



BLADE2K, BLADEM2K

Wireless IR detector for NG-TRX
intrusion detection systems



Addressee for this information:  User |  Installer

1 DESCRIPTION

BLADE2K is a wireless infrared detector belonging to the NG-TRX product family.

The detector can be integrated in systems managed by Villeggio NG-TRX, Pregio and Proxima control units (using GATEWAY2K).

The “curtain” coverage can provide protection to windows, doors, French doors and doorways.

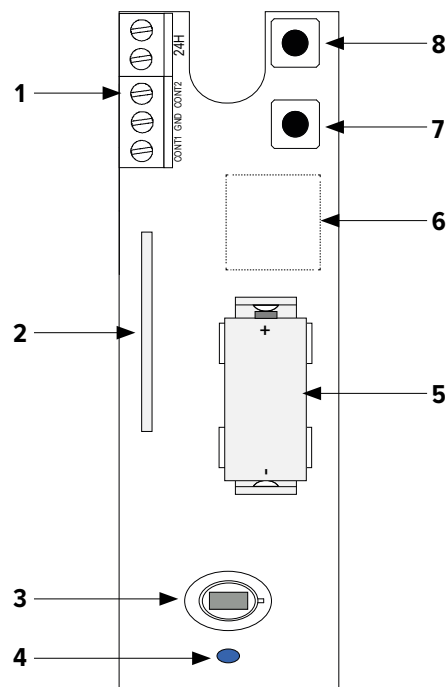
BLADE2K allows achieving a complete perimeter protection on three levels by connecting magnetic contacts and rolling shutter sensors.

BLADE2K can be programmed using BrowserOne software.

A version with brown housing is also available.

BLADE2K is certified IMQ - Security Systems.

2 PCB



- 1 Terminal board
- 2 Antenna
- 3 PIR sensor
- 4 LED
- 5 Battery
- 6 Buzzer (on the rear panel)
- 7 Tamper button
- 8 Learning button

3 TECHNICAL DATA



Model		BLADE2K	
Identification			
Technology		IR	
Coverage type		Vertical curtain	
IR section			
Max range		4	m
Average range		2	m
Min range		1	m
Pulse count		10	s
No. of IR sensitive zones		2 beams	
General features			
Operating voltage	Power supply	3,6	V
	Compatible battery	ER14250 (supplied)	
	Minimum power supply	2,0	V
	Discharged battery threshold	2,5	V
	Battery restore threshold	2,9	V
Consumption at power voltage	Power on in progress	270	µA
	Inactive mode	11,6	µA
	Transmitting	22,0 (1)	mA
Autonomy		3 years with 5 min inhibition; 1.5 years with 30 s inhibition (2)	years
Transmission frequencies		868.120; 868.820; 869.525	MHz
Max power in transmission mode		25	mW
Radio connection range	maximum	750 (3)	m
	nominal	350 (3)	m
Operating times	Power-on stand-by	10	s
	Walk test	8	min
	Post-alarm inhibition time	in walk-test: 5 s; in system test: 5 s; in operation, if armed: 5 s for the first 3 alarms; in operation, if disarmed: 5 min by default (settable)	
	Supervision	240	min
	IR fault detection	10	s
Working temperature		-10 / +55	°C
Dimensions and weight		W35 - H96 - D34 mm, 65 g	

- (1) peak
 (2) With one supervision transmission every 20 minutes.
 (3) Ranges refer to the reception of 99% of the transmitted packets, with the devices in open field at 1.5 m height from the ground, respectively without and with the antenna oriented in the best direction.

Model	BLADE2K
IMQ certified	EN50131-2-2: grade 2; EN50131-5-3: grade 2
Environmental class	2

- (1) peak
 (2) With one supervision transmission every 20 minutes.
 (3) Ranges refer to the reception of 99% of the transmitted packets, with the devices in open field at 1.5 m height from the ground, respectively without and with the antenna oriented in the best direction.

Parts supplied

Screws and plugs, technical manual, adhesive labels to limit the range.

4 PRECAUTIONS BEFORE DEVICE MOUNTING



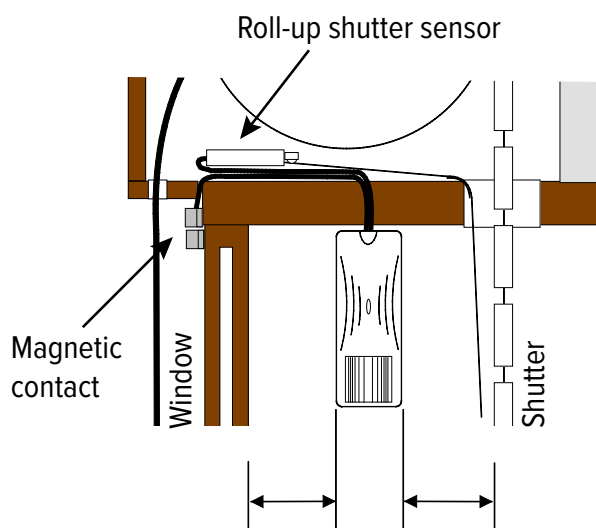
! General warnings are at the end of this manual.

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

The detector provides a vertical curtain protection with a coverage pattern of about 90° lengthwise and 15° transversely.



Install the detector between the door/window and its shutter. We suggest installing it in the middle of the space between them, or, anyway, leaving a clearance distance of at least 3 cm from both door/window and shutter.

The device can be mounted:

- **horizontally** (recommended for door protection): position the detector body on the corner, having the lens point toward the centre of the area to protect;

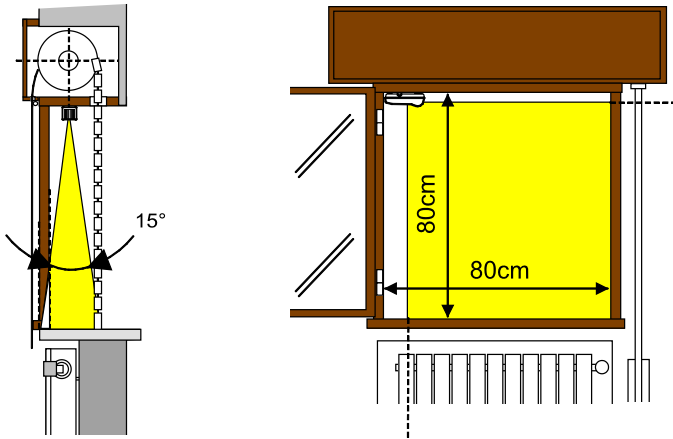
- **vertically**: position the detector body on the corner, having the lens point downwards.

If you need to install the detector in locations where people passage often recurs while the system is disarmed, set the inhibition time to 5 minutes in order to limit the number of radio transmissions and the premature battery fail.

4.1.1 Protection of windows

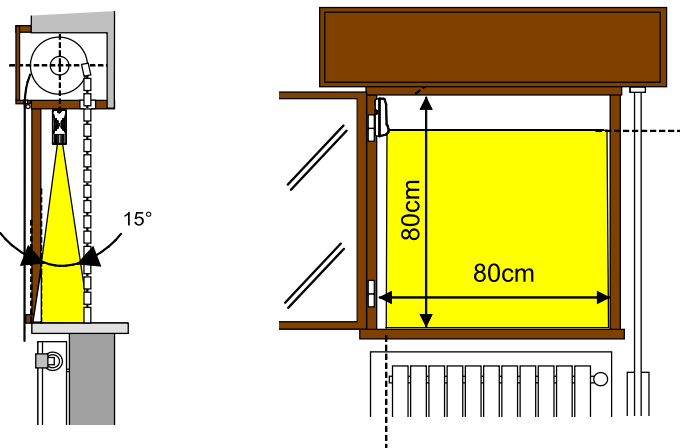
We suggest setting the range to **low**. The nominal range is 1 m; the actual IR coverage may reach 3 m (as indicated by the dashed line).

Horizontal mounting (recommended)



On the left: side view.
On the right: front view.

Vertical mounting (alternative)

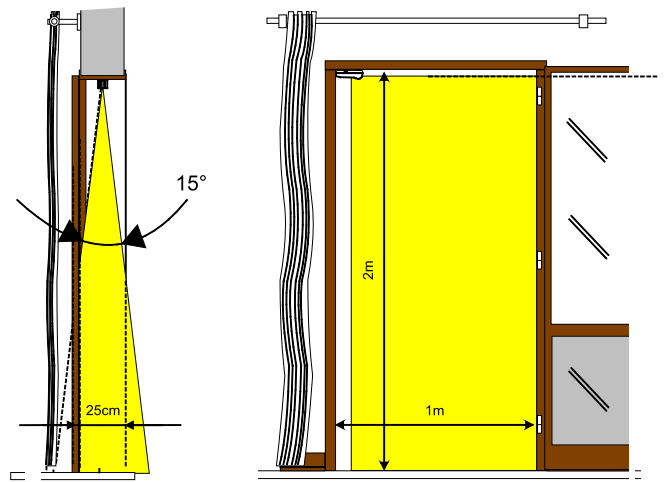


On the left: side view.
On the right: front view.

4.1.2 Protection of doors

We suggest setting the range to **medium**. The nominal range is 2 m; the actual IR coverage may reach 4 m (as indicated by the dashed line).

Horizontal mounting

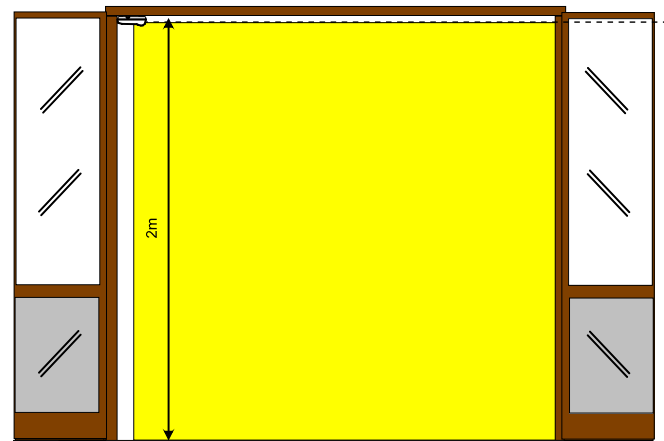


On the left: side view.
On the right: front view.

4.1.3 Protection of double doors

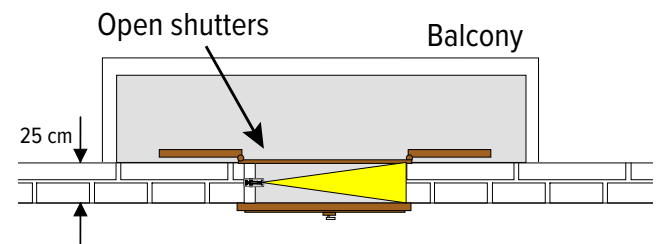
We suggest setting the range to **high**. The nominal range is 4 m; the actual IR coverage may reach 7 m.

Horizontal mounting

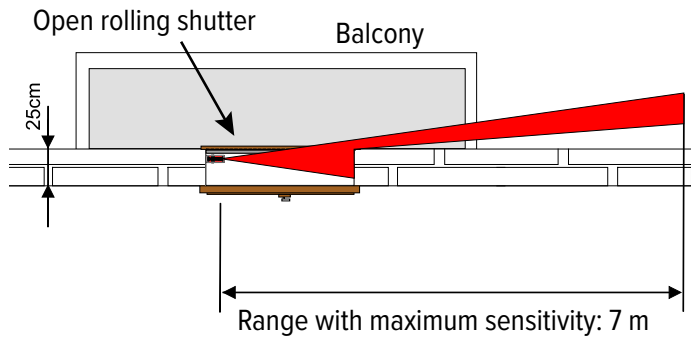


4.1.4 Protection of French windows

Recommended position: horizontal, in the middle of the wall.



Inadvisable position: horizontal, close to the edge of the wall.



In this last case, a portion of the beam may cover unintended areas (the range indeed can reach 7 m when the sensitivity is set to the maximum).

We suggest reducing the range when installing the detector in unfavourable conditions.

If necessary, stick the provided labels onto the lens to reduce the range keeping the sensitivity to the maximum.

4.2 Environment limits

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

Example:

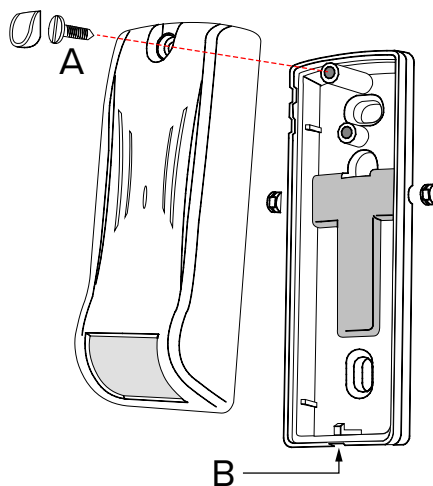
- plywood and honeycomb walls: 90-100% of full strength;
- solid / hollow brick walls 65-95% of full strength;
- concrete walls or metal sheet and plaster: 0-70% of full strength.

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

5 DEVICE MOUNTING

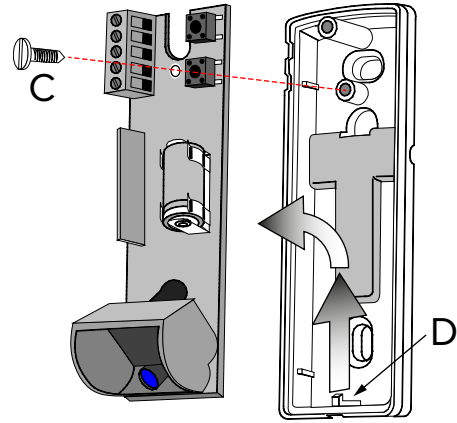


• Opening the housing



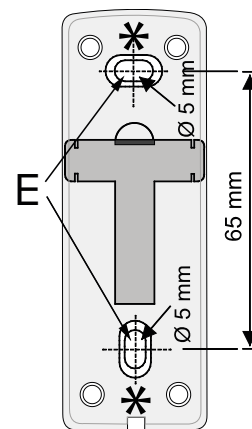
- unscrew the fixing screw (A)
- separate the front cover by pulling it away from B

• Removing the electronic board



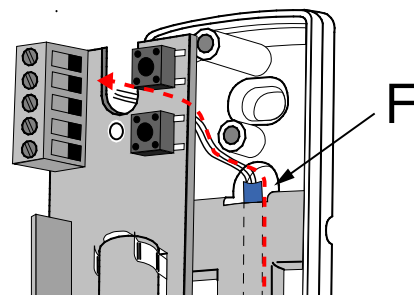
- unscrew the fixing screw (C)
- extract the board from the bottom hook (D)

• Base wall mount



- lean the base to the wall and use it as a template to mark the positions of the holes (E)
- drill the wall and insert the supplied plugs in the holes
- in order to provide an isolating seal against accidental moisture penetration, before leaning the base pour a drop of silicone under the eyelets on the bottom and in the plug hole (as indicated with * in the picture below)
- fix the detector base to the surface using screws and plugs

• Wirings



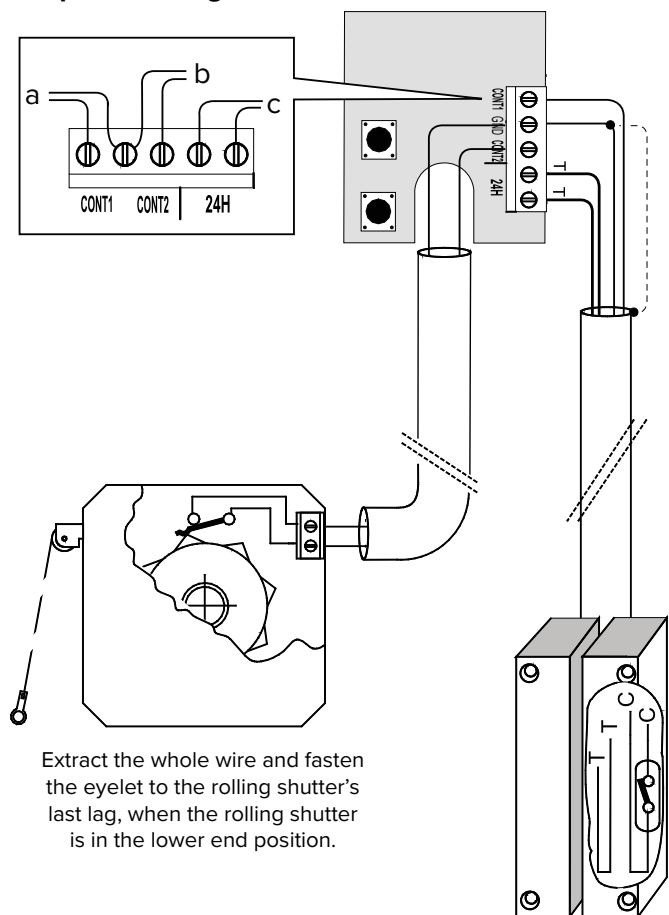
If you need to connect a magnetic contact and/or a rolling shutter sensor, feed the cables through the channel on the bottom.

Alternatively, feed the cable through the side holes; in case

you do not need to use them, close them with the supplied caps.

- extract the cables from hole F
- wire terminals

Example of wiring



Extract the whole wire and fasten the eyelet to the rolling shutter's last lag, when the rolling shutter is in the lower end position.

- A** Terminals for contact 1
- B** Terminals for contact 2
- C** Tamper output

The ground terminal is common.

Note: rolling shutter wire maximum length: 1 m; magnetic contact wire maximum length: 20 m.

• Board positioning

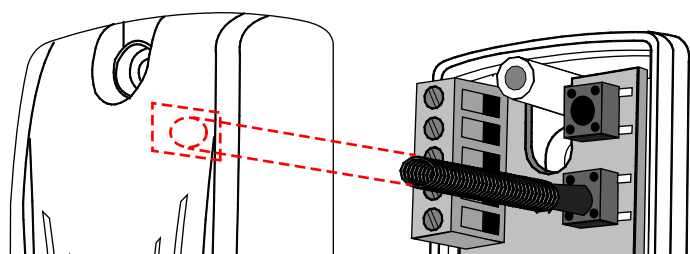
Disconnect the battery following the steps above in reverse order:

- position the electronic board under the lower hook
- tighten the fixing screw

• Device setup

For detector configuration see the following sections.

• Closing the housing



- position the cover on the base

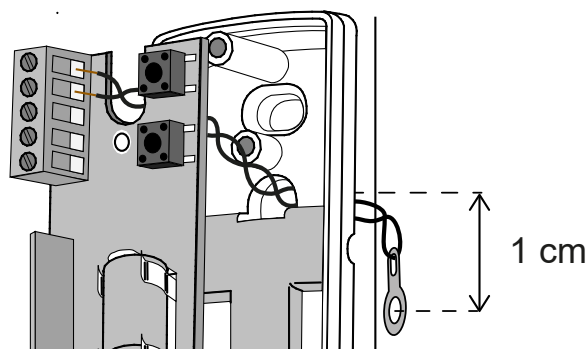
! Make sure the tamper protection spring fits correctly to its place.

- hook the cover to the base
- tighten the cover fixing screw
- cover the screw with the supplied cap

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 KSAS1013 kit for protection against removal (green) **before** fixing the detector base to the fixture.



- cut the cable connector off
- feed the cable (from the free end) in hole F previously indicated
- fix a S4 dowel (supplied) to the wall at a height of 1 cm from the hole, on an area that is covered by the "T" channel on detector base
- fix the eyelet to the dowel
- fix the detector base to the surface
- connect the wires to the 24H terminals on board

6 STARTING THE DEVICE



6.1 First power up

- open the cover and position the battery as illustrated in the mounting procedure
- 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.


6.2 Device learning to NG-TRX control unit

BLADE2K is acknowledged by the control unit as a detector with three channels that can be learned to three different zones.

The correspondence is as follows:

- channel 1: PIR sensor;
- channel 2: magnetic 1 / fast 1 (default: magnetic contact);
- channel 3: magnetic 2 / fast 2 (default: rolling shutter sensor).

Before starting learning procedure, remove the front cover (as illustrated in mounting procedure) to be able to access learn key P2.

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

Device learning procedure:

- 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**
- press the arrow keys to reach the zone where the device's first channel will be memorized (or type the number of such zone)
- press **OK**
- press key 1 (saved to control unit)
- go to the detector
- press and hold detector learn key (P2) for 2 seconds: the detector has entered learning mode when the device blue LED blinks twice and buzzer beeps twice
- 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 buzzer will beep twice and the device blue LED will switch on for 1 second
- once a channel has been learned, the menu will go to the next channel: press **OK** to learn it or **#** to skip it
- exit control unit setup menu; when required, press **OK** to save the setup

Channels that have not been learned here, can be learned later using BrowserOne application.

Later you can use BrowserOne to move already acquired channels to other zones, change their type (magnetic/rolling shutter sensor), delete them to free zones.

7 SETUP VIA BROWSERONE

The device can be set using BrowserOne 3.5.13 or above.

- load the latest module available for the control unit in use
- start control unit connection
- select **Read setup** key to read control unit setup
- in the **Zones** page, select the row corresponding to the

first zone you used during device learning

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



Zones		Areas	Outputs	Users	Telephone Dialler	System Options
	Zone Name	NG-TRX				
07	Zone 7	Yes				
08	Zone 8	Yes				

General Assign Area/Sector Radio Devices Cable Devices **Radio Devices NG-TRX**

7.1 NG-TRX options

Use this section to set detector parameters common to all its channels.

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

Buzzer activation	Buzzer disabled
Performance tuner	Automatic
Supervision interval	5 min
<input type="checkbox"/> Delay supervision anomaly	
<input type="checkbox"/> Tx Boost	

▼ 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 BLADE2K detector options

Set in this pane the parameters concerning each specific channel of the device.

▼ Enable Led

If disabled, LED indicator will not blink in case of alarm/tamper (it will continue working in walk test or learning mode).

▼ Buzzer activation

Flag this checkbox to apply the Buzzer activation settings defined in the pane above to that specific channel.

Channel 1

It can be associated to onboard PIR sensor only.

If you want to change the channel, select the zone from dropdown menu, then select **Jump** button.

Set the **Time inhibition** (after transmitting an IR alarm, the sensor will be inhibited for this amount of time), **Range** and **Sensitivity** (number of pulses to detect in 10 s).

Channel 2 and 3

These channels can be freely assigned either to a magnetic contact or to a rolling shutter sensor using the **Type** menu.

If you want to change the channel, select the zone from dropdown menu, then select **Jump** button.

With **Fast** selected, set also Time (interval within pulses have to be counted) and **Sensitivity** (number of pulses).

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

▼ 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).

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 BLADE2K at the first valid transmission and the device will beep to confirm the operation.

8 OPERATING MODE



8.1 Operating sequence

1. Stabilisation

After power on, the device takes around 10 s to stabilize.

2. Walk test

The device remains in walk test mode for 8 minutes.

The LED flashes anytime an IR pulse is detected.

If the device detects the number of pulses set as Sensitivity, it triggers an alarm transmission; otherwise, it does not.

After an alarm event is transmitted in walk test mode the device will remain inhibited for 5 seconds.

3. Standard operating mode

Detection occurs as in walk test mode, except that the LED does not show each single IR pulse, but it only switches on during alarm transmission.

When operating, after an alarm transmission, the device will remain inhibited:

- for 5 s if the detector belongs to armed sectors (only for the first three alarms received inside an arming cycle);
- for the time set if the detector belongs to disarmed sectors (or starting from the fourth alarm received inside an arming cycle).

8.2 Precautions before arming the system

- We suggest closing the shutters before arming the system.
- Pay attention in case the system is armed while the shutters are open: people or animals passing very close to the protected doors/windows (at a shorter distance than 20 cm) may be detected.
- Close the internal window/French window before arming the system (make sure neither vibrations due to the wind nor indoor-outdoor air circulation occur).
- Roll any mosquito net up before arming the system.
- To further limit the range, use the supplied labels according to specific instructions.

8.3 Blue LED indications

Condition	Power-on time
Power on	2 s
Transmission for alarm / tamper in operation	500 ms
IR detection in walk test mode	500 ms
Transmission for alarm / tamper in walk test mode	2 s
Successful learning	1 s



9.1 System test mode

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

Device operating mode is the same as in walk test, except that device buzzer is activated upon any alarm.

The device remains in this mode as long as the control unit is in ZONE TEST mode.

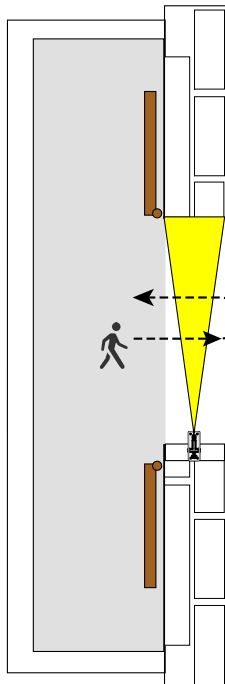
Note: the device will actually enter test mode only after the first transmission, therefore it may take up to 5 min (default) since the control unit is set to ZONE TEST.

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

9.2 Periodic test

Carry out a simple test regularly to verify the functionality and the coverage limits of the detector.

- set the device in system test mode (see above)
- move across the detector coverage area, in both directions



The detector shall react as follows:

- LED flashes once: IR pulse detection;
- LED switches on for a longer time: alarm.

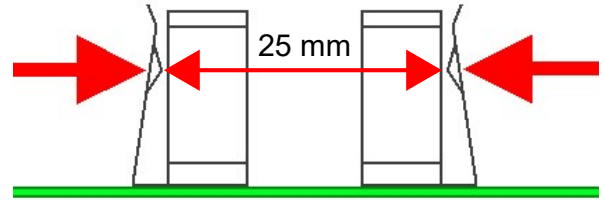
9.3 Battery replacement

The device employs a 3.6V 1.2Ah ER14250 lithium battery. This must be replaced only with a new one of the same model.

Follow this procedure:

- remove the discharged battery
- press and release the Tamper button 3-4 times in order to

- discharge any charged capacitors
- check the distance between the battery clip tabs is about 25 mm: if greater, push them lightly inward



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

- insert the new battery.
- 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.

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EU DECLARATION OF CONFORMITY

Hereby, EL.MO. Spa declares that the radio equipment BLADE2K - BLADEM2K 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 – 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:

Wireless IR detector 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.