Heat cost allocators for the determination of the consumption of room heating radiators - Appliances with electrical energy supply

This document is a preview generated by EVS

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 834:2013 sisaldab Euroopa standardi EN 834:2013 ingliskeelset teksti.	This Estonian standard EVS-EN 834:2013 consists of the English text of the European standard EN 834:2013.
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 07.08.2013.	Date of Availability of the European standard is 07.08.2013.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 91.140.10

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Aru 10, 10317 Tallinn, Eesti; www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:
Aru 10, 10317 Tallinn, Estonia; www.evs.ee; phone 605 5050; e-mail info@evs.ee

This document is a preview generated by EVS

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 834

August 2013

ICS 91.140.10

Supersedes EN 834:1994

English Version

Heat cost allocators for the determination of the consumption of room heating radiators - Appliances with electrical energy supply

Répartiteurs de frais de chauffage pour déterminer la consommation des corps de chauffe - Appareils dotés d'une alimentation en énergie électrique

Heizkostenverteiler für die Verbrauchserfassung von Raumheizflächen - Geräte mit elektrischer Energieversorgung

This European Standard was approved by CEN on 28 December 2012.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

© 2013 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 834:2013: E

This document is a preview generated by EVS

This document is a preview generated by EVS

Contents

Page

Foreword 4

Introduction 5

1 Scope 5

2 Normative references 6

3 Terms and definitions 6

4 Functional principle and measurement methods 11

5 General specifications 12
5.1 Base condition 12
5.2 c-value 13
5.3 Rating factors 13
5.4 Calendar function 14

6 Requirements for heat cost allocators 15
6.1 Requirements concerning temperature stress 15
6.2 Storage temperature 15
6.3 Start of counting 15
6.4 Idle counting rate 15
6.5 Temperature sensors 15
6.6 Calculator/central processing unit 16
6.7 Auxiliary power supply 16
6.8 Overflow of the display 16
6.9 Display resolution 16
6.10 Functional check 16
6.11 Limits of relative display deviation 17
6.12 Ageing 17
6.13 Electrical, electrostatic and magnetic influences 17
6.14 Thermal impact on heat cost allocators operating in accordance with the single-sensor measurement method 17
6.15 Thermal impact on heat cost allocators operating in accordance with the two-sensor measurement method 17
6.16 Thermal impact on other devices or components 18
6.17 Impact on transmission systems 18
6.18 Sealing 18
6.19 Calendar function 18
6.20 Taking into account operating conditions 18

7 Requirements for use and installation 19
7.1 Temperature limits 19
7.2 Attachment of the sensors 19
7.3 Attachment position of the sensors 20
7.4 Connecting cable installation 20
7.5 Uniformity of heat cost allocators 20

8 Rating requirements 21
8.1 Rating factor K_Q 21
8.2 Rating factor K_C 21
8.3 Rating factor K_T 21
8.4 Resulting rating factor K 21
8.5 c-value 21

9 Requirements for maintenance and reading 22
9.1 Visual reading 22
9.2 Close-range reading 22
9.3 Remote reading 22

10 Testing 22
10.1 General 22
10.2 Test documents 23
10.3 Test report 23
10.4 Test protocols 23

11 Test procedures 23
11.1 Construction test 23
11.2 Sealing test 23
11.3 Temperature durability test 23
11.4 Test for compliance with the limits of the relative display deviation 24
11.5 Ageing resistance test 24
11.6 Test of the start of counting at normal operation and also, for heat cost allocators with room temperature sensors, at operation with thermal impact 24
11.7 Test of the idle counting rate 25
11.8 Test of the counting rate in the case of thermal impact 25
11.9 Test for external influences 26
11.10 Test of c-values, procedure 26
11.11 Test of c-values, scope of testing 26
11.12 Test of rating factor K_Q 26
11.13 Test of rating factor K_C 27

12 Marking 27

Annex A (informative) **Information and recommendations** 28
A.1 General 28
A.2 Heating systems 28
A.3 Recommended field of application 28
A.4 Heat emission not controllable by the consumer 29
A.5 Additional corrections 29
A.6 Documentation of the relationship between the counting rate and the thermal output 30

Bibliography 32

This document is a preview generated by EVS

Foreword

This document (EN 834:2013) has been prepared by Technical Committee CEN/TC 171 “Heat cost allocation”, the secretariat of which is held by DIN.

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 February 2014, and conflicting national standards shall be withdrawn at the latest by February 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and/or CENELEC shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 834:1994

Amendments

Compared to EN 834:1994, the following changes were made:

a) Definitions, requirements and test procedures have been refined and expanded,

b) Introduction of new values for the lower temperature limit,

c) Uniform definition for the mounting location of heat cost allocators on the radiator.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

This document is a preview generated by EVS

Introduction

This document deals with heat cost allocators with electrical power supply used for establishing the consumption value of room heating surfaces. It specifies the minimum requirements for the construction, materials, production, installation, function and evaluation of the displayed readings established by these measuring devices.

This document describes test procedures to establish compliance with the stated requirements and specifies instructions for their nature and scope.

1 Scope

NOTE See Clause 3 for a definition of the terms used below.

This European standard applies to heat cost allocators which are used to capture the proportionate thermal output of radiators in consumer units.

If an account unit comprises consumer units of different types (e.g. technically different types of heating systems or differences due to the consumer behaviour, e.g. industrial plants as opposed to private apartments), it could be necessary to divide this account unit into groups of users.

Heat cost allocators enable the determination of the heat consumption only of each radiator in a consumer unit as a share of the total heat consumption of the account unit or user group (see Clause 4); it is therefore necessary to determine this total heat consumption either by measuring the consumed fuel quantity or the amount of heat delivered (the latter by means of a heat meter, for example).

For the appropriate use of the heat cost allocators in accordance with this standard, the heating system needs to:

— correspond to the state of the art at the time of installation of the heat cost allocators;

— be operated in accordance with the state of the art (see A.2).

This standard specifies that heat cost allocators shall not be used for heating systems where the temperature of the heating system falls below or exceeds the temperature limits of the heat cost allocators, where the rating factor for the thermal output, K_Q, cannot be clearly specified or where the heating surface is inaccessible. This applies usually to the following heating systems:

— floor heating;

— radiant ceiling heating;

— flap-controlled radiators;

— radiators with ventilators;

— fan-assisted air heaters;

— heating systems with steam-operated radiators.

This document is a preview generated by EVS

2 Normative references

Not applicable.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
heat cost allocator
instrument for registration of the proportionate thermal output of radiators in consumer units

3.2
heat cost allocation system
overall system, as verified by an inspection authority, consisting of a heat cost allocator, installation equipment, installation instructions, rating system, existing rating factors, maintenance and reading instructions

3.3
measurement method
physical principle of measurement in combination with fundamental properties of the appliance type

Note 1 to the term: For heat cost allocators in accordance with this standard, the fundamental property of the appliance type characterizing the method is the number of measuring sensors for registering the relevant temperatures. The physical principle of measurement which is applied preferably is the temperature dependency of electrical components.

3.4
consumer unit
dwellings, office, business or industrial premises in which the heat is supplied by a common central heating system or by a common district heating connection

3.5
account unit
total of all consumer units

3.6
user group
group of consumer units within one account unit, each with a uniform heating system and comparable type of use

3.7
mean heating medium temperature
t_m
mean value of the flow and return temperatures of the heating medium

Note 1 to the term: In this standard, t_m is determined by adding up the logarithmic heating medium excess temperature, Δt_{ln}, (formula (2), see 5.2) and the reference air temperature, t_L.

3.8
heating medium excess temperature
Δt
temperature difference between the mean heating medium temperature and the reference air temperature

Note 1 to the term: In this standard, the heating medium excess temperature (abbreviated as "excess temperature") is determined as the logarithmic excess temperature Δt_{ln} in accordance with formula (2) (see 5.2).

This document is a preview generated by EVS