

IPSO



LIGHTNING DETECTOR

User's guide

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v.1.0

INGESCO[®]
LIGHTNING SOLUTIONS

1 Presentation

Thank you for buying our IPSO lightning detector.

This device, manufactured by **Dena Desarrollos, SL** (**INGESCO**[®] group), has been designed for detecting lightning strikes inside a radius of 30 km (18,64 miles) and warning the user about the intensity of the electro-atmospheric activity.

Light and easy to install, the lightning detector **IPSO** informs you, through its seven LED, of the intensity of lightning strikes inside the covered area. It has also two alarms (that user can easily program) related to two relays that allow the automation of security actions like disconnecting sensitive equipment, turning on acoustic or visual alarms, sending SMS alerts, etc. The device is also provided with an acoustic signal associated with the two alarms that can easily be connected or disconnected by the user.

Please, carefully read this guide before installing your **IPSO** in order to obtain the best results of this lightning detector, and don't hesitate to ask us about any doubt you may have.

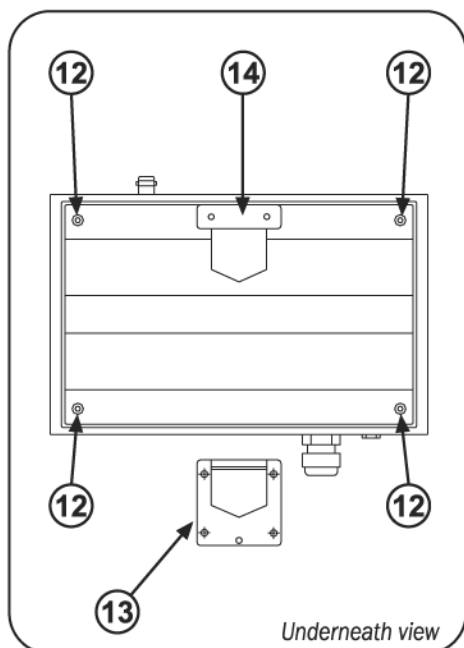
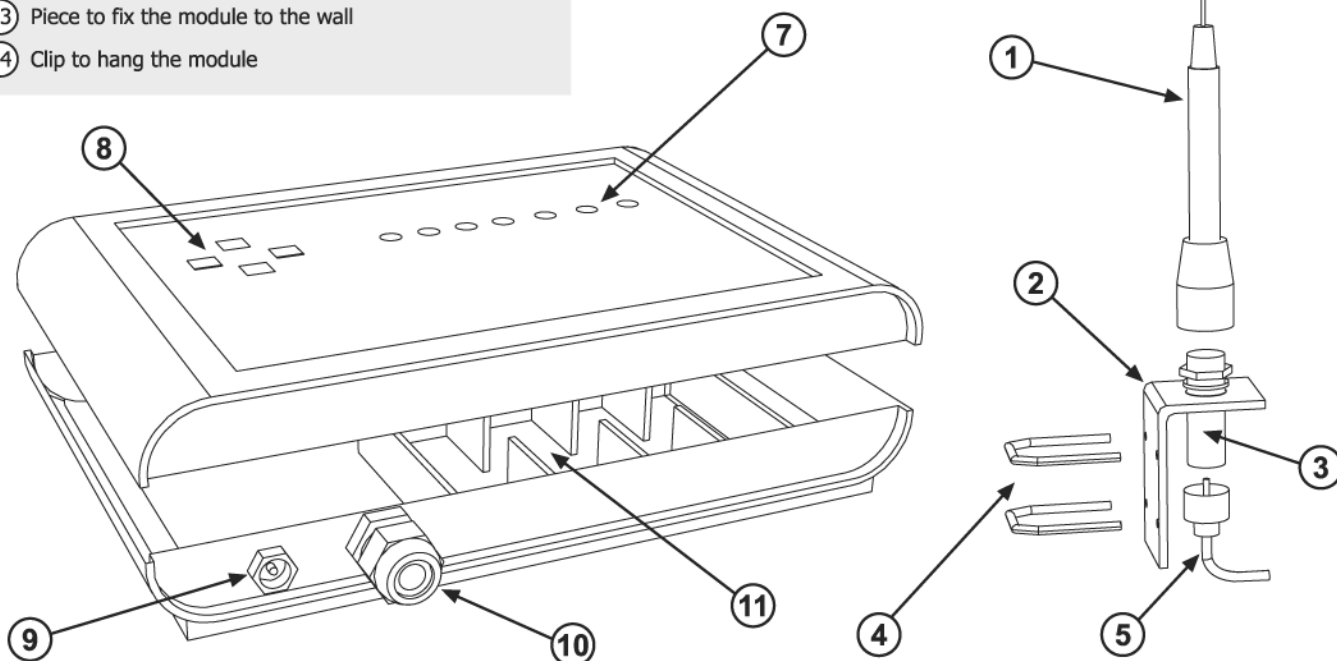
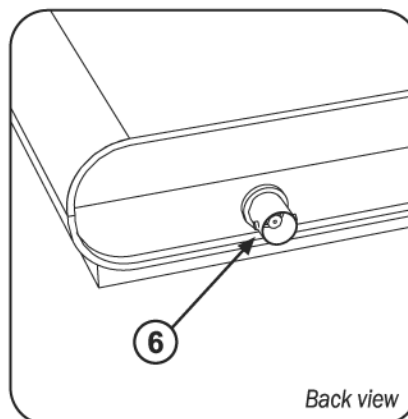
2 Components

Check that all the following components are inside the case of your IPSO:

- Antenna (2 pieces)
- Cable for antenna-control module connection (15 meters)
- **IPSO** control module
- Adapter 230V AC / 6V DC (connection to power supply)
- 4 batteries (1.5 V type C / LR14)
- Accessories for installing the antenna (1 bracket, 1 coupling cable-antenna, 2 flanges, 4 washers, 4 nuts and 1 Allen wrench)
- Piece to fix the module on a wall
- User's guide

3 Description of the equipment

- ① Antenna
- ② Support bracket
- ③ Coupling to fasten and connect the antenna
- ④ Flanges
- ⑤ Cable and terminal to connect the antenna
- ⑥ Antenna connector
- ⑦ Indicators of lightning activity level (LED)
- ⑧ Programming keyboard
- ⑨ Power supply connector
- ⑩ Gland follower (for cables go through to connect relays)
- ⑪ Battery support
- ⑫ Screws to fasten the box module
- ⑬ Piece to fix the module to the wall
- ⑭ Clip to hang the module



TECHNICAL SPECIFICATIONS	
Measurements	Module: 220 x 140 x 55 mm Antenna: 510 mm
Weight	Module: 873 g (with batteries) Antenna: 110 g
Power requirement	6 V DC (adapter AC-DC // 4 batteries x 1.5 V Class C / LR14)
Power consumption	7 mA
Relays (max)	10 A, 250 V AC, 60 V DC
Fixing module	mural or desktop equipment
Fixing antenna	adapter for external installation
Relay 1 timing	30 minutes
Relay 2 timing	30 minutes
Radius of detection	30 km
Acoustic alarm timing	2 seconds
Standard cable length	15 m

4 Installation

1. Fix the antenna ① outside, in a high and open area, using the support bracket provided. Choose a place where there is a low risk for the device of receiving lightning strikes. The antenna must not be placed in any case higher than the nearest lightning rod. It must not be placed either near to any big metallic mass or electromagnetic radiation sources (TV monitors, fluorescent lighting, engines, lifts, air conditioning equipment or electric sparks sources).
2. The support bracket provided ② allows to fasten the antenna to a mast (using the flanges ④) or to a wall. When the bracket is securely fastened, remove the upper hex nut from the coupling ③, put it in the support hole and fix it by means of the two nuts. Screw the antenna on the upper side of the coupling and connect the cable terminal ⑤ to the lower side.
3. The antenna must be connected to the module using the cable provided (15 meters).
4. The control module can be fixed on a wall or be used as desktop equipment. Before fixing it anywhere the box must be opened to install the batteries (4 x 1.5 V DC), if this kind of power supply is likely to be used. For that, unscrew the four screws ⑫ located in the back side of the module box.
5. After removing the screws, put the module box in its normal position and take away the **IPSO** cap. Place then the batteries in the battery support.
6. While the module box is open, you can proceed to connect the two relays with which **IPSO** is provided. These relays allow the automation of different safety protocols, like sensitive equipment disconnection,

turning on visual and acoustic alarms, etc. Pass the cables through the gland follower and connect the relays according your needs. Remember each relay is associated with one of two **IPSO** alarms that the user can programme freely. In the diagram below you can see relay connections when in active or inactive position.



7. When batteries are installed and relays properly connected, close the module box using the four screws placed on its back side.
8. Fix the support provided for mural installation ⑬ of **IPSO** module on the wall using four screws (not included) and hang the module using the piece in its back side ⑭.
9. Connect the antenna's cable to the module using the connector in the upper side of the box ⑥ and connect the **IPSO** to the current using the adapter provided, if you want to use this kind of power supply. When the antenna and the power supply are connected, you can proceed to programme the alarms.
10. **IPSO** is not provided with an on/off switch, so it will continue working without interruption until the power supply is disconnected or batteries run out of charge.

5 Operation

The **IPSO** lightning detector operation is based on the record of the electromagnetic field, whose value changes when an electric storm happens and that raises or falls according with a higher or lower number of lightning strikes in the controlled area.

The **IPSO** antenna is able to detect any lightning strike inside a radius of 30 km and to indicate, through the device seven **LED**, the number of electro-atmospheric discharges detected inside this area. The range of lightning strike number controlled by each **LED** is described in the table below.

Table of LED values								
MIN	1	2	3	4	5	6	7	MAX
LIGHTNING ALERT								
1 = Operation led 2 = from 0 to 10 discharges/min. 3 = from 11 to 20 discharges/min. 4 = from 21 to 30 discharges/min. 5 = from 31 to 40 discharges/min. 6 = from 41 to 50 discharges/min. 7 = > 50 discharges/min.								

The user can freely decide which level of activity (and related **LED**) wants associate with each of two **IPSO** alarms. When each alarm level is reached the corresponding relay is activated. Optionally, each alarm can switch on the acoustic signal with which **IPSO** is provided.

LED are also used to control the batteries charge level and to check which level of discharges is associated with each alarm.

All this operations can easily be done using the **IPSO** keyboard that allows the following functions:

PROG	It activates the programming mode (and shows levels associated with each alarm)	-	It activates/deactivates alternatively the acoustic signal (in programming mode, it is used to select the alarm level)
OK	Confirm and establish the programming options selected	+	It shows the batteries charge level (in programming mode, it is used to select the alarm level)

Programming alarms

To associate each alarm to a specific level of electro-atmospheric activity you must follow the following steps:

1. Keep pressing the **PROG** button for 2 seconds.
2. At this moment the **LED** indicating the lightning activity level associated with Alarm 1 will begin to blink.
3. Using **+** and **-** buttons we select the level of activity that we want to link to Alarm 1. When we are satisfied with our selection, we press the **OK** button and the Alarm 1 programming is completed.
4. At this moment we can see another **LED** blinking, which indicates the lightning activity level associated with Alarm 2.
5. Using **+** and **-** buttons we select the level of activity that we want to link to Alarm 2. When we are satisfied with our selection, we press the **OK** button and the Alarm 2 programming is completed.
6. The device remains now in its normal operation mode.

Activation and deactivation of the acoustic signal

The acoustic signal is activated by default.

1. When acoustic alarm is activated, it is enough to press **-** button to deactivate it.
2. When acoustic alarm is deactivated, it is enough to press **-** button to activate it.

Checking batteries charge level

To check the batteries charge level it is enough to press **+** button. It is not necessary to keep pressing the button. **LED** will keep lighted some seconds for you can see the charge level.

6 Warnings

For the IPSO lightning detector to work properly, it is necessary to carefully follow the following advice:

- The antenna must **never** be located at a higher position than the nearest lightning rod.
- Install the antenna outside, in an open and high location.
- Install the control module away from electric equipment: microwaves, refrigerators, TV monitors, heating and air conditioning equipment, etc.
- The antenna can be installed near other reception antennas (of television or radio, satellite dishes...) but it must never be located near transmission antennas (of radio ham, for example).
- The cable that connects the antenna to the module can be installed next to other antennas cables (TV, radio...), but it must never be located next to the cable of a transmission antenna. It is also recommended to avoid the proximity of mains cables.
- It is recommended not to approach the antenna or the control module carrying a mobile phone, especially while making a call.
- It is recommended no to approach the antenna or the control module carrying radio transmitters (walkie-talkie).
- Remember to check periodically the batteries charge level and replace them when necessary. Discharged batteries can leak acid and damage the device.

7 Guarantee and technical assistance

INGESCO® guarantees that the IPSO lightning detector fulfils the requirements of following standards:

- EN 61010 Electrical Safety requirements
- EN 50081-2 (94) Electromagnetic Compatibility (EMC)
- EN 61000-3-2 (97)//A12 (97)//A1 (99) EMC
- EN 61000-3-3 (97) EMC
- EN 61000-6-2 (00) EMC

It also fits the criteria of **Low Voltage Directive 73/23/EEC** (Safety of electrical equipment designed for use within certain voltage limits) and **Directive 89/336/EEC** (Electromagnetic Compatibility) in accordance with the CE mark, and has a calibration certificate from Electro-technical high voltage Laboratory **LABELEC** (accredited by **ENAC**).

The device is covered by the legally established guarantee referred to manufacturing defects. Any failure caused by an inappropriate use or manipulation is explicitly excluded of this guarantee.

Our authorized distributors and our **Technical Service (www.ingesco.com/contacto/?idioma=en)** will be pleased to assist you in your requests.

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