

DT4000

**DT detector with digital PIR sensor,
antimasking and under-crawl protection**



Addressee for this information: User | Installer

1 DESCRIPTION

DT4000 is a dual-technology (infrared and microwave) detector.

The detector includes two sections operating in AND or OR mode.

Infrared section (IR): digital PIR sensor with temperature compensation and environmental monitoring, FRESNEL lens with white light protection.

An additional bottom lens is used for the under-crawl function.

Microwave section (MW): 10.525 GHz DRO planar antenna (also available as an alternative in the 9.9 GHz version). Anti-masking device.

The two green and blue LEDs show the activities of the IR and MW section respectively.

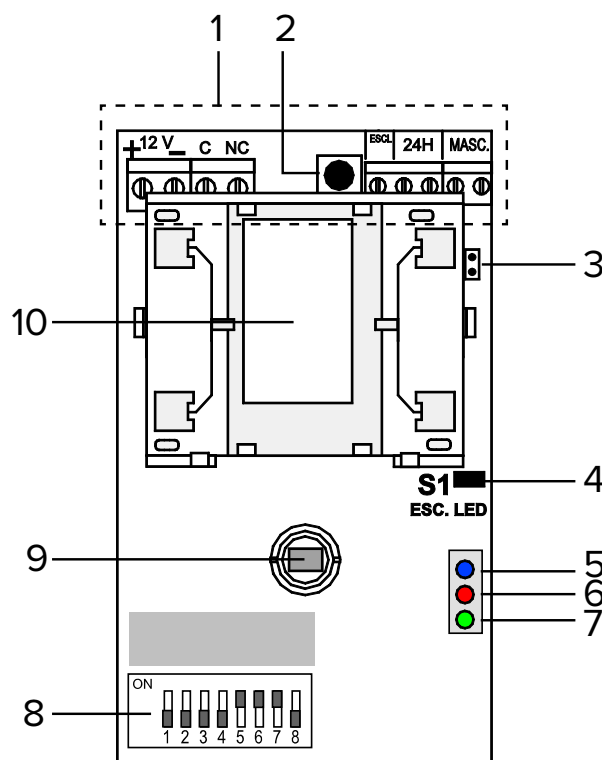
For side-by-side mounting, differentiated frequencies can be used.

DT4000 can be set with board dip switch.

An optional swivel mount may be used for wall or corner installation.

DT4000 is certified IMQ - Security Systems.

2 PCB



- 1 Terminal board
- 2 Tamper button for protection against cover opening
- 3 Jumper to enable protection against removal
- 4 LED exclusion jumper
- 5 Blue LED
- 6 Red LED
- 7 Green LED
- 8 Dip switches
- 9 PIR sensor
- 10 MW planar antenna



Model	DT4000		
Identification			
Technology	IR + MW		
Coverage type	Volumetric		
IR section			
PIR sensors number	1		
Max range	15	m	
Pulse count	5	s	
Opening	81°	°	
No. of IR sensitive zones	18 zones on 4 levels. 3 creep zones on one level		
MW section			
MW max range	15	m	
Pulse count	5	s	
Standard TX frequency	10,525	GHz	
Differentiated TX frequency	9,900	GHz	
Max power output	13	dBm	
MW horizontal coverage	95°	°	
MW vertical coverage	60°	°	
General features			
Operating voltage	Power supply	12 (9 ÷ 15)	V
	Minimum power supply	7,0	V
Consumption at power voltage	Idle mode	17	mA
	Alarm mode	19	mA
	MW excluded mode	14	mA
Operating times	Power-on stand-by	30	s
	Pre-alarm time	10	s
	Alarm	5	s
	Orientation change	5	s
Working temperature	-10 / +55		°C
Humidity	93% r.h.		
Protection class	IP3x		
IMQ certified	EN50131-2-4: grade 3		
Environmental class	II		
Dimensions and weight	W65 × H111 × D48 mm, 110 g		

Parts supplied

Screws, inserts, S4 screw and insert for microswitch against removal, technical manual.

Optional accessories

SN/D(x)99 swivel mount for tilted installation.

Optional accessories are not IMQ - Security Systems certified.



General warnings are at the end of this manual.

Before installing the product, please read the following indications carefully.

4.1 General considerations

- Make sure the device operating field is free and devoid of zones darkened by obstacles.
- Adjust the range of the microwave so that it does not go through glass or plastic curtains. For distances below 4 m disable the anti-masking function.
- Avoid installation nearby oscillating or vibrating metal items (e.g. refrigerating units). If this is not possible, disable the anti-masking function.
- Avoid installation near heat sources or drafts.
- Do not touch the PIR sensor with your fingers.
- Leave a distance of at least 5 m between two detectors operating at the same frequency when aimed at each other. If this is not possible, disable the anti-masking function.
- In case of two detectors installed one close to the other, the second must have differentiated frequency:
10,525 GHz (standard) model code: **RCRDTMP067#00**
9,9 GHz (differ. freq.) model code: **RCRDTMP068#00**

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

4.2 Definition of installation position

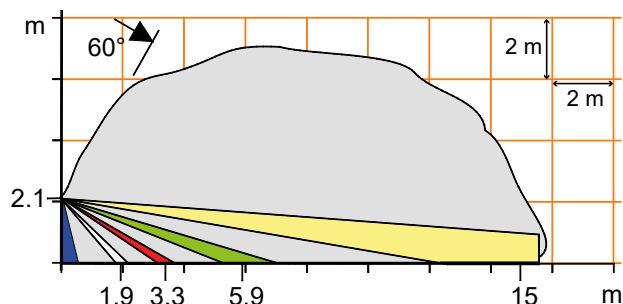
Choose installation position taking into account the IR and MW cover ranges shown in the following diagrams.

The diagrams consider an installation height of 2.1 m and usage of the SML/15 lens.

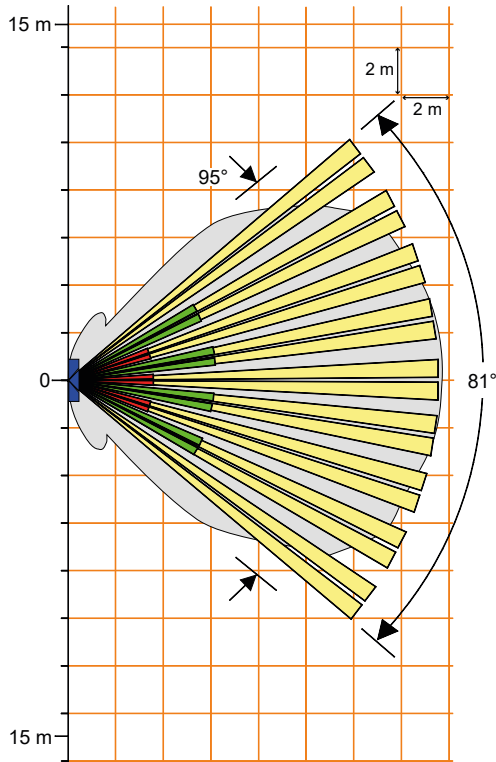
The under-crawl zones are also included: 3 zones on 1 floor.

Coverage at maximum range:

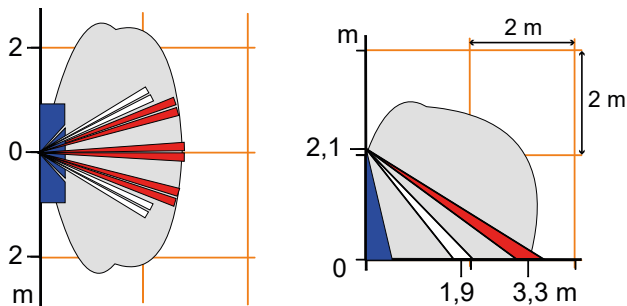
Side view



Top view



Coverage at minimum range:



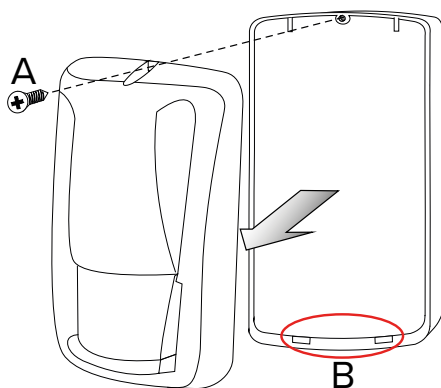
On the left: top view.
On the right: side view.

Note: the under-crawl function is not IMQ-certified.

5 DEVICE MOUNTING

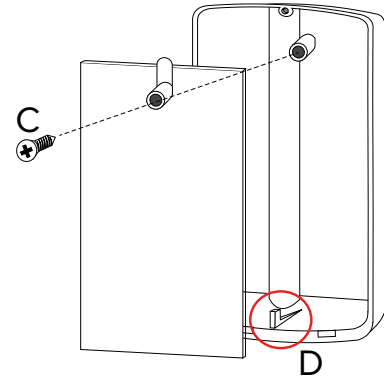


• Opening the housing



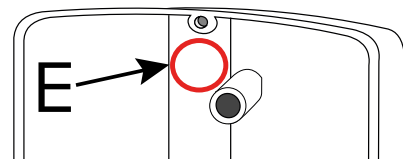
- unscrew the cover fixing screw (A)
- separate the front cover by pulling it away from the stops (B)

• Removing the electronic board

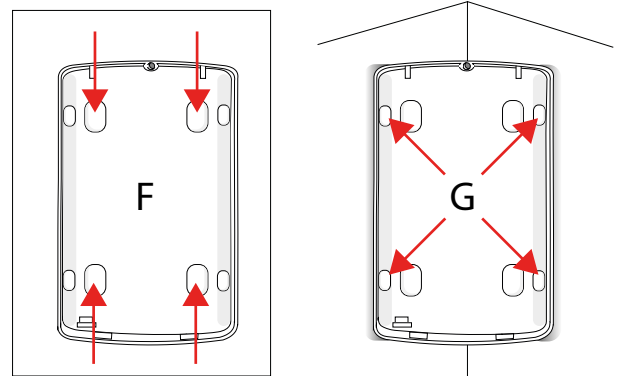


- remove the screw fixing the board to the base (C)
- extract the board from the bottom hook (D)

• Base wall mount



- drill a hole on area E (pre-cut plastic on the outside) for the passage of the wires



- using a screwdriver, perforate the 4 pre-cut areas of the support for flat (F) or corner (G) installation
- In case of corner mount, move the lever against removal from wall as indicated in paragraph 5.1 p. 5
- insert a screw with the supplied S4 dowel where the microswitch against removal is located
- adjust the depth level of the screw so that the lever will keep the switch pressed

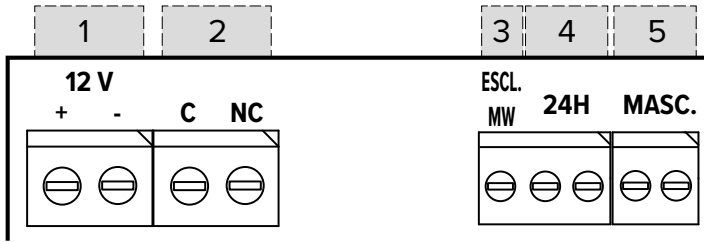
! The lever is not active when the detector is installed on the optional swivel mount. Disable the function against removal by closing jumper S2.

- fix the base to the surface using screws and dowels

! In case of corner mount, to ensure the right value of max range, it is necessary to tilt the detector suitably by inserting a 2-3mm-thick shim under the two upper fixing holes.

• **Wirings**

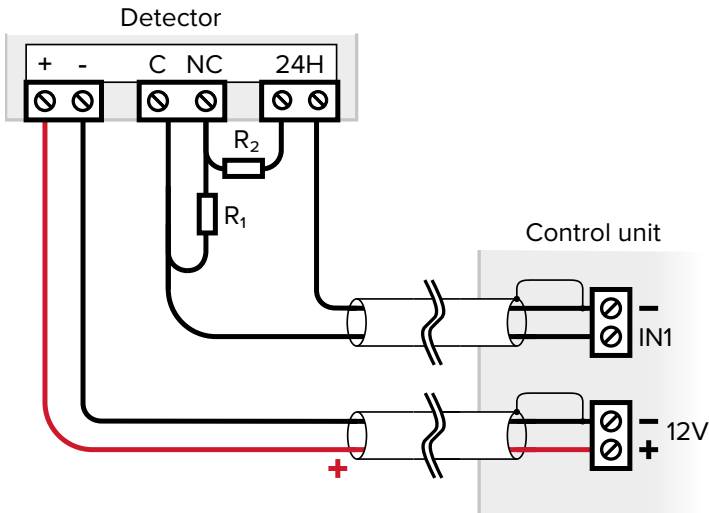
Detector terminal board:



- 1 Power supply (+12 V)
- 2 Alarm relay output C-NC (with 10 Ω resistor and 500 mA voltage)
- 3 Activate LED / MW section exclusion
- 4 Tamper output (NC)
- 5 Fault/masking output

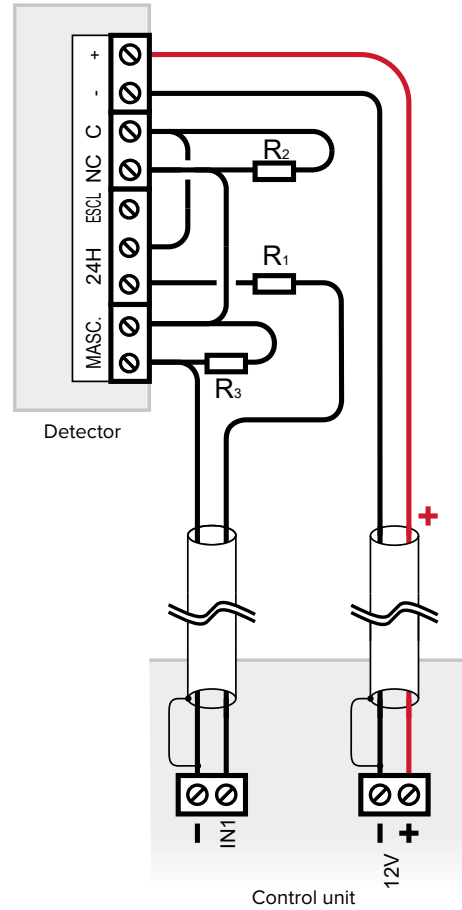
- remove the sheath from the end of the cable to connect to the terminal block
- feed the cable through the channel
- extract it from the drilled hole E
- wire terminals

Dual-balancing drawing:



Resistors R1 = R2 = 1500 Ω are supplied with the control unit.

Triple-balancing drawing:



Verify the unit supports triple-balancing setup. Resistors R1 = 1000 Ω, R2 = 680 Ω, R3 = 1200 Ω are supplied with the unit.

• **Board positioning**

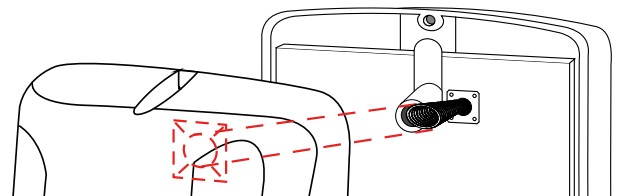
Disconnect the battery following the steps above in reverse order:

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

• **Device setup**

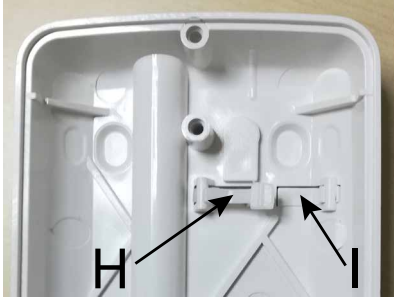
Configure the sensor functions (see next chapter).

• **Closing the housing**

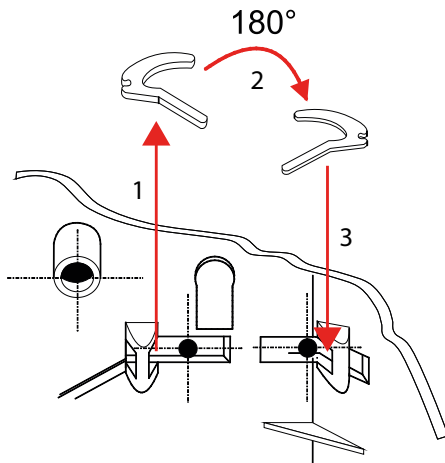


- position the front cover on the base making sure the tamper protection spring fits correctly to its place
- hook the cover to base stops again
- fix the cover with the screw

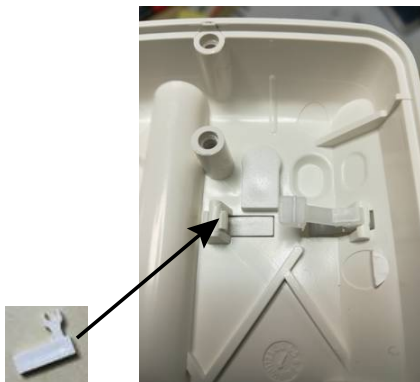
5.1 Protection against removal for corner mount



In case of corner installation, in order to ensure protection from removal from the mounting surface, it will be necessary to move the H lever (which operates the corresponding micro-switch at the back of the board) to the position of the plastic plug I that closes the detector angle. Proceed as follows (images show the internal view of the detector base):



- detach the lever from the rotation pin
- detach the plastic plug that closes the detector angle
- rotate the lever by 180°
- insert the lever where the plug was, firmly attaching it to the pin



You can close the gap where the lever was before using the second plastic plug provided.

6 STARTING THE DEVICE



All the detector functions can be configured using dip switches and jumpers, positioned as shown in 2 p. 1 section.

To access it, open the cover as illustrated in the mounting procedure.

6.1 DIP switch settings

▼ Activate LED / MW section exclusion

DIP 1	Function
ON	LED exclusion enabled on ESCL. terminal
OFF	MW section exclusion enabled on ESCL. (default) terminal

▼ Enable/disable anti-masking and anti-sneak

DIP 2	DIP 3	Functions enabled
OFF	OFF	None (default)
OFF	ON	Anti-masking function
ON	OFF	Anti-sneak
ON	ON	Anti-masking, anti-sneak

▼ Sensitivity adjustment

DIP 4	Sensitivity
ON	Minimum: 8 MW pulses, 4 IR pulses
OFF	Maximum: 4 MW pulses, 2 IR pulses (default)

▼ AND/OR

DIP 5	Mode
ON	AND (default)
OFF	OR

▼ Activate/deactivate disorientation protection.

DIP 6	Enable disorientation detection
ON	Enabled (default)
OFF	Disabled

▼ MW range adjustment

DIP 7	DIP 8	Range
ON	ON	25%
ON	OFF	50% (default)
OFF	ON	75%
OFF	OFF	100%

6.2 Use of jumpers

Jumper to enable protection against removal

Open: protection enabled

Closed: protection disabled (default)

LED exclusion jumper

Open: LED disabled

Closed: LED enabled (default)


It is no longer possible to enable the LEDs remotely while the LED exclusion jumper is open.

6.3 ESCL. terminal settings

The detector features a terminal board input (ESCL.) that can be used to exclude the MW section or disable the LEDs.

Disable the MW section

- set dip 1 to OFF
- wire ESCL. terminal to +12V

 MW section will be disabled regardless of dip 5 position.

Disabling the LEDs

- set dip 1 to ON
- wire ESCL. terminal to +12V

7 OPERATING MODE

The detector detects motion inside the covered area.

7.1 AND/OR mode

The way the alarm notification is given differs depending on operating mode set:

AND mode

To activate it, set dip 5 to ON.

The alarm relay is activated only when both IR and MW technologies trigger an alarm.

One of the two technologies detects a movement and switches to pre-alarm status (IR or MW) for 10 s.

If within such time the other technology does not confirm the detection, the technology in pre-alarm status will reset.

OR mode

To deactivate it, set dip 5 to OFF.

The alarm relay is activated when either of the two technologies sends an alarm notification due to movement within the controlled area.

7.2 Anti-masking function

To activate it, set dip 3 to ON.

The function detects attempts to obscure/cover the vision by placing an object in front of the detector.

In order to activate the anti-masking function, the device shall be operating in AND mode and the MW mode shall be enabled.


The alarm relay and the MASC relay will be both enabled while masking persists.

The standard operating mode will be restored when one of the technologies confirms the first movement.

Activation status of the anti-masking function can be controlled with indications only during stabilisation at power on: if someone passes close to the sensor, blue and green LEDs will blink.

It is advisable to connect MASC output to an independent

alarm input, or in series to the detector alarm output. In any case, when possible, connect the detector to a control unit that individuates alarm, tamper and fault events separately. If using 24H input, set it to silent mode.

 We recommend to disable anti-masking function if the detector is installed in places with people passing often close to the detector.

7.3 Anti-sneak

To activate it, set dip 2 to ON.

The function detects attempts to elude the IR section from far off with special physical expedients.

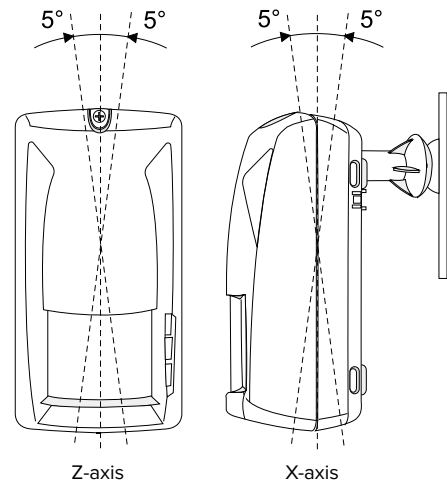
In order to activate the function, the device shall be operating in AND mode.

The standard operating mode will be restored when one of the technologies confirms the first movement.

7.4 Function against disorientation

To activate it, move dip 6 to ON.

An accelerometric sensor with operation on two axes detects device moving attempts.



If the detector is rotated by 5 degrees compared to its initial position, 24H relay will enter the alarm condition for 5 s and red LED will start blinking slowly.

The circuit is protected against accidental vibrations; however it is advisable to take the following precautions:

- Verify that the mounting wall is solid and stable.
- Verify that the joint is installed properly.
- Avoid drilling and beating in the area near the detector without having previously disarmed the system.

7.5 LED indications

Condition	Red LED	Green LED	Blue LED
Stabilisation at power on	ON steady (30 s)		
Anti-masking test at power on		Blinking	Blinking

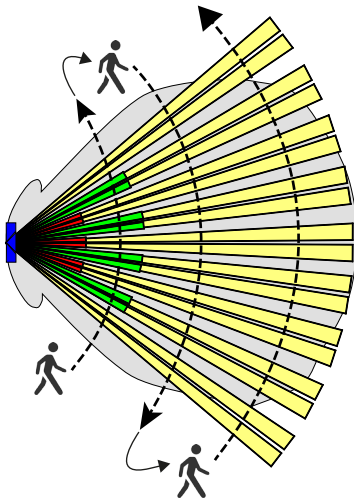
Condition	Red LED	Green LED	Blue LED
IR pulse		Single blinking	
MW pulse			Single blinking
Pre-alarm IR		ON steady (10 s)	
Pre-alarm MW			ON steady (10 s)
General alarm		ON steady (5 s)	ON steady (5 s)
PIR fault		Fast blinking	
MW fault			Fast blinking
Sneak/Masking			Slow blinking
Orientation change	Slow blinking		

8 MAINTENANCE



8.1 Periodic test

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



- taking detector position as the point of reference, make half-circle movements from opposite directions to check coverage from both sides

Detector LED indicators shall respond as shown in the table of 7.5 p. 6 paragraph.

EU DECLARATION OF CONFORMITY

Hereby, EL.MO. Spa declares that the radio equipment DT4000 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:

DT detector with digital PIR sensor, antimasking and under-crawl protection.

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...)

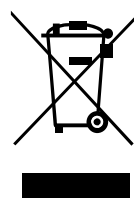
MAIN SAFETY RULES

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.