

To provide effective protection it is of utmost importance that this system have a low impedance path to ground when lightning follows these higher impedance path, extensive damage may be caused by the heat and mechanical forces generated during the passage of the lightning discharge. A low impedance path reduces the potential difference between the storm system, the earth and the protection system.

Every effort must be made to obtain the lowest earth resistance. A number of technique can be used to provide an effective grounding network.

This System recommended the earth resistance is max. 3 ohm.

Advantages

- Light weight
- minimizes damage potential
- easy to install
- consumes no power, it is activated by the energy of the storm itself
- completely eliminates lightning strikes and related energy from the protected area.
- Warranty 2 years

Applications :

- high rise building
- factory
- tower
- housing
- complex palnt

Installations :

- The air terminal is to be installed minimum 2 m above the highest point of the structure.

ZONE OF PROTECTION

The radius of protection are calculated using the formula

$$Rp. = 1,5 h_1 (1 - \frac{h_x}{0,8h^1})$$

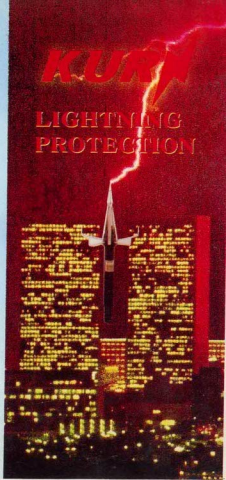
Where ; $h_x = 5$

Rp. = Radius of protection of the kurn system
 h^1 = virtual height of lightning rod : $h^1 = h + \Delta h$
 h = height of structure

TABLE OF THE RADIUS OF PROTECTION

Height of Structure (M)	Radius of Protection (M)
20	152
30	168
40	182
50	196
60	213
70	227
80	242

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MECHANISM OF LIGHTNING STRIKE

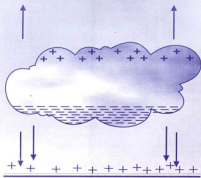
Atmospheric electricity is the general phenomenon; lightning is one of its manifestations. The thunderheads (storm clouds) are electrically charged bodies suspended in the atmosphere. The air serves as an insulator, separating the electrical charge of the cloud from the ground or other clouds.

During a storm situation, charge separation will continue to build up, and will induce a similar charge of opposite potential into the earth will be concentrated at the surface just under the cloud, and a strong field will be established between the cloud and ground.

If the potential within the cloud reaches a point where the insulating quality of the air gap is no longer effective and break down the places.

The specific breakdown point varies with atmospheric conditions. The potential at the base of the cloud is generally assumed to result electrostatic field about 10 kV/m of elevation above earth.

If there are structures or trees between the earth and the cloud, they will likewise become charged with less of an air gap between these high points and the cloud, there is greater likelihood of a lightning strike to them. See figure 1.



EXPOSURE HAZARD

The Lightning strike hazard for a given facility depend on a number of factors, including:

- The facility's location
- size
- shape

One index of location's exposure rate of lightning activity is IKL (Isokeraunic Level). The higher the number, the greater the potential activity. The Character of structure its height, shape, size and orientation influences hazard. Taller structures tend to collect the strikes from surrounding and tend to trigger additional strike.

LIGHTNING STROKE PARAMETER

Total charge transferred:
- 2 to 200 coulombs

- Peak current:
- 200 to 400,000 amperes
Time (duration)
- 10 to 250 microsecond/stroke
Velocity of propagation:
- 1 to 21 X 10 meters per seconds
Number of stroke per flash:
- 1 to 26

SPECIFICATION:

- Kurn Lightning System has been designed to prevent lightning strike to the protected area. To prevent a lightning strike, a system must be able to prevent a lightning strike, a system must be able to reduce the cloud, such that it is not high enough for a stroke within that area.
- This system produce ionized field that continually discharges the electrical field created by the storm. In the area around the lightning protection, the field never reaches the lightning flash over point.
- Kurn lightning protection is composed of four basic element:
 - body terminal
 - head copper
 - disch vertical
 - disch horizontal
- **Weight**
- Approximately: 2.7 kg