



SLOVENSKI STANDARD SIST EN 60904-7:2001

01-september-2001

Photovoltaic devices -- Part 7: Computation of spectral mismatch error introduced in the testing of a photovoltaic device

Photovoltaische Einrichtungen -- Teil 7: Berechnung des Fehlers der spektralen Fehlanpassung, der beim Prüfen von photovoltaischen Einrichtungen entsteht

Dispositifs photovoltaïques -- Partie 7: Calcul de l'erreur de désadaptation des réponses spectrales introduite dans les mesures de test d'un dispositif photovoltaïque

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Ta slovenski standard je istoveten z: EN 60904-7:1998

ICS:

27.160 Solar energy engineering

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60904-7

April 1998

ICS 27.160

English version

Photovoltaic devices
Part 7: Computation of spectral mismatch error
introduced in the testing of a photovoltaic device
(IEC 60904-7:1998)

Dispositifs photovoltaïques
Partie 7: Calcul de l'erreur de
désadaptation des réponses spectrales
introduite dans les mesures de test d'un
dispositif photovoltaïque
(CEI 60904-7:1998)

Photovoltaische Einrichtungen
Teil 7: Berechnung des Fehlers der
spektralen Fehlanpassung, der beim
Prüfen von photovoltaischen
Einrichtungen entsteht
(IEC 60904-7:1998)

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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.

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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 82/184/FDIS, future edition 2 of IEC 60904-7, prepared by IEC TC 82, Solar photovoltaic energy systems, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60904-7 on 1998-04-01.

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) 1999-01-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2001-01-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60904-7:1998 was approved by CENELEC as a European Standard without any modification.

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Annex ZA (normative)**Normative references to international publications
with their corresponding European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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 60904-3	1989	Photovoltaic devices Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data	EN 60904-3	1993
IEC 60904-10	1998	Part 10: Methods of linearity measurement	EN 60904-10	1998

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**NORME
INTERNATIONALE
INTERNATIONAL
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**CEI
IEC**

60904-7

Deuxième édition
Second edition
1998-03

Dispositifs photovoltaïques –

Partie 7:

Calcul de l'erreur de désadaptation des réponses spectrales introduite dans les mesures de test d'un dispositif photovoltaïque

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Photovoltaic devices –

SIST EN 60904-7:2001

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**Part 7:
Computation of spectral mismatch error introduced in the testing of a photovoltaic device**

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PHOTOVOLTAIC DEVICES –

**Part 7: Computation of spectral mismatch error
introduced in the testing of a photovoltaic device**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60904-7 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This second edition cancels and replaces the first (monolingual English) edition published in 1995 and constitutes a technical revision.

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

FDIS	Report on voting
82/184/FDIS	82/200/RVD

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

PHOTOVOLTAIC DEVICES –

Part 7: Computation of spectral mismatch error introduced in the testing of a photovoltaic device

1 Scope

This part of IEC 60904 describes the procedure for determining the error introduced in the testing of a photovoltaic device caused by the interaction of the mismatch between the spectral responses of the test specimen and the reference device, and the mismatch between the test spectrum and the reference spectrum. The procedure applies only to photovoltaic devices which are linear over the range of interest, as defined in IEC 60904-10.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60904. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 60904 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60904-3:1989, *Photovoltaic devices – Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data*

[SIST EN 60904-7:2001](https://standards.iteh.ai/catalog/standards/sist/f1981f2-1b6e-495e-b1af-98b93b8f0ffd/sist-en-60904-7-2001)

IEC 60904-10:1998, *Photovoltaic devices – Part 10: Methods of linearity measurement*

3 Description of method

The error is computed from the integrated products of the relative spectral responses of the reference device and the test specimen and the relative spectral irradiances of the simulator and the reference solar spectral irradiance distribution as defined in IEC 60904-3. Thus, if

J_1 is the short-circuit current density of the reference cell in solar radiation having an irradiance of 1 000 W·m⁻² and the reference spectral distribution [A·m⁻²];

J_2 is the short-circuit current density of the reference cell as measured in natural or simulated solar radiation [A·m⁻²];

$s_{1\lambda}$ is the absolute spectral response of the reference cell at wavelength λ [A·W⁻¹];

$k_1 \cdot s_{1\lambda}$ is the relative spectral response of the reference cell at wavelength λ ;

J_3 is the short-circuit current density of the test specimen in solar radiation having an irradiance of 1 000 W·m⁻² and the reference spectral irradiance distribution [A·m⁻²];