

---

**Dvosmerni omrežni elektroenergetski pretvorniki - 2. del: Vmesnik za GCPC in porazdeljene energijske vire (IEC 62909-2:2019)**

Bi-directional grid-connected power converters - Part 2: Interface of GCPC and distributed energy resources (IEC 62909-2:2019)

Bidirektionale netzgekoppelte Leistungsumrichter - Teil 2: Schnittstelle des GCPC und erneuerbaren Energiequellen (IEC 62909-2:2019)

Convertisseurs de puissance connectés aux réseaux bidirectionnels - Partie 2: Interface du GCPC avec les ressources énergétiques réparties (IEC 62909-2:2019)

<https://standards.iteh.ai/catalog/standards/sist/ee065b65-8558-4bee-ad81-995b3b29213/sist-en-iec-62909-2-2019>

**Ta slovenski standard je istoveten z: EN IEC 62909-2:2019**

**ICS:**

29.200

Usmerniki. Pretvorniki.  
Stabilizirano električno  
napajanje

Rectifiers. Convertors.  
Stabilized power supply

**SIST EN IEC 62909-2:2019****en,fr,de**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN IEC 62909-2:2019

<https://standards.iteh.ai/catalog/standards/sist/ee065b65-8558-4bee-ad81-f995b3b29213/sist-en-iec-62909-2-2019>

EUROPEAN STANDARD

EN IEC 62909-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2019

ICS 29.200

English Version

## Bi-directional grid-connected power converters - Part 2: Interface of GCPC and distributed energy resources (IEC 62909-2:2019)

Convertisseurs de puissance connectés aux réseaux bidirectionnels - Partie 2: Interface du GCPC avec les ressources énergétiques réparties (IEC 62909-2:2019)

Bidirektionale netzgekoppelte Leistungsumrichter - Teil 2: Schnittstelle des GCPC und erneuerbaren Energiequellen (IEC 62909-2:2019)

This European Standard was approved by CENELEC on 2019-04-12. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

[SIST EN IEC 62909-2:2019](#)

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



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

**EN IEC 62909-2:2019 (E)****European foreword**

The text of document 22E/196/FDIS, future edition 1 of IEC 62909-2, prepared by SC 22E "Stabilized power supplies" of IEC/TC 22 "Power electronic systems and equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62909-2:2019.

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) 2020-01-12
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-04-12

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.

**iTeh STANDARD PREVIEW**  
**Endorsement notice**  
**(standards.itih.ai)**

The text of the International Standard IEC 62909-2:2019 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60364-7-722:2018	NOTE Harmonized as HD 60364-7-722:2018
IEC 61851-1:2017	NOTE Harmonized as EN IEC 61851-1:— <sup>1</sup> (not modified)
IEC 61982:2012	NOTE Harmonized as EN 61982:2012 (not modified)
IEC 62109-1:2010	NOTE Harmonized as EN 62109-1:2010 (not modified)
IEC 62619:2017	NOTE Harmonized as EN 62619:2017 (not modified)
IEC 63027:— <sup>2</sup>	NOTE Harmonized as EN IEC 63027:— <sup>3</sup>

---

<sup>1</sup> Under preparation. Stage at the time of publication: FprEN 61851-1:2016.

<sup>2</sup> Under preparation. Stage at the time of publication: IEC/PCC 63027:2018.

<sup>3</sup> Under preparation. Stage at the time of publication: prEN 63027:2017.

## 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](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60730-1 (mod)	2013	Automatic electrical controls - Part 1: General requirements	EN 60730-1	2016
+ A1	2015		+ A1	2019
IEC 61508	series	Functional safety of electrical/electronic/programmable electronic safety-related systems	of EN 61508	series
IEC 61851-23	2014	Electric vehicle conductive charging system - Part 23: DC electric vehicle charging station	EN 61851-23	2014
IEC 62909-1	2017	Bi-directional grid connected power converters - Part 1: General requirements	EN IEC 62909-1	2018

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN IEC 62909-2:2019

<https://standards.iteh.ai/catalog/standards/sist/ee065b65-8558-4bee-ad81-f995b3b29213/sist-en-iec-62909-2-2019>



IEC 62909-2

Edition 1.0 2019-03

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Bi-directional grid-connected power converters –  
Part 2: Interface of GCPC and distributed energy resources**  
(standards.iteh.ai)

**Convertisseurs de puissance connectés aux réseaux bidirectionnels –  
Partie 2: Interface du GCPC avec les ressources énergétiques réparties**

f995b3b29213/sist-en-iec-62909-2-2019

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

ICS 29.200

ISBN 978-2-8322-6613-7

**Warning! Make sure that you obtained this publication from an authorized distributor.  
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references .....	7
3 Terms and definitions .....	7
4 GCPC general specifications .....	11
4.1 General.....	11
4.2 Description of GCPC and its components.....	11
4.3 Operating modes .....	11
4.4 Interfaces with distributed energy resources .....	11
4.101 Specific requirements for earth fault detection on DC-port interfaces .....	12
5 Performance requirements.....	12
6 Hazard protection requirements.....	12
7 Test requirements.....	12
8 Information and marking requirements.....	12
101 Interface requirements for EV section .....	13
101.1 General system requirement and interface.....	13
101.2 Protection against electric shock.....	13
101.3 Connection between the power supply and the EV.....	13
101.4 EV coupler requirements.....	13
101.5 Charging cable assembly requirements.....	13
101.6 Specific requirements for GCPC including EV section.....	13
101.7 Communication .....	13
101.8 Isolation.....	14
101.8.1 General .....	14
101.8.2 GCPC of system A.....	14
101.8.3 GCPC of system B.....	14
101.8.4 GCPC of system C.....	14
101.9 Connection/disconnection .....	15
101.10 Self-start up .....	16
101.10.1 General .....	16
101.10.2 EV section of system A.....	16
101.11 Test requirements and procedures for connection.....	19
101.12 EV section requirements .....	19
102 Interface requirements for BS section .....	19
102.1 General.....	19
102.2 System configuration .....	19
102.3 Voltage and current requirements .....	20
102.3.1 General .....	20
102.3.2 Location for the information for selection .....	20
102.3.3 Voltage and current ranges.....	20
102.4 Requirements of the control port.....	21
102.5 Functional safety requirements of the control port.....	21
102.6 Installation .....	21
103 Interface requirements for PV section.....	21
103.1 Protection against arc fault .....	21



Bibliography.....	23
Figure 101 – GCPC with multiple earth fault detection circuits .....	12
Figure 102 – GCPC with EV section.....	13
Figure 103 – GCPC with an isolated DC/DC converter in its EV section.....	14
Figure 104 – GCPC with a non-isolated DC/DC converter in its EV section .....	15
Figure 105 – Active EV section of GCPC with a switch at DC-connection interface side .....	15
Figure 106 – Inactive EV section.....	16
Figure 107 – Interface circuit for charging/discharging control of system A station .....	18
Figure 108 – An example of GCPC containing a battery system with discrete DC/DC converter .....	19
Figure 109 – An example of GCPC containing a battery system with an integrated dc/dc converter .....	20
Figure 110 – External AFD.....	22
Figure 111 – Integrated AFD.....	22
Table 101 – Alphabetical list of terms .....	8
Table 102 – Parameters and values for interface circuit in Figure 107.....	17

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

SIST EN IEC 62909-2:2019

<https://standards.iteh.ai/catalog/standards/sist/ee065b65-8558-4bee-ad81-f995b3b29213/sist-en-iec-62909-2-2019>

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**BI-DIRECTIONAL GRID-CONNECTED POWER CONVERTERS –****Part 2: Interface of GCPC and distributed energy resources**

## 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 62909-2 has been prepared by subcommittee 22E: Stabilized power supplies, of IEC technical committee 22: Power electronic systems and equipment.

This International Standard is to be used in conjunction with IEC 62909-1:2017.

The clauses of particular requirements in this document supplement or modify the corresponding clauses in IEC 62909-1:2017. Where the text of subsequent clauses indicates an "addition" to or a "replacement" of the relevant requirement, test specification or explanation of IEC 62909-1:2017, these changes are made to the relevant text of IEC 62909-1:2017. Where no change is necessary and the clause is applicable, the words "The provisions of IEC 62909-1:2017, Clause XX shall apply" are used. Additional clauses, tables, figures and notes which are not included in IEC 62909-1:2017, are numbered starting from 101.

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

FDIS	Report on voting
22E/196/FDIS	22E/198/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 62909 series, published under the general title *Bi-directional grid-connected power converters*, 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.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN IEC 62909-2:2019](https://standards.iteh.ai/catalog/standards/sist/ee065b65-8558-4bee-ad81-f995b3b29213/sist-en-iec-62909-2-2019)

<https://standards.iteh.ai/catalog/standards/sist/ee065b65-8558-4bee-ad81-f995b3b29213/sist-en-iec-62909-2-2019>