Irish Standard
I.S. EN 12966:2014+A1:2018

Road vertical signs - Variable message traffic signs

I.S. EN 12966:2014+A1:2018

Incorporating amendments/corrigenda/National Annexes issued since publication:

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National Foreword

I.S. EN 12966:2014+A1:2018 is the adopted Irish version of the European Document EN 12966:2014+A1:2018, Road vertical signs - Variable message traffic signs

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12966:2014+A1

December 2018

ICS 93.080.30

Supersedes EN 12966:2014

English Version

Road vertical signs - Variable message traffic signs

Signaux de signalisation routière verticale - Panneaux à messages variable

Vertikale Verkehrszeichen - Wechselverkehrszeichen

This European Standard was approved by CEN on 18 October 2014 and includes Amendment 1 approved by CEN on 10 October 2018.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 12966:2014+A1:2018) has been prepared by Technical Committee CEN/TC 226 "Road equipment", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2019 and conflicting national standards shall be withdrawn at the latest by September 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1 approved by CEN on 7 November 2018.

This document will supersede ▌A1⟩ EN 12966:2014 ⟨A1▌.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ▌A1⟩ ⟨A1▌.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with Regulation (EU) No. 305/2011 [1], see informative Annex ZA, which is an integral part of this document.

EN 12966, *Road vertical sign – Variable message traffic signs*, covers the product standard, assessment and verification of constancy of performance (AVCP) including type testing and factory production control.

It derives from performance requirements and test methods published in CEN, CENELEC, CIE, IEC and ISO documents.

The main changes with respect to the previous edition are listed below:

— The new structure of the standard has been adapted to the structure proposed by CEN BT for harmonized standards

  — Consequently the contents of Clauses 4 to 8 of the previous edition have been moved to Clause 4, Product characteristics, in 4.1 to 4.6;

  — Contents of Clause 9 of the previous edition have been moved to Clause 5, Testing, assessment and sampling methods;

  — Contents of EN 12966-2:2005 and contents of EN 12966-3:2005 have been moved to Clause 6, Assessment and verification of constancy of performance (AVCP), and revised in accordance with requirements of CPR;

  — contents of Clause 10 of the previous edition have been moved to Clause 7, Classification and designation;

  — contents of Clause 11 of the previous edition have been moved to Clause 8, Marking, labelling and packaging;

- contents of Clause 12 of the previous edition are now included in Clause 6, Assessment and verification of constancy of performance (AVCP);
- contents of Clause 13 of the previous edition are now included in 4.6, Dangerous substances;
- informative Annex B of the previous edition has been renamed informative Annex L;
- informative Annex C of the previous edition has been renamed informative Annex M, information and guidance on graphics for discontinuous light emitting signs including figures has been added for better understanding;
- informative Annex D of the previous edition has been renamed informative Annex N, information and guidance on dimensions, luminance, beam width, legibility and efficiency for discontinuous VMS including figures has been added for better understanding;
- informative Annex E of the previous edition has been renamed informative Annex O;
- informative Annex F of the previous edition has been renamed informative Annex P ;
- new normative Annex B has been added to define declaration codes for marking;
- new informative Annex Q has been added to give guidance for technical documentation;
- new informative Annex R has been added showing templates for summary of test results;

— visual performance requirements of continuous VMS (4.3) and discontinuous VMS (4.4), have been updated, test methods have been simplified (5.5);

— physical performance requirements have been updated (4.5), test method have been adjusted accordingly (5.4);

— informative Annex ZA has been revised in accordance with requirements of the CPR.

NOTE The structure of the document follows the requirements requested by the CEN CPR Consultant at the time of drafting the document.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This European Standard is designed for use by manufacturers, who are placing their variable message traffic signs on the market, as well as by Road Authorities and private developers who wish to use variable message signs. It provides requirements for performance of characteristics of these signs, test and assessment methods and the means of assessment and verification of constancy of performance (AVCP).

This European Standard is a product standard covering the requirements for variable message traffic signs (VMS). A VMS is a sign where the information shown can be changed or switched on or off as required. The information can be text and/or symbols.

VMS fall into the two different types of continuous and discontinuous. Continuous VMS show sign faces of the types of fixed signs defined in EN 12899. Discontinuous VMS use luminous elements to show different messages on a single sign face.

There is diversity of VMS. Some have elements that are placed with a view of displaying a few predetermined messages, while other have elements placed in arrays. Some can show messages where all elements have approximately the same luminous intensity while other can vary the luminous intensity individually. Some can show certain predetermined colours, while other can show a range of colours. Some can show only character legends while other can show a wider range of legends.

This European Standard does not describe the detailed form and configuration of a VMS. Therefore, test modules representing the VMS are used to demonstrate compliance with the requirements of this European Standard because of the impracticality of testing some complete VMS.

Because of the major demands on a sign for good legibility and visibility throughout the required viewing range, the main properties of the sign are described. These properties can vary depending on the situation. For example, it will not be necessary to ask for a minimum temperature requirement of -40 °C in Greece, but this needs to be considered in Lapland. For visual performance there will be a difference between installation on highways - with good distance visibility and a narrow beam width - and installation in cities, where there is only short distance legibility and when a wide beam width may be required.

This European Standard uses requirements for performance of the characteristics, which are not dependent on technology. The visual and environmental performance is demonstrated on a test module representing the VMS. This European Standard contains a number of defined requirements on VMS, some of which have to be demonstrated on the test module, others that are to be verified by the manufacturer. It is the manufacturer’s responsibility to ensure that the VMS is fully represented by the test module.

The performances of the main characteristics of discontinuous VMS are given by classes, which are designed to be selected by choosing a combination of classes dependent on the end-user’s requirements. National annexes may define class combination applicable to the local needs. This combination covers not only the regulatory requirements of the destination country but also issues of lifetime, quality, maintenance and construction, all of which affect the ability of a sign in its particular application, to meet safety and fitness for purpose. The details in the informative annexes are provided as useful guidance on the additional aspects relating to VMS for those setting up purchasing contracts for signs or signing systems.

Installed discontinuous VMS should be regulated in view of the ambient light and the stroke width of legends to provide the intended apparent luminance and balance of colours. Symbols and fonts for character legends should be designed to provide best possible legibility.

The working environment for VMS can be relatively harsh and equipment that is deemed "fit for purpose" is expected to last in an exposed, corrosive environment for a minimum of 10 years. It is essential that all materials and manufacturing processes take this into account.

1 Scope

This European Standard provides specifications for two types of variable message signs (VMS); i.e. continuous (see 3.4) and discontinuous (see 3.7).

This European Standard covers mobile, temporary and permanently installed VMS used in circulation areas, on public and private land, including tunnels for the information, guidance, warning and/or direction of traffic. Test modules are used to demonstrate compliance with the requirements.

This European Standard specifies visual and physical characteristics of VMS as well as their durability aspects. It also provides relevant requirements and corresponding test methods, assessment and verification of constancy of performance (AVCP) and marking.

NOTE Provisions for the evaluation of conformity with regards to type testing are further specified in 6.2; provisions with regards to factory production control (FPC) are further specified in 6.3.

This European Standard does not cover

a) sign gantries, cantilevers, posts (supports) and foundations,

b) signal heads,

c) sizes and shapes of VMS messages,

d) control units and monitoring units unless inside the VMS,

e) control of sign luminance.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12899-1:2007, *Fixed, vertical road traffic signs — Part 1: Fixed signs*

EN 12899-4:2007, *Fixed, vertical road traffic signs — Part 4: Factory production control*

EN 50293:2012, *Road traffic signal systems — Electromagnetic compatibility*

EN 50556:2011, *Road traffic signal systems*

EN 60068-2-1, *Environmental testing — Part 2-1: Tests — Tests A: Cold (IEC 60068-2-1)*

EN 60068-2-2, *Environmental testing — Part 2-2: Tests — Tests B: Dry heat (IEC 60068-2-2)*

EN 60068-2-5, *Environmental testing — Part 2-5: Tests — Test Sa: Simulated solar radiation at ground level and guidance for solar radiation testing (IEC 60068-2-5)*

EN 60068-2-14, *Environmental testing — Part 2-14: Tests — Test N: change of temperature (IEC 60068-2-14)*

EN 60068-2-30, *Environmental testing — Part 2-30: Tests — Test Db: Damp heat, cyclic (12 h + 12 h cycle) (IEC 60068-2-30)*

EN 60068-2-64, *Environmental testing — Part 2-64: Tests— Test Fh: Vibration, broadband random and guidance (IEC 60068-2-64)*