

Thunderguard

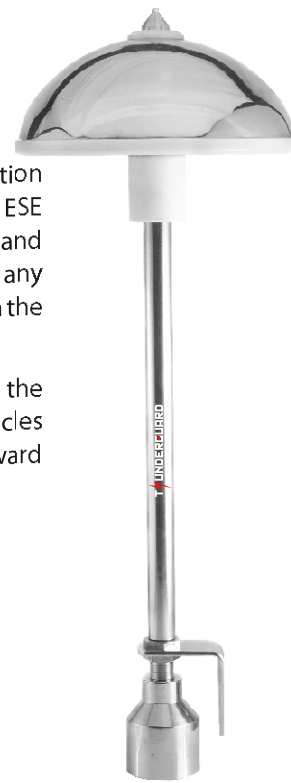
Early Streamer Emission (ESE) System

The THUNDERGUARD, Early Streamer Emission Systems (ESE) has a larger protection radius when compared to a conventional Franklin rod. The THUNDERGUARD ESE TERMINAL produces an upward streamer quicker than conventional air terminals and attaches the downward leader of the lightning strike in mid air, before it strikes any other object in the vicinity and safely conducts the lightning current to the ground via the down-conductor and the earthing system.

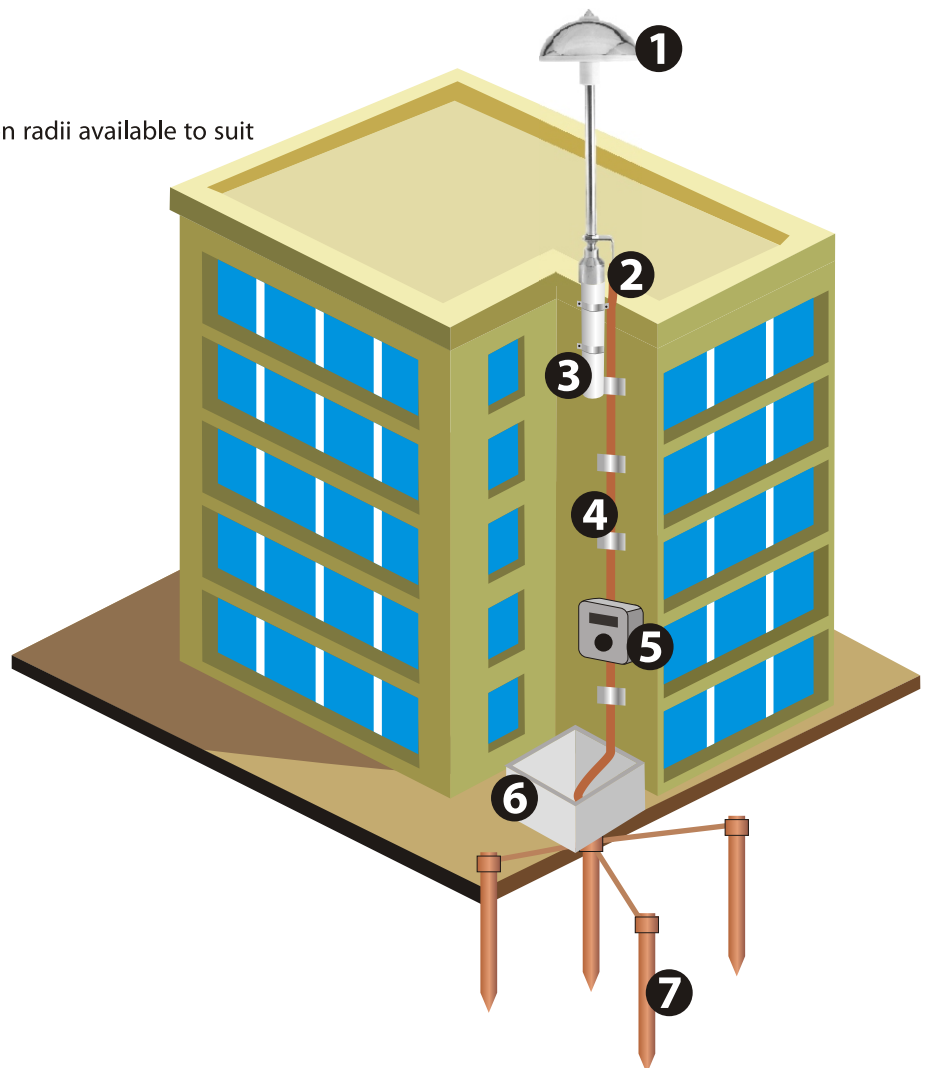
Just before the lightning strike, THUNDERGUARD senses the rapid change in the ambient electric field and produces high voltage pulses that ionises the air particles around the device, generating an upward streamer that intercepts the downward leader of the lightning strike.

Specifications & Standards

- Full compliance with French Standard NF C17-102.
- Outer body made of non-corrosive XL 304 stainless steel making the system fully resistant to dynamic power surging and effects of acid rain caused by lightning discharge.
- Capturing rod diameter : 25mm
- Atmospheric Area Force : 5 – 200 Kv/m
- Lightning Conductor weight : 6.2 Kg
- Different models with various protection radii available to suit the application.



THUNDERGUARD



- 1 **Thunderguard ESE Terminal**
- 2 **Inline Coupling**
- 3 **Metallic Lower Mast**
- 4 **Downconductor Saddle**
- 5 **Lightning Event Counter**
- 6 **Inspection Pit**
- 7 **Ground Rods**

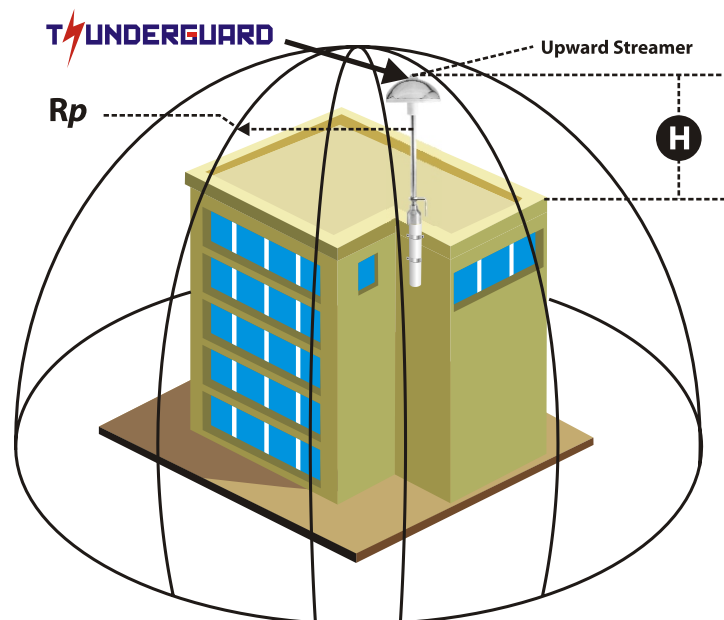
The ESE Principle

The Principle of operation for ESE terminals is to create an upward propagating streamer earlier than conventional air terminals or other objects on the earth. Thunderguard does this by collecting and storing ground charge during the initial phase of a thunderstorm development.

Once a thunderstorm begins creating downward step leaders, the ambient electric field intensity in the area of the ESE terminal increases. When this electric field intensifies, it triggers the terminal to release the stored ground charge, forming an upward streamer microseconds earlier than other objects in the immediate area.

This development of an upward streamer earlier in time and space ensures that the Thunderguard ESE Terminal will be target of the developing lightning strike. The selection of the Thunderguard model, placement, and mounting height above the protected area all factor into formulas calculating the dimensions of the protection area.

The standard protection radius R of the Thunderguard is linked (according to NF C 17-102 standard) to ΔT , to the protection levels I, II, III or IV and to the height of the Thunderguard above the protected structure (H , defined by NF C 17-102 as a minimum of 2 m). The NF C 17-102 standard includes four levels of protection. The protection radii of different models of Thunderguard are given in the table. Our experts will suggest the most suitable model after conducting a site survey.



Lightning Event Counter

The lightning event counter is designed to keep a record of all direct lightning strikes on the external lightning protection system. The digital display (6 digits) allows a direct and comfortable reading of the number of lightning events. It requires no external power supply and functions on a lithium battery. Suitable for use with both ESE terminals and conventional lightning protection systems.

Specifications

- Current Sensitivity : 3KA nom. for 8/20us impulse.
- Operating range : 3KA min, >150KA max
- Display : Resettable 6 digit LCD counter 8mm numerals.
- Power source : Lithium battery 10 years life.
- Dimensions : 110mm (w) x 80mm (h) x 66.5mm(d).
- Mounting : 90mm x 60mm x M4.
- Weight : 0.2kg.

Protection Areas

	H(m)	TG-100	TG-20	TG-300
Level I	2	15	25	32
	3	23	37	48
	4	31	50	65
	5	39	62	80
	6	40	62	80
	8	40	63	80
	10	41	63	80
Level II	2	18	28	38
	3	26	42	55
	4	36	55	74
	5	45	69	89
	6	47	69	90
Level III	2	21	32	42
	3	31	48	62
	4	42	63	82
	5	54	80	99
	6	54	80	99
Level IV	2	24	36	45
	3	35	52	65
	4	49	71	87
	5	61	88	108
	6	62	89	108
	8	63	90	109
	10	65	91	110