



SLOVENSKI STANDARD
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Električne naprave za zaznavanje vnetljivih plinov, ki se uporabljajo v gospodinjskih okoljih - 1. del: Preskusne metode in zahtevane lastnosti

Electrical apparatus for the detection of flammable gases in household premises - Part 1: Test methods and performance requirements

Elektrische Geräte für die Detektion von brennbaren Gasen in Wohnhäusern – Teil 1: Prüfverfahren und Anforderungen an das Betriebsverhalten

Matériels électriques pour la détection des gaz inflammables dans les locaux à usage domestique - Partie 1: Méthodes d'essai et exigences d'aptitude à la fonction

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Electrical apparatus for the detection of flammable gases in household premises - Part 1: Test methods and performance requirements

Matériels électriques pour la détection des gaz inflammables dans les locaux à usage domestique -
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Elektrische Geräte für die Detektion von brennbaren Gasen in Wohnhäusern - Teil 1: Prüfverfahren und Anforderungen an das Betriebsverhalten

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European foreword

This document (EN 50194-1:2023) has been prepared by CLC/TC 216 “Gas detectors”, the secretariat of which is held by BSI.

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) 2024-08-14
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2026-08-14

This document supersedes EN 50194-1:2009 and all of its amendments and corrigenda (if any).

EN 50194-1:2023 includes the following significant technical changes with respect to EN 50194-1:2009:

Description	Clause
This document has been completely revised following the structure of EN 50291-1:2018	All
End of Life indicator has been made mandatory and shall include an audible and visible warning	5.5
Guidance has been added for assessing battery capacity and expected life	8.2
Requirements for mains powered alarms with back-up supply have been added	8.5
The number of potential interference gases has been increased	
Tests have been added for an optional alarm silence facility	
Requirements have been added for apparatus using radio links	Clause 7
Added requirements for the use of batteries	5.10
Annex B has been added	Annex B
New requirement to comply with EN 50271 Standard for software	5.8
Defined type C apparatus for refrigerant gases	Clause 1
Bibliography has been added	
Annex C “A-deviations” has been removed	
Tests for stability in high humidity (non-condensing) and low humidity for Type C apparatus has been added	6.3.19 and 6.3.20
Ignition test for Hydrogen and Type C apparatus has been added	6.3.14
Tests for refrigerant poisoning and oil spray for Type C apparatus has been added	6.3.15
Revision of the Normative references	Clause 2

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.

EN 50194-1:2023 (E)**Introduction**

This document defines test methods and performance requirements for all electrical gas detection apparatus used in residential and household premises by means of measurement of one or more threshold alarm levels. It is addressed to the manufacturers of such apparatus and test laboratories which validate it.

This document is an updated revision of the previous EN 50194-1 issued in 2009 and includes some new concepts of detection:

The term of “domestic” has been implemented in “household premises” in order to include further applications, i.e. shops, offices, hotel rooms, residential premises and in general where household appliances are installed (as defined in IEC/EN 60335-1).

This document implements a new range of the flammable gases to be detected. In the premises within the scope of this document, also flammable refrigerant gases, R-717 (Ammonia) at LFL level and Hydrogen in fuel cells applications may be present and are thus necessary to consider.

Finally, the document structure has been completely revised in order to align this revision with the similar standard EN 50291-1:2018 for Carbon Monoxide and other new standards concerning digital and software technologies.

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1 Scope

This document specifies general requirements for the construction, testing and performance of electrically operated apparatus for the detection of flammable gases, designed for continuous operation in a fixed installation in household premises. The apparatus can be mains or battery powered.

Additional requirements for apparatus to be used in recreational vehicles and similar premises are specified in EN 50194-2.

NOTE For caravan holiday homes EN 50194-1 applies.

This document specifies four types of apparatus to warn and/or alarm in the event of an escape of town gas, natural gas or liquefied petroleum gas (LPG), Hydrogen and flammable refrigerant gases:

- Type A apparatus – provides a visual and audible alarm and an executive action in the form of an output signal that can actuate directly or indirectly a shut-off device and/or other ancillary device in the event of an escape of town gas, natural gas (LNG) liquefied petroleum gas (LPG) and Hydrogen gases;
- Type B apparatus – same as Type A but provides a visual and audible alarm only;
- Type C apparatus – provides a visual and audible alarm and an executive action in the form of an output signal that can actuate directly or indirectly a shut-off device and/or other ancillary device in the event of an escape of flammable refrigerant gas A2L, A2 or A3 as classified in other International Standards, e.g. ISO 817;
- Type D apparatus – intended to be installed where there can be a source of danger to the public, designed for continuous operation in fixed installations in non-classified explosive atmosphere premises (where the requirements for electrical Ex-safety are not requested). Intended for any flammable gases.

Typically Type D apparatus are available with analogue or digital output, designed as detection system. These systems are regularly maintained by competent persons and/or have a protection of IP44 or higher.

For type D apparatus, EN 60079-29-1 is applied.

See Annex C for further clarification on the apparatus types and their application.

NOTE Apparatus complying with this document is not considered suitable for installation in potentially explosive atmospheres, in which case the EN 60079 series applies.

NOTE Apparatus complying with EN 60079-29-1 will not necessarily comply with this document.

This document does not apply to any of the following:

- apparatus intended for the detection of dusts or mists in air;
- scientific or laboratory-based apparatus used only for analysis or measurement;
- apparatus used exclusively for process measurement purposes;
- apparatus for medical purposes;
- apparatus used for breath alcohol measurement;
- apparatus intended for the direct measurement of automotive exhaust gases;
- apparatus intended for use in industrial environments.

EN 50194-1:2023 (E)**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 437:2021, *Test gases. Test pressures. Appliance categories*

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

EN 50244:2016, *Electrical apparatus for the detection of combustible gases in domestic premises - Guide on the selection, installation, use and maintenance*

EN 50270, *Electromagnetic compatibility - Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen*

EN 50271, *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 60335-1:2002, *Household and similar electrical appliances - Safety - Part 1: General requirements*

EN 60335-1:2012, *Household and similar electrical appliances – Safety - Part 1: General requirements*

IEC 60335-2-40:2022, *Household and similar electrical appliances. Safety - Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers*

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

EN 60704-1:2010, *Household and similar electrical appliances - Test code for the determination of airborne acoustical noise - Part 1: General requirements (IEC 60704-1:2010)*

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 ambient conditions

normal atmosphere surrounding the apparatus

3.2 clean air

air which is free from combustible gases, interfering and contaminating substances

3.3 household 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**latching alarm**

alarm which, once activated, requires deliberate action for resetting

3.6**lower flammable limit****LFL**

volume ratio of flammable gas or vapour in air below which an explosive gas atmosphere will not be formed

3.6.1**Upper Flammable Limit****UFL**

volume ratio of flammable gas or vapour in air above which an explosive gas atmosphere will not be formed

3.7**sensor**

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

3.8**sensing element**

part of the sensor which is sensitive to the gas/vapour to be measured, the output of which will change in the presence of flammable gas

3.8.1**integral sensor**

sensor which is within or directly mounted to the equipment housing

3.9**volume ratio****V/V**

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

3.10**transmittable output signal**

signal characterised by a standby and an activation state by which action may be initiated

EXAMPLE Triggering a ventilation device.

3.11**warm-up time**

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

3.12**alarm set point**

fixed setting of the apparatus that determines the volume ratio of combustible gas at which the apparatus will automatically initiate an alarm and for Type A and Type C apparatus, an output signal

3.13**fault warning**

visual or audible warning signal indicating a faulty or failed apparatus

3.14**LPG**

butane, propane or mixtures thereof