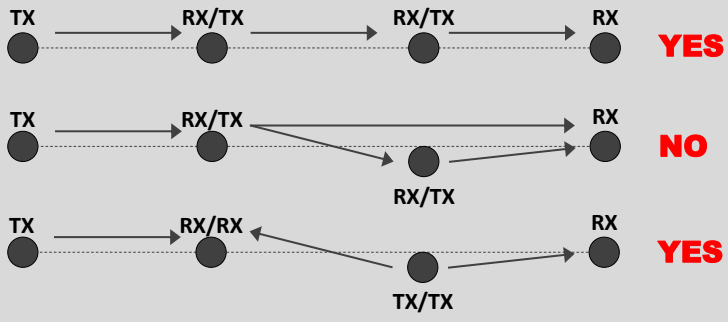
3 SIDES PERIMETER PROTECTION

With terminal and bi-directional barriers



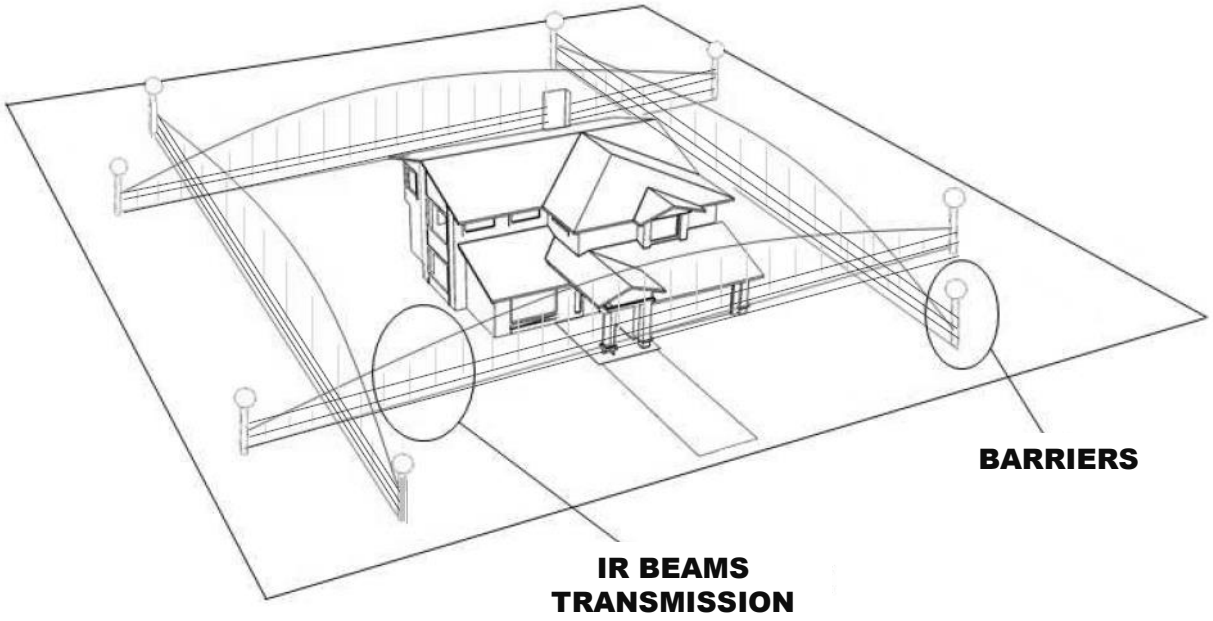
WARNING: ENSURE THAT THE barriers ARE INSTALLED IN A STRAIGHT ROW

For a correct positioning of the barriers, refer to the following diagram (contact the supplier for more information)



Example of protection

The barriers come with crossed beams to ensure maximum protection.
For visibility purposes, the beams in this drawing are linear.

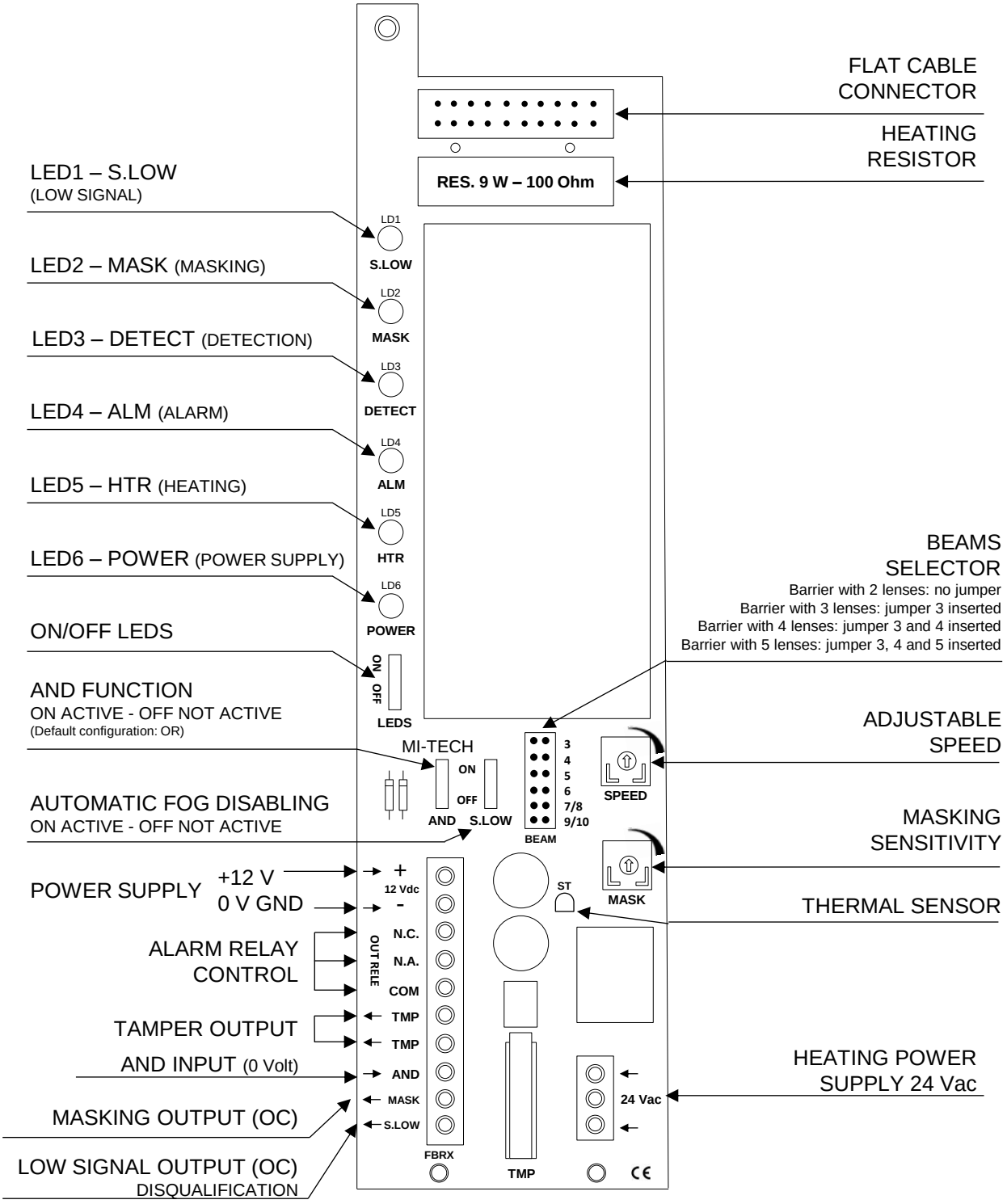


<u>WARNING</u>

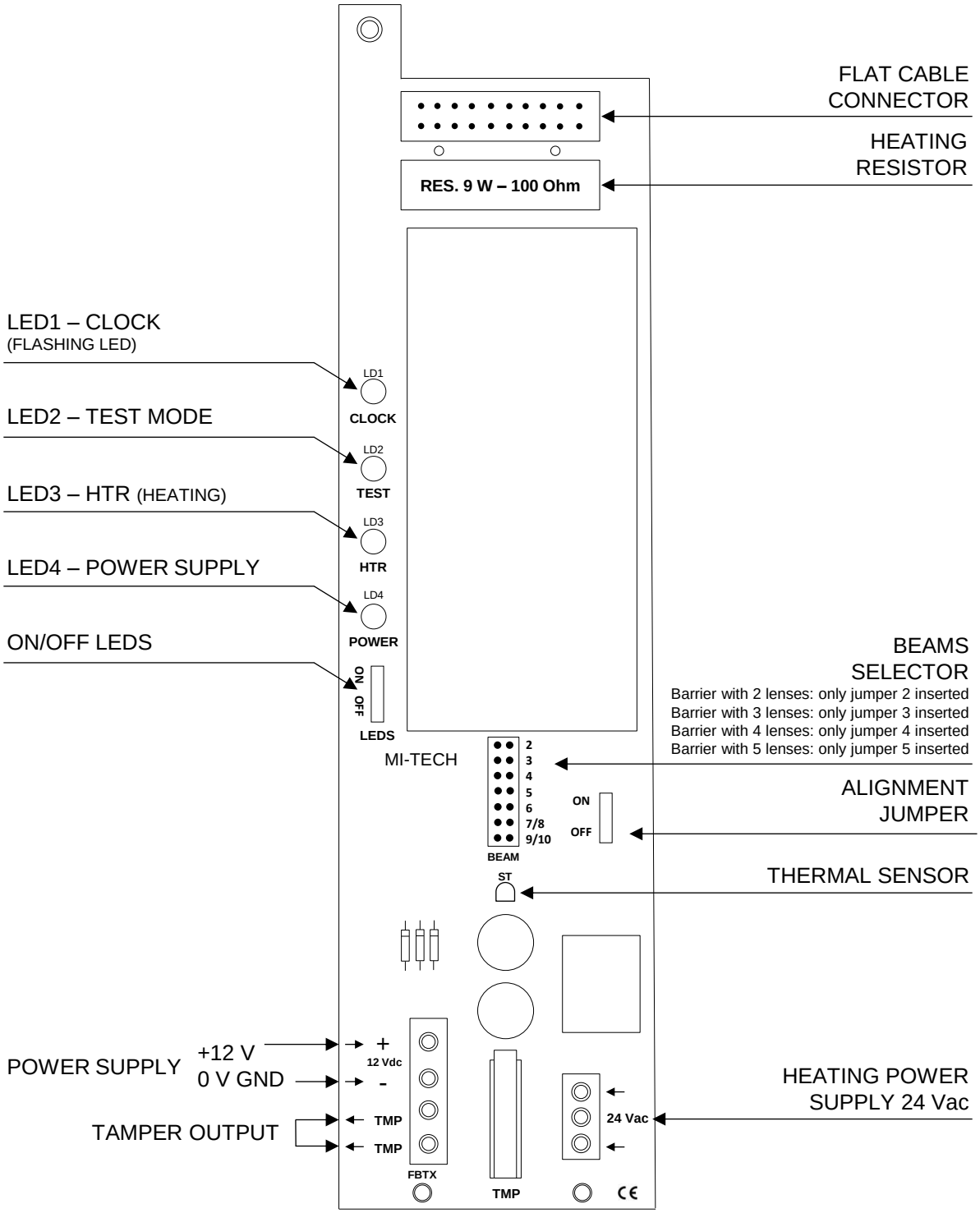
Ensure no interference is caused by the presence of photocells for automatic gates or infrared cameras, as these may blind the barriers.

Receiver and transmitter motherboards

Receiver (RX)

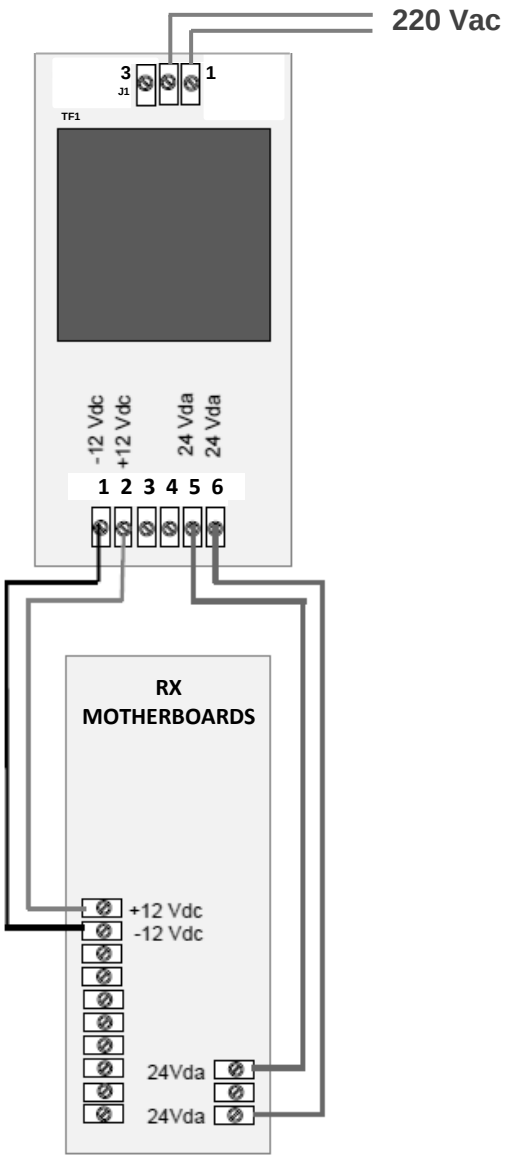


Transmitter (TX)



Power supply

Example of power supply connection with GAR POW unit.
With a power supply it is possible to feed a pair of barriers (RX-TX or RX-RX or TX-TX).



WARNINGS

Always use filtered and stabilized 230 Vac voltage.
Then check the cabling before connecting the power supply

Alignment

1. Barrier power supply (see page 10)

2. Check that all the red leds (ALM LEDs) on the expansion and tamper boards of the RX optics are all off (Image 1)

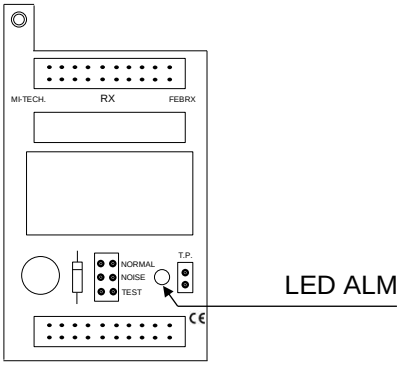


Image 1

3. If one or more leds are not off, gently adjust the relevant lenses in a horizontal and vertical direction towards the transmitters until all the leds are turned off.
If one or more leds are not turned off, go directly to the instrumental alignment procedure described on page 16.

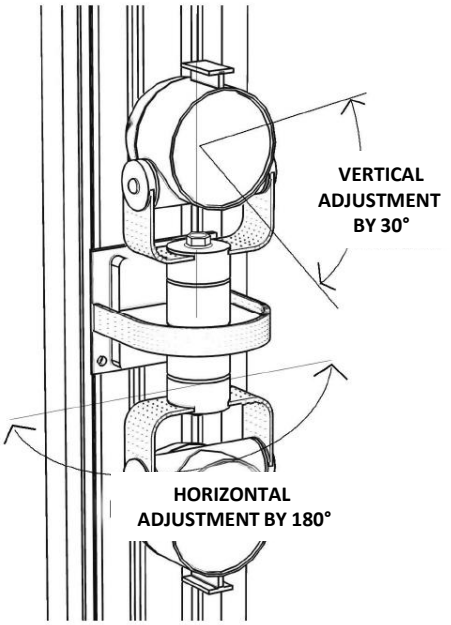
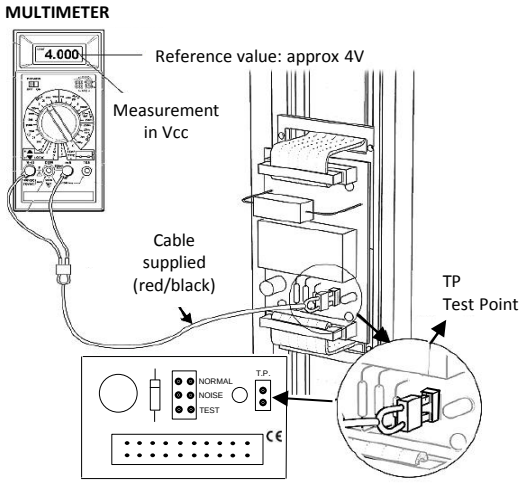


Image 2

WARNINGS:
Before the instrumental alignment verify the following on the receiver motherboard:
- **the blinding led must be switched off**
- **the AND and S.LOW jumpers must be set to OFF**
- **the MASK and SPEED trimmer regulation must remain in vertical position**

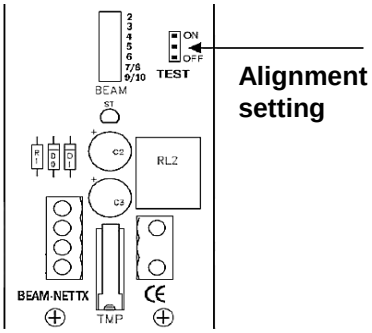
Instrumental alignment

1. Connect the multimeter to the connector TP of the most central RX expansion board using the specific red/black cable supplied.

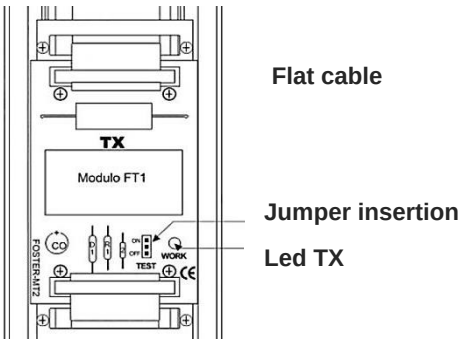


NOTES:
a) some multimeters might display a voltage that is up to 50% lower than the real value, therefore check the tester is working correctly
b) the use of some transceivers to communicate during installation could affect the multimeter readings

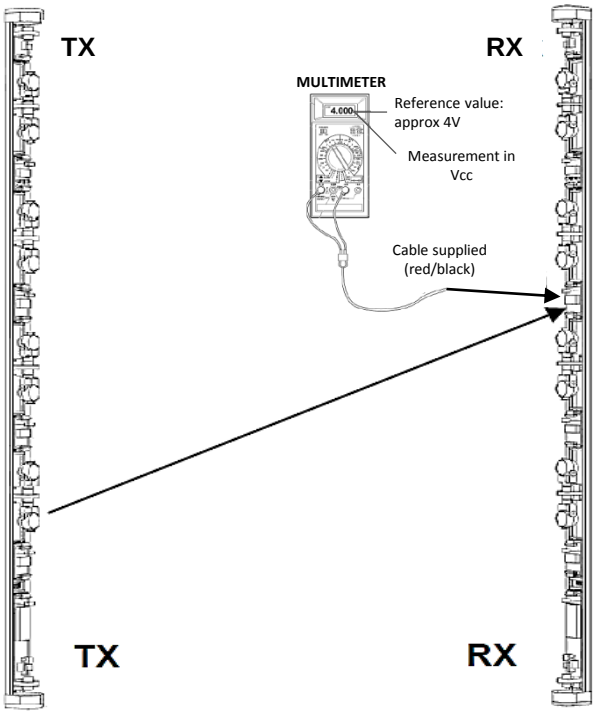
2. Move the TEST jumper on the TX motherboard to ON



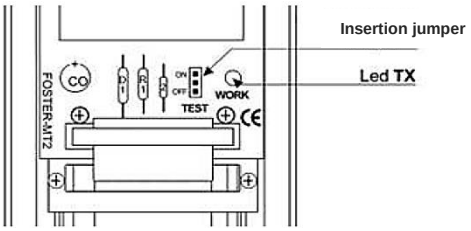
3. Move the TEST jumper on the first TX expansion board to ON



4. Manually adjust the optics of the first **lower TX expansion board, towards the centre of the RX receiving unit** (see image), in order to display the maximum voltage value of **around 4 Volt** on the tester (over 4 Volt the voltage values are to be considered optimal).
It is important in this phase to ensure all the red leds on the RX expansion boards are switched off. In the event of some or all of the leds being on, adjust the RX optics vertically and horizontally and orient again the TX optics until the leds switch off.

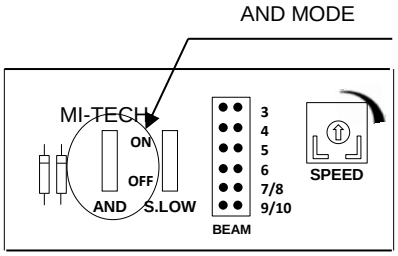


5. Set the TEST Jumper to the OFF mode of the first TX expansion board at the bottom and repeat from step 3 the alignment of all the remaining TX expansion boards.



6. **Ensure all the TEST jumpers of the TX motherboard and of the TX expansion boards are set to OFF.**
FINAL TEST:
Double lens version: verify that the barrier triggers an alarm signal when both lenses of each optical group are covered (OR setting).
Single lens version: verify that the barrier triggers an alarm signal when each lens is covered (OR setting).

7. Once the **FINAL TEST** is finished, for setting the barrier in AND mode, it is necessary to set the AND programming jumper to ON, on the RX motherboard.
IMPORTANT: during the alignment phase, remember that the AND jumper must always be set to OFF.



Settings and programming

Description of signalling leds

The RX board has 6 leds for control purposes which can be enabled or disabled by setting the jumper to ON.

Led S.LOW: Low signal (DISQUALIFICATION)
It switches ON to indicate the presence of intense fog and the activation of the disqualification function. In this mode the barrier is deactivated and then automatically restored as soon as the signal is regained.
It is possible to manage this signal directly in the control panel (O.C. output).
For the correct functioning of the disqualification device it is mandatory to have accomplished a proper alignment.

Led MASK: Blinding signal and mains anomaly
It switches ON and blinks to signal the presence of an electromagnetic interference or a wiring problem that may affect the correct functioning of the barrier.

Led DETECT: Irregular transmission signal
This led is generally OFF in ordinary operating conditions. The led blinks if one or more transmitter signals are not detected by the receivers.
It lights permanently if all the transmitters signals are not detected by the receivers.
Verify alignment and possible blinding problems.

Led ALM: Alarm acknowledgement
It switches ON to signal the occurrence of an alarm.
The tripping delay set on trimmer SPEED ranges from 50 ms to 500 ms (turn the trimmer clockwise to increase the delay).

Led HTR: Heating
The barriers have an automatic heating system with electronic control that guarantees a minimum internal temperature of 17°C in all environmental conditions.
If the led is ON, the heating system is working correctly.

POWER: Power supply
The POWER led is the only one that is permanently ON in ordinary operating conditions.

Jumpers, trimmers and connector T.P. description

RX motherboard

Jumper BEAM
Number of beams selector, see diagram on page 12.

Jumper AND
Inserted in ON enables the AND function. To have an alarm condition, two random optical groups must be interrupted. The function can also be programmed remotely via terminal blocks (output OC - 0 Volt).

Jumper S.LOW: Signal low (DISQUALIFICATION)
Inserted in ON enables the disqualification function (output OC - 0 Volt).

Jumper LEDS
Inserted in ON enables the signal LEDS.

Trimmer SPEED
For adjusting the tripping time from 50 ms to 500 ms (the delay increases by turning the trimmer clockwise).

Trimmer MASK
For adjusting the sensitivity of the blinding function (the sensitivy increases by turning the trimmer clockwise).

TX motherboard

Jumper BEAM
Number of beams selector, see diagram on page 13.

Jumper TEST
To use for alignment, see page 16.

Jumper LEDS
Inserted in ON enables the signal LEDS.

RX expansion board

Jumper NORMAL
Do not change the programming.

Jumper NOISE
Not used.

Connector T.P.
Connect the special red/black cable supplied to the connector T.P. during alignment, see page 16.

TX expansion board

Jumper TEST
To use during alignment, see page 16.

Technical features and consumption

Technical features

Maximum range outdoors	100 m
Minimum range outdoors	15 m (For distances of less than 15 m please contact the supplier).
Barrier height	1.0 m - 1.5 m - 2.0 m - 2.5 m – 3,0 m
Synchronization	Optical
Total number of beams	50 crossed
Power supply	12Vdc
Disqualification	Automatic with external signals
Maximum barrier consumption (5 lenses version)	Tx 120 mA + Rx 270 mA
Maximum heaters absorption	60 W
Operating temperature	–25°C +70°C
Alignment angle	Vertical: 30° - horizontal: 180°
Detection system	AND / OR on Tx and Rx remote AND
Anti-masking	Automatic, can be disabled
Tripping time	Adjustable, 50 / 500 ms
Alarm and tamper output	Contact NC/NA
Led indicators	Power supply, anti-masking, heating, low signal, alarm, detection
IR signal	Pulsed coded
Standard compliance	EN 50131-1 and CEI 79-3
ROhs compliance	2011/65/UE
Protection class	IP 65
Warranty	3 years

Consumption

barrier	TX	RX	TOTAL CONSUMPTION
TW102D	120 mA	110 mA	230 mA
TW102-RX	-	110 mA	110 mA
TW102-TX	120 mA	-	120 mA
TW153D	120 mA	150 mA	270 mA
TW153D-RX	-	150 mA	150 mA
TW153D-TX	120 mA	-	120 mA
TW204D	120 mA	230 mA	350 mA
TW204D-RX	-	230 mA	230 mA
TW204D-TX	120 mA	-	120 mA
TW254D	120 mA	230 mA	350 mA
TW254D-RX	-	230 mA	230 mA
TW254D-TX	120 mA	-	120 mA
TW304D	120 mA	230 mA	350 mA
TW304D-RX	-	230 mA	230 mA
TW304D-TX	120 mA	-	120 mA
TW305D	120 mA	270 mA	390 mA
TW305D-RX	-	270 mA	270 mA
TW305D-TX	120 mA	-	120 mA

Notes:

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