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

GB/T 28029.11-2020

**Electronic railway equipment - Train communication network
(TCN) - Part 3-3: CAN open Consist Network (CCN)**

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4.3 of IEC 61375-3-3..2012).

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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 section is Part 3-3 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 61375-3-3..2012 "Train Communication Network (TCN) for Rail Transit Electronic Equipment"

Part 3-3. CANopen Marshalling Network (CCN).

Compared with IEC 61375-3-3..2012, this part is structurally adjusted, 8.3.3.1 is deleted;

9.3.2 is added, and the subsequent article numbers are

Extension, adjust 9.3.1.1 ~ 9.3.1.7 to 9.3.2.1 ~ 9.3.2.7; add 9.5.1, the subsequent article number is postponed; adjust 10.4.3.3.1 to

10.4.3.4, adjust 10.4.3.4 ~ 10.4.3.10 to 10.4.3.5 ~ 10.4.3.11.

Compared with IEC 61375-3-3:2012, 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 646:1991 with GB/T 1988 equivalent to international standards (see 3.1.1, 10.5.2.4.1);

* Replace ISO /IEC 9899:1999 with GB/T 15272 equivalent to the international standard (see 10.5.2.3, 10.5.2.4.1);

* Replace IEC 61375-1 with GB/T 28029.1 modified to adopt international standards (see Chapter 1, 3.1, 3.2, 3.3, 10.3.3);

* Replace IEC 61375-2-1 with GB/T 28029.2 modified to adopt international standards (see 3.1, 3.2, 10.2, 11.1, 11.2,

11.3, 11.4, 11.5.2, 12.1, 12.2, 12.4);

* Replace IEC 61375-2-2 with GB/T 28029.3 modified to adopt international standards (see Chapter 13);

* Replace ISO 11898-1:2003 with the international standard ISO 11898-1;

* Replace ISO 11898-2:2003 with the international standard ISO 11898-2;

* Replace EN50325-4:2012 with international standard EN50325-4;

* Replace IEC 61131 with GB/T 15969 equivalent to the international standard and move it into the reference, because in this part

In the information quoted.

--- Added abbreviations COB-ID, LMA, SDO, RTR (see 3.2).

--- Modified the maximum length of the bus and stub at the 125kbit/s transmission rate recommended in the original IEC standard, directly cited

The maximum length of bus and stub recommended in ISO 11898-2 at a transmission rate of 1 Mbit/s to meet China's national conditions (see 4.3,

4.3 of IEC 61375-3-3..2012).

This section also made the following editorial changes.

--- Modified the error in the original IEC text, IEC 61375-3-3..2012 11.5.2 "The manufacturer of the application data directly described in 8.2

The "8.2" of the dedicated object representation in the index range of the proprietary and standard CANopen object dictionary shall be "8.1".

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).

This section was drafted by. CRRC Zhuzhou Electric Locomotive Research Institute Co., Ltd., CRRC Qingdao Sifang Vehicle Research Institute Co., Ltd., CRRC

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Introduction

This part of GB/T 28029 defines the following interfaces for plug-in compatibility.

- a) Between the equipment on different rolling stocks (groups);
- b) Between the equipment in the same rolling stock (group).

One of the key success factors for developing any technology is standardization and ensuring interoperability between different implementations. To facilitate interoperability

Conduct consistency testing.

Rail Transit Electronic Equipment Train Communication Network (TCN)

Part 3-3. CANopen Marshalling Network (CCN)

1 Scope

This part of GB/T 28029 specifies the data communication bus within the group based on CANopen technology. CANopen is designed for,

But it is not limited to industrial automation applications. These applications can include input/output modules, motion controllers, human-machine interfaces, sensors, closed-loop control

Encoder, encoder, hydraulic valve or programmable controller.

In the field of rail transit, the CANopen network is used to group networking subsystems, such as brake control systems, internal combustion drive control systems and

Internal/external lighting control system, etc. In addition, the CANopen network is used as a marshalling network to achieve the same rail vehicle or a group in the same marshalling network

Data exchange between different subsystems in rail vehicles.

This section applies to devices and equipment of CANopen marshalling network in the TCN architecture specified in GB/T 28029.1.

This section applies to the consistency check of independent TCN implementations, and is also a further interoperability check between different TCN implementations

Check the prerequisites.

This section applies to open train communication system architecture. If the supplier agrees with the user through consultation, this section may also apply 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 1988 Seven-bit coded character set for information technology information exchange (GB/T 1988-1998, eqvISO /IEC 646.

1991)

GB/T 15272 programming language C (GB/T 15272-1994, ISO /IEC 9899..1990, IDT)

GB/T 28029.1 Rail Transit Electronic Equipment Train Communication Network (TCN) Part 1. Basic Structure (GB/T 28029.

1-2020, IEC 61375-1..2012, MOD)

GB/T 28029.2 Rail Transit Electronic Equipment Train Communication Network (TCN) Part 2-1. Stranded Train Bus (WTB)