

# **Air conditioners and heat pumps with electrically driven compressors — Cooling mode**

## **Part 1. Terms, definitions and designations**

The European Standard EN 814-1 : 1997 has the status of a  
British Standard

ICS 01.040.23; 23.120; 27.080; 91.140.30

## Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee RHE/17, Testing of heat pumps and air conditioners, upon which the following bodies were represented:

British Gas plc  
British Refrigeration Association  
Building Services Research and Information Association  
Chartered Institution of Building Services Engineers  
Department of the Environment – Building Research Establishment  
Electricity Association  
Heating and Ventilating Contractors' Association  
Hevac Association  
Institute of Refrigeration  
Institution of Mechanical Engineers

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# Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
Foreword	2
Text of EN 814-1	3

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## National foreword

This British Standard has been prepared by Technical Committee RHE/17 and is the English language version of EN 814-1 : 1997 *Air conditioners and heat pumps with electrically driven compressors — Cooling mode — Part 1: Terms, definitions and designations*, published by the European Committee for Standardization (CEN).

### Cross-reference

Publication referred to	Corresponding British Standard
	BS 7326 : <i>Specification for rating and performance of heat pumps with electrically driven compressors</i>
EN 255-1 : 1988	Part 1 : 1990 <i>Terms, definitions and designations</i>

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### Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 6, an inside back cover and a back cover.

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ICS 01.040.23; 23.120; 27.080; 91.140.30

Descriptors: Air conditioning equipment, air conditioners, vocabulary, designation

English version

**Air conditioners and heat pumps with electrically driven  
compressors — Cooling mode —  
Part 1: Terms, definitions and designations**

Climatiseurs et pompes à chaleur avec compresseur entraîné par moteur électrique — Mode réfrigération — Partie 1: Termes, définitions et désignations

Luftkonditionierer und Wärmepumpen mit elektrisch angetriebenen Verdichtern — Kühlen — Teil 1: Benennungen, Definitionen und Bezeichnungen

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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**

## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 113, Heat pumps and air conditioners, of which the Secretariat is held by AFNOR.

This standard consists of the following Parts:

- EN 814-1 *Air conditioners and heat pumps with electrically driven compressors — Cooling mode — Part 1: Terms, definitions and designations*
- EN 814-2 *Air conditioners and heat pumps with electrically driven compressors — Cooling mode — Part 2: Testing and requirements for marking*
- EN 814-3 *Air conditioners and heat pumps with electrically driven compressors — Cooling mode — Part 3: Requirements*

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.

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## Contents

	Page
Foreword	2
<b>1</b> Scope	3
<b>2</b> Normative references	3
<b>3</b> Definitions	3
<b>4</b> Designations and denominations	4
<b>Annex</b>	
<b>A</b> (normative) Diagram illustrating the various air flows	5

## 1 Scope

This part of EN 814 specifies the terms and definitions for the rating and performance of air and water cooled air conditioners, air/air and water/air heat pumps with electrically driven compressors as well as the properties of the units when used in cooling mode. When these units are used in heating mode by reversing the refrigerating cycle, then prEN 255-1 applies.

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.

This standard does not apply to liquid chilling packages units.

A diagram which illustrates the various air flows is included in annex A which forms part of this standard.

NOTE. All the symbols given in this text should be used regardless of the language used.

## 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.

EN 255-1 *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors — Heating mode — Part 1: Terms, definitions and designations*

## 3 Definitions

For the purposes of this standard, the following definitions apply.

### 3.1 air conditioner

Encased assembly or assemblies designed as a unit to provide delivery of conditioned air to an enclosed space (room for instance) or zone. It includes an electrically operated refrigeration system for cooling and possibly dehumidifying the air.

It can have means for heating, circulating, cleaning and humidifying the air. The heating can be by means of reversing the refrigerating cycle, like a heat pump, see EN 255-1.

### 3.2 comfort air conditioner or heat pump

Air conditioner or heat pump to satisfy the requirements of the occupants of the air conditioned room.

### 3.3 close control air conditioner

Air conditioner to satisfy the requirements of the process carried out in the air conditioned room.

### 3.4 control cabinet air conditioner

Air conditioner to satisfy the requirements of the control cabinet.

### 3.5 single packaged unit

Factory assembly of components of refrigeration system fixed on a common mounting to form a discrete unit.

### 3.6 split packaged unit

Factory assembly of components of refrigeration system fixed on two mountings or more to form a discrete matched functional unit.

### 3.7 spot air conditioner

Air conditioner that cools a zone within a space. The condenser intake air is introduced from that space and discharged back into the same space.

### 3.8 single-duct air conditioner

An air conditioner for comfort cooling in which the condenser intake air is introduced from the conditioned space and discharged outside this space.

### 3.9 evaporator

Heat exchanger assembly which is designed to remove heat from air of the conditioned space by evaporation of a refrigerant.

NOTE. In the case of a heat pump operating in the cooling mode, this will be the indoor heat exchanger, see prEN 255-1.

### 3.10 condenser

Heat exchanger assembly which is designed to transfer heat to the outdoor ambient environment, or any other available source by condensation of a refrigerant.

NOTE. In the case of a heat pump operating in the cooling mode, this will be the outdoor air exchanger, see prEN 255-1.

### 3.11 ventilation air

Air introduced to the conditioned space through the unit from the outside (see annex A).

### 3.12 exhaust air

Air from the conditioned space through the unit to the outdoor side (see annex A).

### 3.13 internal leakage air

Air interchanged between the indoor side and outdoor side through the unit, but not through the openings designated for this purpose (see annex A).

### 3.14 total cooling energy ( $Q_C$ )

Heat removed by the unit from air within a defined interval of time.

### 3.15 total cooling capacity ( $P_C$ )

Total cooling energy divided by the defined interval of time.

NOTE. This quantity is not used for spot air conditioners because it is not significant. Performances of these devices are expressed in terms of flow-rate and dry bulb temperature.

### 3.16 latent cooling capacity ( $P_L$ )

Capacity of the unit for removing latent heat from the evaporator intake air.

### 3.17 sensible cooling capacity ( $P_S$ )

Capacity of the unit for removing sensible heat from the evaporator intake air.

### 3.18 effective power input ( $P_E$ )

Average electrical power input of the unit within the defined interval of time obtained from:

- the power input for operation of the compressor, excluding additional electrical heating devices;
- the power input of all control and safety devices of the unit; and
- the proportional power input of the conveying devices (e.g. fan, pumps) for ensuring the transport of the heat transfer media (see 3.23) inside the unit.

### 3.19 total power input ( $P_T$ )

Power input of all components of the unit as delivered.

### 3.20 energy efficiency ratio ( $EER$ )

Ratio of the total cooling capacity to the effective power input of the unit.

### 3.21 sensible heat ratio ( $SHR$ )

Ratio of the sensible cooling capacity to the total cooling capacity.

### 3.22 operating range

Range of operation of the unit indicated by the manufacturer and limited by the upper and lower limits of use (e.g. temperatures, air humidity, voltage) within which the unit is deemed to be fit for use and has the published properties.

### 3.23 heat transfer medium

Liquid or gas (usually water or air) by means of which heat is transferred to or from the unit.

### 3.24 nominal conditions

Standardized conditions provided for the determination of data which are characteristic for the unit, especially cooling capacity, power input,  $EER$ ,  $SHR$ .

### 3.25 sound power level ( $L_W$ )

Ten times the logarithm to the base 10 of the ratio of the given sound power to the reference sound power expressed in decibels. The reference sound power is 1 pW ( $10^{-12}$  W).

## 4 Designations and denominations

### 4.1 Designation of temperatures of heat transfer media

The designation relating to the temperatures of heat transfer media is formed in such a way that the heat transfer media are indicated together with their temperatures (in degrees Celsius), the values indicated in the first place referring to the condenser and the values indicated in the second place to the evaporator.

All temperatures are inlet temperatures.

A short designation is formed in such a way that a characteristic letter is used for the heat transfer medium: A for air and W for water.

For example W30/A27 means an inlet temperature of water for the condenser of 30 °C and an inlet temperature of air for the evaporator of 27 °C.

### 4.2 Denomination of units

The denomination of units normally depends on the heat transfer medium used to remove the heat from the condenser (see table 1).

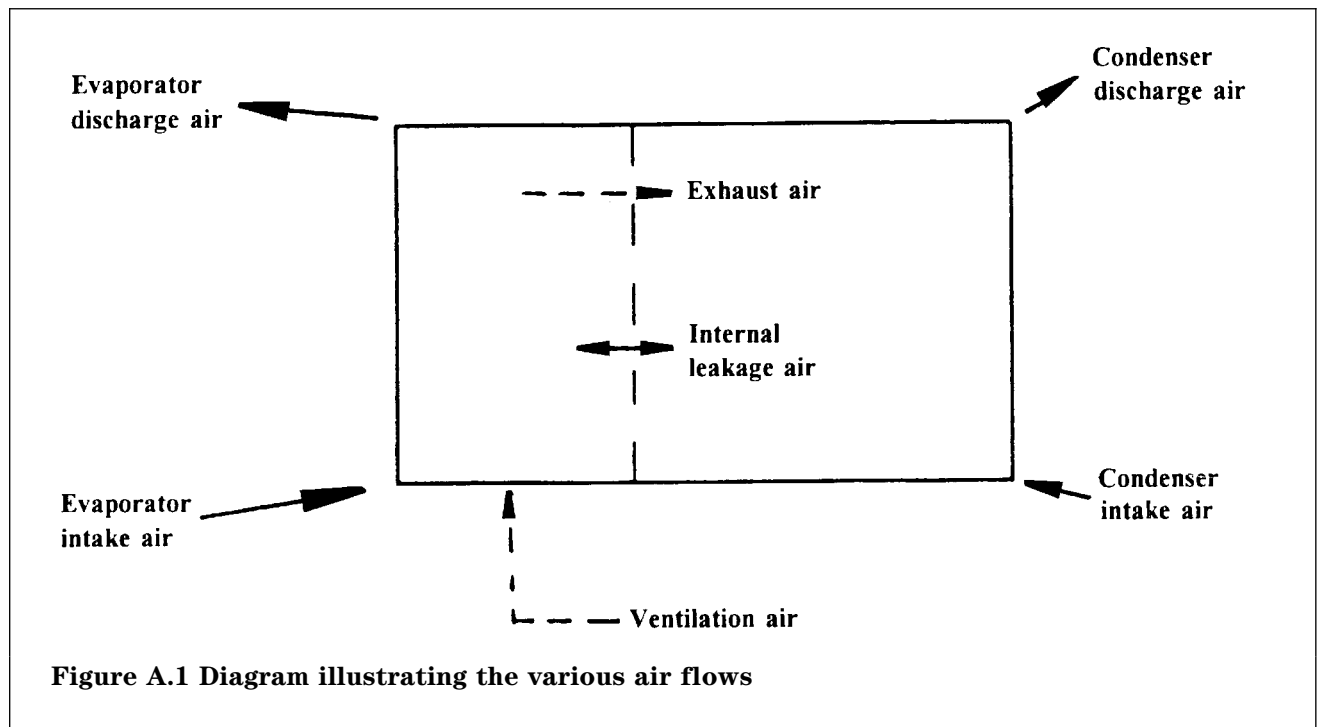
In the case where a unit reverses its refrigerating cycle the denomination can follow the same principles given in EN 255-1.

Table 1. Most common types of units	
Heat transfer medium condenser	Denomination
Air	Air cooled air conditioner Air/air air conditioner or heat pump
Water	Water cooled air conditioner Water/air air conditioner or heat pump



Annex A (normative)

Diagram illustrating the various air flows





## List of references

See national foreword.

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