CAUTION

CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY SAFEGUARDS TECHNOLOGY INC COULD VOID THE USERS AUTHORITY TO OPERATE THIS DEVICE

PRINCIPLES OF OPERATION

ABSOLUTE is a double-technology appliance for outdoor installation, enclosed in two columns made of aluminium extrudate. This completely new combination of outdoor detectors allows perimetral protection with coverage of up to 150 m. Microwave technology, combined with infrared sensors, eliminates the possibility of false alarms while maintaining high security standards.

The microwave and active infrared signals are received and processed individually: the activation of the alarm signal comes as a result of precise synchronisms and a sophisticated coordination between the two technologies.

Surveillance is carried out by means of a temporary window memory circuit. The pilot circuits of both detection technologies are equipped with a timer whose range is from 20 seconds to 2 minutes. The first device that receives a stimulus activates its own timer. During this time the other technology will be summoned to confirm the final alarm. Through this method of operation, false alarms caused by environmental factors are eliminated.

The microwave device is the one that functions as the “activator” because, in most cases, it is activated first. Its detection capacity is determined by a lobe that can be regulated with its own trimmer. In a case where the infrared disqualification circuits start functioning, the sensibility of the microwave device decreases automatically, and during this time span (of disqualification) the barrier functions using one technology only. Moreover, as an option, an anti-crawling device can be installed, in case there are no crossing columns. In such cases, a Doppler short-beam microwave device is employed. This covers the blind zone in proximity to the barriers.

In its basic configuration, ABSOLUTE is equipped with two pairs of active infrared devices, of which one is master and one slave. The transmitter sends a modulated infrared beam in the direction of the receiver.

The receiver does not recognize continuous (unmodulated) infrared or visible signals: therefore it is completely immune to sunlight.

The built-in disqualifying circuits de-activate the active infrared device in case of an attenuation of the signal, e.g. by fog, heavy rain or snowfall.

INSTRUCTIONS FOR INSTALLATION

Position the appliance in a sufficiently open area, strategically optimal for protection of the site. Local conditions must be thoroughly evaluated in advance so that the zone to be protected is delimited by the double technology sensor, physical obstacles like walls, fences and ditches or other systems of anti-intrusion surveillance.

ORIENTATION

The installation of the appliance requires that the transmitters and receivers placed in the two columns face each other, so that the two technologies may be aligned.

INSTALLATION SITE

The installation site must be chosen in such a way that the transmitters and the receivers are on the same level. Installation in sites with significant terrain irregularities must be avoided.

If this is not done, blind zones for the microwaves as well as the infrared signals may occur, through which a trespasser could find his way in.

The installator must also avoid positioning the appliance in zones with objects lying between the receiver and the transmitter (trees, bushes, etc.), as these could cause false alarms.

Attention must be paid to the surface as well. If it is grass, it is important to trim it regularly in order to avoid its movement interfering with the microwave signal.

If the installation is done on asphalt, the microwave must be raised by 20 cm, as described in chart TAB 1, page 13. This is necessary in order to avoid interference generated by reflections when the asphalt is wet.

PLACING THE UNIT IN THE PROXIMITY OF BUILDINGS

If the installation is to be done in the proximity of buildings, several rules must be followed:

Metal Nets

In order to avoid reflections that could create interference, position the columns in such a way that the appliance main axis is at a distance of at least 2 m from the maximum diameter formed by the microwave. This is because casual movements or vibrations of the metal nets caused by the wind could activate the microwave.

REMOVAL OF THE PROTECTOR, ASSEMBLY OF THE UNITS

1. Unscrew the two bolts placed on the lateral side of the cap.

2. Pull out the plexiglass, taking care to pull the special anti-dust gaskets out at the same time. The latter will be put back into their positions after finishing the operation, before repositioning the plexiglass.

3. Use the 4 bolts supplied to fix the bases. Fix them upon their appropriate plinths, which must be prepared beforehand with metal plates sunk into concrete, or with dowels suitable for this purpose.

4. Make sure that the cables can pass through the passage hole in the centre of the base and be connected to the interface plate set in the receiver as well as in the transmitter.

POWER SUPPLY

DC Supply

The double technology detection appliance operates at 12 V DC. This power supply guarantees regular operation of the apparatus. If you wish to keep a back-up battery, the system must be supplied with 13,8 V DC. A led on the 2 interface cards indicates the correct DC voltage (range between 12 to 15 VDC).

AC Supply

The heating system operates on alternate current. It is sufficient to give 24 V AC to the interface plate in order to supply 24 V AC to the heating resistances. This heating is controlled by a thermostat. The thermostat should be calibrated at 20°C. A led on the 2 interface cards indicates the correct AC voltage (range between 21 to 26 VAC).

ELECTRICAL CONNECTIONS

The ABSOLUTE barrier consists of two columns. One of them contains the transmitting appliances and the other column contains the receiving appliances. Between the two columns an interface cable must be installed if a MW Doppler on the TX interface card is installed. The recommended type is 2 x 0,50 + 4 x 0,22.

Interface Card of the TRANSMITTER

Terminal	1	NC	MWD	Input contact Doppler NC	
	2	+	12 VDC	Power supply MWD TX	
	3	(-)	12 VDC	Power supply MWD TX	
	23	+	12 VDC	Power supply beams	Just connected
	24	(-)	12 VDC	Power supply beams	Just connected
	29	+	12 VDC	Power supply MW	Just connected
Terminal	30	(-)	12 VDC	Power supply MW	Just connected
	34	~	24 VAC	Power supply secondary	
	35	~	24 VAC	Power supply secondary	
	38	(-)	12 VDC	Power supply secondary	
	39	+	12 VDC	Power supply secondary	
	42		Tamper	Input tamper	Just connected
Terminal	43		Tamper	Input tamper	Just connected
	47		Tamper	Output contact tamper	
	48		Tamper	Output contact tamper	
	49		Heat 1	Output 24 VAC heat 1	
	50		Heat 1	Output 24 VAC heat 1	
	51		Heat 2	Output 24 VAC heat 2	
Terminal	52		Heat 2	Output 24 VAC heat 2	
	53		Heat 3	Output 24 VAC heat 3	
	54		Heat 3	Output 24 VAC heat 3	
	55		Heat 4	Output 24 VAC heat 4	
	56		Heat 4	Output 24 VAC heat 4	
	57	(-)	12 VDC	Power supply secondary	
	58	+	12 VDC	Power supply secondary	
	59	(-)	12 VDC	Power supply secondary	
	60	+	12 VDC	Power supply secondary	
	61-62	~	24 VAC	Input power supply AC	
	63-64	~	24 VAC	Input power supply AC	
	65-66	(-)	12 VDC	Input power supply DC	
Terminal	67-68	+	12 VDC	Input power supply DC	
	71	(-)	MWD	Output alarm Doppler	
	72	NC	MWD	Output alarm Doppler NC	

Interface Card of the RECEIVER

Terminal	23	+	12 VDC	Power supply beams	Just connected
	24	(-)	12 VDC	Power supply beams	Just connected
	25	NC		Input contact alarm beam NC	Just connected
	26	(-)		Input contact alarm beam	Just connected
	27	NO	Disq.	Input contact disqualifying beam NO	Just connected
	28	(-)	Disq.	Input contact disqualifying beam	Just connected
Terminal	29	+	12VDC	Power supply MW	Just connected
	30	(-)	12VDC	Power supply MW	Just connected
	31	NC		Input contact MW alarm NC	Just connected
	32	(-)		Input contact MW alarm	Just connected
	33		OUT	Output command disqualifying MW	Just connected
	34	~	24 VAC	Power supply MW secondary	
Terminal	35	~	24 VAC	Power supply MW secondary	
	37	NO	MWD	Input contact Doppler RX NA	
	38	(-)	12 VDC	Power supply MW Doppler RX	
	39	(+)	12 VDC	Power supply MW Doppler RX	
	40	(-)		Input contact Doppler TX	
	41	NC		Input contact NC Doppler TX	
Terminal	42		Tamper	Input Tamper	Just connected
	43		Tamper	Input Tamper	Just connected
	44	NO	Relay alarm	Contact NA general alarm dual tech	
	45	COM	Relay alarm	Contact common general alarm dual tech	
	46	NC	Relay alarm	Contact NC general alarm dual tech	
	47		Tamper	Output contact tamper	
	48		Tamper	Output contact tamper	
	49		Heat 1	Output 24 VAC heat 1	
	50		Heat 1	Output 24 VAC heat 1	
	51		Heat 2	Output 24 VAC heat 2	
Terminal	52		Heat 2	Output 24 VAC heat 2	
	53		Heat 3	Output 24 VAC heat 3	
	54		Heat 3	Output 24 VAC heat 3	
	55		Heat 4	Output 24 VAC heat 4	
	56		Heat 4	Output 24 VAC heat 4	
	57	(-)	12 VDC	Power supply secondary	
	58	+	12 VDC	Power supply secondary	
	59	(-)	12 VDC	Power supply secondary	
	60	+	12 VDC	Power supply secondary	
	61-62	~	24 VAC	Input power supply AC	
	63-64	~	24 VAC	Input power supply AC	

	65-66	(-)	12 VDC	Input power supply DC
Terminal	67-68	+	12 VDC	Input power supply DC

CONNECTION BETWEEN THE TWO COLUMNS

The connection is to be done by:

Transmitter column	**Receiver column**
Terminal 72 (only if anti-crawling MW is used)	Terminal 41
71	40 (ground reference)

CONNECTIONS TO THE CONTROL PANEL

Connections to be made between the transmitter column and the central unit:

Terminal 67-68		+ 12 V DC supply
	65-66	- 12 V DC supply
	63-64	AC 24 V AC resistances power supply
	61-62	AC 24 V AC resistances power supply
	47	Tamper column output
	48	Tamper column output

Connections to be made between the receiver column and the control panel:

Terminal 46		NC double-technology alarm relay
	45	COM double-technology alarm relay
	44	NA double-technology alarm relay
	67-68	+ 12 V DC supply
	65-66	- 12 V DC supply
	63-64	AC 24 V AC resistances power supply
	61-62	AC 24 V AC resistances power supply
	47	Tamper column output
	48	Tamper column output

LEDS, TRIMMERS, RESISTORS, FUSES, SWITCHES OF THE RECEIVER INTERFACE CARD

L1 Led lit: beams alarm
L2 Led lit: MW alarm
L3 Led lit: MW Doppler RX alarm
L4 Led lit: MW Doppler TX alarm
L5 Led lit: beams disqualify on
L6 Led beams alarm timing - disqualify
L7 Led MW alarm timing - MW Doppler RX - MW Doppler TX
L8 Led lit: dual tech general alarm
L9 Led lit: power supply OK, 12 VDC (12-15 VDC)
L10 Led lit: power supply OK, 24 VAC (21-26 VAC)
L11 Led lit: fuse F1 out
L12 Led lit: fuse F2 out
L13 Led lit: thermost on

P1 Trimmer setting beams timing
P2 Trimmer setting MW timing

R1 Cut if input for MW Doppler TX is used
R2 Cut if input for MW Doppler RX is used

F1 Fuse 1A to protect input 12 VDC
F2 Fuse 1A to protect input 24 VAC

DIP SWITCH D1-D8

Tramite questo banco di DIP SWITCH è possibile attivare il funzionamento del buzzer con le seguenti modalità:

D1 on Activate buzzer during dual tech alarm
D2 on Activate buzzer during MW alarm
D3 on Activate buzzer during beams alarm
D4 on Activate buzzer during disqualifying
D5 on Activate buzzer during MW Doppler TX alarm
D6 on Activate buzzer during MW Doppler RX alarm
D7 on Activate buzzer during disqualify simulation
D8 on Disqualify simulation

Dip switchs 7-8 allow to verify the MW working in disqualifying conditions.

The two trimmers on the analysis card will be explained in the section CALIBRATION OF PROCESSING TIMES OF THE TWO TECHNOLOGIES.

LEDS AND FUSES OF THE TRANSMITTER INTERFACE CARD

L1 Led lit: power supply OK 12 VDC (12-15 VDC)
L2 Led lit: power supply OK 24 VAC (21-26 VAC)
L3 Led lit: fuse F1 out
L4 Led lit: fuse F2 out
L5 Led lit: thermostat is on

F1 Fuse 1A to protect input 12 VDC
F2 Fuse 1A to protect input 24 VAC

ALLIGNMENT AND SETTING OF THE INFRARED BEAM MASTER - SLAVE DIP SWITCHES

Before talking about the optical and electrical alignment system, it is necessary to give a few explanations. The serial ABSOLUTE system is composed of one master beam and one slave beam. This means that inside the transmitter column there will be two master transmitters and one slave, and the same for the receiver column.

The identification of the master transmitter and receiver is simple, because they are the only ones having power feeding terminals. If you need stronger protection, the system is prepared for the mounting another four beams inside the columns, while its maximum expansion is six beams.

In the following text we see various dip switches mounted in the apparatuses, with their appropriate settings:

TRANSMITTER SLAVE 7 dip block E
RECEIVER SLAVE 7 dip block D

TRANSMITTER MASTER 5 dip block C
RECEIVER MASTER 6 dip block A + 4 dip block B

SETTING OF DIP C, TRANSMITTER MASTER

TRANSMITTER MASTER

BLOCK C

By setting dip 5 this block assumes two different functions, according to the operation mode:

dip 5 on test mode
dip 5 off operating mode

Test Mode: In the Test Mode it is possible to set the individual transmitters in order to align them individually. The following chart gives various settings for operating individually in the alignment phase:

	1	2	3	4
Test Tx Master	off	off	off	off
Test Tx 1 Slave	on	off	off	off
Test Tx 2 Slave	off	on	off	off
Test Tx 3 Slave	on	on	off	off
Test Tx 4 Slave	off	off	on	off
Test Tx 5 Slave	on	off	on	off

Operating Mode: In this mode the dips are used for introducing of the device code. This code must be identical with the master receiver (block B) and, essentially, ensures that the receivers will not be blocked by other transmitters.

SETTING OF DIP A - B, RECEIVER MASTER

RECEIVER MASTER

BLOCK B

BLOCK A

Block B These dips are used for introducing the device code. This code must be identical with the master transmitter and, essentially, ensures that the receivers will not be blocked by other transmitters.

Block A By setting dip 6 this block assumes two different functions according to the operation mode:

dip 6 on test mode
dip 6 off operating mode

Test Mode: In the Test Mode it is possible to set the individual receivers in order to align them individually. The following chart gives various settings for operating individually in the alignment phase:

	1 2 3
Test Rx Master	off off off
Test Rx 1 Slave	on off off
Test Rx 2 Slave	off on off
Test Rx 3 Slave	on on off
Test Rx 4 Slave	off off on
Test Rx 5 Slave	on off on

Operating Mode: In the operating mode these dips are used to determine the number of receivers connected, including the master.

	1 2 3
Master	on off off
Master + 1 Slave	off on off
Master + 2 Slave	on on off
Master + 3 Slave	off off on
Master + 4 Slave	on off on
Master + 5 Slave	off on on

IMPORTANT: Dip 4 must always remain in the ON position. By using dip 5 it is possible to sample, at different times, the speed of crossing beams:

dip 5 on	80 mS low sesitivity
dip 5 off	40 mS high sensitivity

SETTING OF DIP E - D, TRANSMITTER SLAVE - RECEIVER SLAVE

RECEIVER SLAVE

BLOCK D

TRANSMITTER SLAVE

BLOCK E

This setting is important for establishing dialogue between the master and slave beams. Normally in the ABSOLUTE system there is one transmitter and one receiver slave. These carry the address 1. In case of additional transmitters and receivers, the dip switch must be set in increasing order (SEE table).

	1	**2**	**3**	**4**	**5**	**6**	**7**
Optics 1	**on**	off	off	off	off	off	off
Optics 2	off	**on**	off	off	off	off	off
Optics 3	off	off	**on**	off	off	off	off
Optics 4	off	off	off	**on**	off	off	off
Optics 5	off	off	off	off	**on**	off	off

LED SIGNALS (see picture on page 18)

DL1 RED	**Lit: Beams aligned** **Out: Beams disaligned**

The red LED normally remains lit if all transmitters and receivers are aligned. When the system is in the Test Phase (alignment), this LED indicates the centering of the tested pair.

DL2 YELLOW	**Lit: Beams in normal condition** **Out: One or more beams disqualified**
DL3 RED	**Lit: Beams not in alarm** **Out: Beams in alarm**

The red LED normally remains lit if none of the beams is in alarm. When the system is in the Test Phase (alignment), this LED signals an alarm of the tested pair.

INFRARED BEAM ALIGNMENT

The alignment of the infrared beams is done in two phases: the first one consists in optical alignment, the second in electrical alignment, which requires the use of an analogical voltmeter (tester).

Let us look at how to carry out a correct alignment:

Position a luminous source in correspondence with the transmitter. The beam of the source should be as narrow as possible. For easier alignment during daytime it is advisable to use an impulse source. Direct the beam towards the receiver and move the lens holder of the receiver, at first along the vertical and then the horizontal axis. Make sure that the luminous point generated by the light after passing through the lenses is positioned on the center of the photodiodes.

After completing this step move the lamp to the following transmitters and optically align the remaining receivers.

After aligning all the receivers, repeat the same steps as above in order to align the transmitters.

After completing the optical alignment, pass on to the electrical alignment.

System in Test

Switch dip 6 of block A of receiver master to position ON

Switch dip 5 of block C of transmitter master to position ON
During test procedure, Led DL3 is not active (always off).

Master Alignment
Set the dips 1 2 3 of block C
of the transmitter master into positions Off Off Off
Set the dips 1 2 3 of block A
of the receiver master into positions Off Off Off

Make sure that the red LED DL1 is lit.

Position the tester probes between the terminals -12 +13 (scale range 15 V DC).

The reading on the voltmeter should be between 3 V and 8 V; if so, go on optimizing the signal without the filters. Conversely, if the value is between 8 V and 12V, attenuate the signal by means of the filters supplied so that it is brought between 3V and 8V.

Move the lens holder of the receiver, at first along the vertical and then the horizontal axis, attempting to get the maximum signal. This action should be carried out on the transmitter, and then repeated anew on the receiver. At this point the master is aligned.

Verify that the LEDs are lit, and make crossing tests.

Slave 1 Alignment

Set dips 1, 2 and 3 of blocks A and C into positions On, Off and Off. Position the probes of the voltmeter into the alignment terminals of the receiver slave and repeat the above described steps.

Alignment of Joint Slaves

If the ABSOLUTE system is supplied with more beams, set blocks A and C according to the charts, and align all the transmitters and the receivers electrically.

Operational Setting

Transmitter

After completing the alignment actions, return dip 5 of the transmitter master into position OFF. Set the 4-digit device code by means of dips 1, 2, 3 and 4 on block C.

Receiver

Return dip 6 of block A of the receiver master into position OFF. Set the number of beams present in the system by means of dips 1, 2 and 3 (normally 2 beams: dip = 1 off 2 on 3 off).

Verify that dip 4 is in position ON.

Verify that dip 5 is in positon ON. If a higher sampling speed is required, switch it to OFF.

Set the 4-digit device code by means of dips 1, 2, 3 and 4 on block B.

<u>ATTENTION:</u> it is important and necessary to connect the ground to the individual inputs of <u>transmitter and receiver master</u>!

SUMMARY CHART OF THE SETTINGS

<u>OPERATING MODE</u>

TX MASTER BLOCK DIP C	1	2	3	4	5		
					(DEVICE CODE)		
OFF							
TX SLAVE1 BLOCK DIP E	1	2	3	4	5	6	7
					ON	OFF	OFF
OFF	OFF	OFF	OFF				
RX MASTER BLOCK DIP A	1	2	3	4	5	6	
					OFF	ON	OFF
ON	ON	OFF					
RX MASTER BLOCK DIP B	1	2	3	4			
					(DEVICE CODE)		
RX SLAVE 1 BLOCK DIP D	1	2	3	4	5	6	7
					ON	OFF	OFF
OFF	OFF	OFF	OFF				

<u>CONNECTIONS OF TRANSMITTER MASTER</u>

Terminal 1 Negative supply Connected
Terminal 2 Positive supply Connected
Terminal 3 Earth

CONNECTIONS OF RECEIVER MASTER

Terminal 1 Negative supply Connected
Terminal 2 Positive supply Connected
Terminal 3 Earth
Terminal 4 NC alarm Connected
Terminal 5 COM alarm Connected
Terminal 6 NA alarm Connected
Terminal 7 NC disqualification Connected
Terminal 8 COM disqualification Connected
Terminal 9 NA disqualification Connected
Terminal 10 Free
Terminal 11 Free
Terminal 12 Negative test point for aligment
Terminal 13 Positive test point for aligment

ALIGNMENT AND CALIBRATION OF THE MICROWAVE SHEAF

Setting the Frequency on the Transmitter

***** By means of the 5 terminals placed on the transmitter of common frequency 1, 2, 3 and 4 you can choose four different operational frequencies. For instance, to select frequency 3 it is enough to bridge the COMMON terminal with terminal 3. It is necessary to choose various frequencies because for installation purposes you need to cross or put side by side two beams. It is obvious that the frequency chosen on the transmitter must be selected on the receiver as well.

Description of the Transmitter Fuses Function

- F1 Fuse 1A Supply input 12 V DC
- F2 Fuse 1A Supply input 24 V AC
- F3 Fuse 1A Battery input

Setting the Frequency on the Receiver

By means of dip switch SW 1 it is possible to choose four different operation frequencies. As mentioned before about the setting of transmitter frequencies, it is important to set the same frequency for every pair.

To set the receiver frequency:

Frequency 1 dip 1-2 off dip 3-4 off
Frequency 2 dip 1-2 on dip 3-4 off
Frequency 3 dip 1-2 off dip 3-4 on
Frequency 4 dip 1-2 on dip 3-4 on

Frequency 1 dip 1 off dip 2 off
Frequency 2 dip 1 on dip 2 off
Frequency 3 dip 1 off dip 2 on
Frequency 4 dip 1 on dip 2 on

Alignment Procedure for Microwave

The first regulation to be made involves the distance between the transmitter and the receiver columns. The height of the microwave pair in reference to the ground is the following:

TAB 1

Distance 30 m Height 85 cm*
Distance 50 m Height 110 cm*
Distance 75 m Height 120 cm*
Distance 100 m Height 85 cm*
Distance 130 m Height 100 cm*
Distance 150 m Height 110 cm*

* Attention: if the surface is asphalt, 20 cm more must be added to the normal heights mentioned above.

* Attention: the minimum operational distance between the two columns of the ABSOLUTE system is 20 m.

* Select, using dip switch SW 2, the test state: DIP 2 OFF.

* Connect a 20 kOhm/V tester, with a range of 2 V DC, between terminals M 10 (ground) and M 1.

* Using dip switch SW 2

dip 1 on near
dip 1 off distant

and regulating trimmer R 18 the tester should give a reading at about the middle of the scale.

* Moving the joint of the receiver parabola first horizontally and then vertically, find the maximum indication of the tester. If in this phase the instrument should reach the scale maximum by means of trimmer R 18, you will have to return the pointer to the middle of the scale in order to find the maximum indication.

* Repeat the above-described actions on the transmitter parabola.

* Repeat the calibration of the receiver, seeking the maximum alignment.

* After completing the above-described actions, return dip switch SW 2 into operational state, **dip 2 ON**, after about 30 - 40 seconds. If nobody interrupts the beam, the tension reading of the tester should stabilize itself at about 0.4 V DC.

* With trimmer R 45 you can carry out an electronic regulation of the width of the beam according to your protection demands. Keep in mind that the beam in the centre has a width of about:

Distance 30 - 50 m Beam width 2 - 3.5 m
Distance 50 - 100 m Beam width 3.5 - 5 m
Distance 100 - 150 m Beam width 5 - 6 m

* By using trimmer R 62 you can make the microwave less sensitive to the crossing of the beam, and consequently less sensitive to the crossing through of small animals.

* During the test phase R 45 and R 62 are not in operation.

Description of the receiver fuses function:

- F1 Fuse 1A Supply input 12 V DC
- F2 Fuse 1A Supply input 24 V AC
- F3 Fuse 1A Battery input
- The red LED of the microwave receiver indicates an alarm of the microwave. The signalization is important when carrying out field tests. When the system is in test this led flashes.

ASSEMBLY AND CALIBRATION OF DOPPLER MICROWAVE ANTI-CRAWLING DEVICE (optional)

In linear installations where no crossing by more barriers is implemented, it is possible to protect the first few metres under the individual columns with a special microwave “Strip Line” device mounted inside the column. With such a device the first two to three metres are covered, which does not permit crawling.

This system also requires infrared consent to generate the double-technology alarm. Conversely, in the case of disqualification of the system, it will behave in the same way as the microwave sheaf, generating its own autonomous alarm.

ASSEMBLY

* Connect the three wires to the following terminal on the TX interface card:

Terminal 2 to red wire
Terminal 3 to black wire
Terminal 1 to blue wire

Cut R1 resistor on the receiver interface card.

* Repeat the same actions on the interface card of the receiver as follow:

37 blue
38 black
39 red

Cut R2 resistor.

* By means of the potentiometer placed directly above the fixing nut you can carry out microwave calibration, keeping in mind that the covering lobe must reach as far as the point at which the microwave sheaf can get activated, even by crawling.

Make sure that during calibration nobody moves in front of the transmitter column.

CALIBRATION OF THE PROCESSING TIMES OF THE TWO TECHNOLOGIES

On the interface card of the receiver (page 9), in the bottom left corner, there are two trimmers: P1 and P2. Both trimmers are used to regulate the times (from 20 to 120 Sec, clockwise) of the temporary windows of their technologies. This means that if the microwave timer is set at 30 seconds, an alarm triggered by the microwave will be transformed into a general alarm **only** if, within 30 seconds, the infrared device generates an alarm as well. Similarly, if the timer of the infrared device is set at 20 seconds, an alarm provoked by the infrared

device will be transformed into a general alarm **only** if, within 30 seconds, the microwave generates an alarm as well.

CLOSING THE COLUMNS

Close the columns, taking care so that the guiding gaskets of the plexiglass are in place and correctly inserted into the extrudates. Random movements of the plexiglass could cause false alarms. Make sure that the plexiglass is always clean, especially at the lower part of the columns.

Caution: *it is recommended to close the hole on the bottom of the columns in order to avoid the intrusion of insects which could jeopardize the operation of the appliance.*

TECHNICAL FEATURES OF THE INFRARED DEVICE

The infrared system is composed of a transmitter that sends, through a special optical system, an encoded infrared beam to the receiver.

The receiver provides for recognition and decodification of the beam, and generates an alarm in case the signal is different from an acceptable one (attempt to neutralize the barrier), or whenever a signal is not received for a time span longer than the sampling time.

Power supply: 12 V DC
Scope: 150 m
Optics: 4 Fresnel lenses (42 mm)
Wavelength: 940 nm
Max. number of beams: 6
Sampling time: 80 - 120 ms (master)
40 - 80 ms (slave)

TECHNICAL FEATURES OF THE MICROWAVE DEVICE

Frequency: 10,5 GHz
Scope: 150 m
Sheaf diameter: from 1 to 6 m
Power supply: 12 V DC, 24 V DC

FEATURES OF THE COLUMNS

Colour: black
Construction: alluminium extrudate
Dimensions: width 25 cm
depth 13 cm
standard height 2 m
maximum height 4 m

COMPONENTS CONSUMPTION

Scheda interfaccia RX:
Scheda interfaccia TX:

MW Doppler TX o RX:	35 mA (14VDC)
MW TX:	110 mA (14VDC)
MW RX:	35 mA (14VDC)
IR sezione TX master:	45 mA (14VDC)
IR sezione TX slave:	25 mA (14VDC)
IR sezione RX master:	110 mA (14VDC)
IR sezione RX slave:	40 mA (14VDC)

Resistenze di riscaldamento a 24 VAC: 220 mA per each IR