



# SLOVENSKI STANDARD

## SIST EN 50292:2023

01-junij-2023

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**Električni aparati za zaznavanje ogljikovega monoksida v stanovanjskih prostorih, bivalnih prikolicah in čolnih - Navodilo za izbiro, vgradnjo, uporabo in vzdrževanje**

Electrical apparatus for the detection of carbon monoxide in domestic premises, caravans and boats - Guide on the selection, installation, use and maintenance

Elektrische Geräte für die Detektion von Kohlenmonoxid in Wohnhäusern, Caravans und Booten - Leitfaden für Auswahl, Installation, Benutzung und Instandhaltung

Matériels électriques pour la détection de monoxyde de carbone dans les locaux à usage domestique, caravanes et bateaux - Guide de sélection, d'installation, d'utilisation et de maintenance

**Ta slovenski standard je istoveten z: EN 50292:2023**

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13.320	Alarmni in opozorilni sistemi	Alarm and warning systems
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English Version

**Electrical apparatus for the detection of carbon monoxide in  
domestic premises, caravans and boats - Guide on the selection,  
installation, use and maintenance**

Matériels électriques pour la détection de monoxyde de  
carbone dans les locaux à usage domestique, caravanes et  
bateaux - Guide de sélection, d'installation, d'utilisation et  
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Elektrische Geräte für die Detektion von Kohlenmonoxid in  
Wohnhäusern, Caravans und Booten - Leitfaden für  
Auswahl, Installation, Benutzung und Instandhaltung

This European Standard was approved by CENELEC on 2023-03-20. 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 CEN-CENELEC Management Centre or to any CENELEC member.

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

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## European foreword

This document (EN 50292:2023) has been prepared by CLC/TC 216, "Gas detectors".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2024-03-20
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2026-03-20

This document supersedes EN 50292:2013 and all of its amendments and corrigenda (if any).

EN 50292:2023 includes the following significant technical changes with respect to EN 50292:2013 (various minor changes have also been made):

- Document title revised to include applications that are similar to domestic premises;
- Section titles have been revised to be clearer;
- Normative references have been extended to include smoke and CO alarm standards;
- Clause 3, Definitions have been extended and revised, e.g. to bring in line with other standards;
- Clause 4, sources of carbon monoxide have been revised to include wood pellets, and ethanol;
- 4.3.1, included reference to Inversion weather conditions;
- 4.3.3, revised title and text to improve clarity;
- 4.5, include reference to other smoke emitting sources such as Shisha venues;
- 4.6, Revised;
- 4.7, Revised with reference to CO diffusion;
- 5.2, Title revised;
- 5.2.1, Title revised;
- 5.2.2, Title revised;
- 5.2.2, Content revised for easier reading and improved clarity;
- 5.2.2.1, revised to improve clarity and refence to other standards included;
- 5.2.2.2, New section covering wood pellets, wood chips and biomass briquettes added;
- 5.2.2.3, renumbered and revised Caravans and recreational craft;
- 5.2.3, title revised for improved clarity;
- 5.2.3.1, Revised throughout;

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- 5.2.3.2, Title revised, Text revised for improved clarity;
- 5.2.3.3, Title revised, Text revised for improved clarity;
- 5.2.3.4, Title revised, Text revised for improved clarity;
- 5.2.3.5, Revised with additional information on siting in caravans and recreational craft;
- 5.3, Revised to include reference to other standards;
- 5.4, New section referencing Special needs and Risk Groups;
- Clause 6, Title revised;
- 6.1, text revised to include references to other sections in this document;
- 6.3, Title revised and updated text in relation to ventilation systems;
- 6.4, Added examples on hazards;
- 6.5, Revised section;
- 6.6, title and text revised to reference to the principle of two senses for additional signalling;
- Clause 7, Title revised;
- 7.1, revised for improved clarity;
- 7.2, revised for improved clarity;
- 7.5, revised for improved clarity;
- 7.6, Revised title and updated text on nuisance alarms;
- 7.7, Complete revision of maintenance and lifetimes sections;
- Clause 8, Emergency actions moved to Annex C.

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

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

## Introduction

This document is intended to be a guide for people who, in the course of their professional activities, are required to install apparatus for the detection of carbon monoxide (CO) in domestic premises and rooms with similar purposes. It is also aimed at anyone who might supply such detectors to members of the public for subsequent installation according to national regulations, so that advice may be given based on good engineering practice.

Apparatus for the detection of carbon monoxide are not a substitute for good installation and regular servicing of fuel burning appliances or regular cleaning of chimneys, although they may provide an added margin of reassurance for users. Domestic carbon monoxide detectors with or without some form of executive function may overcome fears of fuel safety and may be particularly beneficial in certain circumstances.

It is necessary to understand that carbon monoxide toxicity may have different consequences according to the physical condition of the individual. Thus, a carbon monoxide detector designed according to the EN 50291 series may not fully safeguard individuals with specific medical conditions.

Carbon monoxide detectors are not intended to be used as an alternative to smoke alarms.

iTeh STANDARD PREVIEW  
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SIST EN 50292:2023

<https://standards.iteh.ai/catalog/standards/sist/f6252be6-b1d2-418d-8b18-ad59c274fd6c/sist-en-50292-2023>

## 1 Scope

This document serves as a guide on the selection, installation, use and maintenance of apparatus for the detection of carbon monoxide, intended for continuous operation in a fixed installation in domestic premises, caravans and boats. This guide is intended to cover any type of domestic or residential accommodation, including leisure accommodation vehicles such as touring and static caravans, and motor homes; and recreational craft such as canal barges. Some static caravans are used as permanent dwellings; in such cases EN 50291-1 is appropriate. For all other types of caravan, EN 50291-2 is appropriate. This guide is read in conjunction with EN 50291-1 and EN 50291-2 together with any additional relevant national or local regulations.

This document refers to the installation of two types of apparatus:

- a) Type A apparatus, 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;
- b) Type B apparatus, to provide a visual and audible alarm only.

This document excludes apparatus for the detection of combustible gases (see EN 50244) and for industrial installations or commercial premises.

## 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 1775, *Gas supply - Gas pipework for buildings - Maximum operating pressure less than or equal to 5 bar - Functional recommendations*

EN 50291-1:2018, *Gas detectors - Electrical apparatus for the detection of carbon monoxide in domestic premises - Part 1: Test methods and performance requirements*

## 3 Terms and definitions

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

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

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

### 3.1

#### **domestic premises**

house or building, or part thereof, residential park homes, or non-recreational boats such as canal barges, in which persons sojourn, reside or sleep as intended

### 3.2

#### **fixed installation**

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

### 3.3

#### **sensor**

assembly in which the sensing element is housed that may contain associated circuit component

### 3.4

#### **sensing element**

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



**3.5****continuous operation**

apparatus that is continuously powered with continuous or intermittent automatic sensing

**3.6****apparatus**

carbon monoxide detection device according to EN 50291-1

Note 1 to entry: Carbon monoxide detection apparatus may also be generically termed “gas detectors” or “CO alarms”.

**3.7****volume ratio****V/V**

ratio of the volume of carbon monoxide to the volume of the gas mixture

Note 1 to entry: Volume ratio (V/V) is often expressed in units of parts per million (ppm); it is commonly referred to as concentration.

**3.8****output signal**

signal (Type A apparatus acc. EN 50291-1 only) characterised by a standby and an activation state, by which action may be initiated

Note 1 to entry: In many cases, such action will entail triggering an ancillary 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 level**

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 warning**

visual and audible signal indicating a faulty or failed apparatus

**3.12****mains-powered apparatus**

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

**3.13****battery-powered apparatus**

apparatus designed to be powered by batteries only

**3.14****leisure accommodation vehicle**

leisure accommodation vehicle (LAV) unit of living accommodation for temporary or seasonal occupation that may meet requirements for construction and use of road vehicles

EXAMPLE: Motor home, caravan, motorhome.

Note 1 to entry: Other motorised vehicles like trucks are known to have residential accommodation. They are not leisure accommodation vehicles but are considered as similar vehicles in this document.

**EN 50292:2023 (E)****3.15****recreational craft**

boat of a minimum length of 2,5 m and a maximum length of 24 m as specified in Directive 94/25/EC, which is intended for sports or leisure purposes

**3.16****corridor**

connection between rooms and the exit of a unit, intended as an emergency route; this includes passageways and stairwells within a unit

**3.17****unit**

apartment, one-family house or comparable single or multi-storey group of rooms with residential-like use or suitability

**3.18****connected devices**

devices which are wired or wirelessly interconnected with the apparatus, to activate an audible alarm (or any other action) on all connected devices, in cases where the apparatus is in a CO alarm condition

**3.19****circulation space**

space (including a stairway) inside a dwelling mainly used as a means of access between a room and an exit from the dwelling

**3.20****dwelling**

flat or maisonette, comprising one or more rooms, forming a separate unit of residential accommodation within a building

**3.21****dwelling house**

building comprising one or more storeys and multiple flats or maisonettes

**3.22****multiple dwelling building**

building comprising one or more storeys and multiple flats or maisonettes

**3.23****flat**

self-contained premises for residential use which are separated from other parts (e.g. other dwellings) of a building and which have an own access door

**3.24****combination/multi-sensor device**

unit containing all the components, except possible the normal power source, necessary for detecting hazardous levels of smoke or carbon monoxide and for giving an audible alarm, which can comprise one or more parts such as a base (socket) and a head (body)

**4 Sources of carbon monoxide****4.1 General information**

Carbon monoxide is a colourless, odourless, non-irritating gas which is classified as a chemical asphyxiant, whose toxic action is a direct result of the hypoxia produced by a given exposure (see Annex A and Annex B).

## 4.2 Normal exposure levels

Carbon monoxide can be generated within a building or enter from outside. Typically the normal average background levels of carbon monoxide in domestic premises, measured over periods of 1 h to 24 h, are less than 10 ppm. In cases of climatic inversion, higher levels of carbon monoxide are possible.

## 4.3 Burning of carbonaceous materials for heating and cooking

### 4.3.1 General

Most of the carbon monoxide in the environment is produced during combustion of carbonaceous material, e.g. solid fuels (such as coal, coke and wood), liquid fuels (such as oil, petrol and ethanol) and gaseous fuels (such as natural gas, town gas and liquefied petroleum gas (LPG)).

It should be noted that town gas might still be in use in some countries, and it can contain a significant proportion of carbon monoxide prior to combustion. The proportion and constituents of the combustion products from carbonaceous fuels will depend on the particular fuel and the combustion conditions.

Varying concentrations of carbon monoxide are produced from most combustion processes. Exhaust gases from burning solid and liquid fuels may contain significant concentrations of carbon monoxide: levels of 20 000 ppm to 50 000 ppm (2 % to 5 %) are not unexpected. For example, burning coal, wood or peat can produce concentrations of 20 000 ppm, 40 000 ppm and 50 000 ppm respectively. In addition, poorly maintained and inefficient burners can produce considerably higher levels of carbon monoxide.

Another topic of concern is flue reversal. A flue reversal may occur both under certain climatic conditions (e.g. inversion weather situations), as well as in the cases of foreign bodies completely or partially blocking the smoke fumes. This applies to facilities where the combustion air is taken from the rooms, as well as to those whose combustion air is supplied to the appliance independent from room air. This is normally a temporary phenomenon. But it cannot be foreseen, and it may occur at any time, and it may last over an incalculable period of time, even if the appliance is correctly maintained.

### 4.3.2 Space and water heating

Solid, liquid and gaseous fuels may be used for space and water heating. They are used in a variety of ways, either as a local heat source or as a remote central heat source, including

- appliance with flue using room air,
- appliance without flue using room air,
- appliance with flue using external air.

In the case of a defective ducted air heater, carbon monoxide can be distributed into remote rooms.

### 4.3.3 Cooking

Natural gas, town gas or LPG (Liquid Petroleum Gas) are the main fuels for cooking, typically using flueless appliances including cooking ranges. In some cases, solid fuels or oil are used in cooking appliances that are generally fitted with flues.

Portable cooking and heating equipment: it should be emphasized that charcoal grills emit very high levels of carbon monoxide and should only be used outdoors, but never as an air heater in any kind of recreational facilities, including tents.

It is also warned about the indoor operation of gas-powered mobile heaters (mushroom / patio heaters). Even those devices can emit increased levels of carbon monoxide and should therefore be operated only outdoors.

## 4.4 Uncontrolled burning

Carbon monoxide is a major gaseous product from fires resulting from uncontrolled burning of carbonaceous material. Varying concentrations of carbon monoxide are produced, depending on the material, burning conditions, etc.