A Joint Standard of AASHTO, ITE, and NEMA

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National Transportation Communications for ITS Protocol

Object Definitions for Dynamic Message Signs (DMS)

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NTCIP 1203 v03 was prepared by the NTCIP Dynamic Message Sign Working Group (DMS WG), a subdivision of the Joint Committee on the NTCIP. The Joint Committee is organized under a Memorandum of Understanding among the American Association of State Highway and Transportation Officials (AASHTO), the Institute of Transportation Engineers (ITE), and the National Electrical Manufacturers Association (NEMA). The NTCIP development effort is guided by the Joint Committee on the NTCIP, which consists of six representatives from each of the above organizations.

When NTCIP 1203 v03 was prepared, the following individuals were active members of the NTCIP DMS WG:

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Ver-Mac
Washington State DOT

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FOREWORD

NTCIP 1203 v03 uses only metric units.

NTCIP 1203 v03 identifies and defines how a management station may wish to interface with a field device to control and monitor dynamic message signs (DMS). NTCIP 1203 v03 defines requirements that are applicable to all NTCIP DMS and it also contains optional and conditional sections that are applicable to specific environments for which they are intended.

NTCIP 1203 v03 is an NTCIP Device Data Dictionary Standard. Device Data Dictionary Standards provide formal definitions of data elements for use within NTCIP systems.

For more information about NTCIP standards, visit the NTCIP Web Site at www.ntcip.org .

Approvals

NTCIP 1203 v03 was separately balloted and approved by AASHTO, ITE, and NEMA after recommendation by the Joint Committee on the NTCIP. Each organization has approved this standard as the following standard type, as of the date:

AASHTO—Standard Specification; December 2011
ITE–Software Standard; May 2012
NEMA—Standard; March 2012

History

The first version of NTCIP 1203 was published as NTCIP 1203:1997 and was also known as NEMA TS 3.6. In 2001, Amendment 1 was accepted by the Joint Committee on the NTCIP and subsequently Jointly Approved by all three SDOs. The Amendment did not add additional functionality but provided clarifications on object definitions and MULTI tags which have been detected by actual implementations.

NTCIP 1203 v02 was developed to reflect lessons learned, to update the document to the new documentation formats, and to add new features such as the colors, graphics, and a 3-tiered equipment management structure. NTCIP 1203 v02 also follows an established ‘systems engineering’ approach. Several new sections were added to relate user needs identified in a concept of operations, functional requirements, interface specifications and a requirements traceability matrix to the existing sections.

This Version 03 of the NTCIP 1203 standard adds test procedures that satisfy the functional requirements that has been provided. These test procedures, provided in Annex C of this standard, allows agencies procuring dynamic message signs to consistently test for conformance to this standard. Minor corrections and clarifications to the standard are also included. All changes are shown and explained in Annex D (Documentation of Revisions) of this standard.

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User Comment. When the committee chairperson or designee reports the committee's consensus opinion related to the User Comment, that opinion is forwarded to the submitter. The committee chairperson may report that action on the User Comment may be deferred to a future committee meeting and/or a future revision of the standards publication. Previous User Comments and their disposition may be available for reference and information at www.ntcip.org.

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Comment:
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Suggested Alternative Language:

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Compatibility of Versions

To distinguish NTCIP 1203 v03 (as published) from previous drafts, NTCIP 1203 v03 also includes NTCIP 1203 v03.05 on each page header. All NTCIP Standards Publications have a major and minor version number for configuration management. The version number syntax is "v00.00a," with the major version number before the period, and the minor version number and edition letter (if any) after the period.

NTCIP 1203 v03 is designated, and should be cited as, NTCIP 1203 v03. Anyone using NTCIP 1203 v03 should seek information about the version number that is of interest to them in any given circumstance. The MIB, the PRL, and the PICS should all reference the version number of the standards publication that was the source of the excerpted material.

Conformant systems based on later, or higher, version numbers MAY NOT be compatible with conformant systems based on earlier, or lower, version numbers. Anyone using NTCIP 1203 v03 should also consult NTCIP 8004 v02 for specific guidelines on compatibility.

INTRODUCTION

NTCIP 1203 v03 provides definitions of data elements for use with dynamic message signs. The data is defined using the Simple Network Management Protocol (SNMP) object-type format as defined in RFC 1212 and would typically be exchanged using one of the NTCIP recognized Application Layers (e.g., SNMP). The content of one object, the dmsMessageMultiString object, uses a complex syntax called the Mark-Up Language for Transportation Information (MULTI) format, also defined in NTCIP 1203 v03.

The following keywords apply to this document: AASHTO, ITE, NEMA, NTCIP, DMS, VMS, CMS, data, data dictionary, object, message sign, message board, sign, MULTI.

In 1992, the NEMA 3-TS Transportation Management Systems and Associated Control Devices Section began the effort to develop the NTCIP. The Transportation Section's purpose was to respond to user needs to include standardized systems communication in the NEMA TS 2 standard, *Traffic Controller Assemblies*. Under the guidance of the Federal Highway Administration's NTCIP Steering Group, the NEMA effort was expanded to include the development of communications standards for all transportation field devices that could be used in an Intelligent Transportation Systems (ITS) network. Message signs were identified as one of the highest priority expansion areas. As a result, in August 1995, NEMA created the DMS Technical Subcommittee to standardize DMS equipment. Their first task was the development of this document.

In September 1996, an agreement was executed among AASHTO, ITE, and NEMA to jointly develop, approve, and maintain the NTCIP standards. One of the first tasks of this joint effort was to finalize the work that NEMA had already begun on the object definitions for dynamic message signs.

CONTENTS

FIGURES

TABLES

Section 1
General [Informative]

1.1 Scope

NTCIP 1203 v03 specifies the logical interface between Dynamic Message Signs (DMS) and the host systems that control them (commonly referred to as "central" systems). NTCIP 1203 v03 describes the supported DMS functionality in terms of user needs and requirements; however, the nature of the interface is determined in part by the operational nature of the devices being controlled, and therefore NTCIP 1203 v03 touches on such operational issues on occasion.

NTCIP 1203 v03 assumes a model of DMS operation in which DMS controllers possess intelligence, and the data used for message display and sign configuration is resident at the DMS controller. In particular, data elements such as fonts, graphics, message text, time-based schedules, and so forth may reside at the DMS controller, and the controller renders messages on the sign face based on this data (This model is typical of existing DMS applications, and may be contrasted with an alternate model in which, for example, the DMS controller only knows how to display static bitmaps, and all message layout and composition is performed by the central system.). We refer to the DMS controller's status, control, and configuration data as the "controller database"; NTCIP 1203 v03 specifies interfaces whereby this data can be manipulated by the central system. There are no imperative commands such as "Display a message" or "Report status"; the central system controls the behavior of the DMS purely through queries of and changes to the controller database using a suite of communication protocols appropriate for the underlying communications infrastructure. These communications protocols are defined in the NTCIP 23xx series (Application Layer protocols), NTCIP 22xx series (Transport Layer protocols), and NTCIP 21xx series (Subnetwork Layer protocols).

1.2 References

For approved amendments, contact:

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For draft amendments of this document, which are under discussion by the relevant NTCIP Working Group, and recommended amendments of the NTCIP Joint Committee, visit the World Wide Web at http://www.ntcip.org.

The following standards (normative references) contain provisions which, through reference in this text, constitute provisions of this Standard. Other documents and standards (other references) are referenced in these documents, which might provide a complete understanding of the entire protocol and the relations between all parts of the protocol. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below.

1.2.1 Normative References

AASHTO / ITE / NEMA NTCIP 1102 v02	*Octet Encoding Rules (OER) Base Protocol* published October 2005
AASHTO / ITE / NEMA NTCIP 1103 v02	*Transportation Management Protocols (TMP)* published July 2010