SLOVENSKI STANDARD

SIST EN 60379:2005

januar 2005

Metode za merjenje električnih lastnosti akumulacijskih grelnikov vode za uporabo v gospodinjstvu

(istoveten EN 60379:2004)

Methods for measuring the performance of electric storage water-heaters for household purposes

ICS 91.140.65

Referenčna številka
SIST EN 60379:2005(en)

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60379

February 2004

ICS 91.140.65

Supersedes HD 500 S1:1988

English version

Methods for measuring the performance of electric storage water-heaters for household purposes
(IEC 60379:1987, modified)

Méthodes de mesure de l'aptitude à la fonction des chauffe-eau électriques à accumulation pour usages domestiques
(CEI 60379:1987, modifiée)

Verfahren zum Messen der Gebrauchseigenschaften von elektrischen Warmwasserspeichern für den Hausgebrauch
(IEC 60379:1987, modifiziert)

This European Standard was approved by CENELEC on 2003-11-01. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 60379:2004 E

Foreword

The text of the International Standard IEC 60379:1987, prepared by SC 59C, Heating appliances, of IEC TC 59, Performance of household electrical appliances, together with the common modifications prepared by the Technical Committee CENELEC TC 59X, Consumer information related to household electrical appliances, was submitted to the formal vote and was approved by CENELEC as EN 60379 on 2003-11-01.

This European Standard supersedes HD 500 S1:1988. It only modifies some clauses for clarification, for better reproducibility and for better information to the consumer.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2004-11-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2006-11-01

This European Standard, based on HD 500 S1:1988, has been prepared by the Technical Committee CENELEC TC 59X due to the draft implementing Directive of the European Commission and the European Free Trade Association on the indication of the energy consumption of electric storage water heaters. According to this draft implementing Directive the energy consumption to be declared in kWh/year refers only to standing loss without water withdrawal and the classification of the energy efficiency is derived from this standing loss.

Clauses and subclauses which are additional to those in IEC 60379 are prefixed "Z".

Technical differences to HD 500 S1:1988 are

a) definition of the rated capacity (in order to clarify the term “storage temperature” used in the draft implementing Directive),

b) general conditions for measurement,

c) verification of the rated capacity,

d) standing loss at 24 h,

e) tolerances and control procedures,

f) no declaration to provide,

g) accuracy of instrumentation,

h) tolerances,

i) mixed water quantity at 40 °C.

Endorsement notice

The text of the International Standard IEC 60379:1987 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

1 Scope

Add a new paragraph:

The common modifications supplement, as far as necessary, test methods which shall be applied in accordance with a Commission's Directive, which is based on standing loss only, implementing Council Directive 92/75/EEC with regard to energy labelling of household electric storage water heaters. Clauses defining permitted tolerances to values declared by the manufacturer and control procedures for checking these declared values are added.

5 Terms relating to characteristics of appliances

5.1 Rated capacity

Change headline to "**Capacity".**

Change the content of this subclause to:

5.1.Z1 Rated capacity

The storage capacity assigned to the water heater by the manufacturer and marked on it.

5.1.Z2 Actual capacity

The water capacity determined by measurement.

Add a new subclause after 5.4:

5.Z1 Mixed water quantity at 40 °C

Quantity of water at 40 °C, which has the same heat content (enthalpy) as the hot water which is delivered above 40 °C at the output of the water heater.

6 Symbols

Add the following symbols

C_R = rated capacity 5.1.Z1
C_A = actual capacity 5.1.Z2
t_{Ai} = cut-out time 15
t_{Ei} = cut-in time 15
D = duration period for the tests 15
Θ_{A1} = switching-off temperature of the thermostat at the beginning of the test 15
Θ_{An} = switching-off temperature of the thermostat at the end of the test..... 15
C_m = mixed water output at 40 °C 17

7 List of measurements

Add the following dash:

– stored water temperature .... Clause 10

8 General conditions for measurements

Replace the paragraph after the second dash by:

The ambient temperature is calculated from measurements at a single point in front of the centre of the water heater halfway between the water heater and the wall, and at half the height of the water heater.

Delete the fourth dash and its subsequent paragraph.

Delete the fifth dash.

Add two new dashes:

– the supply voltage shall be maintained at 230 V with a relative tolerance of 1 %.

– the supply frequency shall be 50 Hz with a relative tolerance of 1 %.

Add a new clause after Clause 12:

Z1 Accuracy of instrumentation

Instruments having the following or better accuracy shall be used for the tests:

Mass
Instruments shall be accurate to ± 1 %.

Ambient temperature
Instruments shall be accurate to ± 1 K.

Water temperature
Instruments shall have a resolution of at least 0,2 K and an accuracy of ± 1 K including non-linearity error, at the nominal temperature measured.

Water volume
Instruments shall be accurate to ± 1 %.

Water flow rate
Instruments shall be accurate to ± 5 %.

Electrical power
Instruments shall have less than 10 W zero point inaccuracy, and provide less than 2 % inaccuracy at the highest nominal value according to rated input power data specified by the manufacturer.

Time
Instruments shall be accurate to ± 1 %.

13 Verification of the rated capacity

Change headline to “**Verification of the actual capacity”.**

Replace the first sentence of the first paragraph by the following two sentences:

The heating of the storage water heater is switched off. Then the storage water heater is filled with cold water in accordance with the manufacturer’s instruction and the water supply is cut off.

14 Standing loss per 24 h

Replace the second formula by:

$$\Theta_M = \frac{1}{D}\sum_i \frac{\Theta_{Ai} + \Theta_{Ei}}{2}(t_{Ai} - t_{Ei})$$

Delete the sentence after the second formula.

Replace the last formula by:

$$Q_{pr} = \frac{45}{\Theta_M - \Theta_{amb}} \cdot E + \frac{1{,}16 \cdot C_A \bullet (\Theta_{A1} - \Theta_{An})}{1\,000}$$

Replace the last sentence by the following two sentences:

Q_{pr} is expressed in kWh per 24 h related to a temperature rise of 45 K.

It shall be given with two decimals for values below 1 kWh per 24 h and with one decimal for values equal or exceeding 1 kWh per 24 h.

17 Mixing factor

Change headline to **“Mixing factor, mixed water output at 40 °C”**

Add at the end of Clause 17:

The mixed water output at 40 °C is calculated as follows:

$$C_m = C_R \cdot \frac{\Theta_P - 15}{25}$$

Add a new clause after Clause 19:

Z2 Tolerances and control procedure

Z2.1 Rated capacity

The value measured according to Clause 13 shall not be less than the rated capacity.

Z2.2 Standing loss

The measurement may be performed with a specific regulation in order to obtain a temperature rise of (45 ± 3) K.

The standing loss measured according to Clause 14 shall not be greater than the value declared by the manufacturer plus 15 %.

If the result of the test carried out on the first appliance is greater than the declared value plus 15 % the test shall be carried out on a further three appliances.

The arithmetic mean of the values of these three appliances shall not be greater than the declared value plus 10 %.

Z2.3 Hot water output

The value measured according to Clause 15 shall not be lower than the hot water output declared by the manufacturer.

Figures

Figure 2: **Delete** Figure 2.

Figure 4: The marking of Θ_{A1} **to be shifted** one curve-peak to the left (just before Θ_{E1}) where main curve cuts the first dotted line.

Replace "F_m (Clause 18)" by "F_m , C_m (Clause 17)".

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
60379

Troisième édition
Third edition
1987-09

Méthodes de mesure de l'aptitude à la fonction des chauffe-eau électriques à accumulation pour usages domestiques

Methods for measuring the performance of electric storage water-heaters for household purposes

International Electrotechnical Commission
3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300
e-mail: inmail@iec.ch
IEC web site http: //www.iec.ch

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE
L

Pour prix, voir catalogue en vigueur
For price, see current catalogue

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

METHODS FOR MEASURING THE PERFORMANCE OF ELECTRIC STORAGE WATER-HEATERS FOR HOUSEHOLD PURPOSES

FOREWORD

1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.

3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This standard has been prepared by Sub-Committee 59C: Heating appliances, of IEC Technical Committee No. 59: Performance of household electrical appliances.

It forms the third edition of IEC Publication 379 and replaces the second edition (1982).

The text of this third edition is based on the second edition and the following documents:

Six Months' Rule	Report on Voting	Two Months' Rule	Report on Voting
59C(CO)31 59C(CO)33	59C(CO)34 59C(CO)37	59C(CO)35	59C(CO)36

Full information on the voting for approval of this standard can be found in the Reports on Voting indicated in the table above.