



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 39572.1-2020

**Bi-directional grid-connected power converters - Part 1:
General requirements**

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Foreword

GB/T 39572 Bi-directional grid-connected power converters intends to publish the following parts.

- Part 1.General requirements;
- Part 2.Interface between bi-directional grid-connected power converters and distributed energy resources;
- Part 3.EMC requirements and test methods.

This Part is Part 1 of GB/T 39572.

This Part was drafted in accordance with the rules given in GB/T 1.1-2009.

This Part is identical to IEC 62909-1.2017 Bi-directional grid-connected power converters - Part 1.General requirements by using the translation method.

The documents of our country that have a consistent correspondence with the international documents referenced in this Part are as follows.

- GB/T 156-2017, Standard voltages (IEC 60038.2009, MOD)
- GB/T 7260.3-2003, Uninterruptible Power Systems (UPS) - Part 3.Method of specifying the performance and test requirements (IEC 62040-3.1999, MOD)
- GB 17625.1-2012 Electromagnetic compatibility - Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase) (IEC 61000-3-2.2009, IDT)
- GB/T 17625.8-2015 Electromagnetic compatibility - Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase (IEC 61000-3-12.2004,

IDT)

-- GB/T 20046-2006 Photovoltaic (PV) systems - Characteristics of the utility interface (IEC 61727.2004, MOD)

This Part makes the following editorial changes.

-- Add a footnote to explain that 7.2.4.9.5 ~ 7.2.4.9.8 belong to the "Short time withstand current (I_{cw}) test (type test)".

This Part was proposed by China Electrical Equipment Industry Association.

Bi-directional grid-connected power converters - Part 1.

General requirements

1 Scope

This Part of GB/T 39572 specifies general aspects of bi-directional grid-connected power converters (GCPC), consisting of a grid-side inverter with two or more types of DC-port interfaces on the application side with system voltages not exceeding 1 000 V AC or 1 500 V DC. In special cases, a GCPC will have only one DC-port interface, which is connected to a bidirectional energy-storage device. This document includes terminology, specifications, performance, safety, system architecture, and test-case definitions. The "system architecture" defines interaction between the inverter and converters. Requirements which are common, general, and independent of special characteristics of individual generators and bi-directional storages are defined in this Part.

This Part does not cover uninterruptible power supply (UPS) systems, which fall under the scope of IEC 62040 (all parts). Requirements for internal and external digital communication might be necessary; the interface requirements including communication with distributed energy resources are provided in a future part of GB/T

39572 All EMC requirements are defined by reference to existing IEC standards.

External communication requirements are out of scope of this Part.

Note. The control signal from the grid is not defined in this Part.

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.

GB/T 3859.4-2004, Semiconductor converter - Self-commutated semiconductor converters including direct d. c. converters (IEC 60146-2.1999, IDT)

IEC 60038.2009, IEC standard voltages

IEC 61000-3-2.2014, Electromagnetic compatibility (EMC) - Part 3-2.Limits -

Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

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