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Standards

Irish Standard  
I.S. EN ISO 4064-1:2017

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

**I.S. EN ISO 4064-1:2017**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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*This document is based on:*

EN ISO 4064-1:2017

*Published:*

2017-05-24

*This document was published under the authority of the NSAI and comes into effect on:*

2017-06-11

ICS number:

91.140.60

NOTE: If blank see CEN/CENELEC cover page

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## National Foreword

I.S. EN ISO 4064-1:2017 is the adopted Irish version of the European Document EN ISO 4064-1:2017, Water meters for cold potable water and hot water - Part 1: Metrological and technical requirements (ISO 4064-1:2014)

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EUROPEAN STANDARD

**EN ISO 4064-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2017

ICS 91.140.60

Supersedes EN ISO 4064-1:2014

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.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN 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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## **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.

For relationship with EU Directives, see informative Annex ZA, which is an integral part of this document.

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

### **Endorsement notice**

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

## **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 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.

#### Introduction:

The column "Comment" the term "Addressed" indicates the compliance between EN ISO 4064-1:2014 and the relevant requirement in Directive 2014/32/EU. The term "Not (fully) addressed" indicates that compliance may not (fully) be realised, whilst "Addressed" may also be qualified in other ways. In the case the requirement is "Not fully addressed", a short statement may explain what is covered. The indication "Not applicable" means that the requirement in Annex I of Directive 2014/32/EU is not relevant for Water Meters.

The original Directive 2004/22/EU had been amended by Directive 137/2009/EC. These have been fully replaced by Directive 2014/32/EU. This latest directive has already been amended by Directive 2015/13/EU.

The numbering in the first column reflects the structure of the new Directive 2014/32/EU.

For purpose of cross-reference the second column indicates the structure of the original Directive 2004/22/EU.



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

<b>Essential Requirements (ERs) of Directive 32/2014/EU Annex I Essential Requirements Note: Amended by Directive 2015/13/EU</b>	<b>Essential Requirements (ERs) of Directive 22/2004/EC Annex I Essential Requirements Note: Amended by Directive 2009/137</b>	<b>Clause(s)/sub-clause(s) of this EN</b>	<b>Qualifying remarks/Notes</b>
I.1.1 and 1.2 Allowable errors, Rated operating conditions	I.1.1 and 1.2 Allowable errors, Rated operating conditions	4.2.2 4.2.3 6.4	Accuracy class 1 Accuracy class 2
I.1.3.1 Climatic environments, temperature limits	I.1.3.1 Climatic environments, temperature limits	A.2	Classes B, O, or M
I.1.3.2 Mechanical environments	I.1.3.2 Mechanical environments	A.2	Classes B, O, or M
I.1.3.3 Electromagnetic environments	I.1.3.3 Electromagnetic environments	A.3	Classes E1 or E2
I.1.3.4 Other influences	I.1.3.4 Other influences	7.2.12.2.2 Annex A table A.1, 8.5.3	Addressed
I.1.4.1 Basic rules for testing	I.1.4.1 Basic rules for testing	Not addressed in EN ISO 4064-1	Addressed in EN ISO 4064-2 7.2.2, 7.4.2 7.4.3
I.1.4.2 Ambient humidity	I.1.4.2 Ambient humidity	Annex A table A.1, 8.4	Addressed
I.2 Reproducibility	I.2 Reproducibility	7.2.9.3	Addressed
I.3 Repeatability	I.3 Repeatability	7.2.4 and Covered in EN ISO 4064-2, performance tests	Addressed via acceptance criteria of tests
I.4 Discrimination and sensitivity	I.4 Discrimination and sensitivity	Covered in EN ISO 4064-2, performance tests	Addressed via acceptance criteria of tests
I.5 Durability	I.5 Durability	7.2.6	Addressed
I.6 Reliability	I.6 Reliability	7.2.6	Addressed
I.7 Suitability	I.7 Suitability	Covered in EN ISO 4064-2, performance tests EN ISO 4064-1,	Addressed via acceptance criteria of tests. Implicitly

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		clauses 4 to 6 EN ISO 4064-5, 4.1	mentioned Instrument requirements Addressed with in the chapter "Selection criteria"
I.7.1 Fraudulent use	I.7.1 Fraudulent use	6.1.7	Addressed
I.7.2 Suitable for use	I.7.2 Suitable for use	No individual chapter	See meter classification
I.7.3 Unduly biasing	I.7.3 Unduly biasing	6.1.9 6.2.1	Addressed
I.7.4 Insensitivity to measurand fluctuations	I.7.4 Insensitivity to measurand fluctuations	Not addressed in EN ISO 4064-1	Addressed in EN ISO 4064-2 performance tests
I.7.5 Robustness and suitability of materials	I.7.5 Robustness and suitability of materials	6.1	Addressed
I.7.6 Allow for control after placing on the market	I.7.6 Allow for control after placing on the market	Annex B	Addressed
I.8.1 Not to be influenced in any admissible way	I.8.1 Not to be influenced in any admissible way	5.1.1 6.3	Addressed
I.8.2 Securing of hardware components	I.8.2 Securing of hardware components	6.8	Addressed
I.8.3 Securing and identification of software	I.8.3 Securing and identification of software	6.8	Addressed
I.8.4 Measurement data adequately protected against corruption	I.8.4 Measurement data adequately protected against corruption	6.8	Addressed
I.8.5 Total quantity supplied not to be reset	I.8.5 Total quantity supplied not to be reset	6.8	Addressed
I.9.1 Inscriptions	I.9.1 Inscriptions	6.6	Addressed
I.9.2 Marking of packaging and documents	I.9.2 Marking of packaging and documents	6.6	Addressed
I.9.3 Information on operation	I.9.3 Information on operation	Not addressed in EN ISO 4064-1	Addressed EN ISO 4064-5, 4.2
I.9.4 Necessity of instruction manual	I.9.4 Necessity of instruction manual	Not addressed in EN ISO 4064-1	Addressed EN ISO 4064-5, 4.2
I.9.5 Scale interval for the measurand	I.9.5 Scale interval for the measurand	6.7.3.2.1 6.7.3.2.3	Addressed
I.9.6 Material measure	I.9.6 Material measure	Not addressed in EN ISO 4064-1	Addressed in EN ISO 4064-2, 6.4.3.2

I.9.7 Unit of measurement	I.9.7 Unit of measurement	6.7.1.2	Addressed
I.9.8 Marking properties	I.9.8 Marking properties	6.7.1	Addressed
I.10.1 Display or hard copy	I.10.1 Display or hard copy	6.7.2	Display is addressed, the standard does not address hard copy
I.10.2 Reading properties	I.10.2 Reading properties	6.7.1.1	Addressed
I.10.3 Hard-copy or print properties	I.10.3 Hard-copy or print properties	-	The standard does not address hard copy
I.10.4 Direct sales trading transactions	I.10.4 Direct sales trading transactions	-	The standard does not address hard copy
I.10.5 Properties of display for remote reading	I.10.5 Properties of display for remote reading	6.1.8	Addressed
I.11.1 Recording properties of non-utility measuring instrument	I.11.1 Recording properties of non-utility measuring instrument	-	Not applicable
I.11.2 Availability of durable proof of measurement result	I.11.2 Availability of durable proof of measurement result	-	Not applicable
I.12 Conformity evaluation	I.12 Conformity evaluation	3.6 7.2 7.3	Addressed together with EN 4064-2 clause 10
<b>Specific Requirements of Annex III for WATER METERS (MI-001)</b>			
<b>Specific Requirements of Annex III for WATER METERS (MI-001)</b>	<b>Specific requirements of Annex MI-001 for WATER METERS</b>	<b>Clause(s)/subclause(s) of this European Standard</b>	<b>Qualifying remarks/Notes</b>
Rated Operating Conditions	Rated Operating Conditions	3.3 and 6.4	Addressed
MI.1 Values of flow rate range Note: addresses amendment of Directive 2015/13/EU	MI.1 Values of flow rate range	4.1	Addressed
MI.2 Temperature range of the water	MI.2 Temperature range of the water	4.2.4	Addressed/MID does not rate temperatures into classes but it does give limits though
MI.3 Relative pressure of the water	MI.3 Relative pressure of the water	4.2.8 and 6.4	Addressed, meters rated with a relative pressure of the water below 10bar are not

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			within the scope of the MID
MI.4 Nominal value of AC voltage supply and limits of DC supply	MI.4 Nominal value of AC voltage supply and limits of DC supply	5.2	Addressed
MI.5 MPE $\pm 2\%$ for water temperature $\leq 30\text{ }^{\circ}\text{C}$ for flow rate between Q2 (included) and Q4	MI.5 MPE $\pm 2\%$ for water temperature $\leq 30\text{ }^{\circ}\text{C}$ for flow rate between Q2 (included) and Q4	4.2.3	The MID provides only for meters equivalent to accuracy class 2/ The MID does not recognize classification
MI.5 MPE $\pm 3\%$ for water temperature $> 30\text{ }^{\circ}\text{C}$ for flow rate between Q2 (included) and Q4	MI.5 MPE $\pm 3\%$ for water temperature $> 30\text{ }^{\circ}\text{C}$ for flow rate between Q2 (included) and Q4	4.2.3	The MID provides only for meters equivalent to accuracy class 2/ The MID does not recognize classification
MI.6 MPE $\pm 5\%$ for any water temperature for flow rate between Q1 and Q2 (excluded)	MI.6 MPE $\pm 5\%$ for any water temperature for flow rate between Q1 and Q2 (excluded)	4.2.3	Not addressed
MI.6 Non exploitation of MPE	(see: Directive 137/2009/EC Requirements below)	7.2.3 7.3.6	Not addressed.
MI.7.1.1 Electromagnetic immunity	MI.7.1.1 Electromagnetic immunity	A.3	Addressed in the annex for Electromagnetic environment
MI.7.1.2 Condition after electromagnetic disturbance	MI.7.1.2 Condition after electromagnetic disturbance	A.3	Addressed in the annex for Electromagnetic environment
MI 7.1.3 Critical change value	MI 7.1.3 Critical change value	A.3	Addressed in the annex for Electromagnetic environment
MI 7.2.1 Variation of measurement after durability	MI 7.2.1 Variation of measurement after durability	7.2.6.3	Addressed
MI 7.2.2 Error of indication after durability	MI 7.2.2 Error of indication after durability	7.2.6.3	Addressed
MI.8.1 Meter able to be installed in defined position	MI.8.1 Meter able to be installed in defined position	7.2.3	Addressed
MI.8.2 Meter is not designed to measure reverse flow	MI.8.2 Meter is not designed to measure reverse flow	4.2.7	Addressed

MI.9 Cubic metre	MI.9 Cubic metre	6.7.1.2	Addressed
MI 10 Putting into use	MI 10 Putting into use	Not addressed in EN ISO 4064-1	Addressed in EN ISO 4064-5, 6.2.6 and 8.3.2 and I.7
	Directive 137/2009/EC Requirements	Clause(s)/subclause (s) of this European Standard	Qualifying remarks/Notes
	MI 001 6a Exploitation of MPE	7.2.3 7.3.6	"non-exploitation of the maximum permissible errors", not addressed

**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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# INTERNATIONAL STANDARD

# ISO 4064-1

Fourth edition  
2014-06-01

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## Water meters for cold potable water and hot water —

### Part 1: Metrological and technical requirements

*Compteurs d'eau potable froide et d'eau chaude —  
Partie 1: Exigences métrologiques et techniques*



Reference number  
ISO 4064-1:2014(E)

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Published in Switzerland



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## ISO 4064-1:2014(E)

### 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](http://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](http://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,<sup>[1]</sup> OIML V 1:2013<sup>[2]</sup> and OIML D 11.<sup>[3]</sup> Modified versions of some terms defined in References<sup>[1]–[3]</sup> 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”.

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