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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 47002-2025

Specification for the information exchange interface of road traffic management and control facilities

道路交通管控设施信息交互接口规范

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1 Scope

GB/T 47002-2025 is the Chinese national standard covering the interface between a traffic control centre and the equipment on the street - the signals, the variable message signs, the cameras and the enforcement devices, with the messages that configure them and the status they report back. First edition, one of four road traffic standards issued together by the Ministry of Public Security. It was issued on 31 December 2025 and has been in force since 1 July 2026, as a first edition. The document is under the responsibility of the Ministry of Public Security. This page is published from the official record of the 2025 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document specifies the layered structure of the communication network for information exchange between road traffic management and control facilities and roadside units. It defines the exchanged information, message requirements, message frame, safety frame, message bodies, and safety requirements, and describes the corresponding verification methods. This document is applicable to the design, development, testing, and application of products related to information exchange between road traffic management and control facilities and roadside units.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 2260 Codes for the administrative divisions of the People's Republic of China

GB/T 16262.1 Information technology - Abstract Syntax Notation One (ASN.1) - Part 1. Specification of basic notation

GB/T 16262.2 Information technology - Abstract Syntax Notation One (ASN.1) - Part 2. Information object specification

GB/T 31418 Terminology of road traffic signal control system

GB/T 46999 General specifications for digital identity and authentication of road traffic management and control facilities GA/T 1743-2020 Specifications for the information release interface of traffic signal controller YD/T 3709-2020 Technical requirements of message layer of LTE-based vehicular communication YD/T 3957-2021 LTE-based vehicular communication - Technical requirement of security certificate management system

3 Terms and Definitions

The terms and definitions defined in GB/T 31418 and the following ones are applicable to this document.

3.1 Road Traffic Management and Control Facility Facilities installed on roadways used for traffic control, as well as for the collection and dissemination of traffic information. NOTE

1.Such facilities include road traffic signal controllers, traffic management and control edge computing terminals, etc. NOTE 2.A traffic management and control edge computing terminal refers to a computing device installed at the roadside that works in conjunction with other traffic management and control facilities to aggregate and process traffic information.

3.2 Roadside Unit; RSU A functional entity installed at the roadside that exchanges information with roadside traffic management and control equipment, on-board units, and other entities via V2X communication technology, thereby supporting Internet of Vehicles services. [Source: GA/T 1743-2020, 3.2]

4 Abbreviations

The following abbreviations are applicable to this document. ASN.1.Abstract Syntax Notation One BASE-T. Broadband Attachment Standard Ethernet-Twisted Pair BSM. Basic Safety Message DE. Data Element DF. Data Frame IP. Internet Protocol TCP. Transmission

Control Protocol UDP. User Datagram Protocol UPER. Unaligned Packed Encoding Rules UTC. Universal Time Coordinated V2X. Vehicle to Everything

5 General Communication Principles

The information exchange interface used by road traffic management and control facilities (hereinafter referred to as the "information exchange interface") shall conduct end-to-end communication with roadside units. The network layered structure for these communication applications is illustrated in Figure 1; specific provisions are as follows:

a) Physical layer. An Ethernet interface is recommended, supporting at least 100/1 000 BASE-T full-duplex communication;

b) Network layer and transport layer. The network layer should utilize the IP protocol, while the transport layer should utilize either the UDP or TCP protocol;

c) Application layer. Custom-defined messages shall be employed to encapsulate the exchanged information; message requirements shall comply with the provisions of Clause 7.

6 Exchanged Information

The information exchanged by road traffic management and control facilities primarily comprises the dissemination of digitized traffic command and dispatch information-such as crossing lane functions, signal lamp group color status, and lane control signals-as well as the reception of basic vehicle operational safety information. Specific requirements shall comply with the provisions of Table 1. Table 1 -- Information Exchange Requirements Serial Information Exchange Requirements Description

7 Message Requirements

7.1 Message Format The interactive message format adopts the ASN.1 definition, and its basic notation standard follows GB/T 16262.1.

7.2 Message Encoding The interactive message data encoding and decoding follows UPER, and its standard follows GB/T 16263.2.