IEC 63092-2

Edition 1.0 2020-09

INTERNATIONAL STANDARD

colour inside

Photovoltaics in buildings –
Part 2: Requirements for building-integrated photovoltaic systems

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 27.160

ISBN 978-2-8322-8877-1

Warning! Make sure that you obtained this publication from an authorized distributor.

® Registered trademark of the International Electrotechnical Commission

CONTENTS

FOREWORD 4
1 Scope 6
2 Normative references 6
3 Terms and definitions 9
4 Requirements 11
4.1 Electrotechnical requirements (for system) 11
4.2 Building-related requirements (for system) 12
4.2.1 General 12
4.2.2 Requirements for systems using modules with at least one glass pane 13
4.2.3 Requirements for systems using modules without glass panes 16
5 Labelling 18
6 System documentation, commissioning tests and inspection 19
7 Reporting 19
Annex A (informative) Resistance to wind-driven rain of BIPV roof coverings with discontinuously laid elements – Test method 20
A.1 General 20
A.2 Scope 20
A.3 Terms and definitions 20
A.4 Symbols and units 21
A.5 Principle 21
A.6 Test specimen 21
A.6.1 Test specimen samples 21
A.6.2 Dimension of the test specimen 21
A.6.3 Number of sets of tests 22
A.6.4 Preparation of test specimen 22
A.7 Apparatus 22
A.7.1 General 22
A.7.2 Suction chamber 22
A.7.3 Fan system 22
A.7.4 Rain generation installation 23
A.7.5 Run-off water 24
A.7.6 Observation and measurement of leakage 24
A.8 Test procedure 24
A.8.1 General 24
A.8.2 Test conditions 25
A.9 Evaluation and expression of test results 27
A.10 Test report 27
Bibliography 29

Figure 1 – Example of optically representative area of a crystalline silicon-based (top) and a thin-film (bottom) BIPV system for the calculation method based on spectral measurements 11

Table 1 – Summary of building-related requirements from IEC 63092-2 specific to BIPV systems using modules with at least one glass pane 16
Table 2 – Summary of building-related requirements from IEC 63092-2 specific to BIPV systems using modules based on polymer waterproofing sheet or metal sheet 18
Table A.1 – Wind speed modification factor 26
Table A.2 – Wind and rain test conditions 26

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

PHOTOVOLTAICS IN BUILDINGS –

Part 2: Requirements for building-integrated photovoltaic systems

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.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 63092-2 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems, in collaboration with ISO technical committee 160: Glass in building.

This standard is based on EN 50583-2.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
82/1768A/FDIS	82/1793/RVD

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

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 63092 series, published under the general title *Photovoltaics in buildings*, 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 "http://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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

PHOTOVOLTAICS IN BUILDINGS –

Part 2: Requirements for building-integrated photovoltaic systems

1 Scope

IEC 63092-1 specifies BIPV (building-integrated photovoltaic) module requirements while this document specifies BIPV system requirements. Both parts specify building requirements and the applicable electrotechnical requirements (both in general and specific with respect to module assembly and application category).

This document applies to photovoltaic systems that are integrated into buildings with the photovoltaic modules used as building products. It focuses on the properties of these photovoltaic systems relevant to basic building requirements and the applicable electrotechnical requirements. This document references international standards, technical reports and guidelines. For some applications, national standards (or regulations) for building products may also apply in individual countries, which are not explicitly referenced here and for which harmonized International Standards are not yet available.

This document is addressed to manufacturers, planners, system designers, installers, testing institutes and building authorities.

This document does not apply to concentrating photovoltaic systems or photovoltaic systems using concentrating photovoltaic modules.

This document addresses requirements on the BIPV systems in the specific ways they are intended to be mounted and the mounting structure, but not the BIPV module itself, which is within the scope of IEC 63092-1.

2 Normative references

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.

IEC 60364-1, *Low-voltage electrical installations – Part 1: Fundamental principles, assessment of general characteristics, definitions*

IEC 60364-4-41, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock*

IEC 60364-4-42, *Low-voltage electrical installations – Part 4-42: Protection for safety – Protection against thermal effects*

IEC 60364-4-43, *Low-voltage electrical installations – Part 4-43: Protection for safety – Protection against overcurrent*

IEC 60364-4-44, *Low-voltage electrical installations – Part 4-44: Protection for safety – Protection against voltage disturbances and electromagnetic disturbances*

IEC 60364-5-51, *Electrical installations of buildings – Part 5-51: Selection and erection of electrical equipment – Common rules*

IEC 60364-5-52, *Low-voltage electrical installations – Part 5-52: Selection and erection of electrical equipment – Wiring systems*

IEC 60364-5-53, *Low-voltage electrical installations – Part 5-53: Selection and erection of electrical equipment – Devices for protection for safety, isolation, switching, control and monitoring*

IEC 60364-5-54, *Low-voltage electrical installations – Part 5-54: Selection and erection of electrical equipment – Earthing arrangements and protective conductors*

IEC 60364-5-55, *Electrical installations of buildings – Part 5-55: Selection and erection of electrical equipment – Other equipment*

IEC 60364-5-56, *Low-voltage electrical installations – Part 5-56: Selection and erection of electrical equipment – Safety services*

IEC 60364-6, *Low-voltage electrical installations – Part 6: Verification*

IEC 60364-7-712, *Low-voltage electrical installations – Part 7-712: Requirements for special installations or locations – Solar photovoltaic (PV) power supply systems*

IEC 61082-1, *Preparation of documents used in electrotechnology – Part 1: Rules*

IEC 61215-1, *Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 1: Test requirements*

IEC 61215-2, *Terrestrial photovoltaic (PV) modules – Design qualification and type approval – Part 2: Test procedures*

IEC 61724-1, *Photovoltaic system performance – Part 1: Monitoring*

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 61730-2, *Photovoltaic (PV) module safety qualification – Part 2: Requirements for testing*

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

IEC 62446-1, *Photovoltaic (PV) systems – Requirements for testing, documentation and maintenance – Part 1: Grid connected systems – Documentation, commissioning tests and inspection*

IEC 62548, *Photovoltaic (PV) arrays – Design requirements*

IEC 63092-1, *Photovoltaics in buildings – Part 1: Requirements for building-integrated photovoltaic modules*

IEC/IEEE 82079-1, *Preparation of information for use (instructions for use) of products – Part 1: Principles and general requirements*

ISO 2394, *General principles on reliability for structures*

ISO 3010, *Bases for design of structures – Seismic actions on structures*

ISO 4354, *Wind actions on structures*

ISO 4355, *Bases for design of structures – Determination of snow loads on roofs*

ISO 4356, *Bases for the design of structures – Deformations of buildings at the serviceability limit states*

ISO 6946, *Building components and building elements – Thermal resistance and thermal transmittance – Calculation methods*

ISO 9050, *Glass in building – Determination of light transmittance, solar direct transmittance, total solar energy transmittance, ultraviolet transmittance and related glazing factors*

ISO 12543-1, *Glass in building – Laminated glass and laminated safety glass – Part 1: Definitions and description of component parts*

ISO 12494, *Atmospheric icing of structures*

ISO 12631, *Thermal performance of curtain walling – Calculation of thermal transmittance*

ISO 13033, *Bases for design of structures – Loads, forces and other actions – Seismic actions on nonstructural components for building applications*

ISO 15099, *Thermal performance of windows, doors and shading devices – Detailed calculations*

ISO 15821, *Doorsets and windows – Water-tightness test under dynamic pressure – Cyclonic aspects*

ISO 16813, *Building environment design – Indoor environment – General principles*

ISO 19467, *Thermal performance of windows and doors – Determination of solar heat gain coefficient using solar simulator*

ISO 22111, *Bases for design of structures – General requirements*

ISO 28278-1, *Glass in building – Glass products for structural sealant glazing – Part 1: Supported and unsupported monolithic and multiple glazing*

ISO 28278-2, *Glass in building – Glass products for structural sealant glazing – Part 2: Assembly rules*

ISO 29584, *Glass in building – Pendulum impact testing and classification of safety glass*

ISO 52022-1, *Energy performance of buildings – Thermal, solar and daylight properties of building components and elements – Part 1: Simplified calculation method of the solar and daylight characteristics for solar protection devices combined with glazing*

ISO 52022-3, *Energy performance of buildings – Thermal, solar and daylight properties of building components and elements – Part 3: Detailed calculation method of the solar and daylight characteristics for solar protection devices combined with glazing*