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Traffic control equipment - Signal heads

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

Traffic control equipment - Signal heads

Equipement de régulation du trafic - Signaux

Anlagen zur Verkehrssteuerung - Signalleuchten

This European Standard was approved by CEN on 11 January 2015.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 12368:2015) 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of an identical text or by endorsement, at the latest by December 2015, and conflicting national standards shall be withdrawn at the latest by March 2017.

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

This document supersedes EN 12368:2006.

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 EU Directive, see informative Annex ZA, which is an integral part of this document.

The main changes in this revision are as follows:

- a) Introduction: Paragraph 6 added outlining reasons for possible degradation of optical performance;
- b) Scope: Individual optical units included in addition to complete signal heads which were in the previous version;
- c) Clauses 4 to 8 Requirements re phrased to clearly identify Product Characteristics as required in the CPR;
 - 1) 4.2 Signal head:- Class V IP65 added as some signals are required with the higher sealing for example in tunnels. A warning note was also added that higher sealing levels can lead to risk of trapped moisture;
 - 2) 4.3 Mountings, poles with brackets and catenaries: removed as topic considered outside of the scope of this standard as the infrastructure to which signals are mounted are the subject of other standards. Table ZA.1 and Clause 8 of DoP updated accordingly to remove these characteristics;
 - 3) 4.4 Deflection: removed as infrastructure, poles, gantries catenaries etc considered outside of the scope of this standard, as the infrastructure to which signals are mounted are the subject of other standards. Table ZA.1 and Clause 8 of DoP updated accordingly to remove these characteristics;

New sub-clause 4.3 Added to clearly state Product Characteristic of Performance Under Impact;

New sub-clause 4.4 Added to clearly state Product Characteristic of Constructional Integrity;

 - 4) 5.2. Electrical safety: Addition detail added noting intended use of signal in a traffic system and that therefore electrical requirements of EN 50556 also apply;
 - 5) 6.1 General: Text added noting that whilst it is normally expected that all aspects in a signal would be of the same performance, this can vary for special applications;
 - 6) 6.3 Luminous Intensities: Allowance for dimming of signals added;
 - 7) 6.4 Distribution of Luminous Intensity: Clarification added as to the meaning of the wording "substantially uniform" distribution;
 - 8) 6.6 Phantom Signal: A note added;

9) 6.9 Background screen of signals: Simplified. Table 8 of background screen sizes removed and all subsequent tables re numbered (i.e. Tables 9 to 17 have become Tables 8 to 14);

10) 6.10 Visible Flicker: Characteristic and a note added;

11) 7 Construction and environmental test methods: Clarification added with reference to optical units of different diameters;

Table 9:- Class AJ2 replaced with duration and axis, as the AJ2 reference was a reference to EN 50556 simply for the duration and axis of the tests as the spectrum was always defined in EN 12368;

12) 8.1 General: Clarification of test tolerances added, optical measurement tolerances and measurement environment temperature tolerance;

13) 8.2 Measurement of luminous intensities: A method of stabilisation added;

14) 8.3. Measurement of luminance for uniformity tests: Method clarified;

15) 8.4. Measurement of phantom signal: specification for the illuminance source change to simplify the equipment needed;

16) 8.6. Measurement of combined colours: The need to plot colours on the chromaticity diagram Figure 3 clarified;

d) 10.1 Marking and labelling: The labelling needs changed increasing the level of information available adding diameter and dimming;

e) 10.2 Product Information: definition of reference axis clarified to include reference centre and the relationship to the light emitting surface. Need for instructions for safe use as required in the CPR article 11.6 also added to this sub-clause;

f) Clause 11: Clause updated to align with AVCP format for CPR, Table 15 removed as not part of the revised AVCP;

11.2.2. Test Modules: Definition expanded to cover alternative types of enclosures;

g) Table A.1: Dimmed operation added;

h) Annex ZA to align with Annex ZA format for CPR;

Table ZA.1: Scope increased to include dimming performance where signals have dimming and the possible use of hoods and visors where provided;

Table ZA.2: Intended uses expanded to indicate possible use of visors and hoods;

Figures ZA1: updated to show diameter and dimming performance.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Signal heads are mainly used to transfer safety messages to the road user to achieve specific reactions. Signal heads in road traffic transfer this information optically by signal lights which have a specific meaning and which differ in their colour of light and in the design of their illuminating surface.

The visibility of a signal light depends on the colour, luminous intensity, luminous intensity distribution, luminance and luminance uniformity, the surrounding luminance (background luminance), the size of the illuminating area of the signal light, the phantom light and the distance and angle between observer and signal head.

Four angular distributions of luminous intensities for signal lights are specified. The user can choose between an extra wide, wide, medium and narrow beam signal to obtain a good recognition of the signal for short distances in urban areas, for long distances in rural areas. To achieve a good performance the standard provides a number of different performance levels and two different diameters for the roundels.

This European Standard does not require limits for the recognition of red or green signals with reduced luminous intensities operating in a failure mode. These limits depend on the surrounding lights (on or off) and on the situation. However, for a simple rule a red signal is considered as failed if the luminous intensity in the reference axes is $I \leq 10$ cd, and a green signal is considered as being in operation if the luminous intensity is $I \geq 0,05$ cd.

The working environment for signal heads is relatively harsh and equipment that is deemed "fit for purpose" is expected to last in this exposed, corrosive environment for a minimum of 10 years. It is essential that all materials and manufacturing processes take this into account. The supplier should detail all steps taken to comply with this clause.

The optical performance of signal heads in use is a function of lens soiling, mirror soiling and a decrease of luminous flux from the lamp. To maintain the performance of the signal heads during service, it is important to ensure that after lamp replacement and cleaning of lens and mirror the light output is restored to as near 100 % as possible and never lower than 80 % of the declared specified performance(s).

For devices randomly selected from series production it is important that the product characteristic as to minimum luminous intensity of the light emitted, are in each relevant direction, of the minimum values prescribed.

1 Scope

This European Standard applies to signal heads with one or more signal lights of the colours red, yellow and/or green signal lights for road traffic with 200 mm and 300 mm roundels and to optical units to be integrated in signal heads to produce the individual signal lights. It defines the product characteristics for the visual, structural, environmental performances and testing of signal heads and optical units for pedestrian and road traffic use.

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 50293, *Electromagnetic compatibility — Road traffic signal systems — Product standard*

EN 50556, *Road traffic signal systems*

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

EN 60068-2-2, *Environmental testing - Part 2-2: Tests - Test 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)*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

EN 60598-1:2008, *Luminaires - Part 1: General requirements and tests (IEC 60598-1)*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN