



Cirprotec

Nimbus® Lightning Rods

Active lightning protection system



ESE Early Streamer Emission lightning rods

CPT cirprotec



CIRPROTEC SOLUTION

Cirprotec, a pioneer in the design and manufacture of **lightning and surge protection** devices, has developed a new catalogue for Nimbus® lightning protection solutions.

In this way, and true to its usual didactic line, **Cirprotec expands its wide range of catalogues with professional solutions**, with the goal of facilitating the choice of lightning rods and accessories suitable for proper protection, in compliance with the current legal framework.

Ask for Cirprotec catalogues with no commitment, or if you need personalised advice, contact our technical sales department or our network of distributors.

ESE Technology: Nimbus® Solution

Nimbus® creates an upward propagating streamer faster than a Franklin passive rod.

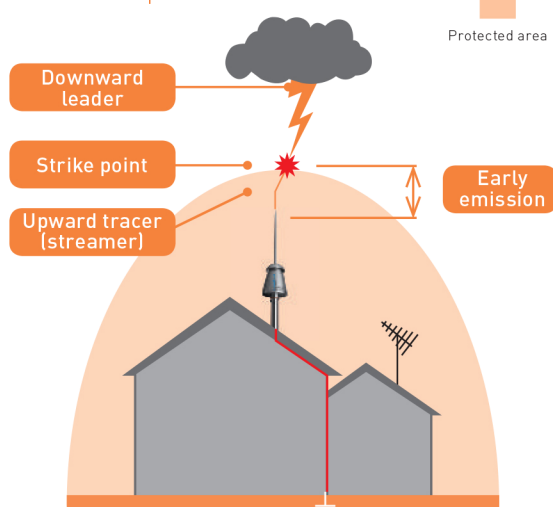
In the case of passive rods, the upward tracer propagates only after a period of charge reorganisation. The time difference Δt is the ESE advantage, called "**early emission**" (μs).

The reduced initiation time allows for the streamer to connect with the downward leader at a **strike point situated high above the tip of the ESE rod**.

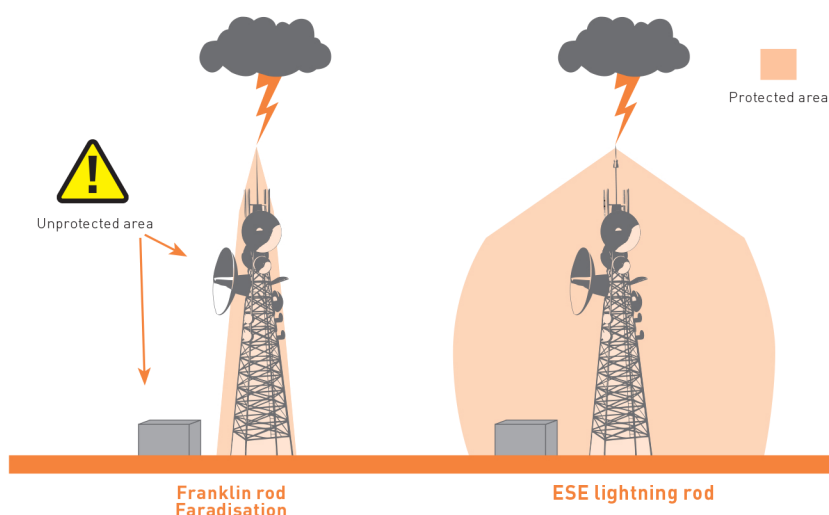
This increases the protected volume, facilitates the protection of large areas and simplifies and **reduces material and installation costs**.

ESE Technology

Greater protection volume



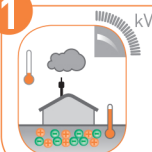
Protection systems compared



ESE devices provide greater efficiency than passive systems; the costs advantage is estimated at 35%.

Operating principles of ESE type lightning rods

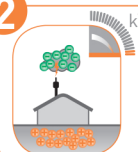
1



Creation of an electric field

When atmospheric conditions lead to the formation of clouds with an electrical charge (Cumulonimbus), the atmospheric gradient increases rapidly, creating an electrical field of thousands of V/m between the cloud and the ground.

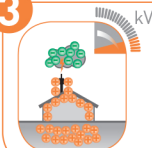
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Energy storage

During the aforementioned process and depending on the electrical field, the Nimbus® ESE system captures and stores energy from the atmosphere.

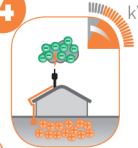
3



Control of streamer charge and emission

When the charge control detects that a lightning bolt is imminent (voltage near to that of the breakdown value of the atmospheric gradient), the Nimbus® lightning conductor emits an ascending streamer in the form of high-frequency pulses, using stored energy.

4



Energy discharge

The ascending streamer provides a low-impedance ionised path for discharge to earth of the energy stored in the cloud, by means of the system's down-conductor, neutralising the earth potential.

Nimbus® Lightning rods

Benefits of installing Nimbus® ESE type lightning protection

Simple, low cost installation and maintenance as per NFC 17-102 and similar ESE standards

Nimbus® is sturdy, manufactured using **top quality** materials (double-layered 3 mm AISI 316 stainless steel) and **unmeltable components**, to ensure maximum strength and guarantee.

Performance, Quality, Warranty and Service Plus

Cirprotec offers a **wide range of Nimbus®** lightning rod models (CPT-L, CPT1, CPT2 and CPT3) with various coverage radii (depending on the value (Δt in microseconds) of the early emission) based on the protection required.

Cirprotec has protected more than 25,000 facilities throughout the world.

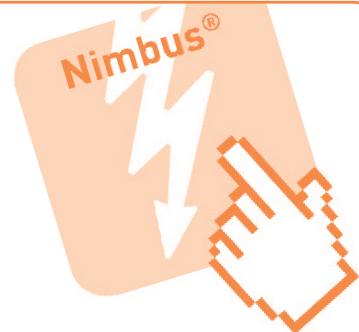


Nimbus® Project (spreadsheet software)

On-line calculation software to establish the need for an external lightning protection system in accordance with the applicable standards, dimensions and building location, among other parameters.

Nimbus® Service (maintenance service)

Free on-line maintenance as per UNE 21186 which offers an extension of the Nimbus product warranty, maintenance follow-up, inspection report and project certificates. Available in Spanish.



Free on-line software

Nimbus certification. Approved independent laboratories

To guarantee the correct operation of this type of lightning rod, tests are required to be performed by duly certified and approved, independent high voltage laboratories.

The Nimbus® lightning rod has been **tested as per NFC 17-102 and UNE 21186 and certified by LCOE (ENAC accredited laboratory)**. The ENAC accreditation mark, recognised by EA (European Cooperation for Accreditation), ILAC (International Laboratory Accreditation Cooperation) and IAF (International Accreditation Forum) and recognised in practice around the world, guarantees the strictness, transparency and test methods.



In addition, Nimbus® lightning rods have been subjected to **150 kA (10/350) lightning current pulse tests** (the average intensity of a lightning strike is 30 kA), with **no loss of properties**.

Nimbus® complies with technical codes and standards NFC 17-102, UNE 21186, CTE SU8, UNE-EN 50164-1/2 and IEC 61024-1.

Guarantee of operation using ESE technology. Do not accept ESE rods without a certificate from an independent and accredited laboratory. Demand ESE type lightning rods with a test certificate as per NFC 17-102 and UNE 21186 from laboratories accredited by the regulating authority in each country (ENAC-Spain, COFRAC-France, etc).

Tested with lightning current pulses up to 150 kA (10/350)

Design Guide. Protection level and parameters

③ Selecting a Nimbus® lightning rod

Choosing a lightning rod from the **Nimbus®** range can be done by using the previously mentioned calculation and **using the table below** to select the right ESE according to required protection level, the height of the rod and the radius to be protected. Cirprotec puts the online program **Nimbus® Project** at your disposal for quick and simple calculations.

Protection radius (in metres) depending on the model of lightning rod - NFC 17-102 and similar ESE standards

NP →	Level I (D=20 m)				Level II (D=30 m)				Level III (D=45 m)				Level IV (D=60 m)			
h(m)	CPT-L	CPT 1	CPT 2	CPT 3	CPT-L	CPT 1	CPT 2	CPT 3	CPT-L	CPT 1	CPT 2	CPT 3	CPT-L	CPT 1	CPT 2	CPT 3
2	14	17	24	32	15	18	25	35	18	23	30	40	21	26	33	44
3	19	25	35	48	22	29	40	52	27	34	45	59	30	39	50	65
4	25	34	46	64	29	40	55	69	35	46	60	78	40	52	67	87
5	31	42	58	79	36	51	70	86	43	57	75	97	50	65	84	107
6	31	43	58	79	37	52	70	87	44	58	76	97	51	66	84	107
8	32	43	59	79	38	53	71	87	46	59	77	98	53	67	85	108
10	32	44	59	79	39	53	71	88	47	61	77	99	55	69	87	109

h: height (in metres) between the tip of the lightning rod and the highest surface to be protected.

Nimbus® Project (calculation software)

Free online calculation program to determine the need for installing a lightning rod and the level of protection required **in terms of applicable technical standards (NFC 17-102, UNE 21186)**, as well as the size and location of the building or structure, among other parameters.

The program provides you with:

- **free registration and use**, hosted at www.cirprotec.com
- management, classification and saving a **log of your projects**.
- downloading a report which is valid for attaching to **project documentation**.
- downloading a **CAD file of the system layout**.



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Lightning
Protection



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of Grounding
Systems



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CIRPROTEC, S.L.

Lepanto 49 - 08223 Terrassa (BARCELONA) - SPAIN
Tel. +34 93 733 16 84 - Fax +34 93 733 21 64
comercial@cirprotec.com - export@cirprotec.com

Technical sales assistance (Spain)

Tel. **902 932 702** - Fax 902 932 703

Cirprotec Distributor / Representative: