

ICS 45.060
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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 28029.6-2020

**Electronic railway equipment - Train communication network
(TCN) - Part 2-5: Ethernet Train Backbone (ETB)**

Issued on: March 6, 2020

Implemented on: October 1, 2020

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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Foreword

GB/T 28029 "Train Communication Network (TCN) for Rail Transit Electronic Equipment" is divided into the following 12 parts.

- Part 1. Basic structure;
- Part 2-1. Stranded Train Bus (WTB);
- Part 2-2. Conformance Test of Wire Train Bus (WTB)
- Part 2-3. TCN Communication Protocol;
- Part 2-4. TCN Application Specification;
- Part 2-5. Ethernet Train Backbone (ETB);
- Part 2-6. Vehicle-ground communication;
- Part 2-7. Radio-based Wireless Train Backbone Network (WLTB);
- Part 3-1. Multifunctional Vehicle Bus (MVB);
- Part 3-2. Multi-function vehicle bus (MVB) conformance test;
- Part 3-3. CANopen Marshalling Network (CCN);
- Part 3-4. Ethernet Marshalling Network (ECN).

This part is part 2-5 of GB/T 28029.

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

This part uses the redrafting method to modify the adoption of IEC 61375-2-5..2014 "Train Communication Network (TCN) for Rail Transit Electronic Equipment

Part 2-5. Ethernet Train Backbone. "

Compared with IEC 61375-2-5..2014, there are technical differences between this part and the terms involved in these differences have been passed on the outside margin.

The vertical single line (|) in the white position is marked. The specific technical differences and the reasons are as follows.

--- With regard to normative quotation documents, this part has been adjusted with technical differences to adapt to China's technical conditions and adjustments

The situation is reflected in Chapter 2 "Regulatory Reference Documents", with specific adjustments as follows.

* Replace ISO /IEC 8824 (all parts) with GB/T 16262 (all parts), consistency between parts of the two standards

The degree is as follows.

* GB/T 16262.1 Information Technology Abstract Syntax Notation One (ASN.1) Part 1. Basic Notation Specification

(GB/T 16262.1-2006, ISO /IEC 8824-1..2002, IDT);

* GB/T 16262.2 Information Technology Abstract Syntax Notation One (ASN.1) Part 2. Information Object Specification

(GB/T 16262.2-2006, ISO /IEC 8824-2..2002, IDT);

* GB/T 16262.3 Information Technology Abstract Syntax Notation One (ASN.1) Part 3. Constraint Specification

(GB/T 16262.3-2006, ISO /IEC 8824-3..2002, IDT);

* GB/T 16262.4 Information Technology Abstract Syntax Notation One (ASN.1) Part 4. ASN.1 Specification Parameters

(GB/T 16262.4-2006, ISO /IEC 8824-4..2002, IDT).

* Replace the IEC 61156-1..2007 with the modified GB/T 18015.1-2017 adopting international standards (see 4.2.2, 4.2.3.1,

4.2.4).

* Replace IEC 61156-5 with GB/T 18015.5 equivalent to the international standard (see 4.2.2).

* Replace IEC 62236-3-2 (see 4.2.2, 4.2.3.1, 4.2.4) with GB/T 24338.4 modified to adopt international standards.

* Replace the IEC 61375-1..2012 with the modified GB/T 28029.1-2020 adopting international standards (see Chapter 1, 3.1,

4.4.1, 6.3.1, 6.3.2, 8.8.6, 11.6).

* Replace IEC 61375-2-3 with GB/T 28029.4 modified to adopt international standards (see

6.3.2, 8.4, 8.5.2.12, 11.6, 13.3).

* Replace IEC 61375-3-4 with modified GB/T 28029.12 that adopts international standards (see 6.2, 6.4.4, Chapter 9).

* Added reference to GB/T 28029.2-2020 (see 3.1 and 3.3.4).

* Removed ISO /IEC 7498 and ISO /IEC 9646.

* Replace IEC 61076-2-101..2012 with the international standard IEC 61076-2-101 (see Chapter 2).

--- Modified the terms and definitions, citing the terms and definitions defined in GB/T 28029.1-2020, GB/T 28029.2-2020 (see 3.1).

--- Added abbreviations CSMA/CD, LAN, SNMP and LLC, deleted abbreviations CSTINFO, XML, MTU (see Chapter 3).

--- Modified the description of type C in Table 4 and forced the use of contradictions with C (see Chapter 5).

--- Modify the formula (1) in 6.5.3.2 to "O = (destination device grouping network identifier-source device grouping network identifier 64) mod64" to

This corresponds to the example of relative addressing shown in FIG. 22.

This part is proposed by the State Railway Administration.

This part is under the jurisdiction of the National Technical Committee for Standardization of Traction Electrical Equipment and Systems (SAC/TC278).

This section was drafted by. CRRC Zhuzhou Electric Locomotive Research Institute Co., Ltd., China Railway Science Research Institute Group Co., Ltd. rolling stock

Research Institute, CRRC Qingdao Sifang Vehicle Research Institute Co., Ltd., CRRC Dalian Electric Power Traction R & D Center Co., Ltd.

Co., Ltd.

Introduction

This part of GB/T 28029 defines the Ethernet train backbone network to realize the different types of marshalling when connected in the same train composition

Interoperability.

This part complies with the ISO -OSI model and specifies the entire protocol stack from the physical layer to the application layer.

The Protocol Implementation Conformance Statement (PICS) allows suppliers to declare their compliance with this part. PICS specifications and related conformance tests are not

The scope of this section.

Rail Transit Electronic Equipment Train Communication Network (TCN)

Part 2-5. Ethernet Train Backbone (ETB)

1 Scope

This part of GB/T 28029 specifies the Ethernet Train Backbone (ETB) requirements to meet open trains based on Ethernet technology

Communication Systems.

Regardless of the marshalling network technology used (see GB/T 28029.1-2020), this section implements interoperability between local marshalling subnets.

All marshalling network definitions should consider this part to maintain interoperability.

When the supply and demand sides agree, this section can be applied to closed trains and multi-unit trains.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this article

Pieces. For the cited documents without date, the latest version (including all amendments) applies to this document.

GB/T 16262 (All Parts) Information Technology Abstract Syntax Notation One (ASN.1) [ISO /IEC 8824 (All Parts)]

GB/T 18015.1-2017 Multi-core twisted or star-twisted symmetrical cables for digital communications. Part 1. General specifications (IEC 61156-1.

2009, MOD)

GB/T 18015.5 Pair or star twisted multicore symmetrical cable for digital communication. Part 5. With transmission characteristics of 600MHz and below

Sectional Specification for Horizontal Layer Cabling Cables for Symmetrical Twisted or Star Twisted Symmetrical Cables (GB/T 18015.5-2007, IEC 61156-5..2002, IDT)

GB/T 18233-2008 General cabling for information technology user buildings (ISO /IEC 11801..2002, IDT)

GB/T 24338.4 Electromagnetic compatibility of rail transit Part 3-2. Locomotive equipment