

TerraStreamer®

Early Streamer Emission (ESE) Terminals

Introduction

ALLTEC is proud to offer our new line of Early Streamer Emission (ESE) terminals for structural lightning protection. The TerraStreamer® ESE utilizes advanced streamer generating design elements to provide lightning protection to facilities that would otherwise be difficult or cost prohibitive to protect by conventional means.

The TerraStreamer® ESE Lightning Terminal is an externally mounted, proactive, structural lightning protection device and is designed to activate itself 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 physical design.

The TerraStreamer® ESE terminal is scientifically designed and rigorously tested to provide exceptional performance, durability and long service life.

Features

- Wide variety of mounting hardware is available for easy installation
- Suitable for use with lightning protection cable or copper tape
- Competitively priced
- Available in five models for all applications
- Rugged yet aesthetically pleasing construction
- Suitable for most environments, including corrosive atmospheres
- Lightweight and low wind loading
- Reliable performance in all weather conditions
- Tested and certified to internationally accepted standards
- Complete design services available

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

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



ALLTEC has developed the TerraStreamer® product according to internationally recognized standards. However, ALLTEC does not make any specific performance guarantees as no lightning protection system can be 100% effective.

Section 1.2

Protection Radius

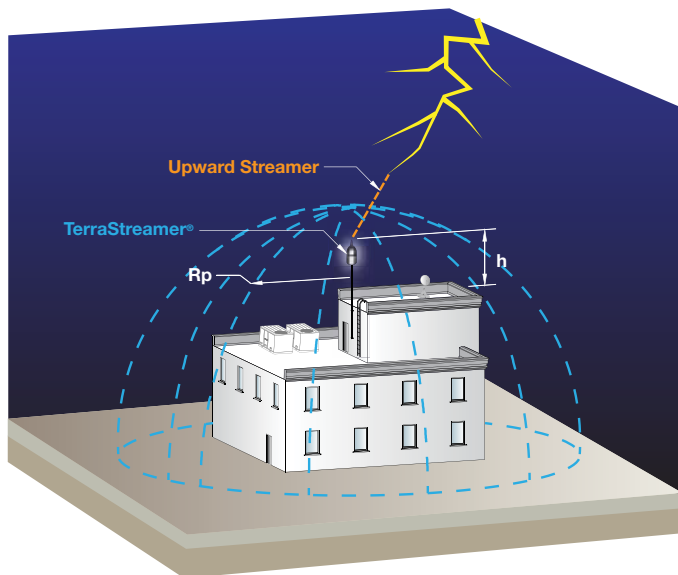
The ESE Principle

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. 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 should 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.

The standard protection radius R_p of the TerraStreamer® 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 TerraStreamer above the protected structure (H , defined by NF C-102 as a minimum of 2 m). The NF C-102 standard includes four levels of protection.



Protection Areas						
	Height (m)	TSP20 (Rp)	TSP30 (Rp)	TSP40 (Rp)	TSP50 (Rp)	TSP60 (Rp)
Level I	2	16	20	25	30	32
	3	24	30	37	44	48
	4	31	40	50	59	63
	5	39	50	62	73	79
	6	40	50	62	74	79
	8	40	51	63	74	79
	10	41	51	63	74	80
Level II	2	18	23	28	32	35
	3	27	35	42	48	52
	4	36	47	55	64	70
	5	45	58	69	80	87
	6	47	58	69	80	87
	8	47	59	70	81	88
	10	48	60	71	81	88
Level III	2	22	27	32	37	39
	3	33	40	48	56	59
	4	43	53	64	74	78
	5	54	66	80	92	97
	6	54	66	80	92	98
	8	56	68	81	93	99
	10	57	69	82	94	99
Level IV	2	25	30	36	41	43
	3	37	45	53	61	64
	4	49	59	71	81	86
	5	61	74	88	101	107
	6	62	74	89	102	107
	8	63	76	90	103	108
	10	63	77	91	104	109

Additional Levels

Level 1+: Structure with a roof protected by an ESE air terminal. The whole constituted by ESE, down conductor(s) and earthing system(s), is connected to continuous metal framework or in concrete of the structure which are used as additional natural down conductors.

Level 1 ++: Structure with roof protected by ESE level 1+ with protection radius reduction by 40% and ensuring a complete protection from the materials on the roof against direct lightning.