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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 18802.31-2021

**Low-voltage surge protective devices-Part 31: Surge protective
devices connected to photovoltaic installations-Requirements
and test methods**

低压电涌保护器 第31部分：用于光伏系统的电涌保护器 性能要求和试验方法
(English Translation)

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Foreword

The structure and name of the "Low-voltage surge protective devices (SPD)" series of standards are as follows.

- GB 18802.1 Low-voltage surge protective devices - Part 1. Surge protective

devices connected to low-voltage power distribution systems -

Requirements and tests;

- GB/T 18802.12 Low-voltage surge protective devices - Part 12. Surge protective devices connected to low-voltage power distribution systems - Selection and application principles;
- GB/T 18802.21 Low-voltage surge protective devices - Part 21. Surge protective devices connected to telecommunications and signaling networks - Performance requirements and testing methods;
- GB/T 18802.22 Low-voltage surge protective devices - Part 22. Surge protective devices connected to telecommunications and signaling networks - Selection and application principles;
- GB/T 18802.31 Low-voltage surge protective devices - Surge protective devices for specific application including d.c. - Part 31. Requirements and tests for SPDs in photovoltaic applications;
- GB/T 18802.311 Components for low-voltage surge protective - Part 311. Specification for gas discharge tubes (GDT);
- GB/T 18802.321 Components for low-voltage surge protective devices - Part 321. Specifications for avalanche breakdown diode (ABD);
- GB/T 18802.331 Components for low-voltage surge protective devices - Part 331. Specification for metal oxide varistors (MOV);
- GB/T 18802.341 Components for low-voltage surge protective devices - Part 341. Specification for thyristor surge suppressors (TSS).

This part was drafted in accordance with the rules given in GB/T 1.1-2009.

This part was proposed by China Electrical Equipment Industry Association.

This part shall under the jurisdiction of the National Lightning Protection Standardization Technical Committee (SAC/TC 81).

Responsible drafting organizations of this part. Shanghai Lightning Protection Center, Xi'an High Voltage Electric Apparatus Research Institute Co., Ltd.

Low-voltage surge protective devices - Surge
protective devices for specific application including
d.c. - Part 31. Requirements and tests for
SPDs in photovoltaic applications

1 Scope

This part specifies the performance requirements and test methods for SPDs installed on the DC side of a photovoltaic system. This type of SPD is used to reduce the impact of lightning induction or direct lightning on the DC side of photovoltaic power generation equipment. These appliances will be connected to the DC power circuit of a photovoltaic power generation equipment which has a rated voltage not exceeding 1500 V.

This part considers the following characteristics of photovoltaic power generation equipment.

- Characteristics similar to current sources;
- The nominal current depends on the light intensity;
- The short-circuit current is almost equal to the nominal current;
- Output various sizes of voltage, current and power in series and/or parallel combination, from several hundred watts (civil facilities) to several megawatts (photovoltaic field).

The very special electrical parameters on the DC side of the photovoltaic equipment place special test requirements on the SPD.

SPD with special series impedance between separate input and output terminals (so-called two-port SPD in EN 61643-11) are not currently fully covered by the performance requirements of this standard, which require additional consideration.

Note: For SPD used in photovoltaic systems, for power efficiency considerations, special series impedances are typically not included between the input and output terminals.