
**Električne naprave za odkrivanje ogljikovega monoksida v gospodinjstvih - 2. del:
Električne naprave za stalno delovanje v nepremičnih inštalacijah na rekreacijskih
vozilih in na sorodnih področjih, vključno na rekreacijskih plovilih - Dodatne
preskusne metode in zahtevane lastnosti**

Electrical apparatus for the detection of carbon monoxide in domestic premises - Part 2:
Electrical apparatus for continuous operation in a fixed installation in recreational
vehicles and similar premises including recreational craft - Additional test methods and
performance requirements (standards.iteh.ai)

Elektrische Geräte für die Detektion von Kohlenmonoxid in Wohnhäusern - Teil 2:
Ortsfeste elektrische Geräte zum kontinuierlichen Betrieb in Freizeitfahrzeugen und
ähnlichen Umgebungen einschließlich Sportbooten - Ergänzende Prüfverfahren und
Anforderungen an das Betriebsverhalten

Appareils électriques pour la détection de monoxyde de carbone dans les locaux à
usage domestique - Partie 2: Appareils électriques en fonctionnement continu et en
installation fixe dans les véhicules de loisir et locaux similaires incluant les embarcations
de loisir - Méthodes d'essai supplémentaires et exigences d'aptitude à la fonction

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ICS:

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 - Part 2: Electrical apparatus for continuous operation in a fixed installation in recreational vehicles and similar premises including recreational craft - Additional test methods and performance requirements

Appareils électriques pour la détection de monoxyde de carbone dans les locaux à usage domestique - Partie 2: Appareils électriques en fonctionnement continu et en installation fixe dans les véhicules de loisir et locaux similaires incluant les embarcations de loisir - Méthodes d'essai supplémentaires et exigences d'aptitude à la fonction

Elektrische Geräte für die Detektion von Kohlenmonoxid in Wohnhäusern - Teil 2: Ortsfeste elektrische Geräte zum kontinuierlichen Betrieb in Freizeitfahrzeugen und ähnlichen Umgebungen einschließlich Sportbooten - Ergänzende Prüfverfahren und Anforderungen an das Betriebsverhalten

This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2018-12-21.

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.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

1 European foreword

2 This document (prEN 50291-2:2018) has been prepared by CLC/TC 216 "*Gas detectors*".

3 This document is currently submitted to the Enquiry.

4 The following dates are proposed:

- latest date by which the existence of this document has to be announced at national level (doa) dor + 6 months
- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) dor + 12 months
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) dor + 36 months
(to be confirmed or modified when voting)

5 This document will supersede EN 50291-2:2010.

6 This Part 2 is to be used in conjunction with EN 50291-1:2018.

7 This Part 2 supplements or modifies the corresponding clauses of EN 50291-1:2018. Where this Part 2 states
8 "addition", "modification" or "replacement", the relevant text of Part 1 is to be adapted accordingly.

SIST EN 50291-2:2019

<https://standards.iteh.ai/catalog/standards/sist/72175cdc-e985-4058-ab53-6cd05f9909d6/sist-en-50291-2-2019>

9 1 Scope

10 This document specifies general requirements for the construction, testing and performance of electrically operated
11 carbon monoxide gas detection apparatus, designed for continuous operation in a fixed installation in recreational
12 vehicles and similar premises including recreational craft.

13 NOTE For caravan holiday homes EN 50291-1 applies.

14 This European Standard specifies apparatus designed to operate in the event of an escape of carbon monoxide
15 and to provide a visual and audible alarms only (Type B of EN 50291-1), or to provide visual and audible alarms
16 and an executive action in the form of an output signal that can actuate directly or indirectly a shut-off device and/or
17 other ancillary device (Type A of EN 50291-1).

18 This European Standard excludes apparatus

19 — for the detection of combustible gases, other than carbon monoxide itself (see EN 50194-1),

20 — for the detection of CO in industrial installations (see EN 45544-1, EN 45544-2 and EN 45544-3) or
21 commercial premises,

22 — for CO measurement for smoke and fire detection.

23 2 Normative references

24 The following documents are referred to in the text in such a way that some or all of their content constitutes
25 requirements of this document. For dated references, only the edition cited applies. For undated references, the
26 latest edition of the referenced document (including any amendments) applies.

27 EN 50270:2015, *Electromagnetic compatibility — Electrical apparatus for the detection and measurement of*
28 *combustible gases, toxic gases or oxygen*

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

31 EN 60068-2-6, *Environmental testing — Part 2-6: Tests — Test Fc: Vibration (sinusoidal)* (IEC 60068-2-6)

32 EN 60068-2-7, *Environmental testing — Part 2: Tests — Test Ga: Acceleration, steady state* (IEC 60068-2-7)

33 EN 60068-2-27, *Environmental testing — Part 2-27: Tests — Test Ea and guidance: Shock* (IEC 60068-2-27)

34 EN 60529:1991, *Degrees of protection provided by enclosures (IP Code)* (IEC 60529:1989)

35 EN 60721-3-6:1993, *Classification of environmental conditions — Part 3: Classification of groups of environmental*
36 *parameters and their severities — Section 6: Ship environment* (IEC 60721-3-6:1987)

37 EN 60945:2002, *Maritime navigation and radiocommunication equipment and systems — General requirements —*
38 *Methods of testing and required test results* (IEC 60945:2002)

39 ISO 7637-2:2011, *Road vehicles — Electrical disturbances from conduction and coupling — Part 2: Electrical*
40 *transient conduction along supply lines only*

41 3 Terms and definitions

42 For the purposes of this document, the terms and definitions given in EN 50291-1 and the following apply.

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

44 — IEC Electropedia: available at <http://www.electropedia.org/>

45 — ISO Online browsing platform: available at <http://www.iso.org/obp>

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46 **3.1**47 **recreational vehicle**

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

50 Note 1 to entry: Other motorised vehicles like trucks are known to have residential accommodation. They are not recreational
51 vehicles but are considered as similar premises in respect of this European Standard.

52 **3.2**53 **recreational craft**

54 boat of a minimum length of 2,5 m and a maximum length of 24 m as specified in Directive 2013/53/EU, which is
55 intended for sports or leisure purposes

56 Note 1 to entry: For the purposes of this European Standard the word 'boat' should be taken with the meaning 'recreational
57 craft'.

58 **3.3**59 **remote sensor**

60 sensor assembly that is mounted in a separate location from the control unit

61 Note 1 to entry: This definition should be read in conjunction with EN 50291-1:2018, Definition 3.5.

62 **3.4**63 **control unit**

64 unit that may contain the power supply, signal processing, alarm circuits and indicators

65 **3.5**66 **vehicle supply powered apparatus**

67 apparatus designed to be powered by the vehicle's electrical supply

68 **3.6**69 **caravan**

70 trailer leisure accommodation vehicle that meets requirements for construction and use of road vehicles

71 [SOURCE: EN 13878:2003]

72 **3.7**73 **motor caravan**

74 self-propelled leisure accommodation vehicle that meets requirements for construction and use of road vehicles

75 It contains at least

- 76 – seats and table,
- 77 – sleeping accommodation which may be converted from the seats,
- 78 – cooking facilities, and
- 79 – storage facilities

80 [SOURCE: EN 13878:2003]

81 **3.8**82 **caravan holiday home**

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

85 [SOURCE: EN 13878:2003]

86 4 Symbols and abbreviations

87 This sub-clause of EN 50291-1 is applicable.

88 5 Design requirements

89 5.1 General requirements

90 This sub-clause of EN 50291-1 is applicable, with the following addition:

91 In this European Standard there are requirements that cover all apparatus. Additional application specific
92 requirements apply to certain groups of recreational vehicles, such as boats. An apparatus which complies with the
93 requirements for recreational craft will automatically comply with the requirements for motor caravans and
94 caravans. An apparatus which complies with the requirements for motor caravans will automatically comply with the
95 requirements for caravans. The apparatus are designed for continuous operation.

96 NOTE 1 When the vehicle is not in use the apparatus may be switched off in order to save the vehicle's power supply or the
97 internal batteries.

98 The apparatus may consist of one or more sensor(s) and a control unit. Sensors (integrated into the apparatus or
99 remote) shall be designed to detect carbon monoxide.

100 NOTE 2 Sensors or apparatus designed according EN 50291-1 may be used as apparatus or as component of it, if the
101 additional requirements of this European Standard are complied with.

102 The apparatus shall reliably detect the presence of carbon monoxide in recreational vehicles under the stated
103 application conditions, shall produce an alarm and Type A apparatus shall be able to initiate executive actions
104 whenever the level exceeds the alarm set point.

105 The apparatus, electrical assemblies and components shall comply with EN 50291-1, where applicable, with the
106 construction requirements of 5.2 and the test and performance requirements of Clause 6.

107 5.2 Construction

108 This sub-clause of EN 50291-1 is applicable, with the following addition:

109 Each sensor shall be constructed of materials that will not corrode in the environment where it is designed for, e.g.
110 in the presence of a salt-laden atmosphere as exists in a marine environment, or be affected by the gases and
111 vapours that may be expected to be present in a recreational craft.

112 Adequate means shall be provided to mount the remote sensor(s), pointing vertically downwards, securely to the
113 vehicle's substructure.

114 The control unit shall be constructed of materials that are suitable for use in the intended application e.g. in the
115 cabin or below deck area of a recreational craft.

116 5.4 Alarms

117 This sub-clause of EN 50291-1 is applicable, with the following addition:

118 5.4.4 Addition:

119 If more than one sensor is connected to a control unit, the control unit shall indicate the alarm condition of the
120 different sensors individually.

121 5.6 Fault Warnings

122 This sub-clause of EN 50291-1 is replaced by:

123 The apparatus shall provide a visual and audible fault signal in the event of interruption of communication between
124 control unit and the remote sensor(s).

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

126 5.9 Transmittable output signal (applicable for type A apparatus only)

127 This sub-clause of EN 50291-1 is applicable, with the following addition:

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128 The output signal of the apparatus shall operate under the same conditions as the visual and audible alarm. For
 129 triggering an output signal, there shall be no built-in delay.

130 5.11 Labelling

131 5.11.1

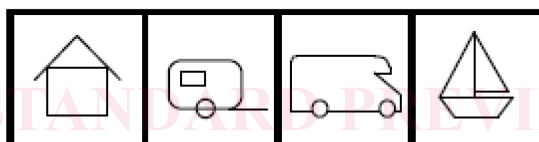
132 This sub-clause of EN 50291-1 is applicable, with the following additions:

133 The manufacturer shall declare for which of the following application(s) the device is approved:

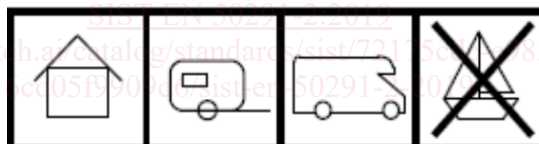
- 134 – domestic premises;
- 135 – caravans;
- 136 – motor caravans;
- 137 – boats.

138 This shall be noted on a label on the device or fixed to the device with a more detailed explanation in the manual
 139 (see Figure 1).

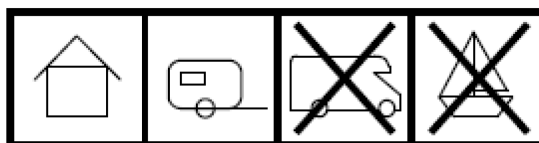
140 If one instruction manual is used for different types of devices it shall be explicitly noted which type is related to
 141 which of the above mentioned applications.



- 142
 143 a) Appropriate for domestic premises (caravan holiday homes),
 144 caravans, motor caravans and boats



- 145
 146 b) Appropriate for domestic premises (caravan holiday homes),
 147 caravans and motor caravans – Not appropriate for boats



- 148
 149 c) Appropriate for domestic premises (caravan holiday homes)
 150 and caravans – Not appropriate for motor caravans and boats

151 Figure 1 — Examples for marking

152 5.11.2

153 This sub-clause of EN 50291-1 is applicable, with the following additions:

154 The following is applicable to recreational craft only:

- 155 i) The classification of the environmental condition as defined in EN 60721-3-6:
- 156 — remote sensor(s): 6K3/6B1/6S1/6M3;
- 157 — control unit: 6K2/6B1//6S1/6M3.

158 6 Test and performance requirements

159 6.3 Test methods and performance requirements

160 In addition to the tests of EN 50291-1 the following tests shall be carried out, where applicable. Some tests are
 161 applicable to recreational craft only. The numbers of the sub-clauses from 6.3.1 to 6.3.23 are identical with
 162 EN 50291-1. The additional sub-clauses, numbered from 6.3.101 on, are added at the end of 6.3.

163 Where a sub-clause of EN 50291-1 shall be replaced by one of the following sub-clauses this is noted below the
 164 headline. Sub-clauses of 6.3 of EN 50291-1:2018 which apply without modification, e.g. 6.3.2, are not referenced in
 165 this European Standard.

166 6.3.1 General

167 This sub-clause of EN 50291-1 is applicable, with the following additions:

168 When the apparatus is switched on, a warm-up time not exceeding 15 min is acceptable.

169 6.3.11 Electromagnetic compatibility

170 This sub-clause of EN 50291-1 is replaced by 6.3.103 and 6.3.104 of this European Standard.

171 6.3.101 Degree of protection (additional requirements)

172 Remote sensors shall provide protection of at least IP44 and the control unit shall provide protection of at least
 173 IP42 as defined in EN 60529:1991.

174 NOTE The degree of protection may be achieved by the provision of attachable splashproof/weatherproof fittings.

175 6.3.102 Mechanical environment

176 6.3.102.1 Vibration

177 6.3.102.1.1 Test

178 The apparatus shall be subjected to a sinusoidal vibration frequency sweep carried out in accordance with
 179 EN 60068-2-6 using a vibration test machine having the characteristics specified in EN 60068-2-6:

Excursion: $\pm 1,5 \text{ mm} \pm 10 \%$

Frequency range: 2 Hz to 13,2 Hz

Acceleration amplitude: 2 g or higher if declared by the manufacturer

Frequency range: 10 Hz to 100 Hz

Sweep rate: 1 octave per min

Number of sweep cycles: 10

Number of axes: 3, mutually perpendicular

180 The apparatus shall be mounted in its normal operating position and the power switched on.

181 6.3.102.1.1 Performance requirement

182 After the test specified in 6.3.102.1.1, the apparatus shall be subjected to the test gas as described in EN 50291-
 183 1:2018, 6.3.2. When exposed to CO - air mixtures, the alarm shall operate according to the conditions in EN 50291-
 184 1:2018, Table 5. Recovery from the alarm state shall take place, after manual resetting if necessary, within 6 min
 185 when exposed to clean air.

186 6.3.102.2 Shock (applicable for recreational craft only)

187 6.3.102.2.1 Test

188 The apparatus shall be subjected to a half-sine pulse carried out in accordance with EN 60068-2-27 using a shock
 189 test machine having the characteristics specified in EN 60068-2-27.

190 The shock severity, equal to 6M3 of EN 60721-3-6, shall be as follows:

191 Maximum acceleration Pulse duration

100 m/s² 11 ms

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300 m/s² 6 ms

500 m/s² 2,3 ms

192 The apparatus shall be mounted in its normal operating position and the power switched on.

193 **6.3.102.2.2 Performance requirement**

194 During the test specified in 6.3.102.2.1, no alarms or fault signals shall be generated. After the test specified in
195 6.3.102.2.1, the apparatus shall be subjected to test gas as described in EN 50291-1:2018, 6.3.2. When exposed
196 to CO - air mixtures, the alarm shall operate according to the conditions in EN 50291-1:2018, Table 5. Recovery
197 from the alarm state shall take place, after manual resetting if necessary, within 6 min when exposed to clean air.

198 **6.3.102.3 Orientation static (applicable for recreational craft only)**

199 **6.3.102.3.1 Test**

200 The sensor, or the whole apparatus if relevant, shall be rotated around each of its three mutually perpendicular
201 axes within the orientation limits stated in the manufacturer's instructions, but in no case less than an inclination of
202 15° from the nominal orientation.

203 **6.3.102.3.2 Performance requirement**

204 During the test specified in 6.3.102.3.1, the apparatus shall be subjected to just test gas C as described in EN
205 50291-1:2018, 6.3.2. When exposed to CO - air mixtures, the alarm shall operate according to the conditions in EN
206 50291-1:2018, Table 5 for test gas C. Recovery from the alarm state shall take place, after manual resetting if
207 necessary, within 6 min when exposed to clean air.

208 NOTE It is acceptable to have the CO alarm apparatus in a sealed container, with test gas C, mounted on the test rig.

209 **6.3.102.4 Orientation dynamic motion (applicable for recreational craft only)**

210 **6.3.102.4.1 Test**

211 The sensor, or the whole apparatus if relevant, shall be rotated cyclically around the X- and Y-axes (according to
212 EN 60721-3-6:1993, Table 5) with a frequency of 0,14 Hz up to an inclination of 22,5° from the nominal orientation.

213 **6.3.102.4.2 Performance requirement**

214 During the test specified in 6.3.102.4.1, the apparatus shall be subjected to just test gas C as described in EN
215 50291-1:2018, 6.3.2. When exposed to CO - air mixtures, the alarm shall operate according to the conditions in EN
216 50291-1:2018, Table 5 for test gas C. Recovery from the alarm state shall take place, after manual resetting if
217 necessary, within 6 min when exposed to clean air.

218 NOTE It is acceptable to have the CO alarm apparatus in a sealed container, with test gas C, mounted on the test rig.

219 **6.3.102.5 Acceleration steady state (applicable for recreational craft only)**

220 **6.3.102.5.1 Test**

221 The sensor, or the whole apparatus if relevant, shall be subjected to a steady acceleration carried out in
222 accordance with EN 60068-2-7 using an acceleration test machine having the characteristics specified in
223 EN 60068-2-7:

224 Direction (related to nominal orientation) Maximum acceleration

225 x and y 6 m/s²

226 z 10 m/s²

227 **6.3.102.5.2 Performance requirement**

228 During the test specified in 6.3.102.5.1, the apparatus shall be subjected just to test gas C as described in EN
229 50291-1:2018, 6.3.2. When exposed to CO - air mixtures, the alarm shall operate according to the conditions in EN
230 50291-1:2018, Table 5 for test gas C. Recovery from the alarm state shall take place, after manual resetting if
231 necessary, within 6 min when exposed to clean air.

232 NOTE It is acceptable to have the CO alarm apparatus in a sealed container, with test gas C, mounted on the test rig.