



**Lightning Protection  
Grounding Solutions  
Surge Protection**

# EARLY STREAMER EMISSION TERMINALS

## TerraStreamer®



TerraStreamer® ESE Terminals are the preferred protection method for mega-structures such as distribution warehouses, industrial plants, amusement parks, shopping malls, sports arenas, golf courses, and other large area structures. ESE Terminals offer a protection zone up to 800 times that of a single traditional lightning rod and are tested to withstand a minimum electrical discharge current of 100 kA.



## Early Streamer Emission (ESE) Terminals

Extensive research and development has allowed Alltec Corporation to create a lightweight and low wind loading ESE system to provide a safe and efficient manner of controlling dangerous lightning energy before it damages structures or its important contents, including human occupants. By utilizing advanced technology, TerraStreamer® ESEs provide lightning protection to facilities that would otherwise be difficult or cost prohibitive to protect by conventional means.

The TerraStreamer® ESE Terminals are externally mounted, proactive, structural lightning protection devices and are designed to activate in the moments directly preceding an imminent direct strike. The installation of a TerraStreamer® ESE Terminal combines the best advantages of two systems: the direct path to ground of a conventional lightning protection system, and state-of-the-art ESE technology employed in the TerraStreamer's internal design. These combined advantages ensure that the TerraStreamer® ESE System provides a secure, increased zone of protection for large structures or open areas.

TerraStreamer® ESEs are made of non-corrosive materials, utilize advance and sustainable technologies, maintain a 5-year replacement warranty, and are independently tested certified

to NF C 17-102 and UNE 21 186 standards. TerraStreamer® products complete the Alltec Protection Pyramid by capturing dangerous lightning discharges and safely channeling it to earth.

## Features

- High level of protection
- NF C 17-102 and UNE 21 186 tested and certified
- Lightweight and low wind loading
- Reliable performance in all weather conditions
- Suitable for corrosive environments
- Available in five models for multiple applications
- Economical and easy to install
- Five-year replacement warranty

## A Certificate of Protection Radius and Fulfillment of standards UNE 21 186 and NF C 17-102 for each model and level

- Certificate of Withstood Current
- Certificate of Gain in Triggering Time

## The ESE Principle

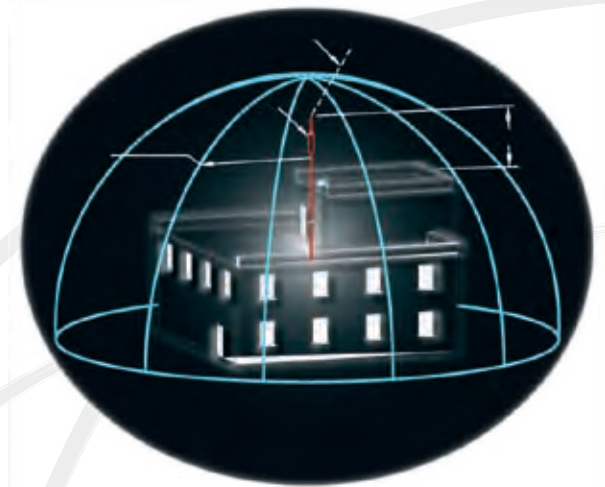
The theory of operation for ESE terminals is to create an upward propagating streamer earlier than conventional air terminals or other objects on the earth, thereby offering larger zones of protection. The TerraStreamer® does this by collecting and storing ground charge during the initial phase of a 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 TerraStreamer® ESE terminal will be the target of the developing lightning strike. The selection of the TerraStreamer® model, placement, and mounting height above the protected area all factor into formulas calculating the dimensions of the protection area.



Protection Areas						
	H (m)	TSP 20 Rp	TSP 30 Rp	TSP 40 Rp	TSP 50 Rp	TSP 60 Rp
Level I	2	15	20	25	30	32
	3	23	29	37	45	48
	4	31	40	50	59	64
	5	39	50	62	73	79
	6	40	50	62	74	79
	8	40	51	63	74	79
	10	41	51	63	74	79
Level II	2	21	26	32	37	37
	3	31	39	48	54	54
	4	42	52	63	73	73
	5	54	66	80	92	92
	6	54	66	80	92	92
	8	56	68	81	93	93
	10	57	69	82	94	94
Level III	2	24	29	36	41	44
	3	35	43	52	60	64
	4	49	59	71	80	86
	5	61	74	88	101	107
	6	62	74	89	102	107
	8	63	76	90	103	108
	10	65	77	91	104	109



According to NF C 17-102, the standard protection radius  $R_p$  of the TerraStreamer® is linked to  $\Delta T$ , the protection levels I, II, or III (as calculated in Annex B of NFC17-102), and to the height of the TerraStreamer® above the protected structure (H, defined by NF C 17-102 as a minimum of 2m).

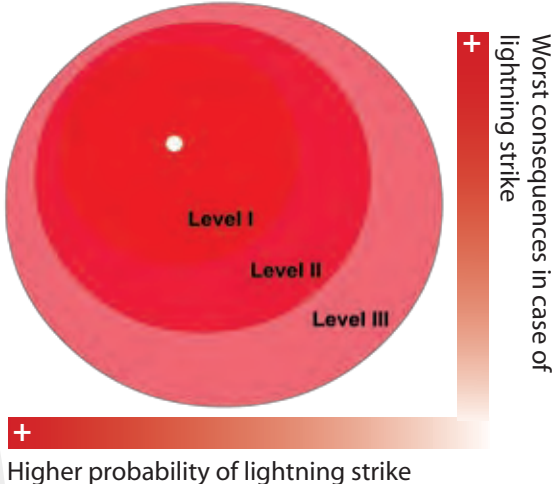
# Active Lightning Protection System Model



## Protection Areas Using Early Streamer Emission Terminals



Level I Protection for an industrial facility





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