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

GB/T 46716-2025

**Technical specifications for household safety extra low voltage
(SELV) DC electricity supply systems**

家用安全特低电压（SELV）直流供电系统技术规范
(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is equivalent to IEC 63318:2022 "Residential power supply requirements conforming to Level 2 and Level 3 of the ESMAP multi-level architecture".

SELV DC System Specification.

The following minimal editorial changes have been made to this document.

---To align with existing standards, the standard name has been changed to "Technical Specification for Safe Extra-Low Voltage (SELV) DC Power Supply Systems for Home Use";

---Informative references to the obsolete IEC 60950-1 have been removed from section 8.3.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Electrical Equipment Industry Association.

This document is under the jurisdiction of the National Technical Committee on Standardization of Low Voltage Electrical Appliances (SAC/TC189).

Introduction

Electricity is a key driver of socio-economic development. However, access to electricity remains a significant challenge in some regions. (United Nations) Sustainable Development Goal 7 aims to ensure that people have access to affordable, sustainable, and reliable modern energy. By 2030, it seeks to ensure that everyone enjoys [access to energy].

Affordable, reliable and modern energy services.

This document aims to improve the electricity ecosystem, provide accessible electricity services to areas without public grid access, and ensure their availability.

Sexuality and sustainability. At the same time, a balance must be considered between the electricity products used and affordability.

With the widespread application of distributed energy sources such as solar and wind power, DC systems are becoming increasingly common and are being used by more and more loads (such as LED lights).

This is used in devices such as televisions. Furthermore, storage batteries are essentially DC-powered. Compared to traditional AC solutions, using a DC system connected to a DC power source...

DC power supplies, energy storage, and DC loads offer advantages such as faster deployment, more flexible expansion, and easier integration into public infrastructure.

Technical Specifications

1 Scope

This document specifies electrical systems for which electricity is connected but not to a public power grid, such as IEC TS62257-9-5 and IEC TS62257-9-8.

The 35VDC and above specified in the World Bank's Energy Sector Management Assistance Program (ESMAP) Multi-Level Home Power Supply Framework Level 2 are used for the second level of the multi-level home power supply framework.

Product components; and/or 48VDC fixtures for the ESMAP multi-level home power supply frame, level 3.

This document applies to Level 2 and Level 3 of safety extra-low voltage DC systems (in the ESMAP multi-level home power supply framework).

Device.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are listed below.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

Note: GB/T 16895 (all parts) Low voltage electrical installations [IEC 60364 (all parts)].

IEC 60364-4-43 Low-voltage electrical installations - Part 4-43.Safety protection against overcurrent Note. GB/T 16895.5-2012 Low-voltage electrical installations - Part 4-43.Safety protection against overcurrent (IEC 60364-4-43:2008, IDT).

IEC 60445 Basic and safety rules for human-machine interface markings, including equipment terminals, conductor terminations and conductor markings.

Note: GB/T 4026-2025 Basic and safety rules for human-machine interface signage - Identification of equipment terminals, conductor terminations and conductors (IEC 60445.

2021, IDT).

IEC 60884-2-4 Plugs and sockets for household and similar purposes - Part 2-4.Special requirements for safety extra-low voltage (SELV) plugs and sockets forplugsandsocket-outletsforSELV) Note. GB/T 2099.8-2017 Household and similar purpose plugs and sockets - Part 2-4.Special requirements for safety extra low voltage (SELV) plugs and sockets (IEC 60884-2-4:2007, MOD).

IEC 60906-3 Plugs and sockets for household and similar purposes in IEC systems - Part 3: Plugs for safety extra-low voltage (SELV) similarpurposes-Part 3: SELVplugsandsocket-outlets,16A6V,12V,24V,48V,acandd.c.) Note. GB/T 34134-2017 Safety Extra Low Voltage (SELV) AC and DC plugs and sockets for household and similar purposes 16A 6V, 12V, 24V, 48V Type, basic parameters and dimensions (IEC 60906-3:1994, MOD).

IEC 61056-1 General purpose lead-acid batteries (valve-regulated) - Part 1: General requirements, test methods for functional characteristics purposelead-acidbatteries(valve-regulatedtypes)-Part 1: Generalrequirements,functionalcharac-Note. GB/T 19639.1-2014 General purpose valve-regulated lead-acid batteries - Part 1: Technical conditions (IEC 61056-1:2012, MOD).

IEC TS61200-101 Electrical Installation Guidelines Part 101: Application Guidelines for DC power distribution systems not connected to the public power grid