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

GB/T 12668.7301-2019

**Adjustable speed electrical power drive systems -- Part 7-301:
Generic interface and use of profiles for power drive systems --
Mapping of profile type 1 to network technologies**

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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 5-1. Safety requirements electrical, thermal and energy;

---Part 5-2. Security requirements function;

--- Part 6. Guidelines for determining the type of load duty and the corresponding current rating;

--- Part 701. General interface and specification interface definition for electric drive systems;

--- Part 7-201. General interface and specification of the electric drive system, type 1 specification;

--- Section 7-301. General interface and specification of the electric drive system Type 1 specification corresponds to the network technology;

--- Part 8. Voltage specifications for power interfaces;

--- Part 9. Energy efficiency of electric drive systems, motor starters, power electronics and their drive equipment.

This part is part 7-301 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 61800-7-301.2015 "Speed Control Electric Drive System Part 7-301. Electric Drive

The system's general interface and usage specification type 1 specification correspond to network technology.

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

---GB/T 12668.7201-2019 Speed control electric drive system Part 7-201. General interface and

Description of the specification type 1 specification (IEC 61800-7-201.2015, IDT).

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).

This section was drafted. MCC Southern (Wuhan) Automation Co., Ltd., Tianjin Electric Science Research Institute Co., Ltd., New Scenery Electronics Division

Technology Co., Ltd., Tianjin Tianchuan Electronic Control Equipment Testing Co., Ltd., Beijing Hekang Xinneng Technology Co., Ltd., Hope Senlan Technology Co., Ltd.

Co., Ltd., Shenzhen Baoan Renda Electric Industrial Co., Ltd., Shandong Taikai Automation Co., Ltd., Xi'an Electric Power Electronics Technology Research Institute,

National Electronic Control and Distribution Equipment Quality Supervision and Inspection Center, Shandong University, Qingdao University.

Introduction

The GB/T 12668 series of standards provides a general specification for a variable speed electric drive system.

Part 701, Sections 7-201, 7-301 of GB/T 12668 and IEC 61800-7-202, which has not yet been converted into national standards,

IEC 61800-7-203, IEC 61800-7-204, IEC 61800-7-302, IEC 61800-7-303, IEC 61800-7-304 are given for electricity

A set of protocols for the Air Drive System (PDS) and map these sets of protocols to existing communication systems using a common interface model.

Part 701, Sections 7-201, 7-301 of GB/T 12668 and IEC 61800-7-202, which has not yet been converted into national standards,

Control systems are described in IEC 61800-7-203, IEC 61800-7-204, IEC 61800-7-302, IEC 61800-7-303, IEC 61800-7-304

A common interface between the system and the electric drive system. This interface can be embedded in the control system, and the control system itself can also be located in the drive

Set (sometimes referred to as "Smart Drive" or "Smart Drive").

A variety of physical interfaces (analog and digital inputs and outputs, serial and parallel interfaces, fieldbus and network) are available. For some should

With domain (eg motion control) and equipment level (eg standard drive, positioning device), the protocol set based on a specific physical interface is already

set. The implementation of the associated drive and application interface is proprietary and varies widely.

Part 701, Sections 7-201, 7-301 of GB/T 12668 and IEC 61800-7-202, which has not yet been converted into national standards,

IEC 61800-7-203, IEC 61800-7-204, IEC 61800-7-302, IEC 61800-7-303, IEC 61800-7-304 specify mapping to

A description of a list of commonly used drive control functions, parameters, state machines, or sequences of operations in a drive protocol set.

Part 701, Sections 7-201, 7-301 of GB/T 12668 and IEC 61800-7-202, which has not yet been converted into national standards,

IEC 61800-7-203, IEC 61800-7-204, IEC 61800-7-302, IEC 61800-7-303, IEC 61800-7-304 provide an interview

A method of asking for drive system functions and data that does not depend on the drive protocol and communication interface that has been used. Its goal is to have universal work

A universal drive model that can be applied to objects that are mapped to different communication interfaces. This allows people without any drive expertise to

Implement universal motion control (or speed control or drive control applications) in the controller.

Several reasons for defining a generic interface are.

For the manufacturer of the transmission.

--- Easier to support system integrators;

---General terminology, easier to describe the transmission function;

--- The choice of drive does not depend on special support.

For control device manufacturers.

- The impact of no bus technology;
- Device integration is easy;
- Does not depend on the transmission supplier.

For system integrators.

- Reduce the workload of device integration;
- There is only one reasonable modeling method;
- Does not depend on bus technology.

Designing a motion control application with several different transmissions and specialized control systems requires a lot of work. Understand certain tasks

Functional definition of each component and system software programming will consume a lot of project resources. In some cases, the transmission cannot share the same

Physical interface. Some control devices only support one interface, but this interface is not supported by a specific transmission. On the other hand, regulations

The function blocks and data structures are usually incompatible. Dealing with this situation requires a system integrator to write a special interface program for the application software.

And this should not be their responsibility.

Some applications require the device to be interchangeable or to integrate a new device into an existing configuration. This also faces various incompatibility

s solution. Work that aligns a solution with a drive agreement and also meets the manufacturer's specific requirements may not be possible. This will reduce this for

The application selects the most suitable device and unit freedom. This unit should be applied to a specific physical interface and supported by the controller at the same time.

GB/T 12668.701 is divided into a general part as shown in Figure 1 and several appendices. Focusing on the drive agreement in the relevant appendix

Several types of CiA??402, CIPMotion, PROFIdrive and SERCOS?? are mapped to the generic interface. The content of the appendix has been opened by the country

Inter-network organizations or fieldbus organizations have suggested that these organizations are responsible for the content of the relevant appendices and the use of related trademarks.

Type 1, 2, 3, and 4 protocols are in Sections 7-201, IEC 61800-7-202, IEC 61800-7-203,