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Interested committees:

Title: Draft BS EN IEC 62909-3 Bi-directional grid connected power converters. Part 3: EMC requirements and test methods.

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- i) has any issues related to 3rd party IPR, patent or copyright
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- iii) requires additional national guidance or information

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



22E/213/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER:

IEC 62909-3 ED1

DATE OF CIRCULATION:

2021-01-22

CLOSING DATE FOR COMMENTS:

2021-03-19

SUPERSEDES DOCUMENTS:

22E/209/NP, 22E/210/RVN

IEC SC 22E : STABILIZED POWER SUPPLIES

SECRETARIAT:

Germany

SECRETARY:

Mr Clemens Klemm

OF INTEREST TO THE FOLLOWING COMMITTEES:

TC 64,TC 69,TC 77,TC 82,TC 120,CIS/B

PROPOSED HORIZONTAL STANDARD:



Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.

FUNCTIONS CONCERNED:

☒ EMC

☐ ENVIRONMENT

☐ QUALITY ASSURANCE

☐ SAFETY

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Bi-directional grid connected power converters - Part 3: EMC requirements and test methods

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

BI-DIRECTIONAL GRID CONNECTED POWER CONVERTERS –

Part 3: EMC requirements and test methods

FOREWORD

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International Standard IEC 62909-3 has been prepared by subcommittee 22E: Stabilized power supplies, of IEC technical committee 22: Power electronic systems and equipment.

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

FDIS	Report on voting
XX/XX/FDIS	XX/XX/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.

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

- 111 • reconfirmed,
- 112 • withdrawn,
- 113 • replaced by a revised edition, or
- 114 • amended.

115

116 The National Committees are requested to note that for this document the stability date
117 is 20XX..

118 THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED
119 AT THE PUBLICATION STAGE.

120

INTRODUCTION

In order to optimize power consumption, for example, within the home power management, it is necessary to optimally combine electricity generation with rechargeable energy storage. This optimization is accomplished, in part, by providing an efficient transfer between DC and AC electricity to accommodate storage batteries. IEC 62909 standards describe a bidirectional grid-connected power converter (GCPC) which efficiently integrates sources of power generation with energy storage.

IEC 62909-1 defines common general requirements, independent from the special characteristics of individual applications. IEC 62909-2 defines the additional requirements necessary for interfacing particular types of distributed energy resources to a GCPC. IEC 62909-3 presents the EMC requirements for GCPC.

IEC Guide 107 specifies that TC 77 and CISPR have responsibility for developing the basic and generic standards for EMC requirements of products. Therefore, product committees are not free to set their own emission limits or immunity levels, except they could provide a technical rationale why to do so. For particular disturbances, where the immunity levels are not covered by the generic standards, some advice for suitable immunity levels can be found in the basic immunity standards.

In the case of GCPC, multiple kinds of distributed energy resources would be connected. While there are some EMC requirements for power electronic converter for single distributed energy resource, these requirements are different from each other. It is necessary to clarify which requirements should be applied to GCPC.

As TC 22 has the responsibility to consider EMC requirements for GCPC, and TC 22 can take action as follows to develop GCPC EMC standards:

- a) select the applicable immunity tests and requirements in accordance with EMC environments for GCPC;
- b) describe test conditions and test set up for emission measurements and immunity tests;
- c) propose conditional limits and alternative test methods in terms of installation environmental and operational conditions;
- d) develop appropriate requirements and test methods for high power equipment.

BI-DIRECTIONAL GRID CONNECTED POWER CONVERTERS –

Part 3: EMC requirements and test methods

1 Scope

This document specifies electromagnetic immunity and emission requirements for GCPCs with having one or more electric vehicle (EV) sections.

GCPCs, solely with PV sections and/or battery sections are out of scope of this document. However, where a GCPC has an EV section in addition to PV sections and/or battery sections, this GCPC is in the scope of this document.

This document covers bi-directional GCPCs connected to a public low voltage AC mains network or to other low voltage AC mains installations. However, some requirements relevant to grid interconnections are addressed by other standards, for example specifying power quality or their own grid codes in some countries.

This document does not cover:

- a) Power conversion equipments covered by IEC 62920; and
- b) UPSs covered by IEC 62040;

NOTE: GCPCs solely with PV sections or with PV sections and battery sections are covered by IEC 62920.

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 61000-3-2:2014, *Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment with input current ≤ 16 A per phase)*

IEC 61000-3-3:2013, *Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*

IEC 61000-4-2:2008, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3:2006, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-3:2006/AMD1:2007

IEC 61000-4-3:2006/AMD2:2010

IEC 61000-4-4:2012, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*

IEC 61000-4-5:2014, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*

- 193 IEC 61000-4-6:2013, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and*
194 *measurement techniques – Immunity to conducted disturbances, induced by radio-frequency*
195 *fields*
- 196 IEC 61000-4-7:2002, *Electromagnetic compatibility (EMC) – Part 4-7: Testing and*
197 *measurement techniques – General guide on harmonics and interharmonics measurements and*
198 *instrumentation, for power supply systems and equipment connected thereto*
- 199 IEC 61000-4-7:2002/AMD1:2008
- 200 IEC 61000-4-11:2004, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and*
201 *measurement techniques – Voltage dips, short interruptions and voltage variations immunity*
202 *tests*
- 203 IEC 61000-4-34:2005, *Electromagnetic compatibility (EMC) – Part 4-34: Testing and*
204 *measurement techniques – Voltage dips, short interruptions and voltage variations immunity*
205 *tests for equipment with input current more than 16 A per phase*
- 206 IEC 61851-21-2:2018, *Electric vehicle conductive charging system - Part 21-2: Electric vehicle*
207 *requirements for conductive connection to an AC/DC supply – EMC requirements for off board*
208 *electric vehicle charging systems*
- 209 IEC 62909-1:2017, *BI-DIRECTIONAL GRID CONNECTED POWER CONVERTERS – Part 1:*
210 *General requirements*
- 211 IEC 62909-2:2019, *BI-DIRECTIONAL GRID CONNECTED POWER CONVERTERS – Part 2:*
212 *Interface of GPCP and distributed energy resources*
- 213 IEC 62920:2017, *Photovoltaic power generating systems – EMC requirements and test methods*
214 *for power conversion equipment*
- 215 CISPR 11:2015, *Industrial, scientific and medical equipment - Radio-frequency disturbance*
216 *characteristics - Limits and methods of measurement*
- 217 CISPR 11:2015/AMD1:2016, *Industrial, scientific and medical equipment - Radio-frequency*
218 *disturbance characteristics - Limits and methods of measurement*
- 219 CISPR 11:2015/AMD2:2019, *Industrial, scientific and medical equipment – Radio-frequency*
220 *disturbance characteristics – Limits and methods of measurement*
- 221 CISPR 16-1-2:2014, *Specification for radio disturbance and immunity measuring apparatus and*
222 *methods – Part 1-2: Radio disturbance and immunity measuring apparatus – Coupling devices*
223 *for conducted disturbance measurements*
- 224 CISPR 32:2015, *Electromagnetic compatibility of multimedia equipment – Emission*
225 *requirements*
- 226
- 227

3 Terms, definitions and abbreviations

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 Terms and definitions

3.1.1

bi-directional grid-connected power converter
grid-connected power converter
GCPC

power converter connected to the grid by bi-directional inverter with multiple DC ports.

[SOURCE: IEC 62909-1:2017, 3.19, modified - "DC-port interfaces" has been replaced by "DC ports".]

3.1.2

associated equipment
AE

equipment needed to exercise and/or monitor the operation of the EUT

[SOURCE: IEC (FDIS) 61851-21-2:2017, 3.1]

3.1.3

port

particular interface of the GCPC with the external electromagnetic environment

Note 1 to entry: See Figure 1 for examples of ports.

[SOURCE: IEC 62920:2017, 3.4, modified - Figure 1 has been replaced.]