



# SLOVENSKI STANDARD

## SIST EN 1434-6:1997

01-junij-1997

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### Toplotni števci - 6. del: Vgradnja, zagon, nadzor in vzdrževanje

Heat meters - Part 6: Installation, commissioning, operational monitoring and maintenance

Wärmezähler - Teil 6: Einbau, Inbetriebnahme, Überwachung und Wartung

Compteurs d'énergie thermique - Partie 6: Installation, mise en service, surveillance et maintenance

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Ta slovenski standard je istoveten z: **EN 1434-6:1997**

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#### **ICS:**

17.200.10      Toplota. Kalorimetrija      Heat. Calorimetry

**SIST EN 1434-6:1997**

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EUROPEAN STANDARD

EN 1434-6

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 1997

ICS

Descriptors: metrology, measuring instruments, thermal energy meters, installation, routine verification, maintenance

English version

## Heat meters - Part 6: Installation, commissioning, operational monitoring and maintenance

Compteurs d'énergie thermique - Partie 6:  
Installation, mise en service, surveillance et  
maintenance

Wärmezähler - Teil 6: Einbau, Inbetriebnahme,  
Überwachung und Wartung

This European Standard was approved by CEN on 1997-01-27. 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 Central Secretariat or to any CEN member.

The European Standards exist 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 Central Secretariat has the same status as the official versions.

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

**CEN**

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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## Foreword

This draft European Standard has been prepared by Technical Committee CEN/TC 176 "Heat meters", the secretariat of which is held by DS.

The other parts are:

Part 1 - General requirements

Part 2 - Constructional requirements

Part 3 - Data exchange and interfaces

Part 4 - Pattern approval tests

Part 5 - Initial verification tests

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 August 1997, and conflicting national standards shall be withdrawn at the latest by August 1997.

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

## 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 heat in legal units.

Electrical safety requirements for the meter itself are not covered by this standard.

This Part of this European Standard specifies the minimum requirements for the documentation and for design, installation and commissioning of installations including heat meters, in order to ensure that the heat meter operates within its specified working range.

## 2 Normative references

EN 1434-1:1997

Heat meters - Part 1: General requirements

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## 3 Definitions

For the purpose of this standard, the following definitions and symbols and those in clause 4 of EN 1434-1:1997 apply.

### 3.1 heating system

The heating installation of the dwelling or premises, including the exchange circuit, the heat meter, the associated fittings and the electrical equipment.

NOTE: The heating system typically commences and finishes at the two connections to the heat mains.

### 3.2 heat mains

The heat suppliers distribution pipes to which the consumer's installation is connected.

### 3.3 flow and return limbs

The pipes connecting the heating system to the heat mains.

### 3.4 primary circuit

A circuit hydraulically connected to the heat mains.

### 3.5 secondary circuit

A circuit hydraulically separated from the primary circuit.

### 3.6 competent authority

The persons or organizations charged with the responsibility for the heat meter and/or its installation.

## 4 Requirements

This clause deals with the minimum requirements for design, installation and commissioning of installations with heat meters.

### 4.1 Design requirements

When designing the heating system, the heat meter supplier's installation instructions shall be followed.

**NOTE:** For DN 25 and smaller, it is possible to use short probes. To achieve good temperature sensitivity, probes should be installed without temperature pockets. Temperature pockets should only be used when required for safety reasons.

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### 4.2 Installation requirements

The heat meter shall be installed in accordance with the supplier's instructions.

Before installation, the circuit into which the flow sensor is to be installed shall be thoroughly flushed to remove debris. The strainer, where fitted, shall be cleaned.

The heat meter shall be protected from the risk of damage by shock and vibration induced by the surroundings at the place of installation.

The heat meter shall not be subjected to undue stresses caused by pipes and fittings.

The pipe lines of the heating system up and downstream of the heat meter shall be adequately anchored.

Heat meters designed to operate from an AC mains supply shall be wired in accordance with wiring regulations applicable.

The AC-mains power supply shall be secured against accidental interruption. However, circuit protection shall be incorporated according to the state of the art, to safely disconnect the device when electrical problems occurs.

Signal leads shall not be laid directly alongside mains supply cables and shall be independently supported. The separation between signal leads and mains supply cables shall not be less than 50 mm.

Each signal lead between temperature sensors and calculator shall be one continuous length without joints.

Signal circuits between parts of a heat meter shall be so installed as to deter unauthorized interference and disconnection.

Precautions shall be taken to prevent damage to the heat meter by unfavorable hydraulic conditions (cavitation, surging, water hammer).

When the installation of the heat meters is complete, it shall be inspected and approved by representatives of the competent authority in accordance with established procedures.

#### 4.3 Heat meter commissioning

The responsibility for the carrying out of each of the inspection phases is not necessarily restricted to one person or one authority, but however arranged, the following points shall be addressed and responsibilities defined.

##### 4.3.1 Certification check

Before commissioning commences it shall be ascertained firstly, that the correct heat meter has been installed by comparing the heat meter supplier's type and size designation against the system specification. Secondly, it shall be checked that the heat meter, if a complete instrument, bears the correct pattern approval mark and, if a combined instrument, that each of the meters sub-assemblies bear the pattern approval marks stipulated in the pattern approval document for the heat meter installed.

##### 4.3.2 Installation check

The following points shall be checked:

- Is the flow sensor mounted in the correct position and with the correct flow direction?  
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- Are the temperature sensors correctly installed?  
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- Is the heat meter installed at a safe distance from sources of electromagnetic interference (switchgear, electric motors, fluorescent lights)?
- Where called for, has the heat meter been correctly earthed?
- Are the accessories correctly installed according to the installation instructions of the supplier and operator?
- Is the heat meter seen to be functioning when the heating system starts operating?

### **4.3.3 Heat meter security**

At the completion of commissioning, the heat meter's protective devices shall be sealed by representatives of the competent authority. For any subsequent adjustment of the meter or for replacement of sub-assemblies, batteries, etc., it will thus be necessary to break one or more seals.

Seals shall be renewed in accordance with appropriate regulations.

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## Annex A (informative)

### Heat meter installation

#### A.1 Introduction

This annex gives recommendations for the installation of heat meters into the heating system of which they form a component.

It includes reference to the quality of the heat conveying liquid and contains recommendations of direct concern to the distributor of heat, the building owner and the final consumer.

#### A.2 Criteria for the selection of a heat meter

The type, size, accuracy and environmental class of a heat meter is determined according to the operating and environmental conditions of the installation, taking into account particularly the following:

- a) Pressure of the heat conveying liquid;
- b) Physical and chemical characteristics of the heat conveying liquid;
- c) Acceptable pressure loss across the heat meter;
- d) Accuracy requirements;
- e) Temperature ranges in flow and return limbs to the heating system and the system temperature difference;
- f) Expected maximum and minimum flow rate of the heat conveying liquid;
- g) Required thermal power of the heating system;
- h) Nature of the flow rate through the heat meter, whether constant, variable or intermittent;
- i) Requirements concerning the electrical supply to the heat meter;
- j) Special requirements of the space around the heat meter for ease of reading, security installation and servicing of the meter;
- k) Requirements for connections, i.e. flanges, fittings and meter dimensions.

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#### A.3 Quality of the heat conveying liquid

##### A.3.1 General

Heat meters in general are constructed to withstand variations in the chemical constituents and the acidity or alkalinity of the heat conveying liquid. However, the presence of solids in suspension and their deposition onto the surfaces of the passages of the heat meter or their effect on the moving parts of a mechanical flow sensor causes degradation of the performance with time.

Solids may be present as products of corrosion from the materials of which the heating system and the supply mains are constructed. They may also be created, in the case of hot water systems, within the circuit by the action of heat on the chemicals contained in the water.