

SPECIFICATIONS OF EXTERNAL LIGHTNING PROTECTION SYSTEM

Lightning Protection System consists of following:

1. Active ESE Early Streamer Emission Air Terminal
2. Shaft / mast for raising Air terminal minimum 3m above the top of the structure to be protected
3. Down conductor
4. Lightning counter
5. Earthing

ACTIVE ESE EARLY STREAMER EMISSION AIR TERMINAL / LIGHTNING CONDUCTOR:

Following should be the specifications of the lightning conductor:

1. Very high grade Stainless steel material body, 700mm long and 5 Kg nett weight with pointed tip.
2. Based on Active Early Streamer Emission principle and consists of Ion Generator.
3. High early streamer warning time of 96 μ sec.
4. Protection radius of Model No. LAP-DX250 of SABO LIVA is 150m in Level III area
5. METU Electrical & Electronics test report as per NFC 17-102 standard.
7. In each lightning conductor Serial number, model no., CE mark, hologram & OEM name is printed.
8. Every lightning conductor carry 30 years warranty. Certificate is issued from the manufacturer.
9. Internal last inspection report of manufacturer will be provided with every serial numbered lightning arrester, if required.
10. Sigma test report
11. QA technic conformity certificate
12. TS EN ISO 9001:2008 certificate
13. BS EN ISO 14001:2004 certificate
14. Certificate of registration from World Intellectual Property Organisation
15. CE certification
16. Testable by means of external tester LLT-X2A
17. Designed as per NFC17-102 standard which meets / exceeds all lightning conductor standards of the world.
18. Suitable for all types of lightning discharges (negative, positive or lateral).
19. Suitable for all whether and climatic conditions and can be used in any terrain.
20. No use of battery or power source is required.

SHAFT:

Lightning conductor should be raised by Stainless Steel / GI shaft of ≥ 3 m height having base plate / side mounting arrangement for mounting on terrace / tower and should have adaptor head to connect lightning conductor.

DOWN CONDUCTOR:

Down conductor to be used should be of 30*2 mm electrolytic copper strip / 8mm dia bare copper rope / 30*3.5mm dia braided copper cable. NFC17-102 standard does not permit use of insulated coaxial cables or sheathed cable.

LIGHTNING COUNTER:

Lightning counter LSC-LX01 is of 6 digits of stainless steel material and have IP65 protection. It also comes in testable/ SMS / Email options. It is used to provide the information of no. of lightning strikes our lightning protection system has safely discharged. It should be installed at eye level.

Email / SMS transmission device needed to be installed in case lightning discharge records are needed in remote computer or mobile automatically during lightning strike.

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TEST CLAMP / JOINT:

Each down conductor should have a test joint for disconnecting it with earth for measuring the earth resistance. It should be installed generally at 2m height.

EARTHING:

Each earth should consist following:

1. Copper bonded rod 17.2mm dia 1.8m long of 254 microns – 1no.
2. NABL tested SABO-EREC having resistivity of 0.039 Ω -m – 30kg
3. Earth chamber of 300*300 of CI / concrete / Brick / Polyplastic should be used as earth pit cover. Polyplastic earth pit is preferred since it can withstand all climatic conditions.

3 sets of above earthing should be made each minimum 2m apart and joined by 30*2mm / 8mm dia bare copper rope / 30*3.5mm dia braided copper cable. Suitable non corrosive clamps for connecting strip or cable to copper bonded rods should be used. All the nuts and bolts should be of stainless steel.

Exothermic welding may also be made for connecting all joints of strip / cable / rod.

INSTALLATION GUIDELINES

1. In case width of building is more than 2 times height of the building or building height is more than 28m then, 2 nos. down conductors should be used. In such cases, the second down conductor should run through other side.
2. Care should be taken in routing the down conductor. It should be routed through the straight and shortest path to earth and also such that all gas pipes, water pipes, wires & cables, etc. should be minimum 1-2m far from it. Sharp bends should be avoided. In any case, bends should have radius of 20cm. External open routing of down conductor is better.
3. In case, metallic pipes / wires /cables are unavoidable then it should be separated by placing them inside a metallic screen which should extend 1m beyond the point of crossing. Such metallic screen should be connected to down conductor.
4. Down conductors should be attached to the side wall of the structure to be protected by means of 3 fixings per m. These fixings should be of same material. All the down conductors are also connected by same material.
5. Drilling on down conductors should be avoided.
6. Each down conductor should be routed to Rubber or PVC pipe or sleeves in order to avoid risk of impact.
7. When external routing of down conductor is impracticable, then a dedicated duct should be made. Such duct should not be more than 2000sq.mm. If it is more than it or in case other wires, pipes / cables also pass through it then insulated non inflammable duct should cover down conductor.
8. When outside of the building or structure has a metal cladding or stone or glass curtain walls then the down conductor should be attached behind the cladding to the concrete wall or the load bearing structure. In such cases, conductive cladding components and supportive structure must be bonded to the down conductor at the top and bottom ends.
9. If external structure is completely metallic like a telecom or transmission tower and if electrical continuity is there, then, it is not necessary to use separate down conductor. Steel metallic structure can be used as down conductor as they are conductive and their internal resistance is <0.01Ohm. In such cases, ESE lightning conductors should be connected directly to the metallic frame which at the ground level is connected to earth termination system. In such cases, equipotential bonding should properly be done.
10. Down conductor should be earthed at minimum 3m apart from building and other earthing. Down conductor should be buried by minimum 1 feet below the ground. Non corrosive earthing compound should be poured below and above the down conductor to avoid corrosion. All the joints should be exothermically welded / brazed / joined by stainless steel nut bolt and washer.

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