

Strikesorb® Lightning Protection Solutions for Wind Tu

Requirements for Surge Protective Devices (SPD) to be used in wind turbine applications

Withstand lightning currents

The SPD will be exposed to locations where it must withstand lightning currents following a 10/350 waveform.

Long lifetime

The SPD should have a lifetime longer than the expected 20-year lifetime of a wind turbine. The SPD should never fail, even in harsh lightning environments, where exposure to direct lightning is much higher than average.

Continuous and efficient protection of the equipment Under any condition, the SPD should always protect the equipment. This means that it should not disconnect itself from the power lines to self-protect, leaving the equipment unprotected. Further, it should provide a very low protection level that protects the equipment efficiently while maintaining it in good condition over its expected lifetime.

Optimized solutions available

The SPD line should be optimized in terms of available size and cost, according to the requirements of the installation.

Maintenance-free

In wind turbine applications the SPD should not have to be inspected frequently, as this requirement will result in increased maintenance costs.

Compliant to global regulations

As wind turbines can be supplied to any country around the world, the SPDs integrated inside of them should comply with and be certified according to all relevant local and international standards.



Strikesorb Modules	Strikesorb Electrical Specifications†		
	Strikesorb Modules		30-A
	Surge Protective Device (SPD) Type	per UL 1449 5th Edition	Туре
		Class per IEC 61643-11	
	Nominal Operating AC Voltage $[U_n]$		120 V
	Maximum Continuous Operating AC Voltage $[U_c]$		150 V
	Nominal Discharge Current [In]	per UL 1449 5th Edition	
	Maximum Surge Current Capacity [I _{max}]	per NEMA LS-1	
	Impulse Discharge Current [I _{imp}]	per IEC 61643-11	5kA 10/350μs
	Over Current Protection [I _{SCCR}]	per IEC 61643-11	
†Information in this chart is subject to change at any time without notice.	SCCR (Over current protection)	per UL 1449 5th Edition	42kA (8
*690 V per IEC 61643-11 **400 V per IEC 61643-11 ***480 V pe <mark>r IEC 61643</mark> -11	Voltage Protection Rating (VPR)	per UL 1449 5th Edition	700 V
	Voltage Protection Level [U _p]	per IEC 61643-11	700 V

rbine Applications

Key benefits of Raycap's unique and enhanced Strikesorb surge protection technology

- Maximum lightning current of up to 25 kA 10/350
 Strikesorb is available in three versions with an impulse discharge current rating (I_{imp}) from 5 kA up to 25 kA.
- More than 20 years of lifetime and an excellent product warranty

Strikesorb is a proven technology that has been in existence for 20-plus years, having more than 10 years of use in the wind generation industry. More than 20 million modules have been installed in mission-critical applications, with a failure rate of practically zero. Strikesorb modules have a 10 year warranty.

 Direct installation on power lines enables uninterrupted and optimized equipment protection

The most important aspect of the Strikesorb technology is its ability to safely withstand significant amounts of energy before and after its end of life, as the failure mode of the device is a short circuit of very low impedance. Therefore, it can sustain very high short circuit currents until the upstream fuse or circuit breaker trips. The high short circuit current rating and connecting terminals of Strikesorb enable its direct installation onto the power lines. This results in low residual voltage to the equipment with no requirement for long connecting cables, series fuses or circuit breakers, which may trip and leave the load unprotected.

Strikesorb will never leave the equipment unprotected. In case of a catastrophic event, either a lighting current that exceeds the Strikesorb specifications or a prolonged temporary overvoltage (TOV) condition, the Strikesorb module will not disconnect from the power system.

600 V

1200V

1300V

1800 V

2300 V

300 V

Instead, it will take the current, tripping the upstream circuit breaker while protecting the equipment from this or following events.

Very low let-through voltage

Strikesorb offers by design the lowest voltage protection level among different technologies. Its design features in combination with an in-line installation result in very low protection levels which in turn protects sensitive and mission-critical equipment exposed to harsh environments.

· Several sizes cover all locations

All possible locations inside the wind turbine can be protected by the most efficiently-sized SPD. The size of SPD needed depends on the lightning current withstand capacity and the short circuit current rating of the modules. This allows optimized panel designs and well engineered solutions with in-line connections to power lines.

Maintenance free operation

Strikesorb modules do not rely on internal disconnecters or dedicated low rated fuses, so they do not require a maintenance plan.

Dual certification (UL/IEC)

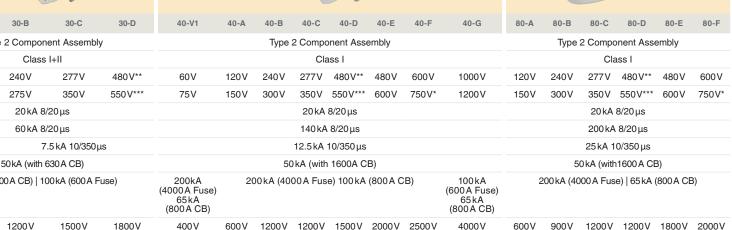
Strikesorb has UL (per UL 1449) and VDE (per IEC 61643-11) markings that allow the panels in which it is integrated to be compliant to all relevant US and international standards. When integrating Strikesorb SPDs into products, users never need to worry about the compliance of their products in any country across the world.



1200 V

1600 V

2200 V



2800 V

4400 V

600 V

1000V

1200 V

1600 V

2400V

1900V



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