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Gas meter - Thermal-mass flow-meter based gas meter

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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Gas meter - Thermal-mass flow-meter based gas meter

Compteurs de gaz - Compteur de gaz basé sur un débitmètre massique par effet thermique

Gaszähler - Thermische Massendurchflussgaszähler

This European Standard was approved by CEN on 11 July 2021.

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EN 17526:2021 (E)**European foreword**

This document (EN 17526:2021) has been prepared by Technical Committee CEN/TC 237 “Gas meters”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2022, and conflicting national standards shall be withdrawn at the latest by June 2022.

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

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

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

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies requirements and tests for the construction, performance, safety and production of battery powered class 1,5 Capillary Thermal-Mass Flow sensor gas meters (hereinafter referred to as meter(s)). This applies to meters having co-axial single pipe, or two pipe connections, which are used to measure volumes of fuel gases of the 2nd and/or 3rd family, as given in EN 437:2018.

In general, the term “thermal mass flow meters” applies to a flow-measuring device using heat transfer to measure and indicate gas flowrate, as defined in ISO 14511.

NOTE 1 Although the word “mass” is present in the definition of the measurement principle, gas meters covered by this document provide measurement of gas at base conditions of temperature and pressure.

These meters have a maximum working pressure not exceeding 0,5 bar and a maximum flowrate not exceeding 160 m³/h over a minimum ambient temperature range of –10 °C to +40 °C and a gas temperature range as specified by the manufacturer with a minimum range of 40 °C.

This document applies to meters indicating volume at base conditions, which are installed in locations with vibration and shocks of low significance. It applies to meters in:

- closed locations (indoor or outdoor with protection, as specified by the manufacturer) with condensing humidity or with non-condensing humidity;

or, if specified by the manufacturer:

- open locations (outdoor without any covering) both with condensing humidity or with non-condensing humidity;

and in locations with electromagnetic disturbances likely to be found in residential, commercial and light industrial use.

For meters which indicate unconverted volume, reference can be made to Annex C.

Unless otherwise stated, all pressures given in this document are gauge pressures.

Requirements for electronic indexes, valves and additional requirements for batteries incorporated in the meter and any other additional functionalities are given in EN 16314:2013.

Unless otherwise stated in a particular test, the tests are carried out on meters that include additional functionality devices intended by the manufacturer.

Clauses 1 to 13 are for design and type testing only.

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 437:2018, *Test gases — Test pressures — Appliance categories*

EN 549:2019, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

EN 1092-1:2018, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 16314:2013, *Gas meters — Additional functionalities*

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EN ISO 228-1:2003, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1:2000)*

EN ISO 1518-1:2019, *Paints and varnishes — Determination of scratch resistance — Part 1: Constant-loading method (ISO 1518-1:2019)*

EN ISO 2409:2020, *Paints and varnishes — Cross-cut test (ISO 2409:2020)*

EN ISO 2812-1:2017, *Paints and varnishes — Determination of resistance to liquids — Part 1: Immersion in liquids other than water (ISO 2812-1:2017)*

EN ISO 4628-2:2016, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 2: Assessment of degree of blistering (ISO 4628-2:2016)*

EN ISO 4628-3:2016, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 3: Assessment of degree of rusting (ISO 4628-3:2016)*

EN ISO 4892-3:2016, *Plastics — Methods of exposure to laboratory light sources — Part 3: Fluorescent UV lamps (ISO 4892-3:2016)*

EN ISO 6270-1:2018, *Paints and varnishes — Determination of resistance to humidity — Part 1: Condensation (single-sided exposure) (ISO 6270-1:2017)*

EN ISO 6272-1:2011, *Paints and varnishes — Rapid-deformation (impact resistance) tests — Part 1: Falling-weight test, large-area indenter (ISO 6272-1:2011)*

EN ISO 9227:2017, *Corrosion tests in artificial atmospheres — Salt spray tests (ISO 9227:2017)*

EN ISO/CIE 11664-4:2019, *Colorimetry — Part 4: CIE 1976 L*a*b* colour space (ISO/CIE 11664-4:2019)*

EN 50561-1:2013, *Power line communication apparatus used in low-voltage installations — Radio disturbance characteristics - Limits and methods of measurement — Part 1: Apparatus for in-home use*

EN 55032:2015, *Electromagnetic compatibility of multimedia equipment — Emission Requirements*

EN IEC 60079-0:2018¹⁾, *Explosive atmospheres — Part 0: Equipment — General requirements (IEC 60079-0:2017)*

EN 60079-10-1:2015, *Explosive atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres (IEC 60079-10-1:2015)*

EN 60079-11:2012, *Explosive atmospheres — Part 11: Equipment protection by intrinsic safety “i” (IEC 60079-11:2011)*

EN IEC 60079-15:2019, *Explosive atmospheres — Part 15: Equipment protection by type of protection “n” (IEC 60079-15:2017)*

1) As impacted by EN IEC 60079-0:2018/AC:2020-02.

EN 60529:1991²⁾, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 60695-11-5:2017, *Fire hazard testing — Part 11-5: Test flames — Needle-flame test method - Apparatus, confirmatory test arrangement and guidance (IEC 60695-11-5:2016)*

EN 60695-11-10:2013³⁾, *Fire hazard testing — Part 11-10: Test flames — 50 W horizontal and vertical flame test methods (IEC 60695-11-10:2013)*

EN 60730-1:2016⁴⁾, *Automatic electrical controls — Part 1: General requirements (IEC 60730-1:2013 , modified + COR1:2014)*

EN 61000-4-2:2009, *Electromagnetic compatibility (EMC) — Part 4-2: Testing and measurement techniques — Electrostatic discharge immunity test (IEC 61000-4-2:2008)*

EN 61000-4-3:2006⁵⁾, *Electromagnetic compatibility (EMC) — Part 4-3: Testing and measurement techniques — Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3:2006)*

EN 61000-4-8:2010, *Electromagnetic compatibility (EMC) — Part 4-8: Testing and measurement techniques — Power frequency magnetic field immunity test (IEC 61000-4-8:2009)*

EN 61000-6-1:2007, *Electromagnetic compatibility (EMC) — Part 6-1: Generic standards — Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1:2005)*

EN 61000-4-9:2016, *Electromagnetic compatibility (EMC) — Part 4-9: Testing and measurement techniques — Impulse magnetic field immunity test (IEC 61000-4-9:2016)*

EN IEC 61000-6-2:2019, *Electromagnetic compatibility (EMC) — Part 6-2: Generic standards — Immunity standard for industrial environments*

EN 62056-21:2002, *Electricity metering — Data exchange for meter reading, tariff and load control — Part 21: Direct local data exchange (IEC 62056-21:2002)*

ISO 834-1:1999, *Fire resistance tests — Elements of building construction — Part 1: General requirements*

ISO 12213-2:2006, *Natural gas — Calculation of compression factor — Part 2: Calculation using molar-composition analysis*

ASTM D 1003-13, *Standard Test Method for Haze and Luminous Transmittance of transparent plastics*

2) As impacted by EN 60529:1991/AC:2006-12, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013 and EN 60529:1991/A2:2013/AC:2019-02.

3) As impacted by EN 60695-11-10:2013/AC:2014.

4) As impacted by EN 60730-1:2016/A1:2019.

5) As impacted by EN 61000-4-3:2006/A1:2008, EN 61000-4-3:2006/A2:2010 and EN 61000-4-3:2006/IS1:2009.

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