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

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**Technical requirements and test methods for grid-connected
PV inverters
(English Translation)**

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1 Scope

This Standard specifies the terms and definitions, product classification, technical requirements, test methods, inspection rules and marking, packaging, transportation and storage for grid-connected PV inverters.

This Standard applies to grid-connected PV inverters - hereinafter referred to as inverters - whose AC output terminal voltage does not exceed 0.4 kV.

Note: According to the Technical rules for photovoltaic power station connected to power grid formulated by the State Grid Corporation of China, considering the technical requirements of power transmission and distribution capacity and power quality of power grids of different voltage levels, photovoltaic power stations can be divided into small, medium or large photovoltaic power stations according to the voltage level of photovoltaic power stations connected to.

Small photovoltaic power station - photovoltaic power station connected to low-voltage power grid with a voltage level of 0.4 kV.

Medium photovoltaic power station - photovoltaic power station connected to power grid with a voltage level of 10 kV ~ 35 kV.

Large photovoltaic power station - photovoltaic power station connected to power grid with a voltage level of 66 kV or above.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies to this document. For undated references, the latest edition (including any amendment) applies to this document.

GB/T 191, Packaging - Pictorial marking for handling of goods

GB/T 2423.1-2008, Environmental testing for electric and electronic products - Part

2: Test methods - Tests A: Cold (IEC 60068-2-1: 2007, IDT)

GB/T 2423.2-2008, Environmental testing for electric and electronic products - Part

2: Test methods - Tests B: Dry heat (IEC 60068-2-2:2007, IDT)

GB/T 2423.3-2006, Environmental testing for electric and electronic products - Part

2: Testing method - Test Cab: Damp heat, steady state (IEC 60068-2-78:2001, IDT)

GB/T 3859.2-2013, Semiconductor converters - General requirements and line commutated converters - Part 1-2: Application guide (IEC/TR 60146-1-2:2011, MOD)

GB 4208-2008, Degrees of Protection Provided by Enclosure (IP Code) (IEC 60529:2001, IDT)

GB 7260.2-2009, Uninterruptible power systems (UPS) - Part 2: Electromagnetic compatibility (EMC) requirements (IEC 62040-2:2005, IDT)

GB/T 13384-2008, General specifications for packing of mechanical and electrical product

GB/T 14549-1993, Quality of electric energy supply - Harmonics in public supply network

GB/T 15543-2008, Power quality - Three-phase voltage

GB/T 17626.2-2006, Electromagnetic compatibility (EMC) - Testing and measurement techniques - Electrostatic discharge immunity test (IEC 61000-4-2:2001, IDT)

GB/T 17626.3-2006, Electromagnetic compatibility - Testing and measurement techniques - Radiated radio-frequency electromagnetic field immunity test (IEC 61000-4-3:2002, IDT)

GB/T 17626.4-2008, Electromagnetic compatibility - Testing and measurement techniques -

Electrical fast transient/burst immunity test (IEC 61000-4-4:2004, IDT)

GB/T 17626.5-2008, Electromagnetic compatibility - Testing and measurement techniques - Surge immunity test (IEC 61000-4-5:2005, IDT)

GB/T 17626.6-2008, Electromagnetic compatibility - Testing and measurement techniques - Immunity to conducted disturbances induced by radio-frequency fields (IEC 61000-4-6:2006, IDT)

GB/T 17626.11-2008, Electromagnetic compatibility - Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests (IEC 61000-4-11:2004, IDT)

GB/T 18479-2001, Terrestrial photovoltaic (PV) power generating systems - General and guide (idt IEC 61277:1995)

GB/T 20514-2006, Photovoltaic systems - Power conditioners - Procedure for measuring efficiency (IEC 61683:1999, IDT)

The output power rating of the single-phase inverter is preferably selected from the following values, in kilowatts (kW):

1, 1.5, 2, 2.5, 3, 4, 5, 6, 8.

4.2.2 Three-phase inverter

The output power rating of the three-phase inverter is preferably selected from the following values, in kilowatts (kW):

10, 20, 30, 50, 100, 250, 500, 1 000.

5.1 Environmental conditions for normal use

The environmental conditions for the normal use of the inverter are specified as follows:

- a) operating environment temperature: -10 °C ~ +40 °C for indoor type, -25 °C ~ +60 °C for outdoor type (no direct sunlight); relative humidity not more than 95%, no condensation.
- b) altitude not greater than 1 000 m; when the altitude is greater than 1 000 m, it shall be derated according to the provisions of GB/T 3859.2-2013.
- c) no severe shock and impact; vertical inclination not greater than 5°.
- d) no corrosive and explosive particles and gases shall be contained in the air.