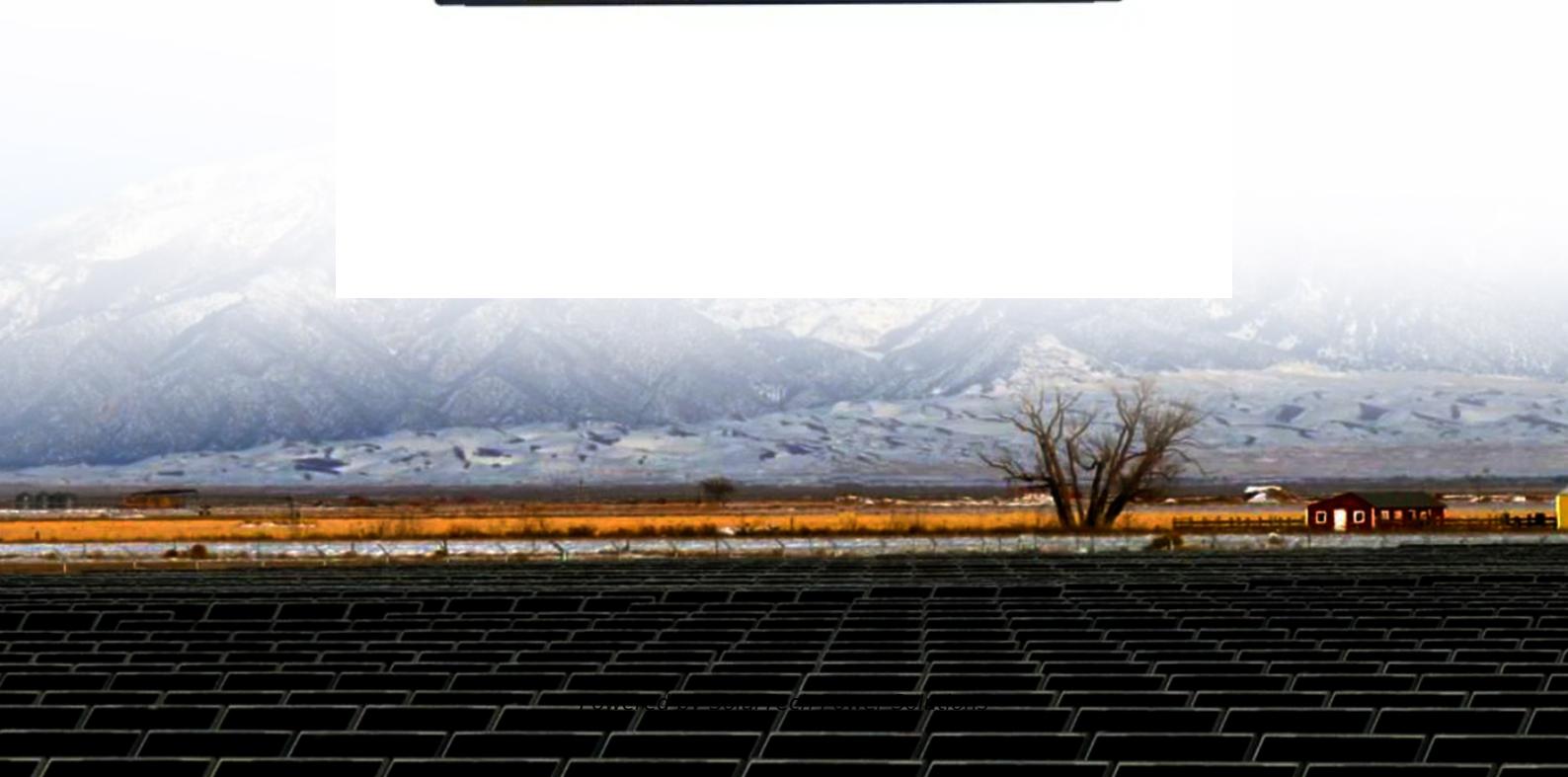




**SolarTech Power Solutions**

# **Lightning protection design scheme for energy storage containers**



## Overview

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What is a lightning protection system?

A lightning protection system not only protects the solar PV system but also provides reliable protection to your entire property and assets while safely diverting transient currents to the ground.

How to protect high-end electronics in storage containers?

In addition, battery storage for the power grid forms the basis for energy management (so-called “peak shaving”). In order to provide optimum protection for the high-end electronics in storage containers, one needs a comprehensive lightning and surge protection system.

What are surge protective devices (SPDs) in battery energy storage systems?

Surge protective devices (SPDs) is required in Battery Energy Storage Systems (BESS) BESS systems contain AC/DC converters and battery banks implemented in concrete constructions or in metallic containers.

Do energy storage systems need application-specific protection?

As demand for electricity becomes ever greater, the need to store energy (as well as produce it) also does. Like all electrical installations, energy storage systems need application-specific protection. Energy Storage Systems (ESS) are now a mature technology.

Do I need an external lightning protection system?

Therefore the need for optimized and reliable electrical protection against the influence of lightning and surge events becomes mandatory. A risk assessment per IEC 62305-2 should first be performed to understand better if an external lightning protection system (LPS) is required.

What happens when lightning strikes a storage system?

Distant lightning strikes or so-called indirect lightning strikes lead to conducted partial lightning currents (impulse waveform 10/350  $\mu$ s) in the supply lines, or also to induced / capacitive couplings (impulse 8/20  $\mu$ s) in the electronic components of the storage system itself (so-called LEMP = Lightning ElectroMagnetic Pulse) (Figure 1).

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