

Heat meters —

Part 1: General requirements

The European Standard EN 1434-1:1997, with the incorporation of amendment A1:2002, has the status of a British Standard

ICS 17.200.10

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee CPI/30, Measurement of fluid flow in closed conduits, to Subcommittee CPI/30/7, Volume flowrate methods, upon which the following bodies were represented:

- British Gas
- GAMBICA
- Petrol Pump Manufacturers' Association
- Society of British Gas Industries
- Water Services Association of England and Wales

The following bodies were also represented in the drafting of the standard, through a panel:

- Building Services Research Information Association
- Combined Heat and Power Association
- Department of the Environment (Building Research Establishment)
- Department of Trade and Industry (National Weights and Measures Laboratory)
- National Engineering Laboratory

This British Standard, having been prepared under the direction of the Sector Board for Materials and Chemicals, was published under the authority of the Standards Board and comes into effect on 15 September 1997

© BSI 5 March 2003

The following BSI references relate to the work on this standard:
Committee reference CPI/30/7
Draft for comment 93/204824 DC

ISBN 0 580 27950 2

Amendments issued since publication

Amd. No.	Date	Comments
14221	5 March 2003	See national foreword

Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
Foreword	2
Text of EN 1434-1	3

National foreword

This part of BS EN 1434 has been prepared by Subcommittee CPI/30/7, and is the English language version of EN 1434-1:1997, including amendment A1:2002, published by the European Committee for Standardization (CEN). The six parts of BS EN 1434 supersede BS 7234-1, BS 7234-2 and BS 7234-3 which are withdrawn.

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

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 16, an inside back cover and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

ICS 17.200.10

Descriptors: Metrology, measuring instruments, thermal energy meters, equipment specifications, definitions, symbols, operating requirements, characteristics, performance evaluation, fidelity, classifications, computation, cooling meters

English version

Heat meters — Part 1: General requirements

(including amendment A1:2002)

Compteurs d'énergie thermique —
Partie 1: Prescriptions générales
(inclut l'amendement A1:2002)

Wärmezähler —
Teil 1: Allgemeine Anforderungen
(enthält Änderung A1:2002)

This European Standard was approved by CEN on 1997-01-27 and amendment A1 was approved by CEN on 2002-07-01. 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.

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 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
Comite Europeen de Normalisation
Europäisches Komitee für Normung

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

© 1997 Copyright reserved to CEN members

Ref. No.  EN 1434-1:1997 + A1:2002 E
Documents
Document Sharing Hub

Foreword

This 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 2: Constructional requirements;*
- *Part 3: Data exchange and interfaces;*
- *Part 4: Pattern approval tests;*
- *Part 5: Initial verification tests;*
- *Part 6: Heat meter installation, commissioning, operational monitoring and maintenance.*

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.

Foreword to amendment A1

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 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.

Contents

	Page
Foreword	2
1 Scope	3
2 Normative references	3
3 Types of instrument	3
4 Definitions and symbols	4
5 Rated operating conditions	6
6 Technical characteristics	7
7 Specified working range	8
8 Heat transmission formula	9
9 Metrological characteristics (maximum permissible errors, MPE)	9
10 Environmental classification	11
11 Heat meter specification	11
12 Information to be delivered with the heat meters or sub-assemblies	14
Annex A (normative) Heat coefficient equations	15
Annex B <i>deleted</i>	16
Annex C <i>deleted</i>	16

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.

A1 Pressure safety requirements are not covered by this standard.

Surface mounted sensors are not covered by this standard. **A1**

Part 1 specifies general requirements.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 1434-2:1997, *Heat meters — Part 2: Constructional requirements*.

EN 60751, *Industrial platinum resistance thermometer sensors*.
(IEC 751:1983)

IEC 10101, *Safety requirements for electrical equipment for measurement, control and laboratory use — Part 1: General requirements*.

ISO 7268, *Pipe components — Definition of nominal pressure*.

3 Types of instrument

For the purpose of this standard, heat meters are defined either as complete instruments or as combined instruments.

3.1 Complete instrument

A heat meter which does not have separable sub-assemblies as defined in 3.4.

3.2 Combined instrument

A heat meter which has separable sub-assemblies as defined in 3.4.

3.3 Hybrid instrument (often called a “compact” instrument)

A heat meter which for the purpose of pattern approval and verification, can be treated as a combined instrument as defined in 3.2. However, after verification, its sub-assemblies shall be treated as inseparable.

3.4 Sub-assemblies of a heat meter, which is a combined instrument

The flow sensor, the temperature sensor pair and the calculator or a combination of these.

3.4.1 Flow sensor

A sub-assembly through which the heat-conveying liquid flows, at either the flow or return of a heat-exchange circuit, and which emits a signal, which is a function of the volume or the mass or the volumetric or mass flow-rate.

3.4.2 Temperature sensor pair

A sub-assembly (for mounting with or without pockets), which senses the temperatures of the heat-conveying liquid at the flow and return of a heat-exchange circuit.

3.4.3 Calculator

A sub-assembly which receives signals from the flow sensor and the temperature sensors and calculates and indicates the quantity of heat exchanged.