

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. Protec ESE does this by collecting and storing ground charge during the initial phase of a thunderstorm development and emits strong and consistent upwards streamers to intercept leaders.

### Features

- Meets NFC 17-102 & UNE 21186 standards
- Tested to withstand multiple 40kA impulses
- High quality anti-corrosive and conductive coating
- Low wind resistance and light weight
- 5 years replacement warranty

### Triggering Time Gain

The triggering time  $\Delta T$  ( $\mu s$ ) is defined as the gain at the sparkover instant obtained with a ESE terminal compared with a simple rod terminal exposed to the same conditions.

### Triggering Time Distance Gain

According to NF C 17-102, The triggering time instance gain  $\Delta T$  is associated with a triggering time distance gain  $\Delta L$ .

$\Delta L = V \cdot \Delta T$  where:

$\Delta L$  (m) : gain in lead distance of the sparkover distance.

$V$  (m/ $\mu s$ ) : the average speed of the downward tracer

$\Delta T$  ( $\mu s$ ) : gain in sparkover time of the upward leader

### Lightning Protection of Structures

As a general rule for protection, the object to be protected shall be in a LPZ whose electromagnetic characteristics are compatible with the capability of the object to withstand stress causing the damage to be reduced (physical damage, failure of electrical and electronic systems due to over-voltages).



### Radius of Protection (Rp) in Metres

Protection Level	H (m)	Pro ESE 20 Rp	Pro ESE 40 Rp	Pro ESE 60 Rp
Level - I (D = 20)	2	13	25	31
	4	25	51	63
	6	32	63	79
	8	33	64	79
	10	34	64	79
Level - II (D = 30)	2	15	28	35
	4	30	57	69
	6	38	71	87
	8	39	72	87
	10	40	72	88
Level - III (D = 45)	2	18	32	39
	4	36	64	78
	6	46	81	97
	8	47	82	98
	10	49	83	99
Level - IV (D = 60)	2	20	36	43
	4	41	72	85
	6	52	90	107
	8	54	91	108
	10	56	92	109

**Protection to reduce physical damage and life hazard:** The functions of the external LPS are

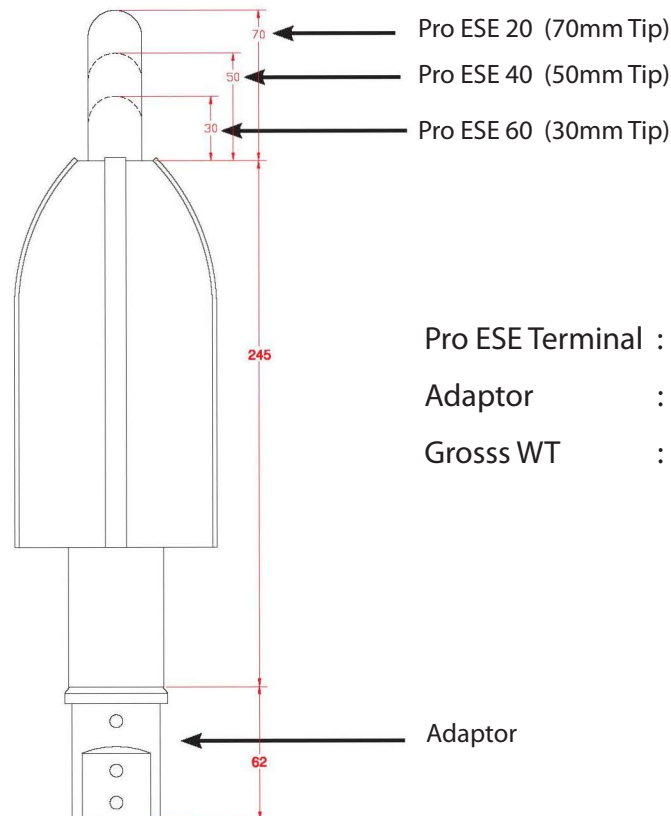
- to intercept a lightning flash to the structure (with an air-termination system),
- to conduct the lightning current safely to earth (with a down-conductor system),
- to disperse it into the earth (with an earth-termination system) and equalize potential between other earth-termination systems on site (with an isolation spark gap)

Four classes of LPS (I, II, III, IV) are defined as a set of construction rules.

**Protection to reduce the failure of internal systems:** The protection against LEMP to reduce the risk of failure of internal systems shall limit:

- over-voltages due to lightning flashes to the structure resulting from resistive and inductive coupling;
- over-voltages due to lightning flashes near the structure resulting from inductive coupling;
- over-voltages transmitted by lines connected to the structure due to flashes to or near the lines;
- magnetic field directly coupling with internal systems

Effective protection against over-voltages, causing failures of internal systems, may be achieved by means of a "coordinated SPD protection", limiting over-voltages below the rated impulse withstand voltage of the system to be protected.



Pro ESE Terminal : Net WT 1.40 kg

Adaptor : Net WT 0.60 Kg

Gross WT : 2.50 Kg

**Protec ESE Terminal (Model Pro ESE 60/40/20)**

**Disclaimer:**

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