



# ASHLOK

Safe Lighting Protection System



It's easier to explain Price  
once, than to apologise  
for Quality forever

Your Ultimate Solution for Earthing & Lightning Protection

Zig Ziglar

# ASHLOK

Ashlok is the pioneer in the manufacturing of Earthing & Lightning Protection Systems since 1999. It is one of the most reliable companies in the Asian market today due to its quality products. Ashlok earthing & lightning protection components are designed and manufactured to withstand maximum fault / lightning current carrying capacity and meet British, European, Indian and other International standards.

Ashlok has always attempted to bring original products for all of its customers. Due to this, our relentless efforts have always been rewarded in the form of brand loyalty. Over a period of time Ashlok has gained the reputation of being a house hold product in the Indian market having been installed in more than a million places, safeguarding human lives and expensive equipments across India, Nepal, Sri Lanka and African countries.

Ashlok with its R&D team is proud to present an Indigenous Safe Lightning Protection Rod, conceptualized, designed and developed for the Indian & International market ..... THOR SLPR, which works on the principle of ESE type lightning protection system.

Today, we are at the forefront of every other infrastructure project being executed in the country for providing earthing and lightning solutions. This includes a host of clients from industries like telecommunication, power generation, manufacturing, infrastructure, transport, housing and many more.

We thank you for understanding that there is a better way, in the Ashlok way.

Ashok Tripathy  
Chairman



The Ashlok Group



## Lightning Strike

Lightning is a word that inspires awe and fear in different measures among us mortals. Its a fascinating phenomenon to observe and equally dangerous with disastrous direct & indirect effects. The amount of loss of human life and properties due to lightning is significantly high.

Recent studies have found that lightning related deaths / damages are higher compared to once caused by hurricanes or tornadoes globally. To put a figure to it, the lightning frequency is approximately 40-50 times a second or nearly 1.4 billion flashes per year and the average duration is 0.2 seconds made up from a number of much shorter flashes (strokes) of around 30 microseconds.

Lightning flashes to, or nearby structures are hazardous to people, to the structure, its contents & installations along with power line and signal lines. Therefore application of lightning protection measure is essential.

Traditional methods used for protection of ground based facilities & operating systems against the effect of lightning strikes, including use of air terminals, down conductors and grounding systems are the first basic step to protection.

The increasing reliance on sophisticated and sensitive electronic systems for control of critical functions has created the need to re-evaluate and come up with a range of Advanced Range of Safe Lightning Protection Rod(s) better suited to the changing needs of mankind.





## THOR SLPR | Characteristics & Benefit

- Country Of Origin | First Indian made Advanced Safe Lightning Protection Rod
- Technology | Based on a Hybrid Model which conforms to the latest ESE standard as per NFC & Corona Inhibiting Technology
- Central Main Rod | Based on the result of recent research it has been concluded that Blunt Tip is more efficient in real world conditions in increasing the efficiency of the system.
- Upward Streamer | Blunt tip increases the length of upward streamer as the construction of the system allows it to store the charge within it so as to release it in the most optimum possible way.
- SFCH | Side Flash Capture Head prevents damage to property and life from side flashes
- Power Source | THOR SLPR doesn't require any input. Completely Self Reliant
- Coverage Area | Provides larger area for interception of lightning
- Material Of Construction (SS 304 | SS 316) | Made of high quality stainless steel which allows the system to efficiently operate in all kinds of weather conditions. Corrosion Resistant
- Installation / Service Support | Direct Manufacturers Service Support for Installation and Maintenance
- Certification | CPRI tested & certified for both types (+, -) impulse
- Design Patent / Intellectual Patent | The one & only Indian make brand of its category to get patent due to its unique combination of technology & design

### Applications

All type of Industrial units, power plants, transmission towers, offices, residences, commercial structures, telecommunications towers, wind farms, power stations, mines and virtually every installation.

### Certifications | Standards | Approvals

ISO 9001:2008 | OHSAS 18001  
CPRI | RoHS | CE

**Standard Of Compliance : UNE 21186**  
**Designed in accordance with NFC 17 - 102**

# Ashlok Lightning Protection System

## Working Principle of THOR LPR

THOR SLPR is designed in such a way that the sum of its parts works in tandem to attract and capture lightning strikes in an efficient way.

When the downward leader approaches the structure and creates an electric field to enable free movement of charges, the internal design of THOR SLPR helps to increase the quantity of emitted charges by reducing and limiting corona in the initial stages of lightning. The charges stored in THOR SLPR will not be wasted in the developing stages of lightning as it is designed to provide zero surface area for corona to occur. Once THOR SLPR gets fully charged, a very powerful upward streamer with high charge density of longer length is released from THOR SLPR which couples with the downward leader from lightning, at a very high distance from the structure, which it is protecting. Hence THOR SLPR is able to protect a larger area.

Recent research shows when lightning strikes any object, it creates secondary flashes. THOR SLPR is designed with SFCH which captures any secondary flashes that may occur during a lightning strike thus preventing these secondary flashes from causing damage.

THOR SLPR has been developed in such a way that it requires no maintenance and works in all types of atmospheric condition.

SLPR : Safe Lightning Protection Rod

SFCH : Side Flash Capture Head

## Radius Of Protection (Rp)

The radius of protection is the distance between the point where you want to place the rod and the further point from the structure or building we want to protect for calculating the radius of protection, It is very important to get the triggering advance time value of the device.

## Triggering Advance Time (Δ)

The triggering advance time is defined as the difference in triggering time of an early streamer lightning rod and a simple franklin rod obtained when both rods exposed in the same atmospheric and electrical condition

$\Delta = TSR - TESE$  . where,

TSR = The mean triggering time of the upward leader of a simple lightning rod .

TESE = The mean triggering time of the upward leader of a ESE lightning conductor.

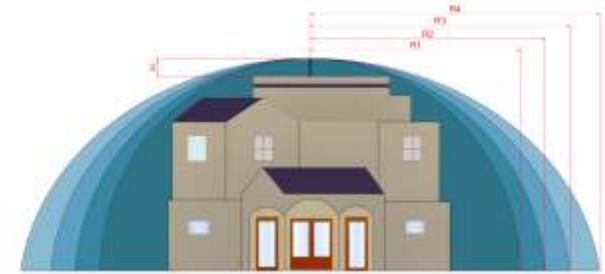
## Calculation for Radius of Protection

The protection radius of an early streamer emission air terminal is calculated using the following equation

$$Rp = \sqrt{2rh - h^2} + \Delta (2r + \Delta) \text{ for } h \geq 5m$$

$\Delta$  = Triggring Time

- r(m) = 20m for L-1
- = 30m for L-2
- = 45m for L-3
- = 60m for L-4



## Level of Protection

Model	THOR 1.0	THOR 1.1	THOR 1.2
$\Delta$	60μs	45μs	25μs
Level 1	79M	63M	42M
Level 2	87M	71M	49M
Level 3	97M	81M	57M
Level 4	107M	89M	65M

Level I - Level with maximum security

Level II - Level with high security

Level III - Level with standard security

Level IV - Level with Moderate security

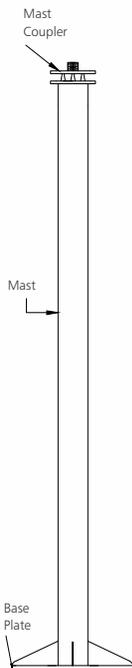
## Ashlok's SLPR Mast

Designed to mount Ashlok's THOR Safe Lightning Protection Rod. It is custom designed to withstand THOR in all weather conditions. Its conceptualised to be a free standing mast without the need for additional guy wires.

- Mast of 4.5m or 6m length
- Supplied with Mast Coupler, Mast, Base Plate
- The Mast Coupler comes with bus bar insulators.
- The Base Plate can be secured on the surface either using foundation bolts or expansion bolts.
- The mast bracket is Hot dip galvanised.

## DOWN CONDUCTOR

- 70 sqmm Single Core PVC Insulated Copper Flexible Cable (or)
- Copper Strip 25 x 3





## Ashlok's ZEUS Safe Lightning Protection Rod

Ashlok's ZEUS Safe Lightning Protection Rod system is an improved version of Franklyn type lightning protection system.

ZEUS Safe Lightning Protection system consists of one primary and four secondary air terminals. The primary air terminal is a vertical conductive rod having a sharp tip at one end. The secondary air terminals (4 No) formed on a bowl shaped circular disc are fixed on the vertical rod. Further, the acute points of the secondary air terminals are spaced and placed in such a way to receive the maximum side flashes.

How ZEUS Safe Lightning Protection Rod functions - It attracts and receives the direct lightning, approaching the structure and the secondary air terminals arrests the side flashes, and dissipate the high voltage lightning currents into the earth mass through conductors, thus preventing damages to the structure/building and fire hazards.

In general, the angle of protection is 45° at 15 metre height & 30° at 25 metre height.

### Specification

Ashlok's ZEUS Safe Lightning Protection Rod consists of one primary terminal 1000mm long with a dia of 22mm with a tapered tip. Secondary Terminal(s) are attached to a bowl which is 125mm wide and 4mm thick facing the primary terminal on four sides.

Ashlok's ZEUS SLPR CU - Copper with Ni Plated Tip weighing in at 6 kgs approx

ASHLOK's ZEUS SLPR SS - Full Body Stainless Steel weighing in at 6 kgs approx



## FRANKLYN Lightning Rod

How FRANKLYN Lightning Rod functions - It attracts and receives the direct lightning, approaching the structure and dissipates the high voltage lightning currents into the earth mass through conductors, thus preventing damages to the structure/building and fire hazards.

### Specification

Ashlok designed FRANKLYN Lightning Rod consists of a sphere made of pure copper with a diameter of 155mm and is 200mm in height. 5 tapered spikes made of copper, each 390mm in length with a dia of 16mm is fixed at different angles, with 4 spikes pointing in opposing directions along the sphere and one spike pointed upwards. The sphere is connected to a main rod made of copper with a length of 1010mm and dia of 22mm. A square copper base plate of 150mm and 6mm thickness is used to install the FRANKLYN Lightning Rod.

Ashlok's FRANKLYN LR CU - Made of Copper weighing in at 12 kgs approx

### Standard Of Compliance for Conventional Type

- I. IS 2309 - Protection of buildings and allied structures against lightning.
- II. BS 6651 - Protection of structures against lightning.
- III. NFPA 780 - Standard for installation of lightning protection system.



## Air Terminal

It is the top most part of a lightning protection system & is intended to intercept the lightning leader. The air terminal is made of a solid highly conductive material. It comes in a range of base materials & surface platings.

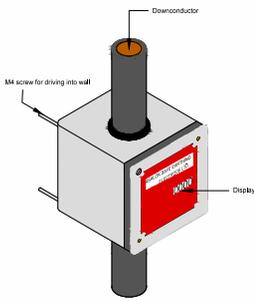
### Coverage of Conventional Type

Protection Level	Protection Efficiency	Protection Angle Method (Height-Metres)			
		20	30	45	60
I	0.98	20°	n/a	n/a	n/a
II	0.95	35°	25°	n/a	n/a
III	0.90	45°	35°	25°	n/a
IV	0.80	55°	45°	35°	25°

### Available in :

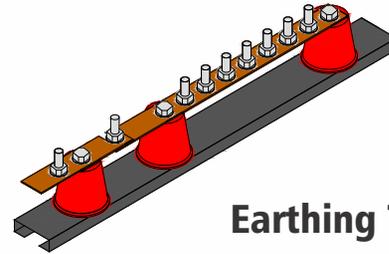
Spike Material : Copper / SS

Base Pale : Copper / SS

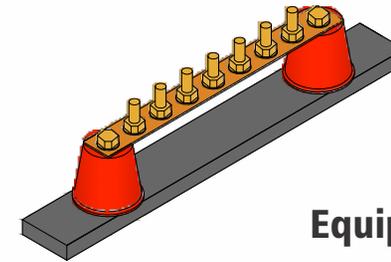


## A.L.I.C.E

Ashlok's Lightning Impulse Counter Electromechanical



**Earthing Test Link**



**Equipotential Busbar**

### Features.

- MOC | Box: ABS
- Display Type: Electromechanical
- Dimensions | Box: 80\*80\*80 mm
- Box | U.V Resistant
- Max Reading : 9999
- Does not require a power source
- Minimum current (I min) : 1KA
- Maximum current(I max) : 100KA
- Enclosure Type : IP 65
- Light weight & easy to install
- Certified & Tested by CPRI Bangalore | Only Lightning Impulse Counter to be Certified by CPRI
- Tested for Dual Polarities | Positive & Negative
- Standard

### Types

A.L.I.C.E. Analog | A.L.I.C.E. Digital

Earthing Test Link allows for quick and convenient disconnection of one part of the earthing system from another in order to facilitate inspection.

### Features.

- Provides a convenient, single - point earthing & bonding location
- Constructed of Copper busbar, corrosion resistant galvanised steel mounting brackets, halogen-free polyamide insulators with zinc plated steel hardware
- Material of construction: GI / Copper
- Busbar Size : 25 x 3 / 50 x 6
- Connecting Links : 1 / 3 / 5 / 7
- Customer specific bars can be designed.

We at Ashlok understand that that proper bonding is essential to create an equipotential plane between service grounds & equipment during fault conditions.

This equipotential plane provides a near-zero voltage differential, & serves to protect people & equipment during these events. The equipotential busbar is the most convenient form of bonding product in use today.

### Features

- Single Point grounding & bonding location, making it convenient to install.
- Conductors can be exothermically welded or bolted using lugs.
- Material of construction: GI / Copper
- Busbar Size : 25 x 3 / 50 x 6
- Connecting Links : 5 / 7
- Customer specific bars can be designed.

### Standard Of Compliance

- I. IS 2309 - Protection of buildings and allied structures against lightning.
- II. BS 6651- Protection of structures against lightning.
- III. NFPA 780 - Standard for installation of lightning protection system.
- IV. NFC 17 - 102
- V. UNE 21186 - 96

### SLPR Accessories Kit

- LN SS Bolt | M8
- LN Key
- Copper Lug
- Cable Tie
- M16 MS Fasteners
- Wall Flakes
- Wall Screw
- Wall Clip
- Insulating Tape

## Installation Method For THOR Safe Lightning Protection Rod

- Unpack the THOR SLPR from the box
- Tighten the base coupler of THOR to the top of the mast (Mast Coupler)
- Connect the down conductor to the side of the base coupler using the provided LN Key arrangement
- Erect the mast using foundation bolts to the top of the building, securely
- Run the down conductor along the length of the mast, and onward along the height of the building and connect it to the dedicated earthing for THOR SLPR
- Attache A.L.I.C.E to the wall near the dedicated earthing pit at a convenient height (5 feet or eye level)
- Pass the down conductor through A.L.I.C.E before attaching it to the dedicated earthing for THOR SLPR
- The down conductor needs to be attached to the structure by way of insulators and clamps every 1 metre for support.
- It is recommended to connect all the metal bodies present in the vicinity of THOR SLPR to prevent side flashes during a lightning strike.
- Provide a test link above A.L.I.C.E for periodic maintenance and testing.

### Our Recommendations

1. The mast should have a minimum length of 4.5 | 6 metre and should be constructed of FRP or GI / SS
2. A.L.I.C.E should be installed at a height of 5 feet from the ground level (eye level)
3. The down conductor should be a Single Core Insulated Flexible Copper Cable of 70 sqmm cross section minimum, or a Strip of Copper or G.I with a minimum cross section of 70 sqmm.
4. The shortest possible path should be chosen for the down conductor.
5. The THOR SLPR needs to be connected to its own dedicated tripodal earthing system.

## To mention a few who chose...

Akshardham Temple  
Amara Raja Batteries Ltd  
AMT-The Association For Manufacturing Technology  
Aruna Agencies  
Beacon Technologies  
Blue Sky Engineering  
Chennai Star Shelters  
Chettinad International Coal Terminal Pvt. Ltd  
Cholayil Private Limited  
Corona Entreprises Pvt Ltd  
Dixcy Textiles (P) Ltd  
Eatec Engineering Solutions  
Flowsun Energy and Engineering System  
Green Ripples Pvt. Ltd  
Greenvironment Innovation & Marketing India (P) Ltd  
Gurumurthy Engineering Enterprises  
Harsha Abakas Solar Pvt. Ltd.HIL Limited  
Infiniti Building Solution Pvt Ltd  
K.H. Leather Industries Pvt Limited  
Kanchi Kamakshi Mines and Crushers  
Kurlon Enterprises Limited  
Lakshmi Enterprises  
M+L Shoes and Accessories Private Limited  
Mahaviryaa Concerte  
Mahindra Holidays & Resorts India Ltd  
Netafim Irrigation India Pvt Ltd  
NexiaNitya Power Projects  
Osram India Pvt Ltd  
Oxymed Hospital  
Powertron Products Pvt Ltd  
Precision Controls  
Pushpakaran Trading Company  
Radcon  
Renxsol Scotch Pvt Ltd  
Renxsol Ecotech Pvt. Ltd  
Rungta Mines Limited  
Shree Datta Fabricators  
Shree Gokulesh Electric & Engg.Co

## ...The Ashlok Way

Sri Srinivas Power Liners  
Srishti Sales & Services  
Srivari Power Liners  
St.Antony's Church  
Sure Energy Systems P.Ltd  
Synotex Enterprises  
The Leela Hotel & Resorts  
Turbo Energy Pvt Ltd  
U-Solar Clean Energy Solutions P.Ltd  
V.K.Sam Engineering  
Vega Electrical Services  
Vijay By Ten Square Mall  
Voltamp Controls  
Zenith Electrotech Pvt. Ltd



why?



**ASHLOK**

India's first professional earthing company founded in 1999

Pioneered the concept & changed the understating of earthing in India by introducing the revolutionary Maintenance Free Earthing System designed on Pipe-In-Pipe technology

Changed industry standard for earthing from conventional to PIP based Maintenance Free Earthing through out the country.

Indigenous Safe Lightning Protection Rod for the Indian and International market ... THOR SLPR... another 1st by Ashlok

Widest and most acclaimed product range in India

Tried, tested and trusted by all major corporations of India since 1999

## Ashlok Safe Earthing Electrode Limited

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Ashlok products shall be installed and used only as indicated in Ashlok's product installation manual. Improper installation, misuse, misapplication or other failure to completely follow Ashlok's instructions and warnings may cause product malfunction, property damage, serious bodily injury and death and/or void your warranty.

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