



# ASHLOK

Your Ultimate Solution for Earthing & Lightning Protection

## SINCE 1999



IT'S EASIER TO EXPLAIN PRICE ONCE THAN

TO APOLOGISE FOR QUALITY FOREVER.

-Zig Ziglar

LIGHTNING  
PROTECTION

CONVENTIONAL  
LIGHTNING  
PROTECTION

EARTHING  
PROTECTION



ASHLOK

We entered the electrical industry in the early part of the 1970's much before the technological revolution took place. In 25 years, after dealing with electrical products of all types and sizes,

we realized that the entire industry's success and failure fell in the hands of an earthing system.

We understood that the conventional system of earthing was unreliable, inefficient, cumbersome and prone to problems which resulted in fire hazards, equipment failures and loss of life due to high voltage shocks/ short circuits etc. We believed that there was a better solution & one that did not involve the aged & ineffective system of earthing.

Challenging convention, in 1999 - we came up

with "maintenance free earthing technology" which revolutionised the earthing practices being followed in India and now, it has become a norm to provide earthing or grounding through maintenance free earthing systems only.

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

## Objectives of earthing

Provide an alternative path for the fault current to flow so that it will not endanger man or machine

Ensure that all exposed conductive parts do not reach a dangerous potential. Maintain the voltage at any part of an electrical system at a known value so as to prevent over current or excessive voltage developing in the machinery.

### End Result

-  Human safety
-  Protect equipment
-  Electrostatic discharge

## History

Very early use of electricity systems were generally localized. the way to the growth of accidents were reported live parts due to insulation

A need was felt path for fault currents, being a huge mass sink for electrical fault buried into earth and parts (enclosures) were connected to earthing electrodes. an ever- increasing Unfortunately, its degree of danger.

Earthing in protecting man and danger. Earthing also increasing the reliability helps to provide stability preventing excessive and also as a mean of against lightning.

A low resistance earthing effective and quality power system.

The Ashlok Group

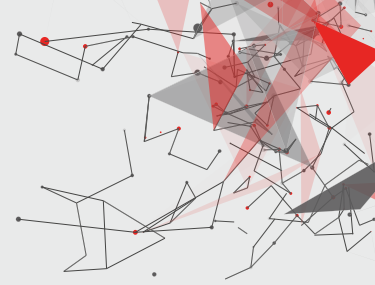


was with ungrounded systems. These The first AC transmission in 1886 paved electrical earthing systems. Fatal when persons came in contact with damage.

to provide an alternate easy to prevent accidents. Earth was thought to be the best current. Metal rods were non-current carrying metal of electrical apparatus these metal rods called Electricity today is playing role in everyone's lives. use brings with it a certain

plays a very important role machine against this plays a major role in of the supply service, as it in voltage conditions, voltage peak during disturbance, providing a measure of protection

system is a key safety element in an



## **EARTHING : UNCOVERED**

Earthing is the process of creating an alternative path for the flow of fault I Excessive currents safely into the ground in the presence of minimal resistance or impedance.

The primary purpose of Earthing is to reduce the risk of serious electric shock from current leaking into uninsulated metal parts of an appliance, power tool, or other electrical devices. In a properly Earthed system, such leaking I fault current is carried away harmlessly while tripping the fuse. Earthing also provides protection from large electrical disturbances like lightning strikes and power surges. It also aids in the dissipation of hazardous static electrical charges.

Although most electrical systems have fuses or circuit breakers for protection against a fault current, the human body may be fatally electrocuted by a current of less than one ampere. Earthing helps minimize such hazards from occurring.

Over the years, billions of dollars worth of property has been destroyed due to electrical failures, short circuits etc causing fires, electrocutions and other mishaps. But more importantly, lives were lost this makes earthing of crucial importance everywhere electricity is used.

This makes earthing of crucial importance everywhere electricity is used.

Let us help in changing that.

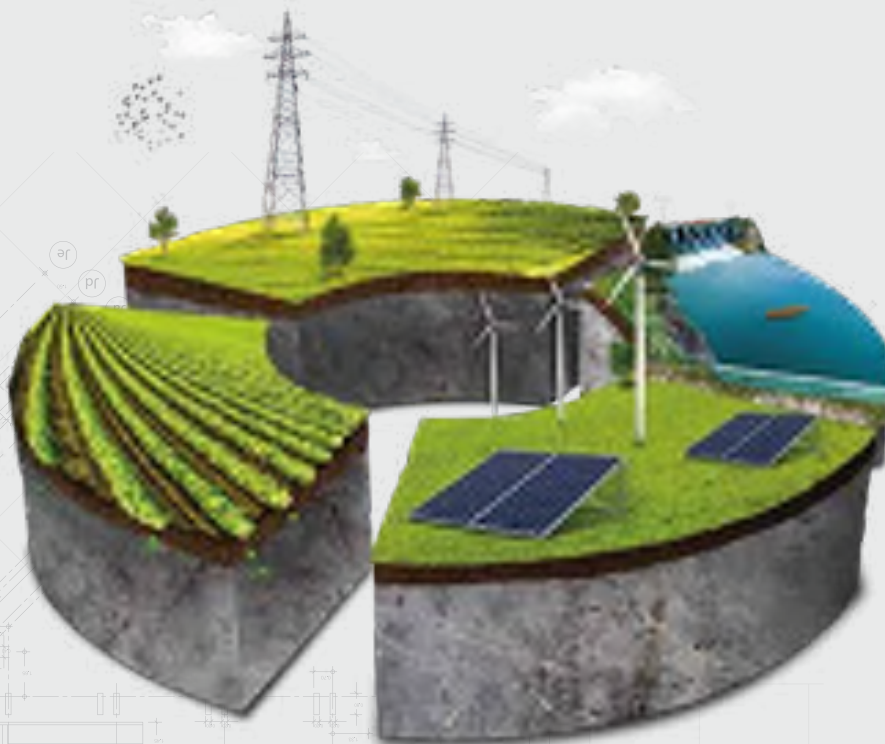


### **A complete lightning protection & earthing system constitutes the following :**

**SAFE EARTHING ELECTRODE  
SAFE LIGHTNING PROTECTION ROD  
DOWN CONDUCTOR**



**BACK FILL COMPOUND(S)<sup>®</sup>  
CONVENTIONAL LIGHTNING PROTECTION  
EARTH PIT CHAMBER COVER(S)**



# The Earthing System

## SAFE EARTHING ELECTRODE

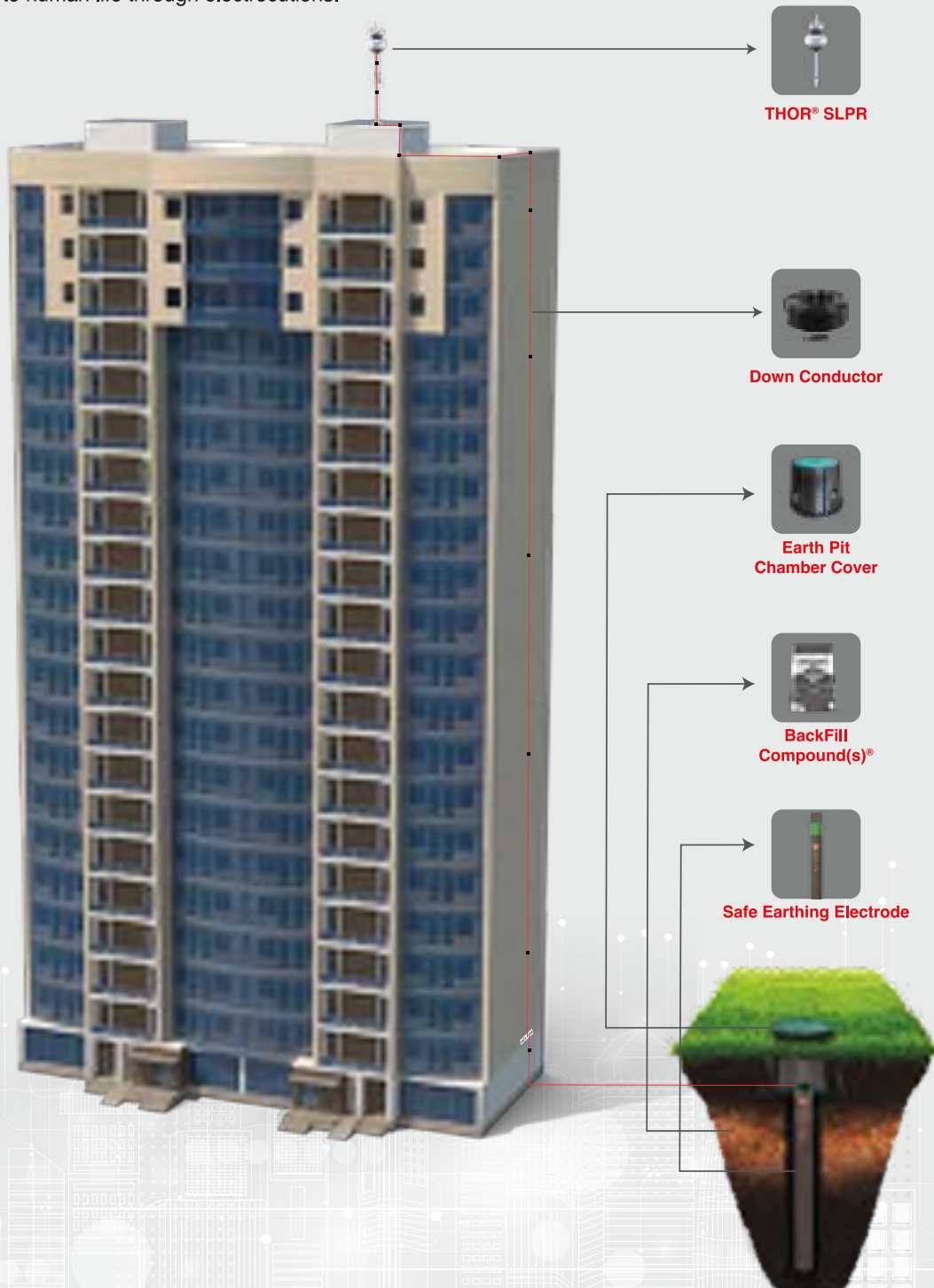
It is a metal electrode which goes into the ground near the building. It helps in the efficient discharge of all the fault currents / surge currents present in the electrical system. It also helps in dissipating the high voltages which are passed on through the lightning arrestors atop buildings.

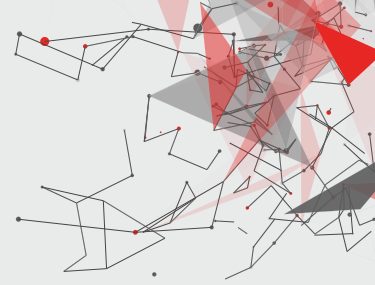
## SAFE LIGHTNING PROTECTION ROD

It is a metallic device, usually mounted at the highest point of the building to capture lightning strikes and direct it to the earth via a safe path thereby preventing it from flowing through the building's electrical circuit. In the absence of the lightning arrester, a lightning strike could destroy electrical equipment and cause harm to human life through electrocutions.

## BACK FILL COMPOUND(S)<sup>®</sup>

These are earth enhancement compounds, having different properties that can be chosen / selected as per soil & its other properties. Essentially, an ideal BFC should have low resistance, excellent moisture absorption and retention capabilities, and thermally stable. Although, earthing can be provided even without the use of BFC, however, for better performance it is suggested to use the BFC while providing the earthing system.

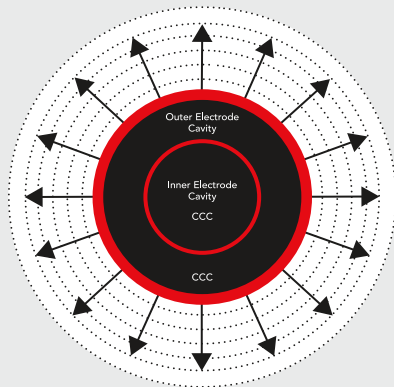




### Pipe In Pipe Technology

Pioneered by ASHLOK in 1999, the Pipe In Pipe design incorporates the use of two pipes of co-axial diameters joined together for enhancing the service life and performance of the over all earthing system. The cavity in- between the electrodes is filled with crystalline conductive compounds IonFill or CompactFill for current dissipation and anti corrosive properties. The electrode cross section has to be circular for the uniform distribution of fault current all around from electrode to earth.

#### Cross Section View



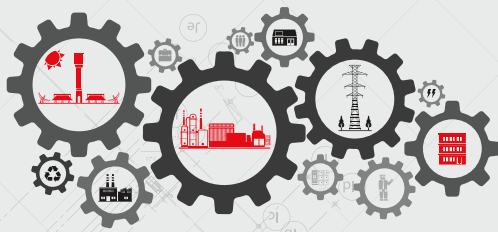
- CCC Crystalline Conductive Compound
- ..... Fault Current Dissipation
- Inner Electrode
- Outer Electrode

Description : Ashlok's Pipe-in-Pipe Design  
Design Year : 1999

Available in the following sizes (vary with product)

Model	Length (mm)	Inner Pipe Dia (mm)	Outer Pipe Dia (mm)
ASEEL-19	2 & 3	26 - 27	48 - 50
ASEEL-39	2 & 3	38 - 42	75-76

Customised Electrodes Can be Manufactured Based on Clients Requirement



### CompactFill

The volume between the inner and outer pipes of the electrode is occupied by CompactFill, a compound formula developed by ASHLOK which aids in increasing the electrical conductivity, service life and current with-stand capacity of the earthing electrode. It constitutes elements picked up from nature and is anti corrosive too.

### IonFill

This is the latest compound formula developed by ASHLOK for the IC99 range of earthing electrodes. The internal cavity of the electrode is occupied by IonFill which constitutes elements which aid in the breathing action of the electrode. They form an integral part of the functioning of the electrode as they trap moisture from the surroundings and enhance electrical conductivity. Through the breathing action of the electrode, they form conductive roots all around the earthing system.

CompactFill & IonFill play a crucial roll in the functioning health of the electrode and it is very critical that they are produced in exact proportions and filled with scientific care A small void in the internal cavity of the electrode can cause fluctuations in results.

For that reason, all the electrodes undergo an ASHLOK designed precision process for the deposition of CompactFill/ IonFill into the internal cavity keeping in tune with our quality policy.

### ASHLOK Designed Production Process

Since earthing systems face different kinds of soil, climatic & electrical environments around the world it is extremely important that they are manufactured with extreme care precision and quality.

Defects like varying coating levels on the electrode surface can hamper service life. Improper ratios of CCC components can lead to varying resistance results.

At ASHLOK, we took up the challenge to design our own production processes for the different metallic coatings, internal cavity compound fillings and packaging.

Today, we have our own production systems in place to constantly meet 'A' grade quality norms we have set for ourselves. This is helping us to serve you better - everyday.



## Products & Services

Ashlok is a one stop solution for all your earthing needs, be it design, production of customised earthing equipment, execution and after sales service.

### Safe Earthing Electrodes

- Singleton Earthing Ecosystem
- Carbon Coating Technology
- Copper Plated Electrodes
- Zinc Coated Electrodes
- Copper Bonded Rods
- Alloy Coated Electrodes
- Physical Vapor Deposition Electrodes
- Hot Dip Galvanized Electrodes
- Self Breathing & Leaching Type Electrodes

### Earth Pit Chamber Cover(s)

- Conventional Lightning Protection
- Safe Lightning Protection Rod
- Conventional Lightning Protection
- Surge Protection Device (SPD)

### Services

- Earthing Installations (All types of soil conditions)
- Lightning Arrestor(s) Installations
- Soil Resistivity Measurement
- Earth Resistance Measurement
- E.S.E Conventional Lightning Protection Design
- Risk Assesment of Lighting Protection System
- Commissioning of Lighting Protection System
- Testing of existing Lighting Protection System & Earthing System

### Back Fill Compounds by Baron

- Conductolite
- Electroditte
- Humedite
- Terraion (Soil Ion Enhancer)
- Zetalite



### Certifications | Standards | Approvals

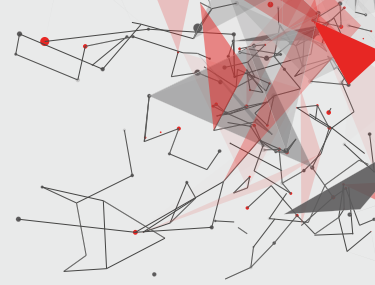


IS 3043 | ISO 9001:2015 | OHSAS 18001  
 CPRI | RoHs | CE | UL | NFC | HIZAL | ICMET  
 IEC 62561-7 | EN 12457-2 | IEC 62321 - 2008-12 Edition-1

Commercial Structures | **Offices** | Power stations | Transmission towers | **Solar Farm** | Wind Farms | **Power Plants** | Commercial Structures | **Wind Farms** | Residences | **All type of Industrial units** | Commercial Structures | **Offices** | Power stations | Transmission towers | **Solar Farm** | Wind Farms | **Power Plants** | Commercial Structures | **Wind Farms** | Residences | **Mines & Virtually every installation** | Commercial Structures | **Offices** | Power stations | Transmission towers | **Solar Farm** | Wind Farms | **Power Plants** | Commercial Structures | **Wind Farms** | Residences



## Safe Earthing Electrode



### ASEEL HD | Galvanized



- Galvanized for corrosion protection
- Designed for fast fault current dissipation
- Low maintenance earthing system
- Easy & fast installation on site
- Cathodic Corrosion Protection

### ASEEL Z | Zinc Coated



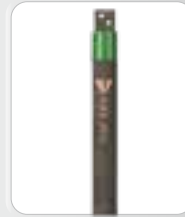
- Zinc Coated earthing electrode
- Coating thickness of 100+ microns
- Quality governed Coating
- Enhanced corrosion protection
- Granular surface finish for compact deposition of BFC all around and improved current dissipation
- Cathodic Corrosion Protection

### ASEEL PVD | Zinc 150 Microns



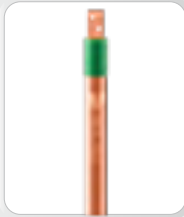
- In compliance with IS 3043 | Revised
- Coated using a SPM | PVD Technology
- Coating thickness of 150+ microns
- Uniform surface coating
- Cathodic Corrosion Protection

### ASEEL A | Alloy Coated



- Specialized alloy coating of minimum 100 microns
- Suitable for soil condition with pH value ranging from 3.5 to 12
- Anodic Protection

### ASEEL CP | Copper Plated



- Copper coating thickness of 100 | 250 + microns as per UL Standards
- Very high electrical conductivity (5.96 x 10<sup>7</sup> s/m) and anti - corrosion properties
- Long service life
- Best suited for harsh environments
- Anodic Protection

### ASEEL CBR | Copper Bonded Rod



- Copper bonded rods meeting UL467 international standards for Earthing
- Coating thickness of 250 + microns over earth rod
- Projected life of 15 years +
- Excellent electrical conductivity and corrosion resistance

Model	Length (mm)	Inner Pipe Dia (Min) (mm)	Outer Pipe Dia (Min) (mm)	Rod Dia (Min) (mm)
ASEEL 19 HD	2 & 3	26	48	-
ASEEL 39 HD	2 & 3	42	76	-
ASEEL 19 Z	2 & 3	26	48	-
ASEEL 39 Z	2 & 3	42	76	-
ASEEL 19 PVD	2 & 3	26	48	-
ASEEL 39 PVD	2 & 3	42	76	-
ASEEL 19 A	2 & 3	26	48	-
ASEEL 39 A	2 & 3	42	76	-
ASEEL 19 CP100   250	2 & 3	26	48	-
ASEEL 39 CP100   250	2 & 3	38	76	-
ASEEL 14 CBR100   250	2 & 3	-	-	14
ASEEL 17 CBR100   250	2 & 3	-	-	17



**EARTHING  
PROTECTION**





## ASEEL CC | Composite Carbon Coating Technology



- Zero Galvanic Corrosion
- Proprietary Coating Technology
- Uniform Dissipation of Current
- Eco-Friendly | Long Life
- Low Resistivity
- Design for all highly corrosive terrain

The biggest challenge faced by an Earthing System has always been the deteriorating effects on the system due to Corrosion & fluctuations in Resistance caused due to the vagaries of Mother Earth.

To take on Mother Earth is an impossibility based on the current levels of technology available to Mankind. We went and solved the other challenge that threatens Your Earthing System ... That of Corrosion.

Available in the following sizes (vary with product)

Model	Length (mm)	Inner Pipe Dia (mm)	Outer Pipe Dia (mm)
ASEEL-19	2 & 3	26 - 27	48 - 50
ASEEL-39	2 & 3	38 - 42	75-76

The R&D team of Ashlok has developed a proprietary coating for the Safe Earthing Electrode(s) that precludes the possibility of Corrosion. Its the first Safe Earthing Electrode to incorporate the latest proprietary Carbon Coating Technology from Ashlok.

With that in mind, we humbly present to you the crown jewel..

### ASHLOK'S SENTINEL RANGE OF SAFE EARTHING ELECTRODE(S)

#### COPPER BONDED ROD SERIES

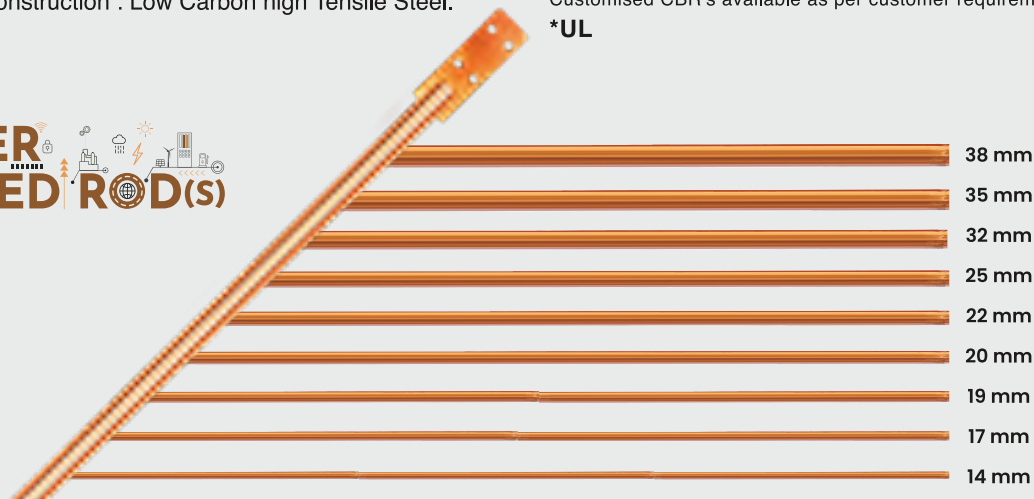
We offer a complete range of Copper Bonded earth rods that are suitable for earthing.

Baron's Range of CBR(s) are made from low carbon high tensile steel and the rods are molecularly bonded by 99.9% pure electrolytic copper. The threads are provided at both ends of the rod to increase the length by joining other rod with the help of a threaded coupler if required.

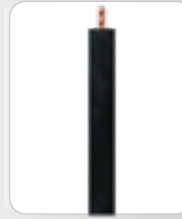
Baron's Copper bonded rods\* meet UL467 International Standard for earthing.

- Long service life
- Minimum Coating thickness of 250+ microns over the rod
- Material of Construction : Low Carbon high Tensile Steel.

## COPPER BONDED ROD(S)



## ASEEL SE | Singleton Earthing EcoSystem



- Zero Galvanic Corrosion
- Proprietary Coating Technology
- Negative Thermal Coefficient
- Proprietary CarboForm Compound
- Low Resistivity | Long Life

Ashlok's Singleton Earthing EcoSystem based ConductoCast Electrodes has been conceptualised & designed such that the primary conductor comes encased within a tightly formed conductive matrix of CarboForm Compound which is a mixture of various eco-friendly materials.

Available in the following sizes (vary with product)

Model	Length (mm)	Primary Conductor, (mm)	Outer Pipe Dia (mm)
ASEEL 17 CF	2 & 3	17	70
ASEEL 20 CF	2 & 3	20	85
ASEEL 25 CF	2 & 3	25	105

In areas where the soil conditions are overly loose resulting in an earthing pit where the surface area contact with the primary electrode is intermittent, Ashlok's Singleton Earthing EcoSystem based ConductoCast Electrodes can be used.

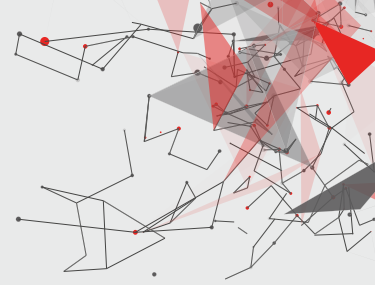
### ASHLOK'S SINGLETON EARTHING ECOSYSTEM CONDUCTOCAST ELECTRODE(S)

Available in the following sizes (vary with product)

Model	Length (mm)	Rod Dia, (mm)	Micron Coating $\mu$
CBR 14*	2 & 3*	14	100   250*
CBR 17*	2 & 3*	17	100   250*
CBR 19	2 & 3	19	100   250
CBR 20	2 & 3	20	100   250
CBR 22	2 & 3	22	100   250
CBR 25	2 & 3	25	100   250
CBR 32	2 & 3	32	100   250
CBR 35	2 & 3	35	100   250
CBR 38	2 & 3	38	100   250

Customised CBR's available as per customer requirement\*

\*UL



## Earth Resistivity

The resistance to earth of an electrode is directly proportional to soil resistivity & inversely proportional to the total area of contact established with the soil for fixed land areas. Soil resistivity is a function of several factors. These include the type of soil, moisture content, temperature, mineral content, granularity & compactness. Usually moisture & mineral content are the only factors that can be influenced by any practical control concept. Ionisation of soil & moisture retention are required to reduce soil resistivity, but the mineral content has the most dramatic influence. Ionisation is the first step to reduce soil resistivity.

The next step is to increase the moisture retention capacity of the soil. These are the two recommended techniques for reducing earth resistivity.

## BACKFILL COMPOUND(S)<sup>®</sup> SERIES

These are earth enhancement compounds, having different properties that can be chosen | selected as per soil & its other properties. Essentially, an ideal BFC should have low resistance, excellent moisture absorption and retention capabilities, and thermally stable. Although, earthing can be provided even without the use of BFC, however, for better performance it is suggested to use the BFC while providing the earthing system.

Baron has developed five different types of BackFill Compound(s) for three dimensional augmentation in electrical earthing system. This system should achieve low group resistance value for long periods where obtaining a satisfactory earth resistance has always been a problem in areas of poor soil conductivity.



### ELECTRODITE<sup>™</sup>

It is a regular Back Fill Compound that absorbs & retains the moisture, reduces the soil resistivity & thus helps in quick dissipation of fault current. Constituting natural elements, it is an effective soldier in the dissipation of fault current. It is hygroscopic in nature & swells when it comes in contact with water, thereby engaging constant contact between the electrode surface & soil which ensures smooth and efficient discharge of fault current. Best for normal soil conditions. Resistivity : < 5 ohm-metre (In ideal moist conditions) ; > 5 ohm-metre (Dry Conditions) | Ph Value: 7.0 -8.5

Available in : 15 kg & 25 kg



### CONDUCTOLITE<sup>®</sup>

It is a premium conductive carbonaceous material that can be used as an effective durable & high conductive material for earthing that dramatically reduces impedance & enhances the performance, reliability longevity of earthing systems. Conductolite has been designed to function in soil environments where electrical conductivity is low. It helps to improve the conductivity of the soil to aid in faster current dissipation while at the same time having hygroscopic and anti corrosive properties. Recommended for harsh Conditions. Resistivity : < 0.5 ohm-metre (In dr conditions) | Resistivity is not moisture dependant Ph Value : 6.5 - 8.0

Available in : 25 kg



### ZETALITE™

Is a combination of naturally occurring elements that optimize the conductivity of the soil around the earth electrode. increasing the amount of Zetalite can decrease the overall earth electrode resistance. Highly conductive and can hold a high level of moisture and minerals without shrinkage and cracks. It's a Clay based compound that has High Water Retention Capacity and High Thickening & Conductive Properties

Available in : 15 kg



### TERRAION®

It has been recognised that earthing can be improved by lowering the soil resistivity by soil treatment, by applying salt to soil. Salt reduces the soil resistivity but is prone to leach out from treated soil when water is added to it during rainy season & thus it is only a temporary improvement. Moreover it pollutes the ground water & creates other environmental problems besides accelerating the corrosion of the electrode. The formula has been designed keeping in mind the harshest conditions faced by earthing systems around the world. It helps in reducing the soil resistivity and normalizing the soil conditions. It forms a bulk aqueous solution on addition of water and creates conductive roots in the immediate environment of the earthing system. It is a soil ion enhancer which is used in tandem with Conductolite | Humedite | Electroditte Recommended for Earth Pit recharging. Ph Value: 7.0 - 9.0

Available in : 10 kg



### HUMEDITE®

Moisture plays a very important role in the earthing system because the dissipation of fault current depends considerably on the capillary & electro-osmotic action of soil. Specifically developed for relatively dry conditions, it captures moisture from the surrounding environment & retains it for long periods of time. It has an electrical resistivity of approximately 0.5 ohm-meter which gives minimal resistance to the dissipation of current. When mixed with water it forms a semi-permeable conductive gel around the electrode & is far less susceptible to shrinkage. Recommended for semi-rocky conditions. Resistivity : 1 - 5 ohm-metre (In ideal moist conditions) | Ph Value : 7.0-8.0

Available in : 25 kg



Custom Composite of BackFill Compound(s) can be supplied based on Clients Requirement

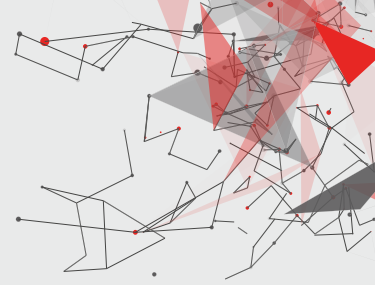
### Certifications | Standards | Approvals















ISO 9001:2015 | ISO 14001:2015 | ISO 45001:2018  
RoHS

An initiative under the aegis of Ashlok, the range of Earth Pit Chamber Covers are made keeping in mind the ease of use by the consumer and the latest impact directly or indirectly upon the environment by way of utilising raw materials that not only add value to the EPCC series but also ensures that no adverse harm befalls upon the environment thereby co-existing in a harmonious manner.

The basic raw materials are a very specific ratio of High-Density PolyEthylene (HDPE) compounds reinforced with glass fibers with additives of antioxidants and other proprietary items that combine to give a high tensile qualitative product that has innumerable features allowing the Earth Pit Chamber Cover to be a complementary guardian to the entire Lightning & Earthing Solution deployed within your premises for your ultimate protection.



- |   |   |
|---|---|
|  High Tensile Strength                       |  High Compressive Strength               |
|  Lightweight - Ease of handling & transport  |  Ready to use - No curing time required. |
|  High Strength to weight ratio               |  Hassle-Free Installation                |
|  Zero Scrap Value - Deterrence against theft |  Long Life Span                          |
|  Plug & Play design - Fit & Forget          |  Zero Maintenance - Fit & Forget        |
|  Eco-Friendly                              |  UV Stabilised                         |



## Installation Method

It is very important that Ashlok earthing systems are installed correctly for system to work safely, to get maximum benefit & advantage. Upon proper installation, the earthing system exhibits low earth resistance value compared to conventional earthing system in a given soil conditions. Please note that ASHLOK earthing system once installed needs very little or negligible maintenance, however, pouring of few bucket of waters in side and around the earth pits is recommended in poor soil conditions. It is to be understood that earth resistance value of any earthing system varies from place to place since soils are hardly homogeneous in nature and exhibits different & varying soil resistivity even in close proximity. In such cases, use of multiple earth pits in grid formation is recommended to get the desired earth resistance value.

Note: Since there exist varying types of soil & environment conditions around the world, the best resistance values for an earthing system vary.

### Normal Soil

- Make a bore of 8" to 10" in dia up to the electrode length of 2 | 3 meters.
- Fill the bottom 4" of the bore with the supplied BFC (Electrodite).
- Vertically, place the electrode in the centre of the pit.
- Fill the cavity around the electrode with the BFC (Electrodite).
- Ensure there are no air gaps in the BC filled cavity region.
- Now pour sufficient water into the earth pit until the BFC takes the form of a paste | mud. Allow the pit to absorb the water and settle.
- Test the earth pit and make the required connections to the electrical service box.

**Caution: Avoid excess watering and do NOT hammer the electrode.**

For instructions on installation methods for other soil types; and corresponding FCs, kindly contact us on [earthing@ashlok.com](mailto:earthing@ashlok.com) or call +91 94440 87356.



## Where is earthing needed?

Anyplace where electricity is used, earthing is important for safety of life and property. This can include

- Homes
- Offices
- Telecommunication towers
- Power transmission towers & HT | LT lines
- Power generation plants
- Mines
- Transformers
- High rise buildings
- Production plants
- Refineries
- Windmills etc.



## Why should I choose ASHLOK earthing systems?

From the very beginning, we have been the first to introduce different technologies and earthing designs into the industry, the first to achieve government test approvals and the pioneers of forefront earthing designs existing in the marketplace today.

We have Ashlok earthing system designs working efficiently across Asia in homes, offices & industries of the private & public sector.

Our product range, manufacturing systems, supply network and customer support have earned us a position at the top of the industry today, and our client list speaks for itself why we are at the forefront of every other earthing project being executed in the industry today.

Ashlok is present across India to cater to the earthing needs wherever it might arise. Supported by a robust R&D & Service team to take care of the earthing challenges.

No matter where you are located, we have an earthing solution for you.

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 household 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.

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.

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

Ashok Tripathy  
Chairman



The Ashlok Group

# THOR® SLPR | Characteristics & Benefits



- 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 with in it so as to release it in the most optimum possible way.
- 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) | 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

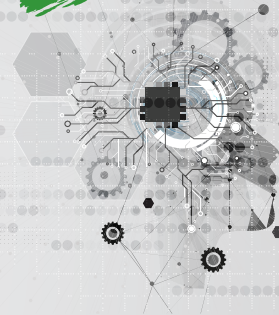
All type of Industrial units | Power Plants | Transmission towers Solar Farm | Offices | Residences | Commercial Structures | Telecommunications Towers | Wind Farms | Power stations | Mines & Virtually every installation.

## Certifications | Standards | Approvals

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

**Standard of Compliance : UNE 21186**

**Designed in accordance with NFC 17 - 102**



## LIGHTNING PROTECTION





## Working Principle of THOR® SLPR

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 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

## 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 FRANKLYN 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

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

$\Delta$  = Triggering Time

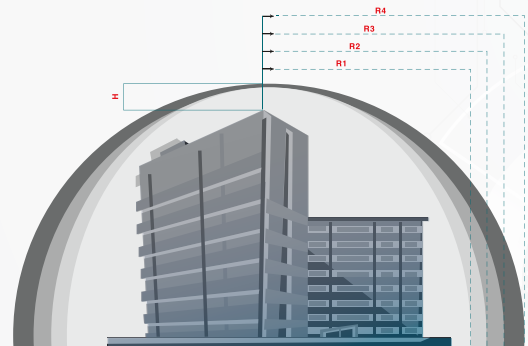
- r(m) = 20m for L-1
- = 30m for L-2
- = 45m for L-3
- = 60m for L-4

## Level of Protection

Model	THOR 1.0 THOR Helios	THOR 1.1	THOR Helios Bolt	THOR 1.2
$\Delta$	60 $\mu$ s	45 $\mu$ s	30 $\mu$ s	25 $\mu$ s
Level 1	79M	63M	48M	42M
Level 2	87M	71M	54M	49M
Level 3	97M	81M	63M	57M
Level 4	107M	89M	71M	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 is made up of High Quality dielectric material with U.V resistance
- 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 sq mm Single Core PVC Insulated Copper Flexible Cable (or)
- Copper I GI Strip





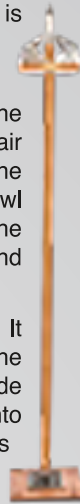
## ASHLOK'S ZEUS® Safe Lightning Protection Rod

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

Available in SS | Copper variant | Additional Protection : Side Flash Capture Head SFCH | Overall Length is 1010 mm | Base plate dimension is 150mm x 150mm x 6mm | Conforms to IEC 62305 i.e., Code Of Practice For Lightning.

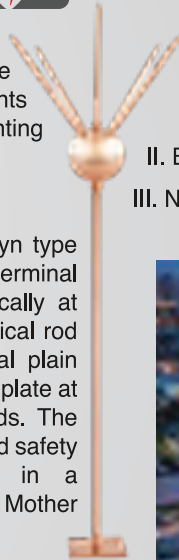


## FRANKLYN LIGHTNING ROD

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

Franklyn Penta 1.0 Cu : Ashlok designed Franklyn type Lightning Conductor, Made of Copper material the air terminal consist of metal sphere having 5 spikes fixed vertically at different angles. The sphere is connected with a vertical rod having a suitable base plate to fix it over horizontal plain surface. The protective conductor is connected at base plate at one end and other end is connected with Earth Rods. The Lightning current gets attracted towards air terminal and safety passes through the protective conductors laid in a pre-determined route and dissipates in to the ground | Mother earth through earthing system.



### 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

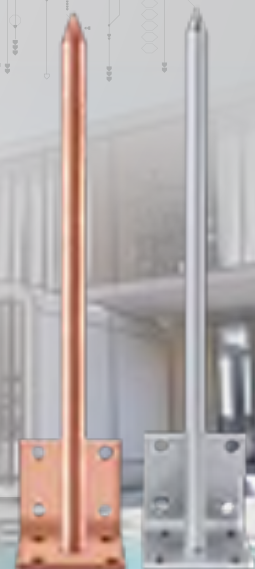
It is the top most part of a lightning protection system & is intended to intercept the lightning leader. The air terminal is made of a solid highly conductive material. It comes in a range of base materials & surface platings.

### 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 Plate : Copper | SS



### Features

- Dimensions | Box : 80 x 120 x 85 mm
- Max Reading : 9999 9999 Does not require a power source
- Minimum Current ( I min ) : 1KA
- Light weight & easy to install
- Certified & Tested by CPRI Bangalore | Only Lightning Impulse
- Counter - A World's First
- Tested for dual Polarities | Positive & Negative
- Can be coupled with both i.e., Conventional LA's as well as ESE Type LA's



### EARTHING TEST LINK

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 | 40 x 6
- Connecting Links : 1 | 3 | 5 | 7
- Customer specific bars can be designed.

### EQUIPOTENTIAL BUSBAR

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 | 40 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   | - ESE Standard National French Code.                               |
| V. IS/IEC - 62305  | - Standard for Lightning Protection.                               |
| VI. 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
- Guy wire kit

## SURGE PROTECTION DEVICE (SPD)

Is your electrical and electronics equipment safe from lightning & transient surges? According to survey 65% of the electronic equipment degradation are due to transient surge, indirect lightning, faulty wiring which results in early aging effect, data loss, sometimes even failure of equipment.

Ashlok's range of Surge Protection Devices, when installed in Panels, DB's protects against internally created surges and also against effect induced by indirect lightning strike. Thus ensuring longevity of electrical & electronics appliances from degradation caused by surge effects.

### SOLAR PV SPD

- Quick thermal response for self protection
- With & Without remote indication contact
- Plug-in module design
- Device status indicator
- IP 20 Protection
- DC Surge Protection Devices
- Type 2 (T2, Class II, Class C)
- Ucpv 600Vdc | 1000Vdc | 1500Vdc
- SPD according to EN 50539 -11 | IEC 61643-31

### DCDB Box

- UV - Resistant housing | Class IP -54
- Polymer housing | Non-Combustible
- Easy | Clear | Efficient cable management
- Weather Resistant | Long Life
- Voltage - 500V and 1000V DC
- I/O - 1 in 1 out to 12 in 12 out
- Type of the material - Poly-Carbonate
- Easy Installation and Maintenance

### CLASS B SPD (3+1)

- AC Surge Protection Devices
- Type 1 (T1, Class I, Class B)
- SPD according to EN 61643-11 | IEC 61643-11
- Uc from 275 V up to 600 V AC
- 1P|1P+NI2P|2P+ NI3P| 3P+N | 4P
- With GDT

### CLASS C SPD (3+1)

- SPD according to EN 61643-11 | IEC 61643-11
- AC Surge Protection Devices
- Type 2 (T2, Class II, Class C)
- Uc from 275 V up to 600 V AC
- Plug-in module design
- Device status indicator
- With and without remote indication contact
- 1P | 1P+N | 2P | 2P+N | 3P | 3P+N | 4P connection

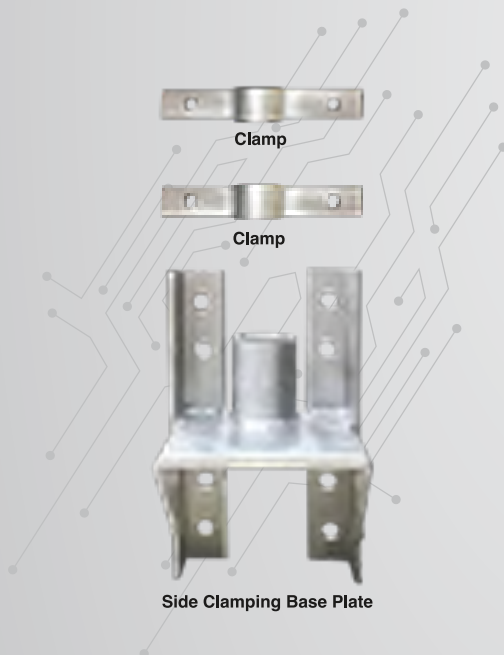
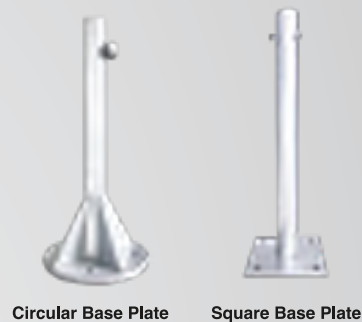
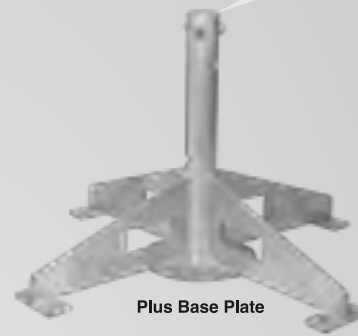
### STREET LIGHT SPD

- Build-in LED indication, saves maintenance time by identifying replacement need
- Thermally Protected
- 20kA maximum discharge current
- High line to ground/earth resistance
- IP 66 : Dust & water resistant
- Parallel or series connection options
- IEC 61643-11
- Suitable for use in luminaire with class I or Class II insulation



## Mast for flat cement surface with Plus I Square I Circular Base plate I Installation Procedure :

- Select the point of installation as per the design of lightning protection system
- Secure the flat base plate of mast on the selected flat cement surface via expansion bolts provided in the accessories box.
- Expansion bolts can be hammered directly on the flat cement surface.
- THOR® SLPR is to be pre assembled before inserting the mast pipe in secured flat base plate. The pre assembly includes connection of THOR® SLPR on the top of mast via Mast coupler. This can be done by joining the provided external and internal threading. THOR® SLPR should be connected with down - conductor via copper lugs and L N Bolt provided in the accessories box. The down-conductor is to be secured at every 1 meter along the length of pipe mast via cable tie.
- If the Base plate provided is Plus Base plate I Square Base plate, then insert the mast pipe into the secured flat base plate.
- If the Base plate provided is welded Circular Base plate I Square Base plate then secure the mast on selected flat cement surface via expansion bolts provided in the accessories box.



## Mast with Side Clamping Base plate I Installation Procedure :

- Select the point of installation as per the design of lightning protection system
- Secure the Side clamping base plate of mast on the selected side surface via expansion bolts provided in the accessories box.
- THOR® SLPR is to be pre assembled before inserting the mast pipe in secured side clamping base plate. The pre assembly includes connection of THOR® SLPR on the top of mast via Mast coupler. This can be done by joining the external and internal threading provided already. THOR® SLPR should be connected with down-conductor via copper lugs and L N Bolt provided in the accessories box. The down-conductor is to be secured at every 1 meter along the length of pipe via cable tie.
- Once pre assembly is done then insert the mast pipe into the secured side clamping base plate.
- 2 nos of U clamps are also provided along with side clamping base plate. U clamps are to be installed above the side clamping base plate using Expansion bolts provided in the accessories box.





### A.L.I.C.E I Installation Procedure :

- Select the point of installation preferably 5 feet above ground level or at eye level.
- Drill the surface of selected point of installation for securing back fixing clamp with screw and wall flake provided.
- Secure A.L.I.C.E on the surface with the help of back fixing clamp.
- A.L.I.C.E having two terminals and connect the down-conductor with two terminals, via copper lug. The connection is bipolar hence any of the terminal can be chosen for input and output.
- Once the above process is completed then the connection of down-conductor is to be done with Test link and Earthing system.



### Test link I Installation Procedure :

- Select the point of installation preferably 3 feet above ground level or at accessible height.
- Drill the surface of selected point of installation for securing Test link.
- Secure the Test link with screw and wall flake provided in the accessories box.
- Secure the down-conductor from Lightning Arrester to the link port of test link via copper lug and The connections from busbar port(s) has to be connected to Earthing system.
- The procedure is applicable for all Test link models (1-3,1-1).

### Our Recommendations :

- The Down-conductor has to be minimum of 50 sq.mm in cross-section.
- The Down-conductor shall be routed from shortest possible path.
- Sharp bending and turning should be avoided while routing the Down-conductor.
- The Down-conductor shall be secured at every 1 meter.
- The THOR® SLPR needs to be connected to its own dedicated earthing system.
- It is recommended to connect all the metal bodies to Equipotential link present in the vicinity of THOR® SLPR to prevent side flashes during a lightning strike.



# LIGHTNING

## What is Lightning ?

Lightning is a naturally occurring electrostatic discharge, during which two electrically charged regions (both in the atmosphere or with one on the ground) temporarily neutralize themselves, causing the instantaneous release of an average of One Gigacycle of energy, which basically translates to a 60W bulb being used continuously for 6 Months!

In ancient times humans have revered lightning as a symbol of God and in turbulent times also as the wrath of God... although these days we have learnt to measure and in our own modern ways to protect Mankind from the destructive effects of a Lightning strike...

Lightning is one of the leading, naturally occurring weather related cause of death and injury not only in India, but also worldwide. Most people do not realize that they can be struck by lightning even when the center of a thunderstorm is 16 kms away and there are blue skies overhead



## Lightning Injury Mechanism

### Direct Strike

This is the most destructive in terms of damage / injury. The entire quantum of lightning energy is subjected to the point of strike.

### Side Flashes

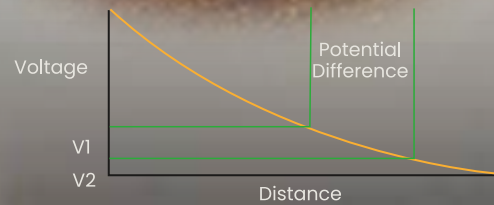
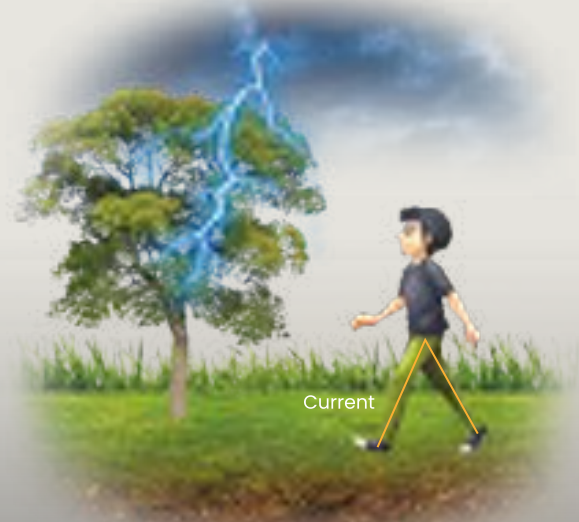
A part of the lightning energy is subjected to any near by structure.

### Step Potential

Partial current is subjected to the body, when gradient is formed by taking a step.

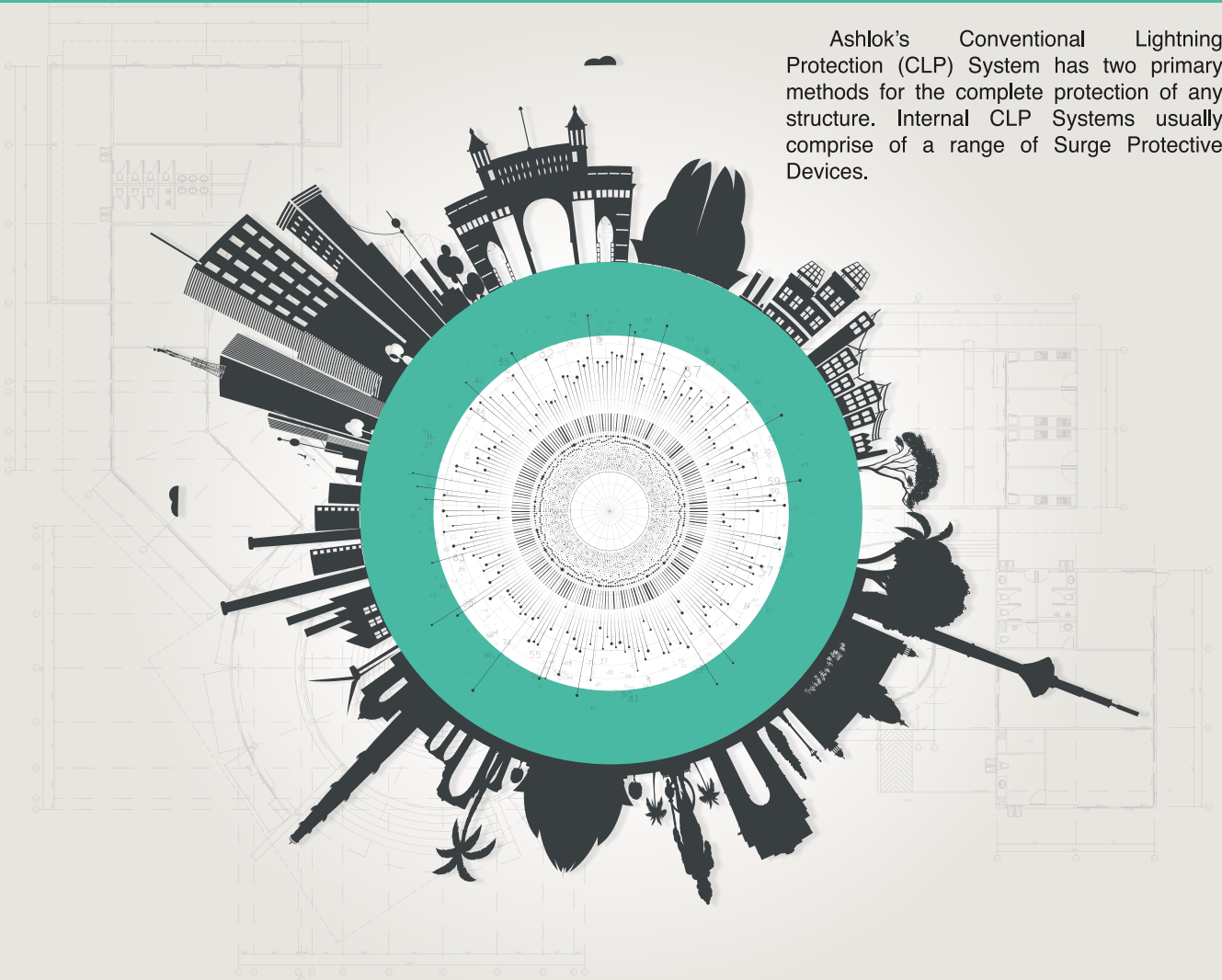
### Touch Potential

Partial current is subjected to the body, when gradient is formed by touching any object that is currently being struck by lightning



## CONVENTIONAL LIGHTNING PROTECTION

Ashlok's Conventional Lightning Protection (CLP) System has two primary methods for the complete protection of any structure. Internal CLP Systems usually comprise of a range of Surge Protective Devices.



External Conventional Lightning Protection Systems are the primary point of direct lightning strikes which are designed on a combination of Rolling Sphere | Angular Method | Faraday Cage which enables the safe interception, conduction and immediate dissipation of lightning current into the ground during any thunderstorm.

Ashlok's CLP Systems is designed in such a way that the sum of its parts comprised of a combination of Lightning Rods, Conductors, Fasteners, Earthing & BackFill Compound(s) works in tandem to ensure the safety of the structure.

### Design Prerequisite...

- Drawing of structure | area.
- Dimensions of structure | area.
- Risk analysis report for choosing level of protection.
- Type of the structure
  - Shed
  - Cemented surface
  - Open space
  - Solar Plant
- Root preference for Down-conductor
- A site survey can be done in case the above details are not available.

Apart from the mentioned design requirements, regular inputs from the CLP System designer, Architect & Builder is recommended in order to achieve the optimum result for the safety of the structure and its inhabitants.

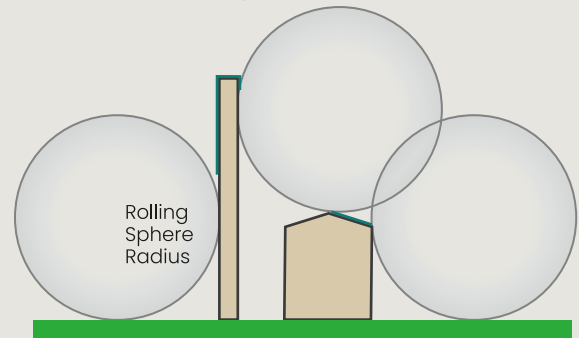


# DESIGN PHILOSOPHY

## Rolling Sphere Method

The method of the rolling sphere is a corollary of the electro-geometric method. This method consists of imagining a sphere of radius equal to the impact distance rolling on the volumes of the structures to be protected against lightning.

— Air termination required

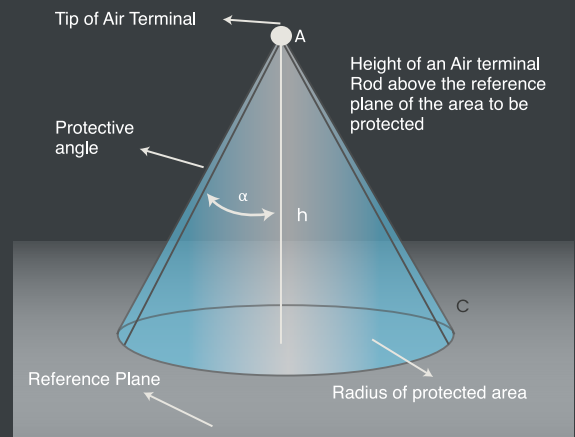


Application of the Rolling Sphere Method

## Angular Method

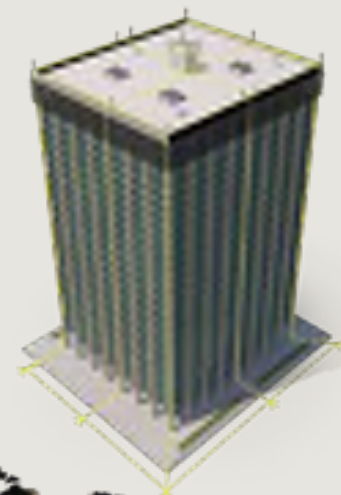
Also referred to as the Protective Angle method, it is most conventional for structures having a high height and a small length and width. The angle of coverage is determined by the height of the air termination and the level of protection.

## Protective angle method for a single air rod



## Mesh I Faraday Cage

Based on the level of protection, the mesh size is selected. The area falling under the mesh is considered to be protected. This method is widely used in lightning protection as it is very cost effective in terms of design, installation, maintenance, and commissioning.



A



LIGHTNING ROD(S)

B



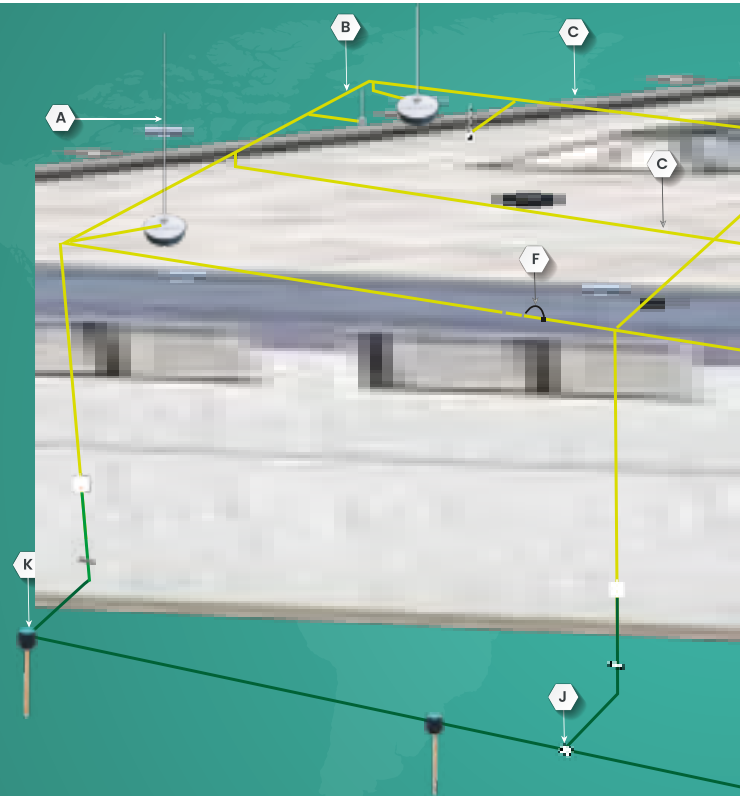
CONDUCTOR

C



CONDUCTOR HOLDER

# CONVENTIONAL LIGHTNING PROTECTION



TEST LINK



G

EARTH CONDUCTOR HOLDER



H

EARTH CONDUCTOR



I

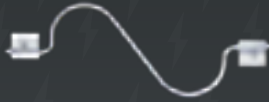


**D**



**CONDUCTOR CONNECTOR**

**E**

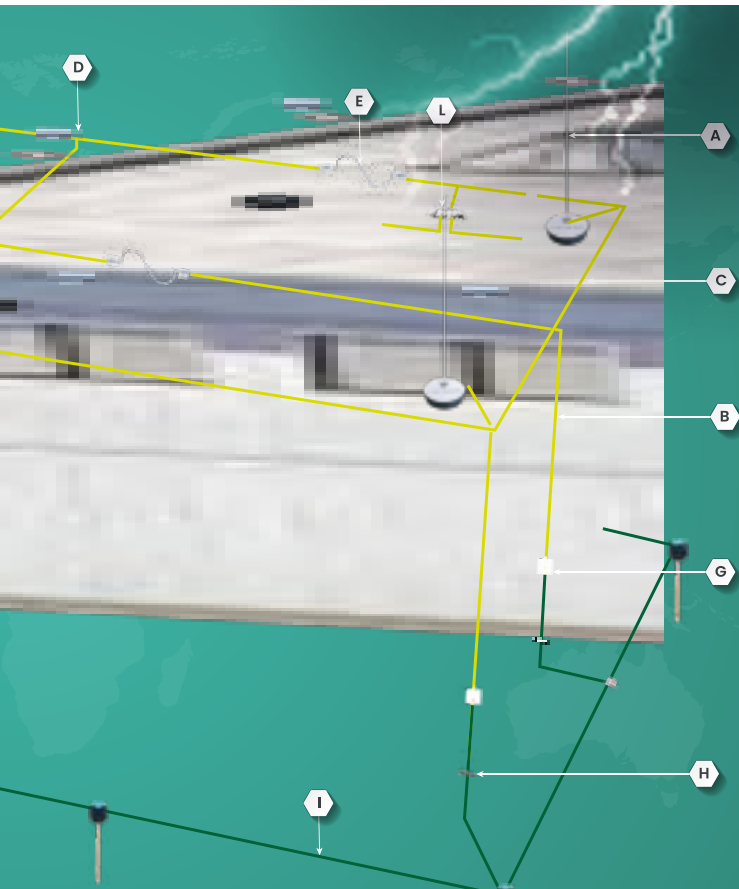


**EXPANSION PIECE WITH CONNECTOR**

**F**



**BRIDGING CABLE WITH CLAMPING SHOE**



**EARTH CONDUCTOR CONNECTOR**

**EARTHING SYSTEM**

**EQUIPOTENTIAL BONDING LINK**



**J**



**K**



**L**

## Lightning Rod | Self Standing

- Intercepting direct lightning strike.
- Highly stable & sturdy design with self standing base plate.
- The system includes vertical lightning rod, clamp, frost resistant concrete block 16 kg and bracket.
- The System is CPRI tested.

Product Code	Material	Length (mm)	Dia (mm)
ASEEL CLP LR1.0   C   CB   FB	AL	1000	10   16
ASEEL CLP LR1.5   C   CB   FB	AL	1500	10   16
ASEEL CLP LR2.0   C   CB   FB	AL	2000	10   16
ASEEL CLP LR2.5   C   CB   FB	AL	2500	10   16
ASEEL CLP LR3.0   C   CB   FB	AL	3000	10   16
ASEEL CLP LR3.5   C   CB   FB	AL	3500	10   16
ASEEL CLP LR4.0   C   CB   FB	AL	4000	10   16

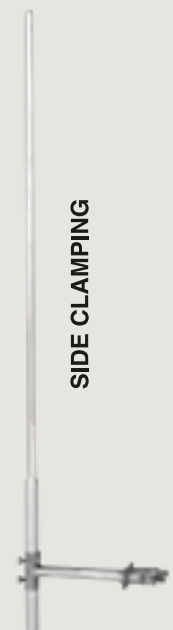
For Lightning Rod having height above 4 meters, Tripod arrangement of 16kg Block, Bracket will be used. This ensures stability during high wind speed.



## Lightning Rod | Side Clamping

- Intercepting direct lightning strike.
- Highly stable & sturdy design with side clamping base.
- The system includes vertical lightning rod with side base, clamp and fasteners.
- The system can also be installed on metal side surface using Industrial Adhesive.
- The System is CPRI tested.

Product Code	Material	Length (mm)	Dia (mm)
ASEEL CLP LR0.6 SB	AL	600	10   16
ASEEL CLP LR1.0 SB	AL	1000	10   16
ASEEL CLP LR1.5 SB	AL	1500	10   16
ASEEL CLP LR2.0 SB	AL	2000	10   16
ASEEL CLP LR2.5 SB	AL	2500	10   16
ASEEL CLP LR3.0 SB	AL	3000	10   16
ASEEL CLP LR3.5 SB	AL	3500	10   16
ASEEL CLP LR4.0 SB	AL	4000	10   16



## Concrete Base

- Stable base for lightning rod.
- Made of frost-resistant concrete.
- Overall Dia 360 mm.

Block Type	Product Code	Weight (Kg)
Frost resistant concrete	ASEEL CLP CB	16



CONCRETE BASE

## Concrete Base Bracket

- Edge protection base bracket for 16 kg concrete base.
- Made of PP material.
- UV resistant.

Bracket Type	Product Code	Material	Height (mm)
Concrete Base Spoke Bracket	ASEEL CLP CBSB	PP	25
Concrete Base Full Bracket	ASEEL CLP CFBF	PP	80



CONCRETE BASE SPOKE BRACKET



CONCRETE BASE FULL BRACKET

## Lightning Rod to Base Plate Clamp

- Connection between lightning rod to conductor & base plate.
- Connection range for conductor : 8-10 mm dia.
- Provided with 3 nos of SS bolt.

Clamp Type	Product Code	Material	Connection Range (mm)
Lightning Rod to Base Plate Clamp SS	ASEEL CLP LR2BPC SS	SS	8-10



LIGHTNING ROD TO BASE PLATE CLAMP SS



## Conductor

Conductor system play a very vital role in distributing lightning current from point of impact to grounding system.

- Distributing lightning current.
- Minimum 50 Sq. mm cross section.
- Conductor size : 8 mm and 10 mm.
- Available in coil I length form.



**CONDUCTOR AL**



**MULTI STRAND CONDUCTOR**

Conductor Type	Product Code	Material	Dia (mm)
Round Conductor	ASEEL CLP CR 8	AL	8
Round Conductor	ASEEL CLP CR 10	AL	10
Multi Strand Conductor	ASEEL CLP MSC 8 SS	SS	8
Multi Strand Conductor	ASEEL CLP MSC 8 GI	GI	8

## Roof Conductor Holder with Concrete

- Holding conductor on horizontal flat surface.
- Outer cover made of polyamide & filled with 1 kg frost resistant concrete.
- Securing range 8-10 mm conductor.
- UV resistant.



**ROOF CONDUCTOR HOLDER  
WITH CONCRETE**

Conductor Holder Type	Product Code	Weight (kg)
Roof Conductor Holder with Concrete	ASEEL CLP RCH CPA	1

## Parapet Conductor Holder

- Securing conductor on structure surface.
- M6 female thread provided at bottom for fastening.
- Made of PA.
- UV resistant.



PARAPET CONDUCTOR HOLDER

Conductor Holder Type	Product Code	Fastener Height (mm)	Material	Securing Dia (mm)
Parapet Conductor Holder	ASEEL CLP PCH	15	PA	8   10

## Roof Conductor Holder

- Securing conductor on corrugated metal roof.
- Stainless steel bottom.
- Installation via hook or Industrial glue.
- UV resistant.



ROOF CONDUCTOR HOLDER Z BASE



ROOF CONDUCTOR HOLDER FLAT BASE



METAL CONDUCTOR HOLDER SS

Conductor Holder Type	Product Code	Fastener Height (mm)	Material	Securing Dia (mm)
Roof Conductor Holder With Z Base	ASEEL CLP RCH ZB	56	PA + SS	8   10
Roof Conductor Holder With Flat Base	ASEEL CLP RCH FB	16	PA + SS	8   10
Metal Conductor Holder	ASEEL CLP MCH SS	18	SS	8   10

## Edge Conductor Holder

- Securing conductor on standing metal seam profile.
- Rust proof and sturdy contact.
- Securing upto 10 mm thickness.



EDGE CONDUCTOR HOLDER SS



EDGE CONDUCTOR HOLDER GI

Conductor Holder Type	Product Code	Material	Conductor Dia (mm)	Securing Thickness (mm)
Edge Conductor Holder	ASEEL CLP ECH SS	SS	8   10	Upto 10
Edge Conductor Holder	ASEEL CLP ECH GI	GI	8   10	Upto 10

## Rod Cross Connector

- T, cross and series connector for Rod to Rod.
- Provided with 4 nos of SS bolt.
- Available for 8-10 mm dia connection.



**ROD CROSS  
CONNECTOR SS**



**ROD CROSS  
CONNECTOR CU**



**ROD CROSS  
CONNECTOR GI**

Conductor Connector Type	Product Code	Material	Connecting Range (mm)
Rod To Rod	ASEEL CLP RTR SQ GI	GI	8-10
Rod To Rod	ASEEL CLP RTR SQ SS	SS	8-10
Rod To Rod	ASEEL CLP RTR SQ CU	CU	8-10

## Rod To Strip Connector

- T, cross and series connector for rod to strip.
- Provided with 4 nos of SS bolt.
- Available for rod 8-10 mm dia to strip upto 30x6 mm cross section connection.



**ROD TO STRIP CROSS  
CONNECTOR SS**



**ROD TO STRIP CROSS  
CONNECTOR CU**



**ROD TO STRIP CROSS  
CONNECTOR GI**

Conductor Connector Type	Product Code	Material	Connecting Range (mm)
Rod To Strip	ASEEL CLP RTS SQ GI	GI	8-10   30 x 6
Rod To Strip	ASEEL CLP RTS SQ SS	SS	8-10   30 x 6
Rod To Strip	ASEEL CLP RTS SQ CU	CU	8-10   30 x 6

## Rod Cross Connector With Plate

- T, cross and series connector for rod | strip to rod | strip.
- Provided with 4 nos of SS bolt.
- Available for rod 8-10 mm dia to strip upto 30x6 mm cross section connection.



**ROD CROSS  
CONNECTOR  
WITH PLATE SS**



**ROD CROSS  
CONNECTOR  
WITH PLATE CU**



**ROD CROSS  
CONNECTOR  
WITH PLAT GI**

Conductor Connector Type	Product Code	Material	Connecting Range (mm)
Rod To Strip	ASEEL CLP RTR SQP GI	GI	8-10   30 x 6   8-10
Rod To Strip	ASEEL CLP RTR SQP SS	SS	8-10   30 x 6   8-10
Rod To Strip	ASEEL CLP RTR SQP CU	CU	8-10   30 x 6   8-10



## Rod Parallel Connector

- T-connection, parallel connection.
- Available for 8-10 mm dia connections.
- Preferred connector for Expansion piece.



ROD PARALLEL CONNECTOR SS



ROD PARALLEL CONNECTOR GI

Conductor Connector Type	Product Code	Material	Connecting Range (mm)
Rod To Rod	ASEEL CLP RTR CT GI	GI	8-8   10-10
Rod To Rod	ASEEL CLP RTR CT SS	SS	8-8   10-10

## Linear Sleeve

- Linear rod to rod connection.
- Provided with 4 nos of SS bolt.



LINEAR SLEEVE SS



LINEAR SLEEVE AL



LINEAR SLEEVE GI



LINEAR SLEEVE CU

Conductor Connector Type	Product Code	Material	Connecting Range (mm)
Linear Connector	ASEEL CLP LS AL	AL	8-10
Linear Connector	ASEEL CLP LS GI	GI	8-10
Linear Connector	ASEEL CLP LS SS	SS	8-10
Linear Connector	ASEEL CLP LS CU	CU	8-10

## Expansion Piece

- Due to temperature change Mitigating expansion and contraction of conductor.
- Semi-hard material.
- Available in 8 mm & 10 mm dia size.
- Quick connector or linear sleeve can used for connection with conductor.



EXPANSION PIECE

Expansion Type	Product Code	Material	Dia (mm)
Expansion Piece	ASEEL CLP EP AL	AL	8

## Bridging Cable With Clamping Shoe

- Bridging connection between conductor and near by metal.
- Insulated 16 Sq. mm cable with copper lugs at both end.
- Clamping shoe is to be used for connecting rod with bridging cable.



BRIDGING CABLE



CLAMPING SHOE

Bridging Cable Type	Product Code	Material	Length (mm)
16 Sq. mm Insulated Copper	ASEEL CLP BGC 16   400	Insulated Copper Cable	400
Clamping Shoe	ASEEL CLP CS GI	GI	8-10

## Test Joint

- Test joint clamp between lightning and earthing conductor.
- Connecting rod 8-10 mm dia to strip upto 30x6 mm in cross section rod 8-10 mm dia.
- Provided with 4 nos of SS bolt.
- Quick & easy to install.



ROD TO STRIP | ROD  
CONNECTOR SS



ROD TO STRIP | ROD  
CONNECTOR GI

Clam Type	Product Code	Material	Connection Range (mm)
Rod To Strip   Rod Connector	ASEEL CLP RTSR GI	GI	8-10   30 x 6   8-10
Rod To Strip   Rod Connector	ASEEL CLP RTSR SS	SS	8-10   30 x 6   8-10
Test Joint Enclosure	ASEEL CLP TJ E101070	ABS	100 x 100 x 70

## T-Strip Holder

- Securing strip on vertical or horizontal surface.
- Provided with 2 nos of SS bolt.
- Securing upto 30x6 mm in cross section strip.
- Comes with wall flake for easy and quick installation.



T-STRIP HOLDER SS



T-STRIP HOLDER GI

Earth Conductor Holder Type	Product Code	Material	Securing Cross Sention (mm)
T-Strip Holder	ASEEL CLP TSH GI	GI	Upto 30 x 6
T-Strip Holder	ASEEL CLP TSH SS	SS	Upto 30 x 6

## T-Rod Holder

- Securing conductor rod on vertical or horizontal surface.
- Provided with 2 nos of SS bolt.
- Securing range upto 8-10 dia.
- Comes with wall flake for easy and quick installation.



T-ROD HOLDER SS



T-ROD HOLDER GI

Earth Conductor Holder Type	Product Code	Material	Securing Range (mm)
T-Rod Holder	ASEEL CLP TRH GI	GI	8 - 10
T-Rod Holder	ASEEL CLP TRH SS	SS	8 - 10

## Copper Bonded Earth Conductor

- High dissipating capacity.
- High corrosion resistant.
- Available in coil and length form.
- Customization can also be done based on project requirement.



COPPER BONDED EARTH CONDUCTOR

Earth Conductor Type	Product Code	Material	Cross Section (In Sq.mm)
Copper Bonded	ASEEL CLP CBEC 10   250	Copper Bonded Steel	78
Copper Bonded	ASEEL CLP CBEC 10   100	Copper Bonded Steel	78

## Strip Conductor

- High dissipating capacity.
- High corrosion resistant.
- Customization can also be done based on project requirement.



STRIP CONDUCTOR GI



STRIP CONDUCTOR CU

Earth Conductor Type	Product Code	Material	Cross Section (In Sq.mm)
Strip	ASEEL STP GI 203	GI	20 x 3
Strip	ASEEL STP GI 253	GI	25 x 3
Strip	ASEEL STP GI 256	GI	25 x 6
Strip	ASEEL STP GI 303	GI	30 x 3
Strip	ASEEL STP GI 306	GI	30 x 6
Strip	ASEEL STP CU 203	GI	20 x 3
Strip	ASEEL STP CU 253	GI	25 x 3
Strip	ASEEL STP CU 256	GI	25 x 6
Strip	ASEEL STP CU 303	GI	30 x 3
Strip	ASEEL STP CU 306	GI	30 x 6

## Strip Cross Connector

- T, Cross and Series connection for strip.
- Provided with 4 nos of SS bolt.



STRIP CROSS CONNECTOR SS



STRIP CROSS CONNECTOR GI

Earth Conductor Connector Type	Product Code	Material	Cross Section (mm)
Strip To Strip	ASEEL CLP STS SQ GI	GI	Upto 30 x 6
Strip To Strip	ASEEL CLP STS SQ SS	SS	Upto 30 x 6

## Protection Tape

- Providing corrosion resistant and protection against moisture.
- To be applied under buried connection.
- PVC sleeve for insulating strip above ground level.



CORROSION PROTECTION TAPE



PVC SLEEVE

Protection Tape Type	Product Code	Material	Length x Width (mm)
PVC Sleeve	ASEEL CLP PVC	PVC	50000 x 48
Corrosion Protection Tape	ASEEL CLP CPT	Petrolatum	10000 x 48

## Earth Clamp

- Terminating earth conductor connection to copper bonded rod.
- Provided with fastness for securing connection with conductor.
- High conductivity and long life.



ASEEL FLAT CLAMP SS

Clamp Type	Product Code	Material
Flat Clamp	ASEEL CLP CBR FC SS	SS
U Bolt	U BOLT CLAMP	Brass + Gun metal



U BOLT CLAMP

## Exothermic Joint

Exothermic welding uses Mould, Weld powder, Starting powder & Accessories for cleaning and safety. Different moulds are selected as per the size of conductor.

- Joining conductors in grid.
- Available for strip, cable, stranded and round conductor.
- High electrical conductivity and long life.
- No bimetallic corrosion.

Joint Category	Product Code	Type of Joint
Cable to Cable	ASEEL ECC S	Series
Cable to Cable	ASEEL ECC T	T
Cable to Cable	ASEEL ECC L	L
Cable to Cable	ASEEL ECC X	X
Cable to Cable	ASEEL ECC P	Parallel
Strip to Strip	ASEEL ESS S	Series
Strip to Strip	ASEEL ESS T	T
Strip to Strip	ASEEL ESS L	L
Strip to Strip	ASEEL ESS X	X
Strip to Strip	ASEEL ESS P	Parallel
Strip to Rod	ASEEL ESR S	Series
Strip to Rod	ASEEL ESR T	T
Strip to Rod	ASEEL ESR L	L
Strip to Rod	ASEEL ESR X	X
Strip to Rod	ASEEL ESR P	Parallel



EXOTHERMIC WELDING



## Equipotential Bonding Link

Strips are an efficient and convenient way of providing equipotential bonding for metallic components. Disconnecting link is provided for opening and closing the connection.

- Providing equipotential bonding.
- Easy and quick to install.
- Wide range of selection.
- Enclosure available as per project requirement.

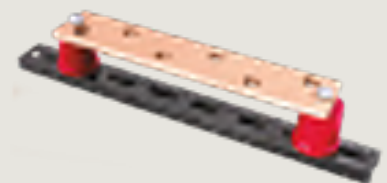
Type	Product Code	Material	No of Ports
Strip	ASEEL EB 2 SS	SS	2
Strip	ASEEL EB 4 SS	SS	4
Strip	ASEEL EB 6 SS	SS	6
Strip	ASEEL EB 8 SS	SS	8
Strip	ASEEL EB 10 SS	SS	10
Strip	ASEEL EB 12 SS	SS	12
Strip	ASEEL EB 14 SS	SS	14
Strip	ASEEL EB 16 SS	SS	16
Strip	ASEEL EB 2 GI	GI	2
Strip	ASEEL EB 4 GI	GI	4
Strip	ASEEL EB 6 GI	GI	6
Strip	ASEEL EB 8 GI	GI	8
Strip	ASEEL EB 10 GI	GI	10
Strip	ASEEL EB 12 GI	GI	12
Strip	ASEEL EB 14 GI	GI	14
Strip	ASEEL EB 16 GI	GI	16
Strip	ASEEL EB 2 CU	CU	2
Strip	ASEEL EB 4 CU	CU	4
Strip	ASEEL EB 6 CU	CU	6
Strip	ASEEL EB 8 CU	CU	8
Strip	ASEEL EB 10 CU	CU	10
Strip	ASEEL EB 12 CU	CU	12
Strip	ASEEL EB 14 CU	CU	14
Strip	ASEEL EB 16 CU	CU	16



**EQUIPOTENTIAL  
BONDING LINK-SS**



**EQUIPOTENTIAL  
BONDING LINK-GI**



**EQUIPOTENTIAL  
BONDING LINK-CU**

## Test Link

- Used for opening and closing connection between conductors and metal body.
- Easy and quick to install.
- Wide range of selection.

Type	Product Code	Material	No of Ports
Strip	ASEEL TL 1+1 SS	SS	1
Strip	ASEEL TL 1+2 SS	SS	2
Strip	ASEEL TL 1+3 SS	SS	3
Strip	ASEEL TL 1+4 SS	SS	4
Strip	ASEEL TL 1+5 SS	SS	5
Strip	ASEEL TL 1+6 SS	SS	6
Strip	ASEEL TL 1+7 SS	SS	7
Strip	ASEEL TL 1+8 SS	SS	8
Strip	ASEEL TL 1+1 GI	GI	1
Strip	ASEEL TL 1+2 GI	GI	2
Strip	ASEEL TL 1+3 GI	GI	3
Strip	ASEEL TL 1+4 GI	GI	4
Strip	ASEEL TL 1+5 GI	GI	5
Strip	ASEEL TL 1+6 GI	GI	6
Strip	ASEEL TL 1+7 GI	GI	7
Strip	ASEEL TL 1+8 GI	GI	8
Strip	ASEEL TL 1+1 CU	CU	1
Strip	ASEEL TL 1+2 CU	CU	2
Strip	ASEEL TL 1+3 CU	CU	3
Strip	ASEEL TL 1+4 CU	CU	4
Strip	ASEEL TL 1+5 CU	CU	5
Strip	ASEEL TL 1+6 CU	CU	6
Strip	ASEEL TL 1+7 CU	CU	7
Strip	ASEEL TL 1+8 CU	CU	8



TEST LINK SS



TEST LINK GI



TEST LINK CU

Why ?



**ASHLOK**

India's first professional earthing & lightning protection company founded in 1999

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

Widest and most acclaimed product range in India

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

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

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



**ASHLOK SAFE EARTHING ELECTRODE LIMITED**

+91 94440 87356 | EARTHING@ASHLOK.COM | WWW.ASHLOK.COM  
58 | SIDCO Industrial Estate | Sector -1 | 3rd Street | North Phase | Ambattur | Chennai - 600 098 | India.