

NEMA Standards Publication TS 4-2016

*Hardware Standards for Dynamic Message Signs (DMS)
with NTCIP Requirements*

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CONTENTS

Section 1 General	1
1.1 Scope and Introduction	1
1.2 References	1
1.2.1 Normative References.....	1
1.2.2 Contacts.....	2
1.3 General Statements	4
1.4 Types of DMS	4
1.4.1 Dynamic Message Signs (DMS)	4
1.4.2 Changeable Message Signs.....	4
1.4.3 Blankout Signs (BOS).....	4
1.5 Types of Technologies	5
1.6 Definitions, Terms, and Acronyms	5
Section 2 Environmental Requirements	16
2.1 Environmental and Operating Standards	16
2.1.1 Definitions of Major Units of the DMS Equipment	16
2.1.2 Compliance of Major Units	16
2.1.3 Electrical.....	17
2.1.4 Transients.....	18
2.1.5 Temperature and Humidity	19
2.1.6 Vibration.....	19
2.1.7 Shock.....	20
2.1.8 Time and Timing.....	20
2.2 DMS Equipment Tests	20
2.2.1 Test Facilities (Except Vibration and Shock).....	20
2.2.2 Test Unit	21
2.2.3 Test Functions	21
2.2.4 Test G: Vibration Test.....	25
2.2.5 Test H: Shock (Impact) Test.....	26
2.2.6 Test J: Power Interrupt Tests	27
2.2.7 Test K: Timing Accuracy Tests.....	28
Section 3 DMS Mechanical Construction	30
3.1 General	30
3.1.1 Weather-Tight Enclosure.....	30
3.1.2 Temperature Control	30
3.1.3 DMS Face.....	31
3.1.4 Galvanic Protection	31
3.1.5 Light Leaks	31
3.1.6 Contrast Border	31
3.2 Fixed-Location DMS	32
3.2.1 Design Life of Fixed DMS.....	32
3.2.2 Structural integrity.....	32
3.2.3 Aluminum Housings.....	32
3.2.4 Housings Made of Other Materials.....	33
3.2.5 Front and Rear Access.....	33
3.2.6 Front Access DMS.....	33
3.2.7 Rear Access DMS	33
3.2.8 Walk-In Access DMS.....	34

3.2.9	Convenience Outlets, Walk-In Access	35
3.3	Portable DMS	35
3.3.1	Transport Safety	35
3.3.2	Structural Integrity	35
3.3.3	Major Subsystems	36
3.3.4	Corrosion Protection and Finishes	37
3.3.5	Power Sources	37
Section 4	Controller to DMS Interface	38
4.1	Interface with DMS Housing	38
4.2	Wiring.....	38
4.3	Wire Entrances	38
4.4	Pixel Control Wiring	38
4.4.1	Power Supply Locations.....	38
4.4.2	DMS Controller and Driver Module Locations.....	39
Section 5	Display Properties	40
5.1	General	40
5.1.1	Development Sources	40
5.1.2	Legibility versus Visibility	40
5.1.3	Photometric and Colorimetric Requirements.....	40
5.2	Contrast Ratio.....	40
5.3	Cone of Vision Type Classification	41
5.3.1	Light Emitting Technology	43
5.4	Luminance Intensity Requirements.....	43
5.4.1	Luminous Intensity Uniformity	45
5.5	Chromaticity Classifications and Limits	46
5.5.1	Chromaticity Limits	46
5.5.2	Chromaticity Uniformity	46
5.6	Display Characters	46
5.6.1	Fonts and Font Alphabets	46
5.6.2	Required Fonts by DMS Type	48
5.7	Display Change Time	52
5.8	Moving arrows	52
5.9	Test Methods.....	53
5.9.1	General Test Parameters	53
5.9.2	Test Area	54
5.9.3	Considerations for Precision and Bias of Test Methods and Accuracy of Test Results.....	55
Section 6	Optical Components	56
6.1	General	56
6.1.1	Pixel Spacing.....	56
6.1.2	Character Module Spacing.....	56
6.1.3	Interchangeability of LED Modules.....	57
6.1.4	Character Replacement.....	57
6.2	LED Light System.....	57
6.2.1	General.....	57
6.2.2	LED Selection	57
6.2.3	LED Use	57

Section 7 DMS Controller Cabinet	58
7.1 General	58
7.2 DMS Controller Cabinet Design	58
7.2.1 Layout.....	58
7.2.2 Protection.....	58
Section 8 Electronics and Electrical	59
8.1 General	59
8.2 Components	59
8.2.1 General.....	59
8.2.2 Wiring, Cabling, and Harnesses.....	59
8.2.3 Circuit Loading, Surge Protection and Disconnects.....	59
8.2.4 Printed Circuit Boards.....	59
8.3 DMS Controller	59
8.3.1 General.....	59
8.3.2 Communication Interfaces.....	59
8.3.3 Communications.....	60
8.3.4 Internal Clock.....	60
8.3.5 Watchdog Timer	60
8.3.6 Loss of Power.....	60
8.3.7 Communications Link Monitor	60
8.3.8 Manual Test Interface.....	60
8.3.9 Controller Reset.....	60
8.4 Controller Functions	61
8.4.1 General.....	61
8.4.2 Control Architectures	61
8.4.3 Common Functionality.....	61
8.4.4 Centralized Messaging Architecture.....	62
8.4.5 Local Messaging Architecture	62
8.4.6 Display Writing.....	62
8.4.7 NTCIP Protocol and Command Sets.....	62
8.4.8 Other Protocols and Command Sets.....	62
8.5 Local Control	63
Section 9 Performance Monitoring	64
9.1 Display Diagnostics and Monitoring	64
9.1.1 LED Pixel Tests	64
9.1.2 LED Temperature Monitor.....	64
9.1.3 Brightness Controls	64
9.2 Controller Diagnostics and Monitoring	65
9.2.1 Watchdog Timer	65
9.2.2 Results of Controller Failures	65
9.2.3 Power Line Failures.....	65
9.2.4 Communication Link Failures	65
9.2.5 Subsystem Component Communications	66
9.3 Error and Failure Log	66
9.4 Message Verification	66
9.5 Defective Character Module	66
Section 10 Power Requirements	67
10.1 AC or DC Electrical Service	67

10.2	Power Panels for AC Only	67
10.2.1	Minimum Requirements.....	67
10.2.2	Service Drop Advisory.....	67
10.3	Distribution Panels for DC	67
10.4	Ground to Neutral Isolation	67
10.5	Surge Protection Device	67
10.6	Convenience Outlets AC Only	67
10.6.1	Calculated Electrical Load.....	68
10.7	Reserve Power Source	68
10.8	DMS Operation	68
10.8.1	Content/Message	68
10.8.2	Message Brightness	68
10.8.3	Definition of Critical vs. Non-Critical Loads	68
10.9	Reserve Power Source Sizing Considerations	68
10.9.1	UPS/Battery	68
Section 11	Conformance	70
11.1	General	70
11.1.1	Involved Parties	70
11.1.2	Other.....	70
11.2	Conformance Document Types	70
11.2.1	Certificates.....	70
11.2.2	Conformance Testing	70
11.2.3	Statement	70
11.2.4	Inspections	71
11.2.5	Evaluation.....	71
11.3	Requirements	71
11.3.1	Mandatory.....	71
11.3.2	Optional	71
11.4	Conformance Documentation Requirements	71
11.5	Conformance Table	72
Section 12	Documentation	78
12.1	Drawing Documentation	78
12.1.1	System Diagrams	78
12.1.2	Wiring Diagrams.....	78
12.1.3	Mechanical Drawings	78
12.2	Site Specific Documentation	78
12.2.1	Conformance Table Checklist	78
12.2.2	NTCIP MIB File.....	78
12.2.3	As-Built Documentation.....	79
12.2.4	Configuration Information	79
12.2.5	Revision Numbers	79
12.2.6	Test Results.....	79
12.2.7	Product Burn-In	79
12.3	Manuals	79
12.3.1	Electronic Copy	79
12.3.2	Hardcopy	79
12.3.3	Service.....	79

12.3.4	Troubleshooting.....	80
12.3.5	Operator’s Manual	80
12.4	Warranty Documentation.....	80

FIGURES

Figure 2-1	Test Profile.....	22
Figure 5-1	Example Comparison—15 versus 30 Degree Cone of Vision (Vertical Plane) (top figure)	42
Figure 5-2	Example Overall Cone of Vision Comparison— 15 versus 30 Degree Angle (Horizontal Plane) (bottom figure)	42
Figure 5-3	Graphical Representation of Character Height, Character Width, and Stroke Width	47
Figure 5-4	Example—Standard Font Containing 5 x 7 Pixels	47
Figure 5-5	Example—Standard Font Containing 5 x 7 Pixels	48
Figure 5-6	Geometric Configuration of Test Equipment for Determination of Luminance and Contrast for All Technologies and Chromaticity of Light Emitting Technologies.....	53
Figure 5-7	Layout Examples for a Test Module and the Positioning of the Measuring Area (Circle).....	54

TABLES

Table 2-1	Compliance of Major Units.....	17
Table 2-2	Operating Voltages	17
Table 2-3	Wet-Bulb, Dry-Bulb Relative Humidity at Barometric Pressure of 29.92 In. of Mercury.....	19
Table 2-4	Test Functions	21
Table 2-5	Effect of Power Interruption	27
Table 5-1	Minimum Contrast Ratio Requirements, Yellow	41
Table 5-2	Minimum Contrast Ratio Requirements, White	41
Table 5-3	Minimum Contrast Ratio Requirements, Green.....	41
Table 5-4	Minimum Contrast Ratio Requirements, Red	41
Table 5-5	Minimum Contrast Ratio Requirements, Blue	41
Table 5-6	Luminance Intensity Limits in CD/M ² for On-Axis (0° Horizontal, 0° Vertical) Test Angles—for Yellow	44
Table 5-7	Luminance Intensity Limits in CD/M ² for On-Axis (0° Horizontal, 0° Vertical) Test Angles—for White.....	44
Table 5-8	Luminance Intensity Limits in CD/M ² for On-Axis (0° Horizontal, 0° Vertical) Test Angles—for White/Yellow	44
Table 5-9	Luminance Intensity Limits in CD/M ² for On-Axis (0° Horizontal, 0° Vertical) Test Angles—for Green.....	44
Table 5-10	Luminance Intensity Limits in CD/M ² for On-Axis (0° Horizontal, 0° Vertical) Test Angles—for Red	45
Table 5-11	Luminance Intensity Limits in CD/M ² for On-Axis (0° Horizontal, 0° Vertical) Test Angles—for Orange.....	45

Table 5-12 Luminance Intensity Limits in CD/M^2 for On-Axis (0° Horizontal, 0° Vertical) Test Angles—for Blue.....	45
Table 5-13 Chromaticity Limits for Light-Emitting DMS Technology	46
Table 5-14 NEMA TS 4 Font Ratios—Width/Stroke/Spacing	50
Table 5-15 MUTCD Font Ratios—Width/Stroke/Spacing	51

FOREWORD

This NEMA Standards Publication, TS 4-2016, *Hardware Standards for Dynamic Message Signs (DMS), with NTCIP Requirements*, was developed to standardize minimum performance requirements and specifications for design and implementation of dynamic traffic messaging equipment that can be safely installed and provided to the end user with operational features based on current technology. Within NEMA TS 4-2016, any reference to a specific manufacturer is strictly for the purpose of defining interchangeability where there exists no nationally recognized standard covering all the requirements. The manufacturer references do not constitute a preference. NEMA TS 4-2016 is intended to reduce hazards to persons and property when traffic-messaging equipment is properly selected and installed in conformance with the requirements herein.

A future version of NEMA TS 4-2016 may address alternative non-grid power sources.

The user's attention is called to the possibility that compliance with NEMA TS 4-2016 may require use of an invention covered by patent rights. By publication of NEMA TS 4-2016, no position is taken with respect to the validity of any claims or of any patent rights in connection therewith.

In the preparation of NEMA TS 4-2016, input of users and other interested parties has been sought and evaluated. Inquiries, comments, and proposed or recommended revisions should be submitted to the concerned NEMA product subdivision by contacting the:

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The Dynamic Message Sign Technical Committee developed NEMA TS 4-2016 under the auspices of the NEMA Transportation Management Systems and Associated Control Devices Section (3TS), of which it is a part.

At the time that NEMA TS 4-2016 was prepared, the following NEMA members and their representatives were active voting members of the NEMA 3TS Dynamic Message Sign Technical Committee (3TS DMS TC):

- Adaptive Micro Systems, Inc. www.adaptivedisplays.com
- Daktronics, Inc. www.daktronics.com (Co-Chairs)
- Parsons delcantechologies.com
- SES America sesamerica.com
- Skyline Products, Inc. www.skylineproducts.com
- Ver-Mac, Inc. www.ver-mac.com

3TS section approval of NEMA TS 4-2016 does not necessarily imply that all Section members voted for its approval or participated in its development. When NEMA TS 4-2016 was approved, the Transportation Management Systems and Associated Control Devices Section was composed of the following members:

- Adaptive Micro Systems, Inc. www.adaptivedisplays.com
- Applied Information, Inc. appinfoinc.com
- Daktronics, Inc. www.daktronics.com
- Eberle Design, Inc. www.editraffic.com
- Horizon Signal Technologies, Inc. www.horizonsignal.com
- Intelight Inc. www.inteligh-its.com
- John Thomas, Inc. www.jititraffic.com
- OMJC Signal, Inc. www.omjcsignal.com

- Parsons delcantechologies.com
- Peek Traffic Corporation www.peektraffic.com
- SES America sesamerica.com
- Siemens Industry, Inc. www.industry.usa.siemens.com
- Skyline Products, Inc. www.skylineproducts.com
- TransCore, ITS, LLC www.transcore.com
- Ver-Mac, Inc. www.ver-mac.com

History

As the implementation of dynamic message signage and general light emitting technology increased in the United States during the late 1980s and early 1990s, various transportation departments tried a number of diverse technologies to meet their signing needs. This eventually led to a wide variety of agency specifications developed across the country, a number of opposing philosophies for implementation by the users, and some unsubstantiated claims by manufacturers. It also led to conflicting definitions and references from one agency to the next for what constituted a dynamic message sign (DMS) or its use.

In 1995, based on industry need, NEMA created the NEMA 3TS Transportation Section.

In August 1997, the DMS manufacturers formed a new committee of the NEMA Transportation Section and met for the first time to outline a plan for developing this hardware standard. Between 1997 and 2005, the NEMA 3TS section developed NEMA TS 4-2005. In 2005 NEMA TS 4-2005 was published and used by the transportation industry.

In 2012, the NEMA 3TS Section authorized a project to revise existing NEMA TS 4-2005. That project resulted in NEMA TS 4-2016, which removes older DMS technology and incorporates the new full color technology available. The 3TS Section, particularly its Dynamic Message Sign Technical Committee also worked to harmonize NEMA TS 4-2016 with EN 12966-1 for Environmental, Display, and testing requirements. The major sections overhauled during this project are Section 2 Environmental Requirements, Section 5 Display Properties, Section 8 Electronics and Electrical. Minor revisions occurred in other portions of NEMA TS 4-2016 to reflect the removal of older display technologies. NEMA TS 4-2016 incorporates all of the current best practices of the industry for specifying a DMS.

Section 1 General

1.1 Scope and Introduction

The goal of NEMA TS 4-2016 is to provide the user with safe, dependable, functional, and easily maintained Dynamic Message Sign (DMS) equipment.

NEMA TS 4-2016 defines the minimum hardware and functional characteristics of electronically controlled DMS used for displaying messages to travelers.

NEMA TS 4-2016 predominantly addresses DMS.

Conformance to NEMA TS 4-2016 is defined in Section 11.

Portions of NEMA TS 4-2016 may be referenced as part of agency (procurement) specifications.

NEMA TS 4-2016 is not intended to be, or is meant to take the place of any application guides for DMS.

Items such as sign siting practices, selection of character heights, siting of cabinets and relations between legibility and travel speed, etc. were all considered to be outside the scope of NEMA TS 4-2016.