



**NSAI**  
Standards

Irish Standard  
I.S. EN 62670-1:2014

# Photovoltaic concentrators (CPV) - Performance testing - Part 1: Standard conditions

**I.S. EN 62670-1:2014**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

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EUROPEAN STANDARD

**EN 62670-1**

NORME EUROPÉENNE

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English Version

**Photovoltaic concentrators (CPV) - Performance testing - Part 1:  
Standard conditions  
(IEC 62670-1:2013)**

Essai de performances des concentrateurs photovoltaïques  
(CPV) - Partie 1: Conditions normales  
(CEI 62670-1:2013)

Konzentrator-Photovoltaik (CPV)-Leistungsmessung - Part  
1: Standardprüfbedingungen  
(IEC 62670-1:2013)

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Europäisches Komitee für Elektrotechnische Normung

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## **Foreword**

The text of document 82/734/CDV, future edition 1 of IEC 62670-1, prepared by IEC/TC 82 "Solar photovoltaic energy systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62670-1:2014.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2014-11-23
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**Annex ZA**

(normative)

**Normative references to international publications  
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NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here:

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<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60904-3	2008	Photovoltaic devices -- Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data	EN 60904-3	2008

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**IEC 62670-1**

Edition 1.0 2013-09

# **INTERNATIONAL STANDARD**

# **NORME INTERNATIONALE**

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

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



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IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00  
[info@iec.ch](mailto:info@iec.ch)  
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**IEC 62670-1**

Edition 1.0 2013-09

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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

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

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## CONTENTS

FOREWORD .....	3
INTRODUCTION .....	5
1 Scope .....	6
2 Normative references .....	6
3 Standard conditions .....	6

## 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.

## 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.

## 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.

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