



SLOVENSKI STANDARD
SIST EN 1434-1:1997/A1:2002
01-november-2002

Toplotni števci - 1. del: Splošne zahteve

Heat meters - Part 1: General requirements

Wärmezähler - Teil 1: Allgemeine Anforderungen

Compteurs d'énergie thermique - Partie 1: Exigences générales

Ta slovenski standard je istoveten z: EN 1434-1:1997/A1:2002

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ICS:

17.200.10 Toplota. Kalorimetrija Heat. Calorimetry

SIST EN 1434-1:1997/A1:2002 **en**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1434-1:1997/A1

September 2002

ICS 17.200.10

English version

Heat meters - Part 1: General requirements

Compteurs d'énergie thermique - Partie 1: Prescriptions
générales

Wärmezähler - Teil 1: Allgemeine Anforderungen

This amendment A1 modifies the European Standard EN 1434-1:1997; it was approved by CEN on 1 July 2002.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This amendment 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This document (EN 1434-1:1997/A1:2002) has been prepared by Technical Committee CEN/TC 176 "Heat meters", the secretariat of which is held by DS.

This Amendment to the 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of an identical text or by endorsement, at the latest by March 2003, and conflicting national standards shall be withdrawn at the latest by March 2003.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this Amendment to the European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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EN 1434-1:1997/A1:2002 (E)**Introduction**

This amendment to EN 1434-1 is divided into 2 main areas. The first being the new clauses – i.e. clauses which are not present in the 1997 version. The second being the amended clauses, where the entire clause – not only the changes – is presented.

It has been prepared in such a way that it can be cut and pasted into the old version.

A new descriptor has been added: cooling meters.

1 New clauses**4.18 Cooling meter**

A heat meter designed for cooling applications at low temperatures, normally covering the temperature range 2 °C to 30 °C and $\Delta\theta$ up to 20 K.

4.19 Flow direction

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The flow direction is described by the terms flow and return. Flow meaning the forward direction to the system and return meaning output from the system. (Flow/return means high/low temperature for a heat meter but low/high temperature for a cooling meter).

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4.20 Electrical pulse

An electrical signal (voltage, current or resistance), that departs from an initial level for a limited duration of time and ultimately returns to the original level.

4.21 Pulse output and input device

Two types of pulse devices are defined and specified:

- a) the pulse output device;
- b) the pulse input device.

Both devices are functional parts of flow sensor, calculator or auxiliary devices such as remote displays or input devices of control systems.

4.22 Maximum admissible temperature

The maximum temperature of the heat conveying liquid the meter can withstand in combination with the maximum admissible working pressure and the permanent flow rate for short periods of time (< 200 hours in the total life time of the unit) without a significant fault after the exposure to this maximum admissible temperature.

4.23 Long life flow sensor

A flow sensor designed to have a longer lifetime than a normal flow sensor which typically lasts for 5 years.

2 Amended clauses

1 Scope

This European Standard applies to heat meters, that is to instruments intended for measuring the heat which, in a heat-exchange circuit, is absorbed or given up by a liquid called the heat-conveying liquid. The heat meter indicates the quantity of heat in legal units.

Electrical safety requirements are not covered by this standard.

Pressure safety requirements are not covered by this standard.

Surface mounted sensors are not covered by this standard.

Part 1 specifies general requirements.

NEW TEXT

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6.1.2 The casing of a heat meter shall protect the interior parts against water and dust ingress. The minimum forms of enclosure protection shall be IP54 for heating applications and IP65 for cooling applications for equipment that is to be installed into pipework and IP52 for other enclosures, all in accordance with IEC 1010-1.

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NEW TEXT

6.3.2 Heat meters shall be so designed, that, in the event of a failure or interruption of the external power supply (mains or external DC), the meter indication of energy remains accessible for a minimum of one year. The supplier shall specify how the indication of energy is handled in case of a failure or interruption in the external power supply (mains or external DC).

NOTE The energy indication can either be stored in a permanent way (memory) at certain intervals, or it can be stored through a controlled shut-down process (powered from an internal source).

NEW TEXT

6.4 Protection against fraud

Heat meters shall have protective devices which can be sealed in such a way, that after sealing, both before and after the heat meter has been correctly installed, there is no possibility of dismantling, removing, or altering the heat meter or its adjustment devices without evident damage to the device(s) or seal(s).

Means shall also be provided for meters with external power supply, either to give protection against the meter being disconnected from the power supply, or to make it evident, that this has taken place. This requirement does not apply to meters with external power supply with automatic switchover to internal battery supply.

NOTE Embodiment of an hour's run counter in the meter casing will make it evident if the power supply has been disconnected.

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NEW TEXT

6.5 Mains voltage

6.5.1 AC mains operated heat meters or subassemblies shall have a rated voltage, U_n , of 230 V $\begin{matrix} +10\% \\ -15\% \end{matrix}$.

6.5.2 Remote DC or AC operated heat meters or subassemblies shall have a rated voltage U_n of 24 V. The tolerance for DC shall be 12 V to 42 V and for AC $\pm 50\%$.

If the remote supply lines are also used for data transmission (e.g. M-bus, see EN 1434-3) these values shall be maintained during any data transmission.

6.5.3 Local external DC operated meters or subassemblies shall preferably have a rated voltage U_n of 6 V, 3,6 V or 3 V.

Table 1 - Standardized levels for external powering

Nominal voltage	6 V	3,6 V	3 V
Max. average current	100 mA	10/20/50/100/200 μ A	10/20/50/100/200 μ A
Tolerance at average current	5,4 to 6,6 V	3,4 to 3,8 V	2,8 to 3,3 V
Peak current	100 mA	10 mA	5 mA
Min. voltage at peak current	5,4 V	3,2 V	2,7 V

NEW TEXT

7.1 Temperature difference

The ratio of the upper and lower limits of the temperature difference shall not be less than 10, with the exception of heat meters intended for cooling circuits. The lower limit shall be stated by the supplier to be either 1, 2, 3, 5 or 10 K. The preferred lower limit is 3 K for heating applications.

NOTE For temperature difference values below 3 K the temperature test equipment should be of the highest precision.

NEW TEXT

9.2.1 Maximum permissible relative errors of complete heat meters

The MPE of a complete heat meter is the arithmetic sum of the MPE's of the subassemblies as defined in 9.2.2.

NEW TEXT

9.3 Application of maximum permissible errors

A supplier of a combination of subassemblies or of a complete instrument, consisting of legally inseparable subassemblies shall declare how the metrological behavior of each subassembly guarantees the MPE of the combination respectively of the complete instrument.

9.3.3 DELETED

NEW TEXT

11.1 Flow sensor

- Supplier
- Type identification
- Accuracy class
- Limits of flow-rate (q_i , q_p and q_s)
- Maximum admissible working pressure (PN-class)
- Maximum pressure loss (pressure loss at q_p)
- Maximum admissible temperature
- Limits of temperature (θ_{min} and θ_{max})
- Nominal meter factor (litres/pulse or corresponding factor for normal and test output)
- Installation requirements including installation pipe lengths
- Orientation limitations for installing the meter
- Physical dimensions (length, height, width, weight, thread/flange specification)
- Pulse output device class (see 7.1.2 of EN 1434-2:1997/prA1:2002)
- Output signal for testing (type/levels)
- Performance at flow-rates greater than q_s
- Low flow threshold value
- Liquid if other than water
- Response time - for fast response meters

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