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colour inside

Photovoltaic devices –
Part 2: Requirements for photovoltaic reference devices

INTERNATIONAL
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COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PHOTOVOLTAIC DEVICES –

Part 2: Requirements for photovoltaic reference devices

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International Standard IEC 60904-2 has been prepared by IEC Technical Committee 82: Solar photovoltaic energy systems.

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

The main technical changes with regard to the previous edition are as follows:

– addition of a test procedure in simulated sunlight of subsequent measurement of primary and secondary reference device;
– definition of standard test conditions;
– reduction of allowed diffuse component for secondary reference cell calibration to 20 %.

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

FDIS	Report on voting
82/893/FDIS	82/918/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.

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PHOTOVOLTAIC DEVICES –

Part 2: Requirements for photovoltaic reference ~~solar~~ devices

1 Scope ~~and object~~

This part of IEC 60904 gives requirements for the classification, selection, packaging, marking, calibration and care of photovoltaic reference ~~solar~~ devices.

This standard covers ~~solar~~ photovoltaic reference devices used to determine the electrical performance of ~~solar~~ photovoltaic cells, modules and arrays under natural and simulated sunlight. It does not cover ~~solar~~ photovoltaic reference devices for use under concentrated sunlight.

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 60891, *Photovoltaic devices – Procedures for temperature and irradiance corrections to measured I-V characteristics*

IEC 60904-1, *Photovoltaic devices – Part 1: Measurements of photovoltaic current-voltage characteristics*

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

IEC 60904-4, *Photovoltaic devices – Part 4: Reference solar devices – Procedures for establishing calibration traceability*

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

IEC 60904-7, *Photovoltaic devices – Part 7: Computation of the spectral mismatch correction for measurements of photovoltaic devices*

IEC 60904-8, *Photovoltaic devices – Part 8: Measurement of spectral responsivity of a photovoltaic (PV) device*

IEC 60904-9, *Photovoltaic devices – Part 9: Solar simulator performance requirements*

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

~~IEC 61215, Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval~~

~~IEC 61646, Thin-film terrestrial photovoltaic (PV) modules – Design qualification and type approval~~

IEC TS 61836, *Solar photovoltaic energy systems – Terms, definitions and symbols*

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Photovoltaic devices –
Part 2: Requirements for photovoltaic reference devices

Dispositifs photovoltaïques –
Partie 2: Exigences applicables aux dispositifs photovoltaïques de référence

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PHOTOVOLTAIC DEVICES –

Part 2: Requirements for photovoltaic reference devices

FOREWORD

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PHOTOVOLTAIC DEVICES –

Part 2: Requirements for photovoltaic reference devices

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This part of IEC 60904 gives requirements for the classification, selection, packaging, marking, calibration and care of photovoltaic reference devices.

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

IEC 60904-4, *Photovoltaic devices – Part 4: Reference solar devices – Procedures for establishing calibration traceability*

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

IEC 60904-7, *Photovoltaic devices – Part 7: Computation of the spectral mismatch correction for measurements of photovoltaic devices*

IEC 60904-8, *Photovoltaic devices – Part 8: Measurement of spectral responsivity of a photovoltaic (PV) device*

IEC 60904-9, *Photovoltaic devices – Part 9: Solar simulator performance requirements*

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

IEC TS 61836, *Solar photovoltaic energy systems – Terms, definitions and symbols*

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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DISPOSITIFS PHOTOVOLTAÏQUES –

Partie 2: Exigences applicables aux dispositifs photovoltaïques de référence

AVANT-PROPOS

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Cette troisième édition annule et remplace la seconde édition, publiée en 2007, dont elle constitue une révision technique.

Par rapport à l'édition précédente, les modifications techniques majeures sont les suivantes:

– ajout d'une procédure d'essai en rayonnement lumineux solaire simulé d'une mesure suivante de dispositifs primaires et secondaires de référence;
– définition des conditions normalisées d'essai;

– diminution de la composante diffuse autorisée pour l'étalonnage à 20 % de la cellule secondaire de référence.

Le texte de cette norme est issu des documents suivants:

FDIS	Rapport de vote
82/893/FDIS	82/918/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de la présente norme.

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Une liste de toutes les parties de la série IEC 60904, publiées sous le titre général *Dispositifs photovoltaïques,* peut être consultée sur le site web de l'IEC.

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DISPOSITIFS PHOTOVOLTAÏQUES –

Partie 2: Exigences applicables aux dispositifs photovoltaïques de référence

1 Domaine d'application

La présente partie de l'IEC 60904 donne les exigences relatives à la classification, à la sélection, au conditionnement, au marquage, à l'étalonnage et aux précautions d'utilisation des dispositifs photovoltaïques de référence.

La présente norme couvre les dispositifs photovoltaïques de référence utilisés pour déterminer les performances électriques des cellules, modules et panneaux photovoltaïques sous rayonnement lumineux solaire naturel et simulé. Elle ne couvre pas les dispositifs photovoltaïques de référence pour une utilisation sous rayonnement lumineux solaire concentré.

2 Références normatives

Les documents suivants sont cités en référence de manière normative, en intégralité ou en partie, dans le présent document et sont indispensables pour son application. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60891, *Dispositifs photovoltaïques – Procédures pour les corrections en fonction de la température et de l'éclairement à appliquer aux caractéristiques I-V mesurées*

IEC 60904-1, *Dispositifs photovoltaïques – Partie 1: Mesure des caractéristiques courant-tension des dispositifs photovoltaïques*

IEC 60904-3, *Dispositifs photovoltaïques – Partie 3: Principes de mesure des dispositifs solaires photovoltaïques (PV) à usage terrestre incluant les données de l'éclairement spectral de référence*

IEC 60904-4, *Dispositifs photovoltaïques – Partie 4: Dispositifs solaires de référence – Procédures pour établir la traçabilité de l'étalonnage*

IEC 60904-5, *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*

IEC 60904-7, *Dispositifs photovoltaïques – Partie 7: Calcul de la correction de désadaptation des réponses spectrales dans les mesures de dispositifs photovoltaïques*

IEC 60904-8, *Dispositifs photovoltaïques – Partie 8: Mesure de la sensibilité spectrale d'un dispositif photovoltaïque (PV)*

IEC 60904-9, *Dispositifs photovoltaïques – Partie 9: Exigences pour le fonctionnement des simulateurs solaires*

IEC 60904-10, *Dispositifs photovoltaïques – Partie 10: Méthodes de mesure de la linéarité*

IEC TS 61836, *Solar photovoltaic energy systems – Terms, definitions and symbols* (disponible en anglais uniquement)