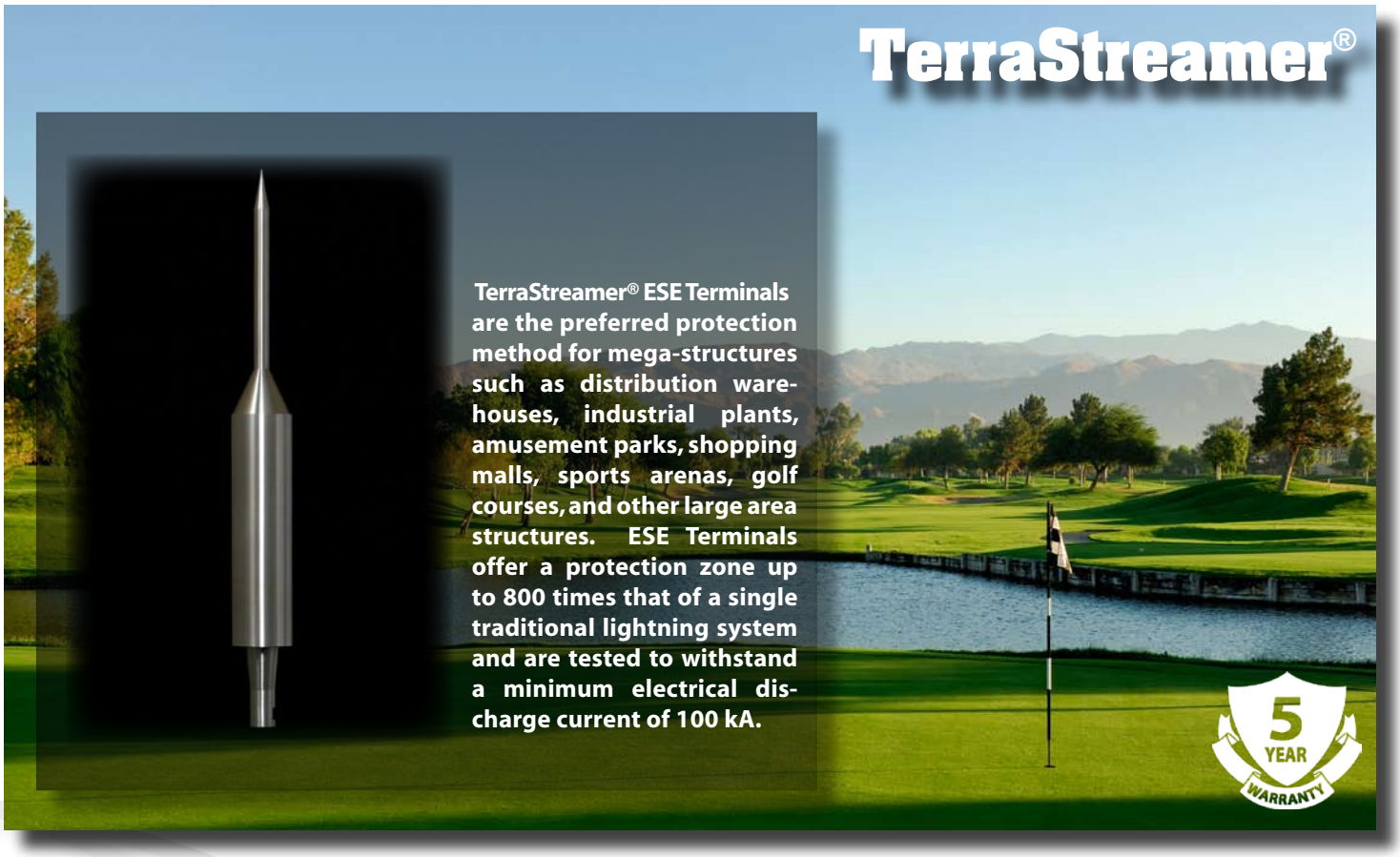
ALLTEC®
CORPORATION

Lightning Protection
Grounding Solutions
Surge Protection

Early Streamer Emission Terminals



Early Streamer Emission (ESE) Terminals

ALLTEC Corporation is proud to offer our new line of Early Streamer Emission terminals for structural lightning protection. The TerraStreamer® ESE utilizes advanced electronics 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 internal design. These combined advantages ensure that the TerraStreamer® ESE System provides a secure, increased zone of protection for large structures or open areas.

The TerraStreamer® ESE terminal is designed and constructed with the latest advanced electronics circuitry encased in a lightweight and unobtrusive stainless steel housing for durability and long service life.

Features

- Variety of installation hardware is available for easy installation
- Suitable for use with lightning protection cable or copper tape
- Competitively priced
- Available in three models for all applications
- High grade stainless steel one piece construction
- Suitable for most environments including corrosive atmospheres
- Lightweight and low wind loading
- Tested and certified to internationally accepted standards
- Reliable performance in all weather conditions.
- Complete design services available

A Certificate of Protection Radius and Fulfillment of standards UNE 21186 and NFC 17102 for each model and level

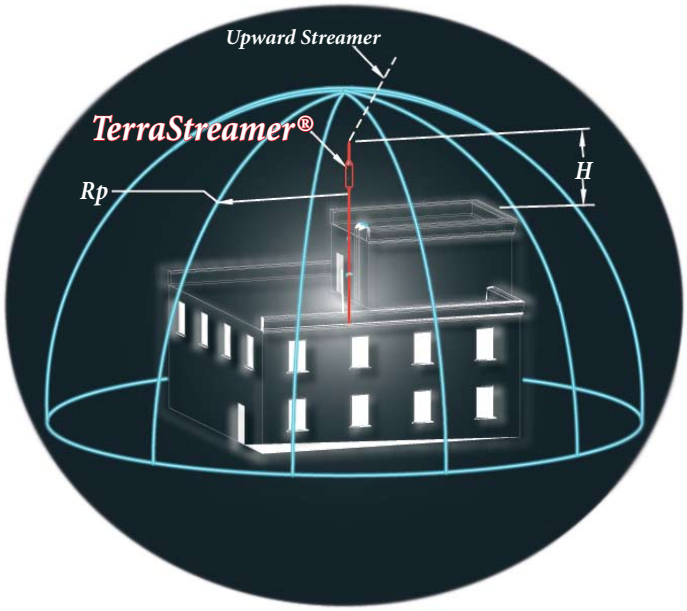
- Certificate of Withstood Current
- Certificate of Gain in Triggering Time

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 intensity reaches a preset level, 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.



Triggering Time Test Results

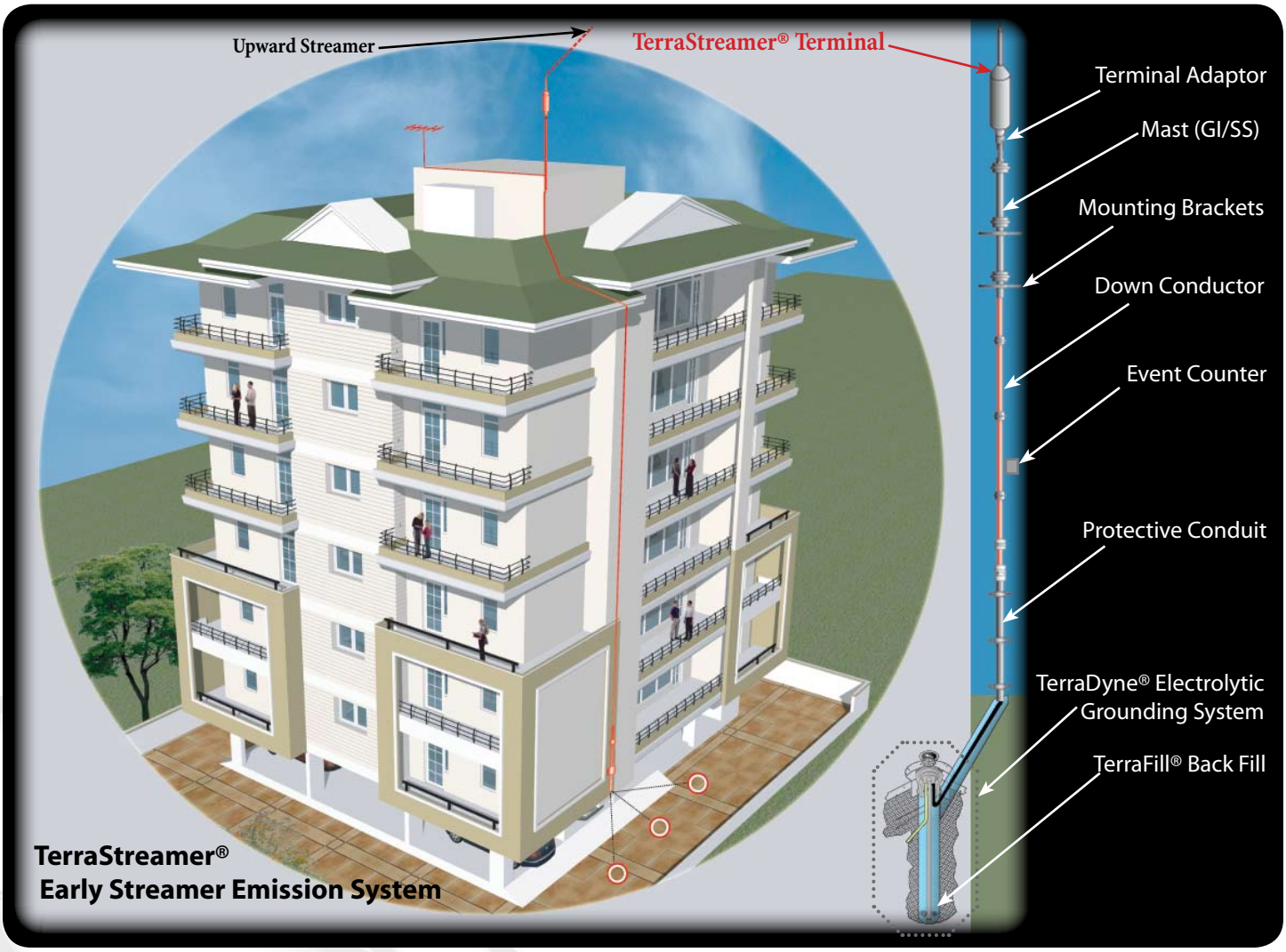
Model	Advance Time	Gain in Lead Distance
TSE-25	33 µs	40.6 m
TSE-40	47 µs	57.8 m
TSE-60	60 µs	72.6 m

Protection Areas

	H (m)	TSE 25 Rp	TSE 40 Rp	TSE 60 Rp
Level I	2	14	23	31
	4	30	46	63
	6	37	58	79
	8	38	59	79
	10	39	59	79
Level II	2	20	30	39
	4	40	60	78
	6	52	76	97
	8	53	77	98
	10	55	77	99
Level III	2	24	34	46
	4	46	68	85
	6	59	84	107
	8	61	85	108
	10	62	87	109

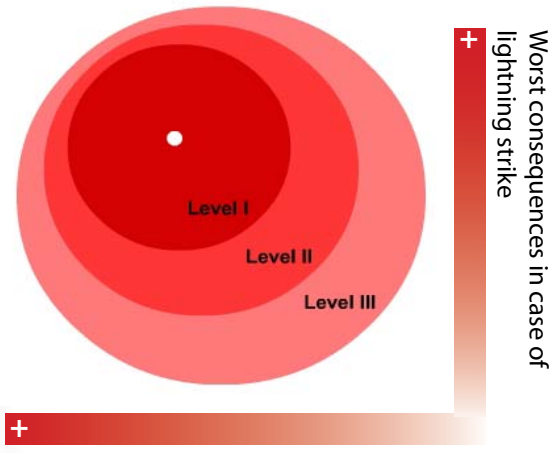
The standard protection radius Rp of the TerraStreamer® is linked (according to NFC17-102 1995 standard, to ΔT as given left) to the protection levels I, II, or III (as calculated in Annex B of NFC17-102) and to the height of the TerraStreamer® above the protected structure (H, defined by NFC17-102 as 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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