



Lightning and overvoltage protection for lighting systems

ABB, leader in lightning protection

For over 80 years, we have built and marketed:

- lightning protection systems to protect buildings against direct lightning strikes;
- surge protective devices for indoor protection of electrical and electronic equipment.

Our offering is now extended to propose full solutions for LED lighting systems.

LED, the new street lighting technology of the future



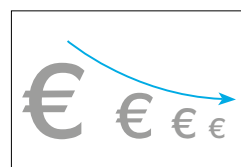
Light is essential to modern human life. Over 50% of municipal budgets are devoted to public area lighting. LED technology represents a versatile lighting source that meets the joint requirements of cost reduction and energy efficiency.



A higher lighting efficiency in relation to other technologies (energy-saving lamps, sodium vapor lamps, incandescent lamps). High color quality with chromatic efficiency > 80% **for better visibility**.



Extraordinary energy savings in the order of 60 to 90% compared to conventional incandescent lamps, sodium or mercury lamps, and of 10 to 20% in relation to energy-saving CFL lamps **to reduce electricity bills**.



Reduced maintenance costs due to long service lifetime. This prevents service interruptions, damage and constant replacement of lamps, which are difficult to access without the appropriate equipment (e.g. cradle lifts).



Major cost savings on the whole installation. Due to their low energy consumption, LED lamps make a considerable contribution to the number and diameter of copper cables required.



Greater safety, through low voltage operation (< 32 V) to **prevent the risks of electrocution**, minimal heat, better resistance to temperature variations, vibrations and impacts.



Intelligent management through instant illumination. LED technology is suitable for applications requiring lighting intensity controls (dimmers), room occupancy sensors or time switches.

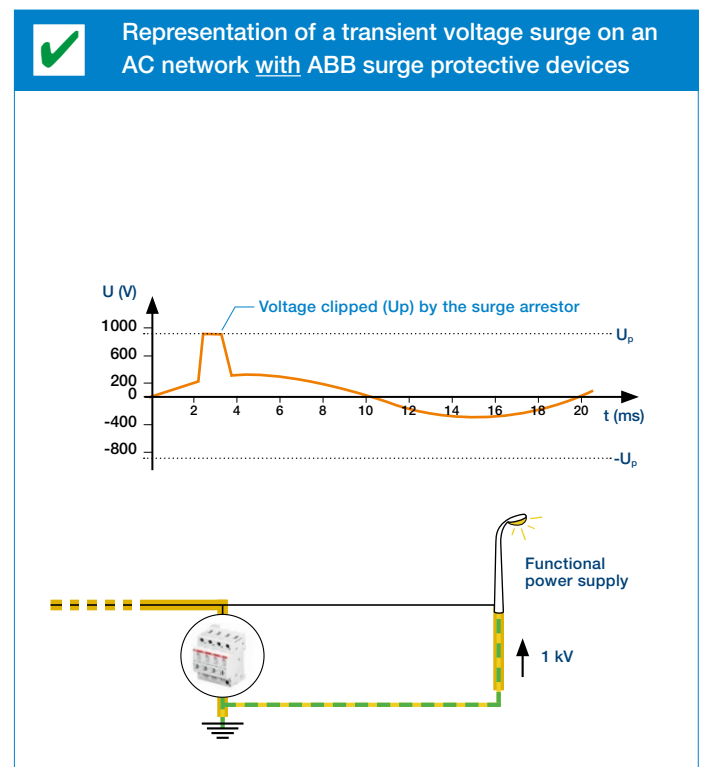
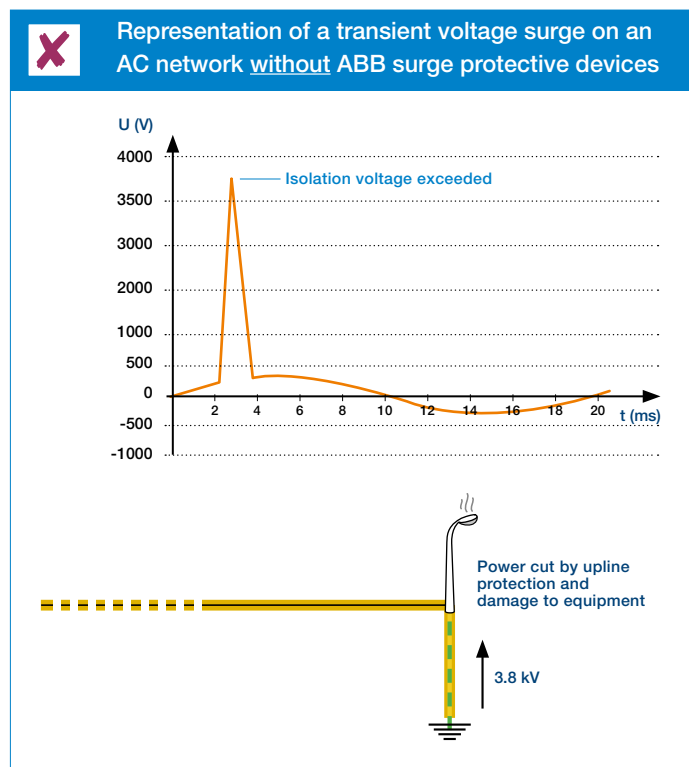
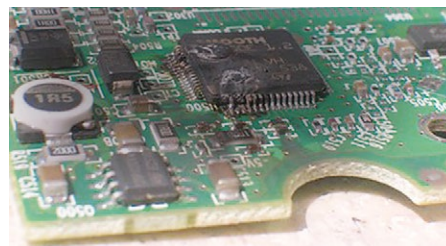
Why protect lighting networks against overvoltages and lightning strikes?

Public street lighting, especially since the advent of LED technology, is highly sensitive to transient overvoltages of industrial origin, or of natural origin caused by lightning. This may cause electrical disturbances due to the AC network (switching operations) or the lightning surge. As LED electric lighting is usually connected to power networks via long cables, this disturbance phenomenon is amplified.

Moreover, earthed equipment (class II) is much more exposed to the risk of voltage surge caused by lightning, referred to as rising earth potential. These surges can destroy the power circuits and LED components.

Protection provided by OVR surge protective devices therefore serves to:

- prevent lighting outages
- reduce network maintenance costs
- facilitate access for surge arrester inspection and maintenance
- protect electrical devices against lightning strikes.



What ABB solutions offer

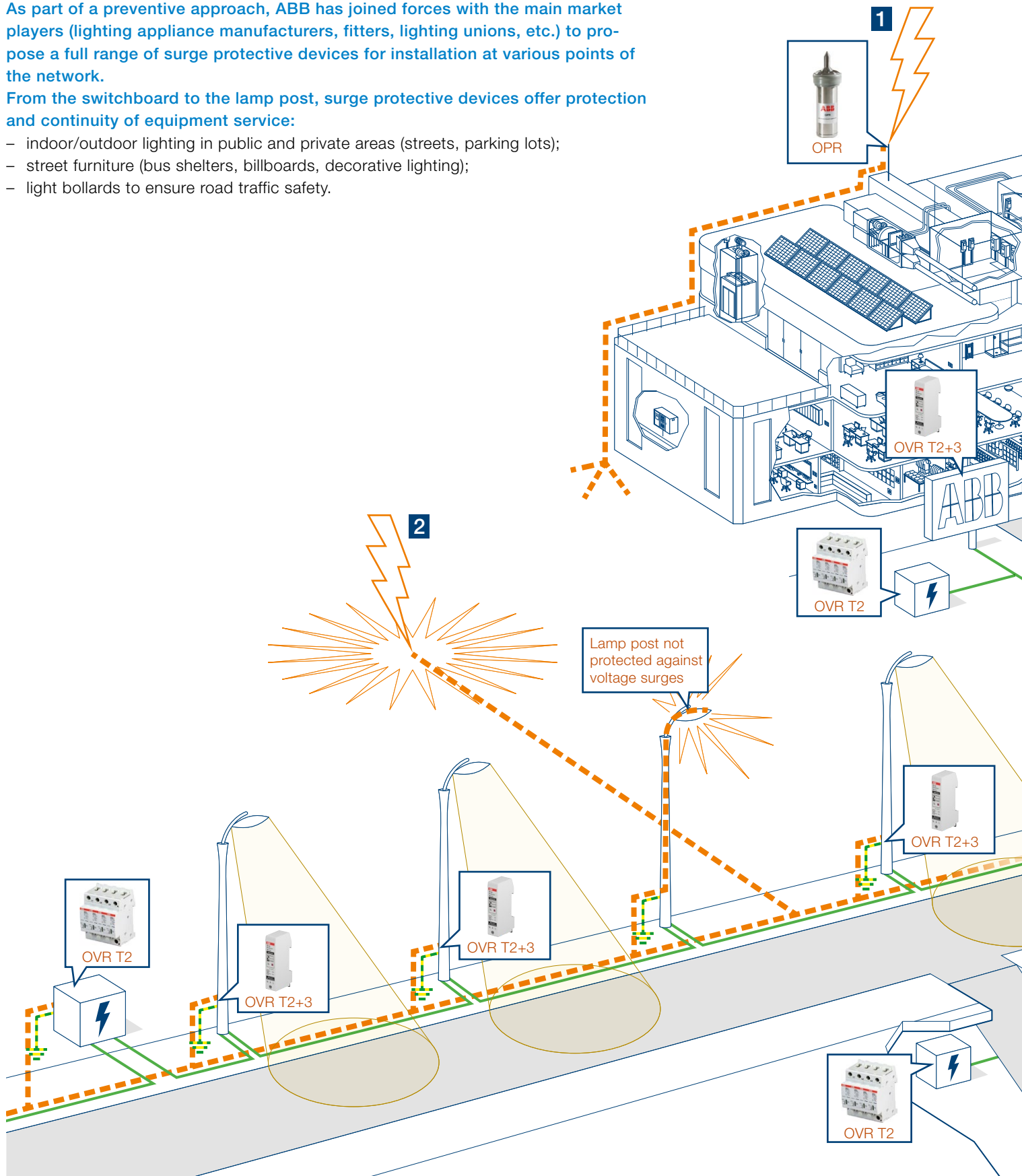
- **Continuity of lighting service** even in the event of lightning strike
- **Budget savings** by **protecting public lighting equipment** against high voltage surges
- **Cost reductions** and less maintenance required
- Easier inspection of equipment with **display of state** of surge arrester
- **Rapid replacement** due to equipment at base of post
- **Compact products** that adapt to current installations, even the narrowest.

Overall network lightning protection

As part of a preventive approach, ABB has joined forces with the main market players (lighting appliance manufacturers, fitters, lighting unions, etc.) to propose a full range of surge protective devices for installation at various points of the network.

From the switchboard to the lamp post, surge protective devices offer protection and continuity of equipment service:

- indoor/outdoor lighting in public and private areas (streets, parking lots);
- street furniture (bus shelters, billboards, decorative lighting);
- light bollards to ensure road traffic safety.



In general, public lighting equipment is powered with a TT or TN-S neutral point system. In the event of lightning strike impact, there is a risk of transmission of transient overvoltages via Earth cables. This phenomenon can occur in two manners:

- via a direct strike **1**, i.e. a direct impact on the metal conductor mast, where the energy will travel to the ground;
- via an indirect strike **2**, i.e. where lightning strikes nearby to the system on an object or directly hitting the ground, Earth connections transmit transient overvoltages via the power cables, to reach the most sensitive components.

To protect public lighting equipment, it is recommended to install surge protective devices on the following equipment points:

- SPD Type 2 in the switchboards supplying the lamp post, traffic lights or street furniture;
- SPD Type 2+3 as close as possible to the sensitive systems, in the power supply cabinets in the lamp post masts.

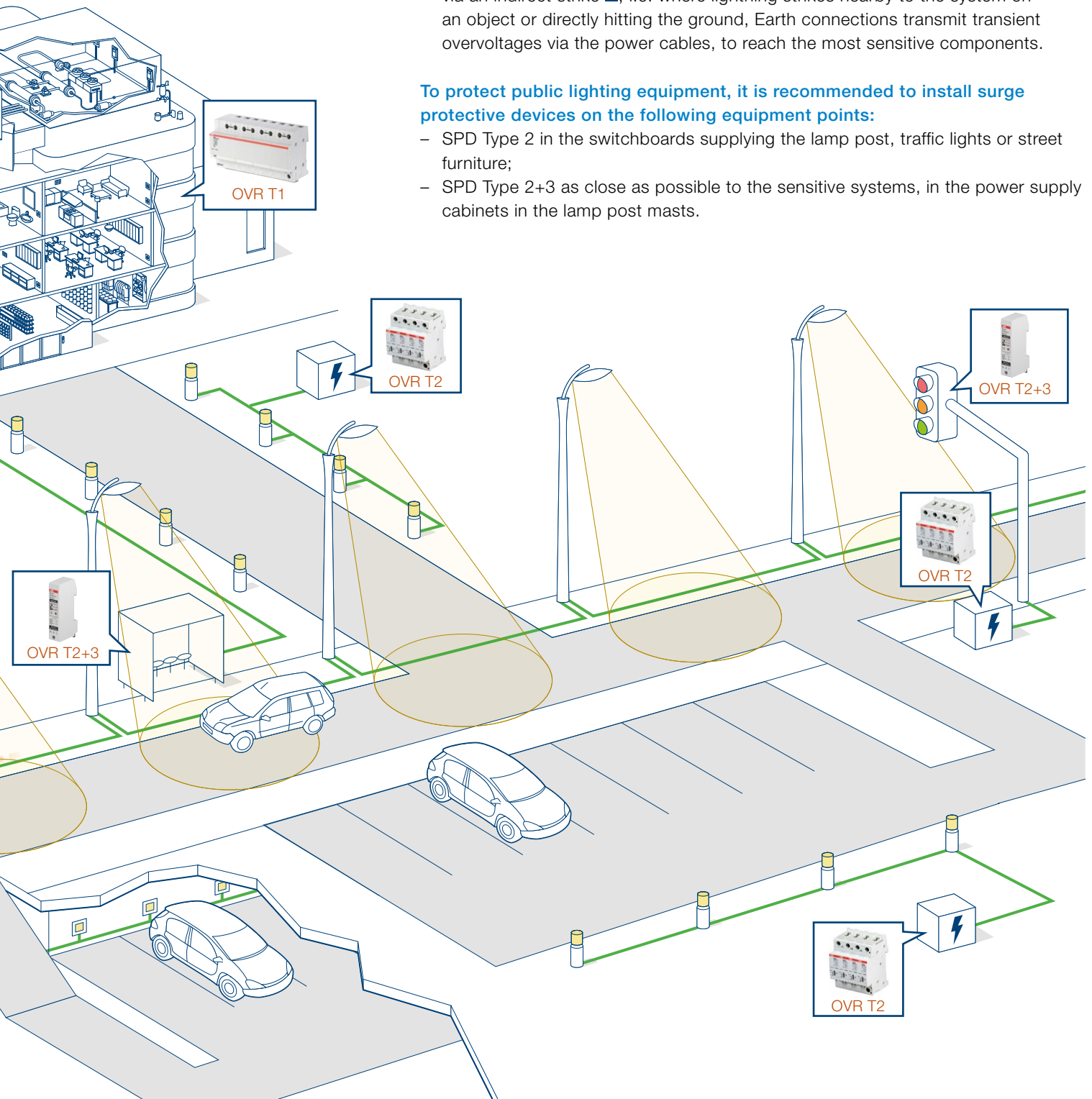
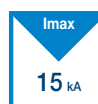


ABB proposes a full range of lightning protection products to protect network equipment using OVR's SPDs for transient overvoltages and OPR external lightning protection for direct lightning strikes.

For close equipment protection - SPD Type 2+3



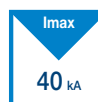
- **The safety system to extend product life**
The SPD is equipped with two varistors that protect the system against high voltage surges. If one is damaged, the other continues to protect the equipment until the surge arrester is replaced.
- **Multi-mode protection**
Its common and differential protection mode serves to limit voltage surges occurring between the live (L), the neutral (N) and the Earth (PE) to protect the system against the effects of lightning.
- **Compact design**
Easily integrated in all types of lamp posts due to its highly compact design, suitable to small power supply boxes.
- **DIN rail mounting for quick installation**
- **End of life SPD visual indicator**
- **Excellent IP rating and bottom connection**
No condensation issues.



For protection of general power supply cabinets - SPD Type 2



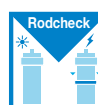
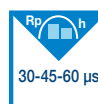
- **Multi-mode protection**
Its common and differential protection mode serves to limit voltage surges occurring between the live (L), the neutral (N) and the Earth (PE) to protect the system against the effects of lightning.
- **Plug-in cartridge**
When a cartridge needs replacement, you can replace it without cutting the power or disconnecting wires.
- **DIN rail mounting for quick installation**
- **Auxiliary contact TS**
Easy inspection of equipment due to NO/NC mechanical contact, end of life indicator.



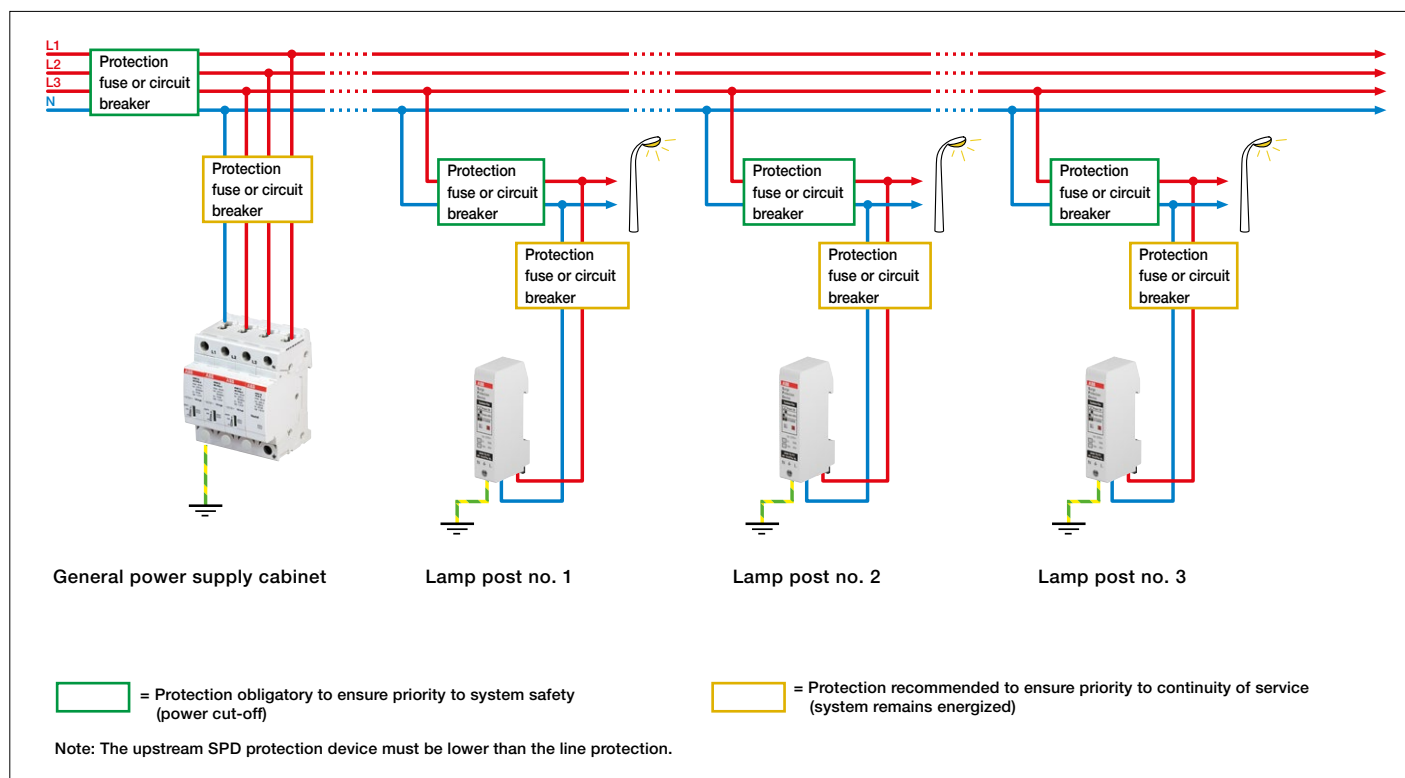
For protection against lightning strikes - OPR lightning conductor



- **Early streamer emission lightning rod**
Electronically-assisted formation of an upward leader that rapidly propagates to capture the lightning and direct it to the ground.
- **Total autonomy**
Requires no power supply, provided by ambient electrical field during a storm.
- **Display of lightning impact**
Visual verification using the Rodcheck ring, if it has moved from the top to the bottom.
- **Certified compliant with NF C 17-102 (September 2011)**
Certification of priming device lightning conductors by independent inspection bodies.



Surge protective device installation diagram



Technical details

Part number	2CTB803853R1100	2CTB804500R0200	2CTB804500Z1200
Designation	OVR T2 N3 40 275 P	OVR T2-T3 N1 15-275S SL	OVR T2-T3 N1 15-275S SL
Packing unit	parts 1	1	20
Type of network	TT, TN	TT, TN	
Current type	AC	AC	
Nominal voltage	Un 230 V	230 V	
Type of SPD	Type 2/II	2+3	
Protection mode	Common + differential	Common + differential	
Nominal discharge current	In 20 kA	5 kA	
Maximal discharge current	I _{max} 40 kA	15 kA	
Voltage protection level	Up 1.4 kV	1.1 kV	
Short-circuit withstand	I _{cc} 50 kA	15 kA	
Connection	Screw terminals	L+N cables 17 cm + screw terminal on PE	
Assembly	DIN rail	DIN rail	
End of life indicator	Mechanical indicator	Mechanical indicator	
Auxiliary contact	Yes	No	
Dimensions (L x H x W)	71.2 x 85 x 64.8 mm	17.5 x 84.5 x 41 mm	
Installation location	Electric cabinet	Power supply box closest to protected equipment	
Response Time	< 25 ns	< 25 ns	
Degree of protection	20	32	
Safety reserve	Optional OVR T2 N3 40 275S P TS, 2CTB803853R0800	Yes	
Back-up protection	Circuit breaker curve B/C < 50 A Fuse gG - gL < 50 A	Circuit breaker curve B/C < 20 A Fuse gG - gL < 20 A	
Reference standard	IEC / EN 61643-11	IEC / EN 61643-11	

Contact us

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