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**Vodomeri, namenjeni za merjenje hladne pitne vode in vroče vode - 2. del:
Preskusne metode (ISO/DIS 4064-2:2011)**

Water meters intended for the metering of cold potable water and hot water - Part 2: Test methods (ISO/DIS 4064-2:2011)

Wasserzähler zum Messen von kaltem Trinkwasser und heißem Wasser - Teil 2: Prüfverfahren (ISO/DIS 4064-2:2011)

Compteurs d'eau potable froide et d'eau chaude - Partie 2: Méthodes d'essai (ISO/DIS 4064-2:2011)

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91.140.60 Sistemi za oskrbo z vodo Water supply systems

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English Version

Water meters intended for the metering of cold potable water and hot water - Part 2: Test methods (ISO/DIS 4064-2:2011)

Compteurs d'eau potable froide et d'eau chaude - Partie 2:
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Wasserzähler zum Messen von kaltem Trinkwasser und
heißem Wasser - Teil 2: Prüfverfahren (ISO/DIS 4064-2:2011)

This draft European Standard is submitted to CEN members for parallel enquiry. It has been drawn up by the Technical Committee CEN/TC 92.

If this draft becomes a European Standard, CEN 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.

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Foreword

This document (prEN ISO 4064-2:2011) has been prepared by Technical Committee ISO/TC 30 "Measurement of fluid flow in closed conduits" in collaboration with Technical Committee CEN/TC 92 "Water meters" the secretariat of which is held by SNV.

This document is currently submitted to the parallel Enquiry.

This document will supersede EN 14154-1:2005+A2:2011, EN 14154-2:2005+A2:2011, EN 14154-3:2005+A2:2011.

Endorsement notice

The text of ISO/DIS 4064-2:2011 has been approved by CEN as a prEN ISO 4064-2:2011 without any modification.

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Water meters intended for the metering of cold potable water and hot water —

Part 2: Test methods

Compteurs d'eau potable froide et d'eau chaude —

Partie 2: Méthodes d'essai

[Revision of third edition (ISO 4064-2:2005)]

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ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO-lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five-month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 4064-2 was prepared by Technical Committee ISO/TC 30, *Measurement of fluid flow in closed conduits*, Subcommittee SC 7, *Volume methods including water meters* and OIML Technical Subcommittee TC 8/SC 5 *Water meters*.

This fourth edition cancels and replaces the third edition of ISO 4064-3 (ISO 4064-3:2005), which has been technically revised.

This edition of ISO 4064-2 is identical with the corresponding edition of OIML R 49-2, which has been issued concurrently.

ISO 4064 consists of the following parts, under the general title *Water meters intended for the metering of cold potable water and hot water*:

- *Part 1: Specification of metrological and technical requirements*
- *Part 2: Specification of test methods*
- *Part 3: Specification of test report format*
- *Part 4: Specification of non-metrological requirements not covered in Part 1*
- *Part 5: Specification of installation requirements*

Water meters intended for the metering of cold potable water and hot water —

Part 2: Test methods

1 Scope

This Part of ISO 4064/OIML R 49 is applicable to the type evaluation and initial verification testing of water meters intended for the metering of cold potable water and hot water as defined in ISO 4064-1/OIML R 49-1 [1]. OIML Certificates of Conformity may be issued for water meters under the scope of the OIML Certificate System, providing that the first three parts of this Part of ISO 4064/OIML R 49 are used in accordance with the rules of the System.

This Part of ISO 4064/OIML R 49 sets out details of the test programme, principles, equipment and procedures to be used for the type evaluation and initial verification testing of a meter type.

The provisions of this Part of ISO 4064/OIML R 49 also apply to ancillary devices, if required by national regulations.

The provisions include requirements for testing the complete water meter and for testing the measurement transducer (including the flow or volume sensor) and the calculator (including the indicating device) of a water meter as separate units.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 4064-1:201x, *Water meters intended for the metering of cold potable water and hot water — Part 1: Metrological and technical requirements* [≡OIML R 49-1:201x]

ISO 4064-3:201x, *Water meters intended for the metering of cold potable water and hot water — Part 3: Test report format* [≡OIML R 49-3:201x]

Guide to the expression of uncertainty in measurement. BIPM, IEC, IFCC, ISO, IUPAC, IUPAP and OIML, and published by ISO

ISO 4064-4 (2011): *Measurement of water flow in fully charged conduits – Meters for cold potable water and hot water – Part 4: Additional technical requirements*

OIML International Publication G 13 (1989) *Planning of metrology and testing laboratories*

IEC 60068-2-2 (2007-07). *Environmental testing Part 2. Tests. Test B: Dry heat. Section 4 – Test Bd: Dry heat for heat-dissipating specimen, or Test Bb for non heat-dissipating specimen, with gradual change of temperature*

IEC 60068-2-1 (2007-03). *Environmental testing Part 2.1 Tests. Tests A. Cold. Section 3 - Test Ad: Cold for heat-dissipating specimen or test Ab for non heat-dissipating specimen, with gradual change temperature*

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IEC 60068-2-30 (2005-08). *Basic environmental testing procedures, Part 2: Tests. Test Db and guidance: Damp heat, cyclic (12h + 12h cycle)*

IEC 60068-3-4 (2001-08). *Environmental testing Part 3-4: Supporting documentation and guidance - damp heat tests*

IEC 61000-4-11 (2004-03). *Electromagnetic Compatibility (EMC) – Part 4: Testing and measurement techniques – Section 11: Voltage dips, short interruptions and voltage variations immunity tests*

IEC/TR3 61000-2-1 (1990-05) *Electromagnetic Compatibility(EMC) Part 2: Environment. Section 1: Description of the environment – Electromagnetic environment for low frequency conducted disturbances and signaling in public power supply systems*

IEC 61000-2-2 (2002-03) *Electromagnetic Compatibility(EMC) Part 2: Environment. Section 2: Compatibility levels for low frequency conducted disturbances and signaling in public power supply systems*

IEC 61000-4-1 (2006-10) *Electromagnetic Compatibility(EMC) Part 4-1: Testing and measurement techniques – Overview of IEC 61000-4 series*

IEC 60654-2 (1979-01) -am1 (1992-10) *Operating conditions for industrial process measurement and control equipment. Part 2: Power*

IEC 60068-2-64 (2008-04). *Environmental testing – Part 2: Test methods – Test Fh: Vibration, broadband random (digital control) and guidance*

IEC 60068-2-47 (2005-04). *Environmental testing – Part 2-47: Test methods – Mounting of components, equipment and other articles for vibration, impact and similar dynamic tests*

IEC 60068-2-31 (2008-05). *Environmental testing – Part 2: Tests. Test Ec: Drop and topple, primarily for equipment-type specimens*

IEC 61000-4-4 (2004-07) Corrigendum IEC 61000-4-4-Cor 1 (2006-8), Corrigendum IEC 61000-4-4-Cor 2 (2007-6). *Electromagnetic compatibility (EMC) Part 4: Testing and measurement techniques – Section 4: Electrical fast transient/burst immunity test. Basic EMC publication*

IEC 61000-4-2 (2001-04) Ed. 1.2 Consolidated Edition. *Electromagnetic Compatibility (EMC) – Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity tests*

IEC 61000-4-3 (2006-03). Amendment IEC 61000-4-3-am1 (2007-11) Ed 3.0. *Electromagnetic compatibility (EMC). Part 4-3: Testing and measurement techniques – Radiated, radio frequency, electromagnetic field immunity tests*

OIML International Document D 11 (2004): *General Requirements for Electronic Measuring Instruments*

IEC 61000-4-5 (2001-04) consolidated edition 1.1 (Including Amendment 1 and Correction 1). *Electromagnetic compatibility (EMC)- Part 4-5: Testing and measuring techniques – Surge immunity test*

IEC 61000-6-1 (1997-07). *Electromagnetic compatibility (EMC) – Part 5: Generic standards – Section 1: Immunity for residential, commercial and light-industrial environments*

IEC 61000-6-2 (1999-01). *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards –Immunity for industrial environments*

IEC 61000-4-6 am2 (2006). *Electromagnetic compatibility (EMC) Part 4:6 Testing and measurement techniques – immunity to conducted disturbances, induced by radio-frequency fields*

3 Terminology

The terms and definitions given in ISO 4064-1/R 49-1 [1] apply in this Part of ISO 4064/OIML R 49.

Some of the definitions used in this Part of ISO 4064/OIML R 49 conform to terminology used in IEC 60068-1 [9] and are adapted where necessary.

4 Reference conditions

All applicable influence quantities, except for the influence quantity being tested, shall be held at the following values during type approval tests on a water meter. However, for influence factors and disturbances for electronic water meters, it is permissible to use the reference conditions defined in the applicable IEC standard:

Flowrate: $0.7 \times (Q_2 + Q_3) \pm 0.03 \times (Q_2 + Q_3)$

Water temperature: T 30, T 50 : $20 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$.

T70 to T180: $20 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$ and $50 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$.

T30/70 to T30/180: $50 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$.

Water pressure: Within rated operating conditions (See 6.4 of ISO 4064-1/OIML R 49-1 [1])

Ambient temperature range: $15 \text{ }^\circ\text{C}$ to $25 \text{ }^\circ\text{C}$

Ambient relative humidity range: 45 % to 75 %

Ambient atmospheric pressure range: 86 kPa to 106 kPa [0.86 bar to 1.06 bar]

Power supply voltage (mains AC): Nominal voltage (U_{nom}) $\pm 5 \%$

Power supply frequency: Nominal frequency (f_{nom}) $\pm 2 \%$

Power supply voltage (battery): A voltage V in the range $U_{\text{bmin}} \leq V \leq U_{\text{bmax}}$

During each test, the temperature and relative humidity shall not vary by more than $5 \text{ }^\circ\text{C}$ or 10 % respectively within the reference range. The reference conditions are permitted to deviate from the defined tolerated values during the performance tests if evidence can be given to the Type approval testing authority that the type of meter in consideration is not affected by the deviation of the condition in question. The actual values of the deviating condition, however, have to be measured and documented as part of the performance test documentation.

5 Symbols, units and equations

Equations, symbols and their units, concerning the calculation of the error (of indication) of a water meter used in this Part of ISO 4064/OIML R 49, are given in Annex B.

6 External examination

During the external examination, all relevant values, dimensions and observations shall be recorded.

NOTE 1 For presentation of the results of type examinations see clause 11.