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**GB/T 12668.8-2017**

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**Adjustable speed electrical power drive systems -- Part 8:  
Specification of voltage on the power interface  
(English Translation)**

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## Foreword

GB/T 12668 "Speed Control Electric Drive System" is divided into the following parts.

- Part 1. General requirements for the rated value of the low-voltage DC-regulated electric drive system;
- Part 2. General requirements for the rated value of low-voltage AC variable frequency electric drive system;
- Part 3. Electromagnetic compatibility requirements and their specific test methods;
- Part 4. General requirements for AC speed control electric drive systems with AC voltages above 1000V but not exceeding 35kV Provision of value;
- Part 5. Safety requirements;

- Part 6. Guidelines for determining the type of load duty and the corresponding current rating;
- Part 7. General interface and specification for electric drive systems;
- Part 8. Voltage specifications for power interfaces;
- Part 9. Energy efficiency of electric drive systems, motor starters, power electronics and their drives.

This part is the eighth part of GB/T 12668.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part uses the translation method equivalent to IEC/T S61800-8:2010 "Speed Control Electric Drive System Part 8. Power Interface Power Pressure specification.

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

---GB/T 18039.4-2003 Compatibility level of low frequency conducted disturbance in electromagnetic compatibility environment factory (IEC 61000-2-4.

1994, IDT)

This section has made the following editorial changes.

--- Considering the consistency with the various parts of GB/T 12668, the word "U" is used to indicate the voltage, and the text symbol "V" is used.

Potential.

This part was proposed by China Electrical Equipment Industry Association.

This part is under the jurisdiction of the National Power Electronics System and Equipment Standardization Technical Committee (SAC/TC60).

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## 1 Scope

This part of GB/T 12668 gives a method for determining the voltage of the electrical drive system (PDS) power interface.

**Note:** In the GB/T 12668 series of standards, the power interface is defined as a power connection for transmitting electrical power between the converter and the motor of the PDS.

This section applies to determining the relative phase voltage (line voltage) and relative ground voltage (phase voltage) of the converter and the motor terminals.

In the first edition of this section, these guidelines are limited to the following topologies for three-phase outputs.

--- Voltage source type indirect converter, the grid side converter is a single phase diode rectifier;

--- Voltage source type indirect converter, the grid side converter is a three-phase diode rectifier;

--- Voltage source type indirect converter, the grid side converter is a three-phase active rectifier.

The inverters referred to in this section are pulse width modulation type, and the width of each output voltage pulse is voltage change according to actual demand.

Chemical.

This section does not include voltage specifications for other topologies.

The safety requirements are given in Section 5 of GB/T 12668 and are not included in this section. Electromagnetic compatibility requirements are it is given in Part 3 of GB/T 12668 and is not included in this section.

## 2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

IEC 61000-2-4 Electromagnetic compatibility - Part 2-4. Compatible levels of low-frequency conducted disturbances in environmental plants [Electromagnetic Compatibility(EMC)-Part 2-4.Environment-Compatibilitylevelsinindustrialplantsforlow-fre-Quencyconducteddisturbances]

### 3.1 System Overview

The electric drive system (PDS) consists of an electric motor and a complete set of drive modules (CDM), excluding equipment driven by electric motors.

The CDM includes a Basic Drive Module (BDM) and its periphery, such as an input section or some auxiliary equipment (such as a ventilator). BDM includes Power converter with control and self-protection. The boundaries between the PDS and other parts of the equipment and/or production process are shown in Figure 1. Such as the PDS uses a dedicated transformer that is included in the CDM.

In this section, the following conventions are used for all symbols.

--- Use the "^" symbol to indicate the peak value;

--- Use the "\*" symbol to indicate the amount of bipolarity.

For a defined driver topology, the pattern of voltage waveforms between the various parts defined later is substantially identical in shape (including peaks) Values), and their magnitude depends on the appropriate operating voltage, which is the reference value in each section.

Whether the reference voltage between the parts uses the DC average or the AC fundamental RMS, depending on the interface and the detection voltage of the considered part the actual situation (differential mode or common mode).

In the differential mode and the common mode model, the actual voltage value between the various parts is considered as the peak value. the relevant given value can be multiplied by some the appropriate coefficient is obtained, and the coefficient includes the influence of the overvoltage phenomenon.

Figure 1 Definition of equipment and some equipment

### 3.2 Terms and definitions

The following terms and definitions apply to this document.

#### 3.2.1

Power interface the connections required for PDS internal power distribution.

[GB/T 12668.3-2012, definition 3.3.11] 3.2.2 Dual port network two-portnetwork A two-port network (or four-terminal network, or quadropole network) is a circuit or device with two pairs of terminals.

#### 3.2.3

Converter reference point; NP the point in the converter where the potential is equal to  $(V_d - V_d)/2$ . The converter reference point can be used in different topologies. Electricity from NP