

SECURING YOUR LIFE & ASSETS



Power Ark Engineering

"Securing your life & Assets"

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AN OVERVIEW

When positive and negative charges grow large enough, a giant spark - lightning - occurs between the two charges within the cloud. Most lightning happens inside a cloud, but sometimes it happens between the cloud and the ground. A lightning strike discharges about 1-10 billion joules of energy and produces a current of 30,000 – 50,000 amps. Lightning strikes usually last around 1 or 2 microseconds with an average temperature of around 20000 °C (36000 °F) and are produced by cumulonimbus clouds that are very tall and dense. There are bolts of lightning striking somewhere on Earth every second

LIGHTNING FACTS

LIGHTNING PRODUCTS

Digital LPS
Conventional LPS

LIGHTNING ARRESTORS ACCESSORIES

ESE Technology
Digital Lightning Counter
Earthing Compounds
Franklin Rod
Standed Copper Wire
Pure Copper Rods
Different type Clamp



At any time there are over 2,000 thunderstorms occurring world wide, each producing over a 100 lightning strikes a second.



That's over 8 million Lightning bolts every day.



Each lightning flash is about 3 miles long but only about a centimetre wide.



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Working Principle

The traditional Air Terminals are believed to provide an inverted cone of protection at 45 degree angle from the tip of these terminals. In general the theory is that higher these air terminals are mounted on the structure to be protected, larger the protection area you get at the bottom.

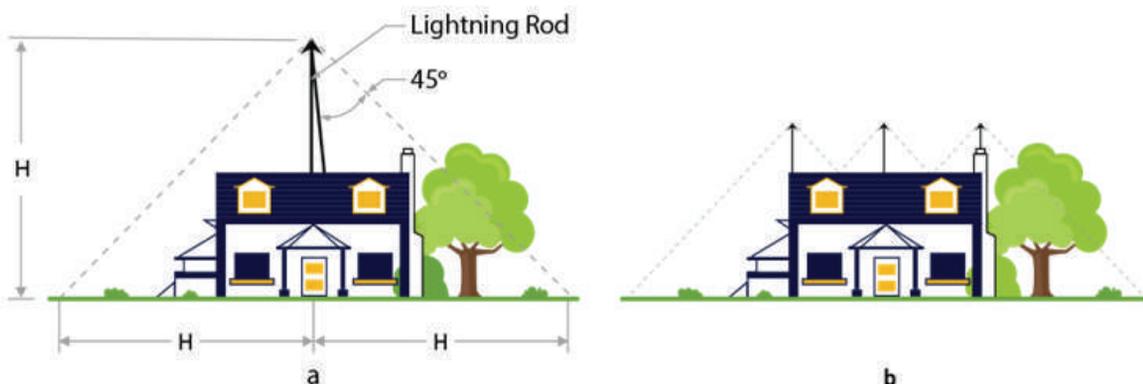


Figure a) A house protected by a single lightning rod having an assumed 45 degree angle cone of protection – that is, the height of the rod is H and the base area assumed to be safe from a lightning strike has a radius H. (b) The same house protected by a lightning rod system consisting of three smaller rods, each assumed to provide a 45 degree – angle cone of protection

Lightning Protection System



LIGHTNING PROTECTION



PROTART ESE Lightning Rods Protection Radius Table

Rp (m)	PROTART-30 $\Delta L: 30\text{ m}$ $\Delta T: 30\ \mu\text{s}$				PROTART-45 $\Delta L: 45\text{ m}$ $\Delta T: 45\ \mu\text{s}$				PROTART-60 $\Delta L: 60\text{ m}$ $\Delta T: 60\ \mu\text{s}$			
	Level I	Level II	Level III	Level IV	Level I	Level II	Level III	Level IV	Level I	Level II	Level III	Level IV
2	19	22	25	28	25	28	32	36	31	35	39	43
4	38	44	51	57	51	57	64	72	63	69	78	85
5	48	55	63	71	63	71	81	89	79	86	97	107
6	48	55	64	72	63	71	81	90	79	87	97	107
8	49	56	65	73	64	72	82	91	79	87	98	108
10	49	57	66	75	64	72	83	92	79	88	99	109
20	50	59	71	81	65	74	86	97	80	89	102	113
30	50	60	73	85	65	75	89	101	80	90	104	116
60	50	60	75	90	65	75	90	105	80	90	105	120



LIGHTNING PROTECTION

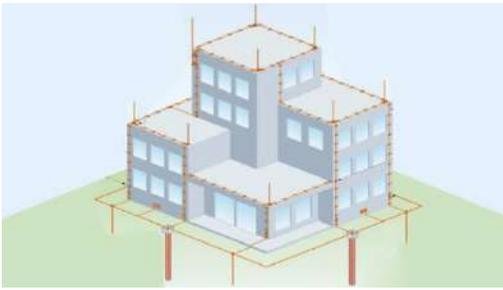


OPR radius of protection

Level of protection	I (r = 20 m)			II (r = 30 m)			III (r = 45 m)			IV (r = 60 m)		
	OPR 30	OPR 45	OPR 60	OPR 30	OPR 45	OPR 60	OPR 30	OPR 45	OPR 60	OPR 30	OPR 45	OPR 60
Type	Radius of protection Rp (m)											
h (m)	19	25	31	22	28	35	25	32	39	28	36	43
2	29	38	47	30	42	52	38	48	58	43	57	64
3	38	51	63	44	57	69	51	65	78	57	72	85
4	48	63	79	55	71	86	63	81	97	71	89	107
5	48	63	79	55	71	87	64	81	97	72	90	107
6	49	64	79	56	72	87	65	82	98	73	91	108
8	49	64	79	57	72	88	66	83	99	75	92	109
10	50	65	80	58	73	89	69	85	101	78	95	111
15	50	65	80	59	74	89	71	86	102	81	97	113
20	43	65	76	58	75	89	75	90	105	89	104	119
45	40	65	74	57	75	88	75	90	105	89	104	120
50	36	65	72	55	75	86	74	90	105	90	105	120
55	30	65	69	52	75	85	73	90	104	90	105	120
60												

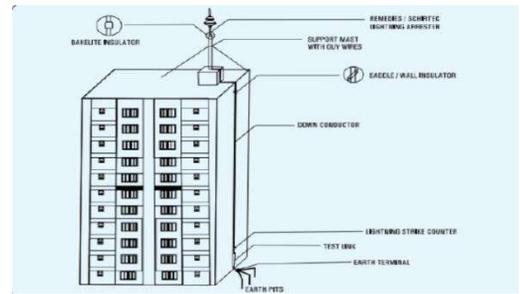
Note: the optimized radius of protection is reached when placing the ESE lightning conductor at 5 m above the highest point of the structure to protect. A minimum of 2 m is a must.

Lightning Protection Installation

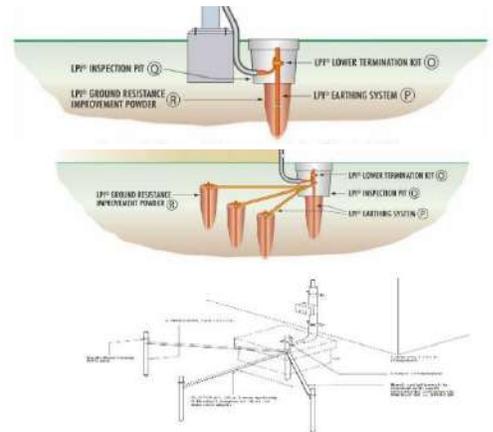


Lightning protection system with meshed

LPS are especially effective for the protection of classified industrial sites, administrative or public buildings, historical monuments and open-air sites such as sports grounds.



Equipotential bonding of metal parts



Application



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