

ICS 27.160
CCS K 83



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

GB/T 18210-2025

Replacing GB/T 18210-2000

**Photovoltaic array - On-site measurement of current-voltage
characteristics**

光伏方阵 电流-电压特性的现场测量

(English Translation)

Issued on: December 31, 2025

Implemented on: July 1, 2026

Issued by: State Administration for Market Regulation

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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 replaces GB/T 18210-2000 "Field Measurement of IV Characteristics of Crystalline Silicon Photovoltaic (PV) Arrays", and is consistent with GB/T 18210-Compared to 2000, aside from structural adjustments and editorial changes, the main technical changes are as follows.

- Added "Terms and Definitions" (see Chapter 3);
- The sections "Test Methods" and "Programs" have been merged into a single chapter, "Test Programs" (see Chapter 5).
- A new chapter on "Analysis" has been added (see Chapter 6);
- A new chapter, "Test Report," has been added (see Chapter 7);
- The word "accuracy" has been removed (see Chapter 6 of the 2000 edition);
- The statement regarding "test scope" has been amended (see Chapter 1, Chapter 1 of the 2000 edition);
- The content of "Normative References" has been changed (see Chapter 2, Chapter 4 of the 2000 edition);
- The rules for referring to "devices" have been changed (see Chapter 5, Chapter 4 of the 2000 edition);
- The rules for describing "measurement procedures" have been changed (see Chapter 6, Chapter 5 of the 2000 edition).

This document is equivalent to IEC 61829:2015 "Field measurement of current-voltage characteristics of photovoltaic arrays".

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

The performance of a photovoltaic (PV) system over its decades-long lifespan is measured by comparing its power generation with predictions based on recorded weather conditions.

It is determined by the estimated power generation. Continuous measurements of the system or subsystem-level operational output can detect poorly performing arrays, but cannot...

While it achieves precise tracking of attenuation, it is not suitable for identifying potential defects or fault types within the array. Field IV curve measurements are performed on a group basis.

This document provides a practical method for field benchmarking or troubleshooting of components, strings, and arrays. It specifies field IV curve measurements.

The methods and procedures for calculation, including guidelines for handling uncertainties related to the measurement equipment and configuration matrix. Consistent and correct application of IV.

Curve measurement procedures help ensure that the performance of photovoltaic systems is fully characterized over time.

The IV characteristics measured under actual field conditions or corrected to reference test conditions (RTC) provide the following information.

- Data on rated power or test capacity;
- Verify that the power performance of the installed array meets the design specifications;
- The potential differences between the characteristics of components tested on-site and measurements taken in the laboratory or factory;
- The performance of the detection components and array may have degraded relative to the initial field data;
- Detect the possibility of component or array failure or poor performance.

For a specific component, field test data corrected to STC conditions can be directly compared with previous test data from the laboratory or factory.

Compare the results obtained from the experiment. Differences in the spectral response or spatial uniformity of standard photovoltaic devices may require reference to the specifications in IEC 60904.

The program has been corrected.

The measurement results of the field array are affected by diodes, cables, mismatch losses, stains and obstructions, aging degradation and other uncontrollable factors.

Therefore, the measurement results cannot be directly equated to the product of the number of components and the power data of each component.

If a photovoltaic array consists of subarrays with different tilt angles, azimuth angles, technological or electrical configurations, the procedures specified in this document shall apply.

Applicable to each individual photovoltaic subarray of interest.

Field measurement of current-voltage characteristics of photovoltaic array

1 Scope

This document specifies the field measurement procedures for the current-voltage characteristics of flat-panel photovoltaic arrays, the corresponding meteorological conditions, and the data to be measured.

According to the procedure modified to standard test conditions (STC) or other selected temperature and irradiance conditions.

This document applies to the field measurement of the current-voltage characteristics of flat-panel photovoltaic arrays.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

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.

GB/T 46982-2025 Photovoltaic devices - Temperature and irradiance correction methods for IV characteristics (IEC 60891:2021, IDT) Note. GB/T 6495.1-2025 Photovoltaic devices - Part 1: Measurement of photovoltaic current-voltage characteristics (IEC 60904-1:2020, IDT) Note. GB/T 6495.2-2025 Photovoltaic devices - Part 2: Requirements for standard photovoltaic devices (IEC 60904-2:2023, IDT) IEC 60904-3 Photovoltaic devices - Part 3: Measurement principles and standard spectral irradiance data for terrestrial photovoltaic devices [Photo-] Note. GB/T 6495.3-2025 Photovoltaic devices - Part 3: Measurement principles of terrestrial photovoltaic devices based on standard spectral irradiance data (IEC 60904-3) 2019, IDT) IEC 60904-7 Photovoltaic devices - Part 7: Calculation of spectral mismatch error caused during the measurement of photovoltaic devices photovoltaic devices) Note. GB/T 6495.7-2025 Photovoltaic devices - Part 7: Calculation method for spectral mismatch correction in photovoltaic device measurements (IEC 60904-7:2019, IDT) Note. GB/T 6495.10-2025 Photovoltaic devices - Part 10: Methods for measuring linear