SOOJUSARVESTID. OSA 4: MUDELI TÜÜBIKATSED

Thermal energy meters - Part 4: Pattern approval tests

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 1434-4:2022 sisaldab Euroopa standardi EN 1434-4:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 1434-4:2022 consists of the English text of the European standard EN 1434-4:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 07.09.2022.	Date of Availability of the European standard is 07.09.2022.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 17.200.20

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1434-4

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Supersedes EN 1434-4:2015+A1:2018

English Version

Thermal energy meters - Part 4: Pattern approval tests

Compteurs d'énergie thermique - Partie 4 : Essais en vue de l'approbation de modèle

Thermische Energiemessgeräte - Teil 4: Prüfungen für die Bauartzulassung

This European Standard was approved by CEN on 17 July 2022.

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 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 1434-4:2022) has been prepared by Technical Committee CEN/TC 176 “Thermal energy meters”, the secretariat of which is held by SIS.

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 March 2023, and conflicting national standards shall be withdrawn at the latest by March 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 supersedes EN 1434-4:2015+A1:2018.

EN 1434, *Thermal energy meters*, consists of the following parts:

— *Part 1: General requirements*;

— *Part 2: Constructional requirements*;

— *Part 3: Data exchange and interfaces*[1];

— *Part 4: Pattern approval tests*;

— *Part 5: Initial verification tests*;

— *Part 6: Installation, commissioning, operational monitoring and maintenance*.

In comparison with EN 1434-4:2015+A1:2018, the following changes have been made:

— addition of fluids other than water as well as electromagnetic field frequency groups and electromagnetic field distance groups on the test programme in 7.2;

— addition of performance test with fluids other than water, tapping profile test for fast response meters and general testing of temperature sensors in 7.4;

— addition of durability test for bifunctional thermal energy meters, durability test for fluids other than water and accelerated durability test for temperature sensors in 7.8;

— addition of information on supply voltage and output impedance for surge transients in 7.11;

— addition of 7.12.1 “Low frequency fields” and 7.12.2 “High frequency fields”;

— addition of 7.13.1 “Electromagnetic field in distant proximity” and 7.13.2 “Electromagnetic field in close proximity”;

— addition of pressure loss with fluids other than water in 7.19;

— reference for electromagnetic emission has been updated in 7.20;

[1] EN 1434-3 is maintained by CEN/TC 294.

— addition of asymmetric swirl generator and performing flow disturbance test with liquids other than water in 7.22;

— checklist for type approvals has been updated in Annex B;

— addition of Annex D including dimensions of asymmetric swirl generator;

— Annex ZA has been updated.

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, Türkiye and the United Kingdom.

1 Scope

This document specifies pattern approval tests for thermal energy meters. Thermal energy meters are instruments intended for measuring the energy which in a heat-exchange circuit is absorbed (cooling) or given up (heating) by a liquid called the heat-conveying liquid. The thermal energy meter indicates the quantity of thermal energy in legal units.

This document covers meters for closed systems only, where the differential pressure over the thermal load is limited.

This document is not applicable to:

— electrical safety requirements;

— pressure safety requirements; and

— surface mounted temperature sensors.

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 1434-1:2022, *Thermal energy meters — Part 1: General requirements*

EN 60068-2-1:2007, *Environmental testing — Part 2-1: Tests — Test A: Cold (IEC 60068-2-1:2007)*

EN 60068-2-2:2007, *Environmental testing — Part 2-2: Tests — Test B: Dry heat (IEC 60068-2-2:2007)*

EN 60068-2-30:2005, *Environmental testing — Part 2-30: Tests — Test Db: Damp heat, cyclic (12 h + 12 h cycle (IEC 60068-2-30:2005)*

EN 60068-2-78:2013, *Environmental testing — Part 2-78: Tests — Test Cab: Damp heat, steady state (IEC 60068-2-78:2012)*

EN 60751:2008, *Industrial platinum resistance thermometers and platinum temperature sensors (IEC 60751:2008)*

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 61000-4-3:2006,[2] *Electromagnetic compatibility (EMC) — Part 4-3: Testing and measurement techniques — Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3:2006)*

EN 61000-4-4:2012, *Electromagnetic compatibility (EMC) — Part 4-4: Testing and measurement techniques — Electrical fast transient/burst immunity test (IEC 61000-4-4:2012)*

EN 61000-4-5:2014,[3] *Electromagnetic compatibility (EMC) — Part 4-5: Testing and measurement techniques — Surge immunity test (IEC 61000-4-5:2014)*

[2] Document is impacted by /A1:2008 and /A2:2010.
[3] Document is impacted by /A1:2007.

EN 61000-4-6:2014,[4] *Electromagnetic compatibility (EMC) — Part 4-6: Testing and measurement techniques — Immunity to conducted disturbances, induced by radio-frequency fields (IEC 61000-4-6:2013)*

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 IEC 61000-4-11:2020,[5] *Electromagnetic compatibility (EMC) — Part 4-11: Testing and measurement techniques — Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase (IEC 61000-4-11:2020)*

EN 61000-4-39:2017, *Electromagnetic Compatibility (EMC) — Part 4-39: Testing and measurement techniques — Radiated fields in close proximity — Immunity test (IEC 61000-4-39:2017)*

EN 61000-6-3:2007,[6] *Electromagnetic compatibility (EMC) — Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3:2006)*

EN 61326-1:2013, *Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements (IEC 61326-1:2012)*

EN ISO 4064-2:2017, *Water meters for cold potable water and hot water — Part 2: Test methods (ISO 4064-2:2014)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1434-1:2022 apply.

ISO and IEC maintain terminological 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

4 General

The procedure shall ascertain that the pattern conforms to the metrological requirements of this document. In addition to the checking of the documentation (Clause 8) and the comparison of the pattern with the metrological requirements of this European Standard, the tests in Clause 7 shall be performed.

It is recommended to use a checklist as in Annex B to report in a standardized way the result of the comparison between the patterns under approval with the essential requirements of this document.

5 Requirements

Under normal operating conditions, the error of thermal energy meters or their sub-assemblies shall not exceed the maximum permissible error, MPE specified in EN 1434-1:2022.

When thermal energy meters or their sub-assemblies are exposed to disturbances, significant faults shall not occur.

[4] Document is impacted by AC:2015.
[5] Document is impacted by /AC:2020.
[6] Document is impacted by /A1:2011 and /A1:2011/AC:2012.