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

GB/T 156-2017

**Standard voltages
(English Translation)**

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Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009.

This Standard replaced GB/T 156-2007 Standard Voltages; compared with GB/T 156-2007, this Standard has the major technical changes as follows.

--- Add the nominal voltage of the HVDC transmission system, form DC transmission voltage level sequence of ± 160 , (± 200) , ± 320 , (± 400) , ± 500 , (± 660) , ± 800 , ± 1100 kV (see Table 6);

--- Delete 1.2V, 1.5V in the DC part of the original standard; add the preferred value of 400V; change 440V as the alternative value; add note "because the voltage of original battery and battery unit are both lower than 2.4V; the selection of battery in the practical application is based on its property rather than its voltage; these voltages are not included in the table" (see Table 7);

--- Delete the rated voltage of the generator (see 4.8).

This Standard adopts the re-drafting method to modify and use IEC 60038.2009 IEC Standard Voltages.

Compared with IEC 60038.2009, this Standard has the changes in structure. Since Clause 2, Sub-clauses 3.4~3.8 are deleted, the clause number after Clause 2 shall be decremented by 1 based on IEC 60038.2009.

The technical differences and their causes between this Standard and IEC 60038.2009 are as follows.

--- According to China's actual situation, in the Clause 1 Scope, modify the nominal

voltage of greater than 100V into greater than 220V; modify the DC voltage of lower than 750V into lower than 1500V; add "HVDC transmission system" to the applicable range; delete NOTE 1 used for instructing the value-taking reason for international standard; add new NOTE 1 for the benefit of standard use; this Standard only retains the 50Hz voltage series (see Clause 1);

--- In view of the standard (GB/T 12325) on the special supply voltage tolerance, the technical requirements of which is stricter; thus, delete the normative reference of IEC60364-5-52 in IEC 60038:2009;

--- Delete the terms of "power supply point", "supply voltage", "supply voltage range", "electrical voltage" and "electrical voltage range"; add the term of "rated voltage for equipment" (see 2.4);

--- Modify the IEC standard voltages of 230/400V and 400/690V into 220/380V and Standard Voltages

1 Scope

This Standard specifies the nominal voltage value to be.

--- The preferred value for the nominal voltage of the power supply system;

--- The reference value for the equipment and system design.

This Standard is applicable to.

--- AC transmission, distribution, power systems and equipment with nominal voltage greater than 220V, standard frequency of 50Hz.

--- AC and DC traction system.

--- Equipment with rated voltage lower than 120V, standard frequency of 50Hz (but not absolutely limited), DC voltage less than 1500V. They include batteries (consist of primary battery and battery cell), other power supply units (AC or DC), electrical equipment (including industrial and communication), and electrical appliances.

--- HVDC transmission system.

This Standard is not applicable to the voltages that characterize or transmit signals

and measurements.

This Standard is not applicable to the voltages of the elements, components, parts inside the electrical equipment.

NOTE 1: the AC voltage is the rms value; while the DC voltage is the ripple-free DC voltage value in this Standard.

NTOE 2. test voltage, test conditions, acceptance criteria require to be specified in the system

and product standards.

2 Terms and Definitions

The following terms and definitions are applicable to this document.

2.1 Nominal system voltage

It is used to mark or identify a given value of the system voltage.

NOTE: rewrite GB/T 2900.50-2008, definition 601-01-21.

2.2 Highest voltage of a system

The maximum operating voltage value that occurs at any point in the system, or at any time during the normal system operation.

NOTE: Transient overvoltage (such as those caused by switching operation) and abnormal transient voltage change shall be excluded.

[GB/T 2900.50-2008, definition 601-01-23].

2.3 Lowest voltage of a system

The minimum operating voltage that occurs at any point in a system, or at any time during normal system operation.

NOTE: Transient overvoltage (such as those caused by switching operation) and abnormal transient voltage change shall be excluded.

[GB/T 2900.50-2008, definition 601-01-24].

2.4 Rated voltage (for equipment)

The voltage specified by the manufacturer for an electrical equipment under specified operating conditions.

NOTE: rewrite GB/T2900.1-2008, definition 3.5.86.

2.5 Highest voltage for equipment

The highest voltage for the equipment is specified to indicate.

- a) Insulation;
- b) Other performance associated with the high voltage for equipment.

NOTE: the equipment can only be used in the systems where the highest voltage of a system is no greater than the highest voltage for equipment.

3.1 AC system and related equipment with nominal voltage of 220V~1000V

The standard voltages of AC system and relevant equipment with nominal voltage of 220V~1000V shall be selected from Table 1. In the Table, the lower value in the same set of data indicates the phase voltage; while the higher value indicates the line voltage;

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