

ACTIVE 2D®

DOUBLE EXCITATION DEVICE

Principle and operating

The operating principle of the Active 2D® consists, not only to initiate the upward leader, but moreover, to provide enough energy to ensure its propagation to the junction with the downward tracer.

A first device, named « impulse device », stores the electrostatic energy present in the atmosphere.

When approaching storm activity, the integrated sensor measuring the surrounding electrical field, releases the impulse device such as most of usual Early Streamer Emission systems. It almost immediately reverses the polarity of their head, creating a sudden amplification of the electrical field on its tip.

The innovation comes from the use of a second device, named « power device », which collects and stores energy in power capacitors. The Active 2D® is in this way permanently pre-loaded of an important energy which allows maintaining the ascendant tracer propagation.

When the downward tracer enters in the protection area of the lightning conductor, the measured current strongly increases. As soon as this current is superior to a characteristic threshold, the power capacitors discharge and release the necessary energy for the propagation of the leader.

In this last device, the lightning conductor's head is used as a capture device. It is, by consequence, electrically insulated from the earth.

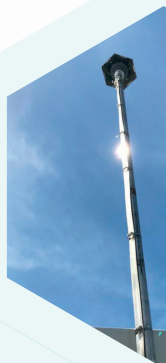
Active 2D® characteristics

- Consideration of the energetic information to choose the tracer which can become an ascending tracer,
- Source of energy autonomous and clean : photovoltaics cells,
- Consideration of the cloud polarity,
- Optimized head curvature radius to reduce the corona effect and guarantee the excitation device,
- Operation guarantee in all atmospherical conditions,
- High resistance to corrosion
- In compliance with NFC 17-102 standard of September 2011
- Double device for a better propagation of the ascending tracer
- Remote test for an easy maintenance
- Test in High Voltage in the laboratory of Bazet in France (laboratory totally independant – laboratory patented COFRAC)

Active 2D® radius of protection

The Active 2D® has been tested in laboratory according to the protocol of the NFC 17-102 standard.

These showed, according to models, excitation advances from 30 and 60µs compared to a simple rod.

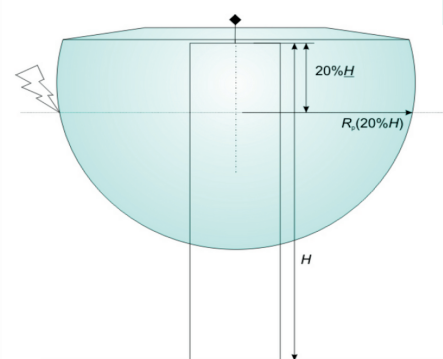


Enhanced protection area

The radius of protection of the Active 2D® indicated below, are defined for the four levels of protection Np (from I to IV) regarding to the real height h between the lightning rod tip and the highest point to protect.

- ΔT : Excitation advance, for the Active 2D®, $\Delta T=30$ and $60\mu s$
- Np : level of protection of more or less great severity (I to IV) determined by the lightning risk assessment done with Lightning Risk software according to NFC 17-102 standard,
- h(m) : height between the lightning rod tip and the highest point to protect.

Active 2D®	AFB10302D				AFB10602D			
h(m) \ Np	I	II	III	IV	I	II	III	IV
2	19	21	25	28	31	34	39	43
4	38	43	51	57	63	69	78	85
5	48	55	63	71	79	86	97	107
6	48	55	64	72	79	87	97	107
8	49	56	65	73	79	87	98	108
10	49	57	66	75	79	88	99	109
20	50	59	71	81	80	89	102	113
30	50	60	73	85	80	90	104	116



Active 2D® range

Model	$\Delta T(\mu s)$	Lightning counter
AFB10302D	30	Not included
AFB17302D	30	Included

Model	$\Delta T(\mu s)$	Lightning counter
AFB10602D	60	Not included
AFB17602D	60	Included



Active 2D® test

Model	Testers
AFV10101TT	Remote tester
AFV0050TT	Wired tester
AFV0087PT	Test perch

Model	$\Delta T(\mu s)$	Remote tester
AFB18302D	30	Included
AFB18602D	60	Included



The Active 2D® lightning conductor can be tested on site, with its AFV10101TT remote tester (initial checking, periodical checkings according to NFC 17-102 standard and decrees in force, maintenance,...). Simple and fast, this test does not need any particular operation of dismantling of the lightning rod and can be done safely from the ground. The testers use the communication with non disturbing radio waves. The lightning rods and their testers are both equipped with a transceiver: bidirectional emission and reception. The LED display indicates instantaneously the obtained result (positive or negative). The performed tests on the lightning rod with the remote tester are numerous: tests at the terminals of the capacitor, voltage test at the terminals of the battery, test of the electrical continuity, test of the communication. The Active 2D® can be also tested with a telescopic perch AFV0087PT and its tester AFV0050TT.

Packing

Complete lightning rod packed in reinforced cardboard box

- Weight : 6,90 Kg
- Dimensions : 320 x 320 x 500 mm

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