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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Photovoltaic devices – Procedures for temperature and irradiance corrections to measured I-V characteristics

Dispositifs photovoltaïques – Procédures pour les corrections en fonction de la température et de l'éclairement à appliquer aux caractéristiques I-V mesurées

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FOREWORD

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International Standard IEC 60891 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This third edition cancels and replaces the second edition published in 2009. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

– adds guidance on which correction procedure shall be used depending on application;
– introduces translation procedure 4 applicable to c-Si technologies with unknown temperature coefficients;
– introduces various clarifications in existing procedures to improve measurement accuracy and reduce measurement uncertainty;
– adds an informative annex for supplementary methods that can be used for series resistance determination.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
82/1936/FDIS	82/1957/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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- replaced by a revised edition, or
- amended.

PHOTOVOLTAIC DEVICES – PROCEDURES FOR TEMPERATURE AND IRRADIANCE CORRECTIONS TO MEASURED I-V CHARACTERISTICS

1 Scope

This document defines procedures to be followed for temperature and irradiance corrections to the measured I-V (current-voltage) characteristics (also known as I-V curves) of photovoltaic (PV) devices. It also defines the procedures used to determine factors relevant to these corrections. Requirements for I-V measurement of PV devices are laid down in IEC 60904-1 and its relevant subparts.

The PV devices include a single solar cell with or without a protective cover, a sub-assembly of solar cells, or a module. A different set of relevant parameters for I-V curve correction applies for each type of device. The determination of temperature coefficients for a module (or sub-assembly of cells) may be calculated from single cell measurements, but this is not the case for the internal series resistance and curve correction factor, which should be separately measured for a module or subassembly of cells. Refer to Annex A for alternative procedures for series resistance determination.

The use of I-V correction parameters is valid for the PV device for which they have been measured. Variations may occur within a production lot or the type of class.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60904-1, *Photovoltaic devices – Part 1: Measurements of photovoltaic current-voltage characteristics*

IEC TS 60904-1-2, *Photovoltaic devices – Part 1-2: Measurement of current-voltage characteristics of bifacial photovoltaic (PV) devices*

IEC 60904-2, *Photovoltaic devices – Part 2: Requirements for reference solar devices*

IEC 60904-7, *Photovoltaic devices – Part 7: Computation of the spectral mismatch correction for measurements of photovoltaic devices*

IEC 60904-8, *Photovoltaic devices – Part 8: Measurement of spectral responsivity of a photovoltaic (PV) device*

IEC 60904-9, *Photovoltaic devices – Part 9: Classification of solar simulator characteristics*

IEC 60904-10:2020, *Photovoltaic devices – Part 10: Methods of linear dependence and linearity measurements*

IEC 61215-2, *Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 2: Test procedures*

IEC TS 61836, *Solar photovoltaic energy systems – Terms, definitions, and symbols*