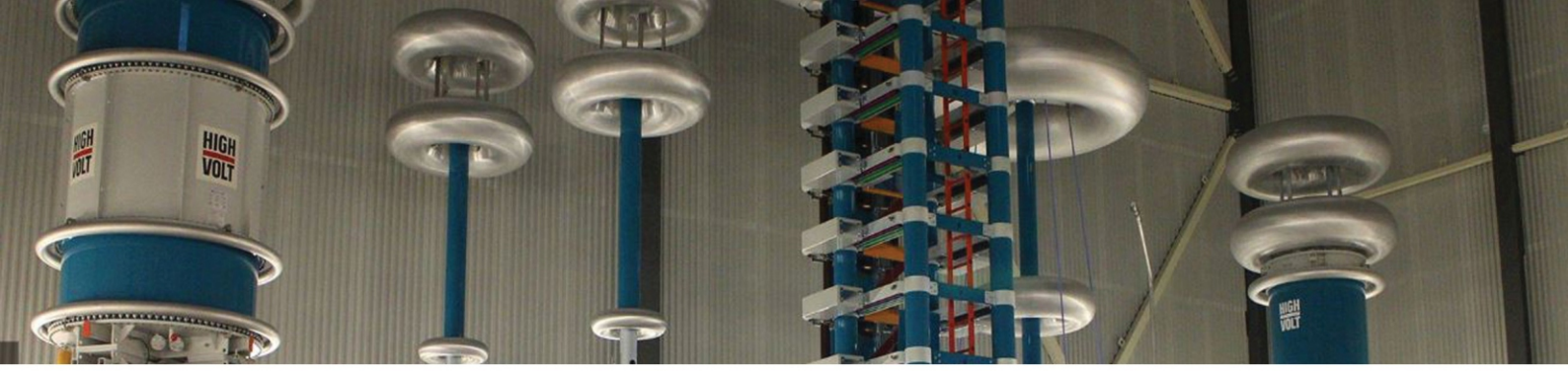


Summary Brochure **PRODUCT** **ORBITAL**

**LIGHTNING
PROTECTION TECHNOLOGIES**



Advance Through Technics®



ABOUT ORBITAL

ORBITAL Lightning Protection Technologies is a fully compatible and competitive manufacturer and supplier of external direct strike lightning instruments, grounding/bonding equipments under ORBTech® brand, surge protection devices (SPDs) and all kinds of Lightning protection side products. For long successful years, ORBITAL has been providing expertise for lightning protection insights to its customers in some of the most lightning prone areas of the world. Each of our personnel have extensive experience in risk management, system designs, training, installation, certification, qualifications, production and commissioning of all systems in a wide variety of industry groups like manufacturing, transportation, security and military zones.

ORBITAL also maintains a third party Quality Management System to AS/NZS ISO 9001:2015, ISO 14001:2015, ISO 29001:2010, OHSAS 9001:2007 and CE European Conformity certificates. ORBITAL's most range of products and services are exported from its head Office, manufacture and research facility in Izmir, Turkey and via regional/local offices and branches worldwide in 4 continents.



Our company has been recognised in Turkey in a very respectful aspect by Ministry of Industry, Exporters Agencies and Trade Chambers. ORBITAL's fascinating production and export successes has been awarded by government and export agencies with many prestigious awards.

ORBITAL TECHS LIGHTNING PROTECTION

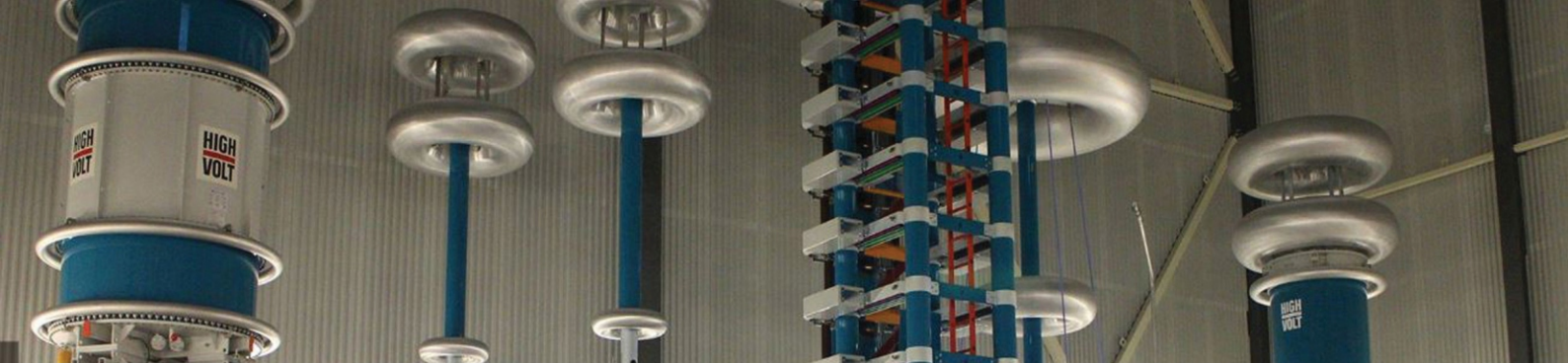
Technologies 339 street. No.1 D.10 Konak/Izmir/TURKEY

Phone: +90 543 397 44 97

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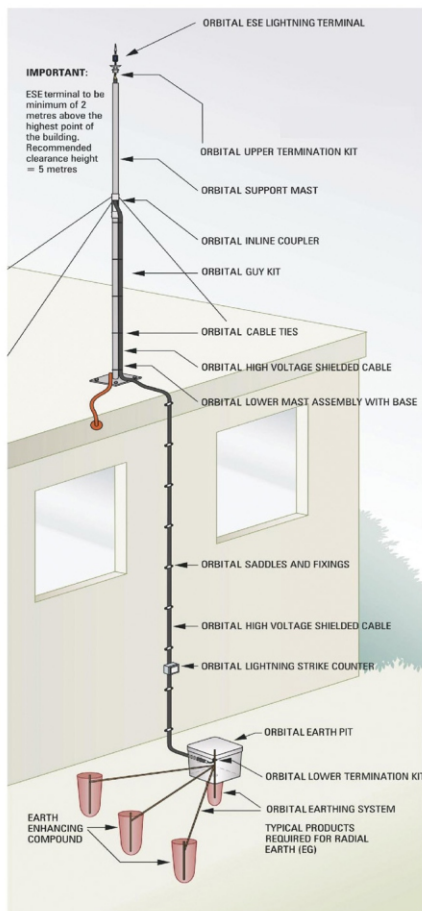
web: www.orbitaltechs.com

www.pusatantipetir.com



Lightning discharges are one of the most destructive and dangerous natural phenomena.

There are many atmospheric discharges during lightning storms and some of them can even reach hundreds of kiloamperes. These electrical discharges might mean great hazard to people, animals, buildings and electronical equipments as well. Economical consequences of Lightning strikes are also very curical and considerable. Lightning strikes can cause huge fire. A direct lightning discharge to a person results in current flowing through the body. This current stays a very short time on the body itself however its intensity is strong enough to provoke electrocution which resulting in heart failure and causing burns at different degrees.



The protection radius (R_p) of an ESE terminal is calculated using the following formula as defined in NF C 17-102 (2011)

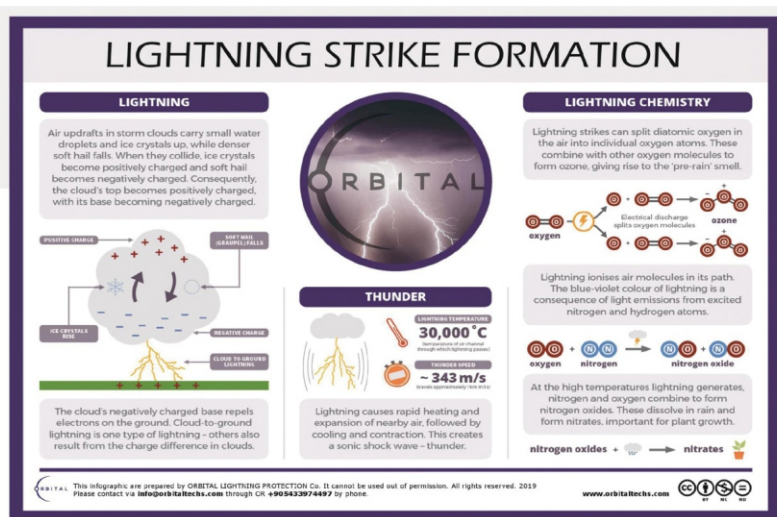
$$R_p(h) = \sqrt{2rh - h^2 + \Delta(2r + \Delta)} \text{ for } h \geq 5 \text{ m}$$

$R_p(h)$ = Protection radius at a given height (h)
 h (m) = Height of the mast / pole
VALUES

r (m) = Protection Level I / Very High
 Protection Level II / High
 Protection Level III / Medium
 Protection Level IV / Standard

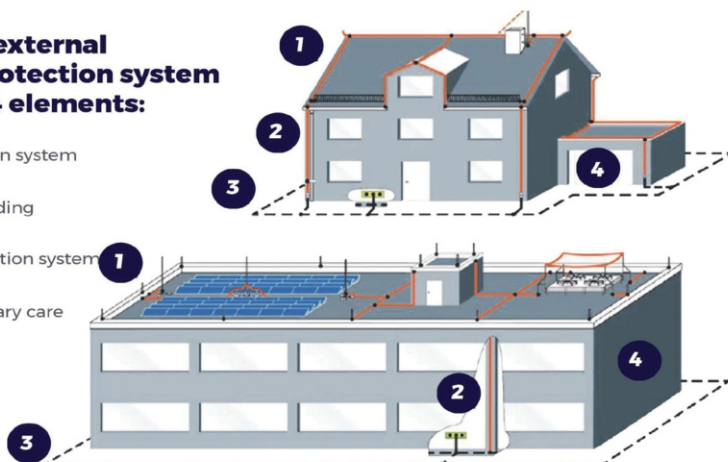
Δ = Time triggering advance time value of the ESE air terminal

Computer database centres, facilities, nuclear power stations
 Mass industrial zones, chemical manufacturing facilities
 Photovoltaic systems > 10 kW, Solar panels, Hospitals, Schools
 Others



A standard external lightning protection system consists of 4 elements:

- 1 Air termination system
- 2 Earthing/Bonding
- 3 Earth termination system
- 4 Complementary care



ZERU ESE Lightning Terminal is specially suitable to install for solar and wind panels, telecommunication towers, hospitals, schools and transportation stations.



GENERAL DESCRIPTIONS

ZERU Early Streamer Emission (ESE) lightning terminal can anticipate all other elements and items within its protectable range according to its protection level radius by intercepting the lightning strikes and conducting these strikes into the earth through the safest and projected ways. ZERU ESE Terminal work as to principle of creating IONs by its internal ION GENERATION channels. This structure itself allows the terminal to conduct the high voltage lightning strikes, even up to 200kA, to the earthing system then to the earth at the safest way.

Tested and certified according to NFC 17-102/2011 Early Streamer Emission Standard including DeltaT (ΔT) advance time test, current withstanding test to determine ZERU's protection levels.

- > High Salt mist treatment
- > Humid sulphurous atmosphere treatment
- > Current withstanding test: 200kA (10/350 μ s).
- > Advance time DeltaT (ΔT) test

TECHNICAL CHARACTERISTICS

Material	Stainless Steel
Weight	3.60 kg
Ext. Diameter	155 mm.
Lenght (h)	58 cm.
Box Lenght	62 cm.
Rod Diameter	20 mm.
Adapter Diameter	60mm. Male
IP Code	IP67
Working Temperature	-25°C / 90°C
Type of Terminal	Electroatmospheric
Internal Insulation	High Density Polyurethane Resin
Standard	NFC 17-102/2011
Grounding Method	Wire/Tape
Max. Current Withstand (10/350 μ s) / >2.5 MJ/ Ω	200kA
Advance Time (ΔT)	60 μs.



PROTECTION RADIUS LEVEL

Height(m)	Rp (m) Early Streamer Emission			
	Level 1	Level 2	Level 3	Level 4
2	31	35	39	43
4	63	69	78	85
5	79	86	97	107
10	79	88	99	109