



BSI Standards Publication

Photovoltaic devices

Part 5: Determination of the equivalent cell temperature (ECT) of photovoltaic (PV) devices by the open-circuit voltage method

National foreword

This British Standard is the UK implementation of EN 60904-5:2011+A1:2022. It is identical to IEC 60904-5:2011 incorporating amendment 1:2022. It supersedes BS EN 60904-5:2011, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by **A1** **A1**.

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 committee manager.

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Amendments/corrigenda issued since publication

Date	Text affected
31 January 2023	Implementation of IEC amendment 1:2022 with CENELEC endorsement A1:2022

English version

**Photovoltaic devices -
Part 5: Determination of the equivalent cell temperature (ECT) of
photovoltaic (PV) devices by the open-circuit voltage method
(IEC 60904-5:2011)**

Dispositifs photovoltaïques -
Partie 5: Détermination de la température
de cellule équivalente (ECT) des
dispositifs photovoltaïques (PV) par la
méthode de la tension en circuit ouvert
(CEI 60904-5:2011)

Photovoltaische Einrichtungen -
Teil 5: Bestimmung der gleichwertigen
Zellentemperatur von photovoltaischen
(PV) Betriebsmitteln nach dem
Leerlaufspannungs-Verfahren
(IEC 60904-5:2011)

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Ref. No. EN 60904-5:2011 E

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Foreword

The text of document 82/595/CDV, future edition 2 of IEC 60904-5, prepared by IEC TC 82, Solar photovoltaic energy systems, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60904-5 on 2011-03-24.

This European Standard supersedes EN 60904-5:1995.

The main technical changes with regard to EN 60904-5:1995 are as follows:

- added and updated normative references;
- added reporting section;
- added method on how to extract the input parameters;
- rewritten method on how to calculate ECT;
- reworked formulae to be in line with EN 60891.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

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| – latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2011-12-24 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2014-03-24 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60904-5:2011 was approved by CENELEC as a European Standard without any modification.

European foreword to amendment A1

The text of document 82/2069/FDIS, future IEC 60904-5/AMD1, prepared by IEC/TC 82 "Solar photovoltaic energy systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60904-5:2011/A1:2022.

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) 2023-09-22
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2025-12-22

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The text of the International Standard IEC 60904-5:2011/AMD1:2022 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

ISO 7214 NOTE Harmonized as EN ISO 7214

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60891	-	Photovoltaic devices - Procedures for temperature and irradiance corrections to measured I-V characteristics	EN 60891	-
IEC 60904-1	-	Photovoltaic devices - Part 1: Measurement of photovoltaic current-voltage characteristics	EN 60904-1	-
IEC 60904-2	-	Photovoltaic devices - Part 2: Requirements for reference solar devices	EN 60904-2	-
IEC 60904-7	-	Photovoltaic devices - Part 7: Computation of the spectral mismatch correction for measurements of photovoltaic devices	EN 60904-7	-
IEC 60904-10	-	Photovoltaic devices - Part 10: Methods of linearity measurement	EN 60904-10	-
IEC 61215	-	Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval	EN 61215	-
IEC 61829	-	Crystalline silicon photovoltaic (PV) array - On-site measurement of I-V characteristics	EN 61829	-
IEC/TS 60904-1-2	2019	Photovoltaic devices - Part 1-2: Measurement of current-voltage characteristics of bifacial photovoltaic (PV) devices	-	-
IEC 60904-3	-	Photovoltaic devices - Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data	EN IEC 60904-3	-