



Joining sky and ground

PROTECTING YOU FOR OVER 50 YEARS



INGESCO PDC - ESE LIGHTNING RODS BROCHURE



1973

SINCE

INGESCO®

■ **LIGHTNING SOLUTIONS**

PDC 3.1

Lightning rod with Early Streamer Emission - ESE System

100%
Efficacy

High Protection
Class

200kA
Tested

AISI 316L
Stainless steel

Non-electronic
Maintenance-free

QR
Authentication

Quality

The **PDC 3.1** complies with all current regulations and has the certificate issued by **Bureau Veritas** according to standard **NFC 17-102:2011** and UNE 21186:2011. Our company has ISO 9001:2015 and 14001:2015 **environmental certification**.



Double ESE system

Electro atmospheric capacitor and atmospheric accelerator. It has been tested by **LABELEC** (High Voltage Laboratory accredited by **ENAC** n°307/LE681 according to **ISO 17025**) and has been tested in natural field.



Warranty

This product has a **10-year warranty** against any manufacturing defect. Offering a performance effective in any atmospheric and environmental conditions. **Operating temperature range:** -20°C to + 125°C.



LIGHTNING PROTECTION



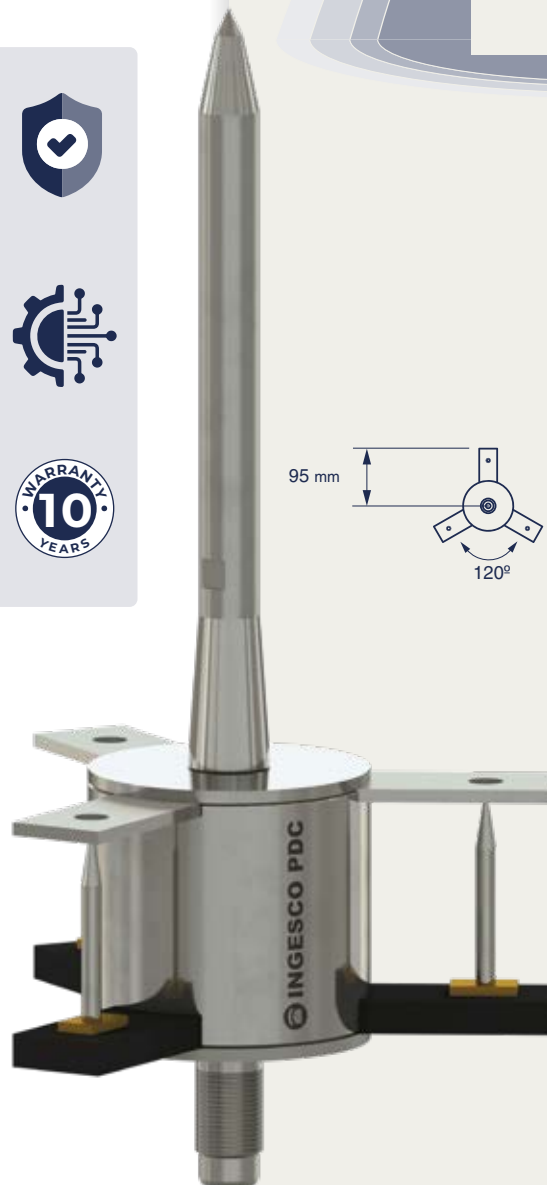
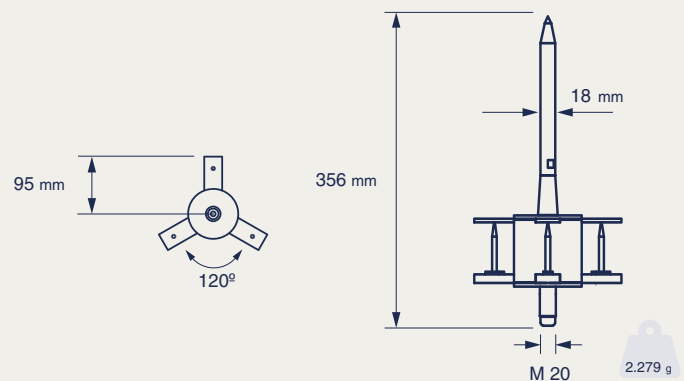
Level of
Protection

PDC 3.1 ($\Delta t = 15\mu s$)
Ref. 101000

● LEVEL I	35 m
● LEVEL II	43 m
● LEVEL III	54 m
● LEVEL IV	63 m

Protection radius calculated according to **NFC 17-102:2011**, UNE 21186:2011 and NP 4426:2013, based on a 20 m height difference between the lightning rod tip and the horizontal reference plane.

Protection radius



PDC 3.3

Lightning rod with Early Streamer Emission - ESE System

100%
Efficacy

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200kA
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AISI 316L
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The **PDC 3.3** complies with all current regulations and has the certificate issued by **Bureau Veritas** according to standard **NFC 17-102:2011** and UNE 21186:2011. Our company has ISO 9001:2015 and 14001:2015 **environmental certification**.



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LIGHTNING PROTECTION



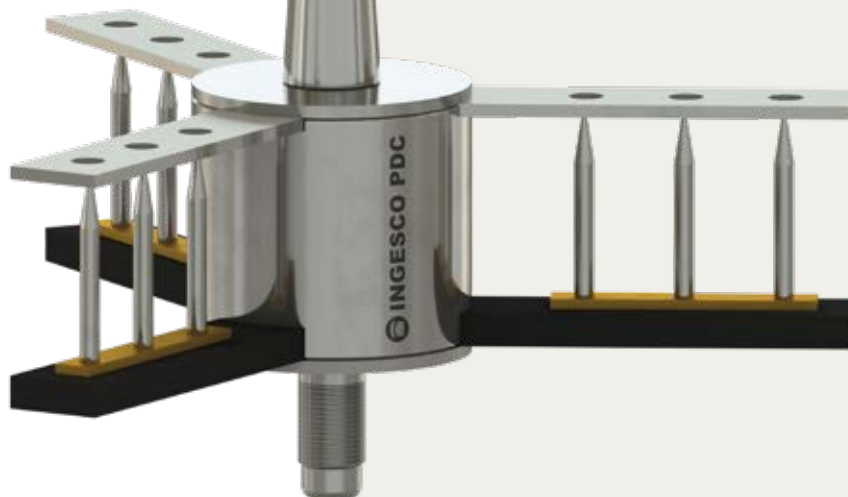
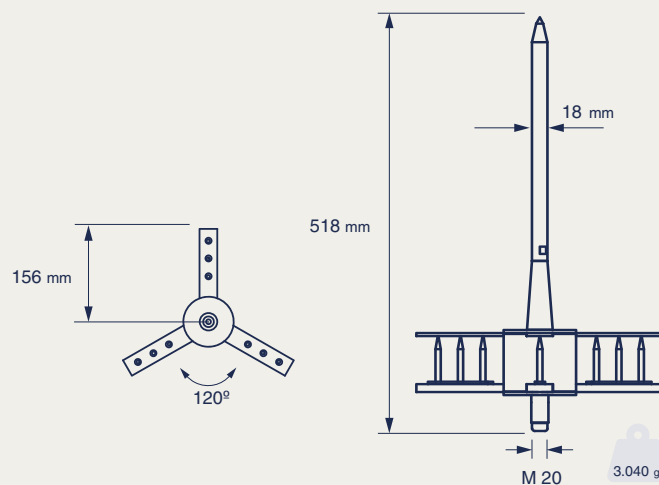
Level of
Protection

PDC 3.3 ($\Delta t = 30\mu s$)
Ref. 101001

● LEVEL I	50 m
● LEVEL II	59 m
● LEVEL III	70 m
● LEVEL IV	81 m

Protection radius calculated according to **NFC 17-102:2011**, UNE 21186:2011 and NP 4426:2013, based on a 20 m height difference between the lightning rod tip and the horizontal reference plane.

Protection radius



PDC 3.4

Lightning rod with Early Streamer Emission - ESE System

100%
Efficacy

High Protection
Class

200kA
Tested

AISI 316L
Stainless steel

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Maintenance-free

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Authentication

Quality

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Double ESE system

Electro atmospheric capacitor and atmospheric accelerator. It has been tested by **LABELEEC** (High Voltage Laboratory accredited by **ENAC** n°307/LE681 according to **ISO 17025**) and has been tested in natural field.



Warranty

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LIGHTNING PROTECTION



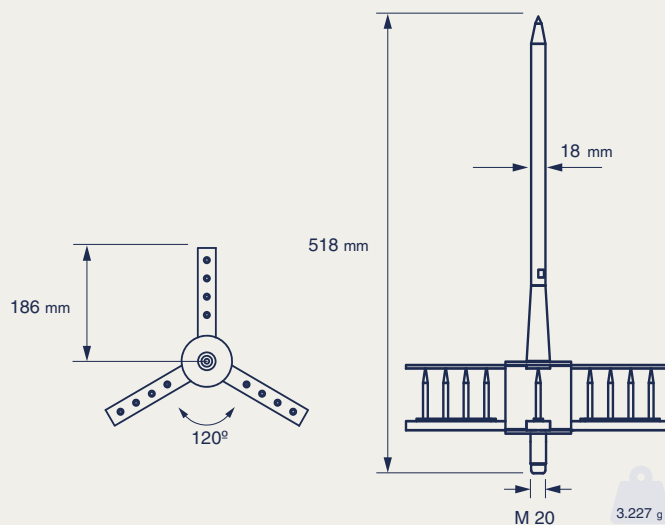
Level of
Protection

PDC 3.4 ($\Delta t = 40\mu s$)
Ref. 101002

● LEVEL I	60 m
● LEVEL II	69 m
● LEVEL III	81 m
● LEVEL IV	92 m

Protection radius calculated according to **NFC 17-102:2011**, UNE 21186:2011 and NP 4426:2013, based on a 20 m height difference between the lightning rod tip and the horizontal reference plane.

Protection radius



PDC 6.3

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LIGHTNING PROTECTION



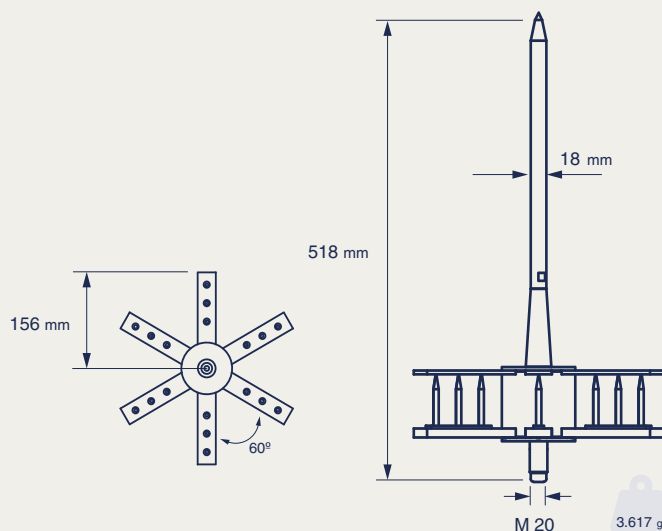
Level of
Protection

PDC 6.3 ($\Delta t = 54\mu s$)
Ref. 101008

● LEVEL I	74 m
● LEVEL II	83 m
● LEVEL III	95 m
● LEVEL IV	106 m

Protection radius calculated according to **NFC 17-102:2011**, UNE 21186:2011 and NP 4426:2013, based on a 20 m height difference between the lightning rod tip and the horizontal reference plane.

Protection radius



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LIGHTNING PROTECTION



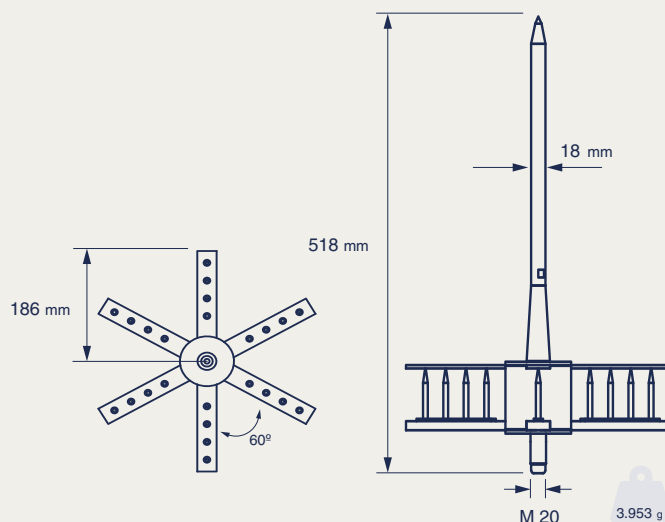
Level of
Protection

PDC 6.4 ($\Delta t = 60\mu s$)
Ref. 101009

● LEVEL I	80 m
● LEVEL II	89 m
● LEVEL III	102 m
● LEVEL IV	113 m

Protection radius calculated according to **NFC 17-102:2011**, UNE 21186:2011 and NP 4426:2013, based on a 20 m height difference between the lightning rod tip and the horizontal reference plane.

Protection radius



ASSEMBLY INSTRUCTIONS

CAPTURE SYSTEM

- Fix the central axis of the air terminal to the lightning head-mast adaptor piece.
- Pass the down conductor cable through the interior of the mast and connect it to the base of the adaptor, fixing it using two Allen screws.
- Couple the adaptor inside the mast. Secure it with its screw.
- Connect all the metallic structures that are within the safety distance using spark gaps.

DOWN CONDUCTOR

- Anchor the mast to the structure using the most appropriate support and, if necessary, fix the mast to the cover using anchor braces.
- Fix the down conductor with clamping brackets, ensuring that they are firmly tightened and, as a reference, using three fasteners per metre.
- Install the lightning counter on the lower part of the conductor, two or three metres above the ground.
- Protect the lower part of the down conductor with a protection tube that is at least 2 m long.
- Each PDC will be connected to earth using two down conductors, while four down conductors will be required for buildings that are taller than 60 m. These down conductors will be located, wherever possible, at the four corners of the building and interconnected using a perimeter ring.

GROUNDING SYSTEM

- There are two types of grounding systems, Type A and Type B:
 - Type A1: "crow's foot" horizontal electrodes.
 - Type A2: straight or triangular vertical electrodes.
 - Type B: ring-shaped electrodes outside the structure.
- Another possible configuration, particularly recommended for rocky ground that does not permit excavation to a great depth, consists of placing an electrode-grounding plate vertically in a hole with a minimum volume of 1m³.
 - It is recommended to add Quibacsol composite to improve the ground's conductivity.
 - Connect the lightning grounding system to the building's general grounding system using a spark gap.

OPERATION

The **INGESCO® PDC lightning rod** generates an upward flow of ionized particles that safely attracts and channels the electrical discharge to the ground, preventing lightning strikes in unprotected areas.

Its structural design distributes the electric field along the head, allowing a more controlled and efficient upward leader emission. This geometry enhances lightning capture and extends the protected area, reducing the likelihood of nearby impacts.

The performance of the device is defined by the **Δt** value, which represents the triggering advance compared to a conventional lightning rod, allowing calculation of its **protection radius** in accordance with **NFC 17-102:2011**, **UNE 21186:2011**, and **NP 4426:2013** standards.

TEST AND CERTIFICATES

The **INGESCO® PDC** has successfully passed the following certification tests and trials:

- Product certificate issued by the **Bureau Veritas** certification entity.
- ESE lightning rod streamer emission time evaluation test (Annex C UNE 21186:2011 and NFC 17-102:2011), at **LABELEC High Voltage Laboratory**.
- Certificate of supported current according to IEC 62561-1, issued by **LABELEC High Voltage Laboratory**.
- Certificate of insulation in wet conditions by **LABELEC High Voltage Laboratory**.
- Mechanical test (tensile and bending at break).
- Testing by UL Test Report Number: 4789563988.1.

INSTALLATION



VIDEO



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