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

GB/T 46985.3-2025

**Safety of power converters for use in photovoltaic power
systems - Part 3: Particular requirements for electronic devices
in combination with photovoltaic elements**

光伏发电系统用功率转换设备安全性 第3部分：与光伏部件连接的电子器件特定
要求

(English Translation)

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A.1 Overview

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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 Part 3 of GB/T 46985 "Safety of Power Conversion Equipment for Photovoltaic Power Generation Systems". GB/T 46985 has been issued.

The following parts were laid out.

---Part 3: Specific requirements for electronic devices connected to photovoltaic components.

This document is equivalent to IEC 62109-3:2020 "Safety of power conversion equipment for photovoltaic power generation systems - Part 3: Relationship with photovoltaic components".

Specific requirements for connected electronic devices.

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

---The suspension section in Chapter 4 of IEC 62109-3:2020 is incorporated into 4.1.

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 Ministry of Industry and Information Technology of the People's Republic of China.

This document is under the jurisdiction of the National Technical Committee on Standardization of Solar Photovoltaic Energy Systems (SAC/TC90).

Introduction

GB/T 46985 "Safety of Power Conversion Equipment for Photovoltaic Power Generation Systems" sets forth safety requirements for power conversion equipment used in photovoltaic power generation systems.

Requirements were set forth to ensure the safety and reliability of power conversion equipment used in photovoltaic power generation systems, specifying the basic requirements that the equipment should meet.

The summation test method has positive guiding significance for improving the safety of power conversion equipment used in photovoltaic power generation systems. GB/T 46985 is proposed to be developed by...

It consists of the following parts.

---Part 1: General Requirements. This section specifies the general requirements that inverter products must meet, including but not limited to the insulation of the product.

Requirements regarding performance, electrical connections, electromagnetic compatibility, and environmental adaptability.

---Part 2: Inverter-Specific Requirements. The purpose is to specify the requirements for inverters that interact with the grid and for stand-alone inverters.

---Part 3: Specific Requirements for Electronic Devices Connected to Photovoltaic Components. The purpose is to specify the requirements for electronic components and photovoltaic components or photovoltaic...

Products composed of components.

Note: The correspondence between each part and the IEC 62109 series of international standards is as follows.

---Part 1 corresponds to IEC 62109-1:2010;

---Part 2 corresponds to IEC 62109-2:2011;

---Part 3 corresponds to IEC 62109-3:2020.

This document sets forth requirements for products composed of electronic components and photovoltaic elements or photovoltaic modules. For this type of equipment, consideration must be given to Considering the specific security concerns arising from the combination of these two product types, this document outlines the security requirements as follows. [Reference] Other parts of IEC 62109 and photovoltaic module standards such as IEC 61730 define additional tests and requirements for these sub-component product standards.

Modifications to the test procedures in IEC 62109 and IEC 61730 are defined, and methods

are provided for applying these tests to photovoltaic modules and electronic component groups.

Comprehensive guidance.

Note: It must be acknowledged that the physical designs of the products covered in this scope may vary considerably. The requirements of this document are expected to evolve to meet the needs of such products.

The unique safety requirements of the product, especially when the photovoltaic elements of the product are not flat-panel structures. For example, this document does not fully describe building-integrated photovoltaics.

Safety requirements for Building-Integrated Photovoltaics (BIPV) and Building-Added Photovoltaics (BAPV) products, although they fall within the scope of this document.

The purpose of this document is to provide additional security for the following types of integrated electronic devices [collectively referred to as component integration devices (MIEs)].

Relevant testing requirements.

a) Type A MIE, where the photovoltaic element, according to GB/T 20047.1-2006 and IEC 61730-2, can function independently of the electronic element as a light source.

The components were evaluated;

b) Type B MIE, wherein the photovoltaic elements, according to IEC 61730-1 and IEC 61730-2, cannot be used independently of electronic components as photovoltaic modules.

An assessment will be conducted.

Products not covered.

Photovoltaic modules that use only one or more bypass diodes as combined or integrated components. These products are covered by IEC 61730-1 and Within the scope of IEC 61730-2.

The scope includes and excludes the following aspects.

All contents of IEC 62109-1:2010 apply. The list of items excluded from the scope has been expanded to include those evaluated according to IEC 61215-1.

Estimate MIE.

Safety of power conversion equipment used in photovoltaic power generation systems Part 3: Electronic Devices Connected to Photovoltaic Components Specific requirements