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de l'accréditation, de la sécurité et qualité
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ILNAS-EN 1434-2:2015+A1:2018

Thermal energy meters - Part 2: Constructional requirements

Compteurs d'énergie thermique - Partie
2 : Prescriptions de fabrication

Thermische Energiemessgeräte - Teil 2:
Anforderungen an die Konstruktion

11/2018



National Foreword

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ILNAS-EN 1434-2:2015+A1:2018

EUROPEAN STANDARD **EN 1434-2:2015+A1**

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Thermal energy meters - Part 2: Constructional requirements

Compteurs d'énergie thermique - Partie 2 :
Prescriptions de fabrication

Wärmezähler - Teil 2: Anforderungen an die
Konstruktion

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

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European foreword

This document (EN 1434-2:2015+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of an identical text or by endorsement, at the latest by May 2019, and conflicting national standards shall be withdrawn at the latest by May 2019.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 1434-2:2015 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 1434-2, A1 *Thermal energy meters* A1 consists of the following parts:

- *Part 1: General requirements*
- *Part 2: Constructional requirements*
- *Part 3: Data exchange and interfaces¹⁾*
- *Part 4: Pattern approval tests*
- *Part 5: Initial verification tests*
- *Part 6: Installation, commissioning, operational monitoring and maintenance*

In comparison to EN 1434-2:2007, the following changes have been made:

- additional functionalities for smart metering applications are added;
- minimum requirements for test signal output of calculators are added;
- minimum requirements for test data interface of complete A1 thermal energy meters A1 are added;
- new forms of pockets and sensors and parameter setting and adjustment through interface are added.

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⁾ EN 1434-3 is maintained by CEN/TC 294.

1 Scope

This European Standard specifies the constructional requirements for $\square A_1$ thermal energy meters $\square A_1$. $\square A_1$ Thermal energy meters $\square A_1$ 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 $\square A_1$ thermal energy meter $\square A_1$ 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.

EN 1092-1, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 1092-2, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 2: Cast iron flanges*

EN 1092-3, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 3: Copper alloy flanges*

$\square A_1$ EN 1434-1:2015+A1:2018, *Thermal energy meters — Part 1: General requirements* $\square A_1$

EN 1434-3, *Heat Meters — Part 3: Data exchange and interfaces*

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

EN 60947-5-6, *Low-voltage switchgear and controlgear — Part 5-6: Control circuit devices and switching elements — DC interface for proximity sensors and switching amplifiers (NAMUR) (IEC 60947-5-6)*

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1)*

ISO 4903, *Information technology — Data communication — 15-pole DTE/DCE interface connector and contact number assignments*

3 Terms and definitions

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

4 Temperature sensors

4.1 General

The temperature sensor sub-assembly shall consist of platinum resistance temperature sensors selected as matched pairs.

Other types of temperature sensor pairs may be used, where the sub-assembly consists, inseparably, of temperature sensors and calculator.

The maximum admissible working pressure shall be declared by the manufacturer.

Where no dimensional tolerance is specified, the values shall be taken from Table 1.

Table 1 — Tolerances

Dimension mm	0,5 up to 3	over 3 up to 6	over 6 up to 30	over 30 up to 120	over 120 up to 400
Tolerance mm	± 0,2	± 0,3	± 1	± 1,5	± 2,5

4.2 Mechanical design

4.2.1 General

For pipe sizes up to and including DN 250, 3 different temperature sensor types are standardized:

- direct mounted short probes - Type DS;
- direct mounted long probes - Type DL;
- pocket mounted long probes - Type PL.

Types PL and DL can be either head probes or have permanently connected signal leads. Type DS shall have permanently connected signal leads only.

4.2.2 Materials of temperature probe sheath and pocket

The temperature pocket and the protective sheath of direct mounted probes shall be of a material that is adequately strong and resistant to corrosion and has the requisite thermal conductivity.

A suitable material has been shown to be EN 10088-3 — X6 Cr Ni Mo Ti 17 12 2.

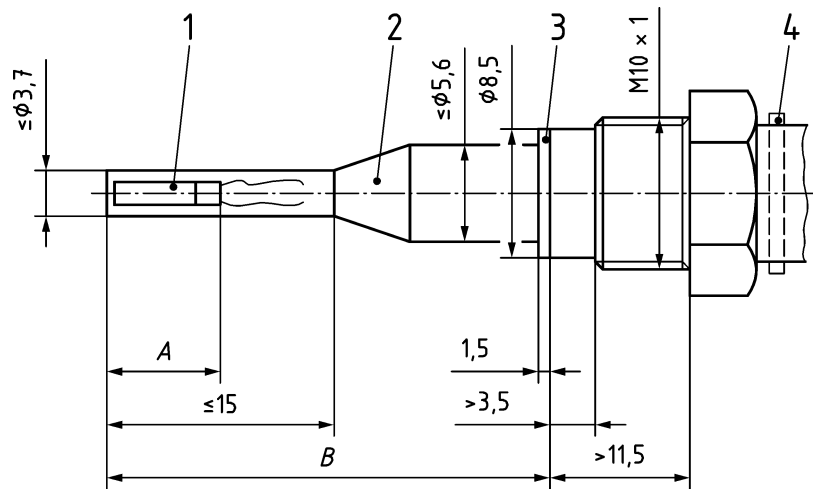
4.2.3 Dimensions of direct mounted short probes - Type DS

The dimensions shall be as given in Figure 1.

Further non-normative information is given in Annex A, Figure A.1.

The qualifying immersion depth shall be 20 mm – or less if so specified by the manufacturer.

Dimensions in millimetres

**Key**

- 1 temperature sensing element
- 2 protective sheath
- 3 sealing ring
- 4 ejection device

A: < 15 mm

B: = 27,5 mm or = 38 mm or 60 mm

Figure 1 — Temperature probes type DS**4.2.4 Dimensions of direct mounted long probes - Type DL**

The dimensions shall be as given in Figure 2.

Further information is given in Annex A, Figures A.2 and A.3.

The qualifying immersion depth shall be 50 % of the length B – or less if so specified by the manufacturer.