

## ▶ INGESCO® PDC.E LIGHTNING ROD

**INGESCO® PDC.E** electronic lightning rod with ESE (Early Streamer Emission) system, standardized according norms UNE 21186:2011, NFC 17-102:2011 and NP4426:2013.

### ▶ operation

PDC.E lightning rod with electronic ESE system offers the most effective and safe protection against lightning. It has been designed to reduce the time of the electro atmospheric discharge, in order to increase its capacity for lightning capture.

When a storm cloud is about to produce a downward electrical discharge (lightning), an increase in the electric field takes place. The electronic ESE system accumulates this electric potential and afterwards releases it as high voltage impulses that ionize the air particles around the device. This process produces an upward streamer emission that attracts and captures lightning.

**INGESCO® PDC.E** combines two quality factors:

1. It uses the latest generation electronic technology to generate upward emissions the shortest time so that the protection for your equipments and facilities increases.
2. It is the result of R&D programs in our electro-technical laboratory LABELEEC and has been submitted to several tests (performance in artificial electric field).

Because of that, **INGESCO® PDC.E** is the most reliable lightning rod of its class currently available in the market, able to offer an **intelligent performance**: its **ESE** system only works when there is a real risk of lightning impact, lowering the risk of unnecessary discharges.

### ▶ protection levels

Model	PDC.E 15	PDC.E 30	PDC.E 45	PDC.E 60
Ref.	102004	102005	102006	102007
$\Delta t$	15 $\mu s$	30 $\mu s$	45 $\mu s$	60 $\mu s$
LEVEL I	35 m	50 m	65 m	80 m
LEVEL II	43 m	59 m	74 m	89 m
LEVEL III	54 m	70 m	86 m	102 m
LEVEL IV	63 m	81 m	97 m	113 m

Protection radii calculated according to: Norm UNE 21.186:2011 & NFC 17.102:2011 (These radii of protection have been calculated according to a height difference of 20 m between the tip of the lightning rod and the considered horizontal plane).

### ▶ technical specifications

Mod.	Ref.	Mat.	H (mm)	D1 (mm)	D2 (mm)	M1	Weight (g)
<b>PDC.E15</b>	102004	Inox	412	16	83	M 20	3775
<b>PDC.E30</b>	102005	Inox	412	16	83	M 20	3770
<b>PDC.E45</b>	102006	Inox	412	16	83	M 20	3765
<b>PDC.E60</b>	102007	Inox	412	16	83	M 20	3760

## ► characteristics & benefits

- 100% of efficacy in lightning capture.
- High protection level.
- Electrical continuity guaranteed. The device doesn't offer any resistance to discharge conduction.
- Lightning rod with electronic device.
- Maximum accepted current 200kA.
- **INGESCO® PDC.E** preserves its initial properties after each discharge.
- No need of external power supply.
- Operation guaranteed in any atmospheric condition.
- Model testable with the INGESCO Advanced PDC Tester.
- Authentication system using QR code.

The capture terminal of **INGESCO® PDC.E**, meets the following technical specifications:

- It has an electronic ESE (Early Streamer Emission) system:
    - A capacitive generator of an upward emission.
    - A capacitive circuit to store electrical charges.
    - An insulation system made with resin (certified for high voltage devices protection).
  - An external structure made from stainless steel AISI 316 L.
- Its effective operation in any atmospheric condition and environment is thus guaranteed.

## ► installation

The capture terminal of **INGESCO® PDC.E** should follow the prescriptions of the norms UNE 21.186:2011, NFC17-102:2011, NP4426:2013 y IEC62.305, and should take into account:

- The point of the lightning rod should be located, at least 2 m. above the highest building or structure in the area to protect.
- A head-mast adapter piece is required in order to attach the lightning rod to the mast selected for its installation.
- The wiring of the covers should be protected against surges and any metallic structures present within the safety zone should be connected to the down conductors of the earthing system.
- The lightning rod should be connected to a grounding point by way of two or various conducting cables which will go down, whenever possible, the exterior of the construction with the shortest and straightest possible trajectory.
- The earth termination systems, whose resistance should be the lowest possible (less than 10 ohms), should guarantee the most rapid possible dissipation of the lightning current discharge.

## ► norms | tests | certificates


**INGESCO® PDC.E**, fits the requirements contained in norms:

- NP4426:2013
- IEC 62561/1
- UNE 21186:2011
- NFC 17-102:2011
- IEC 62561/3

In addition to all the specifications described for these types of components in the Regulation of High Voltage by the Ministry of Industry and Energy.

Lightning rod fabricated since 2006 the most advanced electronic components available on the current electronic lightning rod market.

**INGESCO® PDC.E** lightning rod have successfully surpassed the following test and trials of certification:

- Evaluation test of the upward leader initiation time emitted by the lightning rods with ESE system (Annex C UNE 21.186:2011 and NFC 17.102:2011), at the **LABELEC High Voltage Laboratory**.
- Mechanical test (traction and flexion until breakage).
- Product certificate issued by the **Bureau Veritas Certification entity**.
- Certificate of insulation in rainy conditions issued by the **LABELEC High Voltage Laboratory**.
- Testing by  Test Report Number : 4789563988.1.



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**LIGHTNING ROD**