



SLOVENSKI STANDARD

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Nadomešča:
SIST EN 50291:2002

**Električne naprave za odkrivanje ogljikovega monoksida v gospodinjstvih - 1. del:
Preskusne metode in zahtevane lastnosti**

Electrical apparatus for the detection of carbon monoxide in domestic premises - Part 1:
Test methods and performance requirements

Elektrische Geräte für die Detektion von Kohlenmonoxid in Wohnhäusern - Teil 1:
Prüfverfahren und Anforderungen an das Betriebsverhalten
(standards.iteh.ai)

Appareils électriques pour la détection de monoxyde de carbone dans les locaux à
usage domestique - Partie 1. Méthodes d'essais et prescriptions de performances
<http://standards.iteh.ai/catalog/standards/sist/31a7d222e7c4/sist-en-50291-1-2010>

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 50291-1

April 2010

ICS 13.320

Supersedes EN 50291:2001

English version

**Electrical apparatus for the detection of carbon monoxide
in domestic premises -
Part 1: Test methods and performance requirements**

Appareils électriques pour la détection
de monoxyde de carbone dans les locaux
à usage domestique -
Partie 1: Méthodes d'essais
et prescriptions de performances

Elektrische Geräte für die Detektion
von Kohlenmonoxid in Wohnhäusern -
Teil 1: Prüfverfahren und Anforderungen
an das Betriebsverhalten

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This European Standard was approved by CENELEC on 2010-04-15. CENELEC 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 Central Secretariat or to any CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

This European Standard, prepared by the Technical Committee CENELEC TC 216, Gas detectors, was submitted to the formal vote and was approved by CENELEC as EN 50291-1 on 2010-04-15.

This European Standard supersedes EN 50291:2001.

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

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2011-04-15
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2013-04-15

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1 Scope

This European Standard specifies general requirements for the construction, testing and performance of electrically operated carbon monoxide gas detection apparatus, designed for continuous operation in domestic premises. The apparatus may be mains or battery powered. Such apparatus is intended to warn of an accumulation of CO, enabling the occupant to react before being exposed to significant risk.

Additional requirements for apparatus to be used in recreational vehicles and similar premises are specified in EN 50291-2.

NOTE For caravan holiday homes EN 50291-1 applies.

This European Standard specifies two types of apparatus, these are

- type A – to provide a visual and audible alarm and an executive action in the form of an output signal that can be used to actuate directly or indirectly a ventilation or other ancillary device, and
- type B – to provide a visual and audible alarm only.

This European Standard excludes apparatus

- for the detection of combustible gases, other than carbon monoxide itself (see EN 50194-1),
- for the detection of CO in industrial installations (see EN 45544-1, EN 45544-2 and EN 45544-3) or commercial premises,
- for CO measurement for smoke and fire detection.

2 Normative references

[SIST EN 50291-1:2010](#)

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The following referenced documents are indispensable for the application 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 50270	2006	Electromagnetic compatibility – Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen
EN 50271	2001	Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen – Requirements and tests for apparatus using software and/or digital technologies
EN 50292	2001	Electrical apparatus for the detection of carbon monoxide in domestic premises – Guide on the selection, installation, use and maintenance
EN 60335-1	2002	Household and similar electrical appliances – Safety – Part 1: General requirements (IEC 60335-1:2001, modified)
EN 60529	1991	Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)
EN 60704-1	1997	Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 1: General requirements (IEC 60407-1:1997)

3 Terms and definitions

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

3.1

ambient air

normal atmosphere surrounding the apparatus

3.2

clean air

air which is free of carbon monoxide, interfering and contaminating substances

3.3

domestic premises

any house or building being a place of residence or home of a household, family or person

3.4

fixed installation

apparatus which is intended to have all parts except replaceable batteries permanently installed

3.5

sensor

assembly in which the sensing element is housed and which may contain associated circuit components

3.6

sensing element

device, the output of which will change in the presence of carbon monoxide

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3.7

volume ratio (V/V)

ratio of the volume of a component to the volume of the gas mixture

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3.8

output signal

signal characterised by a standby and an activation state by which action may be initiated, e.g. triggering a ventilation device

3.9

warm-up time

time interval between the time when the apparatus is switched on and the time when the apparatus is fully operational

3.10

alarm set point

fixed setting of the apparatus that determines the volume ratio and duration of exposure at which the apparatus will automatically initiate an alarm and, for type A apparatus an output signal

3.11

fault signal

visual and/or audible signal indicating a faulty or failed apparatus

3.12

mains-powered apparatus

apparatus designed to be powered by the normal domestic mains electrical supply, with or without an alternative power source

3.13**battery-powered apparatus**

apparatus designed to be powered by batteries only

3.14**continuous operation**

apparatus which is continuously powered with continuous or intermittent automatic sensing

3.15**recreational vehicle**

recreational vehicles considered by this European Standard include recreational craft, caravans and motor caravans

NOTE Other motorised vehicles like trucks are known to have residential accommodation. They are not recreational vehicles but are considered as similar premises in respect of this European Standard.

3.16**caravan holiday home**

transportable leisure accommodation vehicle that does not meet requirements for construction and use of road vehicles, that retains means for mobility and that is for temporary or seasonal occupation

[EN 13878:2003]

3.17**CO detection apparatus**

apparatus, which may also be generically termed "gas detector", comprising the sensor, remote sensor if applicable, alarm and any other circuit components, power supply and, for type A apparatus, a means of providing an output signal

4 General requirements

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4.1 General

Unless otherwise stated, the requirements specified are applicable to both type A and type B apparatus.

The apparatus shall reliably detect the presence of carbon monoxide in domestic premises under the stated application conditions, shall produce an alarm, and in the case of type A apparatus, shall be able to initiate executive actions whenever the conditions (in terms of both level and duration) exceed pre-set alarm set points.

Apparatus which includes functionality additional to carbon monoxide detection shall perform according to the requirements of this European Standard and to the requirements of any standards relevant to the additional functionality.

The apparatus, electrical assemblies and components shall comply with the requirements of 4.2 to 4.7 and the performance requirements of Clause 5. Apparatus shall be designed for continuous operation. The apparatus shall not be class 0 as defined in EN 60335-1:2002, 3.3.7.

When replaceable, the sensor as defined in 3.5 shall guarantee the same constructional characteristics and functions as the previous sensor without modifying the internal detector in such way to keep unchanged the compliance of the detector to all the requirements of this European Standard. The above condition shall be verified using the information and the documentation given by the manufacturer of the detector.

4.2 Construction

The apparatus shall comply with the appropriate requirements of EN 60335-1:2002 as listed in Table 1.

When the sensor is replaceable: Mechanical and/or electrical means shall guarantee the replacement of the sensor without errors. In the case of electrical recognition of the incorrect connection or absence of the sensor, the detector shall give an automatic signal of a fault and/or alarm. Moreover shall be impossible or recognized as an error the connection of a sensor designed for a certain type of gas to a detector designed for a different type of gas.

Table 1 – Construction requirements

Constructional requirement	EN 60335-1:2002 (Sub)clause
Protection against accessibility to live parts	8
Heating	Relevant parts of 11
Leakage current and electrical strength at operating temperature	13
Moisture resistance	15.1 and 15.3
Leakage current and electrical strength	16
Overload protection of transformers and associated circuits	17
Abnormal operation	19
Construction	22
Internal wiring	23
Components	24.1, 24.2, 24.4
Supply connection and external flexible cords	25.3
Terminals for external conductors	26
Provision for earthing	27
Screws and connections	28
Creepage distances, clearances and distances through insulation	29
Resistance to heat and fire	30
Resistance to rusting	31

4.3 Indicators and alarms

4.3.1 Visual indicators shall be fitted and coloured as follows:

- a) power supply indicators shall be coloured green;
- b) alarm indicators shall be coloured red.

Where fitted, the visual fault indication shall be yellow.

If a sensor 'end-of-life' indication is fitted, this shall be clearly different from all other indications.

The indicators shall be marked to show their function.

The indicators shall be visible when the apparatus is installed in its operating position according to the manufacturer's instructions.

4.3.2 The apparatus shall have an audible alarm, see 5.3.16.

4.3.3 Alarm indicators and audible alarms shall operate simultaneously at the set points as listed in Table 2.

Table 2 – Alarm conditions

CO concentration	Without alarm before	With alarm before
30 ppm	120 min	-
50 ppm	60 min	90 min
100 ppm	10 min	40 min
300 ppm	-	3 min

Once activated, the alarm shall remain in operation at carbon monoxide concentrations above 50 ppm.

4.3.4 All adjustment devices and tools intended for adjustment of, or access to, such adjustment devices shall be designed so as to discourage unauthorised interference with the apparatus.

4.4 Fault signals

The apparatus shall provide a fault signal in the event of loss of continuity or short circuit to the sensor.

The fault signal shall be clearly identified and different from a gas alarm.

4.5 Output signal (applicable for type A apparatus only)

The apparatus shall provide an output signal at each of the alarm conditions listed in Table 2.

4.6 Software-controlled apparatus

In the design of software-controlled apparatus, the risks arising from faults in the programme shall be taken into account.

The apparatus shall fulfil the requirements of EN 50271.

4.7 Labelling and instructions

4.7.1 General

All text on the apparatus, its packaging and in the instruction book shall be in accordance with national regulations.

4.7.2 Labelling

The apparatus shall carry durable label(s) carrying the following information:

- a) the manufacturer's or supplier's name, trademark or other means of identification;
- b) the name of apparatus, model number (if any) and the type of gas to be detected;
- c) the number of this European Standard;
- d) the type of apparatus, A or B;
- e) the serial number or manufacturing date code of the apparatus;
- f) for mains powered apparatus the electricity supply voltage and frequency and maximum power consumption;

- g) for battery powered apparatus the type and size of replacement batteries;
- h) indication of the maximum lifetime recommended for the apparatus.

The label shall be visible with the apparatus in a typical installed position and markings b) and h) shall be clearly visible.

When the sensor is replaceable: The apparatus shall carry the next replacement date of the sensor that shall be clearly visible with the apparatus in a typical installed position. This data shall be updated in the apparatus at each revision or replacement of the sensor, with the new date given by the manufacturer. If the updating procedure provides the application of a pre-printed label, this shall be supplied with the new sensor with a warning to replace the previous label attached to the detector with the new one: Every sensor shall be provided with a marking which allows to trace the manufacturing and calibration information of each single sensor (e.g. serial number, manufacturing batch/production date, expected lifetime of the apparatus, etc.).

The markings shall be legible and shall comply with EN 60335-1:2002, 7.6 and 7.14.

4.7.3 Cautions

All gas detection apparatus shall carry a caution, on a label attached to the apparatus, for example:

CAUTION: READ THESE INSTRUCTIONS CAREFULLY
BEFORE OPERATING OR SERVICING.

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4.7.4 Instruction booklet **(standards.iteh.ai)**

The apparatus shall be provided with an instruction booklet or leaflet. The instruction book or leaflet shall give complete, clear and accurate instructions for the installation, safe and proper operation, and regular checking of the apparatus. It shall include at least the following information:

- a) for mains powered apparatus, the correct operating voltage, frequency, fuse-rating (if any) and method of connection to the mains supply system;
- b) for battery powered apparatus the type and size of replacement batteries, normal operating life, battery replacement instructions, and information on low battery conditions;
- c) guidance on siting and mounting of the apparatus and the warning that the apparatus should be installed by a competent person (see EN 50292);
- d) actions to take if the apparatus alarms (see EN 50292);
- e) an explanation of all warning (visual and audible) and other indicators, including re-setting facilities where relevant;
- f) a list of commonly occurring materials, vapours or gases, e.g. in cleaning fluids, polishes, paints, cooking operations, etc., which may affect the reliability of the apparatus in the short or long term;
- g) warning of the risk of electric shock or malfunction if the apparatus is tampered with;
- h) instructions on the use of any relevant test procedure supplied with the apparatus;
- i) the expected lifetime of the apparatus;
- j) for type A apparatus, instructions on the use and characteristics of the output signal;
- k) a note stating the working ranges of both temperature and humidity;
- l) the alarm conditions;