

ICS 27.160
CCS K 83



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

GB/T 6495.10-2025

Replacing GB/T 6495.10-2012

**Photovoltaic devices - Part 10: Methods of linear dependence
and linearity measurements**

光伏器件 第10部分：线性相关性和线性特性测量方法
(English Translation)

Issued on: December 31, 2025

Implemented on: July 1, 2026

Issued by: State Administration for Market Regulation

Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative References	
3 Terms and Definitions	
4 Component Selection	
5 Device	
5.1 General requirements for all procedures	
5.2 Apparatus for measuring all linear correlations under natural sunlight or a solar simulator	
5.3 Apparatus for measuring all linear correlations of short-circuit current using differential spectral responsivity measurement method	
5.4 Apparatus for measuring the linear characteristics of short-circuit current using the two-lamp method	
5.5 Apparatus for measuring the linearity of short-circuit current using the N-lamp method	
6 Procedures for measuring linear characteristics and other linear correlations under natural sunlight or a solar simulator. 5.	
6.1 Additional General Requirements for Natural Sunlight	
6.2 Testing under natural sunlight	
6.3 Debugging the Solar Simulator	
6.4 Measurement of linear correlation with irradiance	
6.5 Measurement of linear correlation with temperature	
7 Procedure for measuring the linearity and other linear correlations of short-circuit current using differential spectral responsivity. 8.	
7.1 Measurement of linear characteristics	
7.2 Measurement of the linear correlation between short-circuit current and temperature	
8 Procedure for measuring the linear characteristics of short-circuit current using the two-lamp method or the N-lamp method	
8.1 Background	
8.2 Two-lamp method measurement procedure	
8.3 N Lamp Method Measurement Procedure	
9 Calculation of linear correlation and linearity properties	
9.1 Overview	

- 9.2 Measurement Uncertainty Assessment
- 9.3 Determination of Deviation in General Linear Correlation
- 9.4 Determination of the nonlinear characteristics of short-circuit current and irradiance
- 9.5 Determination of the Nonlinear Characteristics of Short-Circuit Current and Irradiance using the Two-Lamp Method
- 9.6 N Lamp Method for Determining the Nonlinear Characteristics of Short-Circuit Current and Irradiance
- 9.7 Maximum deviation requirement of an ideal linear function.
- 10 Report
- Reference

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 10 of GB/T 6495 "Photovoltaic Devices". GB/T 6495 has already published the following parts.

- Part 1: Measurement of Photovoltaic Current-Voltage Characteristics;
- Part 1-1.Measurement of Current-Voltage Characteristics of Multijunction Photovoltaic Devices;
- Part 2: Requirements for Standard Photovoltaic Devices;
- Part 3: Measurement Principles of Ground-Based Photovoltaic Devices Based on Standard Irradiance Spectral Data;
- Part 5: Determining the Equivalent Cell Temperature (ECT) of Photovoltaic Devices Using the Open-Circuit Voltage Method;
- Part 7: Calculation Method for Spectral Mismatch Correction in Photovoltaic Device Measurements;
- Part 8: Measurement of the Spectral Response of Photovoltaic Devices;
- Part 8-1.Measurement of the Spectral Response of Multijunction Photovoltaic Devices;
- Part 9: Solar Simulator Characteristic Classification;
- Part 10: Methods for measuring linear correlation and linearity;
- Part 11: Initial light-induced degradation test method for crystalline silicon solar cells.

This document replaces GB/T 6495.10-2012 "Photovoltaic Devices - Part 10: Methods for Measuring Linear Characteristics", and is consistent with GB/T 6495.10-Compared to 2012, aside from structural adjustments and editorial changes, the main technical changes are as follows.

- a) A "Terms and Definitions" section has been added (see Chapter 3);
- b) Added a clear definition of equivalent samples in "Device Selection" (see Chapter 4);
- c) Changes were made to the "Apparatus" (see Chapter 5, Chapter 3 of the 2012 edition) and the "Measurement Procedures" (see Chapters 6, 7, and 8 of the 2012 edition). Chapters 4 and 5) and "Data Analysis" (see Chapter 9, Chapter 6 in the 2012 edition);
- d) Detailed data analysis of the two-lamp method was added, resulting in an extended version called the N-lamp method (see Chapter 8);
- e) The linear evaluation criteria have been changed (see Chapter 9, 2012 edition);
- f) A "Report" has been added (see Chapter 10).

This document adopts IEC 60904-10:2020 "Photovoltaic devices - Part 10: Methods for measuring linear correlation and linearity characteristics".

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 6495 proposes methods for measuring the performance of photovoltaic devices, as well as standards, value transfer, and result correction related to performance measurement.

The requirements for the classification of testing equipment, etc., have positive guiding significance for the performance measurement of photovoltaic devices such as photovoltaic cells and photovoltaic modules.

GB/T 6495 is proposed to consist of the following parts.

---Part 1: Measurement of Photovoltaic Current-Voltage Characteristics. The purpose is to define the basic requirements for measuring the IV curve of photovoltaic devices.

---Part 1-1.Measurement of Current-Voltage Characteristics of Multijunction Photovoltaic Devices. The purpose is to specify the measurement of the IV characteristics of

multijunction photovoltaic devices.

Quantification method.

---Part 1-2.Measurement of Current-Voltage Characteristics of Bifacial Photovoltaic Devices. The purpose is to specify the IV characteristic measurement of bifacial photovoltaic modules.

Quantification method.

---Parts 1-3.Measurement of Current-Voltage Characteristics of Curved Photovoltaic Devices. The purpose is to specify the measurement of the IV characteristics of curved photovoltaic devices.

Quantification method.

---Part 2: Requirements for Standard Photovoltaic Devices. The purpose is to specify the requirements for standard photovoltaic devices.

---Part 3: Measurement Principles of Ground-Based Photovoltaic Devices Based on Standard Irradiance Spectral Data. The aim is to provide standard photovoltaic irradiance data.

data.

---Part 4: Procedures for Establishing Standard Photovoltaic Device Calibration Traceability. The purpose is to establish traceability for photovoltaic device calibration.

program.

---Part 5: Determining the Equivalent Cell Temperature (ECT) of Photovoltaic Devices Using the Open-Circuit Voltage Method. The aim is to define the equivalent cell temperature (ECT) of photovoltaic devices.

Method for testing the open-circuit voltage of battery temperature.

---Part 7: Calculation Method for Spectral Mismatch Correction in Photovoltaic Device Measurements. The purpose is to specify the calculation method for spectral mismatch correction.

---Part 8: Measurement of the Spectral Response of Photovoltaic Devices. The purpose is to specify the methods for measuring the spectral response.

---Part 8-1.Measurement of the Spectral Response of Multijunction Photovoltaic Devices. The purpose is to specify the measurement method for the spectral response of multijunction photovoltaic devices.

method.

---Part 9: Classification of Solar Simulator Characteristics. The purpose is to specify the