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# TECHNICAL DETAILS

Product Code	HLP 10201		
Product Name	HERMES PRO030		
Warranty	2 Years		
ΔT (NFC17-102)	60µs		
CurrentTest (kA)	100 kA		
IP Protection	IP66		
Lightning Arrester Type	Early Streamer Emmission		
Material	Stainless Steel		
Net Weight	2,2kg		

Length	990 mm
Diameter	Q125 mm
Package Dimension	14x14x53mm

# 16,5 CM

# HERMES PRO30 PROTECTION RADIUS TABLE (NFC 17-102)

Height	Levell	Level II	Level III	LevelIV
2	31	35	39	43
5	79	86	97	107
8	79	87	98	108
10	79	88	99	109
15	80	89	101	111
20	80	89	102	113

# LIGHTNING OCCURRENCE

Lightning is an unpredictable natural phenomenon. It is a powerful natural discharge of static electricity generated during a thunderstorm, producing an electromagnetic pulse. Lightning follows a principle law of physics defined as the path of least resistance. Under normal conditions, there is a balance between positive and negative charges.





1. During the occurrence of storm clouds, there is an increase in electrical field and a potential difference between the cloud and the ground that leads to small discharges.

2. As the electrical field gains strength (the potential difference between the cloud and the gro-und increases), the descending lightning channel breaks the dielectric field in the air.

3. It eventually manages to break down the layers of dielectric field in the air. Thus, a conducti-ve channel is formed and electrical discharge begins, that is, lightning occurs.

### THE DEVASTATING EFFECTS OF LIGHTNING

Since lightning causes serious damage to people, structures and equipment in the structure at the point where it strikes, measures against lightning must be taken.

On humans, it causes electric shock, severe burns and de-ath.

On structures; lightning can cause serious damage (fire, destruction, etc.) directly to the structure (buildings, telecommunication masts, utilities and renewable energy plants, etc...).

On equipment; an indirect lightning strike (via electricity, telephone, internet networks, or ground line in the immedi-ate area) causes damage to the equipment connected to these points as a result of voltage surges.



# L.P.S. RISK ASSESMENT, IEC-EN 62305

### **RISK ANALYSIS**

It is a calculation performed within the scope of the standards to determine the lightning protection needs of a specific facility and the level of protection required.

As a result of these calculations, the necessary protection needs will be defterinde to effectively mitigate the risk.



# LIGHTNING PROTECTION SYSTEM DESIGN

Lightning protection installation is needed when the expec-ted number of lightning strokes (Nd) for the installation is greater than the lightning frequency (Nc) in the area where the installation is located. The calculation of the need for protection is quite complex and depends on the state of the existing environment.

In the standards, an effective lightning protection system consists of equipment and devices that capture lightning and are used to safely conduct the captured lightning cur-rent to earth.

1- Capture System : Active or Passive protection systems.

2- Down Conductor : Components required to transmit lightning energy to earth in a controlled and safe manner.

3– Grounding System : Components required to distribute the lightning current to earth.

4– Surge Protection : Devices that protect the devices con-nected to the electrical power grid and weak current sys-tem of the facility against voltage fluctuations. Important factors in lightning protection calculations;

The density of buildings and trees in the vicinity of the structure and their heights.

External components of the structure and the materials used.

The frequency of people and the value of the structure in the environment.

Protection	n Level
Levell	Maximum Protection
Level II	High Protection
LevelIII	Medium Protection
Level IV	Standard Protection
	Protection Level I Level II Level III Level IV



3



# CALCULATION METHOD NFC 17-102

### Calculation of Lightning Protection Activity Value and Determination of Protection Level

Before the lightning protection system is installed in the facility, the necessary calculations should be made to determine the level of protection. After determining the protection level, the number of lightning rods required for the structure should be determined.

### The calculation of the protection level is based on the formulas given below.

Ae = a.b + 6. H (a+b) + 9.  $\pi$ . H<sup>2</sup>

a : Building Width b: Building Lenght c: Building Height

Equivalent Area of the Facility is Calculated.

 $Nd = Ng \cdot Ae \cdot Ce \cdot 10^{-6}$ Ng = 0,04 . Td . <sup>1,25</sup>

The expected number of lightning strokes for the facility. Td value is determined from the annual lightning day map.

The annual frequency Nc of lightning strikes that will cause damage to the building is calculated.

### Nc = A B. C

 $A = A_1 \cdot A_2 \cdot A_3 \cdot A_4$   $B = B_1 \cdot B_2 \cdot B_3 \cdot B_4$ 

 $\mathbf{C} = \mathbf{C}_1 \cdot \mathbf{C}_2 \cdot \mathbf{C}_3$ 

All of the correction factors A, B, C ... should be calculated by equations and tables in accordance with TS EN 62305-2 "Lightning Protection Risk Management" standards.

Activity	Protection Level	
0,98 <e< td=""><td>Levell</td><td>Maximum Protection</td></e<>	Levell	Maximum Protection
0,95 <e 0,98<="" td="" ≤=""><td>Level II</td><td>High Protection</td></e>	Level II	High Protection
0,80 < E ≤ 0,95	Level III	Medium Protection
0 <e 0,80<="" td="" ≤=""><td>Level IV</td><td>Standard Protection</td></e>	Level IV	Standard Protection

If Nc<Nd, the protection level is determined by calculating E = 1-(Nc/Nd).

# CALCULATION METHOD NFC 17-102

## Calculation of Protection Radius (NFC 17-102)

### **Protection Radius**

The protection radius of an ESE active lightning arrester is related to its height (h) relative to the surface to be protected, its effectiveness and the protection level selected.

 $R_p(h) = \sqrt{2rh - h^2 + \Delta(2r + \Delta)} \quad \text{for } h \ge 5 \text{ m}$ (1)

 $R_{\rm p} = h \ge R_{\rm p}(5) / 5 \text{ for } 2 \ {\rm m} \le h \le 5 \ {\rm m}$  (2)

- $R_{n}$  (h) (m) is the protection radius at a given height h
- h (m) is the heigh of the ESEAT tip over the horizontal plane through the fursthest point of the object to be protected
- r (m) 20 m for protection level I 30 m for protection level II 45 m for protection level III 60 m for Protection Level IV
- $\Delta$ (m)  $\Delta = \Delta T \times 106$ Field experience has proved that  $\Delta$  is equal to the efficiency achieved during the ESE evaluation tests.



### HERMES PR030 PROTECTION RADIUS (NFC17-102)

Height	Level I	Level II	Level III	Level IV
2	31	35	39	43
5	79	86	97	107
8	79	87	98	108
10	79	88	99	109
15	80	89	101	111

Protection radius study in line with NFC 17-102 standards



# LIGHTNING PROTECTION SYSTEMS

### E.S.E Active Lightning Arrester Advantages



### ADVANTAGES

Provides more protection radius.

Thanks to its early warning technology, it captures lightning at a higher point before it falls.

E.S.E active lightning arrester will be cheaper in terms of cost as less equipment will be used in provi-ding protection area of a large area compared to passive systems.

Compared to the passive system, the aesthetic appearance of the building will be less affected since less equipment is used.



E.S.E (early stimulation emission) technology creates a lightning path that propagates upwards faster than any Franklin rod with the ionisation created by atmospheric change. The time difference  $\Delta T$  is one of the most impor-tant factors of E.S.E technology.



# LIGHTNING STRIKE COUNTER



Screen	6 Digit Analogue
Min-Max Current	1-100kA
IP Protection	IP66
Maintenance	Not Required
Standard Code	IEC EN 62561-6
Material	Stainless Steel
Installation	Directly on Down Conductor

# LIGHTNING ARRESTER TESTER

E.S.E Active Lightning Arresters must be tested in certain periods according to NFC 17-102 standard. As Hermes Earthing, we recommend that at least 2 times a year, lightning arrester heads should be tested for operability.



# INSTALLATION DETAILS







# CERTIFICATION





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IP X6 Suya Karşı Koruma IP X6 Water Protection Test	GEÇTÎ (PASSED)	Şifarısır ŞAMİN	to	
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Availation No : AB-1932-T















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