ILNAS

Institut luxembourgeois de la normalisation
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ILNAS-EN 17075:2018+A1:2023

Water quality - General requirements and performance test procedures for water monitoring equipment - Continuous measuring devices

Wasserbeschaffenheit - Allgemeine Anforderungen und Testverfahren zur Leistungsprüfung von Geräten zum Wassermonitoring - Kontinuierliche

Qualité de l'eau - Exigences générales et modes opératoires d'essai de performance pour les équipements de surveillance de l'eau - Dispositifs de

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National Foreword

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EUROPEAN STANDARD
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English Version

Water quality - General requirements and performance test procedures for water monitoring equipment - Continuous measuring devices

Qualité de l'eau - Exigences générales et modes opératoires d'essai de performance pour les équipements de surveillance de l'eau - Dispositifs de mesure en continu

Wasserbeschaffenheit - Allgemeine Anforderungen und Testverfahren zur Leistungsprüfung von Geräten zum Wassermonitoring - Kontinuierliche Messgeräte

This European Standard was approved by CEN on 18 June 2018 and includes Amendment 1 approved by CEN on 20 February 2023.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 17075:2018+A1:2023) has been prepared by Technical Committee CEN/TC 230 “Water analysis”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by October 2023, and conflicting national standards shall be withdrawn at the latest by October 2023.

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 includes Amendment 1 approved by CEN on 20 February 2023.

This document supersedes EN 17075:2018.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

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 organizations 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, Türkiye and the United Kingdom.

Introduction

This document defines general requirements and test procedures for verifying the performance of [A1] continuous measuring devices (CMDs) [A1] used to monitor the quality of a wide range of waters including drinking waters, waste waters, and natural waters. It covers both portable [A1] continuous measuring devices (PCMDs) [A1] and fixed position [A1] continuous measuring devices (FCMDs) [A1]. These devices include: sensors, single and multi-parameter instruments, discrete and batch instruments, probes and sondes. It excludes chemical test kits. For the purposes of this document the acronym [A1] CMD(s) [A1] is used except where it is necessary to be specific about the particular type (e.g. [A1] PCMDs, FCMDs [A1]) or component of a [A1] CMD [A1] (e.g. sensor).

This document is associated with EN 16479 [1] which covers automated sampling devices (samplers) for water and waste water.

The general requirements include several features that are necessary to meet users' applications and information that has to be included in associated documents.

The performance tests comprise testing carried out under laboratory and field conditions They are designed to determine, in a systematic and consistent way, the capability of [A1] CMDs [A1] to make reliable measurements. The testing focuses on key performance characteristics. Statistical procedures are defined for evaluation of the test data.

The range of measurements over which the test procedures will be applied, the test range, is not specified. It is for the [A1] CMD [A1] manufacturer and/or the user to decide on the test range. Similarly, it is for the [A1] CMD [A1] manufacturer and/or the user to decide on the intended uses (applications) which will inform the design of the field trial.

Water monitoring equipment is widely used for compliance monitoring purposes under national and European regulations. This document supports the requirements of the following EU Directives:

— Industrial Emissions Directive (2010/75/EU) [2];

— Water Framework Directive (2000/60/EC) [3];

— Marine Strategy Framework Directive (2008/56/EC) [4];

— Drinking Water Directive (98/83/EC) [5];

— Technical Specifications for Chemical Analysis and Monitoring of Water Status (2009/90/EC) [6].

1 Scope

This document specifies general requirements and performance test procedures for portable and fixed position [A1] continuous measuring devices [A1] that are used in an in-line or online operating position to measure physical and chemical measurands in water. It excludes chemical test kits and laboratory analysers.

The general requirements include functional facilities that [A1] CMDs [A1] need to meet users' applications and information that needs to be included in associated documents.

The test procedures specify uniform methods to be used when determining key performance characteristics of [A1] CMDs [A1]. The performance tests comprise testing carried out under laboratory and field conditions. It is recognized that for some devices certain test procedures are not applicable.

Statistical procedures are defined for evaluation of the test data.

Example values for performance characteristics for a selection of [A1] CMDs [A1] for monitoring waste water effluents and receiving waters are detailed in Annex A for guidance.

This document requires the manufacturer of a [A1] CMD [A1] to provide more technical data for verification than does EN ISO 15839:2006 [7]. Consequently, EN ISO 15839 [7] will be of greater assistance to manufacturers wishing to characterize a new device whereas this document is more focussed on user requirements for the verification of manufacturer's claims.

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 ISO 5814:2012, *Water quality - Determination of dissolved oxygen - Electrochemical probe method (ISO 5814:2012)*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

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

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

[A1]

3.1
continuous measuring device
CMD
component or a group of components, used in an in-line or on-line operating position, which continuously (or at a given frequency) gives an output signal proportional to the value of one or more measurands in waters which it measures

Note 1 to entry: The device can be portable or fixed in position.

[A1]

3.2
portable [A1] continuous measuring device
PCMD
continuous measuring device [A1] that can be moved from one measuring point to another and used in an in-line or on-line operating position

3.3
fixed [A1] continuous measuring device
FCMD
continuous measuring device [A1] that can be fixed in position and used in an in-line or on-line operating position

3.4
sensor
electronic device that senses a physical condition or chemical compound and delivers an electronic signal proportional to the observed characteristic

[SOURCE: ISO/IEC 19762:2016 [8], 06.02.08]

3.5
in-line measuring device
in situ measuring device
system of automatic measurement in which at least the sensor is sited in the body of water

[SOURCE: ISO 6107-2:2006[9], 54, modified — term “analysis” replaced by term “measuring device” and within definition “analysis” replaced by “measurement”]

3.6
on-line measuring device
system of automatic measurement in which the sample is taken from the body of water through a probe to the measuring device by means of an appropriate conduit

Note 1 to entry: Sometimes referred to as an extractive measuring device.

[SOURCE: ISO 6107-2:2006+A1:2012 [10], 71, modified — term “analysis” replaced by term “measuring device”, within definition “analysing equipment” replaced by “measuring device” and Note 1 to entry added]

3.7
percentage error
error in measurement expressed as a percentage of the reference value

3.8
measurement bias
bias
estimate of a systematic measurement error

[SOURCE: ISO/IEC Guide 99:2007 [11], 2.18]