
Safety of household and similar electrical appliances - Part 2: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers (IEC 335-2-40:1992, modified)

Safety of household and similar electrical appliances -- Part 2: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke -- Teil 2: Besondere Anforderungen für elektrisch betriebene Wärmepumpen, Klimageräte und Raumluft-Entfeuchter

SÉCURITÉ DES APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES -- Partie 2: Règles particulières pour les pompes à chaleur électriques, les climatiseurs et les déshumidificateurs

Ta slovenski standard je istoveten z: EN 60335-2-40:1993

ICS:

23.120	Zračniki. Vetrniki. Klimatske naprave	Ventilators. Fans. Air-conditioners
27.080	Toplotne črpalke	Heat pumps

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EUROPEAN STANDARD
 NORME EUROPÉENNE
 EUROPÄISCHE NORM

EN 60335-2-40

August 1993

UDC 64.06-83:621.577:614.8

Descriptors: Household electrical appliances, heat pumps, air conditioners, safety requirements, protection against electric shock, fire protection, protection against mechanical hazard

English version

Safety of household and similar electrical appliances
Part 2: Particular requirements for electrical heat pumps,
air-conditioners and dehumidifiers
 (IEC 335-2-40:1992, modified)

Sécurité des appareils
 électrodomestiques et analogues
 Partie 2: Règles particulières pour
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This European Standard was approved by CENELEC on 9 March 1993. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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

Foreword

Following a decision taken by the CENELEC Technical Board at their meeting in London on 23 September 1991, the draft prEN 60335-2-40 as prepared by BTTF 49-1 was submitted to the CENELEC Unique Acceptance Procedure (UAP) in December 1991 for acceptance as a European Standard.

A decision was taken at the CENELEC Technical Board meeting in Brussels on 9 March 1993 to ratify the BTTF 49-1 document. However, noting that IEC 335-2-40 which had been firmly based on EN 60335-2-40 had been published, it was agreed that the final text of EN 60335-2-40 should be edited as an endorsement of IEC 335-2-40 with common modifications.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1994-03-01
- latest date of withdrawal of conflicting national standards (dow) 1994-03-01

For products which have complied with the relevant national standard before 1994-03-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1999-03-01.

This standard has to be used in conjunction with EN 60335-1:1988, Safety of household and similar electrical appliances, Part 1: General requirements, including its amendments A2:1988, A5:1989, A6:1989, A51:1991, A52:1992, A53:1992, A54:1992 and A55:1993.

Where a particular subclause of Part 1 is not mentioned in this Part 2, that subclause applies as far as is reasonable. Where this standard states "addition", "modification" or "replacement", the relevant text of Part 1 is to be adapted accordingly.

Subclauses or figures which are in addition to those in Part 1 are numbered starting with 101. Additional appendices are lettered AA, BB, etc.

Other publications quoted in this standard:

EN 60335-2-21:1992	Safety of household and similar electrical appliances — Part 2: Particular requirements for storage water heaters
EN 60529:1991	Degrees of protection provided by enclosures (IP Code)
HD 277 S1:1985	Safety of household and similar electrical appliances — Part 2: Particular requirements for motor-compressors
HD 566 S1:1990	Thermal evaluation and classification of electrical insulation
ISO 817:1974	Organic refrigerants — Number designation
ISO R1662:1971	Refrigerating plants — Safety requirements
prEN 378	(in preparation)

The following print types are used:

- requirements proper: in roman type;
- test specifications: in italic type;
- explanatory matter: in smaller roman type.

Endorsement notice

The text of the International Standard IEC 335-2-40:1992 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

Foreword Delete.

1 Scope

- 1.1 Replace "IEC 335" by "EN 60335".
 Replace "IEC 335-2-34" by "HD 277 S1".
 Replace "IEC 335-2-21" by "EN 60335-2-21".
- 1.101 Delete.

2 Definitions

- 2.2.123 Replace by "Void".

4 General notes on tests

- 4.5 Replace the last sentence by: "(see 7.12)".
- 4.101 Replace "IEC 335-2-34" by "HD 277 S1".

6 Classification

- 6.2 Replace "IEC 529" by "EN 60529".
- 6.3 Delete "2.2.123 et".

7 Marking

- 7.1 Penultimate paragraph, first line, amend to read as follows: "Appliances shall be marked separately with all...".
- 7.12 In the first paragraph replace "appliance" by "equipment".
- 7.14 In the first paragraph, first line, replace "can" by "would".
 In the second paragraph, first line, replace "building-in" by "built-in installation".

11 Heating

- 11.1 Replace "IEC 335-2-34" by "HD 277 S1".
- 11.9 Third paragraph, second line, replace "instructions; this casing is composed of plywood walls..." by "instructions, which consists of walls...".
- 11.10 Table 1:
 Note 1, replace "IEC 335-2-34" by "HD 277 S1".
 Note 3, replace "IEC 85" by "HD 566 S1".
 Note 3, replace "5 °C (5K)" by "5K(5 °C)".
 Note 5, replace "IEC" by "European".
 Note 6, replace "IEC" by "European".

15 Moisture resistance

- 15.2 Replace "IEC 529" by "EN 60529".
- 15.3 Replace "17 cm³/s" by "17 x 10⁻⁶ m³/s".

19 Abnormal operation

- 19.2 Seventh paragraph, last line, replace "...in the following table." by "in table 2".
Add title to table as follows: "Table 2: Winding temperatures".
- 19.3 Replace "IEC 335-2-34" by "HD 277 S1" (2 times).
- 19.11 First paragraph, last line, replace "...in the following table:" by "...in table 3".
Add title to table as follows: "Table 3: Temperature rises".
In table 3 and in the accompanying note 3, replace "IEC 335-1" by "EN 60335-1".

21 Mechanical strength

Replace "ISO/DIS 5149" by "prEN 378".

22 Construction

- 22.102 Replace the first paragraph by:
Appliances provided with supplementary electric air heaters shall be provided with a self-resetting thermal cut-out intended to operate first and another non-self-resetting thermal cut-out that can be located outside of the appliance according to the manufacturers instructions, to operate at a second stage.
- 22.104 Second paragraph, second line, replace "hereafter" by "below".
- 22.105 First paragraph, last line, replace "10 litres" by "10%".

24 Components

- 24.1 Replace "IEC 335-2-34" by "HD 277 S1" (3 times).

25 Supply connection and external flexible cables and cords

Replace "(design 245 IEC 57)" by "(design H05 RN-F)".

29 Creepage distances, clearances and distances through insulation

- 29.1 Replace "IEC 335-2-34" by "HD 277 S1".
Second paragraph, last line, replace "...in the following table:" by "...in table 4".
Add title to the table as follows: "Table 4: Creepage distances and clearance".

Appendices

Appendix AA Delete.

**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC
335-2-40**

Deuxième édition
Second edition
1992-09

**Sécurité des appareils électrodomestiques
et analogues**

Partie 2:

Règles particulières pour les pompes à chaleur
électriques, les climatiseurs et les déshumidificateurs

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**Safety of household and similar electrical
appliances**

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Part 2:

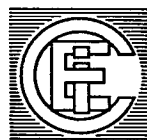
Particular requirements for electrical heat pumps,
air-conditioners and dehumidifiers

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CONTENTS

	Page
FOREWORD	7
Clause	
1 Scope	11
2 Definitions	13
3 General requirement	17
4 General notes on tests	17
5 Rating	19
6 Classification	19
7 Marking	21
8 Protection against electric shock	25
9 Starting of motor-operated appliances	25
10 Input and current	25
11 Heating	25
12 Operation under overload conditions of appliances with heating elements	35
13 Electrical insulation and leakage current at operating temperature	37
14 Radio and television interference suppression	37
15 Moisture resistance	37
16 Insulation resistance and electric strength	39
17 Overload protection	39
18 Endurance	39
19 Abnormal operation	39
20 Stability and mechanical hazards	47
21 Mechanical strength	47
22 Construction	47
23 Internal wiring	53

Clause	Page
24 Components	53
25 Supply connection and external flexible cables and cords	55
26 Terminals for external conductors	55
27 Provision for earthing	55
28 Screws and connections	55
29 Creepage distances, clearances and distances through insulation	57
30 Resistance to heat, fire and tracking	57
31 Resistance to rusting	57
32 Radiation, toxicity and similar hazards	57
Figures	59
Appendices	
A Thermal controls and overload releases	63
D Alternative requirements for protected motor units	63
F Motors not isolated from the supply mains and having basic insulation not designed for the rated voltage of the appliance	63
AA Examples for operating temperatures of the appliance	65

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This document is a preview of the standard SIST EN 60335-2-40:1997. It is not intended for use as a reference document. The full text of the standard is available on the iTeh website.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

SAFETY OF HOUSEHOLD AND SIMILAR
ELECTRICAL APPLIANCESPart 2: Particular requirements for electrical heat pumps,
air-conditioners and dehumidifiers

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) 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.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.

This part of International Standard IEC 335 has been prepared by Sub-Committee 61D: Appliances for air-conditioning for household and similar purposes, of IEC Technical Committee No. 61: Safety of household and similar electrical appliances.

It forms the second edition of IEC 335-2-40 and replaces the first edition printed in 1987. It also replaces the text of IEC 378 (1972): Safety requirements for the electrical equipment of room air-conditioners.

The text of this part is based on the following documents:

DIS	Report on voting
61D(CO)13	61D(CO)15

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

This part 2 is intended to be used in conjunction with IEC 335-1. It has been established on the basis of the second edition (1976), fourth impression (1991), incorporating amendments No. 1 (1977), No. 2 (1979) and No. 3 (1982), and on the basis of amendments No. 4 (1984), No. 5 (1986) and No. 6 (1988).

This part 2 supplements or modifies the corresponding clauses in IEC 335-1 in order to convert it into IEC Standard: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers.

Where a particular subclause of part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. Where this second edition states "addition", "modification" or "replacement", the relevant requirement, test specification or explanatory matter in part 1 should be adapted accordingly.

The following differences exist in some countries:

- the starting test is not made if it is specified in the manufacturer's instructions that the supply circuit must be protected by a fuse having a rated current which corresponds to at least 1,5 times the rated input of the heat pump's largest hermetic motor compressor plus the sum of all additional concurrent loads (9.2);
- class 1 heat pumps are permitted (22.1);
- power supply cables with aluminum conductors are not allowed (7.103).

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In this part:

- 1) The following print types are used:
 - requirements proper: in roman type;
 - *test specifications: in italic type;*
 - explanatory matter: in smaller roman type.
- 2) Subclauses or figures which are additional to those in part 1 are numbered starting from 101.

Appendix A forms an integral part of this part 2 of IEC 335.

Appendix AA is for information only.

NOTE - Appendices B, E and G are normative. Appendix C is informative. It should be noted that these appendices are to be found in IEC 335-1.

SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES

Part 2: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers

1 Scope

This clause of part 1 is applicable except as follows:

1.1 *Replacement:*

This part of IEC 335 applies to the safety of electric heat pumps, including heat pumps for sanitary (potable) hot water, air-conditioners, and dehumidifiers incorporating sealed motor-compressors.

The appliances referenced above may consist of one or more factory made assemblies. If provided in more than one assembly, the separate assemblies are to be used together, and the requirements are based on the use of matched assemblies.

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A definition of "sealed motor-compressor" is given in IEC 335-2-34.

Requirements for refrigeration safety are covered by ISO R1662, and requirements for containers intended for storage of the heated water included in sanitary hot water heat pumps are, in addition, covered by IEC 335-2-21.

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Supplementary electric heaters, or a provision for their separate installation, are within the scope of this standard, but only heaters which are designed as a part of the appliance package, the controls being incorporated in the appliance.

This standard does not apply to

- appliances designed exclusively for industrial processing;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas).

For appliances intended for use in vehicles or on board ships or aircraft, additional requirements may be necessary.

Attention is drawn to the fact that in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour and the national authorities responsible for building design and regulation. In the case of appliances for permanent connection to the water supply system, all relevant requirements shall be observed.

1.101 *Normative references*

The following standards contain provisions which, through reference in this text, constitute provisions of this part of IEC 335. At the time of publication the editions indicated were

valid. All standards are subject to revision and parties to agreements based on this part of IEC 335 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 85: 1984, *Thermal evaluation and classification of electrical insulation.*

IEC 335-1 (2nd edition): 1976, *Safety of household and similar electrical appliances. Part 1: General requirements.*

IEC 335-2-21: 1989, *Safety of household and similar electrical appliances. Part 2: Particular requirements for storage water heaters.*

IEC 335-2-34: 1980, *Safety of household and similar electrical appliances. Part 2: Particular requirements for motor-compressors.*

IEC 529: 1989, *Degrees of protection provided by enclosures (IP Code).*

ISO 817: 1974, *Organic refrigerants - Number designation.*

ISO R1662: 1971, *Refrigerating plants - Safety requirements.*

ISO DIS 5149, *in preparation.*

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2 Definitions

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This clause of part 1 is applicable **except as follows:**

2.2.4 Addition:

If the appliance comprises electrical accessories, including fans, the rated input is based upon the total maximum electrical input with all accessories energized, when operating continuously under the appropriate environmental conditions. If the heat pump can be operated in the heating or cooling mode, the rated input is based upon the input in the heating or in the cooling mode, whichever is the greater.

2.2.29 Replacement:

Conditions of adequate heat discharge denote the conditions that apply when the appliance is mounted as in normal use and is operating under the most severe operating conditions specified by the manufacturer.

Additional definitions:

2.2.101 heat pump: Appliance which takes up heat at a certain temperature and releases heat at a higher temperature.

NOTE - When operated to provide heat (e.g., for space heating or water heating), the appliance is said to operate in the heating mode; when operated to remove heat (for example, for space cooling), it is said to operate in the cooling mode.