

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Photovoltaic concentrators (CPV) – Performance testing –
Part 1: Standard conditions**

**Concentrateurs photovoltaïques (CPV) – Essai de performances –
Partie 1: Conditions normales**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PHOTOVOLTAIC CONCENTRATORS (CPV) –
PERFORMANCE TESTING –**
Part 1: Standard conditions

FOREWORD

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International Standard IEC 62670-1 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

The text of this standard is based on the following documents:

CDV	Report on voting
82/734/CDV	82/758/RVC

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A list of all parts in the IEC 62670 series, published under the general title *Photovoltaic concentrators (CPV) – Performance testing*, can be found on the IEC website.

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INTRODUCTION

This International Standard series establishes IEC requirements for evaluating concentrator PV performance. It is written to be applicable to all concentrator PV technologies that have a geometric concentration ratio greater than 3X and require tracking.

Included in the IEC 62670 series of standards are definitions of the standard conditions and methods to be used for assessing CPV performance.

IEC 62670-1 defines a standard set of conditions so that power ratings noted on data sheets and nameplates will have a standard basis.

IEC 62670-2 describes an on-sun, measurement-based method for determining the energy output and performance ratio for CPV arrays, assemblies and power plants.

IEC 62670-3 describes methods for providing a CPV power assessment under the sets of standard conditions, enabling assessments both indoors and outdoors.

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PHOTOVOLTAIC CONCENTRATORS (CPV) – PERFORMANCE TESTING –

Part 1: Standard conditions

1 Scope

This part of IEC 62670 defines standard conditions for assessing the power produced by CPV systems and their photovoltaic subcomponents. The object of this part of IEC 62670 is to define a consistent set of conditions so that power ratings noted on data sheets and nameplates will have a standard basis. Two sets of conditions are included to characterize:

- a) operating conditions that represent on-sun performance relative to commonly measured meteorological conditions, and
- b) test conditions that represent performance when the module is in a readily reproducible environment.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60904-3, *Photovoltaic devices – Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data*

3 Standard conditions

Any power rating shall indicate the standard conditions used.

- a) CSOC (concentrator standard operating conditions)
 - Irradiance: $900 \text{ W}\cdot\text{m}^{-2}$ direct normal irradiance.
 - Temperature: $20 \text{ }^\circ\text{C}$ ambient temperature.
 - Wind speed: $2 \text{ m}\cdot\text{s}^{-1}$.
 - Spectrum: Direct normal AM1.5 spectral irradiance distribution consistent with conditions described in IEC 60904-3.
- b) CSTC (concentrator standard test conditions)
 - Irradiance: $1\,000 \text{ W}\cdot\text{m}^{-2}$ direct normal irradiance.
 - Temperature: $25 \text{ }^\circ\text{C}$ cell temperature.
 - Spectrum: Direct normal AM1.5 spectral irradiance distribution consistent with conditions described in IEC 60904-3.

DNI (direct normal irradiance) is to be corrected for angle of incidence for devices using single-axis tracking.
