



BSI Standards Publication

Water meters for cold potable water and hot water

Part 1: Metrological and technical requirements

National foreword

This British Standard is the UK implementation of EN ISO 4064-1:2017+A11:2022. It is derived from ISO 4064-1:2014. It supersedes BS EN ISO 4064-1:2014, which is withdrawn.

The start and finish of text introduced or altered by amendment A11 is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A11 is indicated by A11 A11.

The UK participation in its preparation was entrusted to Technical Committee CPI/30/7, Volume flow-rate methods.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Date	Text affected
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English Version

Water meters for cold potable water and hot water - Part 1: Metrological and technical requirements (ISO 4064- 1:2014)

Compteurs d'eau potable froide et d'eau chaude -
Partie 1: Exigences métrologiques et techniques (ISO
4064-1:2014)

Wasserzähler zum Messen von kaltem Trinkwasser
und heißem Wasser - Teil 1: Metrologische und
technische Anforderungen (ISO 4064-1:2014)

This European Standard was approved by CEN on 11 May 2017.

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European foreword

The text of ISO 4064-1:2014 has been prepared by Technical Committee ISO/TC 30 “Measurement of fluid flow in closed conduits” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 4064-1:2017 by Technical Committee CEN/TC 92 “Water meters” the secretariat of which is held by SNV.

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of an identical text or by endorsement, at the latest by November 2017, and conflicting national standards shall be withdrawn at the latest by November 2017.

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

This document supersedes EN ISO 4064-1:2014.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directives.

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Endorsement notice

The text of ISO 4064-1:2014 has been approved by CEN as EN ISO 4064-1:2017 without any modification.

European foreword to Amendment A11

This document (EN ISO 4064-1:2017/A11:2022) has been prepared by Technical Committee CEN/TC 92 “Water meters” the secretariat of which is held by SNV.

This Amendment to the European Standard EN ISO 4064-1:2017 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2023, and conflicting national standards shall be withdrawn at the latest by June 2023.

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Annex ZA
(informative)

Relationship between this European Standard and the essential requirements of Directive 2014/32/EU aimed to be covered

This European Standard has been prepared under a Commission's standardization request Mandate to CEN and CENELEC for standardisation in the field of measuring instruments "M/374 EN" to provide one voluntary means of conforming to essential requirements of Directive 2014/32/EU of the European Parliament and the Council of 26 February 2014 on measuring instruments (Text with EEA relevance).

Once this standard is cited in the Official Journal of the European Union under that Directive 2014/32/EU, compliance with the normative clauses of this standard given in Table ZA.1 and application of the edition of the normatively referenced standards as given in Table [ZA.2] confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive 2014/32/EU, and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Annex I of Directive 2014/32/EU.

Essential Requirements (ERs) of Directive 32/2014/EU Annex I Essential Requirements Note: Amended by Directive 2015/13/EU		Clause(s)/sub-clause(s) of this EN	Qualifying remarks/Notes
I.1.1 and 1.2 Allowable errors, Rated operating conditions		4.2.1 4.2.2 4.2.3 4.2.8 6.4	
I.1.3.1 Climatic environments, temperature limits		6.4 A.2 A.5	
I.1.3.2 Mechanical environments		A.2 A.5	
I.1.3.3 Electromagnetic environments		A.3 A.5	
I.1.3.4 Other influences		7.2.12.2.2 Annex A table A.1,	
I.1.4.1 Basic rules for testing		7.1 A.1	
I.1.4.2 Ambient humidity		8.4	

		Annex A table A.1,	
I.2 Reproducibility		7.2.9.3	
I.3 Repeatability		7.2.4	
I.4 Discrimination and sensitivity		6.7.2 6.7.3.2	
I.5 Durability		4.2 7.2.6	
I.6 Reliability		6.1	
I.7.1 Fraudulent use		6.1.7 6.8	
I.7.2 Suitable for use		6.1.8 6.7.1 6.4	
I.7.3 Unduly biasing		6.1.9 6.2.1	
I.7.5 Robustness and suitability of materials		6.1	
I.7.6 Allow for control after placing on the market		4.3.4 5.1.3 6.7.1 Annex B	
I.8.1 Not to be influenced in any admissible way		4.3.4 5.1.1 6.3 6.8.2.2 6.8.2.3	
I.8.2 Securing of hardware components		6.8	
I.8.3 Securing and identification of software		6.8	
I.8.4 Measurement data adequately protected against corruption		6.8	
I.8.5 Total quantity supplied not to be reset		6.8	
I.9.1 Inscriptions		6.6	

I.9.2 Marking of packaging and documents		6.6	
I.9.3 Information on operation		6.3 6.6	
I.9.5 Scale interval for the measurand		6.7.3.2.1 6.7.3.2.3	
I.9.7 Unit of measurement		6.7.1.2	
I.9.8 Marking properties		6.6.1 6.6.2	
I.10.1 Display or hard copy		6.7.2	
I.10.2 Reading properties		6.7.1.1	
I.10.5 Properties of display for remote reading		6.1.8	
I.12 Conformity evaluation		3.6 7.2 7.3	
Specific Requirements of Annex III for WATER METERS (MI-001)		Clause(s)/subclause(s) of this European Standard	
MI.1 Values of flow rate range Note: addresses amendment of Directive 2015/13/EU		4.1 6.4	
MI.2 Temperature range of the water		4.2.4 6.4	
MI.3 Relative pressure of the water		4.2.8 6.4	
MI.4 Nominal value of AC voltage supply and limits of DC supply		5.2	
MI.5 MPE ± 2 % for water temperature ≤ 30 °C for flow rate between Q2 (included) and Q4		4.2.3	
MI.5 MPE ± 3 % for water temperature > 30 °C for flow rate between Q2 (included) and Q4		4.2.3	
MI.6 MPE ± 5 % for any water temperature for flow rate between Q1 and Q2 (excluded)		4.2.3	
MI.6 Non exploitation of MPE		4.3.3 6.1.9	Not covered

		6.2.1 7.2.3 7.3.6	
MI.7.1.1 Electromagnetic immunity		A.3	
MI.7.1.2 Condition after electromagnetic disturbance		5.1.1 A.3 A.5	
MI 7.1.3 Critical change value		5.1.2 A.3	
MI 7.2.1 Variation of measurement after durability		7.2.6.3	
MI 7.2.2 Error of indication after durability		7.2.6.3	
MI.8.1 Meter able to be installed in defined position		7.2.3	
MI.8.2 Meter is not designed to measure reverse flow		4.2.7	
MI.9 Cubic metre		6.7.1.2	

Table ZA.2 — Applicable Standards to confer presumption of conformity as described in this Annex ZA

Column 1 Reference in Clause 2	Column 2 International Standard Edition	Column 3 Title	Column 4 Corresponding European Standard Edition
ISO 4064-2:2014 OIML R 49-2:2013	ISO 4064-2:2014	Water meters for cold potable water and hot water — Part 2: Test methods	EN ISO 4064-2:2017 EN ISO 4064-2 :2017/A11 :2022

The documents listed in the Column 1 of table [ZA.2], in whole or in part, are normatively referenced in this document, i.e. are indispensable for its application. The achievement of the presumption of conformity is subject to the application of the edition of Standards as listed in Column 4 or, if no European Standard Edition exists, the International Standard Edition given in Column 2 of table [ZA.2].

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard. 

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2, www.iso.org/directives.

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received, www.iso.org/patents.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

The committees responsible for this document are 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 of ISO 4064-1 cancels and partially replaces the third edition (ISO 4064-1:2005), which has been technically revised. Some provisions of the third edition are addressed in ISO 4064-4:2014.

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

- *Part 1: Metrological and technical requirements*
- *Part 2: Test methods*
- *Part 3: Test report format*
- *Part 4: Non-metrological requirements not covered in ISO 4064-1*
- *Part 5: Installation requirements*

This edition of ISO 4064-1 is identical to the corresponding edition of OIML R 49-1, which has been issued concurrently. OIML R 49-1 was approved for final publication by the International Committee of Legal Metrology at its 48th meeting in Ho Chi Minh City, Vietnam in October 2013. It will be submitted to the International Conference on Legal Metrology in 2016 for formal sanction.

Water meters for cold potable water and hot water —

Part 1: Metrological and technical requirements

1 Scope

This part of ISO 4064|OIML R 49 specifies the metrological and technical requirements for water meters for cold potable water and hot water flowing through a fully charged, closed conduit. These water meters incorporate devices which indicate the integrated volume.

In addition to water meters based on mechanical principles, this part of ISO 4064|OIML R 49 applies to devices based on electrical or electronic principles, and mechanical principles incorporating electronic devices, used to measure the volume of cold potable water and hot water.

This part of ISO 4064|OIML R 49 also applies to electronic ancillary devices. Ancillary devices are optional. However, it is possible for national or regional regulations to render some ancillary devices mandatory in relation to the utilization of water meters.

NOTE Any national regulations apply in the country of use.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4064-2:2014|OIML R 49-2:2013, *Water meters for cold potable water and hot water — Part 2: Test methods*

3 Terms and definitions

For the purposes of this document, the following definitions apply.

NOTE This terminology conforms to that used in ISO/IEC Guide 99:2007|OIML V 2-200:2012,^[1] OIML V 1:2013^[2] and OIML D 11.^[3] Modified versions of some terms defined in References^{[1]–[3]} are listed here.

3.1 Water meter and its constituents

3.1.1

water meter

instrument intended to measure continuously, memorize, and display the volume of water passing through the measurement transducer at metering conditions

Note 1 to entry: A water meter includes at least a measurement transducer, a calculator (including adjustment or correction devices, if present) and an indicating device. These three devices can be in different housings.

Note 2 to entry: A water meter may be a combination meter (see 3.1.16).

Note 3 to entry: In this International Standard, a water meter is also referred to as a “meter”.

3.1.2

measurement transducer

part of the meter that transforms the flow rate or volume of water to be measured into signals which are passed to the calculator and includes the sensor

Note 1 to entry: The measurement transducer may function autonomously or use an external power source and may be based on a mechanical, electrical or electronic principle.

3.1.3

sensor

element of a meter that is directly affected by a phenomenon, body or substance carrying a quantity to be measured

[SOURCE: ISO/IEC Guide 99:2007|OIML V 2-200:2012 (VIM), 3.8, modified — “meter” replaces “measuring system”.]

Note 1 to entry: For a water meter, the sensor may be a disc, piston, wheel or turbine element, the electrodes on an electromagnetic meter, or another element. The element senses the flow rate or volume of water passing through the meter and is referred to as a “flow sensor” or “volume sensor”.

3.1.4

calculator

part of the meter that transforms the output signals from the measurement transducer(s) and, possibly, from associated measuring instruments and, if appropriate, stores the results in memory until they are used

Note 1 to entry: The gearing is considered to be the calculator in a mechanical meter.

Note 2 to entry: The calculator may be capable of communicating both ways with ancillary devices.

3.1.5

indicating device

part of the meter that provides an indication corresponding to the volume of water passing through the meter

Note 1 to entry: For the definition of the term “indication”, see ISO/IEC Guide 99:2007|OIML V 2-200:2012 (VIM), [4.1](#).

3.1.6

adjustment device

part of the meter that allows an adjustment of the meter such that the error curve of the meter is generally shifted parallel to itself to fit in the envelope of the maximum permissible errors

Note 1 to entry: For the definition of the term “adjustment of a measuring system”, see ISO/IEC Guide 99:2007|OIML V 2-200:2012 (VIM), 3.11.

3.1.7

correction device

device connected to or incorporated in the meter for automatic correction of the volume of water at metering conditions, by taking into account the flow rate and/or the characteristics of the water to be measured and the pre-established calibration curves

Note 1 to entry: The characteristics of the water, e.g. temperature and pressure, may be either measured using associated measuring instruments or stored in a memory in the meter.

Note 2 to entry: For the definition of the term “correction”, see ISO/IEC Guide 99:2007|OIML V 2-200:2012 (VIM), 2.53.

3.1.8**ancillary device**

device intended to perform a specific function, directly involved in elaborating, transmitting or displaying measured values

Note 1 to entry: For the definition of “measured value”, see ISO/IEC Guide 99:2007|OIML V 2-200:2012 (VIM), 2.10.

Note 2 to entry: The main ancillary devices are:

- a) zero-setting device;
- b) price-indicating device;
- c) repeating indicating device;
- d) printing device;
- e) memory device;
- f) tariff control device;
- g) pre-setting device;
- h) self-service device;
- i) flow sensor movement detector (for detecting movement of the flow sensor before this is clearly visible on the indicating device);
- j) remote reading device (which may be incorporated permanently or added temporarily).

Note 3 to entry: Depending on national legislation, ancillary devices may be subject to legal metrological control.

3.1.9**tariff control device**

device that allocates measured values into different registers depending on tariff or other criteria, each register having the possibility to be read individually

3.1.10**pre-setting device**

device that permits the selection of the quantity of water to be measured and which automatically stops the flow of water after the selected quantity has been measured

3.1.11**associated measuring instrument**

instrument connected to the calculator or the correction device for measuring a quantity, characteristic of water, with a view to making a correction and/or a conversion

3.1.12**meter for two constant partners**

meter that is permanently installed and only used for deliveries from one supplier to one customer

3.1.13**in-line meter**

type of meter that is fitted into a closed conduit by means of the meter end connections provided

Note 1 to entry: The end connections may be flanged or threaded.

3.1.14**complete meter**

meter whose measurement transducer, calculator, and indicating device are not separable