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

GB/T 28029.4-2020

**Electronic railway equipment - Train communication network
(TCN) - Part 2-3: TCN communication profile**

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Foreword

3 5.6.4, 6.4.4, 6.6.1, C.2.1, C.2.2, C.6.4, C.6.5, C.7.4, C.7.5).

Introduction

1 Scope

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 2-3 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 61375-2-3..2015 "Train Communication Network (TCN) for Rail Transit Electronic Equipment

Part 2-3. TCN Communication Protocol.

Compared with IEC 61375-2-3..2015, there are structural changes in this part. The order of appendices has been adjusted. Appendix F has been adjusted to appendix A and appendix E.

Adjust to Appendix B, Appendix A to Appendix C, Appendix G to Appendix D, Appendix B to Appendix E, and Appendix C to Appendix

F, Appendix D is adjusted to Appendix G.

Compared with IEC 61375-2-3..2015, 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.

--- Added the content of "Regulations" in the scope to meet the requirements of GB/T 1.1 (see Chapter 1).

--- 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 9646-6..1994 with GB/T 17178.6 equivalent to international standards (see A.5);

* Replace ISO /IEC 9646-7..1995 with GB/T 17178.7 equivalent to international standards (see A.5);

* Deleted ISO /IEC 17011..2004, ISO /IEC 17025..2005;

* Replace IEC 61375-1 with GB/T 28029.1 modified to adopt international standards (see 3.1, 4.2.2.1, 4.2.2.2, 4.2.4.2,

5.6.4, C.6.3.1, C.6.3.2, C.7.3.1, C.7.3.2);

* Replace IEC 61375-2-1 (see 3.1, 3.3.5) with GB/T 28029.2 modified to adopt international standards;

* Replace IEC 61375-2-4 with modified GB/T 28029.5 adopting international standards (see 3.3.5.1, 4.2.5.3, 4.3.2,

4.3.3, 5.4.4.5, A.2, A.7.6, A.10);

* Replace IEC 61375-2-5 with GB/T 28029.6 modified to adopt international standards (see 4.2.2.5, 4.2.3.1, 4.2.3.2,

4.2.4, 4.2.5.4, 5.2.1, 5.3.1, 5.3.2, 5.3.3, 5.3.4.2, 5.4.1, 5.4.4.3, 5.4.5.1, 5.4.5.2, 5.4.5.5, 5.5.

3 5.6.4, 6.4.4, 6.6.1, C.2.1, C.2.2, C.6.4, C.6.5, C.7.4, C.7.5).

* Added references to GB/T 16262 (all parts), GB/T 20438.1, GB/T 20830-2015, GB/T 25119,

IEC 62580 (all parts), IEEE802.3, UIC550 and UIC556 (see 3.3.1, 4.3.2, 6.8.2, A.7.4, E.3, E.7).

--- Deleted the terms and definitions not used in the text (see Chapter 3).

--- Modified the definition of the decomposed form of the restricted group, the original text conflicts with the textual provisions in paragraph 2 of Table 19 and Table 21 (see 5.4.5.2).

--- Modified the process data priority of Table 28, the original IEC standard is defined as 3, which is at the highest priority and is the same as the monitoring data

Priority, in general practical applications, other data in the network should be lower than the monitoring data, so this part is modified to 2 ~ 3, compared with

The scope of IEC 61375-2-3 is broader, allowing the use of priority 2 to be lower than the priority of monitoring data (see 5.6.4).

--- Added description of the service primitive in PD.putData, IEC 61375-2-3 missed the description of the service primitive, this part

Complete supplement (see C.6.6.1).

This section also made the following editorial changes.

--- This part incorporates the technologies of IEC 61375-2-3..2015/COR1..2015 and IEC 61375-2-3..2015/COR2..2016

Errata content, the terms involved in these errata content have been carried out by the vertical double line (|) on the outer margin of its outer margin

Marking;

--- Removed the UIC prefix named by the UIC prefix for grouping and vehicle identifiers;

--- Modify the examples of Figure 16, Table 6, 5.3.3.2.16 g), Figure 21, 5.4.5.2, Table 21, Figure 22, 5.5.3 Example 4, Table 27, Table 29, Figure

31, Table 36, Figure 36, Table 43, Table 44, Table 49, Figure B.3, B.5.2.2, Figure B.9, Figure B.10, paragraph 2 of C.5, C.6.6. 3rd

6 paragraphs, Table C.1, Table C.10, Table C.15 (see Figure 15 of IEC 61375-2-3, Table 5, d of 5.3.3.2.16), Figure 20, 5.4.5.2,

Table 20, Figure 21, Example 3 of 5.5.3, Table 26, Table 28, Figure 30, Table 35, Figure 35, Table 42, Table 43, Table 48, paragraph 2 of A.5,

Paragraph 6 of A.6.6.3, Table A.1, Table A.10, Table A.15, Figure E.3, E.5.2.2, Figure E.9, Figure E.10].

Please note that some content of this document may involve patents. The issuer of this

document does not assume responsibility for identifying these patents.

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).

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Introduction

GB/T 28029 elaborates the interaction of relevant data in the train communication network (TCN) in the rail transit train control and monitoring system

Cheng. These rules include a variety of communication technologies, covering the physical layer to the application layer.

The main purpose of this part of GB/T 28029 is to.

- a) Define the interconnection requirements of the Ethernet train backbone network;
- b) Standardize user requirements documents and give them in the form of standard documents;
- c) Provide technical solutions for train backbone network interconnection;
- d) Define the consistency test guideline, which is used for consistency detection of the communication protocol between groups (see Appendix A).

Related functional train applications are defined by GB/T 28029.5 and are not described in this section.

Rail Transit Electronic Equipment Train Communication Network (TCN)

Part 2-3. TCN communication protocol

1 Scope

This part of GB/T 28029 specifies the communication protocol of the train communication network to ensure the Ethernet train defined in GB/T 28029.6

The interconnection between the various groups of the backbone network.

The communication protocol aims to ensure the interoperability of information exchange