



SLOVENSKI STANDARD

oSIST prEN 50292:2012

01-marec-2012

Nadomešča:
SIST EN 50292:2002

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 - Leitfaden für Auswahl, Installation, Benutzung und Instandhaltung

SIST EN 50292:2014

Appareils 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: prEN 50292:2012

ICS:

13.320 Alarmni in opozorilni sistemi Alarm and warning systems

oSIST prEN 50292:2012

en

English version

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

Appareils 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

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

This draft European Standard is submitted to CENELEC members for CENELEC enquiry.
Deadline for CENELEC: 2012-06-15.

It has been drawn up by CLC/TC 216.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CENELEC 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 CEN-CENELEC Management Centre 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, Turkey and the United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

1	Contents	
2	Foreword	3
3	Introduction	4
4	1 Scope	5
5	2 Normative references	5
6	3 Terms and definitions	5
7	4 Sources of carbon monoxide	7
8	4.1 General information	7
9	4.2 Normal exposure levels	7
10	4.3 Burning of carbonaceous materials for heating and cooking	7
11	4.4 Uncontrolled burning	8
12	4.5 Tobacco smoking	8
13	4.6 Internal combustion engines	8
14	4.7 Migration of CO from connected premises	8
15	5 Installation	8
16	5.1 General	8
17	5.2 Location of the carbon monoxide detector	9
18	5.3 Types of apparatus	11
19	6 Executive functions (type A apparatus only)	11
20	6.1 General	11
21	6.2 Shut-off valve	11
22	6.3 Ventilation fan	12
23	6.4 Mains electrical switch	12
24	6.5 Remote alarm	12
25	6.6 Additional visual alarm	12
26	6.7 Link between detector and ancillary device	12
27	7 Advice to the user	12
28	7.1 Use of alarm	12
29	7.2 Manufacturer's instructions	12
30	7.3 Location	12
31	7.4 Power supply	13
32	7.5 Indicators	13
33	7.6 Alarms	13
34	7.7 Maintenance	13
35	7.8 Lifetimes	13
36	8 Emergency actions	14
37	Annex A (informative) Health effects	15
38	A.1 Toxic effects	15
39	A.2 Chronic effects on high risk groups	16
40	A.3 Normal COHb levels	17
41	A.4 Tobacco smoking	17
42	Annex B (informative) Philosophy of setting alarm points	18
43	Bibliography	20
44		
45		

46

Foreword

47 This document prEN 50292:2012 has been prepared by CLC/TC 216, Gas detectors.

48 This document is currently submitted to the Enquiry.

49 This document will supersede EN 50292:2001.

50

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 50292:2014

<https://standards.iteh.ai/catalog/standards/sist/7f4b5536-0e81-42f7-9fe5-527e452fb3d1/sist-en-50292-2014>

51 Introduction

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

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

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

66 Carbon monoxide detectors are not intended to be used as an alternative to a smoke alarm.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 50292:2014

<https://standards.iteh.ai/catalog/standards/sist/7f4b5536-0e81-42f7-9fe5-527e452fb3d1/sist-en-50292-2014>

67 1 Scope

68 This guide provides information on the selection, installation, use and maintenance of
69 apparatus for the detection of carbon monoxide, intended for continuous operation in a fixed
70 installation in domestic premises, caravans and boats. It is the intent of this guide to cover any
71 type of domestic or residential accommodation, including leisure accommodation vehicles such
72 as touring and static caravans, and motor homes; and recreational craft such as canal barges. It
73 should be read in conjunction with EN 50291-1 and EN 50291-2 together with any additional
74 relevant national or local regulations.

75 The guide refers to the installation of two types of apparatus:

76 Type A apparatus - to provide a visual and audible alarm and an executive action in the form of
77 an output signal that can be used to actuate directly or indirectly a ventilation or other ancillary
78 device.

79 Type B apparatus - to provide a visual and audible alarm only.

80 This guide excludes apparatus:

- 81 • for the detection of combustible gases (see EN 50244);
- 82 • for industrial installations or commercial premises.

83 2 Normative references

84 The following referenced documents are indispensable for the application of this document. For
85 dated references, only the edition cited applies. For undated references, the latest edition of
86 the referenced document (including any amendments) applies.

87 [https://standards.iteh.ai/catalog/standards/sist/7f4b5536-0e81-42f7-9fe5-527e452fb3d1/sist-](https://standards.iteh.ai/catalog/standards/sist/7f4b5536-0e81-42f7-9fe5-527e452fb3d1/sist-EN-50244:2000)
88 EN 50244:2000, *Electrical apparatus for the detection of combustible gases in domestic premises –
Guide on the selection, installation, use and maintenance*

89 EN 50291-1:2010, *Electrical apparatus for the detection of carbon monoxide in domestic premises –
90 Part 1: Test methods and performance requirements*

91 EN 1775:1998, *Gas supply – Gas pipework for buildings – Maximum operating pressure ≤ 5 bar –
92 Functional recommendations*

93 3 Terms and definitions

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

95 3.1

96 domestic premises

97 any house or building, or part thereof, residential park homes, or non-recreational boats such
98 as canal barges, being the place of residence or home of a household, family or person

99 3.2

100 fixed installation

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

- 103 **3.3**
104 **sensor**
105 assembly in which the sensing element is housed that may contain associated circuit
106 component
- 107 **3.4**
108 **sensing element**
109 device, the output of which will change in the presence of carbon monoxide
- 110 **3.5**
111 **continuous operation**
112 apparatus which is continuously powered with continuous or intermittent automatic sensing
- 113 **3.6**
114 **gas detection apparatus**
115 apparatus, which may also be generically termed “gas detector”, comprising the sensor, remote
116 sensor if applicable, alarm and any other circuit components, power supply and, for type A
117 apparatus, a means of providing an output signal
- 118 **3.7**
119 **volume ratio**
120 ratio of the volume of carbon monoxide to the volume of the gas mixture
- 121 NOTE Volume ratio (V/V) is often expressed in units of parts per million (ppm); it is commonly referred to as
122 concentration.
- 123 **3.8**
124 **output signal**
125 signal characterised by a standby and an activation state, by which action may be initiated
- 126 NOTE In many cases, such action will entail triggering an ancillary device.
<https://standards.iteh.ai/catalog/standards/sist/7f4b5536-0e81-42f7-9fe5-527e452fb3d1/sist-en-50292-2014>
- 127 **3.9**
128 **warm-up time**
129 time interval between the time when the apparatus is switched on and the time when the
130 apparatus is fully operational
- 131 **3.10**
132 **alarm set point**
133 fixed setting of the apparatus that determines the volume ratio and duration of exposure at
134 which the apparatus will automatically initiate an alarm and, for type A apparatus, an output
135 signal
- 136 **3.11**
137 **fault signal**
138 visual, audible or other type of output indicating a faulty or failed apparatus
- 139 **3.12**
140 **mains-powered apparatus**
141 apparatus designed to be powered by the normal domestic mains electrical supply, with or
142 without an additional power source
- 143 **3.13**
144 **battery-powered apparatus**
145 apparatus designed to be powered by batteries only

146 **3.14**
147 **continuous operation**
148 apparatus which is continuously powered with continuous or intermittent automatic sensing

149 **3.15**
150 **leisure accommodation vehicle**
151 vehicles considered by this standard include caravans, caravan holiday homes and motor
152 caravans [from EN 13878], also known as touring and static caravans and motor homes

153 NOTE Other motorised vehicles like trucks are known to have residential accommodation. They are not leisure
154 accommodation vehicles but are considered as similar vehicles in this standard.

155 **3.16**
156 **recreational craft**
157 boat of a minimum length of 2,5 m and a maximum length of 24 m as specified in Directive
158 94/25/EC, which is intended for sports or leisure purposes

159 **4 Sources of carbon monoxide**

160 **4.1 General information**

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

164 **4.2 Normal exposure levels**

165 Carbon monoxide may be generated within the home or enter from outside. The normal
166 average background levels of carbon monoxide in domestic premises, measured over periods
167 of 1 h to 24 h, are less than 10 ppm. In cases of climatic inversion, higher levels of carbon
168 monoxide are possible.

169 **4.3 Burning of carbonaceous materials for heating and cooking**

170 **4.3.1 General**

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

175 It should be noted that town gas may contain a significant proportion of carbon monoxide prior
176 to combustion.

177 The proportion and constituents of the combustion products from carbonaceous fuels will
178 depend on the particular fuel and the combustion conditions.

179 Varying concentrations of carbon monoxide are produced from most combustion processes.
180 Exhaust gases from burning solid and liquid fuels may contain significant concentrations of
181 carbon monoxide: levels of 20 000 ppm - 50 000 ppm (2 % - 5 %) are not unexpected. Efficient
182 burning of natural gas and LPG in well-designed burners in an excess of air will not produce
183 significant flue concentrations of carbon monoxide, usually in the range 10 ppm - 200 ppm.
184 However, poorly maintained and inefficient burners can produce considerably higher levels of
185 carbon monoxide.

186 Flue reversal may occur under certain climatic conditions with appliances using combustion air
187 taken from within the premises. This is normally a temporary phenomenon which may occur
188 with certain types of appliance, even when correctly maintained.

189 4.3.2 Space and water heating

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

- 192 – appliance with flue using room air,
- 193 – appliance without flue using room air,
- 194 – appliance with flue using external air.

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

197 4.3.3 Cooking

198 Natural gas, town gas or LPG are the main fuels for cooking, typically using unflued appliances
199 including cooking ranges. In some cases, solid fuels or oil are used in cooking appliances
200 which are generally fitted with flues.

201 It should be emphasised that barbecue grills using charcoal, emit very high amounts of carbon
202 monoxide and should only be used outdoors and should not be used as air heaters in any
203 leisure accommodation, including tents.

204 4.4 Uncontrolled burning

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

208 4.5 Tobacco smoking

209 Smoking produces a significant concentration of carbon monoxide.

210 4.6 Internal combustion engines

211 A major source of carbon monoxide in the non-industrial environment is the combustion
212 engine. The concentration of carbon monoxide in exhaust gas is normally in the range 1 % -
213 3 % but may reach 7 % in a badly maintained or badly tuned engine.

214 The exhaust gases from internal combustion engines (vehicles or electricity generators for
215 example) running in an enclosed space will quickly produce dangerous levels of carbon
216 monoxide.

217 4.7 Migration of CO from connected premises

218 In connected premises such as semi-detached and terraced premises, maisonettes, and
219 particularly multi-occupancy and multi-storey buildings, carbon monoxide produced in one area
220 may be transported to and leak into another part of the building, e.g. across roof spaces,
221 between floors, along ducting, in shared flues, chimneys and other re-entry points such as air
222 vents.

223 5 Installation

224 5.1 General

225 The manufacturer is required to provide suitable instructions for the correct and safe
226 installation of the apparatus. These should be read carefully before installing or operating the
227 apparatus. Clause 8 lists additional items which should be considered, if appropriate.

228 Generally, the same considerations apply to both type A and type B apparatus.

229 **5.2 Location of the carbon monoxide detector**

230 **5.2.1 General**

231 The design and layout of domestic premises, caravans and boats and the number, type and
232 position of carbon monoxide sources vary widely. However, general guidance is given on where
233 and where not to locate the apparatus in order to minimise the risk of misleading indications.

234 **5.2.2 Which room?**

235 Ideally, an apparatus should be installed in every room containing a fuel burning appliance.
236 Additional apparatus may be installed to ensure that adequate warning is given for occupants
237 in other rooms, by locating apparatus in:

- 238 – remote rooms in which the occupant(s) spend considerable time whilst awake and from
239 which they may not be able hear an alarm from apparatus in another part of the premises,
240 and
- 241 – every sleeping room.

242 However, if there is a fuel burning appliance in more than one room and the number of
243 apparatus is limited, the following points should be considered when deciding where best to
244 position the apparatus:

- 245 • locate the apparatus in a room containing a flueless or open-flued appliance, and
- 246 • locate apparatus in a room where the occupant(s) spend most time.

247 If the domestic premises are a bedsit (a single room serving as both sitting and bedroom) then
248 the apparatus should be positioned as far from the cooking appliances as possible but near to
249 where the person sleeps.

250 If the appliance is in a room not normally frequented (for example a boiler room), the apparatus
251 should be positioned just outside the room so that the alarm may be heard more easily.
252 Alternatively, a remote alarm siren may be connected to a type A apparatus located in a
253 room(s) containing a fuel-burning appliance.

254 Caravans and boats may have additional risks of carbon monoxide ingress through air vents
255 due to the nearby presence of other vehicles, engines, generators or barbecues, however this
256 does not change the basic guidance on location of the alarm. Caravans and boats should be
257 fitted with an alarm in the same room as any combustion appliance(s), located in accordance
258 with 5.2.3.3. If the caravan or boat has a single living space which incorporates the sleeping
259 accommodation, it can be considered to be equivalent to a bedsit, and a single alarm is
260 sufficient. However, any sleeping accommodation which is in a separate room from the
261 combustion appliance(s) should also contain an alarm, located in accordance with 5.2.3.4.

262 **5.2.3 Where in the room?**

263 **5.2.3.1 General**

264 It should be possible to view all the light indicators when in the vicinity of the chosen location
265 for the apparatus.

266 It is not possible to give specific guidance on the exact location of a detector which suits all
267 types of room and their usage. The following points should be taken into consideration when
268 determining an optimum location for any appropriate situation: