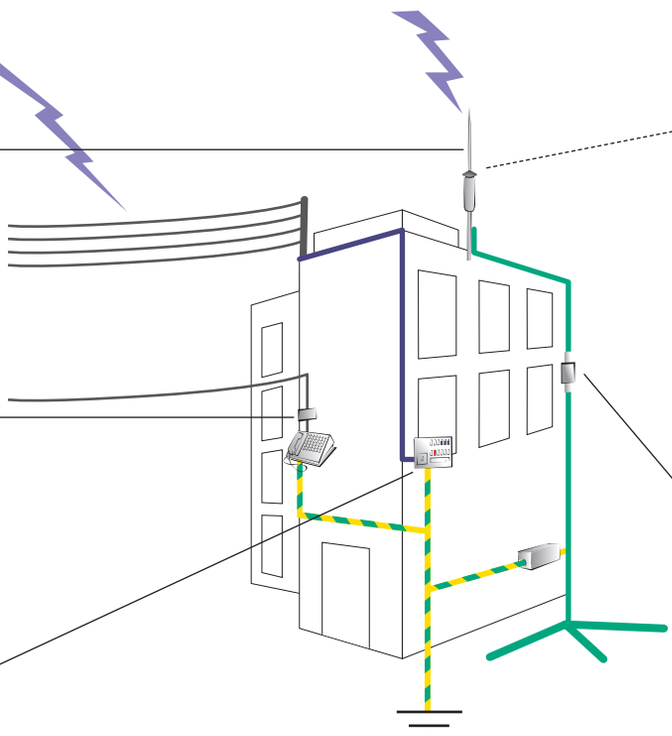
INSTALLATION / VERIFICATION

The installation and verification of lightning protection systems utilising one or more Pulsar units must be performed in accordance with the manufacturer's recommendations and those given in standard NFC 17 102.

Pulsar
Early Streamer Emission lightning terminal.



Test pole for lightning conductors
Unique maintenance system that permits a Pulsar to be tested in situ.

Modular telecom protection

Low voltage lightning protection,
the essential complement for comprehensive protection.

Lightning strike counter
Effective aid to system maintenance.

HELITA ALSO OFFERS A COMPLETE RANGE OF PRODUCTS:

• Simple rods, meshed cages, accessories • Grounding equipment, earth plates and accessories •
• Low voltage, Telecom and coaxial, surge arresters • Air navigation / obstacle beacons • Pylons •

HELITA
YOUR LIGHTNING PROTECTION
Member of ABB Group

Head Office
22, rue du 8 Mai 1945 · 95340 Persan
France
Tél : +33 (0)1 30 28 60 50
Fax : +33 (0)1 30 28 60 24

www.helita.fr

Export Sales Office
8 - 12, rue Marcel Paul · BP 32
95871 Bezons Cedex · France
Tél : +33 (0)1 34 34 19 75
Fax : +33 (0)1 34 34 19 76

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Your installer/dealer

04/2003
DOUBLE YOU

Pulsar Range

Complies with NF C 17-102

CNRS-HELITA PATENT

The high pulse voltage E.S.E lightning conductor.

In ongoing collaboration with the CNRS (French National Research Organisation), Hélita continues to innovate, and has developed a new generation of lightning devices.

The new Pulsar range with increased initiation advance performances, represents further progress in terms of protection, operating autonomy and ease of maintenance.

These advancements reinforce Hélita's position as International leader in direct lightning protection with over 200 000 installations throughout the world.

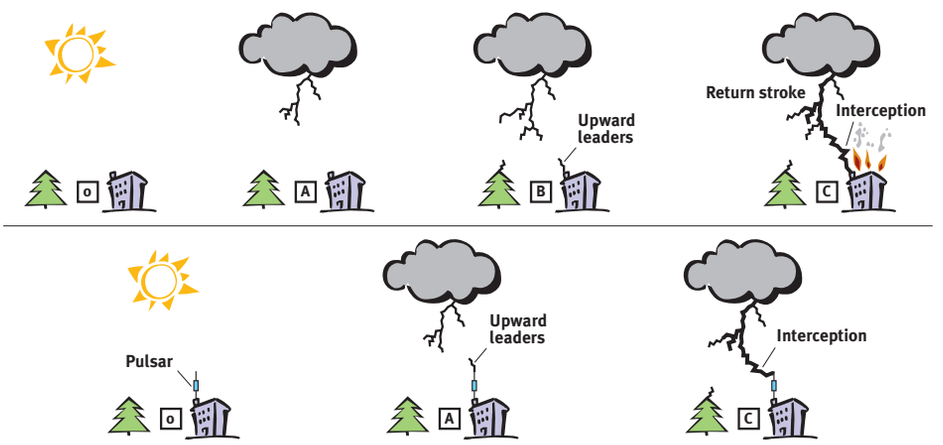
PulsAr

HELITA
YOUR LIGHTNING PROTECTION
Member of ABB Group

PulsAr

THE ADVANTAGE OF INITIATION ADVANCE

The unique efficiency of the Pulsar lightning conductor is based on a specific initiation advance; well before the natural formation of an upward leader, the Pulsar generates a leader that rapidly propagates to capture the lightning and direct it to earth. Validated in the laboratory, this gain in time relative to the simple rod provides additional essential protection.



COMPLETE AUTONOMY

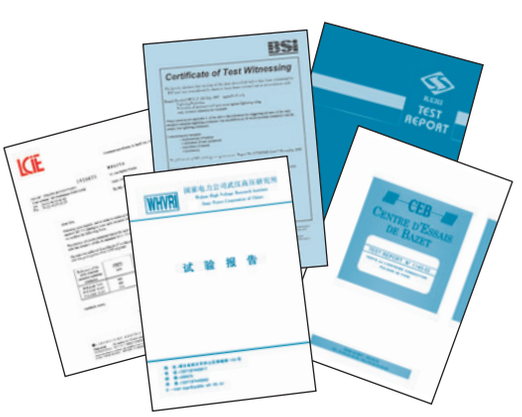
During a storm the ambient electric field may rise to between 10 to 20 kV/m. As soon as the field exceeds a threshold representing the minimum risk of a lightning strike, the Pulsar lightning terminal is activated. It draw its energy from the ambient electric field the energy required to generate high voltage pulses, creating and propagating an upward leader. No other power sources are required, and no radioactive components are used.

PROVEN EFFICIENCY

Hélita has proven commitment to research and development and continuously sets new benchmarks for the efficiency of lightning conductors. Hélita's co-operation with the CNRS led to a better understanding of the test process in high voltage laboratories and of the lightning phenomena itself.

The Pulsar have undergone testing in the IREQ laboratory in Canada and in Hélita's own LEHTM centre. International certification organisations including BSI, LCIE and KERI have validated the results obtained.

Ascending discharge on a Pulsar during the test procedure at IREQ (Canada)



- LCIE (Central Laboratory for Electrical Industries) - France
- KERI (Korean Electrotechnology Research Institute) - Korea
- BSI (British Standard Institute) - United Kingdom
- WHVRI (Wuhan High Voltage Research Institute) - China
- CEB (Bazet High Voltage Laboratory) - France

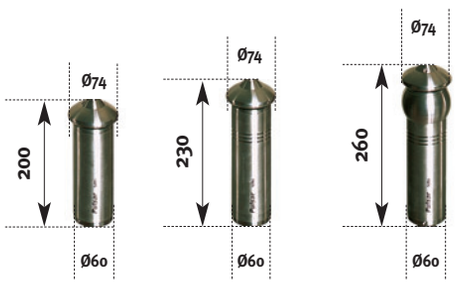
AFAQ ISO 9001

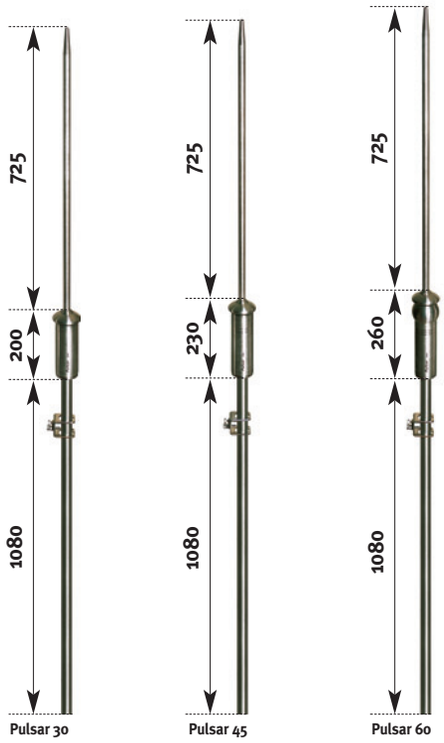
NF

PULSAR REFERENCES

Δt (µs)	Description	Reference	L(m)	Weight (kg)
30	Pulsar 30 stainless steel on 2 metres	IMH.3012	2,0	5,0
45	Pulsar 45 stainless steel on 2 metres	IMH.4512	2,03	5,3
60	Pulsar 60 stainless steel on 2metres	IMH.6012	2,06	5,7

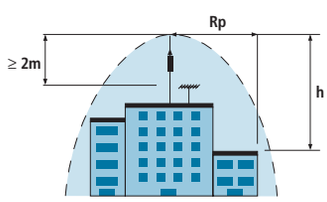
These lightning conductors are also available in copper-covered stainless steel and black stainless steel.





CALCULATION OF PROTECTED AREAS

The radius of protection Rp of a Pulsar is given by the French standard NF C 17-102 of July 1995. It depends on the initiation advance ΔT of the Pulsar measured in the high voltage Laboratory, on the levels of protection I, II, III calculated according to the lightning risk assessment guide (Appendix B of the French standard NF C 17-102) and the height h of the lightning conductor over the area to be protected (minimum height = 2m).



Rp : radius of protection in a horizontal plane located at a vertical distance h from the Pulsar tip.

h : height of the Pulsar tip above the surface(s) to be protected.

D : standardised striking distance.

ΔL = 10^6 . ΔT (initiation advance)

Rp = $\sqrt{h\,(2D-h) + \Delta L\,(2D + \Delta L)}$ (for h ≥ 5m)

For h < 5m, see the radius of protection table opposite.

ΔT = initiation advance measured during efficiency tests according to appendix C of the French standard NF C 17-102

Pulsar radius of protection

Level of protection	I (D = 20 m)			II (D = 45 m)			III (D = 60 m)		
Pulsar	Pulsar 30	Pulsar 45	Pulsar 60	Pulsar 30	Pulsar 45	Pulsar 60	Pulsar 30	Pulsar 45	Pulsar 60
h(m)	Radius of protection RP (m)								
2	19	25	32	25	32	40	28	36	44
3	28	38	48	38	48	59	42	57	65
4	38	51	64	50	65	78	57	72	87
5	**48**	**63**	**79**	**63**	**81**	**97**	**71**	**89**	**107**
6	48	63	79	64	81	97	72	90	107
8	49	64	79	65	82	98	73	91	108
10	49	64	79	66	83	99	75	92	109
15	50	65	80	69	85	101	78	95	111
20	50	65	80	71	86	102	81	97	113
45	50	65	80	75	90	105	89	104	119
60	50	65	80	75	90	105	90	105	120

The level of protection is calculated according to appendix B of the French standard NF C 17-102.
For the Pulsar 60, limiting the value of ΔT, that used in the radius of protection calculation, to 60 µs has been validated by the experiment conducted by the members of Gimelec (Group of Industries for Materials for Electrical Equipment and associated Industrial Electronics).

HELITA MANUFACTURING QUALITY

The enviable reputation of the Pulsar has been earned through maintaining a consistently high quality in manufacture. Before leaving the factory, each pulsar has been tested for insulation breakdown at high voltage, and subjected to a current test that ensures its performance when conducting lightning discharges. The high voltage output pulses at the Pulsar are also examined to verify correct amplitude and frequency. The Pulsar is built to withstand the arduous conditions encountered in service, and its ongoing performance can be monitored simply and quickly using the pulsar test set.