TECHNICAL MANUAL

LUPUS - VOLANS (Vth series)

Evolved wireless transmitters for FM systems

090040459

CE

EL.MO. SPA

WARNING

FOR THE INSTALLER:
Please follow carefully the specifications relative to electric and security systems realization further to the manufacturer's prescriptions indicated in the manual provided.
Provide the user the necessary indication for use and system's limitations, specifying that there exist precise specifications and different safety performances levels that should be proportioned to the user needs. Have the user view the directions indicated in this document.

FOR THE USER:
Periodically check carefully the system functionality making sure all enabling and disabling operations were made correctly.
Have skilled personnel make the periodic system's maintenance. Contact the installer to verify correct system operation in case its conditions have changed (e.g.: variations in the areas to protect due to extension, change of the access modes, etc…)

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This device has been projected, assembled and tested with the maximum care, adopting control procedures in accordance with the laws in force. The full correspondence to the functional characteristics is given exclusively when it is used for the purpose it was projected for, which is as follows:

Evolved wireless transmitters for FM systems

Any use outside of this area is not provided and it is not possible to guarantee its proper operation, and therefore it is expressly forbidden to the holder of this manual to use it for other reasons than those indicated.
The manufacturing process is carefully controlled to prevent defects and malfunctions; nevertheless the components used is subjected to faults extremely low percentage, as indeed it does for every other electronic or mechanical. Given the target of this article (property and persons protection) invite the user to proportion the protection level offered by the system to the actual risk (considering the possibility that the system it is operating in degraded mode due to faults or other), reminding that there are clear rules for the design and construction of equipment to this type of application.

The system's operator is hereby advised to see regularly to the periodic maintenance of the system, at least in accordance with the provisions of current legislation, as well as to carry out checks on the correct running of said system on as regular a basis as the risk involved requires, with particular reference to the control unit, sensors, sounders, dialler(s) and any other device connected. The user must let the installer know how well the system seems to be operating, based on the results of periodic checks, without delay.

Design, installation and servicing of systems which include this product, should be made by skilled staff with the necessary knowledge to operate in safe conditions in order to prevent accidents. These systems' installation must be made in accordance with the laws in force. Some equipment's inner parts are connected to electric main and therefore electrocution may occur if servicing was made before switching off the main and emergency power. Some products incorporate rechargeable or non rechargeable batteries as emergency power supply. Their wrong connection may damage the product, properties and the operator's safety (burst and fire).

Your dealer

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1. GENERALS

LUPUS and VOLANS transmitters are used to control windows, doors or perimeter fences protected by wireless systems based on HELIOS, Villeggio control unit or other compatible units.
Transmitters general features:
- **LUPUS** = Used to transmit status changes of magnetic contacts or detectors for roll-up shutters hardwired to the relevant terminals. Different transmission codes are used for prompt identification of alarmed zones. It is equipped with a REED magnetic contact placed on one side of the housing, the internal REED used is selectable and alternative to the terminal inputs. The roller shutter input can be programmed appropriately to be connected to a second magnetic sensor for use in houses with balconies and windows.
- **VOLANS** (V^{th} series) = Used to transmit status changes of magnetic contacts or detectors for roll-up shutters hardwired to the relevant terminals. Different transmission codes are used for prompt identification of alarmed zones. It is equipped with a REED contact placed on one side of the housing, the internal REED used is selectable and alternative to the terminal inputs. It is equipped a piezo impact sensor with adjustable sensitivity into the plastic bottom to be used as an alternative or in conjunction with the roll-up shutter sensor.
The plastic housing features a brand-new design in line with current style trends. **Version "M" (brown colour) also available.**
For the used with the compatible receiving device, there is a selector to set the communication protocol (default HELIOS).
Note: for Villeggio control unit equipped with firmware previous to the 5.0.0 version select the HELIOS protocol, the Villeggio protocol is supported only by Villeggio control units with 5.0.0 firmware or higher and other compatible devices. The products are supplied with an identification code programmed in factory. The code is randomly assigned choosing among more that 2 billion combinations (2^{31}).
The transmitters will send alerts in the event of discharged battery, housing tamper event and supervision event.
The codes are digitally transmitted to a frequency required for low-power applications (LPD).
The operative range of these devices is evaluated in the open field without obstacles, in some indoor environments with particular constructional characteristics is possible that the range is reduced. LUPUS and VOLANS has 150m range. The autonomy of the transmitter is measurable in years of activity, as indicated in the characteristics of the individual model.

2. FEATURES

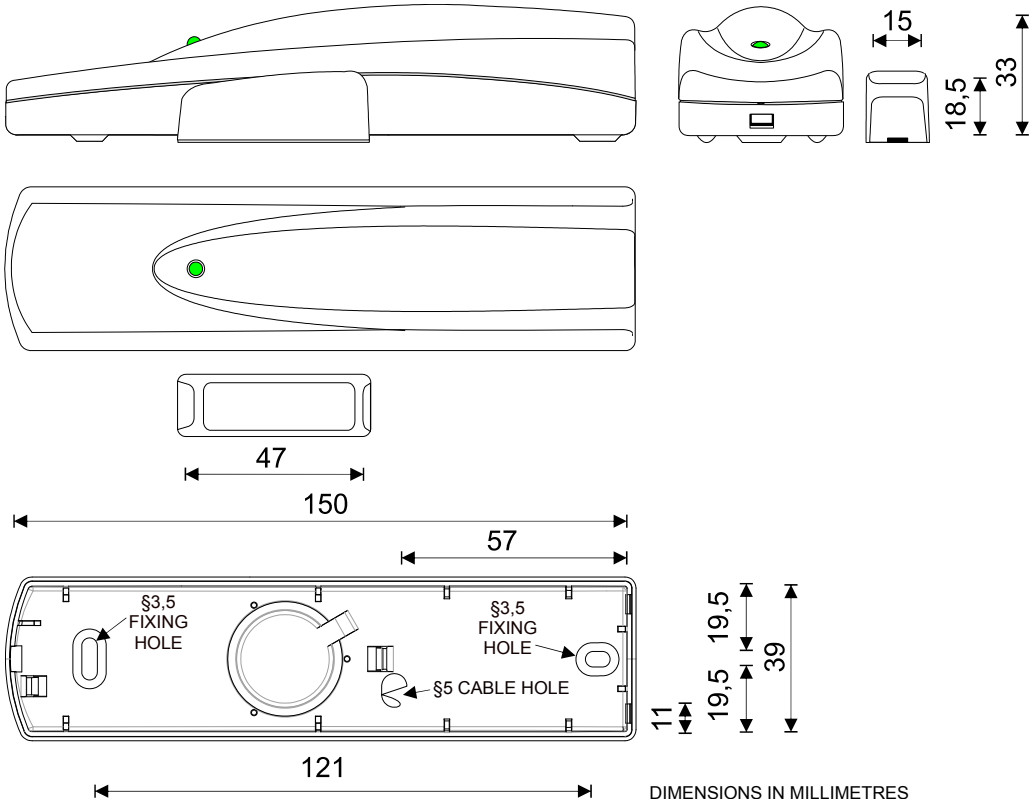
Model:	**LUPUS (V^{th} series)**	**VOLANS (V^{th} series)**
Protection class:	IP3X	
Performance level:	CEI 79-2 1st level, CEI 79-16 B level	
Power supply voltage:	3,6V from Lithium battery 1/2 AA 3,6V supplied	
Low battery threshold:	2,7V	
Minimum operating voltage:	2,3V for the transmitter - 2,7V for LED indicator	
Power consumption @3,6V:	6,1 µA in stand-by, 17 mA maximum.	8,7 µA in stand-by, 17 mA maximum.
TX frequency:	Digital transmission over frequency for LPDs (Low Power Devices)	
Connection range:	150m in open field, subject to environment limits	
Average autonomy:	4 years with HELIOS protocol, 5,5 years with Villeggio protocol.	4 years with HELIOS protocol, 4,5 years with Villeggio protocol.
	Note: the calculation assumes 20 total transmissions per day and a supervised every 25min.	
Inputs:	1 NC input for magnetic contacts. 1 NC input default configured by default for roll-up shutters detectors connection; can also be connected to a second magnetic contact, moving on ON the dip. n°3. NC Tamper input.	1 NC input for magnetic contacts 1 NC input for roll-up shutters detectors connection; can be used in combination with built-in piezo detector. 1 Tamper NC input.
Special operating features:		Piezo detector installed on the base with impact sensitivity adjustment and LED indicator for detected pulses.
Wiring length with 2 x 0,22 mm^2 cable:	input limitation for roll-up shutter at 1 total meter; max. 20 meters for the input for magnetic contacts.	
Adjustments:		Trimmer for impact sensitivity adjustment. Alarm triggered when 2 pulses are received within 15s. Pulses filter with repetitions above 1Hz.

Model:	LUPUS (V[a] series)	VOLANS (V[a] series)
Settings:	Roll-up shutters input sensitivity is set by manufacturer at 5 pulses in 15s	
Selections:	Enable/disable on-board REED magnetic contact (only from one side)	
Views:	Front blue LED.	Front yellow LED used also for viewing of the piezo sensor pulsed.
TX protocol:	the transmitter is supplied with dipswitch for protocol setting, use the n.2 in OFF position for HELIOS protocol (default), in ON for Villeggio protocol. **Note: for Villeggio control units equipped with firmware previous 5.0.0 version select the HELIOS protocol. The Villeggio protocol is supported only by Villeggio control units with 5.0.0 firmware or higher and other compatible devices.**	
TX encoding:	The code is assigned at random choosing among more that 2 billion combinations (231)	
Transmission for:	Magnetic contact alarm code with reset command transmitted separately from transmission code of roll-up shutters input.	See LUPUS details (left). In addition, transmissions for impact detection of built-in piezo detector.
Standard transmission for:	Low battery status is indicated by a piece of code added to the end of the first valid transmission. Periodic transmission for supervision every 30 minutes. Tamper event (when housing is opened)	
Operating temperature:	-10 / +45 °C guaranteed by manufacturer - 93 % Ur.	
Dimensions:	Transmitter W 150 x H 33 x D 39 mm, magnet W 47 x H 18,5 x D 15 mm.	
Weight:	75 g (with battery and magnet).	79g (with battery and magnet).
Parts supplied:	4 self-tapping screws 2.9x13, 1/2 AA 3,6V Lithium battery supplied to install, day magnet, technical manual.	

The transmitters for wireless systems modd. LUPUS and VOLANS are components of wireless intrusion detection systems based on HELIOS, Villeggio control units and other device admittedly compatible. They are compliance to the following Standards: **CEI 79-16, CEI 79-2, ETSI 300-220, ETSI 301 489, EN 50130-4, EN 61000-6-3, EN 60950, 2004/108/CE, 2006/95/CE, EN 50131-1. The LUPUS and VOLANS transmitters are suitable for indoor installation you should not install in a location where they may be interested condensation phenomena such as direct mounting on a balcony.**

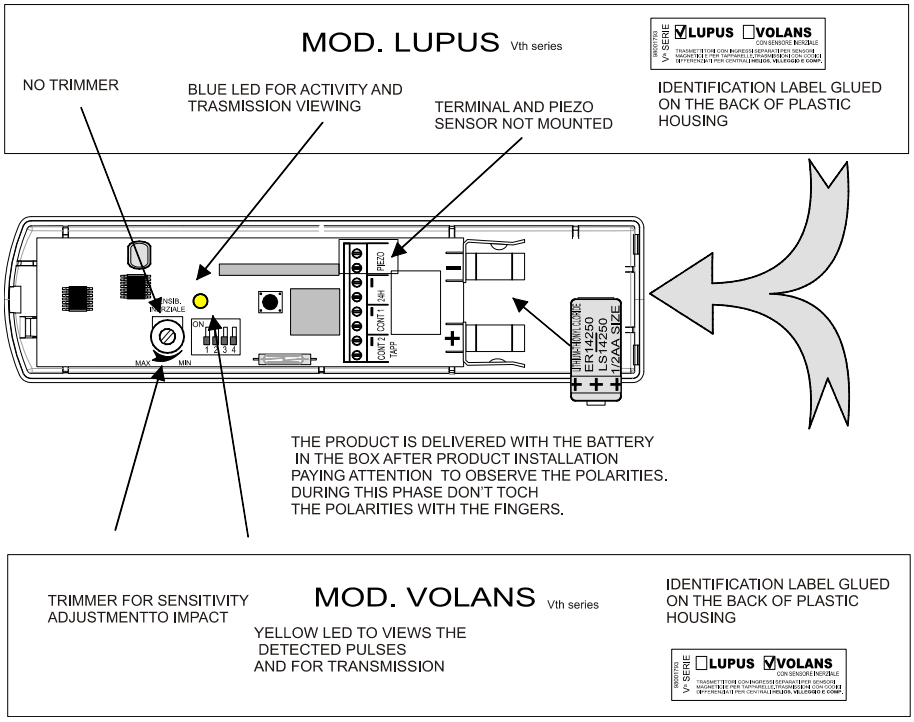
3. MECHANICAL FEATURES

Plastic housing of the transmitter and external magnet viewing.



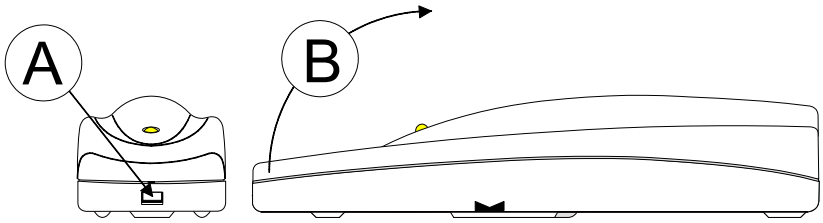
4. HOW IDENTIFY LUPUS AND VOLANS TRANSMITTERS

The two transmitters can be easily recognized as specified in the following drawing:

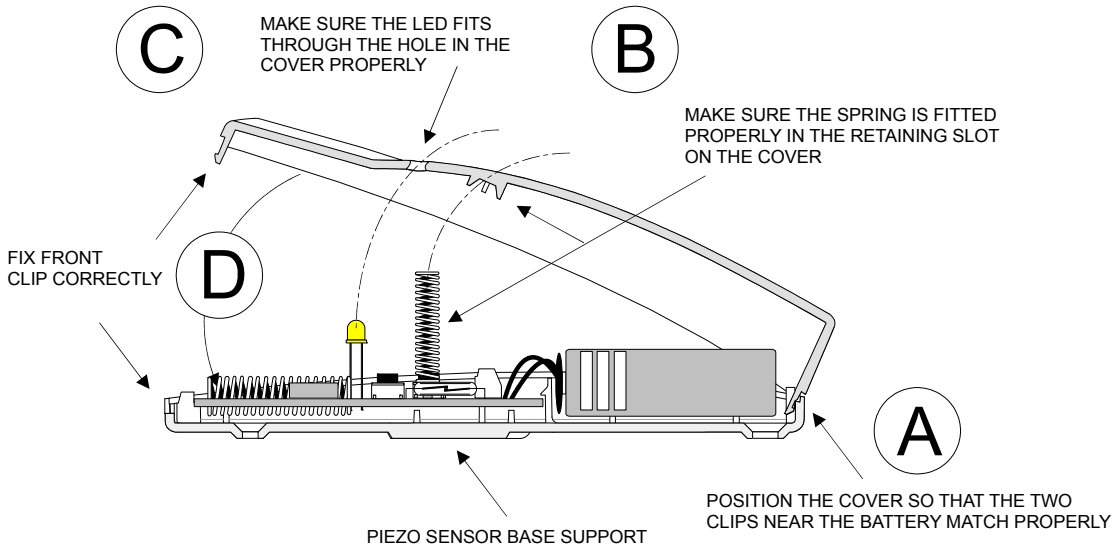


5. OPENING AND CLOSING TRANSMITTERS HOUSING

Basic steps to open and close the transmitter housing.
Housing opening.

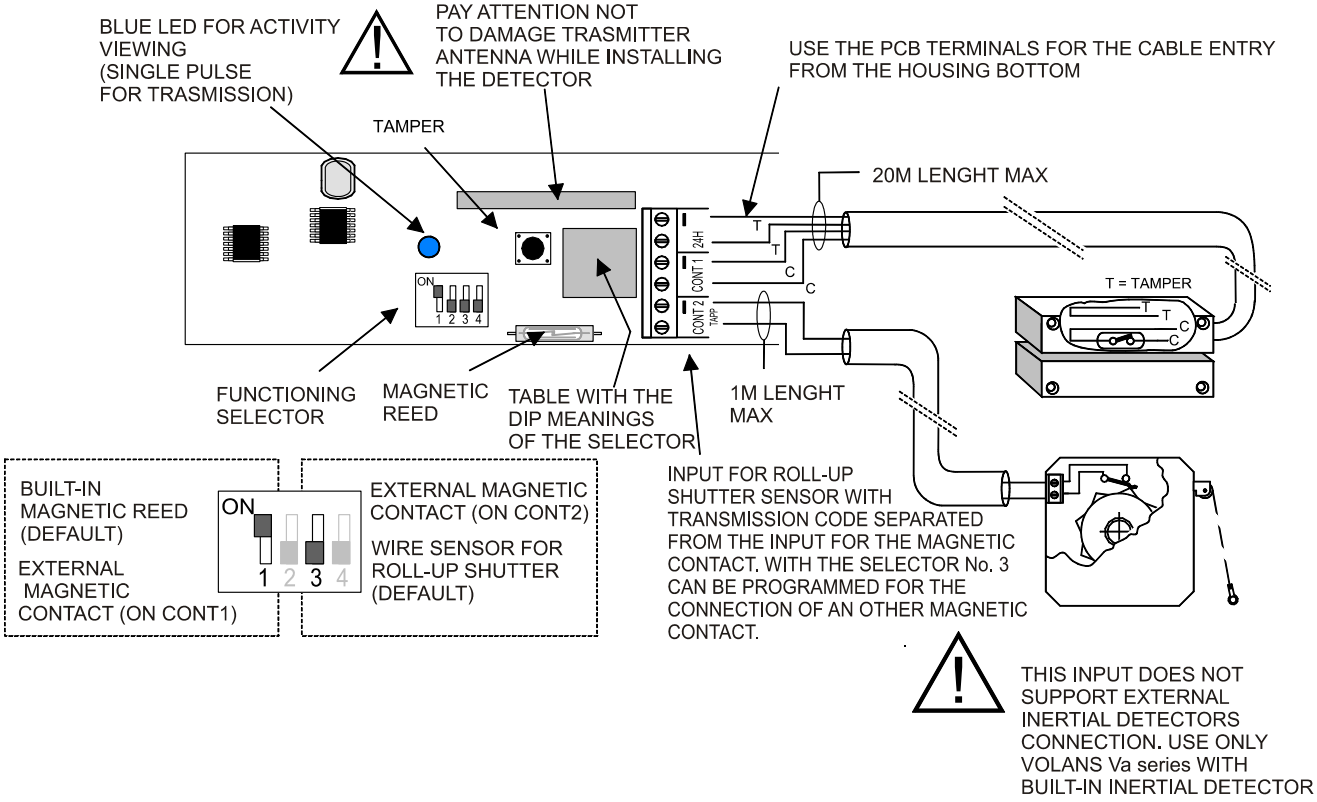


Housing closing.

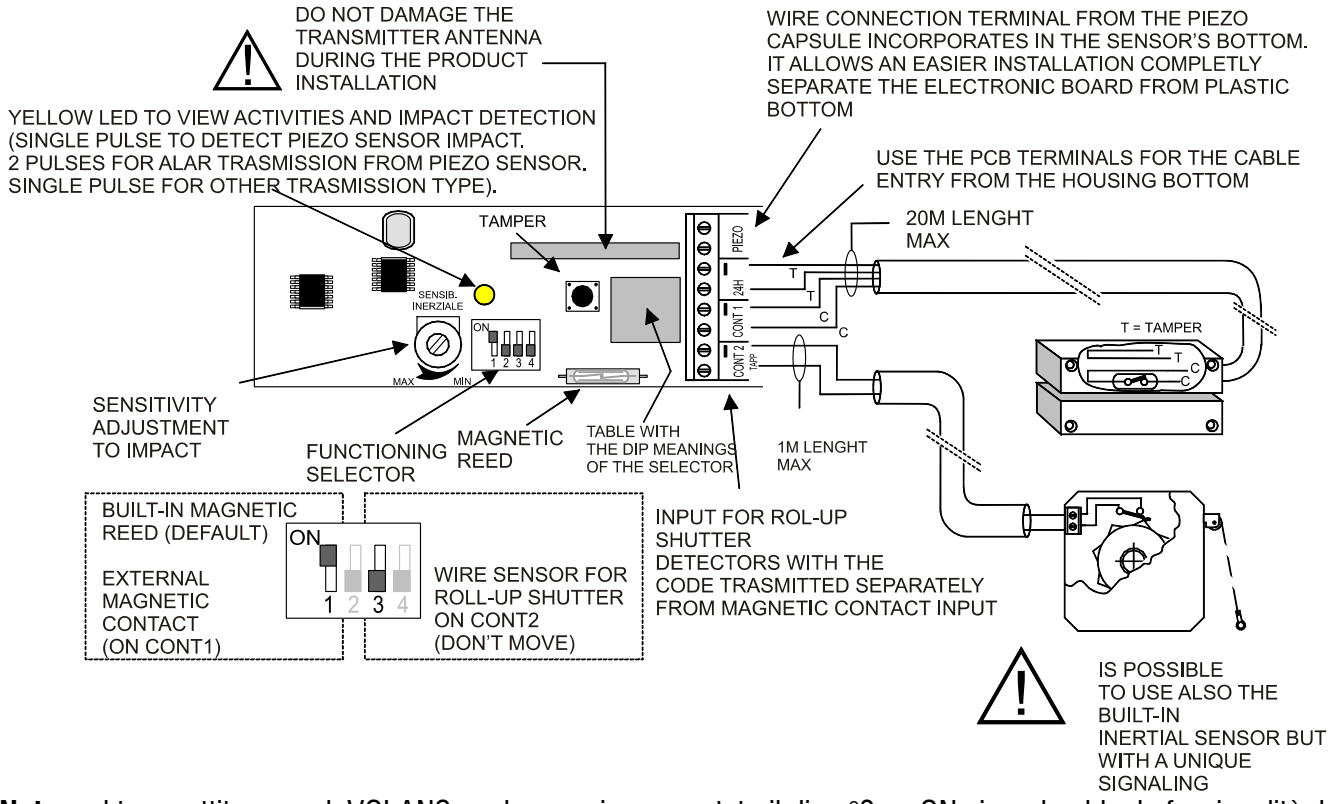


6. ELECTRICAL WIRING DIAGRAMS

View of the LUPUS transmitter board, internal arrangement and basic connections.



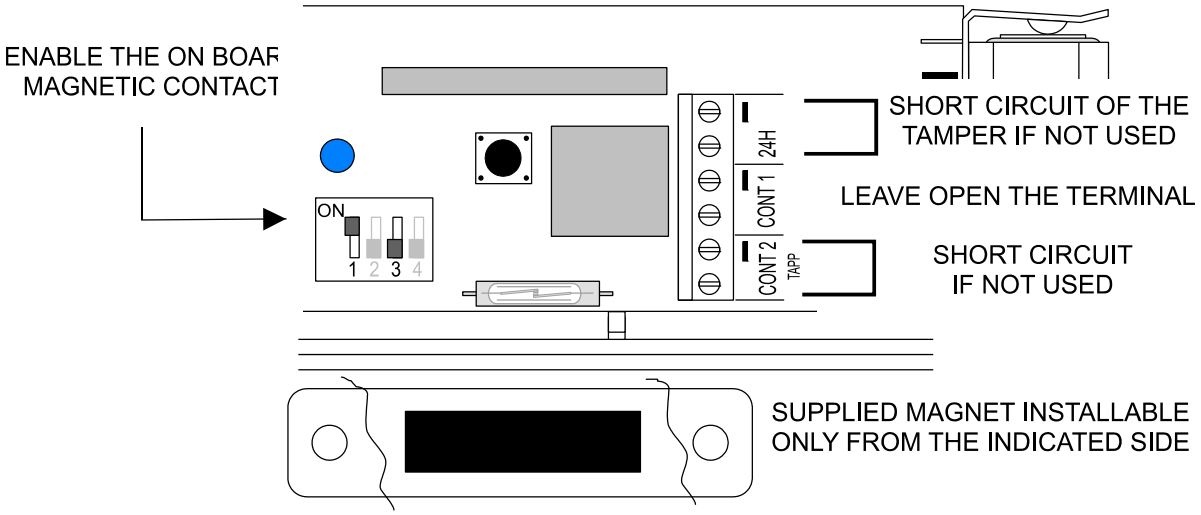
View of the.VOLANS transmitter board, internal arrangement and basic connections.



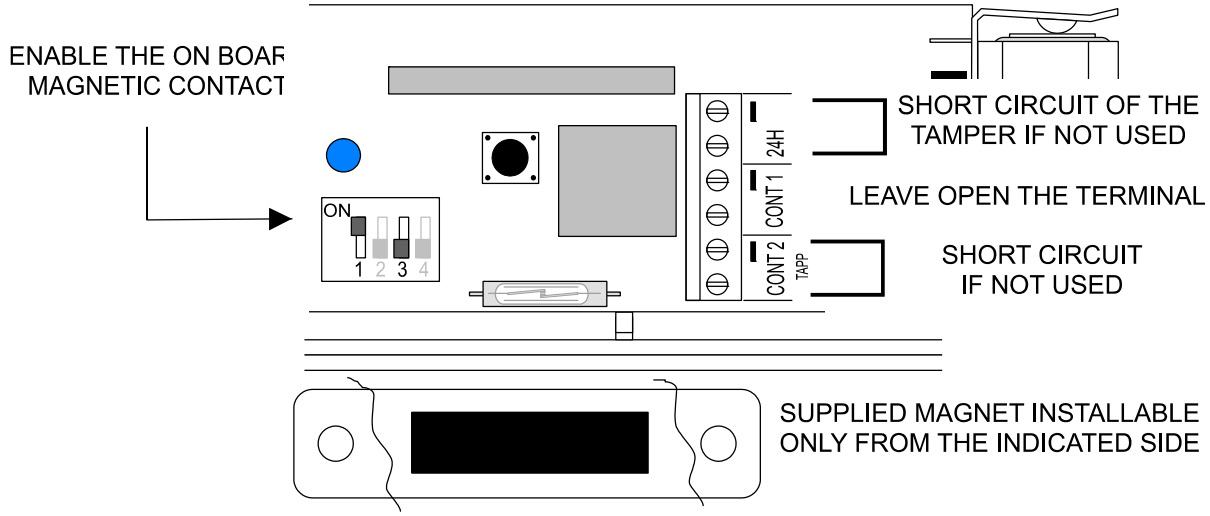
Note: nel trasmettitore mod. VOLANS qualora venisse spostato il dip n°3 su ON si perderebbe la funzionalità del rivelatore piezo ad esclusivo vantaggio della gestione di un contatto magnetico esterno su CONT2.

6.1 Type of connection for LUPUS

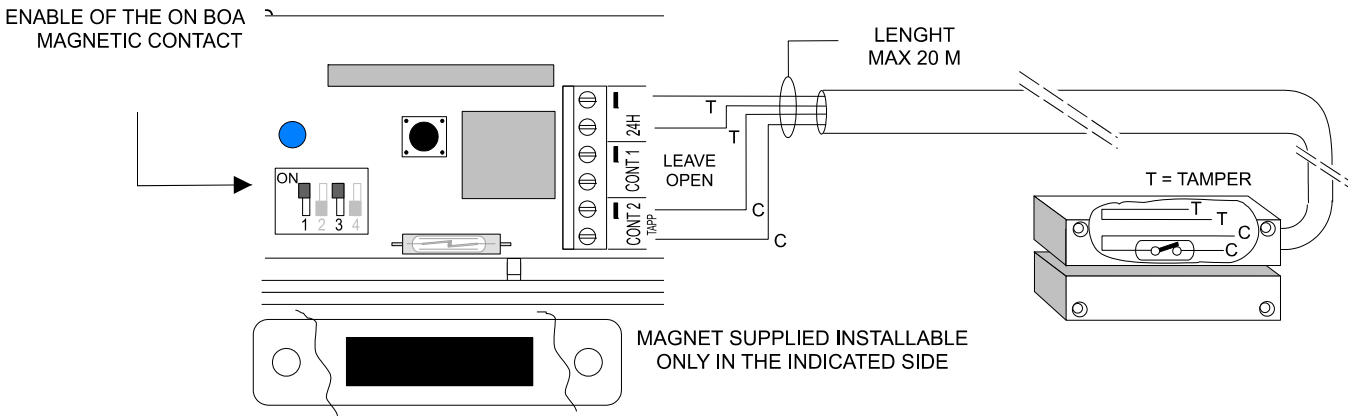
Only on board magnetic contact:.



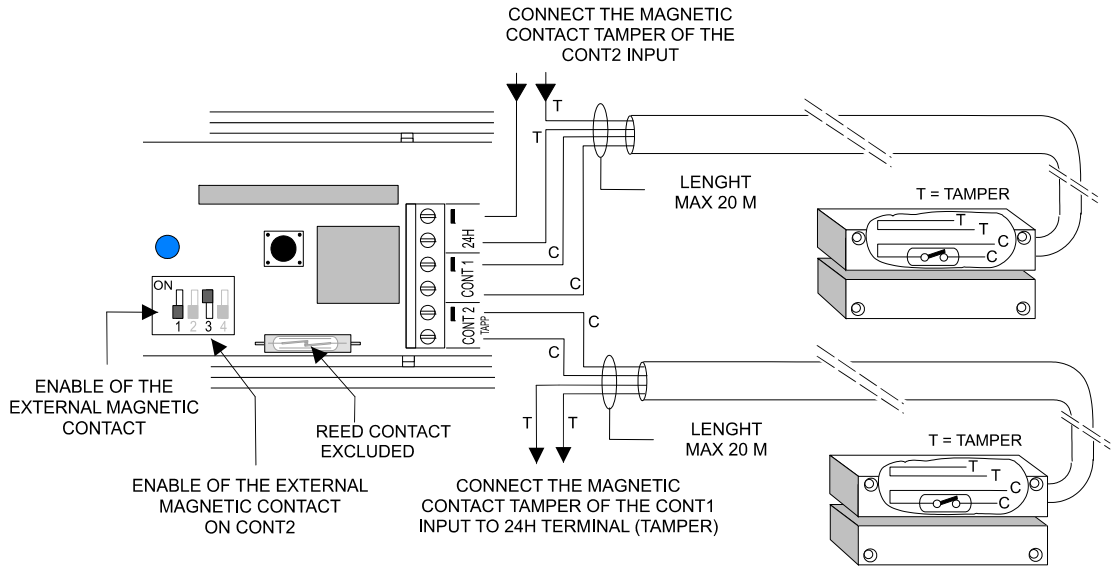
Only external magnetic contact:.



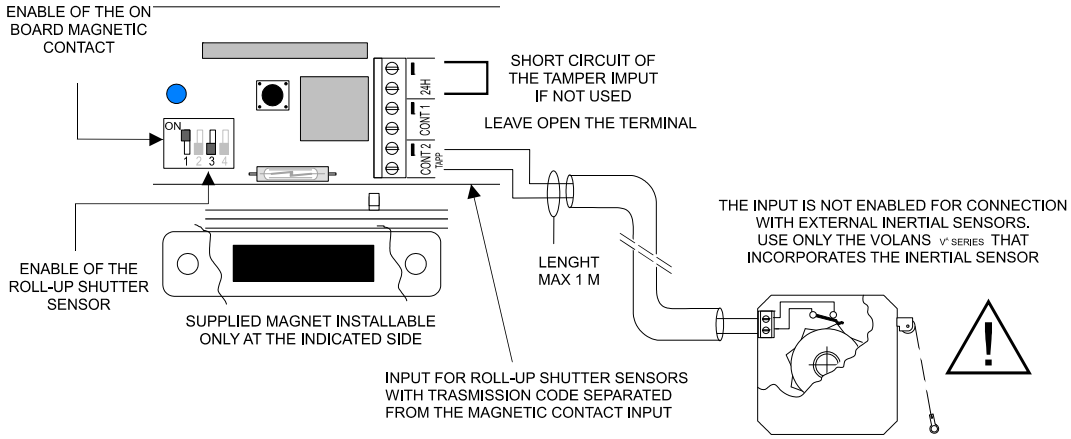
On board and external magnetic contact:



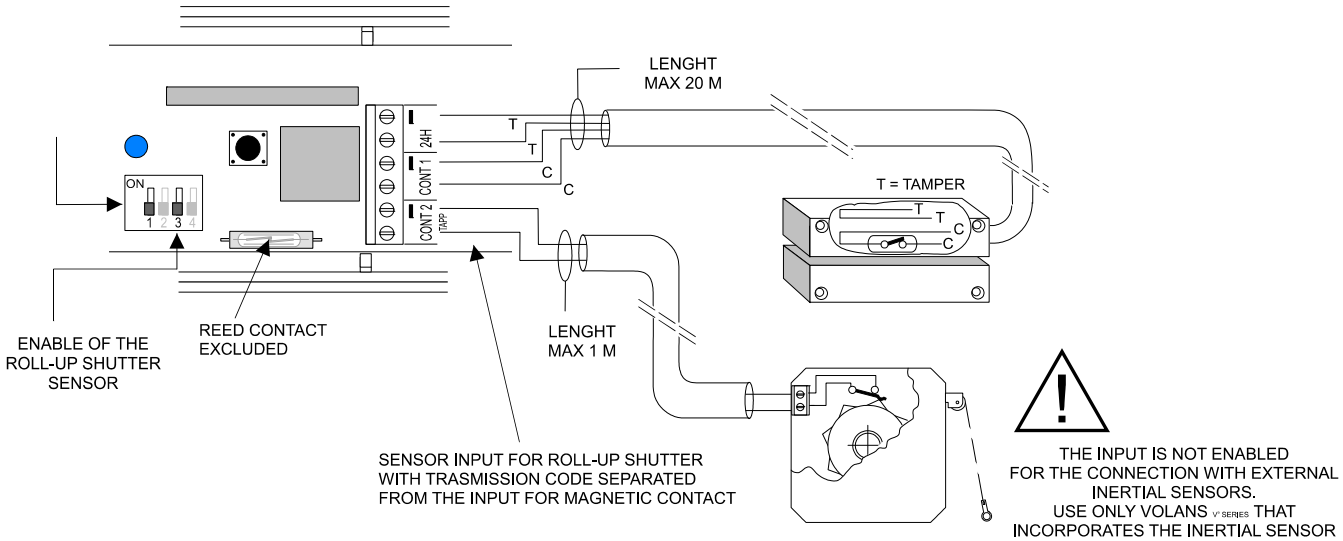
Only external magnetic contact, used of two terminal inputs.



On board magnetic contact and roll-up shutter.



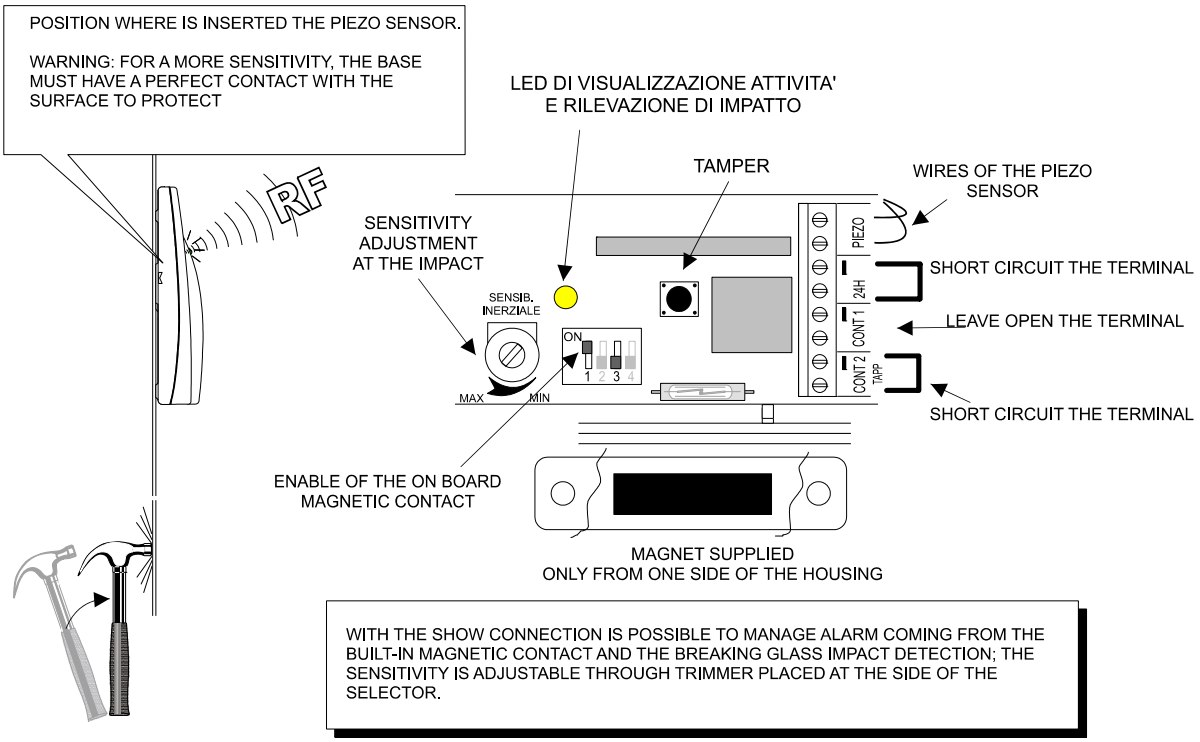
External magnetic contact and roll-up shutter sensor.



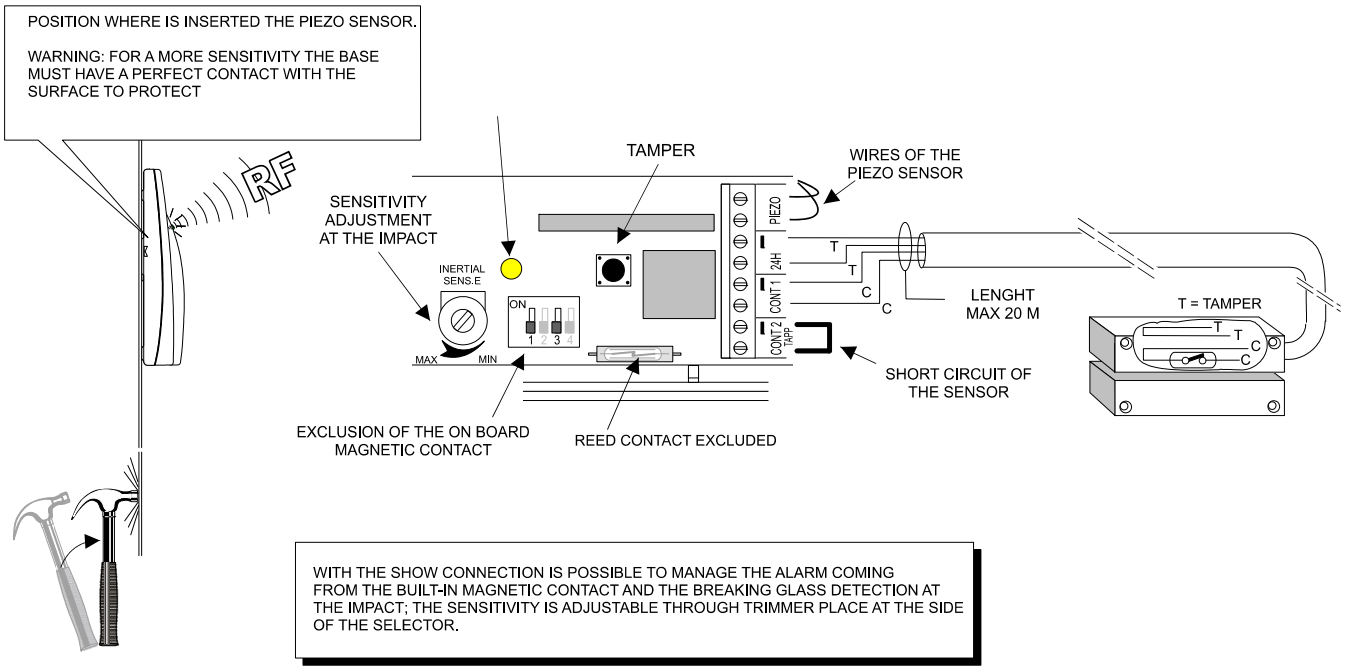
Note: in order to ensure the product certification is necessary to realize the wiring lines of Tamper protection of the external magnetic contact and of the roll-up sensor to the transmitter terminal.

6.2 Type of connection for VOLANS

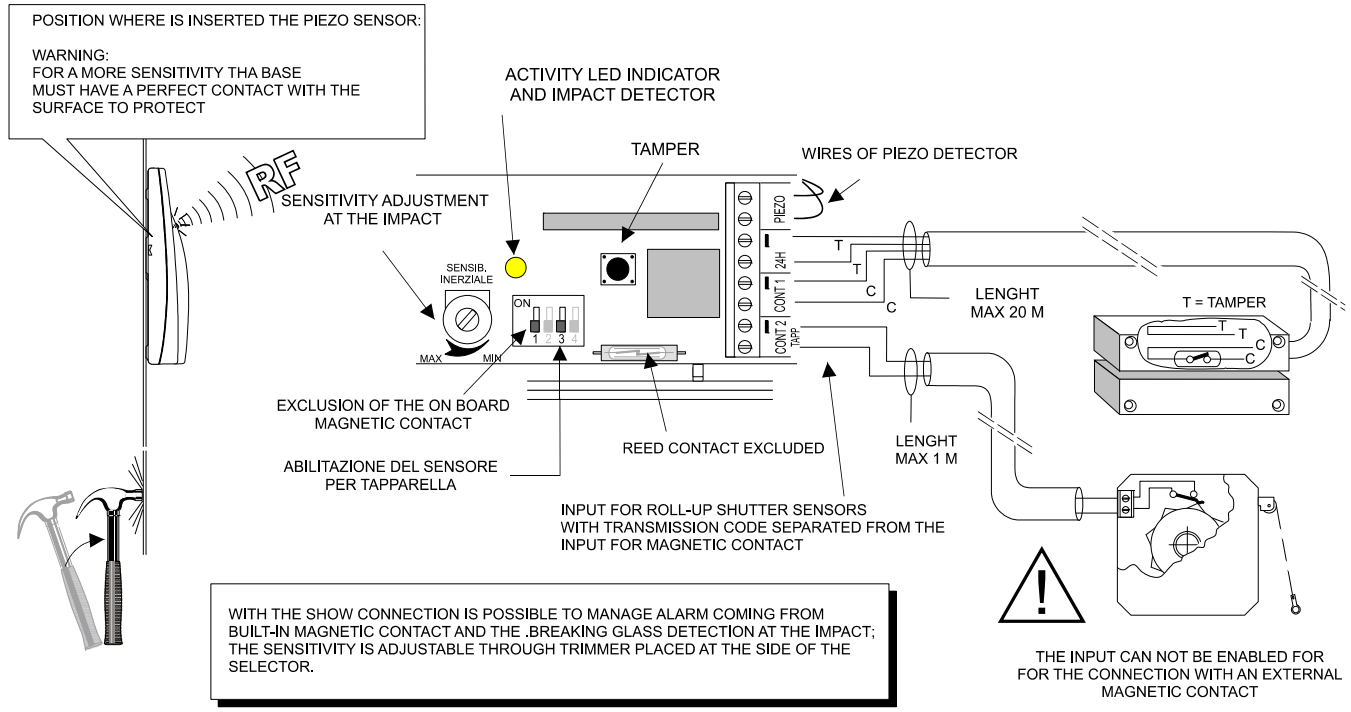
Magnetic contact and on board inertial sensor.



External magnetic contact and on board intertial sensor.

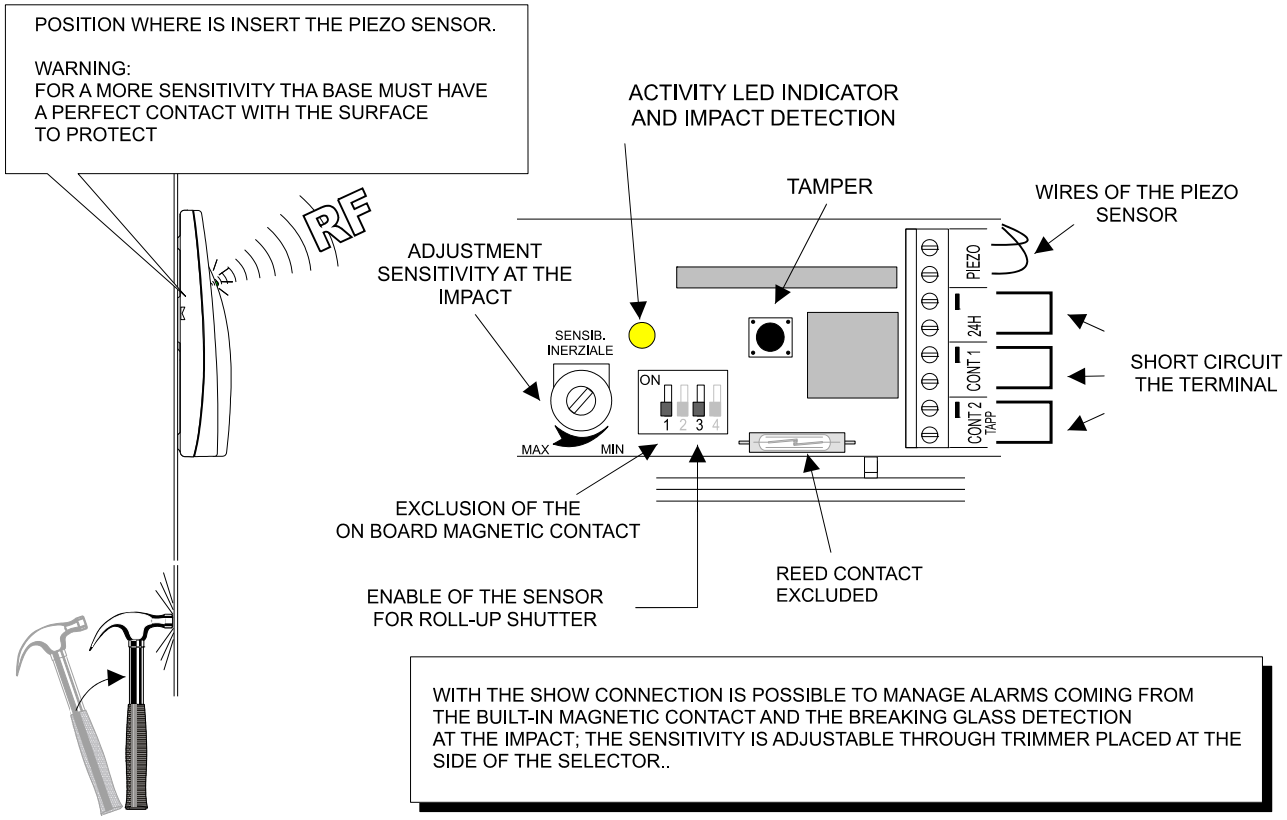


External magnetic contact, external roll-up sensor and on board inertial sensor.



Note: is not possible to use VOLANS transmitter with a second external magnetic contact connected to CONT2 terminal (the dip n°3 must be in OFF position)

Only on board inertial sensor.



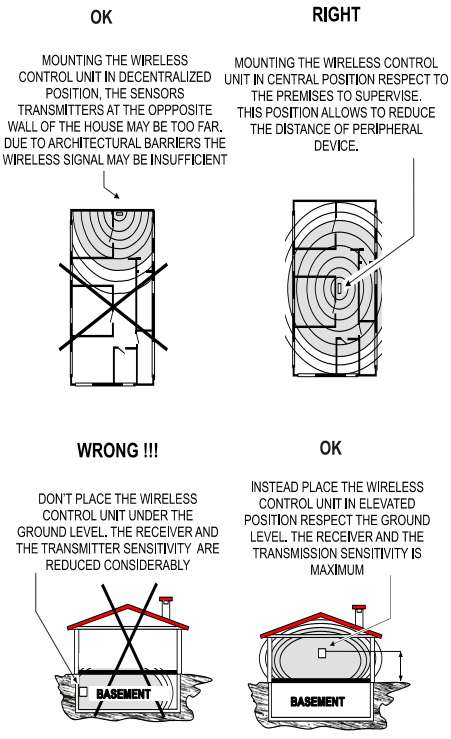
Note: in order to ensure the product certification is necessary to realize the wiring lines of Tamper protection of the external magnetic contact and of the roll-up sensor to the transmitter terminal.

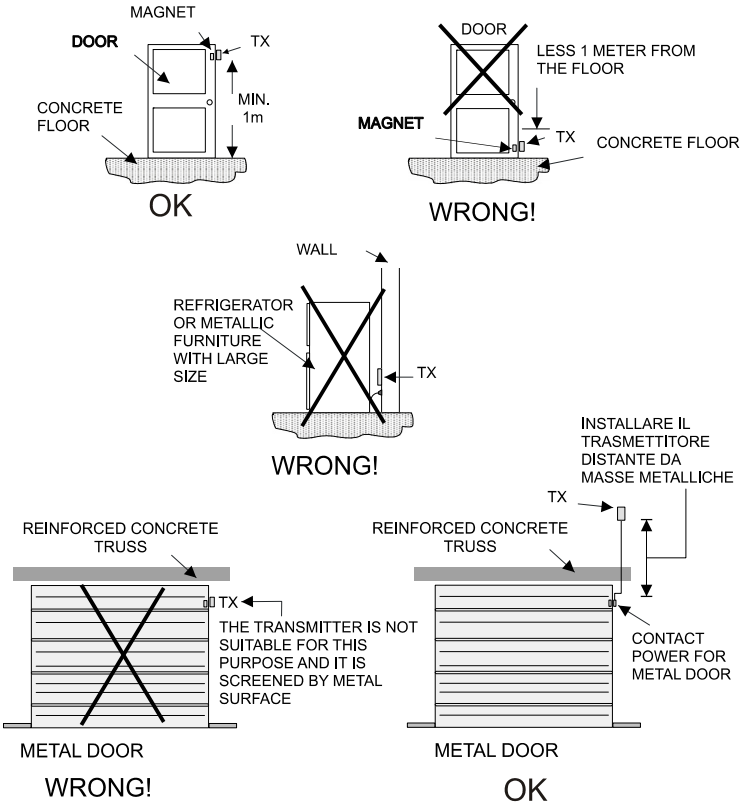
7. INSTALLATION

The installer must operate in the total absence of electrostatic charges already at the housing opening, make sure that the electronic board of the detector can be damaged by electrostatic discharge.
The precautions should be observed during the installation phase and during maintenance.

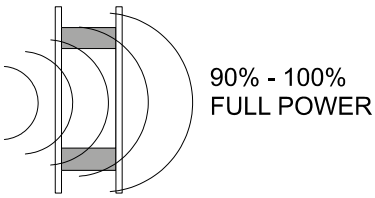
The transmitters have to be installed strictly following a number of rules to avoid loss of performance as a result of positioning errors. For instance, it is of the utmost importance that you use extreme care when defining the receiving system's operating area within which the transmitter will be installed, as well as the detectors' actual coverage and correct installation, especially taking into account building materials used. The following drawings illustrate correct and unsuitable installation positions, and objects and materials that may affect (i.e. attenuate) RF signals.

Installation layouts:.

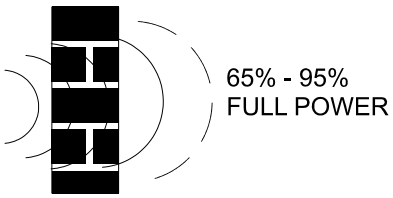




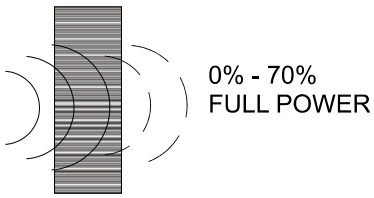
Radio signal attenuation caused by common building materials.



PLYWOOD OR HONEYCOMB WALLS

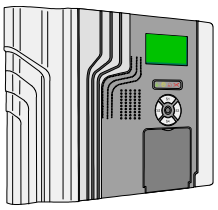


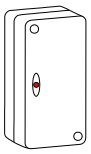
SOLID OR HOLLOW BRICKS

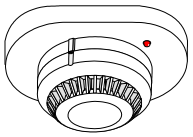


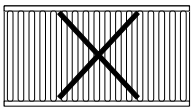
SHEET METAL AND PLASTER REINFORCED CONCRETE

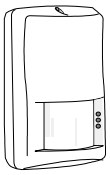
Objects that may alter and/or decrease operating range with HELIOS control unit.

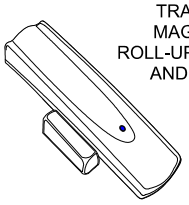

WIRED WIRELESS CONTROL UNIT

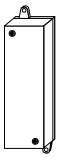

ACTUATOR

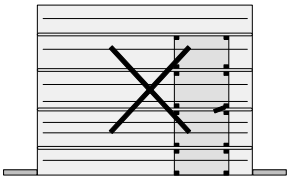

SMOKE DETECTOR


METAL GRIDS
(EG. BASEMENT WINDOW WELLS)
AND REINFORCED CONCRETE WALLS

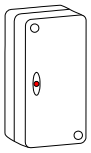

IR DETECTOR

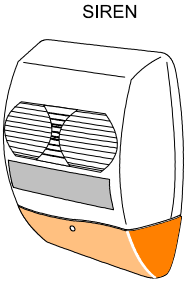

TRANSMITTERS FOR
MAGNETIC CONTACT,
ROLL-UP SHUTTER SENSORS
AND IMPACT INERTIAL

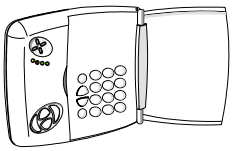

RF RIVER
CONCENTRATORS


METAL DOORS

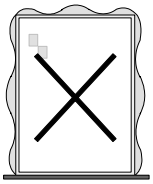

TRANSMITTER WITH
BUILT-IN MAGNETIC
CONTACT


TRANSMITTER WITH
TERMINAL INPUT

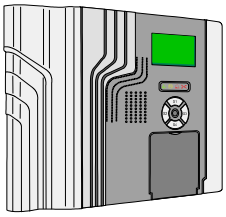

SIREN

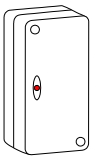

CONTROL
KEYBOARD

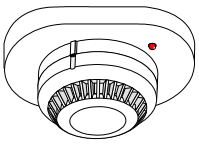

TRANSMITTER
WITH TEMPERATURE
SENSOR

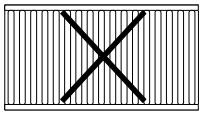

MIRRORS

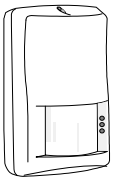
Objects that may alter and/or decrease operating range with Villeggio control unit.

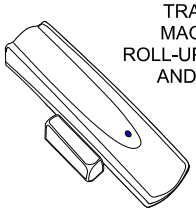

WIRED WIRELESS CONTROL UNIT

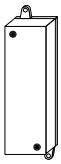

ACTUATOR

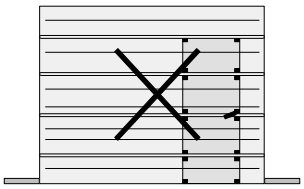

SMOKE DETECTOR


METAL GRIDS
(EG. BASEMENT WINDOW WELLS)
AND REINFORCED CONCRETE WALLS

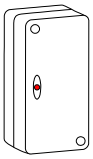

IR DETECTOR

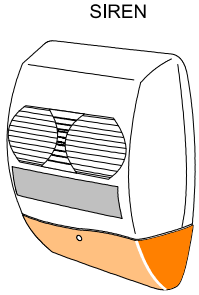

TRANSMITTERS FOR
MAGNETIC CONTACT,
ROLL-UP SHUTTER SENSORS
AND IMPACT INERTIAL

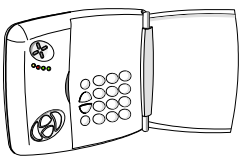

RF RIVER
CONCENTRATORS


METAL DOORS

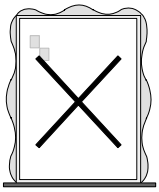

TRANSMITTER WITH
BUILT-IN MAGNETIC
CONTACT


TRANSMITTER WITH
TERMINAL INPUT


SIREN


CONTROL
KEYBOARD


TRANSMITTER
WITH TEMPERATURE
SENSOR


MIRRORS

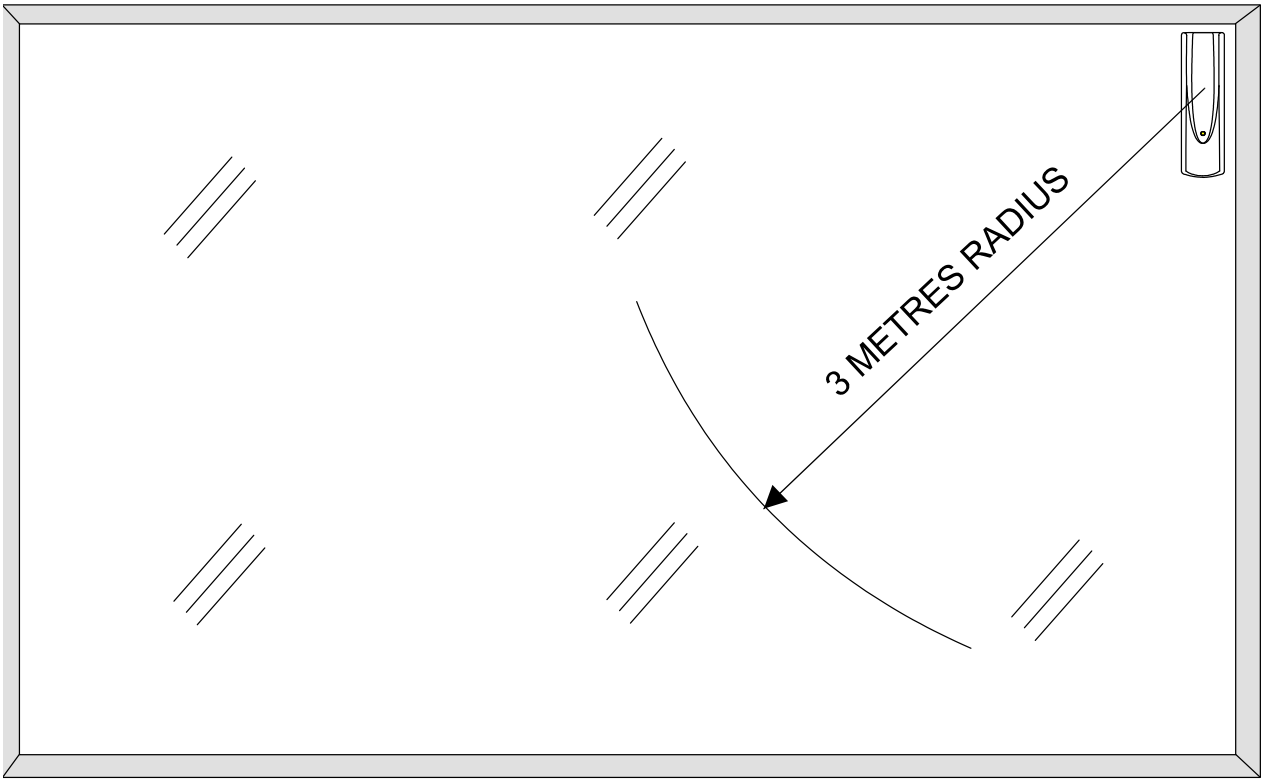
8. SENSITIVITY AND COVERAGE

Before VOLANS installation should be carefully considered the maximum sensitivity that can be obtained based on the surface to be protected with its integrated piezo sensor.
In this regard, it is useful to refer to the following table:

Surface	Brick wall	Steel	Wood	Concrete	Plywood	Glass
Range in metres	1 m	3 m	3 m	30 cm	3 m	3 m

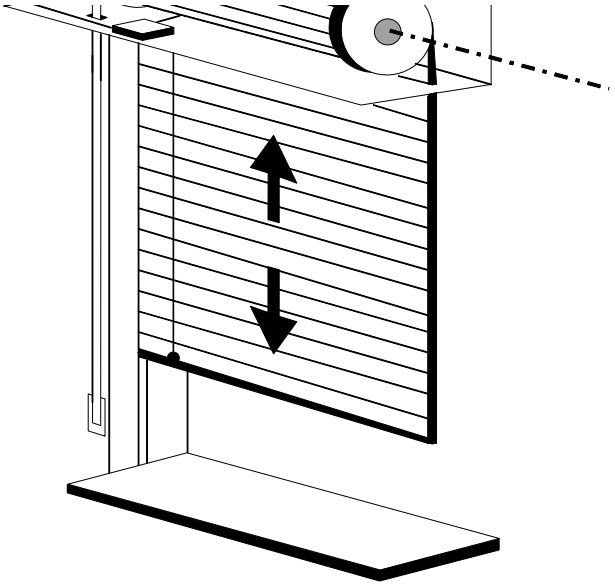
*** Glass test was conducted by sticking the detector with strong double-sided tape. When installed on glass surfaces, VOLANS transmitter is suitable for detecting impact but not cutting or drilling.**

Application of VOLANS transmitter on a glass panel:



9. MOUNTING

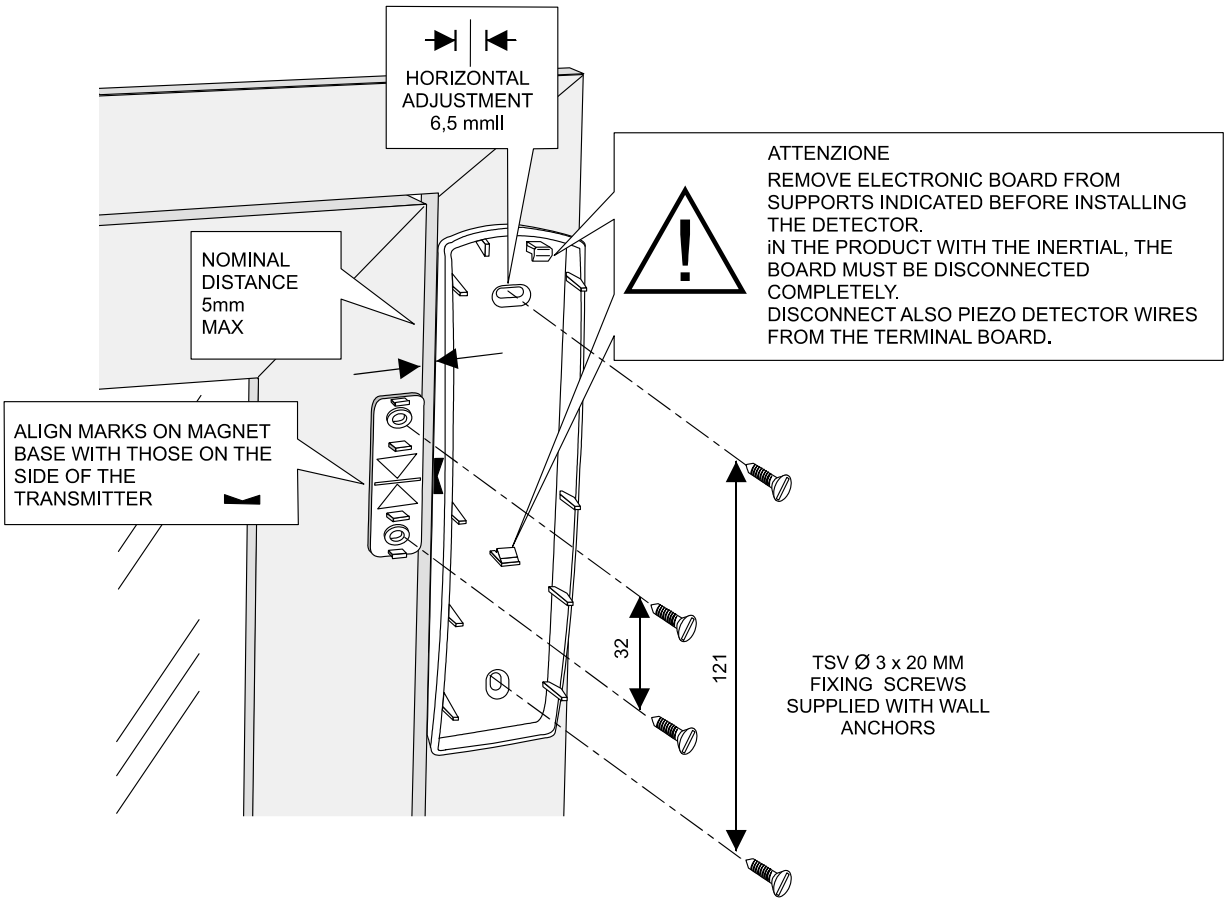
Example of LUPUS transmitter mounting inside a roll-up shutter box, the following figure is shown one of the possible fixing positions.



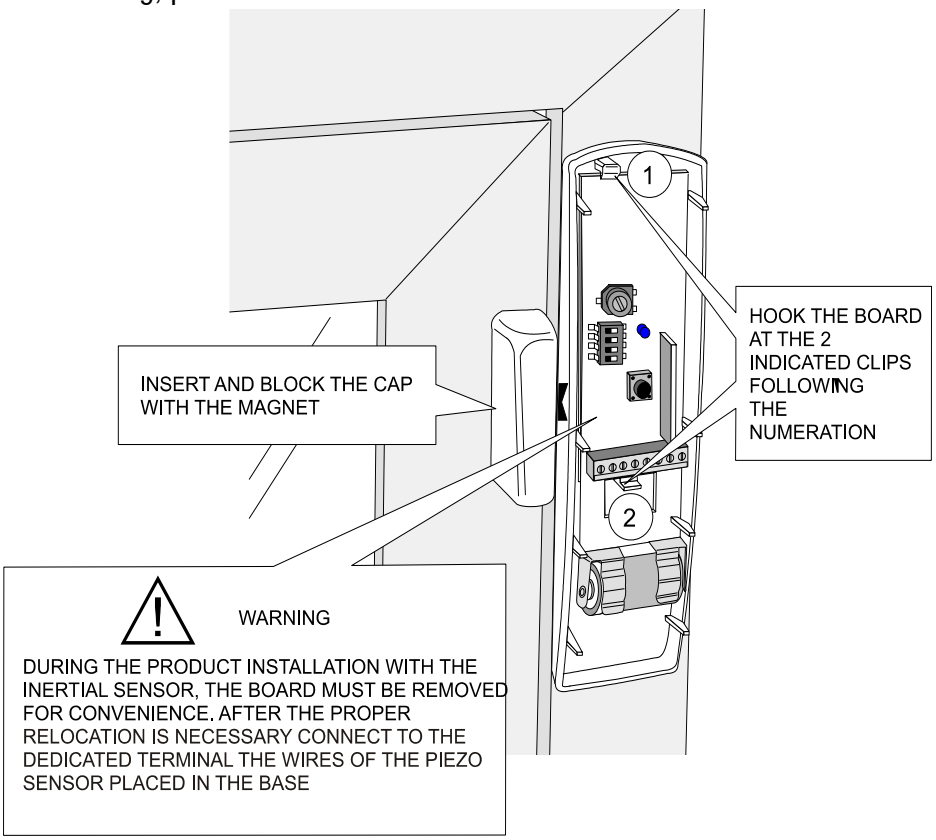
Search for the best position to exchange in the future the battery, a possible position could also be the outer side of the box.

Do not allow any additional support fixing of metal type to avoid damaging the wireless signal.

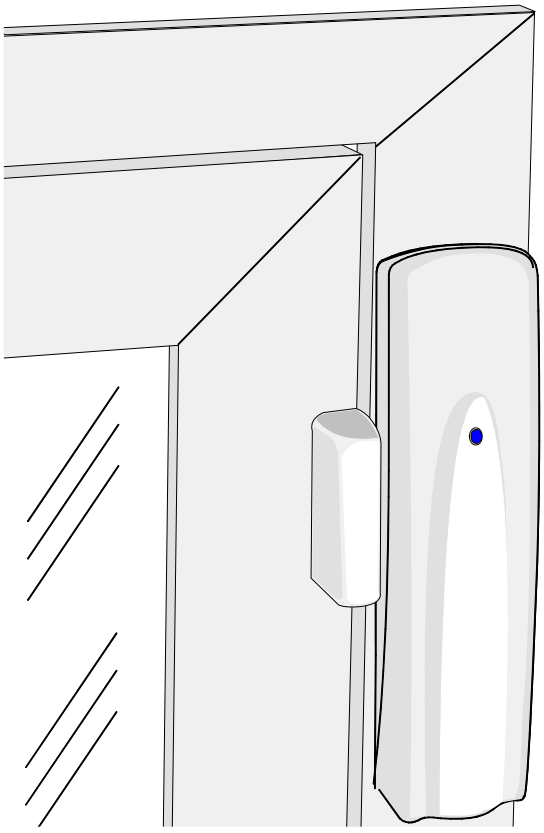
Example of general mounting, phase 1.



Example of general mounting, phase 2.



Example of general mounting, phase 3.

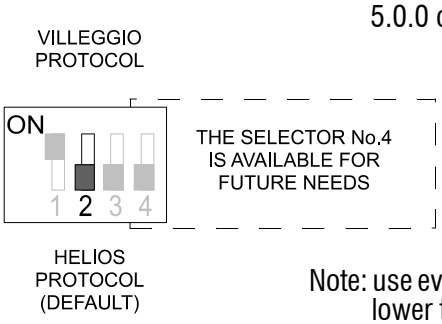


10. SETUP PROCEDURE

10.1 Communication protocol setting

LUPUS and VOLANS are components of wireless systems having as processing units the HELIOS or Villeggio control units or other models admittedly compatible.
In order to successfully send event codes generated is necessary to correctly set the communication protocol.
For this purpose there is an internal switch that with the dip No. 2 allows the setting

Note: use Villeggio control units equipped with firmware 5.0.0 or higher and with other compatible devices.



Note: use even for Villeggio contro unit equipped with firmware lower than 5.0.0

> WARNING: the wrong position of the selector will not allow a transmission intelligible with the compatible control unit.

Note: the Villeggio protocol used (only with compatible devices) improves the communication reliability and the battery life.

10.2 Transmitter storing procedure with a compatible control unit

A. Open the transmitter plastic case.

B. If necessary, perform the setup procedure as specified in the previous paragraph using the supplied battery.

C. Enter in programming of the compatible control unit in wireless capture device menu.

D. Cause a transmission by pressing and holding the Tamper button, in this way is send the recognition code of the wired magnetic sensor to the transmitter terminal or on board the magnetic contact if previously enabled with jumper dip No.1.

NOTES: if is necessary the magnetic sensor management and not the roll-up shutter, exit now from the programming and ONLY subsequently release the TAMPER button.

> **WARNING:** *pressing wrong pressure of the TAMPER button with a pressure and release operation, is stored incorrectly the transmitter code and therefore it is absolutely necessary to delete the last stored transmitters and repeat correctly the operation.*

Continuing to hold the TAMPER button, carry on in the control unit menu to add a new transmitter. Activate the recognition of the new transmitter.

E. Release the TAMPER button.
The control unit recognized the received code as coming from the roll-up shutter sensor, coinciding with the piezo inertial sensor code for the VOLANS transmitter.
Exit from the programming menu with the usually way.
Note: if is used a LUPUS programmed for the second magnetic contact input, the TAMPER release will transmit to the control unit the code of the second magnetic contact input.

F. Once stored the transmitter code you can go to the specialization phase of the attributes related to the device in question.

G. Install the transmitter in allowed positions, for this purpose is possible to consult the drawings in the "INTALLATION" chapter, checking the proper operation with the test transmissions.

H. Close the transmitter housing checking the perfect pressure of the Tamper button.

WARNING: the lack of care in housing reclosing with the consequent anomaly of the Tamper circuit generates a tampering alarm for each supervision transmission and for each opening/closing transmission of the magnetic contact.

11. FIRST POWERED OR BATTERY REPLACE

The transmitter requires special care during the first power supply, the procedures can be summarized as follows:

1. Insert the 3,6V supplied battery observing the polarities, as indicated in the previous chapter.
2. Press and release 3-4 times the Tamper button.
3. Clear any
4. Clear any low battery memory in the control unit or in the compatible receiving device.

WARNING: if the battery is new or unused for a long period, there can sometimes be a wrong low battery signal to the first activations. This is due to the chemical features of the Lithium Thionyl Chloride batteries and can be resolved by performing the above operations. When the batteries is exposed to low temperature, it is advisable that the battery has a room temperature before inserting it.

12. DISPOSAL INSTRUCTIONS

Dispose of LUPUS and VOLANS in compliance with current city regulations and by leaving the device in a dumping ground which is authorized for the disposal of electronic products; if required, please contact the appropriate city office for additional information.

Warnings for the battery

The product require that, for their proper functioning, should each be connected to a 1/2 AA 3.6 V battery, if necessary take care that, once replaced with an identical copy, the battery must be given in an approved landfill for batteries disposal.

The material used for this product is very harmful and polluting if dispersed in the environment.

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Global Security Solutions

DICHIARAZIONE DI CONFORMITA' CE DECLARATION OF CONFORMITY

EL.MO. spa
dichiara sotto la propria responsabilità che il prodotto / *declares that the product:*

LUPUS / LUPUSM

Sensore via radio / *Wireless detector*
al quale questa dichiarazione si riferisce, è conforme alle seguenti norme:
to which this declaration is referred to is in conformity with the following:

EN 50130-4 2011-06	Sistemi d'allarme Parte 4: Compatibilità elettromagnetica Norma per famiglia di prodotto: Requisiti di immunità per componenti di sistemi antincendio, antintrusione e di allarme personale. *Alarm systems* *Part 4: Electromagnetic compatibility* *Product family standard: Immunity requirements for components of fire, Intruder and social alarm system*
EN61000-6-3 2007-01 +A1 2011-03	Compatibilità elettromagnetica(EMC). Parte 6-3: Norme generiche – Emissione per gli ambienti residenziali, commerciali e dell'industria leggera. *Electromagnetic compatibility (EMC). Part 6-3:Generic standards – Emission standard for residential, commercial and light-industrial environments*.
CEI EN60950-1 2006-04 +A11 2009-03 +A1 2010-03 +A12 2011-02	Apparecchiature per la tecnologia dell'informazione - Sicurezza. Parte 1:Requisiti generali *Information technology equipment – Safety. Part 1: General requirements*
ETSI EN 300220-2 2007-06	Apparati radio e sistemi. Dispositivi a corto raggio. Caratteristiche tecniche e metodi di prova per apparati radio da utilizzarsi da 25 a 1000 MHz con livelli di potenza fino a 500 mW. *Radio equipment and systems. Short range devices. Technical characteristics and test methods for radio equipment to be used in the 25 to 1000 MHz frequency range with power levels ranging up to 500 mW.*
ETSI EN 301 489-3 2002 ETSI EN 301-489-1 2008	Apparati radio e sistemi a corto raggio operanti nella gamma di frequenza tra 9KHz e 25GHz. *Radio equipment and systems. Short range devices.*
EN50131-5-3 2005 +A1 2008 Grado Sicurezza 1 Security grade 1 Classe Ambientale II Environmental class II	Sistemi antintrusione:parte 5-3, requisiti per interconnessioni di apparati in radiofrequenza Alarm systems. Intrusion systems. Requirements for interconnections equipment using radio frequency techniques
EN 50131-2-6 2009 Grado Sicurezza 1 Security grade 1 Classe Ambientale II Environmental class II	Sistemi di allarme – Sistemi di allarme intrusione e rapina. Parte 2-6:Contatti (magnetici) Alarm systems – Intrusion and holt-up systems. Part 2-6: Opening contacts (magnetic)

e quindi rispondente ai requisiti essenziali delle direttive:
and then in accordance with the following directives:

☒ 2004/108/CE Compatibilità elettromagnetica *Electromagnetic compatibility*	☒ 2006/95/CE Sicurezza di bassa tensione *Low voltage security*

☒ 1999/5/CE (R&TTE)	Direttiva Europea apparati radio e apparecchiature terminali di telecomunicazione. *European Directive wireless equipment and telecommunication apparatus.*
☒ 2002/95/CE (RoHS)	Direttiva Europea sulla restrizione dell'uso di determinate sostanze pericolose nelle apparecchiature elettriche ed elettroniche *European Directive Reduction of Hazardous Substances*

Campodarsego 12/12/2011

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