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

GB/T 24339-2023

Replacing GB/T 24339.1-2009, GB/T 24339.2-2009

**Railway applications - Communication, signalling and
processing systems - Safety related communication in
transmission systems
(English Translation)**

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting:

This document replaces GB/T 24339.1-2009 "Rail transit communication, signaling and processing systems - Part 1: Closed transmission systems" "Safety-related communications in rail transit" and GB/T 24339.2-2009 "Rail transit communications, signaling and processing systems Part 2: Open transmission" "Security-related communications in transmission systems", compared with GB/T 24339.1-2009 and GB/T 24339.2-2009, except for structural adjustments and editing in addition to sexual changes, the main technical changes are as follows:

- a) Changed scope (see Chapter 1);
- b) Changed the definition of hazard analysis (see 3.1:23, 3:11:1 of GB/T 24339.2-2009);
- c) Added the term implicit data and its definition (see 3.1:24);
- d) Changed the term non-encrypted security encoding and its definition (see 3.1:36, 3:9 of GB/T 24339.1-2009);

- e) Added the term public network and its definition (see 3.1:38);
- f) Added the term trustworthy and its definition (see 3.1:61);
- g) Increased main hazards of safety-related communications (see Chapter 5);
- h) Changed the requirements when protective measures are implemented in accordance with GB/T 28809 [see 7.2:5, 6:2d) of GB/T 24339.2-2009];
- i) Added requirements for safety integrity of safety arguments and safety-related functional characteristics (see 7.3:8:1);
- j) Added the requirement that the probabilistic analysis of secure coding performance should be compatible with the security objectives, provide models of failure modes, and evaluate all calculations Requirements for verification and validation of calculation assumptions (see 7.3:8:2:4);
- k) The technical selection of encryption technology has been changed (see 7.3:9:2, 6:3:8:2 of GB/T 24339.2-2009);
- l) Added technical options for encryption architecture (see 7.3:9:2);
- m) Changed the selection and application of security encoding and encryption technologies in non-security related transmission systems (see B:2, GB/T 24339.2-A:2 of:2009);
- n) Changed the description of the security code length (see B:4, Appendix A of GB/T 24339.1-2009);
- o) Added description of communication between safety-related and non-safety-related applications (see B:5);
- p) Changed the association between the communication authorizing party and the attacker (see C:3:1, D:3 of GB/T 24339.2-2009);
- q) Added the classification of transmission systems (see D:1);
- r) Added the relationship between the classification of transmission systems and threats (see D:2):

This document is modified to adopt IEC 62280:2014 "Safety-related communication in rail transit communication, signaling and processing system transmission systems":

letter":

Compared with IEC 62280:2014, this document has made the following structural adjustments:

---3:1:4~3:1:65 corresponds to 3:1:5~3:1:66 of IEC 62280:2014;

---Appendix A corresponds to Appendix E of IEC 62280:2014;

---Appendix B corresponds to Appendix C of IEC 62280:2014;

---Appendix C corresponds to Appendix A of IEC 62280:2014;

---Appendix D corresponds to Appendix B of IEC 62280:2014;

---Appendix E corresponds to Appendix D of IEC 62280:2014:

The technical differences between this document and IEC 62280:2014 and their reasons are as follows:

---Replaced IEC 62425:2007 with normative reference GB/T 28809 (see Chapter 1, Chapter 4, Chapter 5, 7:2:5, 7:2:8) to adapt to my country's technical conditions and improve operability:

The following editorial changes have been made to this document:

---Change footnote 1 in IEC 62280:2014 to note in Chapter 5;

---Change footnote 6 in IEC 62280:2014 to note 3:2;

---Replaced IEC 62278 (see C:4:2:2:1, E:1:3) with the informative reference GB/T 21562, and included it in the references;

---References changed:

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

Introduction

If a safety-related electronic system involves the transmission of information between different locations, the transmission system becomes an integral part of the safety-related system:

points, and according to GB/T 28809, end-to-end transmission security is specified:

The transmission systems considered in this document are used for the transmission of information between different locations and generally have no specific prerequisites that need to be fulfilled:

From a security perspective, the system is not trustworthy or completely trustworthy:

This document is dedicated to the requirements for security-related information transmission considerations under such transmission systems:

This document does not consider RAM related content, but it is a major aspect of global security:

Safety requirements depend on the characteristics of the transmission system: To simplify the complexity of the method of proving system security, 3 types of transmissions are

considered system:

---Category 1 includes systems that are controlled by the safety system designer and remain fixed during their life cycle;

---Category 2 is a system that contains partially unknown or unfixed parts, but excludes unauthorized access;

---Category 3 is a system that is not under the control of the designer and where unauthorized access is contemplated:

Previously, the requirements for Category 1 systems were specified in GB/T 24339.1-2009, and the requirements for other systems were specified in GB/T 24339.2-2009 stipulated in:

When a safety-related communications system certified to the above standards requires maintenance or expansion, use Appendix A to review the terms of this document and the previous the terms of the series of standards are traceable:

Rail transit communication, signaling and processing systems Safety-related communications in transmission systems

1 Scope

This document specifies the basic requirements required to enable safety-related communication between safety-related equipment connected to transmission systems:

This document applies to safety-related transmission systems for digital communications that are not necessarily designed for safety-related systems, but rather:

---Under the control of the designer and fixed during the life cycle;

---Parts are unknown or not fixed, but unauthorized access can be ruled out;

---Not under the control of the designer and contemplates unauthorized access:

Both safety-related and non-safety-related equipment can be connected to the transmission system:

Safety requirements are usually implemented in safety-related equipment designed according to GB/T 28809: In some cases, as long as safety measures are in place Meet assigned safety requirements, which may be implemented in other relevant equipment of the transmission system:

The safety requirements specification is a prerequisite for the safety argument for safety-related electronic systems, and the evidence (including quality) required for the safety argument Management and safety management, etc.) are specified in GB/T 28809:

This document does not apply to existing systems prior to the release of this document:

The following terms are not defined in this document: