Kim thu sét Pulsar 18, Pulsar 30, Pulsar 45, Pulsar 60

Lightning Protection

Helita Pulsar Early Streamer Emission
lightning conductor

HELITA
France

Pulsar,
the high pulse voltage, initiation advance 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 300 000 installations throughout the world.

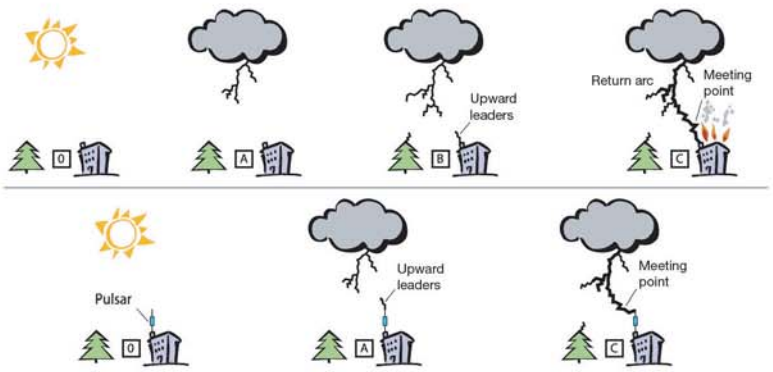
PulsAr

Hélita 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.

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

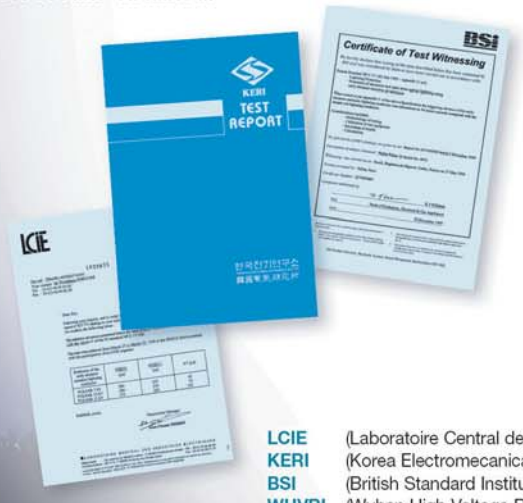
During a storm the ambient electric field may rise to between 10 to 20 kV/m. As soon as the field exceeds a threshold representing the minimum risk of a lightning strike, the Pulsar lightning terminal is activated. It draw its energy from the ambient electric field the energy required to generate high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

RodCheck: Visual Strike Indicator

The RodCheck System is a state-of-the-art visual indicating system exclusively developed by Hélita. The RodCheck system provides a visual indication that the Pulsar has been struck by lightning by revealing a highly visible red marker.

Scientifically 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.



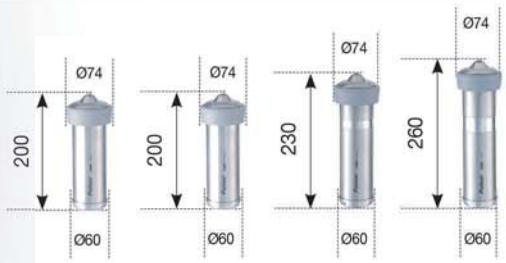
AFAQ ISO 9001

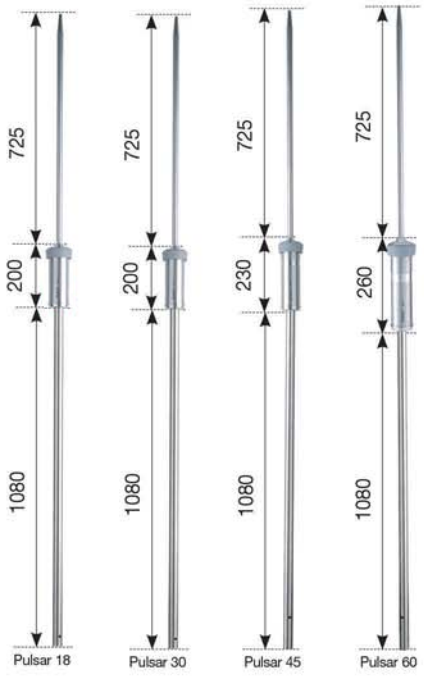
Qualifoudre INERIS

LCIE	(Laboratoire Central des Industries Électriques) · France
KERI	(Korea Electromecanical Research Institute) · Korea
BSI	(British Standard Institute) · Great Britain
WHVRI	(Wuhan High Voltage Research Institute) · China
CEB	(Centre d'Essais de Bazet) · France
TEST	(Beijing Testing Center of Lightning/Surge Protective Device) · China

Pulsar references

ΔT (µs)	Description	Reference	L(m)	Weight (kg)
18	Pulsar 18 stainless steel 2 m Lightning conductor	**IMH 1812**	2.0	5.0
30	Pulsar 30 stainless steel 2 m Lightning conductor	**IMH 3012**	2.0	5.0
45	Pulsar 45 stainless steel 2 m Lightning conductor	**IMH 4512**	2.03	5.3
60	Pulsar 60 stainless steel 2 m Lightning conductor	**IMH 6012**	2.06	5.7





Calculating protected areas

The radius of protection Rp of a Pulsar is given by French standard NF C 17-102 dated Sept 2011. It depends on the initiation advance ΔT of the Pulsar measured in the high voltage laboratory, on the levels of protection I, II, III or IV calculated according to the lightning risk assessment guides or standards (NF C 17-102/ IEC 62305-2) and on the height h of the lightning conductor over the area to be protected (minimum height = 2m). Helita Pulsar also complies with NF C 17-102 and IEC 62305-3.

The protection radius is calculated according to French standard NF C 17-102. In the case of Helita Pulsar 60, limiting the value of ΔT used in the protection radius calculations to 60 µs has been validated by the experiments conducted by the members of Gimelec (Groupement des industries de l'équipement éléctrique, du contrôle-commande et des services associés, Group of Industries for Materials for Electrical Equipment and associated Industrial Electronics).

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

$$R_p = h \times R_p(5)/5 \quad (\text{for } 2\text{ m} \leq h \leq 5\text{ m})$$

where

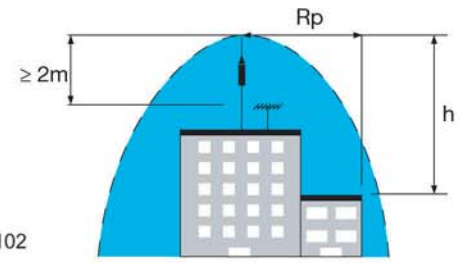
$R_p(h)(m)$: Radius of protection in a horizontal plane located at a vertical distance, h, from the Pulsar tip

h(m) : Height of the Pulsar tip above the surface(s) to be protected

r(m) : Level of Protection

Δ(m) : $10^6 \times \Delta T$

ΔT : Initiation advance measured during efficiency test according to Annex C of NFC 17-102



Test on Pulsar during a series of tests at IREQ (Canada).

Pulsar radius of protection

Level of Protection	I (r = 20 m)				II (r = 30 m)				III (r = 45 m)				IV (r = 60 m)			
Pulsar Model	Pulsar 18	Pulsar 30	Pulsar 45	Pulsar 60	Pulsar 18	Pulsar 30	Pulsar 45	Pulsar 60	Pulsar 18	Pulsar 30	Pulsar 45	Pulsar 60	Pulsar 18	Pulsar 30	Pulsar 45	Pulsar 60
h (m)	Radius of Protection Rp (h) (m)															
2	14	19	25	32	16	22	28	35	19	25	32	40	22	28	36	44
3	21	28	38	48	25	33	42	52	29	38	48	59	33	42	57	65
4	28	38	51	64	33	44	57	69	38	50	65	78	44	57	72	87
5	**35**	**48**	**63**	**79**	**41**	**55**	**71**	**86**	**49**	**63**	**81**	**97**	**55**	**71**	**89**	**107**
6	35	48	63	79	42	55	71	87	49	64	81	97	56	72	90	108
8	36	49	64	79	43	56	72	87	51	66	83	99	58	75	92	109
10	37	49	64	79	44	57	72	88	52	66	83	99	60	75	92	109
15	38	50	65	80	46	58	73	89	55	69	85	101	64	78	95	111
20	38	50	65	80	47	59	74	89	58	71	86	102	67	81	97	113
45	38	50	65	80	48	60	75	90	63	75	90	105	77	89	104	119
60	38	50	65	80	48	60	75	90	63	75	90	105	78	90	105	120

Installation / testing

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

Pulsar Lightning conductor

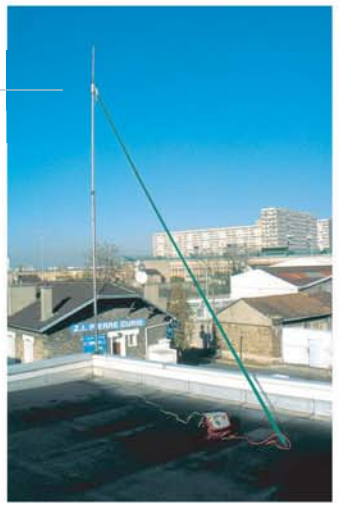
Early Streamer Emission lightning terminal.

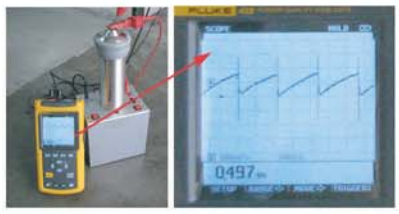
RodCheck System

Featuring the exclusive and state-of-the-art **RodCheck** reveals a red marker when Pulsar is struck by lightning.

Lightning conductor test poles

A unique system for testing lightning conductors on-site without the need to dismantle them, thanks to an eight meter long telescopic pole and a test case.





Waveshapes Analysis

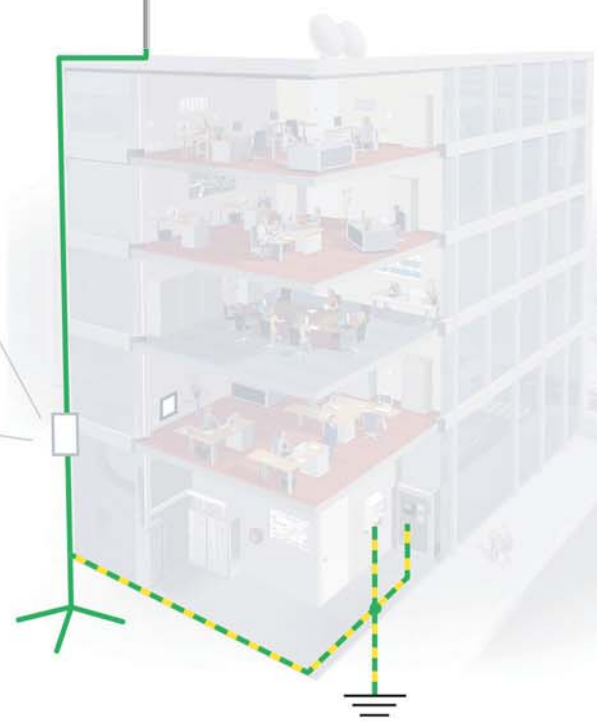
Detailed analysing of impulse waveshapes possible by means of connecting the portable tester to a scope meter.

Analogic Lightning strike counter

Recommended at facilities that are classified as presenting a hazard to the environment

Electronic Lightning strike counter

With data record



MUN HEAN

Representative

Product specifications are subject to change without prior notice.
Information and images extracted from Helita-ABB catalogue.

www.munhean.com