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

GB/T 28029.5-2020

**Electronic railway equipment - Train communication network
(TCN) - Part 2-4: TCN application profile**

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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 2-4 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 use of IEC TS61375-2-4..2017 "railway electronic equipment train communication network

(TCN) Part 2-4. TCN Application Specification.

Compared with IEC TS61375-2-4..2017, this part has structural adjustments, adding 3.3.6, adjusting 7.1 to Chapter 7, and other articles

The numbers are modified sequentially.

There are technical differences between this part and IEC TS61375-2-4..2017, and the terms involved in these differences have been adopted on the outside page

The vertical single line (|) in the marginal 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 IEC 61375-1 with GB/T 28029.1 modified to adopt international standards (see 3.1, 4.3, 7.1);

* Replace IEC 61375-2-1 (see 3.3.4) with GB/T 28029.2 modified to adopt international standards;

* Replace IEC 61375-2-3 (see 3.1.13, 4.2, 5.1) with GB/T 28029.4 modified to adopt international standards;

* Added reference to GB/T 16262 (see 3.3.1);

* Added reference to GB/T 16831 (see A.1);

* Added reference to GB/T 28029.6 (see 6.1).

--- Deleted some terms and definitions (see 3.1.1, 3.1.2, 3.1.3, 3.1.4 of IEC TS61375-2-4..2017).

--- Added the abbreviation "CTCS"; deleted the abbreviations "DB, DDU, ETCS, SNCF" (see 3.2).

--- Modify the speed limit value, change "turn off the fan and speed limit 3km/h" to "turn off the fan and speed limit 5km/h"

Situation (see 6.2.5.9, 6.2.5.9 of IEC TS61375-2-4..2017).

This section also made the following editorial changes.

--- Deleted the notes in Table 1 in 5.2.3 because E, F, and G of IEC TS61375-2-4..2017 Table 1 have already communicated to point to point

The description is clear (see 5.2.3 of IEC TS61375-2-4..2017).

--- Modify "based on channel interoperability, channels should be divided into the following two groups. e) f)" to "based on channel interoperability, pass

The Tao should be divided into the following two groups. a) b) "(see 5.2.3, 5.2.3 of IEC TS61375-2-4..2017).

--- Amend the "distribution of train mode functional components based on the general application architecture (see 4.1)." To "based on the general application architecture (see 4.3)

The distribution of functional components of the train mode is shown in Figure 17 "(see 6.2.1, 6.2.1 of IEC TS61375-2-4..2017).

--- Modified the "ID reader is available" in 6.2.4.4.1, which is not applicable to China. China adopted the key and deleted the "ID reader is available"

Use ", and adjust the corresponding number (see 6.2.4.4.1, IEC TS61375-2-4..2017 6.2.4.4.1).

--- Removed the ETCS example mentioned in 6.2.4.5.1, which is applicable to trains in Europe and not applicable to China (see IEC TS61375-2-4. 6.2.4.5.1 of.2017).

--- According to the application of domestic time, add the note in 6.2.4.8.1. "The mechanic room can only release all train levels related to services.

Instructions (such as air-conditioning control). "This note is also added in 6.2.5.3, 6.2.5.9, 6.2.5.10 (see 6.2.4.8.1, 6.2.5.3, 6.2.5.9, 6.2.5.10).

--- Modify "for example. SNCF/T renitalia. $V_{target} = 3\text{km/h}$, DB. $V_{target} = (1.5 \pm 0.5) \text{ km/h}$ " to "for example,

$V_{target} = 5\text{km/h}$ "to meet China's national conditions (see 6.2.5.9, 6.2.5.9 of IEC TS61375-2-4..2017).

--- Modified the description of the parking mode and the drag mode in 6.2.6 Table 4 and changed "for example to allow simple check at HMI" to

"When the train is stationary and the battery main switch is off", modify "for example, to allow inspection and test procedures via the Web" to be

"Train 'towing as a wagon'" because of errors in IEC TS61375-2-4..2017 (see 6.2.6, IEC TS61375-2-4..2017

6.2.6).

--- Modified the median number in 6.2.6 Table 5 because IEC TS61375-2-4..2017 is wrong; modify Table 5 "B11 ~ B12" to

"B11 ~ B15" because of the error in IEC TS61375-2-4..2017 (see 6.2.6, 6.2.6 of IEC

TS61375-2-4..2017).

--- Revised the guidelines in the illustration in 7.2, because IEC TS61375-2-4..2017 is wrong, the "Figure 22 example

Structure (see 4.1) of the door system component distribution "to" based on the general application architecture (see 4.3) of the door system component distribution see

Figure 22 "(see 7.2, 7.1.2 of IEC TS61375-2-4..2017).

--- Modified 7.3, IEC TS61375-2-4..2017 cited UIC556, it is not recommended. Will "because of the use case in UIC556

It may come from the toilet system without closed waterway, this section does not consider the toilet door. "To" This section does not consider unlinked

Car doors, such as toilet doors, etc. "(see 7.3, 7.1.3 of IEC TS61375-2-4..2017).

--- Modified 7.4, IEC TS61375-2-4..2017 cited UIC556, it is not recommended. Will "derive from the work of UIC556

The functional breakdown structure of the door application illustrated in the scenario is shown in Table 6. "Revised to" The functional breakdown structure of the door application is shown in Table 6. "

(See 7.4, 7.1.4 of IEC TS61375-2-4..2017).

--- Modified 7.7.12, IEC TS61375-2-4..2017 description has nothing to do with DCU local trigger, deleted "DCU local trigger

(See Table 13) provides a reference for describing the application behavior of the door. "(See 7.7.12, 7.1.7.12 of IEC TS61375-2-4..2017).

--- Modified 7.8, IEC TS61375-2-4..2017 defines the wrong reference clause, the "defined in 7.1.5 with parameter 'side'

The trigger should allow optional side operation. "Modified to" 7.7.2 and 7.7.5 defined with the parameter 'side' trigger response

Many side operations are possible. "(See 7.8, 7.1.8 of IEC TS61375-2-4..2017).

--- Modified the description of 7.9.7 "Entry Door", IEC TS61375-2-4..2017 is wrong, and "Table 30 and Table 31 describe the entrance door

Group the triggers and operations of the DCU state machine. "Revised to" Tables 30 and 31 describe the grouping of adjacent interconnecting gates (end gates)

Trigger and operation of DCU state machine. "(See 7.9.7, 7.1.9.7 of IEC TS61375-2-4..2017).

--- Modify the description of "Group DCU" in 7.9.9, because IEC TS61375-2-4..2017 is