

# VIRGO2K, VIRGOM2K

**Compact wireless perimeter transmitters for NG-TRX intrusion detection systems**



Addressee for this information:  User |  Installer

## 1 DESCRIPTION

VIRGO2K is a compact transmitter for controlling fixtures or perimetral protections.

The device features a built-in magnetic contact and it transmits every time the magnet, attached to the leaf of the fixture, is moved away from (fixture opens) or brought to (fixture closes) the sensor body.

Alarm, tamper and supervision states trigger a transmission; load battery status is sent along with the first transmission. The blue LED and the internal buzzer indicate device operation.

The NG-TRX technology ensures safe communication even where a large amount of noise exists.

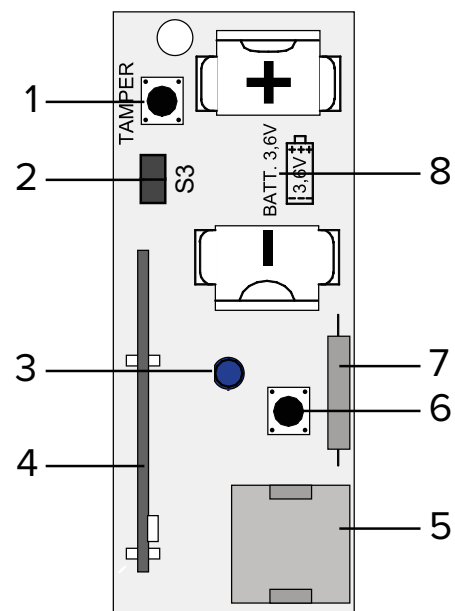
The communication between the devices and the control unit, with proprietary encrypted protocol, is bidirectional. Transmissions take place over three frequencies independently monitored by the control unit. Digital codes identify each device.

VIRGO2K can be programmed using BrowserOne software. VIRGO2K is compatible with Villeggio NG-TRX, Pregio and Proxima series control units. Connection to Pregio and Proxima control units requires use of GATEWAY2K.

Compatible control unit	Firmware Version
Villeggio NG-TRX series	8.4.2 or above
Pregio series	2.6.1 or above
Proxima series	1.0.2 or above

The device is also available in brown version (VIRGOM2K). VIRGO2K, VIRGOM2K are certified IMQ - Security Systems.

## 2 PCB



- 1 Tamper button
- 2 Jumper to insert connector for protection against removal
- 3 Blue LED
- 4 Antenna
- 5 Buzzer
- 6 Learning button
- 7 SMD vial
- 8 Battery position

### 3 TECHNICAL DATA



Model		VIRGO2K	
<b>General features</b>			
<b>Operating voltage</b>	Power supply	3,6 (2,4 ÷ 3,7)	V
	Compatible battery	3.6 V, 1.2 Ah 1/2AA ER14250 or LS14250 type lithium battery	
	Minimum power supply	1,9 (1)	V
	Discharged battery threshold	2,5	V
<b>Consumption at power voltage</b>	Inactive mode	2,6	µA
	Transmitting	23,5 (2)	mA
<b>Operating times</b>	Supervision	5 ÷ 240 (default) (3)	min
<b>Transmission frequencies</b>		868.120; 868.820; 869.525	MHz
<b>Max power in transmission mode</b>		25	mW
<b>Radio connection range</b>	maximum	800 (4)	m
	nominal	400 (4)	m
<b>Autonomy</b>		4 (5)	years
<b>Protection class</b>		IP55 (6)	
<b>IMQ certified</b>		EN50131-5-3: grade 2; EN50131-2-6: grade 2 (7)	
<b>Environmental class</b>		II	
<b>Working temperature</b>		-10 / +55	°C
<b>Humidity</b>		93% r.h.	
<b>Dimensions</b>		W 90 x H 29 x D 32; magnet: W 48 x H 16 x D 16	mm
<b>Weight</b>		60 (8)	g

- (1) with LED disabled
- (2) peak
- (3) adjustable via Browser
- (4) ranges refer to the reception of 99% of transmitted packets, with devices installed in open field at 1,5m height, without/with antennas oriented in the most favourable direction respectively
- (5) with ER14250 battery (20 total daily transmissions and supervision every 25 minutes)
- (6) according to tests carried out by manufacturer, to keep this class, use supplied sealing washers
- (7) set supervision time equal to or below 20 minutes for compliance with EN50131-5-3 standard grade 2; set supervision time equal to or below 60 minutes for compliance with EN50131-5-3 standard grade 1
- (8) with magnet

#### Parts supplied

Screws, 4 mm inserts, caps covering front screws, gaskets for screws, ER14250 3.6 V battery, magnet, technical manual.

### 4 PRECAUTIONS BEFORE DEVICE MOUNTING



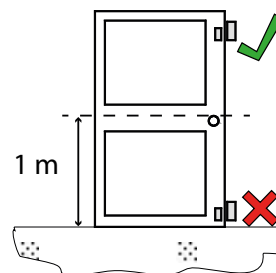
General warnings are at the end of this manual.

The installation has to be performed following precise rules in order to avoid performance losses due to wrong positioning: it is fundamental to accurately define the system operating area considering the real radio device coverage in relation to the composition of the building materials. Before installing the product, please read the following indications carefully.

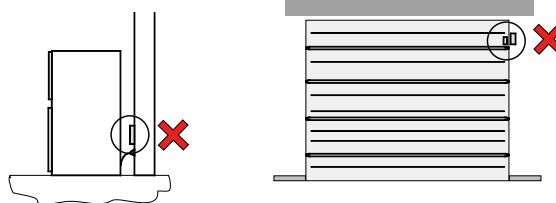
The electronic board of the detector may be damaged by electrostatic discharges. The installer must completely avoid any presence of electrostatic discharges.

#### 4.1 Definition of installation position

- We recommend to install the device at a distance of at least 1 m from floors or concrete truss.




- Avoid installation near metal surfaces or large metal pieces of furniture: the device might be shielded.



- To optimise the device position, we suggest that you check the radio signal indications the control unit (or other compatible device) can provide.
- The device is not suitable for installation on doors/windows that are opened very often (more than 100 activations each day), since this may cause a great amount of radio transmissions and the premature battery fail.

#### Operating distances

	approaching	breaking
on non-ferromagnetic material (wood, PVC, aluminium)	20 mm	25 mm
on ferromagnetic material	10 mm	15 mm

 We advise against using VIRGO2K on ferromagnetic materials.

## 4.2 Environment limits

The use of some building materials may reduce the detector wireless signal strength.

Example:

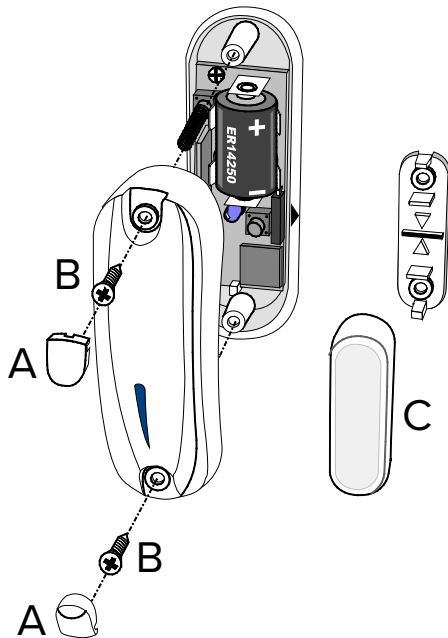
- plywood and honeycomb walls: 90-100% of full strength;
- solid / hollow brick walls 65-95% of full strength;
- concrete walls or metal sheet and plaster: 0-70% of full strength.

Metal grids, metal gates, and glasses may also affect (i.e. diminish) detector strength.

## 5 DEVICE MOUNTING



### • Housing opening



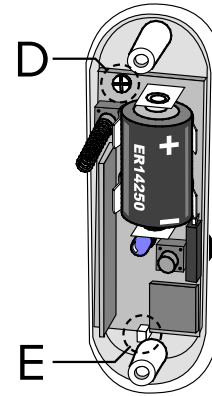
For detector body:

- remove caps covering front screws (A)
- unscrew fixing screws (B)
- remove the cover

For the magnet:

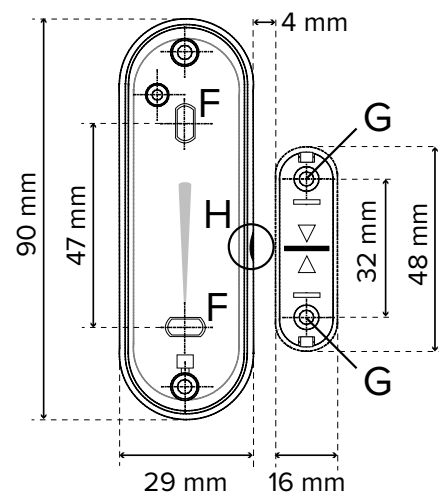
- press on short sides
- lift the cover (C)

### • Removing the electronic board

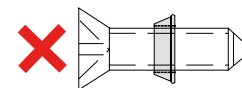
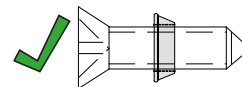



- unscrew the fixing screw (D)
- remove the board from E support

### • Fixing the bases



- drill indicated areas (F, G)
  - fix the bases to the surfaces using screws and inserts
- Install the magnet next to the sensor body (maximum distance: 4 mm). A notch (H) on the sensor body indicates the side that must be aimed to the magnet.



 To ensure the declared IP class protection, insert washers on fixing screws as indicated in picture.

The device can also be installed outdoors using the indicated gaskets.

In addition, the cover is equipped with a gasket for indoor installation on its inner side.

A small amount of silicone around the fixing holes may improve impermeability.

### • Board positioning

Disconnect the battery following the steps above in reverse

order:

- position the electronic board under the lower hook
- secure it in position using the screw


#### • Device setup

Now proceed with detector setup (see following chapter).

#### • Closing the housing

For detector body:

- position the front cover on the base

 *Make sure the tamper protection spring fits correctly to its place.*

- fix the cover with the screws
- place caps covering front screws

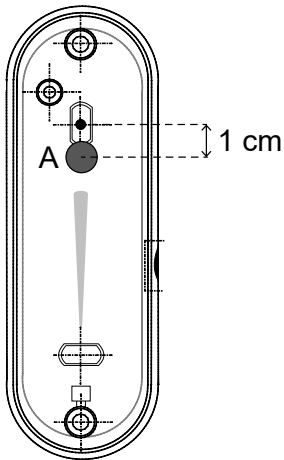
For the magnet:

- position the cover on the base
- push until closing

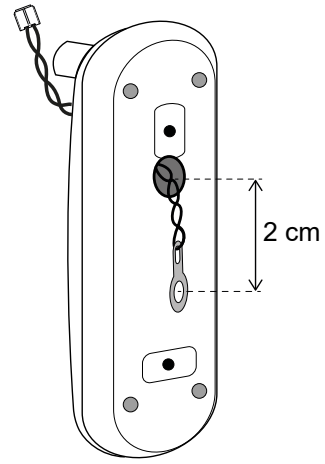
### 5.1 Protection against removal from mounting surface

Compliance with EN 50131 regulation grade 2 requires that the device is protected against removal from the mounting surface.

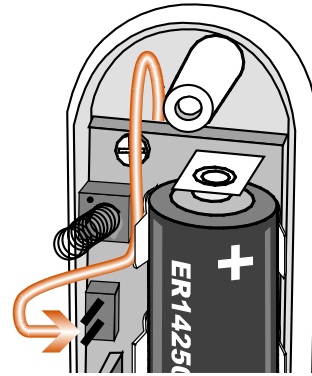
Install the KSAS1013 (green) kit before fixing the detector base to the fixture.



- drill a hole (diameter: 6.5 mm) on the transmitter base (A), approx. 1 cm below the fixing hole center
- feed the cable in the hole, from the eyelet end



- fix a S4 dowel to the fixture at a height of 2 cm from the drilled hole
- fix the eyelet to the dowel
- fix the transmitter base to the fixture



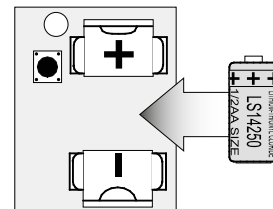
- remove the S3 jumper on the device board
- plug the cable connector into S3
- arrange the cable so that it does not interfere with the tamper spring

## 6 STARTING THE DEVICE




### 6.1 First power up

- open the cover as illustrated in the mounting procedure




- arrange the battery as indicated

 *Ensure correct polarity. Avoid touching the battery poles with fingers.*

- press and release 3-4 times Tamper button
- reset any discharged battery memory on control unit or compatible receiving device


 *If the battery is new or has not been used for long time,*

a wrong message of discharged battery may be displayed. Such problem depends on Lithium Thionyl Chloride battery chemical specifications and can be solved by carrying out the procedure illustrated above. If the battery has been exposed to low temperature, it is advisable to keep it at room temperature before installation.

 Remove the battery during any long period of inactivity in order to preserve its charge.

## 6.2 Device learning to NG-TRX control unit

Before starting learning procedure, remove the front cover (as illustrated in mounting procedure) to be able to access Learning button.

 Verify that the battery is charged otherwise the device will not be learnt.

### Device learning procedure:

- power the device inserting the battery
- on control unit keypad, enter installer code followed by **OK** to go to setup menu
- use arrow keys **↑** or **↓** to go to LEARN RADIO DET. option
- press **OK**
- use arrow keys to go to the zone to which learn the device
- press **OK**
- press key 1 (saved to control unit)
- go to the detector
- press and hold for 3 s the learning button on the detector
- in case of wrong learning procedure, the unit will not confirm the procedure, the detector will beep once to signal error and the device blue LED will remain OFF: restart the procedure
- in case of correct learning procedure, the unit and detector buzzers will beep twice and the device blue LED will switch on
- exit control unit setup menu; when required, press **OK** to save the setup

Open and close the fixture to check the transmitter operation. The blue LED signals each transmission.

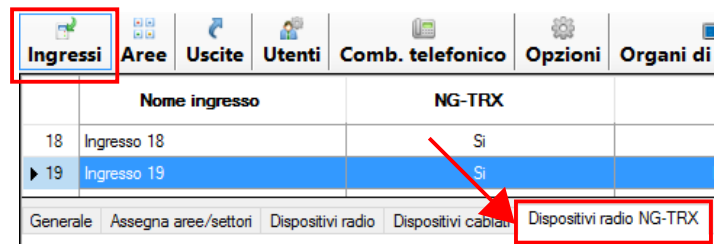
The internal buzzer is disabled by default: use BrowserOne to enable it, if required.

## 7 SETUP VIA BROWSERONE

The device can be set using BrowserOne 3.4.7 or above.

- open BrowserOne
- load the latest module available for the control unit in use
- start control unit connection
- select **Read setup** key to read control unit setup
- select the grid row corresponding to the zone used to learn the device

- select tab **Radio Devices NG-TRX**



	Nome ingresso	NG-TRX	
18	Ingresso 18	Si	
▶ 19	Ingresso 19	Si	

Generalmente Assegna aree/settori Dispositivi radio Dispositivi cablati Dispositivi radio NG-TRX

## 7.1 NG-TRX options

For detailed information, please see programming manual of the control unit in use.

Attivazione Buzzer	Buzzer disattivato
Regolazione prestazioni	Automatica
Intervallo supervisione	Default
<input type="checkbox"/> Ritarda anomalia di supervisione	

### ▼ Buzzer activation

Enable device buzzer for alarm/reset.

### ▼ Performance tuner

Adjust balance between consumption and power used for data transmission.

### ▼ Supervision interval

Set time intervals for control unit data transmission in order to check device presence and proper working.

### ▼ Delay supervision anomaly

If enabled, the anomaly caused by lack of supervision will be signalled with a delay equal to 6 times the supervision time.

### ▼ Tx Boost

Option increasing transmission range (by 10÷30%, effective increase); it may affect battery lifetime at the same time.

## 7.2 Options sensor VIRGO2K

Use this section to set specific parameters of VIRGO2K device.

### ▼ Enable Led

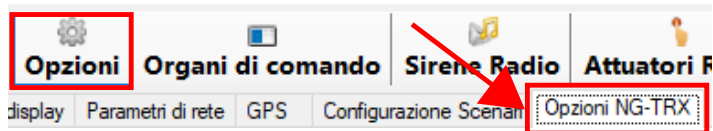
If disabled, the LED will not be active.

This option is available for VIRGO2K with firmware 1.4 or above, using BrowserOne 3.7.4 or above together with module Villeggio 8.7.3 or Pregio 2.5.1 (or above).

## 7.3 Options for communication to control unit

To configure communication between NG-TRX devices and control unit:

- on BrowserOne main page, select **System Options**
- select tab **Options NG-TRX**



#### ▼ Receiving multichannel

When active, the control unit receives on three channels simultaneously; when deactivated, the control unit receives on one channel only (preset/preferred). We recommend to keep it non active only if a channel has disturbances.

#### ▼ Default channel

This is the channel used by the control unit to receive data in case of no interference (default: channel 1).

In case of noise, we suggest that you set the most free channel as default.

In case of interference, the unit defines a preferential channel (even different from the preset one) according to interference level and uses it for data reception.

The control unit can change the preferential channel whether the multichannel reception is enabled or not. Each channel change is logged.

#### ▼ Supervision interval

It defines supervision time interval common to all system devices: such interval will be valid for all devices that has no specific interval selected (default).

Any change in supervision time will be transferred to the devices upon the first transmission. Therefore, in case a device is temporarily not powered, the control unit will signal it considering the older supervision time value. The supervision time will be updated to the new value upon the first transmission after device power on.

Select **Enable detection RF interference** to allow the control unit to detect any interference on the three radio channels.

For further information about this option and other in this menu, please see programming manual of the control unit in use.

⚠ *Once all changes have been done, write the new setup to the control unit. It will be sent to the device at the first valid transmission.*

## 8 OPERATING MODE

The device transmits in case of:

- magnetic contact status change (with reset status generation)
- load battery (after the first valid transmission)
- periodic supervision (this can be set via BrowserOne)
- tamper (case opening)

### Walk test

To start this function, go to unit menu SYSTEM TEST > ZONE TEST.

The LED will blink and the buzzer will beep 3 times to signal each transmission.

The buzzer is disabled when quitting the walk test mode, if not differently programmed.

### Standard operating mode

The LED will blink to signal each transmission (for alarm or tamper). The buzzer is disabled by default.

Use BrowserOne to configure buzzer activation.

**Note:** the device will work properly only after acquisition to the control unit. In case the communication between the control unit and the detector is hard, the LED indication may take place some seconds after event occurrence (alarm, reset or tamper).

## 9 MAINTENANCE

### 9.1 Periodic test

Carry out a simple test regularly to verify the device operating mode.

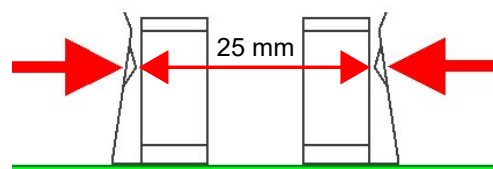
- go to SYSTEM TEST > ZONES TEST menu on control unit
- have the device generate a transmission
- check LED switch on

⚠ *A long permanence in zones test mode may reduce battery lifetime.*

### 9.2 Battery replacement

Replace the battery with a new one of the same type only. Follow this procedure:

- open the housing (see mounting procedure)
- remove the discharged battery
- press and release the Tamper button 3-4 times in order to discharge any charged capacitors



- verify that the distance between the two battery hooks is around 25 mm; if greater, slightly press towards the internal side

⚠ *The correct position of the tabs ensures excellent electrical contact and prevents wrong indications of low battery.*

- position the new battery (see mounting procedure)
- reset any discharged battery memory on control unit or

compatible receiving device

Discharged batteries shall be disposed of according to current laws and using specific containers.

Materials used are very harmful and polluting if dispersed in the environment.

## EU DECLARATION OF CONFORMITY

Hereby, EL.MO. Spa declares that the radio equipment VIRGO2K, VIRGOM2K is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address: [www.elmospa.com](http://www.elmospa.com) – registration is quick and easy.



## GENERAL WARNINGS



This device has been designed, built and tested with the utmost care and attention, adopting test and inspection procedures in compliance with current legislation. Full compliance of the working specifications is only achieved in the event the device is used solely for its intended purpose, namely:

**Compact wireless perimeter transmitters for NG-TRX intrusion detection systems.**

The device is not intended for any use other than the above and hence its correct functioning in such cases cannot be assured. Consequently, any use of the manual in your possession for any purpose other than those for which it was compiled - namely for the purpose of explaining the product's technical features and operating procedures - is strictly prohibited.

Production processes are closely monitored in order to prevent faults and malfunctions. However, the components adopted are subject to an extremely modest percentage of faults, which is nonetheless the case with any electronic or mechanical product.

Given the intended use of this item (protection of property and people), we invite you to adapt the level of protection offered by the system to suit the actual situation of risk (allowing for the possibility of impaired system operation due to faults or other problems), while reminding you that there are specific standards for the design and production of systems intended for this kind of application.

**We hereby advise you (the system's operator) to see that the system receives regular routine maintenance, at least in accordance with the provisions of current legislation, and also check on as regular a basis as the risk involved requires that the system in question is operating properly, with particular reference to the control unit, sensors, sounders, dialler(s) and any other device connected. You must let the installer know how well the system seems to be operating, based on the results of periodic checks, without delay.**

Work involved in the design, installation and maintenance of systems incorporating this product should be performed only by personnel with suitable skills and knowledge required to work safely so as to prevent any accidents. It is vital that systems be installed in accordance with current legislation. The internal parts of certain equipment are connected to the mains and therefore there is a risk of electrocution when maintenance work is performed inside without first disconnecting the primary and emergency power supplies. Certain products include batteries, rechargeable or otherwise, as an emergency backup power supply.

If connected incorrectly, they may cause damage to the product or property, and may endanger the operator (explosion and fire).

## INSTALLER WARNINGS



Comply strictly with current standards governing the installation of electrical systems and security systems, and with the manufacturer's directions given in the manuals supplied with the products.

Provide the user with full information on using the system installed and on its limitations, pointing out that there are different levels of security performance that will need to suit the user's requirements within the constraints of the specific applicable standards. See that the user looks through the warnings given herein.

Work involved in the design, installation and maintenance of systems incorporating this product should be performed only by personnel with suitable skills and knowledge required to work safely so as to prevent any accidents. It is vital that systems be installed in accordance with current legislation. The internal parts of certain equipment are connected to the mains and therefore there is a risk of electrocution when maintenance work is performed inside without first disconnecting the primary and emergency power supplies. Certain products include batteries, rechargeable or otherwise, as an emergency backup power supply. If connected incorrectly, they may cause damage to the product or property, and may endanger the operator (explosion and fire).

## USER WARNINGS



Check the system's operation thoroughly at regular intervals, making sure the equipment can be armed and disarmed properly.

Make sure the system receives proper routine maintenance, employing the services of specialist personnel who meet the requirements prescribed by current regulations.

Ask your installer to check that the system suits changing operating conditions (e.g. changes in the extent of the areas to be protected, change in access methods, etc...)

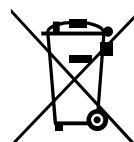
## MAIN SAFETY RULES

The use of the device is forbidden for children and unassisted disabled individuals.

Do not touch the device when bare footed, or with wet body parts. Do not directly spray or throw water on the device.

Do not pull, remove or twist the electric cables protruding from the device even if the same is disconnected from the power source.

## DISPOSAL WARNINGS



IT08020000001624

In accordance with Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), please be advised that the EEE was placed on the market after 13 August 2005 and must be disposed of separately from normal household waste.

This product needs batteries for correct functioning. Exhausted batteries have to be delivered to dumping grounds authorized for battery collection. The materials used for this product are very harmful and polluting if dispersed in the environment.