

## EARTHING, THERMO WELDING & LIGHTNING SYSTEMS & EQUIPMENT



### - EARTHING SYSTEMS

- Earthing Conductors
- Equipotential Earth Bars
- Earthing Electrodes
- Earthing Rod Elements
- Inspection Pits
- Earthing Rod Clamps
- Earth Points
- Electrical Safety Equipments
- Electrical Insulation Material
- Conductor Connection Elements
- Ground Enhancement Material
- Earthing Resistance Test Devices
- Conductor Connection Elements

### - THERMO WELDING SYSTEMS

- Welding Powder
- Welding Mould
- Flint Gun
- Mould Sealer
- Corrosion Tape Strip
- Handle Clamp
- Igniter (Lighter)
- Mould Cleaning Brush
- Mould Cleaning Scraper

### - EXTERNAL LIGHTNING SYSTEMS

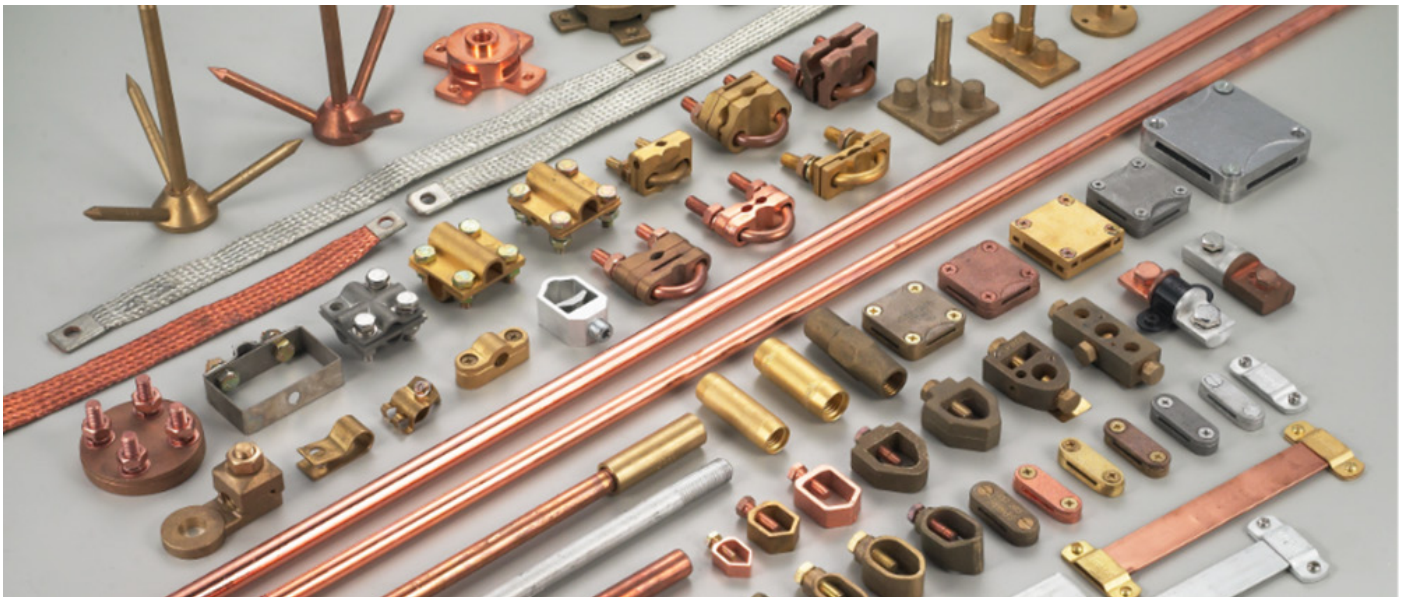
- E.S.E Active Lightning Rods
- Lightning Strike Counters
- Galvanized Steel Poles
- Pole Adapters
- Pole Clamps
- Pole Bases
- Test Clamps
- Pole Stretch Components
- Fixing Clamps
- Air Terminals
- Fixing Bases

### - INTERNAL LIGHTNING SYSTEMS

- Surge Protection Device
- Spark gap Protection
- Surge Protection Device
- Energy Line Protection Device
- Data Line Protection Device
- Telecom Line Protection Device
- Ethernet Line Protection Device
- Satellite Line Protection Device



## EARTHING SYSTEMS



### INTRODUCTION

Grounding(Earthing) systems connect particular portions of an electric power system to the ground often the Earth's conductive surface for safety and functionality. The selection of an earthing system might have an impact on the installation's safety and electromagnetic compatibility. Regulations for earthing systems vary greatly between nations, however most adhere to the International Electro technical Commission's guidelines. Special circumstances for earthing in mines, patient care facilities, or dangerous regions of industrial operations may be identified by regulations. Other systems, in addition to electric power systems, may require grounding for safety or function. Lightning rods may be used as part of a system to protect tall structures against lightning strikes. Telegraph lines can use the Earth as one of the circuit's conductors, reducing the cost of installing a return wire across a lengthy route. Radio antennas may require special grounding to function properly, as well as to reduce static electricity and offer lightning protection.

### ADVANTAGES

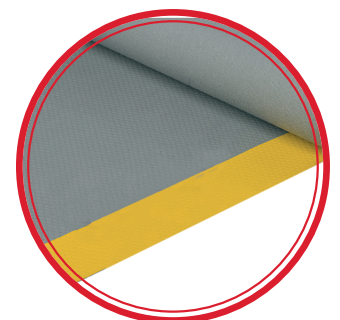
- Ensures the safety of electrical appliances and devices from the excessive amount of electric current.
- Helps in the flow of electric current directly inside the ground.
- Keeps the electric appliance safe from damage.
- It protects building breakdown from lightning.

### APPLICATION

- Residential Areas
- Construction Sites
- Plants and Factories
- Underground (Where the cabling is prevalent)
- Hospitals and Laboratory Rooms
- Medical Facilities
- Schools

### EQUIPMENT

- Earthing Conductors
- Equipotential Earth Bars
- Earthing Electrodes
- Earthing Rod Elements
- Inspection Pits
- Earthing Rod Clamps
- Earth Points
- Electrical Safety Equipments
- Electrical Insulation Material
- Conductor Connection Elements
- Ground Enhancement Material
- Earthing Resistance Test Devices
- Conductor Connection Elements

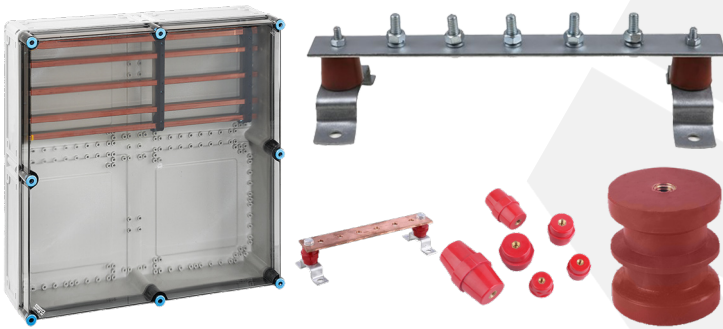


## Earthing Conductors



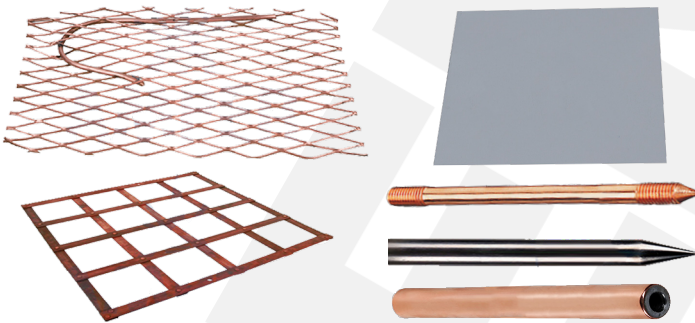
- Mono Copper Conductor
- Stranded Copper Conductor
- CCA Conductor
- Copper Tape Conductor
- Galvanized Tape Conductor(Hot Dipped)
- PVC Covered Copper Tape
- Mono Aluminium Conductor
- Mono Galvanized Conductor
- Stranded Galvanized Conductor
- Flexible Stranded Copper Conductor
- Flexible Tape Copper Conductor

## Equipotential Earth Bars



- Equipotential Bar Flat Type
- Equipotential Bar
- Equipotential Bar With One Separator
- Equipotential Bar With Two Separator
- M6 Insulator
- Special Insulator
- Bar Box
- Panel Earthing Clamp
- Bar For Inspection Pit

## Earthing Electrodes



- Solid Copper Earthing Rode
- Copper Plated Steel Earthing Rod
- Copper Plated Steel Earthing Rod (250 Microns)
- Earthing Plate
- Earthing Mat
- Earthing Grid
- Angle Type Earthing Rode
- Galvanized Steel Earthing Rode

## Earthing Rod Elements

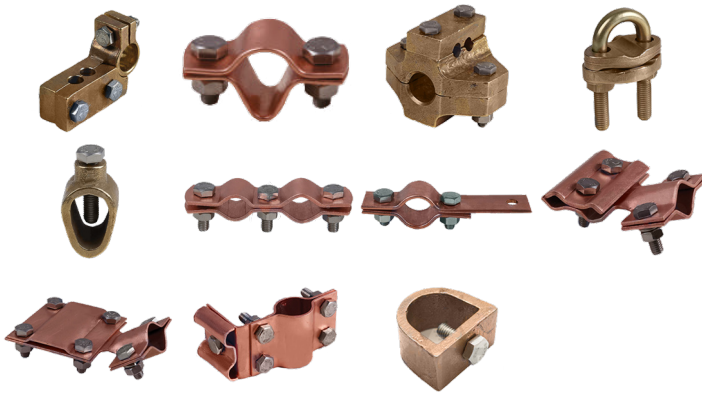


- Rod Driving Stud
- Rod Coupling Dowell
- Rod Spike

## Inspection Pits



- Plastic Inspection Pit
- Galvanized Inspection Pit
- Concrete Inspection Pit



## Earthing Rod Clamps

- D Type
- C Type
- F Type
- U Type
- G Type
- H Type
- K Type
- J Type (Tape Conductor)
- J Type (Round Conductor)
- M Type
- T Type



## Earth Points

- Earthing Terminal
- Concrete Wall Flanges
- Earth Boss
- Earthing Point
- Four Holes Earthing Point (Cable Welded)
- Earthing Point Box



## Electrical Safety Equipments

- Danger Warning Plate
- Active Lightning Conductor Warning Plate
- Static Electric Plate
- Static Electric Reel
- Electronic Controlled Static Electric Reel



## Electrical Insulation Material

- Insulating Mat
- Insulating Glove
- Insulating Stool



## Ground Enchantment Material

- GEM Ground Enchantment Material
- TDM Ground Enchantment Material
- TDM Plus Ground Enchantment Material



## Earthing Resistance Test Devices

- 4105A – Earthing Resistance Test Device
- ERT-S Earthing Resistance Test Device
- ST2000 – Earthing Resistance Test Device





## Conductor Connection Elements

- Cable Clips
- Flat Type Cable Connection Tube
- Cable Lug
- Bimetallic Cable Lug
- Dilatation Clamp
- Reinforcement Clamp (Type 2)
- Reinforcement Clamp (Type 4)
- Reinforcement Clamp (Type 5)
- Parallel Joining Clamp
- Split Bolt Clamp
- Bimetallic Washer
- Claw Type Clamp
- C Clamp
- Hydraulic Crimping Tool
- Dies Set
- H Clamp
- U Clamp
- Practical Connection Clamp
- Triangle T Clamp
- Red Clamp
- T Type Cable Connection Tube
- Quad Type Cable Connection Tube
- Square Clamp (Round Type)
- Square Clamp (T Type)
- Square Clamp (Quad Type)
- Square Clamp (Tape-Tape Conductor)
- Square Clamp (Tape-Round Conductor)
- Square Clamp (Tape Conductor-Reinforcement)
- Square Clamp (Round Conductor-Reinforcement)
- Square Clamp (Tape-Round Conductor)

## THERMO WELDING SYSTEMS



### INTRODUCTION

Thermo welding, also known as exothermic bonding, thermite welding, and thermit welding, is a type of welding that uses molten metal to permanently unite conductors. To heat the metal, an exothermic reaction of a thermite composition is used, and no external source of heat or current is required. The heat is generated by an aluminothermic reaction between aluminium powder and a metal oxide.

Exothermic welds are particularly helpful for connecting incompatible metals. The procedure has the benefit of requiring no external heat source and operates by using a chemical exothermic reaction of a thermite composition (weld powder) to heat the conductors to the point where a low resistance, mechanically sound molecular bond is created once cooled.

### ADVANTAGES

- Thermo welding is a simple and fast process of joining similar or dissimilar metals.
- This process is cheap, as no costly power supply is required.
- This process can be used at the places where power supply is not available.

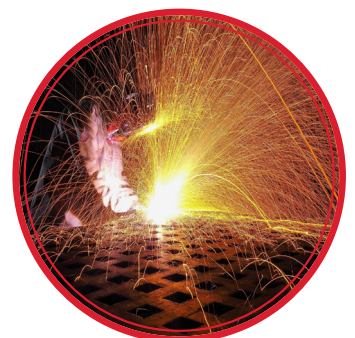
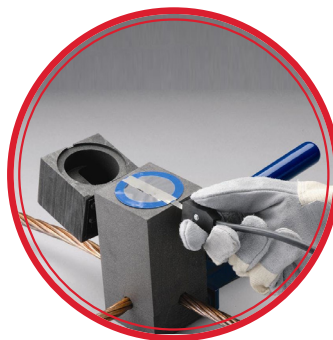


### APPLICATION

- Very thick and heavy plates welding
- Joining rail roads, Pipes and Thick steel sections.
- Heavy castings and Gears repairing.
- Locomotive rails, Ship hulls etc.
- Welding cables made of copper.

### EQUIPMENT

- Welding Powder
- Welding Mould
- Flint Gun
- Mould Sealer
- Corrosion Tape Strip
- Handle Clamp
- Igniter (Lighter)
- Mould Cleaning Scraper
- Mould Cleaning Brush

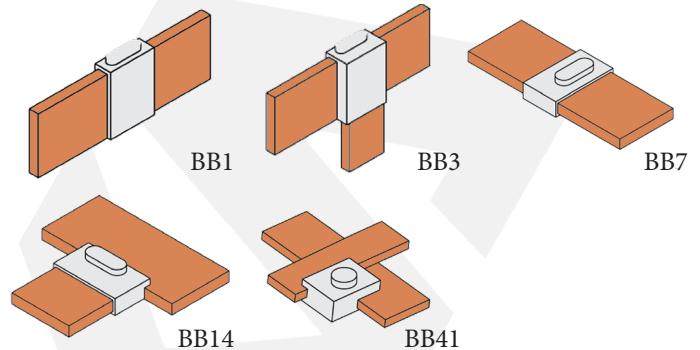




## PRODUCT MOUNTING OPTIONS

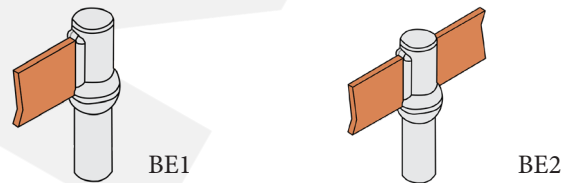
### Bar to Bar

- **BB1:** Conductor size from 25x3 to 50x6mm
- **BB3:** Conductor size from 25x3 to 50x6mm
- **BB7:** Conductor size from 25x3 to 50x6mm
- **BB14:** Conductor size from 25x3 to 50x6mm
- **BB41:** Conductor size from 25x3 to 50x6mm (For both side)



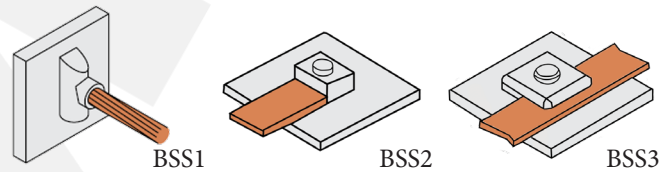
### Bar to Earthing Rod

- **BE1:** Conductor size from 16 to 20mm and 25x3 to 50x5mm
- **BE2:** Conductor size from 16 to 20mm<sup>2</sup> and 25x3 to 50x5mm



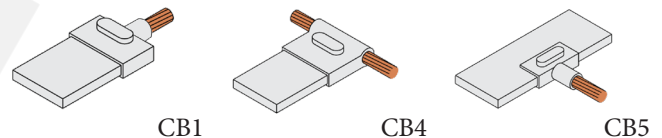
### Bar to Steel Surface

- **BSS1:** Conductor size from 25x3 to 50x6mm
- **BSS2:** Conductor size from 25x3 to 50x5mm
- **BSS3:** Conductor size from 25x3 to 50x6mm



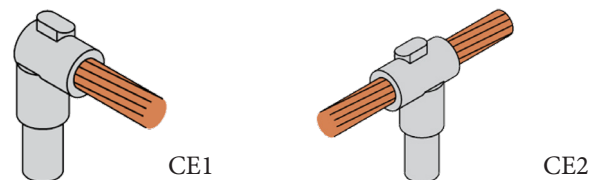
### Cable to Bar

- **CB1:** Conductor size from 10 to 300mm<sup>2</sup> and 25x3 to 50x6mm
- **CB4:** Conductor size from 10 to 300mm<sup>2</sup> and 25x3 to 50x5mm
- **CB5:** Conductor size from 10 to 300mm<sup>2</sup> and 25x3 to 50x6mm



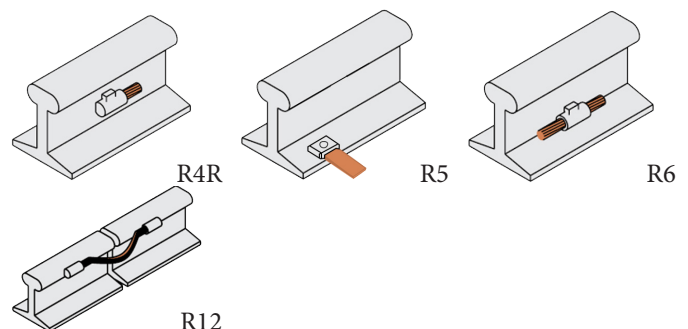
### Cable to Earthing Rod

- **CE1:** Conductor size from 16 to 20mm and 16 to 300mm<sup>2</sup>
- **CE2:** Conductor size from 16 to 20mm and 8 to 300mm<sup>2</sup>



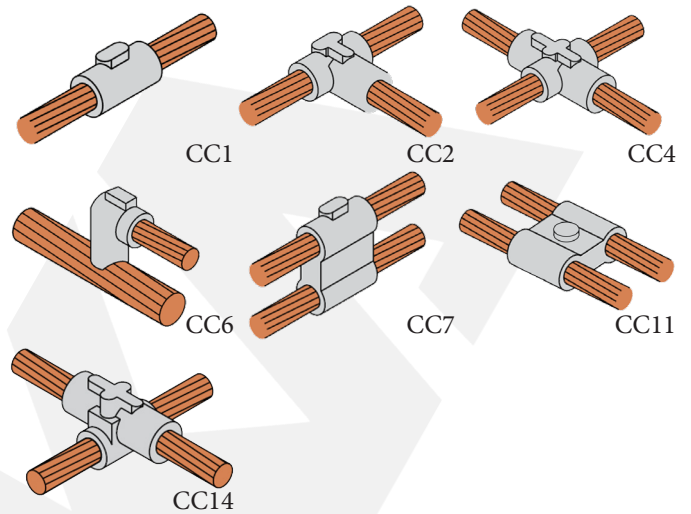
### Cable To Rail

- **R4R:** Conductor size from 16 to 150
- **R5:** Conductor size from 16 to 150
- **R6:** Conductor size 25x3
- **R12:** Conductor size from 25 to 120



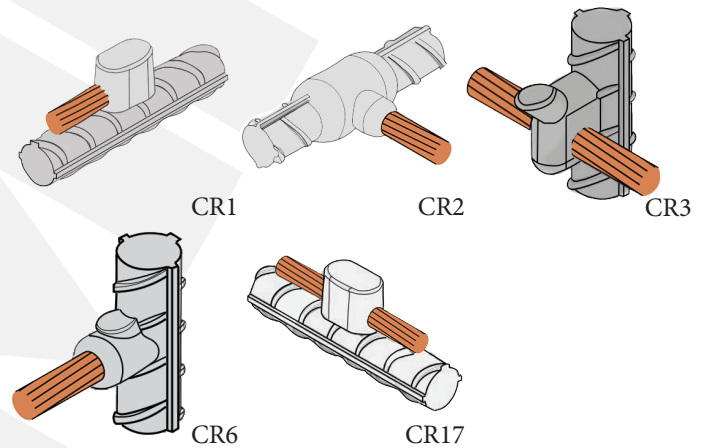
## Cable to Cable

- **CC1:** Conductor size from 10 to 630 mm<sup>2</sup>
- **CC2:** Conductor size from 10 to 630 mm<sup>2</sup> and 10 to 630mm<sup>2</sup>
- **CC4:** Conductor size from 10 to 240 mm<sup>2</sup> and 10 to 240mm<sup>2</sup>
- **CC6:** Conductor size from 16 to 120 mm<sup>2</sup> and 16 to 120mm<sup>2</sup>
- **CC7:** Conductor size from 10 to 300 mm<sup>2</sup> and 10 to 300mm<sup>2</sup>
- **CC11:** Conductor size from 10 to 240 mm<sup>2</sup> and 10 to 240mm<sup>2</sup>
- **CC14:** Conductor size from 10 to 120 mm<sup>2</sup> and 10 to 120mm<sup>2</sup>



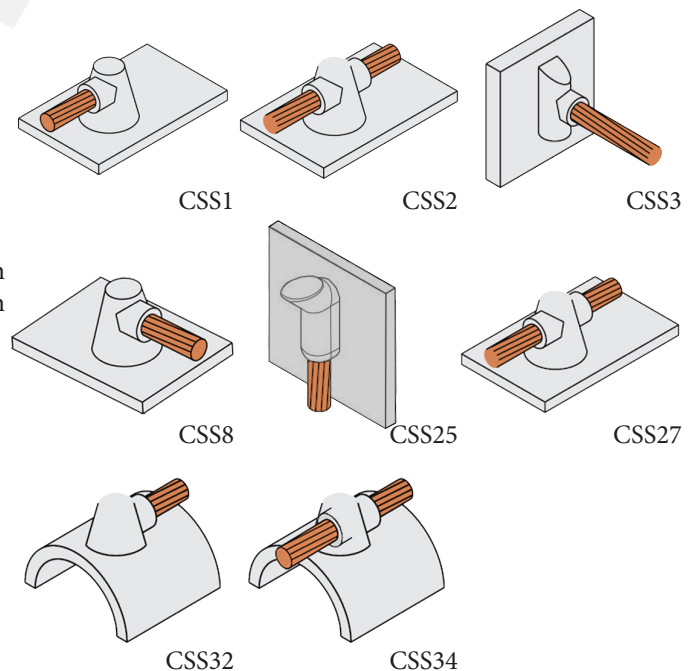
## Cable to Reinforcement

- **CR1:** Conductor size from 20mm and 10 to 120mm<sup>2</sup>
- **CR2:** Conductor size from 16 to 30mm and 10 to 120mm<sup>2</sup>
- **CR3:** Conductor size from 10-40mm<sup>2</sup> and 10 to 120mm<sup>2</sup>
- **CR6:** Conductor size from 10-40mm<sup>2</sup> and 10 to 120mm<sup>2</sup>
- **CR17:** Conductor size from 20mm<sup>2</sup> and 10 to 120mm<sup>2</sup>



## Cable To Steel Surface Or Pipe

- **CSS1:** Conductor size from 10 to 300mm<sup>2</sup>
- **CSS2:** Conductor size from 10 to 300mm<sup>2</sup>
- **CSS3:** Conductor size from 10 to 300mm<sup>2</sup>
- **CSS8:** Conductor size from 10 to 300mm<sup>2</sup>
- **CSS25:** Conductor size from 10 to 300mm<sup>2</sup>
- **CSS27:** Conductor size from 10 to 300mm<sup>2</sup>
- **CSS32:** Conductor size from 4 to 70mm<sup>2</sup> and <70 to >250mm
- **CSS34:** Conductor size from 4 to 50mm<sup>2</sup> and <70 to >250mm





**Igniter (Lighter)**



**Mould Cleaning Brush**



**Mould Cleaning Scraper**



**Welding Powder**



**Welding Mould**



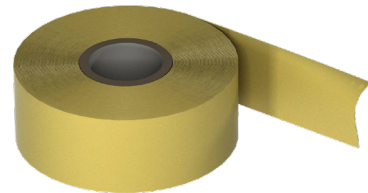
**Flint Gun**



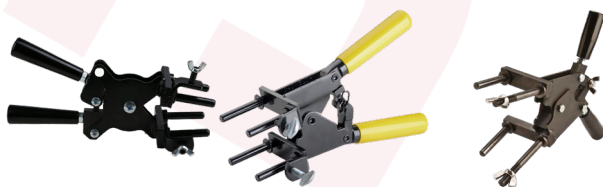
**Mould Sealer**



**Corrosion Tape Strip**



**Handle Clamp**



## EXTERNAL LIGHTNING SYSTEMS



### INTRODUCTION

External Lightning Systems are safe guarders against the loss of life and property caused by the burning-destructive effect of a lightning strike on a structure. These solutions cannot safeguard the electrical-electronic systems and equipment in the building. As a result, in addition to an External Lightning System, an Internal Lightning System must be utilized in a building with an External Lightning System.

### ADVANTAGES

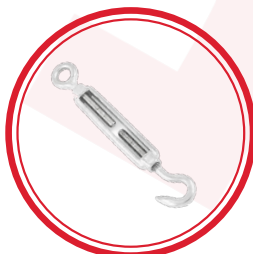
- Provides high safety in harsh weather conditions
- Long-lasting machine safety
- Prevents loss of life and property

### APPLICATION

- Residential Areas
- Hospitals
- Schools
- Public Buildings

### EQUIPMENT

- E.S.E Active Lightning Rods
- Lightning Strike Counters
- Galvanized Steel Poles
- Pole Adapters
- Pole Clamps
- Pole Bases
- Test Clamps
- Pole Stretch Components
- Fixing Clamps
- Air Terminals
- Fixing Bases







## E.S.E Active Lightning Rods

- FRANKLIN FRANCE SE 15 - Piezoelectric Crystal E.S.E Active Lightning Rode
- FRANKLIN FRANCE 2D - Remote Controlled E.S.E Active Lightning Rode
- FRANKLIN FRANCE 4D - Remote Controlled E.S.E Active Lightning Rode
- TESLA ST - E.S.E Active Lightning Rode
- TESLA Tester
- PETEX - E.S.E Active Lightning Rode
- FOREND PETEX - E.S.E Active Lightning Rode
- FOREND EU - E.S.E Active Lightning Rod
- SCHIRTEC S-DA - E.S.E Active Lightning Rod
- FOREND Tester
- 2D Tester
- SCHIRTEC Test SA - 1T



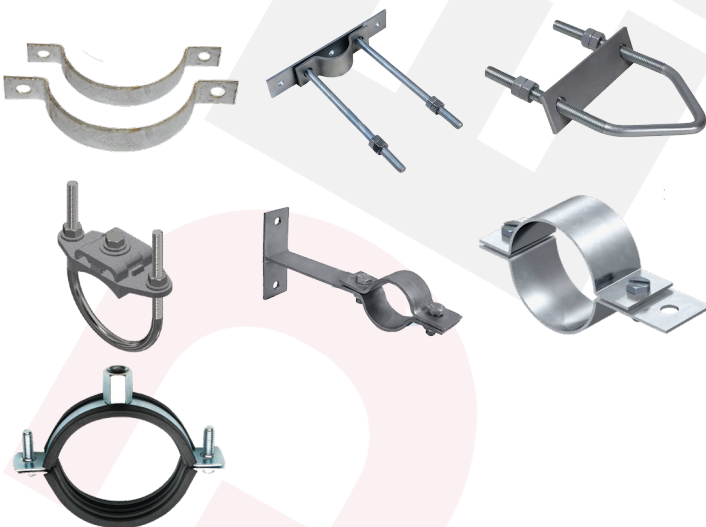
## Lightning Strike Counters

- Analogue Lightning Strike Counter
- Digital Lightning Strike Counter



## Pole Adapters

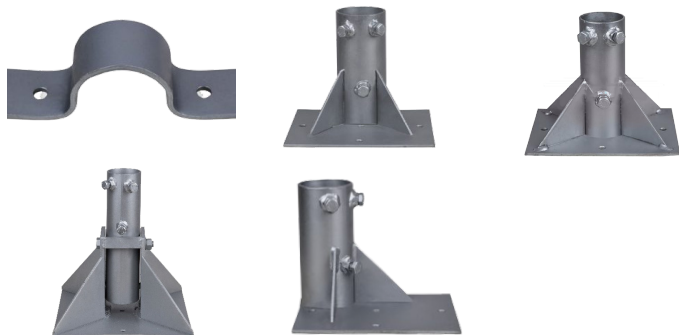
- Unit Adapter
- Pole Adapter
- Insulating Type Pole Adapter



## Pole Clamps

- Flat Type Pole Clamp
- Wall Type Pole Clamp
- Pylon Type Pole Clamp
- U Type Pole Clamp
- Foot Type Pole Clamp
- Protection Pipe Clamp
- Insulating Type Pipe Clamp

## Pole Bases



- Flat Type Wall Base
- Border Type Base
- Middle Type Base
- Pivoting Type Base
- Corner Type Base

## Test Clamps



- Test Clamp
- Earthing System Separator
- Equipotential Bonding Clamp

## Pole Stretch Components



- PVC Insulated Stretch Wire
- Stretch Wire Vice
- Stretch Wire Clamp
- Stretch Wire Clip
- Stretch Wire Fixing Base
- Stretch Wire Pile

## Fixing Clamps



- Flat Conductor Clamp
- U Clamp
- L Clamp
- One Hole Clamp
- Snail Clamp
- DC Clamp
- Sticky Pad
- Steel Screwed Clamp
- Brass Screwed Clamp



## Fixing Clamps



- Z Clamp
- Pylon Clamp
- Ridge Clamp
- Pole Clamp
- Isolated Clamp
- Isolated Ground Clamp Component
- Adhesive

## Air Terminals



- Li-Term Air Terminal Systems
- Brass Air Terminal
- Steel Air Terminal
- Copper Air Terminal
- Aluminium Air Terminal
- Stainless Steel Air Terminal
- Multi Point Air Terminal

## Fixing Bases



- Flat Type Air Terminal Fixing Base
- Isolated Type Air Terminal Fixing Base
- Cross Type Air Terminal Fixing Base
- A Type Air Terminal Fixing Bases
- Curved Type Air Terminal Fixing Base
- Concrete Type Air Terminal Fixing Base
- Bronze Type Air Terminal Fixing Base
- Tape Type Air Terminal Fixing Base
- Omega Type Air Terminal Fixing Base
- Pipe Type Air Terminal Fixing Base
- Ridge Type Air Terminal Fixing Base
- Wall Type Air Terminal Fixing Base

## INTERNAL LIGHTNING SYSTEMS



### INTRODUCTION

Internal Lightning Systems are safe guarders to reduce the risk of electrical equipment corruption by the burning-destructive effect of a lightning strike on a structure. Internal Lightning System must be utilized in a building for safety.

Thanks to the internal lightning system, the electrical current that may occur in the sockets are prevented from damaging the computers. In this and similar cases, the necessary protection system is provided by preventing both valuable information and electronic equipment from being damaged.

### ADVANTAGES

- Long-lasting machine safety
- Data safety for computers etc.
- Prevents loss of life and property

### APPLICATION

- Hospitals
- Schools
- Residential Areas
- Public Buildings

### EQUIPMENT

- Surge Protection Device
- Spark gap Protection
- Surge Protection
- Energy Line Protection Device
- Data Line Protection Device
- Telecom Line Protection Device
- Ethernet Line Protection Device
- Satellite Line Protection Device





**Surge Protection Device**



**Spark Gap Protection**



**Energy Line Protection Device**



**Data Line Protection Device**



**Telecom Line Protection Device**



**Ethernet Line Protection Device**



**Satellite Line Protection Device**