SLOVENSKI STANDARD
oSIST prEN 50725:2023

01-oktober-2023

Specifikacija za prenosne električne naprave za merjenje parametrov in tlaka plina v grelnih napravah in sistemih

Specification for portable electrical apparatus designed to measure draught and gas pressure of heating appliances and systems

Spécification pour les appareils électriques portatifs conçus pour mesurer la pression du tirage et des gaz dans les conduits d'évacuation des appareils et systèmes de chauffage

Ta slovenski standard je istoveten z: **prEN 50725**

ICS:

91.140.10	Sistemi centralnega ogrevanja	Central heating systems

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Specification for portable electrical apparatus designed to measure draught and gas pressure of heating appliances and systems

Spécification pour les appareils électriques portatifs conçus pour mesurer la pression du tirage et des gaz dans les conduits d'évacuation des appareils et systèmes de chauffage

To be completed

This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2023-10-27.

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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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.

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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

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European foreword

This document [prEN 50725:2023] has been prepared by CLC/TC/216 “Gas Detectors”.

This document is currently submitted to the Enquiry.

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)

Introduction

This document covers apparatus for measuring draught and gas pressure of heating appliances and systems. It forms a specification of portable electrical apparatus designed to measure draught and gas pressure of heating appliances and systems.

1 Scope

This document specifies the requirements and test methods concerning, in particular the construction, safety, and fitness for purpose, as well as the capability and marking of a hand-held battery powered pressure and leakage measurement instrument, hereafter referred to as “pressure meters”, for gas pipework in buildings, gas pipes of appliances and draught in chimneys.

NOTE Areas of application can be supply pressure of gas appliances, nozzle pressure of gas appliances (see relevant instruction manuals of gas appliances) as well as strength test, tightness test and fitness test of gas pipework as defined in EN 1775 and relevant national standards for gas pipework in buildings, and draught measurement in chimneys of heating appliances.

This document covers pressure meters with the capability of

- use with air, natural gas, liquid petroleum gas (LPG), hydrogen and mixtures of natural gas and hydrogen,
- measuring pressure in units of bar, mbar, Pa, hPa, kPa, MPa, H_20, mm H_2O or PSI,
- measuring leakage rate in l/h,
- withstanding the every-day working environment encountered by installation and service engineers in domestic, commercial, or industrial premises.

Such pressure meters might be capable of

- being switchable between units by the user,
- storing and/or transmitting said measurements to a remote user.

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 50270:2015,[1] *Electromagnetic compatibility – Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen*

EN 50271:2018, *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 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal) (IEC 60068-2-6)*

prEN IEC 60335-1:2022,[2] *Household and similar electrical appliances – Safety- Part 1: General requirements (IEC 60335-1:2020)*

ISO/IEC Guide 98-3:2008, *Uncertainty of measurement – Guide to the expression of uncertainty in measurement (GUM. 1995)*

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:

- ISO Online browsing platform: available at https://www.iso.org/obp

[1] As impacted by EN 50270:2015/AC:2016-08.
[2] Under preparation.

- IEC Electropedia: available at https://www.electropedia.org/

3.1
domestic residential and commercial premises
any place of residence of a household, family or person (whether temporary or permanent) and commercial premises whether residential or not and including recreational boats, caravans and mobile homes

3.2
sensors
assembly in which the sensing element is housed and which may contain associated circuit components

3.3
sensing element
device, the output of which will change with variation of the parameter of interest

3.4
spot reading
apparatus intended to be used for short periods of time in the range of minutes, as required

3.5
mains powered apparatus
apparatus designed to be powered by the domestic mains electrical supply with or without an additional power source

3.6
battery powered apparatus
apparatus designed to be energised from batteries alone, whether disposable or rechargeable

3.7
sampling point connector
part of the apparatus that is used to connect the apparatus to the appliance for the purpose of sampling the pressure

3.8
initial start up delay
time taken for the apparatus to reach the operating mode from switch-on, or after replacing batteries, or following power failure in the case of mains powered equipment

3.9
calibration
process of determining the deviation of an apparatus relative to a reference

3.10
reference
in laboratory tests, a measuring device with certification proving traceability to a national or international metrology institute

3.11
adjustment
process of tuning the apparatus, in order to return the deviation found in calibration to within the admissible error

3.12
functional module
all components required for one measurement task, including both hardware and software

Note 1 to entry: A functional module may consist of one or more separate pieces of equipment or may be completely integrated with the apparatus.

3.13
response time (t90)
time interval with the apparatus in a warmed-up condition, between the time when an Instantaneous variation of the parameter to be measured is produced at the apparatus inlet, and the time when the response reaches and remains beyond 90 % of the final indication

3.14
gas leakage rate
volume flow (unit l/h) of burnable gas that escapes from the line system during a specified duration due to leakage

3.15
standard volume flow
volume flow (unit l/h) with reference to the physical standard temperature and pressure at a temperature of 273,15 K and a pressure of 1 013,25 hPa

3.16
operating volume flow
volume flow (unit l/h) with reference to the operating conditions (pressure, temperature) prevailing at the place of measurement

3.17
operating pressure
actual operating pressure as standing pressure found at the time of measurement

3.18
reference operating pressure
reference pressure for determining the leakage quantity as operating volume flow

4 General requirements

4.1 General

The apparatus shall reliably measure the applied pressure and shall clearly display the result.

4.2 Construction

4.2.1 General

All parts of the apparatus, including the sensors, shall be constructed of materials that will not be adversely affected by vapours and gases or chemical substances to be expected during normal operation of the apparatus, see 4.3.2 g). Similar consideration shall also be given to the sampling system and components that can be in contact with the measuring medium, as appropriate. The sampling point connector shall be constructed of materials that will not be adversely affected by environmental conditions found in applications within the scope of this document.

4.2.2 Sampling system

The method of testing tightness of the complete gas sampling system, as specified by the manufacturer or installer, shall be checked and verified in practice.

4.2.3 Adjustment

Access to sensitivity controls shall only be possible by the use of special tool or a software pass-code or by destroying a special seal. Any regular checks shall be performed automatically or by access as described above.

4.2.4 Power supply

Apparatus which derives its power from internal batteries may give a visual warning before the battery capacity falls to a point where either the apparatus sensitivity or the stated display accuracy falls outside the requirements. When this point is actually reached, a clear Indication shall be given to alert the user and the display shall switch out of normal operational mode.

4.2.5 Display

Indicators shall be provided to show the following:

— measured value(s) and physical unit;

— low battery warning;

— mode of operation or instrument status (e.g. warm-up, measurement);

— when values lie outside the indicating range; and

— software version.

For each separate parameter measured, the apparatus shall display the value, the physical unit and parameter description. For a combination of parameters, the display may switch automatically from one indication to another. If the display switches between information of simultaneous parameters it shall be clear and understandable. Displayed measured values shall be refreshed at intervals no greater than 3 s. If the apparatus is equipped with seven-segment displays it shall have a device or self-testing function for checking the displays.

4.2.6 Measuring range and resolution

Table 1 lists the different parameters covered by this document. For each parameter given it specifies

— minimum indication range;

— minimum display resolution;

— accuracy of the apparatus;

— the detection limit; and

— maximum response time.

4.2.7 Indication range

The indication ranges are the minimum ranges for the apparatus. Higher ranges are allowed but will not change the values for accuracy or detection limit.

4.2.8 Accuracy of the apparatus

The values in Table 1 e.g. “± 20 Pa or 5 % rel.” have the meaning: “The permitted deviation is up to ±20Pa or ± 5 % of the reading, whichever is the greater”.

4.2.9 Detection limit

Values Indicated below the detection limit are not significant.

194 **Table 1 — Requirements for accuracy**

Parameter	Indication range	Display resolution	Accuracy	Detection limit	Response time t90
Low Range	−50 Pa to +200 Pa	1 Pa	±2 Pa or 5 % o.r	1 Pa	10s
Mid-range	0 Pa to 20 000 Pa	10 Pa	±50 Pa or 3 % o.r.	100 Pa	10 s
High range	0 Pa to 300 000 Pa	100 Pa	±200 Pa or 3 % o.r.	500 Pa	10 s
Leakage rate	0 to 8 l/h	0,1 l/h	±0,2 l/h or ± 5 % of average	0,1l/h	N/A

195 #### 4.2.10 Printer or data storage or transmission

196 If the apparatus is provided with a printer or any means for data storage or transmission e.g. a data logger it
197 shall print, store or transmit the date, time and values or parameters, as specified in 4.2.6, taken at the time of
198 the printout.

199 #### 4.2.11 Averaging

200 Averaging readings during a test is permitted but only to give a more stable reading for recording. The method
201 of averaging shall be included in the manual and its selection shall be recorded with the test results.

202 NOTE Time periods for averaging can be found in national regulations, though these time periods might vary from one
203 another.

204 ### 4.3 Labelling and Instructions

205 #### 4.3.1 Labelling

206 Durable label(s) shall be carried on the apparatus, or moulded into the casing, giving at least the following
207 information:

208 a) the manufacturer's or supplier's name, trademark or other means of identification;

209 b) the type of apparatus, e.g. “combustion appliance pressure meter”, and model name or number;

210 c) either the number of this Standard or the third-party certification;

211 d) the manufacturer's serial number and/or production batch date code;

212 e) the replacement battery and mains power requirements, as relevant;

213 f) whether or not the instrument is suitable for outdoor use (see 5.3.2).

214 Item (e) shall be clearly visible if the batteries are being changed.

215 External label(s) shall comply with prEN IEC 60335-1:2022, 7.6 and 7.14.

216 #### 4.3.2 Instructions

217 The apparatus shall be provided with an instruction manual giving complete, clear and accurate instructions for
218 the safe and proper operation and regular checking of the apparatus. It shall also include the following: