

SLOVENSKI STANDARD

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Nadomešča:

SIST EN 14511-4:2018

Klimatske naprave, enote za hlajenje kapljevine, toplotne črpalke za ogrevanje in hlajenje prostora ter procesne hladilne naprave z električnimi kompresorji - 4. del: Zahteve

Air conditioners, liquid chilling packages and heat pumps for space heating and cooling and process chillers, with electrically driven compressors - Part 4: Requirements

Luftkonditionierer, Flüssigkeitskühlsätze und Wärmepumpen für die Raumbeheizung und -kühlung und Prozess-Kühler mit elektrisch angetriebenen Verdichtern - Teil 4: Anforderungen

Climatiseurs, groupes refroidisseurs de liquide et pompes à chaleur pour le chauffage et le refroidissement des locaux et refroidisseurs industriels avec compresseur entraîné par moteur électrique - Partie 4: Exigences

Ta slovenski standard je istoveten z: EN 14511-4:2022

ICS:

| | | |
|-----------|---------------------------------------|--|
| 23.120 | Zračniki. Vetrniki. Klimatske naprave | Ventilators. Fans. Air-conditioners |
| 27.080 | Toplotne črpalke | Heat pumps |
| 91.140.30 | Prezračevalni in klimatski sistemi | Ventilation and air-conditioning systems |

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EUROPEAN STANDARD

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NORME EUROPÉENNE

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English Version

Air conditioners, liquid chilling packages and heat pumps for space heating and cooling and process chillers, with electrically driven compressors - Part 4: Requirements

Climatiseurs, groupes refroidisseurs de liquide et pompes à chaleur pour le chauffage et le refroidissement des locaux et refroidisseurs industriels avec compresseur entraîné par moteur électrique -
Partie 4 : Exigences

Luftkonditionierer, Flüssigkeitskühlsätze und Wärmepumpen für die Raumbeheizung und kühlung und Prozess-Kühler mit elektrisch angetriebenen Verdichtern - Teil 4: Anforderungen

This European Standard was approved by CEN on 10 July 2022.

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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.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 14511-4:2022) has been prepared by Technical Committee CEN/TC 113 “Heat pumps and air conditioning units”, the secretariat of which is held by UNE.

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 March 2023, and conflicting national standards shall be withdrawn at the latest by March 2023.

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

This document supersedes EN 14511-4:2018.

The main changes compared with EN 14511-4:2018 are as follows:

- update of normative references;
- deletion of Clause 5 “Marking”.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association.

This document has been prepared in the frame of:

- Commission Regulation (EU) No 206/2012 of 6 March 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for air conditioners and comfort fans;
- Commission Delegated Regulation (EU) No 626/2011 of 4 May 2011 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of air conditioners;
- Commission Regulation (EU) No 813/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for space heaters and combination heaters;
- Commission Delegated Regulation (EU) No 811/2013 of 18 February 2013 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to the energy labelling of space heaters, combination heaters, packages of space heater, temperature control and solar device and packages of combination heater, temperature control and solar device;
- Commission Regulation (EU) 2015/1095 of 5 May 2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers;
- Commission Regulation (EU) 2016/2281 of 30 November 2016 implementing Directive 2009/125/EC of the European Parliament and of the Council establishing a framework for the setting of ecodesign requirements for energy-related products, with regard to ecodesign requirements for air heating products, cooling products, high temperature process chillers and fan coil units.

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EN 14511, *Air conditioners, liquid chilling packages and heat pumps for space heating and cooling and process chillers, with electrically driven compressors*, currently comprises the following parts:

- *Part 1: Terms and definitions;*
- *Part 2: Test conditions;*
- *Part 3: Test methods;*
- *Part 4: Requirements.*

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

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[SIST EN 14511-4:2022](https://standards.iteh.ai/catalog/standards/sist/fa948c4c-b8be-4b27-948b-d6c424ac4177/sist-en-14511-4-2022)

<https://standards.iteh.ai/catalog/standards/sist/fa948c4c-b8be-4b27-948b-d6c424ac4177/sist-en-14511-4-2022>

1 Scope

1.1 The scope of EN 14511-1:2022 is applicable, with the exception of process chillers.

1.2 This document specifies minimum operating requirements which ensure that air conditioners, heat pumps and liquid chilling packages using either air, water or brine as heat transfer media, with electrical driven compressors are fit for the use designated by the manufacturer when used for space heating and/or cooling.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 14511-1:2022, *Air conditioners, liquid chilling packages and heat pumps for space heating and cooling and process chillers, with electrically driven compressors — Part 1: Terms and definitions*

EN 14511-2:2022, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling and process chillers, with electrically driven compressors — Part 2: Test conditions*

EN 14511-3:2022, *Air conditioners, liquid chilling packages and heat pumps for space heating and cooling and process chillers, with electrically driven compressors — Part 3: Test methods*

EN 12102-1:2017, *Air conditioners, liquid chilling packages, heat pumps, process chillers and dehumidifiers with electrically driven compressors — Determination of the sound power level — Part 1: Air conditioners, liquid chilling packages, heat pumps for space heating and cooling, dehumidifiers and process chillers*

EN 60204-1:2018, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2016)*

FprEN IEC 60335-2-40:2021, *Household and similar electrical appliances — Safety — Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers (IEC 60335-2-40:2018)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14511-1:2022 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Operating requirements

4.1 General

Except where otherwise stated, tests shall be conducted as described in EN 14511-2:2022 and EN 14511-3:2022.

EN 14511-4:2022 (E)

4.2 Temperature operating range

4.2.1 Starting and operating tests

4.2.1.1 General

The unit shall be capable of starting and/or operating within the limit of use (temperatures and flows) specified by the manufacturer.

Rated voltage shall be set at the beginning of the test and maintained constant during the test.

The environmental conditions during the test shall be as specified in EN 14511-2:2022, Tables 1 and 2.

Air flow rates shall be the same as that used for the rating capacity test, as specified in EN 14511-2:2022.

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

For a given air dry bulb temperature, the relative humidity shall be determined accordingly to Table 1 and used for the calculation of the wet bulb temperature to be set.

Table 1 — Determination of wet bulb temperature related to dry bulb temperature

| Dry bulb temperature T_{DB} °C | Wet bulb temperature T_{WB} °C |
|-------------------------------------|-------------------------------------|
| $T_{DB} < -10$ | Not defined |
| $-10 \leq T_{DB} \leq 12$ | $T_{WB} = T_{DB} - 1$ |
| $12 < T_{DB} \leq 20$ | $T_{WB} = 0,34 * T_{DB} + 6,95$ |
| $T_{DB} > 20$ | $T_{WB} = 0,6414 * T_{DB} + 1,5931$ |

Deviation between individual values and set values shall be between:

- zero and minus twice the permissible deviation according to EN 14511-3:2022, Table 5 for the upper limit of use;
- zero and plus twice the permissible deviation according to EN 14511-3:2022, Table 5 for the lower limit of use.

Uncertainty of measurement shall be as specified in EN 14511-3:2022, Table 2.

The tests shall be performed at every condition stated in Tables 2 to 9, accordingly to the type of unit and in both cooling and heating mode, where applicable.

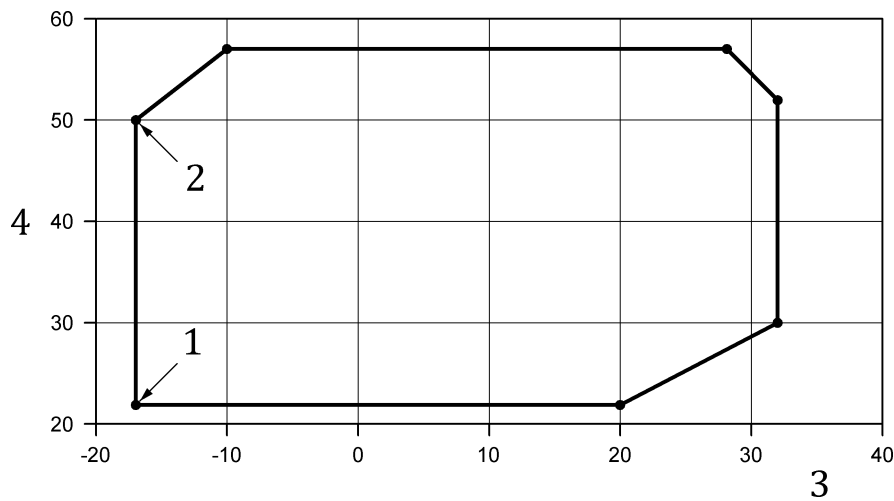
For a starting test, the unit shall start and operate in the temperature conditions stated in Tables 2 to 9 during 15 min.

For an operating test, the unit shall be able to operate during 1h in the temperature conditions stated in Tables 2 to 5.

The unit motor shall operate without tripping of the motor overload protective devices.

4.2.1.2 Heating mode

The following Figure 1 provides an example of the operating range as declared by the manufacturer. The temperature values are not necessarily relevant.



Key

- 1, 2 test points
- 3 inlet temperature at outdoor heat exchanger in °C
- 4 inlet temperature at indoor heat exchanger in °C

Figure 1 — Example of operating range of a unit in heating mode

Table 2 — Operational requirements conditions for air-to-air units

| Test point | Test |
|------------|-----------|
| 1 | Starting |
| 2 | Operating |

Table 3 — Operational requirements conditions for air-to-water units

| Test point | Water flow rate at indoor heat exchanger | Test |
|------------|--|-----------|
| 1 | Minimum | Starting |
| 2 | Minimum | Operating |

Table 4 — Operational requirements conditions for water(brine)-to-water units

| Test point | Water flow rate at indoor heat exchanger | Water flow rate at outdoor heat exchanger | Test |
|------------|--|---|-----------|
| 1 | Minimum | Minimum | Starting |
| 2 | Minimum | Minimum | Operating |

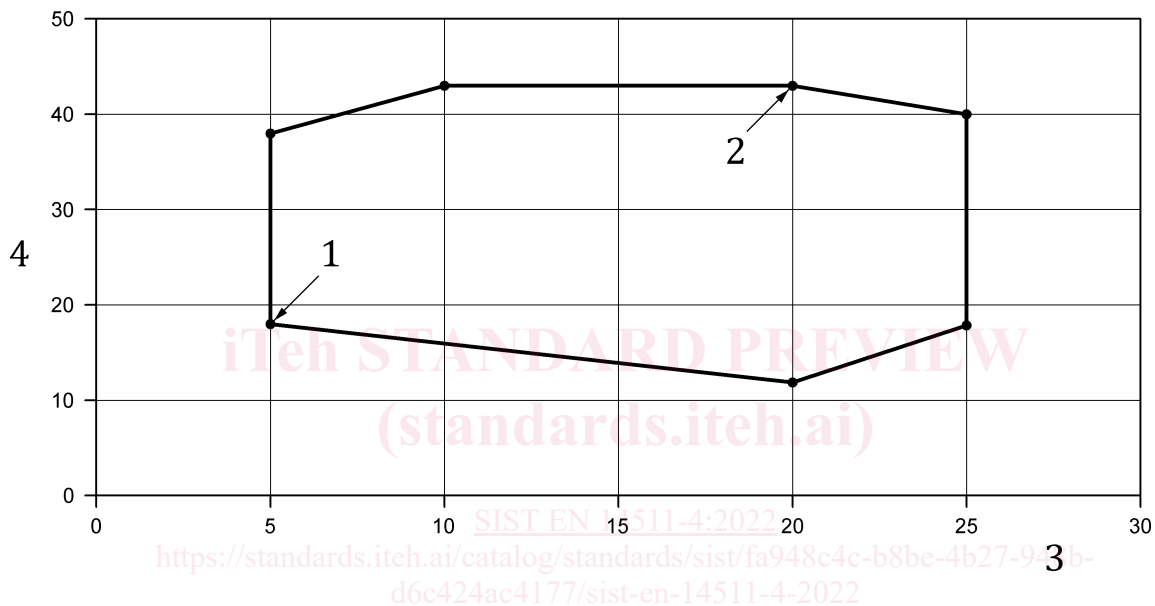
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Table 5 — Operational requirements conditions for water(brine)-to-air units

| Test point | Water flow rate at indoor heat exchanger | Test |
|------------|--|-----------|
| 1 | Minimum | Starting |
| 2 | Minimum | Operating |

4.2.1.3 Cooling mode

The following Figure 2 provides an example of the operating range as declared by the manufacturer. The temperature values are not necessarily relevant.



Key

- 1, 2 test points
- 3 inlet temperature at indoor heat exchanger in °C
- 4 inlet temperature at outdoor heat exchanger in °C

Figure 2 — Example of operating range of a unit in cooling mode

Table 6 — Operational requirements conditions for air-to-air units

| Test point | Test |
|------------|----------|
| 1 | Starting |
| 2 | Starting |

Table 7 — Operational requirements conditions for air-to-water units

| Test point | Water flow rate at indoor heat exchanger | Test |
|------------|--|----------|
| 1 | Minimum | Starting |
| 2 | Maximum | Starting |