SLOVENSKI STANDARD
SIST EN IEC 61724-1:2021

01-november-2021

Nadomešča:
SIST EN 61724-1:2017

Zmogljivost fotonapetostnega sistema - 1. del: Spremljanje in nadzorovanje

Photovoltaic system performance - Part 1: Monitoring

Betriebsverhalten von Photovoltaik-Systemen - Teil 1: Überwachung

Performance d'un système photovoltaïque - Partie 1: Surveillance

Ta slovenski standard je istoveten z: **EN IEC 61724-1:2021**

ICS:

27.160	Sončna energija	Solar energy engineering

SIST EN IEC 61724-1:2021 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 61724-1

August 2021

ICS 27.160

Supersedes EN 61724-1:2017 and all of its amendments and corrigenda (if any)

English Version

Photovoltaic system performance - Part 1: Monitoring (IEC 61724-1:2021)

Performances des systèmes photovoltaïques - Partie 1: Surveillance (IEC 61724-1:2021)

Betriebsverhalten von Photovoltaik-Systemen - Teil 1: Überwachung (IEC 61724-1:2021)

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CENELEC

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 82/1904/FDIS, future edition 2 of IEC 61724-1, prepared by IEC/TC 82 “Solar photovoltaic energy systems” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61724-1:2021.

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) 2022–05–25
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024–08–25

This document supersedes EN 61724-1:2017 and all of its amendments and corrigenda (if any).

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

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 61724-1:2021 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:

IEC 60904-3 NOTE Harmonized as EN IEC 60904-3

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60050-131	-	International Electrotechnical Vocabulary (IEV) - Part 131: Circuit theory	-	-
IEC 60904-2	-	Photovoltaic devices - Part 2: Requirements for photovoltaic reference devices	EN 60904-2	-
IEC 60904-5	-	Photovoltaic devices - Part 5: Determination of the equivalent cell temperature (ECT) of photovoltaic (PV) devices by the open-circuit voltage method	EN 60904-5	-
IEC 60904-7	-	Photovoltaic devices - Part 7: Computation of the spectral mismatch correction for measurements of photovoltaic devices	EN IEC 60904-7	-
IEC 61215	series	Terrestrial photovoltaic (PV) modules - Design qualification and type approval	EN IEC 61215	series
IEC 61557-12	-	Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Equipment for testing, measuring or monitoring of protective measures - Part 12: Power metering and monitoring devices (PMD)		-
IEC/TS 61724-2		Photovoltaic system performance - Part 2: Capacity evaluation method		
IEC/TS 61724-3		Photovoltaic system performance - Part 3: Energy evaluation method		
IEC/TS 61836		Solar photovoltaic energy systems - Terms, definitions and symbols		-
IEC 62053-22	-	Electricity metering equipment - Particular requirements - Part 22: Static meters for AC active energy (classes 0,1S, 0,2S and 0,5S)	EN IEC 62053-22	-

IEC 62670-3	-	Photovoltaic concentrators (CPV) – Performance testing - Part 3: Performance measurements and power rating	EN 62670-3	-
IEC 62817	2014	Photovoltaic systems - Design qualification of solar trackers	EN 62817	2015
ISO/IEC Guide 98-1	-	Uncertainty of measurement – Part 1:- Introduction to the expression of uncertainty in measurement		-
ISO/IEC Guide 98-3	-	Uncertainty of measurement - Part 3:- Guide to the expression of uncertainty in measurement (GUM:1995)		-
ISO 9060	2018	Solar energy - Specification and classification of instruments for measuring hemispherical solar and direct solar radiation		
ISO 9488		Solar energy - Vocabulary	EN ISO 9488	

IEC 61724-1

Edition 2.0 2021-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Photovoltaic system performance – Part 1: Monitoring

Performances des systèmes photovoltaïques – Partie 1: Surveillance

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 27.160

ISBN 978-2-8322-1002-5

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PHOTOVOLTAIC SYSTEM PERFORMANCE –

Part 1: Monitoring

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.
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International Standard IEC 61724-1 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This second edition cancels and replaces the first edition, published in 2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- Monitoring of bifacial systems is introduced.
- Irradiance sensor requirements are updated.
- Soiling measurement is updated based on new technology.
- Class C monitoring systems are eliminated.
- Various requirements, recommendations and explanatory notes are updated.

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

FDIS	Report on voting
82/1904/FDIS	82/1925/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 61724 series, published under the general title *Photovoltaic system performance*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

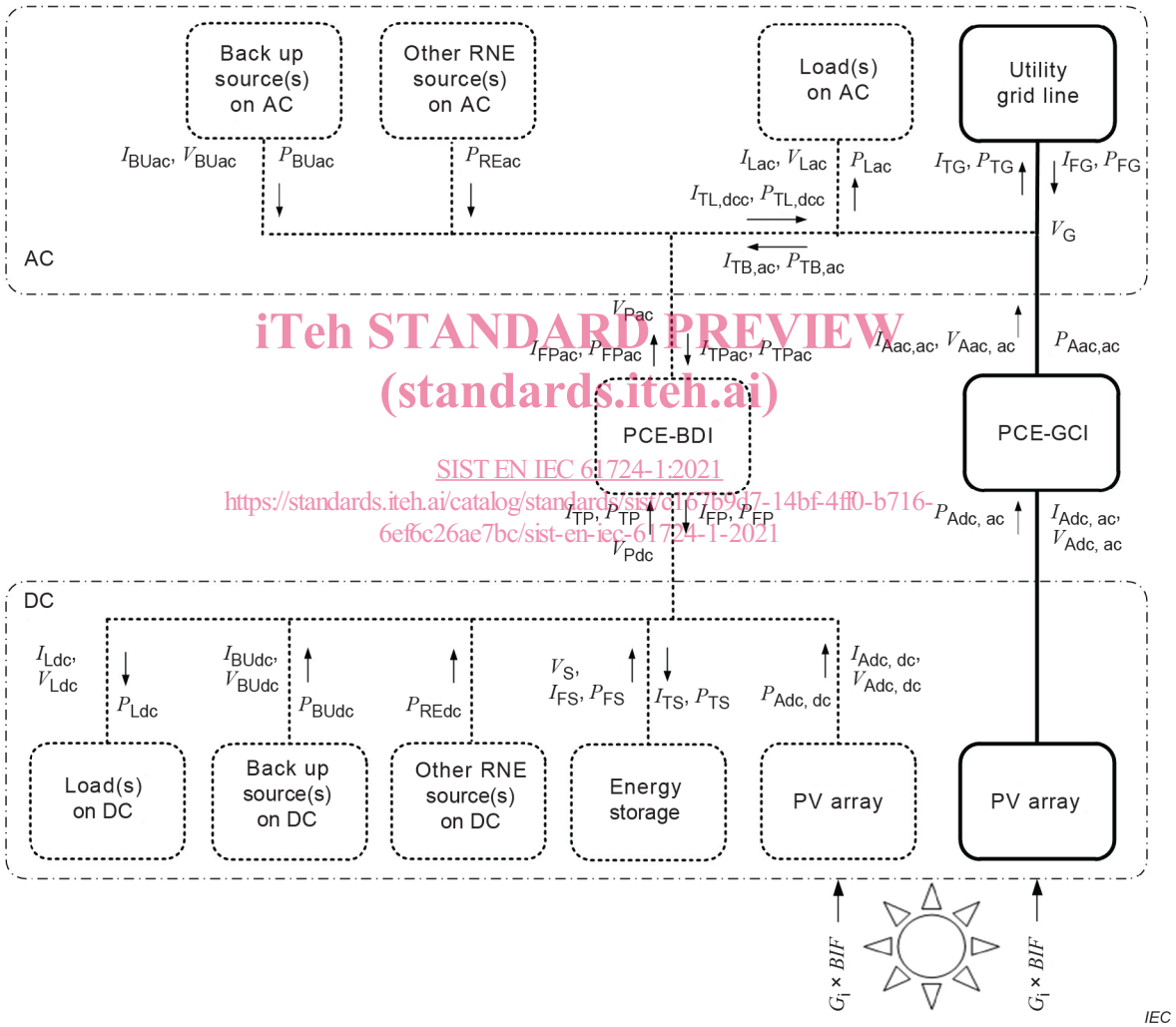
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

This document defines classes of photovoltaic (PV) performance monitoring systems and serves as guidance for monitoring system choices.

Figure 1 illustrates major elements comprising different PV system types. The main clauses of this document are written for grid-connected systems without local loads, energy storage, or auxiliary sources, as shown by the bold lines in Figure 1. Annex E includes some details for systems with additional components.

The PV array may include both fixed-axis and tracker systems and both flat-plate and concentrator systems.



Key

RNE: renewable energy

PCE: power conditioning equipment

BDI: bi-directional inverter

GCI: grid-connected inverter

Bold lines denote simple grid-connected system without local loads, energy storage, or auxiliary sources.

Figure 1 – Possible elements of PV systems

The purposes of a performance monitoring system are diverse and could include comparing performance to design expectations and guarantees as well as detecting and localizing faults.

For comparing performance to design expectations and guarantees, the focus should be on system-level data and consistency between prediction and test methods.

For detecting and localizing faults there should be greater resolution at sub-levels of the system and an emphasis on measurement repeatability and correlation metrics.

The monitoring system should be adapted to the PV system's size and user requirements. In general, larger PV systems should have more monitoring points and higher accuracy sensors than smaller and lower-cost PV systems.