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BSI Standards Publication

Intelligent transport systems — Roadside modules SNMP data interface

Part 2: Generalized field device basic management

bsi.

National foreword

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A list of organizations represented on this committee can be obtained on request to its committee manager.

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Part 2: Generalized field device basic management

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems.*

A list of all parts in the ISO 20684 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

0.1 Background

The need for standardized communication with ITS field devices is growing around the world. Several countries have adopted SNMP-based field device communication standards.

There is a growing view and empirical evidence that standardizing this activity will result in improved ITS performance, reduced cost, reduced deployment time, and improved maintainability. The ISO 20684 series extends ISO 15784-2 by defining the management information necessary to monitor, configure and control features of field devices. The data elements in all parts of the ISO 20684 series may be used with any relevant protocol, but were designed with an expectation that they would be used with one of the ISO 15784-2 protocols.

By using this approach, agencies can specify open procurements and systems can be expanded geographically in an open and non-proprietary manner which reduces costs, speeds up deployment and simplifies integration.

0.2 Overview

SNMP is a collection of well thought-out and well-proven concepts and principles. SNMP employs the sound principles of abstraction and standardization. This has led to SNMP being widely accepted as the prime choice for communication between management systems and devices on the Internet and other communications networks.

The original implementation of SNMP was used to manage network devices such as routers and switches. Since then, the use of SNMP has grown into many areas of application on the Internet and has also been used successfully over various serial communications networks.

This document defines management information for ITS field devices following the SNMP conventions.

0.3 Document approach and layout

This document defines:

a) Conformance tables for this document (Clause 5);

b) Architectural assumptions made by this document (Clause 6);

c) User needs that are deemed to be common to many types of field devices (Clause 7);

d) Requirements for implementing the identified user needs, organized by major feature (Clause 8);

e) Security vulnerabilities that should be considered by implementers of this document (Clause 9);

f) The management information base (MIB) for the features defined by this document (Annex A);

g) A requirements traceability table that traces requirements to the design elements (Annex B);

h) A series of standardized codes that can be used to identify types of sensors and actuators (Annex C);

i) The user needs, features and requirements that were considered for but not included in this document (Annex D).

In addition, a simplified version of the conformance table and the MIBs are available electronically at https://standards.iso.org/iso/ts/20684/-2/ed-1/en/.

TECHNICAL SPECIFICATION **ISO/TS 20684-2:2021**

Intelligent transport systems — Roadside modules SNMP data interface —

Part 2: Generalized field device basic management

1 Scope

Field devices are a key component in intelligent transport systems (ITS). Field devices include traffic signals, message signs, weather stations, traffic sensors, roadside equipment for connected ITS (C-ITS) environments, etc.

Field devices often need to exchange information with other external entities (managers). Field devices can be quite complex necessitating the standardization of many data concepts for exchange. As such, the ISO 20684 series is divided into several individual parts.

This part of the ISO 20684 series identifies basic user needs for the management of virtually any field device and traces these needs to interoperable designs. This includes the ability to identify the device, its capabilities, and its status.

NOTE This document is similar to portions of NTCIP 1103 v03 and NTCIP 1201 v03.

ISO 20684-1 provides additional details about how the ISO 20684 series relates to the overall ITS architecture.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 20684-1, *Intelligent transport systems — Roadside modules SNMP data interface — Part 1: Overview*

IETF RFC 2578, *Structure of Management Information Version 2 (SMIv2), April 1999*

IETF RFC 2579, *Textual Conventions for SMIv2, April 1999*.

IETF RFC 2580, *Conformance Statements for SMIv2, April 1999*.

IETF RFC 3411, *An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks, December 2002*

IETF RFC 3418, *Management Information Base (MIB) for the Simple Network Management Protocol (SNMP), December 2002*

IETF RFC 6933, *Entity MIB (Version 4), May 2013*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 20684-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp