



Lightning Protection

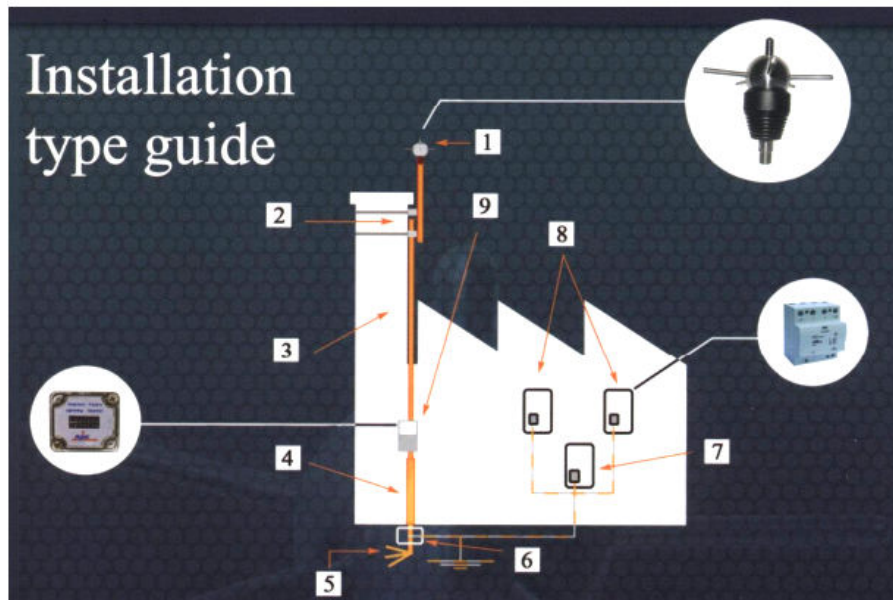
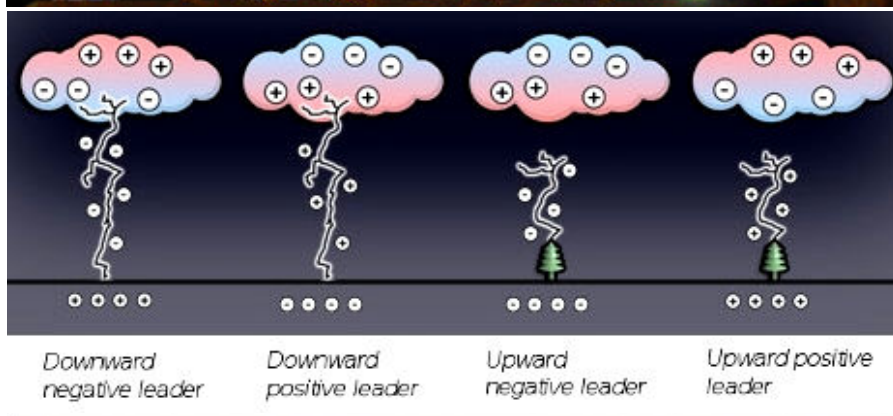


Lightning Protection Catalog 01/2012



TIEC Group

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1. Air terminal
2. Fastening of Air Terminal
3. Down conductor and fasteners
4. Inspection joint and protection sheath
5. Earth rods system
6. Disconnecting connection between earths (Electric earth and Air Terminal earth) in inspection pit.
7. Surge arrester Type 1 to Main Power supply network (associated to Air Terminal)
8. Surge arrester Type 2 to Secondary Power supply network
9. Impulse lightning counter

Lightning

Lightning is a natural phenomenon of disruptive electrostatic discharge which is produced when static electricity accumulates between a cloud and the earth. The different electric potential between the two points can be up to 100 million volts and produces plasma on discharge, causing an explosive expansion in the air through release of heat.

Dissipation

When it disperses, this plasma creates both a flash of light (lightning) and a sound (thunder). Formation of or the arrival of a storm cloud creates an electric field between the cloud and the ground.

This electric field increases up to values of 10 kV/m, thus initiating creation of corona discharges from irregularities on the ground or from metal structures (projections). Lightning between the cloud and the ground is composed of both downward leaders and upward leaders. (fig.1).

The negative downward leader (most frequent case), starts within the negative masses of the cloud.

France Paratonnerres IONIFLASH MACH 30



- > A high level of early streamer emission Δt :
- > Security coefficient more important:
- > Very low dispersion of its performances, with respectively for each standard deviation:
- > Working well adapted to the lightning frequency range (0 to 10 MHz)
- > No electronic device, No energy consumption
- > Metallic parts in Stainless Steel
- > The eco-conception of the IONIFLASH MACH is implemented being concerned by the environment. Its Carbon Assessment is excellent.

Model : KLP Mach-1800/00

Specification :

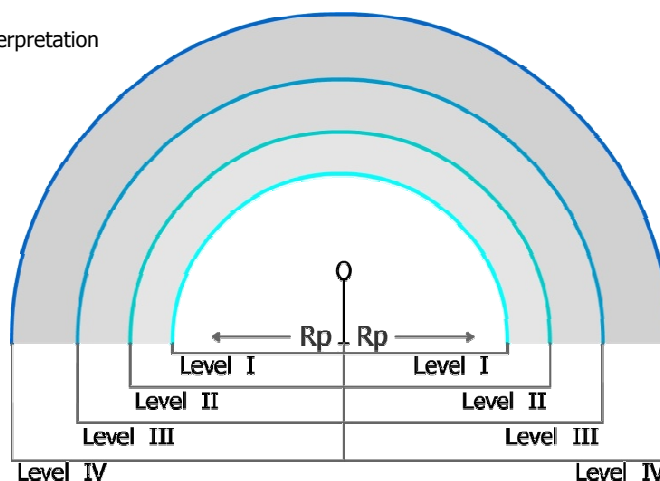
Stainless Steel	Material
>50 years	Life Duration
Outdoors	Installation
France	Origin of Goods
\$ 2,250.00 USD	Price / Each

Radius of protection (R_p) : depends on its height (h) in relation to the surface to be protected, its early streamer emission time (Δt) and the level of protection (L_p) chosen.

Pole High H (m)	Radius of protection (m) of the Air Terminals Model: KLP MACH-30			
	Level I	Level II	Level III	Level IV
2	32	34	40	44
3	48	52	59	65
4	79	68	97	107
5*	79	86	97	107
6	79	87	97	107
8	79	87	98	108
10	79	88	99	109

*Standard Pole Height

The protection level is determined up to UTE C 17-108 guide according to interpretation sheet F4 of the NF C 17-107 standard, or up to NF EN 62305-2 standard





Smart Leader - Smart ESE18

- > The upper electrodes sparks emission
- > A waterproof stainless box connected to earth
- > The lower electrodes energy collection
- > Discharged by sparking around the point this specific artificial ionization, associated to the point effect phenomenon, improves the attraction power of the lightning rod, and significantly increases the radius of protection. Advantage self-contained working, guaranteed wider range of protection, simple system, with less expensive installation costs, electronic charge control and distribution in storm conditions, high reliability, maintenance free.

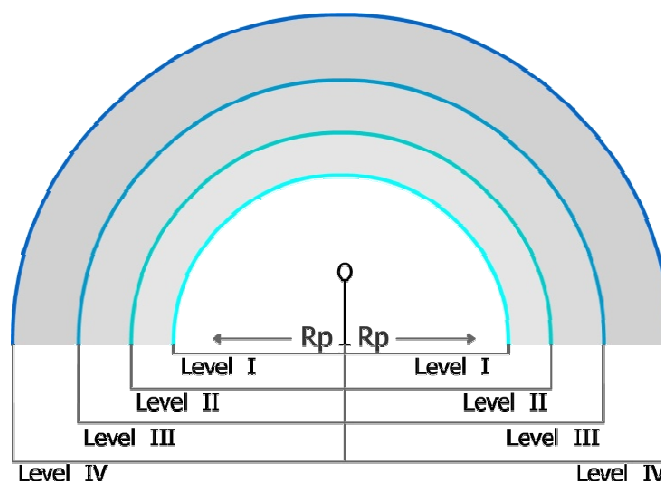
Specification :	Stainless Steel	Material
	>50 years	Life Duration
	Outdoors	Installation
	China	Origin of Goods
	\$ 1,850.00 USD	Price / Each

Radius of protection (R_p) : depends on its height (h) in relation to the surface to be protected, its early streamer emission time (Δt) and the level of protection (L_p) chosen.

Pole High	Radius of protection (m) of the Air Terminals Model: KLP ESE-18			
H (m)	Level I	Level II	Level III	Level IV
2	15	20	22	-
3	22	31	35	-
4	30	41	46	-
5*	37	51	58	-
6	37	52	59	-
8	38	53	60	-
10	38	54	62	-

*Standard Pole Height

The protection level is determined the NF C 17-102 standard



Standard Air-Terminal Lightning Protection

- > Lightning protection that simply installation.
- > No electronic device, No energy consumption



Model : **KLP AT-30/00**

Specification :

Copper	Material
>15 years	Life Duration
Outdoors	Installation
Thailand	Origin of Goods
5 m	Rp (m) Level IV
5/8" x 60 cm. (h)	Pole Size
\$ 50.00 USD	Price / Set

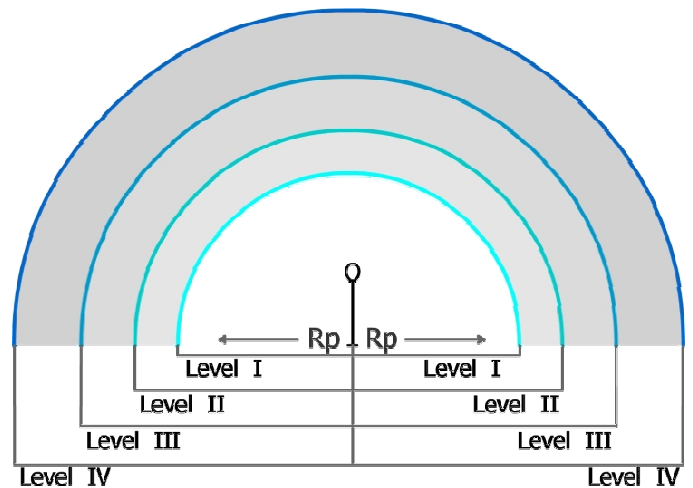
Model : **KLP AA-25/00**



Specification :

Copper	Material
>15 years	Life Duration
Outdoors	Installation
Thailand	Origin of Goods
3 m	Rp (m) Level IV
5/8" x 60 cm. (h)	Pole Size
\$ 40.00 USD	Price / Set

Pole High = 60 cm. Radius of protection (m)	
Model	Level IV
KLP AT-32	5
KLP AA-5060	3

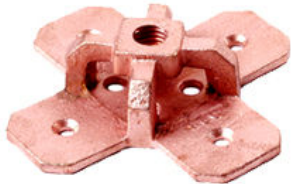


Standard Air-Terminal Base

- > Lightning protection that simply installation.
- > No electronic device, No energy consumption

Model : **KLP FB-12/00**

Specification :



Copper	Material
>15 years	Life Duration
Thailand	Origin of Goods
Flat Base	Rod Install
\$ 22.00 USD	Price / Set

Model : **KLP SB-15/00**

Specification :



Copper	Material
>15 years	Life Duration
Thailand	Origin of Goods
Swell Base (for roof top curve)	Rod Install
\$ 25.00 USD	Price / Set

Model : **KLP PF-14/00**

Specification :



Copper	Material
>15 years	Life Duration
Thailand	Origin of Goods
Panta Flat Base	Rod Install
\$ 24.00 USD	Price / Set

Model : **KLP PW-14/00**

Specification :



Copper	Material
>15 years	Life Duration
Thailand	Origin of Goods
Panta Side Wall Base	Rod Install
\$ 24.00 USD	Price / Set

Standard Ground Rods

- > Ground rod that simply installation.
- > The depth of ground rod hole should prefer with equal or below with 5Ω



Model : **KLP GR-22/00**

Specification :

Copper Clad	Material
>25 years	Life Duration
Underground	Installation
Thailand	Origin of Goods
Ø 5/8" x 300 cm (long)	Size
\$ 48.00 USD	Price / Set



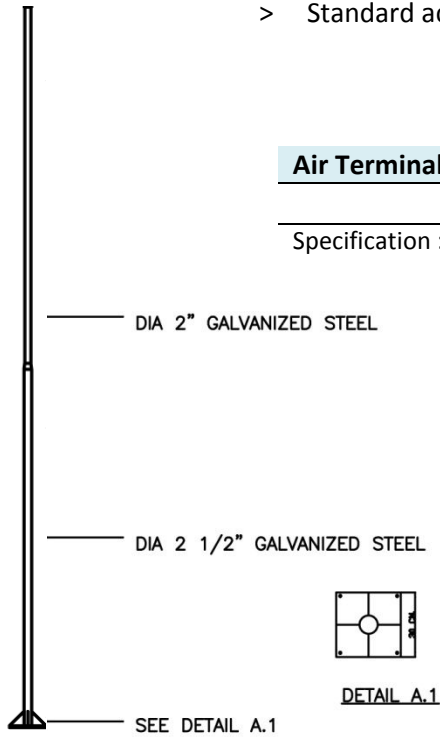
Model : **KLP GR-13/00**

Specification :

Copper Electrolyzed	Material
> 10 years	Life Duration
Underground	Installation
Thailand	Origin of Goods
Ø 5/8" x 300 cm (long)	Size
\$ 20.00 USD	Price / Set

Accessories

> Standard accessories for lightning protection system



Air Terminal Pole

Model : **KLP AP-300/00**

Specification :

2 mm thickness Steel Galvanized	Material
>20 years	Life Duration
Outdoors	Installation
Ø 2", Ø 2 1/2" x 500 cm (long)	Size
\$ 500.00 USD	Price / Each



DETAIL A.1

Lightning Counter

Model : **KLP LC-340/00**

Specification :

Analog 6 Digits	Type
1-100kA	Capacity
Top/Below of the test box	Installation
\$ 550.00 USD	Price / Each



Bare Copper Cable

Model : **KLP BC-07/50**

Specification :

Bare Hard Drawn Copper	Type
618 A (in free air)	Ampacities
70 sqmm.	Size
\$ 10.00 USD	Price / Meter





Test Box

Model : KLP TB-38/00

Specification :

Aluminum	Type
Indoor / Outdoor	Installation
Thailand	Origin of Goods
\$ 58.00 USD	Price / Meter



Ground Clamp

Model : KLP GC-10/00

Specification :

Copper	Type
Connect bare copper with ground rod	Installation
For bare copper 50-70 sqmm	Size
Thailand	Origin of Goods
\$ 20.00 USD	Price / Meter

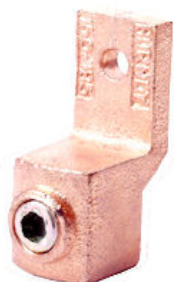


Saddle Wall Clamp

Model : KLP GC-01/90

Specification :

Copper	Type
Saddle bare copper stick to the wall	Installation
For bare copper 50-70 sqmm	Size
Thailand	Origin of Goods
\$ 3.00 USD	Price / Meter



Copper Terminal Lug

Model : KLP TL-01/70

Specification :

Copper	Material
For bare copper 50-70 sqmm	Size
Thailand	Origin of Goods
Bare copper lug	Install
\$ 2.50 USD	Price / Set

Note:

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