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

GB/Z 29619.2-2013

**Digital data communication for measurement and control -- Fieldbus for
use in industrial control systems -- Type 8: INTERBUS Specification --
Part 2: Physical Layer specification and service definition
(English Translation)**

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Foreword

GB/Z 29619 "Measurement and Control Digital Data Communications Industrial Control Systems Fieldbus Type 8. INTERBUS Specification" Former divided into 6 parts.

- Part 1. Overview;
- Part 2. Physical layer specification and service definition;
- Part 3. Data Link Service Definition;
- Part 4. Data link protocol specification;
- Part 5. Application layer service definition;
- Part 6. Application layer protocol specification.

This section GB/Z 29619 Part 2.

This section drafted in accordance with the rules given GB/T 1.1-2009 and GB/T 20000.2-2009.

GB/Z 29619 modified using IEC 61508:2003 "Measurement and Control Digital Data Communications Industrial Control Systems Fieldbus" Part of the content, no adjustment in the technical content, the structure is divided into 6 parts to meet the needs of different users to use alone.

For ease of use, this section made the following editorial changes.

- a) According to the actual use of our country, in accordance with the provisions of GB/T 1.1-2009, the original text was edited editorial changes the content of surgery is exactly the same
- b) reference to the original text of other international standards have been adopted or modified as our standard, this part of our standard number instead Corresponding to the international standard number, the rest have not been the same or modified to use as our standard international advanced standards, are in this section Direct reference.

This part is proposed by China Machinery Industry Federation.

This part of the National Industrial Process Measurement and Control Standardization Technical Committee (SAC/TC124) centralized.

This part of the drafting unit. Machinery Industry Instrumentation Technology and Economy

Institute, Tsinghua University, Southwest University, Beijing Iron and Steel Design and Research General Hospital, Shanghai Automation Instrumentation Co., Ltd., Shanghai Institute of Industrial Automation Instrumentation, Nanjing Phoenix Contact Electric Co., Ltd.

Introduction

INTERBUS is a digital serial communication system used in control systems (such as programmable logic controllers) and industrial sensors and actuators Communication between field devices. These devices include simple limit switches and valves, as well as measurement sensors, measurement transmitters and actuators, and also can include sophisticated high-tech control systems such as controllers that control drive, torque, and process.

This section describes the physical layer specifications and services, which is closely related to GB/Z 29619 other parts. GB/Z 29619 by the Department Separately define the "three-layer" reference model of the fieldbus that is the basic reference model for system interconnects. For ease of management, both reference models will be interactive Even the standard range is subdivided into a series of normative layers. The relationship between the different layers shown in Figure 1.

NOTE The system management used in this section is a local mechanism for managing layers of protocols.

1 Figure, physical layer and other layers

The main purpose of this section is to provide a set of communication rules that are expressed by the procedures that peer physical layer entities implement when communicating.

The physical layer receives the data units from the data link layer, encodes them, adds communication frame information if necessary, combines the synthesized physical information Number to a node on the transmission medium. The other node then receives the signal, decodes it, and passes it to the receiving device if necessary Before the data link layer, but also delete the communication frame information.

This section contains the physical layer specification, corresponding to the DL-Layer protocol GB/Z 29619.4.

The physical layer of the general model shown in Figure 2.

2 Figure, physical layer generic model

The physical layer allows the transmission of received data units to another device through direct media access; it also allows access through other media Ask about its transport

protocol to transfer data units to another device.

The following types are specified.

- Twisted pair media, the maximum rate of up to 16Mbit/s;
- Fiber media, the maximum rate of up to 16Mbit/s.

The general characteristics of these transmission media are.

- Full duplex transmission;
- Not zero (NRZ) encoding.

The wire media type offers the following options.

- Non-bus power supply, non-intrinsically safe;
- Through the bus and other additional wire power supply, non-intrinsically safe.

Measurement and control of digital data communications industrial control systems with the fieldbus type 8.INTERBUS specification Part 2. Physical layer specifications and service definitions

1 Scope

GB/Z 29619 provisions of this part of the requirements of the physical layer components. Also provided for the media and network configuration requirements, to ensure.

- a) data integrity before data link layer error checking;
- b) Interoperability between physical layer devices.

The fieldbus physical layer complies with the first layer of the OSI 7-layer model of GB/T 9387.1.

2 Normative references the following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 7424.2-2008 General specifications for optical fiber cables - Part 2. Basic test methods for optical cables (IEC 60794-1-2-2003, MOD) GB/T 9387.1 Information technology - Open Systems Interconnection Basic Reference Model Part 1. Basic model (GB/T 9397.1-1998, idtISO /IEC 7498.1:1994) GB/T 11327.1-1999 PVC insulated PVC sheathed low frequency communications cables and wires Part 1. General test and measurement Method (neq IEC 60189-1:1986) GB/T 12269 RF cable general specification (GB/T 12269-1990, idtIEC 60096-1.1986) GB/T 16422.1-2006 Plastics - Laboratory exposure test methods - Part 1. General (ISO 4892-1:1999, IDT) Multicore and symmetrical pair/quad cables for digital communications - Part 1. Generic specification (IEC 61156-1). 2002, IDT)