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**Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors - Heating mode - Part 4: Requirements for space heating and sanitary hot water units**

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Luftkonditionerer, Flüssigkeitskühlsätze und Wärmepumpen mit elektrisch angetriebenen Verdichtern - Heizen - Teil 4: Anforderungen an Geräte für die Raumheizung und zum Erwärmen von Brauchwasser

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Climatiseurs, groupes refroidisseurs de liquide et pompes à chaleur avec compresseur entraîné par moteur électrique - Mode chauffage - Partie 4: Exigences pour les appareils de chauffage des locaux et pour les appareils pour eau chaude sanitaire

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23.120	Zračniki. Vetrniki. Klimatske naprave	Ventilators. Fans. Air-conditioners
27.080	Toplotne črpalke	Heat pumps
91.140.65	Oprema za ogrevanje vode	Water heating equipment

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

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English version

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**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 European Standard has been prepared by Technical Committee by CEN/TC 113 "Heat pumps and air conditioners", the secretariat of which is held by AENOR.

This standard consists of the following parts:

- EN 255-1 Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors - Heating mode - Part 1: Terms, definitions and designations
- EN 255-2 Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors - Heating mode - Part 2: Testing and requirements for marking for space heating units
- EN 255-3 Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors - Heating mode - Part 3: Testing and requirements for marking for sanitary hot water units
- EN 255-4 Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors - Heating mode - Part 4: Requirements for space heating and sanitary hot water units

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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 part of EN 255 specifies minimum requirements which ensure that a air or water cooled air conditioner, liquid chilling packages, air/air, water/air, air/water or water/water heat pump, with electrically driven compressor, is fitted for the use designated by the manufacturer, when used for space heating or for hot sanitary water. When these units are used for space cooling, then EN 814-3 applies; when these units are used for liquid cooling and heat recovery, then prEN 12055 applies.

This standard also specifies recommendations for the way the characteristics of units shall be specified by the manufacturer in order to assist users and manufacturers in the understanding and comparison of various types.

This standard applies to factory-made units which can be ducted.

In the case of units consisting of several parts, the standard applies only to those designed and supplied as a complete package.

Units having two or more indoor sections connected to a single outdoor unit (multiple split system air conditioners or heat pumps) are excluded from this standard.

This standard does not apply to continuously variable capacity control units.

Installations used in industrial processes are not within the scope of this standard.

## 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.

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|---------------|--|
| EN 255-1      | Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors - Heating mode - Part 1: Terms, definitions and designations                          |
| EN 255-2:1997 | Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors - Heating mode - Part 2: Testing and requirements for marking for space heating units |

- EN 255-3:1997 Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors - Heating mode - Part 3: Testing and requirements for marking for sanitary hot water units
- EN 814-1 Air conditioners and heat pumps with electrically driven compressors - Cooling mode - Part 1: Terms, definitions and designations
- EN 814-3 Air conditioners and heat pumps with electrically driven compressors - Cooling mode - Part 3: Requirements
- prEN 12055 Liquid chilling packages and heat pumps with electrically driven compressors - Cooling mode - Definitions, testing and requirements
- EN 60335-2-40 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)
- ENV 12102 Air conditioners, heat pumps and dehumidifiers with electrically driven compressors - Measurement of airborne noise - Determination of the sound power level

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### 3 Definitions

For the purposes of this standard, the definitions given in EN 255-1 apply.

### 4 Requirements

#### 4.1 General

Except where otherwise stated, tests shall be conducted as described in EN 255-2 and EN 255-3.

#### 4.2 Temperature operating range

##### 4.2.1 Units for space heating

For every condition stated in table 1, the unit shall start up and operate for at least 20 min, without being stopped by the safety devices.

Table 1: Operational requirements conditions -  
Units for space heating

Type	Temperature at outdoor exchanger °C	Temperature at indoor exchanger °C	Voltage V
All types	Upper limit of use	Upper limit of use	Rated voltage
All types	Lower limit of use	Lower limit of use	Rated voltage

The temperatures are set at the beginning of the test and maintained constant during the test.

Test voltage shall be as specified in table 1. It is set at the beginning of the test and maintained constant during the test.

The environmental conditions during the test shall be as specified in table 2 of EN 255-2:1997.

The flow rates shall be the same as that used for rating test, as specified in table 3 of EN 255-2:1997.

Deviation between individual values and set values shall be between:

-zero and minus twice the permissible deviation according to table 4 of EN 255-2:1997 (the upper limit of use);

-zero and plus twice the permissible deviation according to table 4 of EN 255-2:1997 (the lower limit of use).

Uncertainty of measurement shall be as specified in table 1 of EN 255-2:1997.

#### 4.2.2 Units for sanitary hot water

For every condition stated in table 2, the unit shall heat sanitary water without being stopped by the safety devices.

Table 2: Operational requirements conditions -  
Units for heating sanitary water

Type	Temperature at outdoor exchanger °C	Temperature at indoor exchanger <sup>1)</sup> °C	Voltage V
All types	Upper limit of use	Lower/upper limit of use	Rated voltage
All types	Lower limit of use	Lower/upper limit of use	Rated voltage
<sup>1)</sup> At the indoor heat exchanger lower/upper designates the minimum permissible cold water temperature and the maximum permissible hot water temperature (as determined by the hot water thermostat in its maximum setting).			



The temperature are set before the test and the test is then carried out in the same manner as the heating up period in EN 255-3. This means that the sanitary water is heated from the lower limit of use until the upper limit of use (switching off the unit by the hot water thermostat).

Test voltage shall be as specified in table 2. It is set at the beginning of the test and maintained constant during the test.

The ambient conditions during the test shall be as specified in tables 2 and 3 of EN 255-3:1997.

The flow rates shall be the same as that used for rating test, as specified in table 2 of EN 255-3:1997.

Deviation between individual values and set values shall be between:

-zero and minus twice the permissible deviation according to table 4 of EN 255-3:1997 (the upper limit of use);

-zero and plus twice the permissible deviation according to table 4 of EN 255-3:1997 (the lower limit of use).

Uncertainty of measurement shall be as specified in table 1 of EN 255-3:1997.

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#### 4.2.3 Upper limit of use on the indoor heat exchanger

The unit is operated at its upper limit of use on the indoor heat exchanger and the heat transfer medium temperature is then raised to the maximum inlet temperature stated by the manufacturer at an average rate of 2 °C/min, the compressor not running, and maintained at that final value for a period of 30 min. The unit shall suffer no damage.

The temperature is then lowered at about the same rate. When the heat transfer medium temperature comes back within the operating range, the unit shall be capable of operating.

The other test conditions are those given in 4.2.1.

#### 4.3 Outside the operating range

If operating outside the temperature range can cause damage to the unit, it shall be provided with safety devices which ensure that the unit suffers no damage when the operating limits of use indicated by the manufacturer are exceeded and remains capable of operating when coming back within these limits. A safety device that does not automatically reset may trip provided that a warning device is fitted.

The manufacturer shall indicate any safety devices provided and their operating conditions (see 6.1.3).