TECHNICAL MANUAL

FLY, FLY8

Ceiling-mount DT detectors for intrusion detection systems

IMQ-SISTEMI DI SICUREZZA

Addressee for this information: (U) User | (I) Installer

1 DESCRIPTION

FLY is a dual-technology ceiling-mount detector.
The detector features two sections that can work in AND or OR mode.

InfraRed Section (IR): two-channel digital PIR sensor with ceiling lens and silicon filter for white light protection. Anti-blinding protection. Fault condition control.

Microwave section (MW): 10.525GHz DRO planar antenna (available also 9.9GHz model). Anti-masking and anti-sneak protection. Fault condition control.

Red, green, and blue LED indicators provide information on IR and MW sections status and working mode.

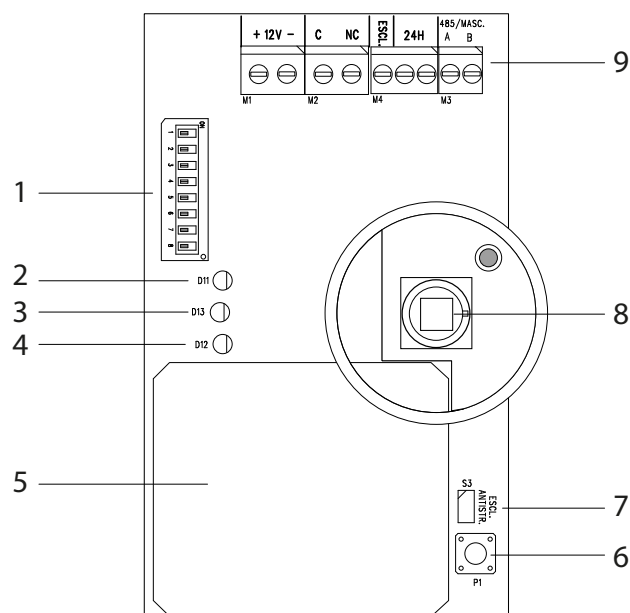FLY can be set with board dip switch.

The detector is available in two versions:
- FLY with lens for installation at 4 m height;
- FLY8 with lens for installation at 8 m height.

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

FLY are FLY8 are certified IMQ - Security Systems.

2 PCB   (I)

1	Dip switches
2	MW LED (blue)
3	Red LED
4	IR LED (green)
5	MW antenna
6	Tamper button
7	Jumper to exclude protection against removal
8	PIR sensor
9	Terminal board

3 TECHNICAL DATA

Model		FLY	FLY8	
Identification				
Technology		IR + MW		
Coverage type		Volumetric, conic-shaped sectors		
IR section				
PIR sensors number		1		
Max range		4	8	m
Pulse count		5		s
No. of IR sensitive zones		55 over 6 conic sectors	19 over 3 conic sectors	
MW section				
MW max range		4	8	m
Pulse count		5		s
General features				
Operating voltage	Power supply	12		V
	Minimum power supply	7.5		V
	Power fault detection threshold	7.5		V
Operating times	Power-on stand-by	25		s
	Pre-alarm time	10		s
	IR fault detection	2		s
Consumption at power voltage	Idle mode	22		mA
	Alarm mode	24.0		mA
	MW excluded mode	20		mA
Working temperature		-10 / +55		°C
Protection class		IP3x		
Certification		IMQ - Security Systems EN50131-2-4: grade 3, environmental class II		
Dimensions and weight		L151 × H159 × P36 mm, 206 g		
Parts supplied		Screws, inserts, S4 screw and insert for microswitch against removal, technical manual		

4 PRECAUTIONS BEFORE DEVICE MOUNTING

⚠️ *General warnings are at the end of this manual.*

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

4.1 General considerations

- Avoid installation nearby oscillating or vibrating metal items (e.g. refrigerating units). If this is not possible, disable anti-masking and anti-sneak functions.
- Avoid installation near heat sources or drafts.
- Do not touch the PIR sensor with your fingers.
- In case of installation of two sensors at a distance of less than 5 m, the second must be be a differentiated-frequency model.

⚠️ *The electronic board of the detector may be damaged by electrostatic discharges.*

The installer must completely avoid any presence of electrostatic discharges both during installation and maintenance.
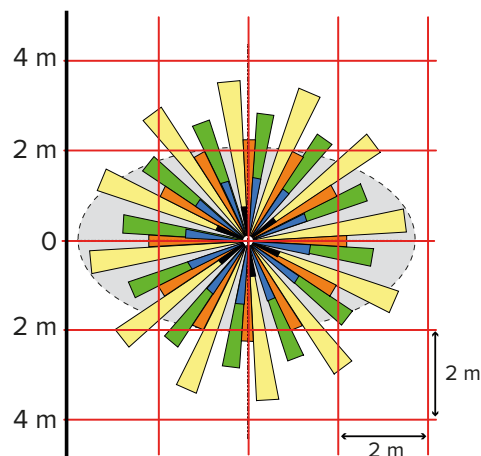
4.2 Definition of installation position

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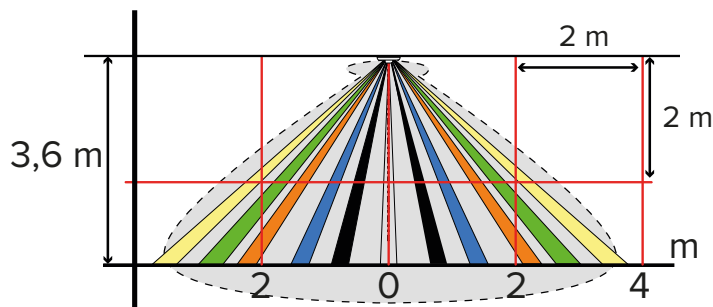
- **FLY**

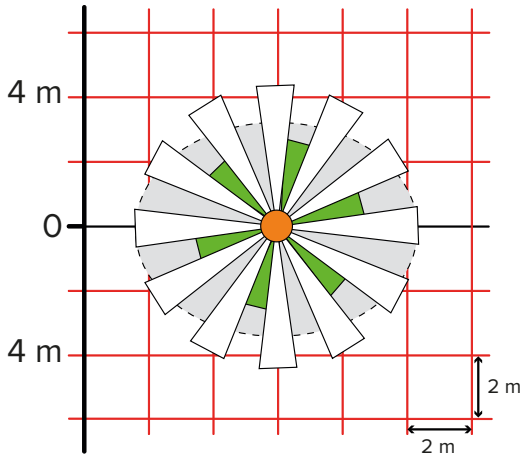Diagrams refer to detectors mounted at 3.6 m height.
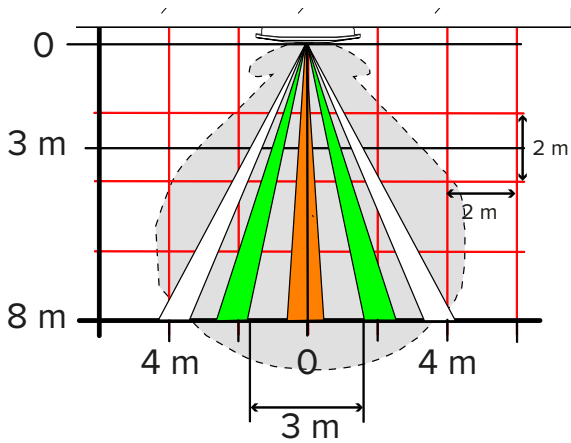
Top view:

Dashed line: MW section

Side view:

Dashed line: MW section

- **FLY8**
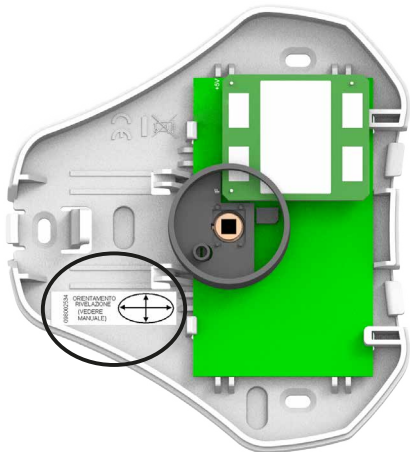
Top view:

4 m

0

4 m

2 m

2 m

Dashed line: MW section

Side view:

0
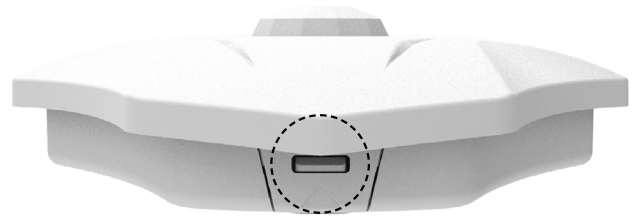
3 m

2 m

2 m

8 m

4 m   0   4 m

3 m

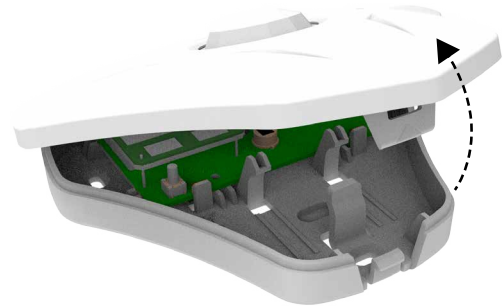Dashed line: MW section

⚠️ *The label on the inner side of the detector base shows the detection orientation.*
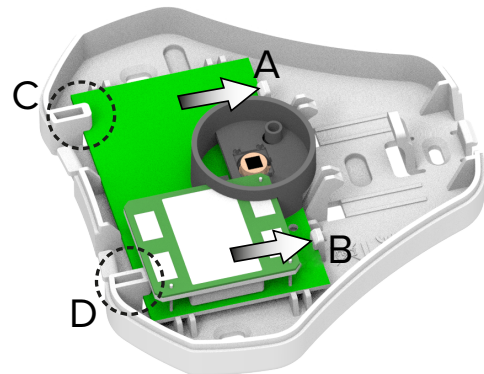
- **Opening the housing**

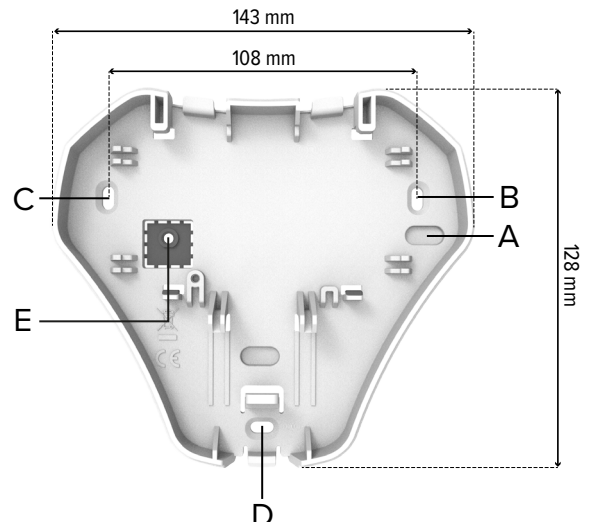– press the hook on the cover rim

– rotate cover upward and remove it

- **Removing the electronic board**

– press on fixing supports A, B
– remove the board from A, B supports
– remove the board from C, D supports

- **Fixing the base to the ceiling**

143 mm

108 mm

128 mm

C   B
     A

E

D

- open area A pre-cut for cables passage
- feed cables through the drilled hole
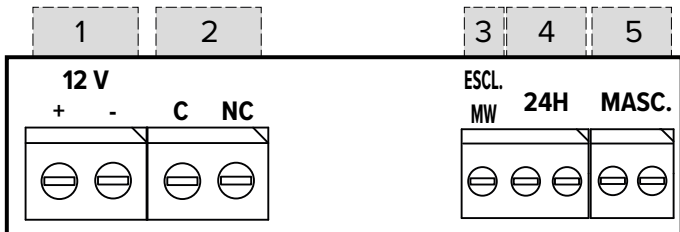- fix the base to the ceiling with screws and dowels using holes B, C, D

Protection against removal from wall
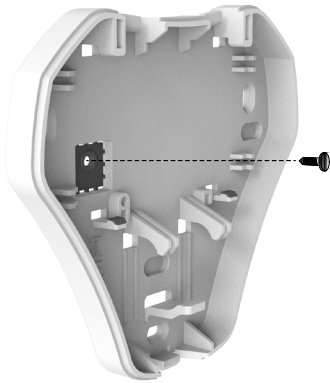
- insert a screw with the supplied S4 dowel into the hole E
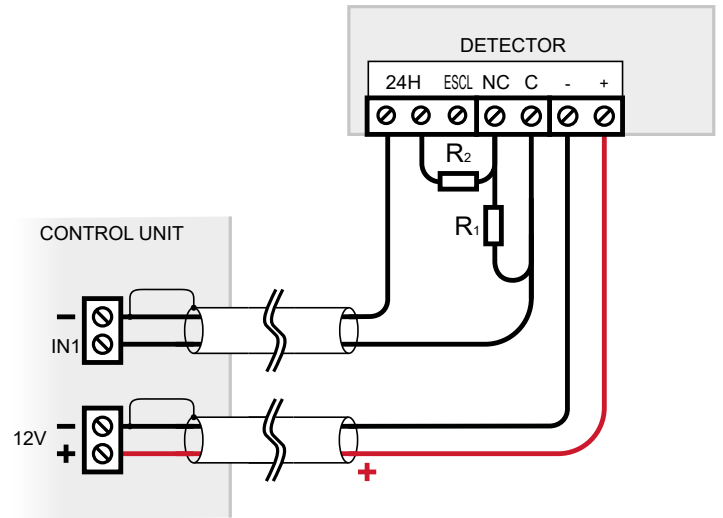
- **Wirings**

Detector terminal board:

1 Power supply (+12 V)
2 Alarm relay output C-NC (with 10 Ω resistor and 100 mA voltage)
3 Activate LED / MW section exclusion
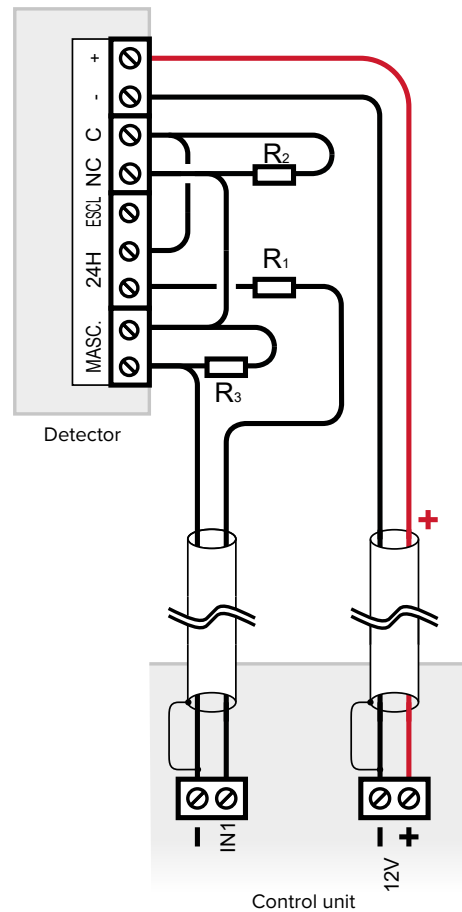**4** Tamper output (NC)
5 Fault/masking output

- wire terminals

Dual-balancing drawing:

R1 = R2 = 1500 Ω resistors are supplied with the unit.

Triple-balancing drawing:

⚠ *Verify the unit supports triple-balancing setup.*

R1 = 1000 Ω, R2 = 680 Ω, R3 = 1200 Ω resistors are supplied with the unit.
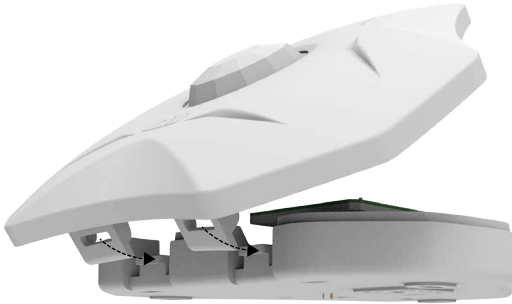
- **Reinstallation of the board**

With ref. to image at **Removing the electronic board**:
– insert the board under C, D supports
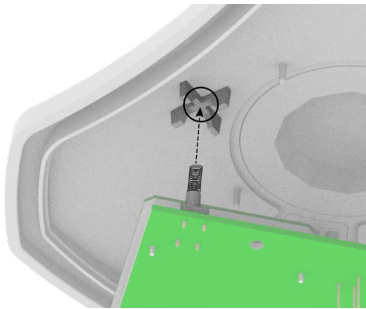– push the board in place under A, B supports

- **Device setup**

Proceed with detector setup (see following chapter).

- **Closing the housing**

– position the cover on the two hooks on the base
– lower the cover until it closes

⚠ *Verify that the spring protecting against housing opening is positioned correctly.*

6 STARTING THE DEVICE 🇮

6.1 DIP switch settings

Detector functions can be set using board DIP switch. To access the dip switch, open the detector cover as illustrated in the mounting diagram.

▼ **Activate LED / MW section exclusion**

DIP 1	Function
ON	LED exclusion enabled on **ESCL.** terminal
OFF	MW section exclusion enabled on **ESCL.** terminal

▼ **Activate/deactivate anti-blind, anti-mask, and anti-sneak functions.**

DIP 2	DIP 3	Functions enabled
OFF	OFF	None
OFF	ON	Anti-masking function
ON	OFF	Anti-masking, anti-blinding
ON	ON	Anti-masking, anti-blinding, anti-sneak

▼ **Sensitivity adjustment**

DIP 4	Sensitivity
ON	Minimum: 8 MW pulses, 3 IR pulses
OFF	Maximum: 4 MW pulses, 2 IR pulses

▼ **AND/OR**

DIP 5	Mode
ON	AND
OFF	OR

▼ **MW range adjustment**

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

6.2 ESCL. terminal settings

The detector features a ESCL. terminal input that can be used to disable the MW section or the LED indicators.

Disable MW section

– set dip 1 to OFF
– wire ESCL. terminal to +12V
MW section will be disabled regardless of dip 5 position.

Disable LED indicator

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

7 OPERATING MODE 🇺

The detectors detects movements inside covered area.

7.1 AND/OR mode

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

AND mode

The alarm relay is only activated 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 the set time. If within this time the other technology does not confirm the

detection, the technology in pre-alarm status will reset.

OR mode

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-blinding function

FLY features anti-blinding function.
The function detects blinding attempts made by placing a reflective body before the lens. Use dip switches 2 and 3 to activate the function.
When the device enters a "blinded" condition, the green LED will start blinking slowly.
When the reflective body is removed, the standard operating mode will be restored.

7.3   Anti-masking function

FLY features anti-masking function.
The function detects attempts to obscure/cover the vision of the unit 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.
Use dip switches 2 and 3 to activate the function.
When the device enters a "detector masked" condition, the blue LED will start blinking slowly.
The standard operating mode will be restored when one of the technologies confirms the first movement.
Note: for grade 3 compliance, enable anti-masking and anti-blinding functions.

7.4   Anti-sneak

FLY features anti-sneak function.
The function detects attempts to elude the IR section from far off with special physical expedient. In order to activate the function, the device shall be operating in AND mode.
Use dip switches 2 and 3 to activate the function.
When the function activates, blue LED indicator will start blinking quickly.
The standard operating mode will be restored when one of the technologies confirms the first movement.

7.5   LED indications

Condition	Red LED	Green LED	Blue LED
Power on	ON steady		
Anti-masking test at power on		Blinking	Blinking
IR pulse		Single blinking	
MW pulse			Single blinking
Pre-alarm IR		ON steady	

Condition	Red LED	Green LED	Blue LED
Pre-alarm MW			ON steady
General alarm		ON 5 s	ON 5 s
Power failure	Slow blinking	Slow blinking	Slow blinking
PIR fault		Fast blinking	
MW fault			Fast blinking
Blinding		Slow blinking	
Masking			Slow blinking
Sneak			Slow blinking

Note: for grade 3 compliance, it must be possible to disable the LEDs remotely.
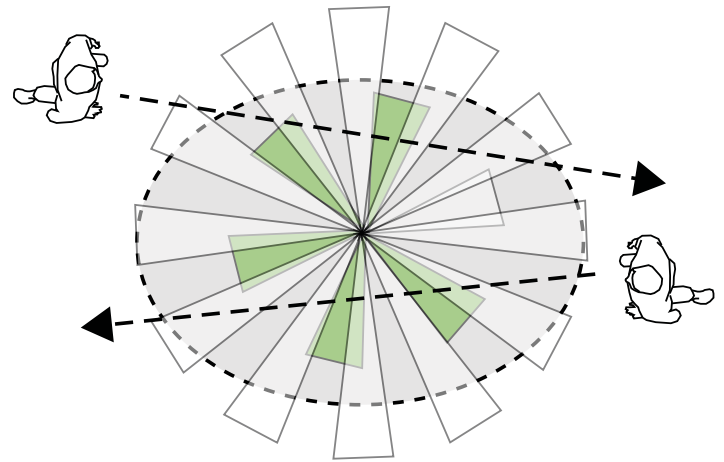
8   MAINTENANCE   Ⓤ Ⓘ

8.1   Periodic test

Carry out a simple test regularly to verify the functionality and the coverage limits of the detector.
Set the microwave range to 75% to comply with the coverage range.

– walk through the area covered by the detector, in both directions
Detector LED indicator shall respond as shown in the table LED indications.

Table of contents

EU DECLARATION OF CONFORMITY

Hereby, EL.MO. Spa declares that the radio equipment FLY, FLY8 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.

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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:

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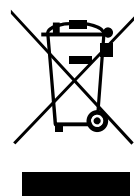
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In accordance with Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), please be advised that the EEE was placed on the market after 13 August 2005 and must be disposed of separately from normal household waste.

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The information and product features herein are not binding and may be changed without prior notice.
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