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**SIST EN 12368:2024**

**01-julij-2024**

**Nadomešča:**  
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**Oprema za nadzor in vodenje cestnega prometa - Signalne luči**

Traffic control equipment - Signal heads

Anlagen zur Verkehrssteuerung - Signalleuchten

Équipement de régulation du trafic - Signaux

**Ta slovenski standard je istoveten z: EN 12368:2024**

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**ICS:** 93.080.30 Cestna oprema in pomožne naprave Road equipment and installations

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## Traffic control equipment - Signal heads

Équipement de régulation du trafic - Signaux

Anlagen zur Verkehrssteuerung - Signalleuchten

This European Standard was approved by CEN on 29 January 2024.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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<b>Contents</b>	<b>Page</b>
European foreword.....	4
Introduction .....	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions .....	6
4 Constructional product characteristics .....	8
4.1 General.....	8
4.2 Ingress protection.....	8
4.3 Performance under impact product characteristic.....	8
4.4 Constructional integrity product characteristic.....	8
5 Environmental, electromagnetic compatibility (EMC) and electrical product characteristics .....	9
5.1 Environmental characteristics.....	9
5.2 Electrical safety, road traffic safety and EMC characteristics .....	9
6 Optical product characteristics.....	9
6.1 General.....	9
6.2 Light emitting diameter of optical units .....	9
6.3 Luminous intensities of optical units.....	9
6.4 Distribution of luminous intensity .....	10
6.5 Luminance uniformity.....	12
6.6 Maximum phantom signal.....	12
6.7 Colours of light .....	12
6.8 Signal lights with symbols.....	13
6.9 Background screen of signal lights.....	13
6.10 Visible flicker.....	13
7 Constructional and environmental test methods.....	13
8 Optical test methods .....	16
8.1 General.....	16
8.2 Measurement of luminous intensities.....	17
8.3 Measurement of luminance for uniformity tests.....	18
8.4 Measurement of phantom signal.....	18
8.5 Measurement of the colour.....	19
8.6 Measurement of combined colours .....	20
9 Tolerances .....	21
10 Marking, labelling and product information.....	21
10.1 Marking and labelling.....	21
10.2 Product information .....	22
11 Assessment and verification of constancy of performance - AVCP .....	23
11.1 General.....	23
11.2 Type testing.....	23
11.2.1 General.....	23

<b>11.2.2 Test samples, testing and compliance criteria.....</b>	<b>24</b>
<b>11.2.3 Test reports .....</b>	<b>26</b>
<b>11.2.4 Shared other party results .....</b>	<b>26</b>
<b>11.2.5 Cascading determination of the product-type results .....</b>	<b>27</b>
<b>11.3 Factory production control (FPC).....</b>	<b>28</b>
<b>11.3.1 General .....</b>	<b>28</b>
<b>11.3.2 Requirements.....</b>	<b>28</b>
<b>11.3.3 Product specific requirements .....</b>	<b>31</b>
<b>11.3.4 Initial inspection of factory and of FPC.....</b>	<b>32</b>
<b>11.3.5 Continuous surveillance of FPC .....</b>	<b>32</b>
<b>11.3.6 Procedure for modifications.....</b>	<b>33</b>
<b>11.3.7 One-off products, pre-production products (e.g. prototypes) and products produced in very low quantity.....</b>	<b>33</b>
<b>Annex A (informative) Test, declarations and requirements.....</b>	<b>34</b>
<b>Bibliography .....</b>	<b>36</b>

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**EN 12368:2024 (E)****European foreword**

This document (EN 12368:2024) 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 October 2024, and conflicting national standards shall be withdrawn at the latest by January 2026.

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 supersedes EN 12368:2015.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

The main changes in this revision EN 12368:2024 compared to the previous edition EN 12368:2015 are as follows:

- a) editorial changes for enhanced clarity and consistency;
- b) change of the scope to include voluntarily application of this standard to other types of signal heads;
- c) clarification of the terms optical surface and reference axis;
- d) change of the headline of 4.2 to better match the content;
- e) part of the content of 6.3 and 6.4 was moved to 8.2;
- f) the explanatory notes in 6.6 referred to the obsolete incandescent lamp technology and were changed based on the current LED technology;
- g) change in the wording of 6.8 for better technical clarification;
- h) change in the testing method regarding the stabilization of the luminous intensity in 8.2;
- i) added the address as an information which is required to be on the product label.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye 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, 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 optical units.

This document 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 should be considered as failed if the luminous intensity in the reference axes is  $I \leq 10$  cd, and a green signal should be 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 their lifetime, 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.

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.

For a full applicability of this document the national standardization/regulatory bodies are requested to define the set of classes relevant for their national requirements.

**EN 12368:2024 (E)****1 Scope**

This document 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, and the rules for the evaluation of the conformity of these products.

This document can be partly or fully applied on a voluntary basis to other signal heads outside of the scope specified above like for instance white optical units or small signal heads with a diameter smaller than 200 mm.

**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.

EN 50293, *Road traffic signal systems - Electromagnetic compatibility*

EN 50556, *Road traffic signal systems*

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

EN 60068-2-2, *Environmental testing - Part 2-2: Tests - Test B: Dry heat*

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*

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

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

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

EN 60598-1:2015, *Luminaires - Part 1: General requirements and tests*

**3 Terms and definitions**

For the purposes of this document, the following terms and definitions apply.

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

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

**3.1****signal head**

device which comprises one or more optical units, including the housing(s), together with all the mounting brackets, fixings, hoods, visors, cowls and background screens, whose task is to convey a visual message to vehicle and pedestrian traffic



### 3.2

#### **optical unit**

assembly of components designed to produce a light of the specified nominal size, colour, luminous intensity and shape

### 3.3

#### **optical surface**

surface of the optical unit which emits light

Note 1 to entry: In many cases it is the external surface of the lens.

### 3.4

#### **lens**

light transmitting element of the optical unit which distributes the luminous flux from the light source into preferred directions of the signal light

### 3.5

#### **background screen**

opaque board placed around the optical unit, either incorporated in the housing of the optical unit or detachable, intended to increase the contrast and to enhance visibility

### 3.6

#### **hood (visor, cowl)**

device located above the front of an optical unit to reduce phantom effect or to restrict the field of view

### 3.7

#### **phantom signal**

false signal that is created by sunlight striking an optical unit

Note 1 to entry: For the technologies that don't use coloured filters, the light reflexion doesn't induce a coloured image, but decreases the visibility of the signal because of the contrast loss.

### 3.8

#### **reference axis**

axis specified by the supplier, used for environmental and optical tests. If not specified by the manufacturer it will be taken as perpendicular to the centre of the optical surface. The reference axis is labelled as  $0^\circ / 0^\circ$

### 3.9

#### **Factory Production Control (FPC)**

permanent internal control of production exercised by the manufacturer

### 3.10

#### **batch**

quantity of a product manufactured with no change in raw material, equipment, settings or operation as defined in the FPC system manual of the manufacturer

### 3.11

#### **individual (and non-series)**

product manufactured under a manufacturing process that is specifically conceived for one unique production

**EN 12368:2024 (E)****3.12****apparent luminous surface**

projection of the optical surface on a plane perpendicular to the reference axis used for the luminance uniformity and the phantom signal measurements

**4 Constructional product characteristics****4.1 General**

The manufacturer shall ensure the design is such that there is a facility for maintenance. Any component requiring replacement shall be designed such that this is easily accommodated and does not affect the optical performance of the signal head.

The construction and choice of materials shall be such that they will provide declared performance for a reasonable economic lifetime of the product as verified by the relevant tests given in this European standard.

The supplier shall detail in his documentation what maintenance shall be carried out, including cleaning methods and materials, to ensure that the optical performance shall be maintained to at least 80 % of the minimum values set out in the appropriate parts of 6.3 and 6.4 during the lifetime as defined by the supplier.

During the declared lifetime of the optical unit the colours shall remain within the colour boxes of Table 7.

**4.2 Ingress protection**

There are 5 classes for the Index Protection, IP, rating in accordance with EN 60529 of a signal head:

— Class I: IP34;

— Class II: IP44;

— Class III: IP54;

— Class IV: IP55;

— Class V: IP65.

NOTE A level of sealing in accordance with IP65 can result in a risk of water collection within the optic housing due to condensation.

Where separate protection of the optical units is required they shall be protected to IP55 or IP65. The signal head, including its optical components, shall be so designed that after installation, during its lifetime as defined by the supplier, including any replacement of components, the optical and mechanical product characteristics are guaranteed to meet the requirements of this standard.

**4.3 Performance under impact product characteristic**

There are 3 classes of performance under impact, IR1, IR2 and IR3. When required by the regulatory authority this characteristic shall be determined in accordance with Clause 7 Constructional and environmental test methods Table 8 — Impact resistance.

**4.4 Constructional integrity product characteristic**

The product is expected to survive levels of vibration that may be expected in normal operation. This characteristic shall be determined in accordance with Clause 7 Constructional and environmental test methods Table 9 — Constructional integrity.

## 5 Environmental, electromagnetic compatibility (EMC) and electrical product characteristics

### 5.1 Environmental characteristics

The signal heads shall comply with one or more of the following classes of operational temperature ranges:

- Class A +60 °C to -15 °C;
- Class B +55 °C to -25 °C;
- Class C +40 °C to -40 °C.

### 5.2 Electrical safety, road traffic safety and EMC characteristics

The signal heads shall comply with the requirements of EN 50293.

Whilst this specification is for a traffic signal product, it is clear that this product is connected to a “Traffic system” and as such the connections/wiring, etc. that is required between it and any controller shall meet the requirements of EN 50556 for electrical safety and in particular attention is drawn to 5.1 Electric safety and to 5.2 road traffic safety.

## 6 Optical product characteristics

### 6.1 General

The optical units of a signal head should normally be of the same classes regarding luminous intensity, dimming, distribution of luminous intensity and phantom light, but it is permissible in special cases that the classes are different.

**EXAMPLE** In signal head with red, yellow and green optical units, it can be required that the red be in a brighter class than the yellow and green on high speed roads.

All values in this section refer to the stabilized values according to 8.2.

### 6.2 Light emitting diameter of optical units

Optical units for road traffic conditions which fall in the scope of this standard shall be circular and have a nominal light emitting diameter of 200 mm or 300 mm  $\pm$  10 %. Local requirements could exist in order to state which signal head to use. When no regulation exists, it is not feasible to give strict rules for the situations where either 200 mm or 300 mm optical unit signals should be used, as the requirements for visibility depend on the local conditions of road lay-out and infrastructure, on traffic conditions and light conditions.

### 6.3 Luminous intensities of optical units

The performance levels for signal lights, for both 200 mm and 300 mm optical units, shall be as specified in Table 1.