

SOOJUSARVESTID, OSA 4: MUDELI TÜÜBIKATSED

Thermal energy meters - Part 4: Pattern approval tests

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 1434-4:2015+A1:2018 sisaldab Euroopa standardi EN 1434-4:2015+A1:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 1434-4:2015+A1:2018 consists of the English text of the European standard EN 1434-4:2015+A1:2018.
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.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 21.11.2018.	Date of Availability of the European standard is 21.11.2018.
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English Version

Thermal energy meters - Part 4: Pattern approval tests

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

Wärmezähler - Teil 4: Prüfungen für die  
Bauartzulassung

This European Standard was approved by CEN on 5 September 2015 and includes Amendment 1 approved by CEN on 18 July 2018.

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## European foreword

This document (EN 1434-4:2015+A1:2018 ) 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of an identical text or by endorsement, at the latest by May 2019, and conflicting national standards shall be withdrawn at the latest by May 2019.

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 2018-07-18.

This document supersedes A1 EN 1434-4:2015 A1.

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

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 Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

EN 1434, A1 *Thermal energy meters* A1 consists of the following parts:

- *Part 1: General requirements*
- *Part 2: Constructional requirements*
- *Part 3: Data exchange and interfaces<sup>1)</sup>*
- *Part 4: Pattern approval tests*
- *Part 5: Initial verification tests*
- *Part 6: Installation, commissioning, operational monitoring and maintenance*

In comparison to EN 1434-4:2007, the following changes have been made:

- metrological requirements for smart metering applications are added;
- additional functionalities for smart metering applications are added;
- cooling meters are added;
- influences of sensors are added;
- tests for cooling applications and for fast response meters are added;

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<sup>1)</sup> EN 1434-3 is maintained by CEN/TC 294.

- test for additional functionalities for smart metering applications, e.g. internal clock, external digital signal, absolute temperature are added;
- calculator with single temperature sensor are added;
- test for communication interfaces, endurance test for flow sensors and accelerated durability test are added;
- electromagnetic field caused by digital radio equipment;
- static magnetic field;
- test procedure for temperature sensor pairs with pockets and without pockets.

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, 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.

## 1 Scope

This European Standard specifies pattern approval tests for  $\text{A}_1$  thermal energy meters  $\text{A}_1$ .  $\text{A}_1$  Thermal energy meters  $\text{A}_1$  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  $\text{A}_1$  thermal energy meter  $\text{A}_1$  indicates the quantity of heat in legal units.

Electrical safety requirements are not covered by this European Standard.

Pressure safety requirements are not covered by this European Standard.

Surface mounted temperature sensors are not covered by this European Standard.

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

## 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.

$\text{A}_1$  EN 1434-1:2015+A1:2018, *Thermal energy meters — Part 1: General requirements*  $\text{A}_1$

EN 55022, *Information technology equipment — Radio disturbance characteristics — Limits and methods of measurement (CISPR 22:2008)*

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

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

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

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

EN 61000-4-2, *Electromagnetic compatibility (EMC) — Part 4-2: Testing and measurement techniques — Electrostatic discharge immunity test (IEC 61000-4-2)*

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

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

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

EN 61000-4-6:2014, *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, *Electromagnetic compatibility (EMC) — Part 4-8: Testing and measurement techniques — Power frequency magnetic field immunity test (IEC 61000-4-8)*



EN 61000-4-11, *Electromagnetic compatibility (EMC) — Part 4-11: Testing and measurement techniques — Voltage dips, short interruptions and voltage variations immunity tests (IEC 61000-4-11)*

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

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in **EN 1434-1:2015+A1:2018** apply.

### 4 General

The procedure shall ascertain that the pattern conforms to the metrological requirements of this European Standard. In addition to the checking of the documentation (Clause 7) and the comparison of the pattern with the metrological requirements of this European Standard, the tests in Clause 6 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 European Standard.

### 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.

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

### 6 Specification of operating conditions

#### 6.1 Rated operating conditions

The rated operating conditions are those given in Table 1.

**Table 1 — Rated operating conditions**

Environmental class	A	B	C
Ambient temperature in °C	+5 to +55	−25 to +55	+5 to +55
Relative humidity in %	< 93		
Mains supply voltage in V	195 V to 253 V		
Mains frequency	$f_{\text{nom}} \pm 2 \%$		
Battery voltage	The voltage of a battery in service under normal conditions		
Remote AC supply voltage	12 V to 36 V		
Remote DC supply voltage	12 V to 42 V		
Local external DC supply voltage	As specified by manufacturer		