

This is a preview of "PD IEC/TS 61836:2016". [Click here to purchase the full version from the ANSI store.](#)

**PD IEC/TS 61836:2016**



**BSI Standards Publication**

# **Solar photovoltaic energy systems — Terms, definitions and symbols**

This is a preview of "PD IEC/TS 61836:2016". [Click here to purchase the full version from the ANSI store.](#)

This Published Document is the UK implementation of IEC/TS 61836:2016. It supersedes DD CLC/TS 61836:2009 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/82, Photovoltaic Energy Systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2017.

Published by BSI Standards Limited 2017

ISBN 978 0 580 94426 0

ICS 27.160

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 January 2017.

#### **Amendments/corrigenda issued since publication**

<b>Date</b>	<b>Text affected</b>
-------------	----------------------

---

This is a preview of "PD IEC/TS 61836:2016". [Click here to purchase the full version from the ANSI store.](#)



Edition 3.0 2016-12

# TECHNICAL SPECIFICATION

---

## Solar photovoltaic energy systems – Terms, definitions and symbols

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

ICS 27.160

ISBN 978-2-8322-3762-5

**Warning! Make sure that you obtained this publication from an authorized distributor.**

This is a preview of "PD IEC/TS 61836:2016". [Click here to purchase the full version from the ANSI store.](#)

## CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references .....	6
3 Terms, definitions and symbols for solar photovoltaic energy systems.....	6
3.1 Solar photovoltaic cells and modules .....	6
3.2 Solar photovoltaic systems components.....	19
3.3 Solar photovoltaic systems .....	26
3.4 Solar photovoltaic system and component performance parameters .....	38
3.5 Measurement devices .....	58
3.6 Environmental parameters .....	60
3.7 Quality and testing.....	69
3.8 Concentrator photovoltaics .....	74
3.9 Project management .....	76
3.10 Miscellaneous .....	77
4 Acronyms and abbreviations.....	78
Bibliography.....	80
Index of terms and symbols .....	82

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### **SOLAR PHOTOVOLTAIC ENERGY SYSTEMS – TERMS, DEFINITIONS AND SYMBOLS**

#### FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. In exceptional circumstances, a technical committee may propose the publication of a technical specification when

- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC 61836, which is a technical specification, has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This third edition cancels and replaces the second edition published in 2007. This edition constitutes a technical revision.

This is a preview of "PD IEC/TS 61836:2016". [Click here to purchase the full version from the ANSI store.](#)

The main technical change with regard to the previous edition consists of adding / revising terms and definitions which have been discussed and agreed on during recent TC 82 WG 1 meetings, more particularly at the WG 1 meeting in Pretoria in 2015-11.

The changes made in this new edition were kept limited deliberately, in order to avoid a long development process and get the newest terms and definitions published as promptly as possible, so that they can be used in the market place.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
82/1117/DTS	82/1176/RVC

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

This document 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 website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual edition of this document may be issued at a later date.

This is a preview of "PD IEC/TS 61836:2016". [Click here to purchase the full version from the ANSI store.](#)

## INTRODUCTION

Following the development of solar photovoltaic (PV) technology, specific Standards have been prepared by IEC Technical Committee 82 since 1987. The terms and symbols used in the PV industry necessitate a systematisation in order to have a consolidated glossary for experts' common understanding.

This Glossary lists the terms and symbols that the PV industry commonly uses. It is a living document that will change as new terms and symbols are added. These have been harmonized with IEC 60050 and other IEC documents as far as possible. All definitions not included in this Technical Specification may be found elsewhere in other IEC documents.

NOTE 1 The terms "PV", "photovoltaic" and "solar photovoltaic" can be read and used interchangeably and without the need for stating each term to show that each is applicable and commonly used by the solar photovoltaic industry.

NOTE 2 All terms beginning with "solar photovoltaic" and "PV" are listed under their respective "photovoltaic" names.

NOTE 3 The terms are listed alphabetically in ten categories. Under these categories, some of the terms have been grouped into families of related meaning in order for the reader to readily see the differences between the terms.

NOTE 4 This Glossary lists the precise usage of terms. Cross-references are provided to efficiently point the reader to the location of definitions. For example, a "solar photovoltaic array" may also be referred to as "photovoltaic array" or "array" when the reference to it is particularly clear. The definition for this term, for example, occurs under the family heading of "photovoltaic" in the "Solar photovoltaic systems" section.

NOTE 5 The colloquial use of "solar" as the sole adjective of a noun is discouraged. For example, though "solar array" may be commonly used in non-technical conversations, the precise terms are "solar photovoltaic array", "photovoltaic array", and "array".

NOTE 6 Unless specifically noted otherwise, the terms "device", "cell", "module", "array", "sub-array", "field", "component", "system", and "product" refer to items incorporating a photovoltaic device. As a result, each of these terms can be understood to read as "PV device", "PV cell", "PV module", etc., without having to re-state the term "PV" each time, though now and then it is useful to re-state "PV".

NOTE 7 The numeric quantities described by many of the terms can be expressed in any convenient unit of time that the user may wish, such as day, month or year.

NOTE 8 " $W_p$ " is not a recommended unit for rated power. For example for a 50 W module, the correct terminology is "the rated power is 50 W", and not "the power is 50  $W_p$ ".

NOTE 9 The documents from which these terms originated are shown in square brackets [ ]. Some adaptations may have occurred.

NOTE 10 This Glossary document recognises the related IEC co-ordinating Technical Committees:

1 Terminology	77 Electromagnetic compatibility
21 Secondary cells and batteries	82 Solar photovoltaic energy systems
22 Power electronic systems and equipment	88 Wind energy generation systems
47 Semiconductor devices	105 Fuel cell technologies
64 Electrical installations and protection against electric shock	106 Methods for the assessment of electric, magnetic and electromagnetic fields associated with human exposure

This is a preview of "PD IEC/TS 61836:2016". [Click here to purchase the full version from the ANSI store.](#)

## SOLAR PHOTOVOLTAIC ENERGY SYSTEMS – TERMS, DEFINITIONS AND SYMBOLS

### 1 Scope

This Technical Specification deals with the terms, definitions and symbols from national and international solar photovoltaic standards and relevant documents used within the field of solar photovoltaic (PV) energy systems. It includes the terms, definitions and symbols compiled from the published IEC technical committee 82 standards.

The focus of this document is "what do the words mean" and not "under what conditions do the terms apply".

### 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 60904-3:2016, *Photovoltaic devices – Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data*

### 3 Terms, definitions and symbols for solar photovoltaic energy systems

#### 3.1 Solar photovoltaic cells and modules

This subclause addresses vocabulary pertaining to photovoltaic materials, photovoltaic cells and photovoltaic modules. Other photovoltaic components are described in 3.2. Photovoltaic systems are described in 3.3.

##### 3.1.1

##### **amorphous photovoltaic material**

solid-state material in a semi-stable condition with no long-range order in the structural arrangement of the atoms

##### 3.1.2

##### **amorphous silicon**

SEE: "silicon/amorphous", 3.1.67.1

##### 3.1.3

##### **anti-reflective coating**

layer formed on the surface of a PV cell to reduce reflective loss

#### 3.1.4 Area

##### 3.1.4.1

##### **active cell area**

part of the total cell area designed to receive solar radiation for creating the photovoltaic effect

Note 1 to entry: Active cell area equals the total cell area minus the area contribution of the metallisation lines if any.