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**ESE Lightning Arrester**



## ABOUT US

LEESAS ENERTECH, an ISO 9001, 14001 & 45001 company with experience since 2005 in the field of lightning protection system. Over the years, the company has earned a reputation for excellence and professionalism for continuously striving to meet and even exceed standards which set the climate for a sustainable business relationship with its clients.

We firmly believes that electricity is the cornerstone of a high-quality life. There will be a never-ending need for products and services to harness and maximize its full potential and use. In doing so, we will be the best-in-class provider of topnotch electrical products and services.

LEESAS ENERTECH is committed to providing the highest quality products and services exceeding our client's expectations. We shall continue to expand in equipment, facilities and engage in training and certification programs to further serve customers with utmost excellence and professionalism.

### OUR VALUES

We believe sustainable partnerships are essential to the company's success. As a proactive company capable of competing in all facets of the marketplace through constant improvement with innovation and guarantees a safe working environment.

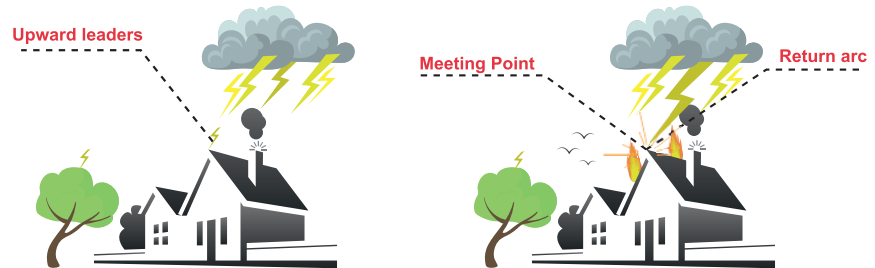
### ENGINEERING

- ▶ Site surveys, engineering calculations and project preparing.
- ▶ 24/7 available for technical support.
- ▶ Highest precision with the help of latest technology machinery.

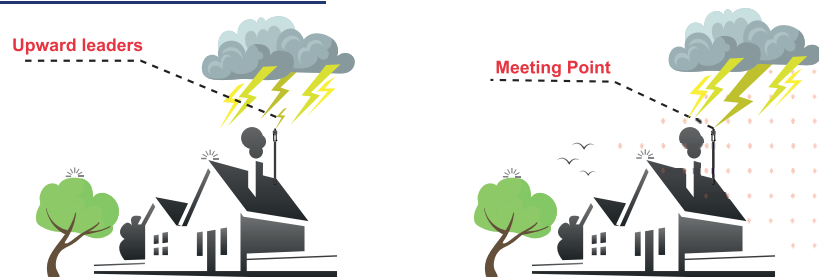
# STORMFLASH EARLY STREAMER EMISSION AIR TERMINAL

The unique efficiency of the StormFlash early streamer emission is based on the difference ( $\Delta T$ ), measured in a laboratory, in between the emission time of the StormFlash and the one from a simple rod. The StormFlash ESE air terminal is composed of a striking point connected to a down conductor to conduct the lightning to the ground.

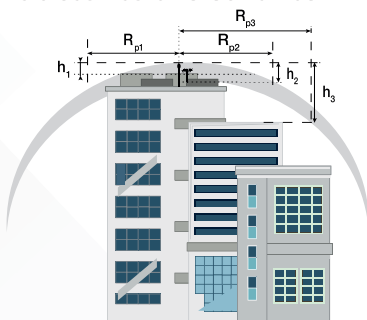
## Without StormFlash



## With StormFlash



During a storm the ambient electric field may rise from 600 V to 10-20 kV/m. When the electric field reach this level representing a minimum risk for a lightning, the StormFlash begins to get activated and generates high voltage pulses, helping to create and propagating an upward leader. After a strike on the StormFlash, the lightning current is driven to ground by the down conductor to the earth termination system.



Where  $h \geq 5\text{m}$ , then  $R_p$  can be calculated from

$$R_p(h) = \sqrt{2rh - h^2 + \Delta(2r + \Delta)}$$

Where  $2\text{m} \leq h \leq 5\text{m}$ , then  $R_p$  Can be Calculated from

$$R_p = h \times R_p(5) / 5$$

$R_p(h)$  (m) is the protection radius at a given height  $h$

$h$  (m) is the height of the ESEAT tip over the horizontal plane through the furthest point of the object to be protected

$r$  (m) 20m for protection level I  
30m for protection level II  
45m for protection level III  
60m for protection level IV

$$\Delta(\text{m}) \Delta = \Delta T \times 10^6$$

Field experience has proved that is  $\Delta$  equal to the efficiency obtained during the ESEAT evaluation tests

## RADIUS OF PROTECTION

The radius of protection ( $R_p$ ) of the StormFlash is calculated according to the NF C 17-102 (edition 2011). It depends on the StormFlash efficiency ( $\Delta T$ ) expressed in micro-seconds.

The risk assessment shall be calculated according to the NF C 17-102 (edition 2011) / IEC 62305-2 and will define the protection level (LPL I, II, III or IV) which will be used in the determination of the StormFlash radius of protection.





## ESE Lightning Arrester

# STORMFLASH 60

- ⚡ Early Streamer Emission (ESE) Lightning Arrester
- ⚡ 304L (Inox) Stainless Steel design - suitable for any environmental conditions
- ⚡ Tested & certified for  
NF C 17-102 (2011) standard  
UNE 21186:2011 standard
- ⚡ Mechanical Test
- ⚡ Environmental Test
  - a) Salt Mist Test - 3 Cycles - 72 Hours
  - b) Humid Sulphur Test - 7 Cycles - 168 Hours
- ⚡ 200 kA (10/350  $\mu$ s) Lightning Impulse Current Test
- ⚡  $\Delta T = 60 \mu$ s - Early Streamer Emission Test
- ⚡ CPRI (Central Power Research Institute, Govt of India) - 70 kA (8/20  $\mu$ s) tested
- ⚡ Suitable for use with a variety of down conductors - tape / strip, round conductor, isolated / insulated cables / High Voltage Shielded Cables, etc.

## PROTECTION RADIUS AS PER NF C 17-102 (2011)



Mast Height h(m)	Level I (Very High)	Level II (High)	Level III (Medium)	Level IV (Standard)
2	31	35	39	43
3	47	52	58	63
4	63	69	78	85
5	79	86	97	107
6	79	87	97	107
8	79	88	98	108
10	79	88	99	109
15	80	89	101	111
20	80	89	102	113
45	80	89	105	119

# STORMFLASH 15

- ⚡ Early Streamer Emission (ESE) Lightning Arrester
- ⚡ 304L (Inox) Stainless Steel design - suitable for any environmental conditions
- ⚡ Tested & certified for  
NF C 17-102 (2011) standard  
UNE 21186:2011 standard
- ⚡  $\Delta T = 15 \mu s$  - Early Streamer Emission Test
- ⚡ Suitable for use with a variety of down conductors - tape / strip, round conductor, isolated / insulated cables / High Voltage Shielded Cables, etc.



## PROTECTION RADIUS AS PER NF C 17-102 (2011)

Mast Height h(m)	Level I (Very High)	Level II (High)	Level III (Medium)	Level IV (Standard)
2	13	15	18	20
3	19	22	27	31
4	25	30	36	41
5	32	37	45	51
6	32	38	46	52
8	33	39	47	54
10	34	40	49	56
20	35	44	55	63
30	35	44	58	69
40	35	44	60	72



## LIGHTNING STRIKE RECORDER

Lightning strike recorder is designed to count and record the lightning strikes captured by lightning protection systems such as ESE lightning rods, simple capturing rods and the cage method. The Lightning strike recorder is necessary to determine whether the lightning rod received any lightning strikes.

The counter is connected to the down conductor of the lightning arrester and therefore it detects the electromagnetic field caused by lightning discharge current and it counts each strike and shows it by way of the number display.

With the help of the Lightning strike recorder the customer can follow the number of lightning strikes arrested by system. It does not require any additional power supply for its operation.



- ▶ IP 65 rated enclosure suitable for external application.
- ▶ Ease of installation, LS-LSR6 can be retrofitted to any lightning protection system.
- ▶ Non-intrusive and fast acting proximity circuit detects lightning transient currents.
- ▶ Non resettable electro-mechanical counter.
- ▶ Can be mounted at any location along the down conductor.

Model	LS-LSR6
Description	Lightning Strike Recorder
Display Model	Electro mechanical display (non re-settable)
Current Sensitive Mode	Inductive Probe (Built - In)
Operating temperature (°C)	-20 ~+85
Current Sensitivity (8/20 $\mu$ s)	>250A
Lightning Current (10/350 $\mu$ s)	100 KA
Indicator	6 Digits
Degree of protection	IP 65 (IEC 529)
Enclosure Material	Plastic
Dimension of Counter (cm)	16 (L) X 9 (W) X 6 (H)
Testing Facility	Testing Jack inbuilt in Counter and Customer can test anytime in field

## LIGHTNING FLASH COUNTER

Lightning flash counter is designed to count and record the lightning strikes captured by lightning protection systems such as ESE lightning rods, simple lightning rods and the cage method. The lightning counter is necessary to determine whether the lightning rod received any lightning strikes.

The counter is connected to the down conductor of the lightning arrester and therefore it detects the electromagnetic field caused by lightning discharge current and it counts each strike and shows it by way of the number display.

With the help of the lightning counter the customer can follow the number of lightning strikes arrested by system. It does not require any additional power supply for its operation.



CPRI Tested

- ▶ IP 67 rated enclosure suitable for external application.
- ▶ Ease of installation, Flashcount can be retrofitted to any lightning protection system.
- ▶ Non-intrusive and fast acting proximity circuit detects lightning transient currents.
- ▶ Non resettable electro-mechanical counter.
- ▶ Can be mounted at any location along the down conductor.

Model

Description

CPRI Test

Display Model

Current Sensitive Mode

Operating temperature (°C)

Current Sensitivity (8/20  $\mu$ s)

Lightning Current (10/350  $\mu$ s)

Indicator

Degree of protection

Enclosure Material

Testing Facility

Leesas Flashcount

Lightning Flash Counter

70 kA (8/20  $\mu$ s)

Electro mechanical display (non re-settable)

Inductive Probe (Built - In)

-20 +~85

>250A

100 kA

6 Digits

IP 67 (IEC 529)

Plastic

Testing Jack inbuilt in Counter and Customer can test anytime in field

## Our Valuable Clients



### Technical Collaboration & Manufacturer

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