

Photovoltaic devices —

Part 2: Requirements for reference solar devices

The European Standard EN 60904-2:2007 has the status of a
British Standard

ICS 27.160

National foreword

This British Standard is the UK implementation of EN 60904-2:2007. It is identical to IEC 60904-2:2007. It supersedes BS EN 60904-2:1993/RP98 and BS EN 60904-6:1995, which are withdrawn.

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

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

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 July 2007

© BSI 2007

ISBN 978 0 580 56885 5

Amendments issued since publication

Amd. No.	Date	Comments

**Photovoltaic devices -
Part 2: Requirements for reference solar devices
(IEC 60904-2:2007)**

Dispositifs photovoltaïques -
Partie 2: Exigences relatives aux
dispositifs solaires de référence
(CEI 60904-2:2007)

Photovoltaische Einrichtungen -
Teil 2: Anforderungen an
Referenz-Solarelemente
(IEC 60904-2:2007)

This European Standard was approved by CENELEC on 2007-05-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 82/425/CDV, future edition 2 of IEC 60904-2, prepared by IEC TC 82, Solar photovoltaic energy systems, was submitted to the IEC-CENELEC parallel Unique Acceptance Procedure and was approved by CENELEC as EN 60904-2 on 2007-05-01.

EN 60904-2:2007 supersedes EN 60904-2:1993 + A1:1998 and EN 60904-6:1994 + A1:1998.

The main technical changes with regard to EN 60904-2:1993 are as follows:

- added subclause on “Calibration traceability”;
- added subclause on “Construction” to differentiate the various types of reference devices;
- added guidance on use of a built-in shunt resistor;
- increased data sheet requirements. In particular added requirement for either a mismatch correction or an estimate of uncertainty due to the mismatch of the reference device;
- added Clause on “Calibration of working solar reference devices”.

The following dates were fixed:

- | | | |
|--|-------|------------|
| – latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2008-02-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2010-05-01 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60904-2:2007 was approved by CENELEC as a European Standard without any modification.

CONTENTS

1	Scope and object.....	4
2	Normative references	4
3	Description	5
3.1	Calibration traceability	5
3.1.1	Primary reference device:	5
3.1.2	Secondary reference device:	5
3.1.3	Working reference device:	5
3.2	Construction of reference devices	5
3.2.1	Reference cell	5
3.2.2	Multi-cell reference devices	6
3.3	Built-in shunt resistors	6
4	Selection	7
4.1	Requirements, general	7
4.2	Additional requirements for reference modules	7
5	Temperature measurement	7
6	Electrical connections	7
7	Calibration	7
8	Data sheet	8
9	Marking	9
10	Packaging	9
10.1	Recommended packaging for use in natural sunlight	9
10.2	Recommended packaging for use under simulators	9
10.3	Single cell package	9
11	Care of reference devices	10
12	Calibration of secondary reference devices against a primary reference cell	10
12.1	Natural sunlight	10
12.2	Simulated sunlight	11
12.3	Test Procedure	11
13	Calibration of Working Solar Reference Device against a Secondary Solar Reference Device	12
Annex ZA (normative) Normative references to international publications with their corresponding European publications		13
Figure 1 – Reference cell in a multi-cell package		12
Figure 2 – Single-cell package		12