

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Comfort fans and regulators for household and similar purposes – Methods for measuring performance**

**Ventilateurs de confort et régulateurs de vitesse pour applications domestiques et analogues – Méthodes de mesure de l'aptitude à la fonction**



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INTERNATIONAL  
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**COMFORT FANS AND REGULATORS  
FOR HOUSEHOLD AND SIMILAR PURPOSES –  
METHODS FOR MEASURING PERFORMANCE**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60879 has been prepared by subcommittee 59L: Small household appliances, of IEC technical committee 59: Performance of household and similar electrical appliances

This second edition cancels and replaces the first edition published in 1986. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) the definitions of fans have been revised;
- b) the test methods for the different types of fans have been revised to allow modern test instrumentation to be used;
- c) acoustic noise measurement and standby power measurement methods have been introduced.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
59L/171/FDIS	59L/172/RVD

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

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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# COMFORT FANS AND REGULATORS FOR HOUSEHOLD AND SIMILAR PURPOSES – METHODS FOR MEASURING PERFORMANCE

## 1 Scope

This International Standard specifies the performance-measuring methods of comfort fans and regulators for household and similar purposes, including conventional fans, tower fans and bladeless fans, their rated voltage being not more than 250 V for single-phase fans and 480 V for other fans, and their rated power input being less than 125 W.

NOTE 1 According to the testing method, the comfort fans are classified into two groups:

- pedestal fans, table fans, wall fans, louvre fans, tower fans, bladeless fans;
- ceiling fans.

Wherever applicable, the term "fan" used in this document includes its associated regulator, if any.

NOTE 2 This document does not apply to

- safety of electric fans for household and similar purposes (IEC 60335-2-80);
- performance of ventilating fans (IEC 60665);
- electromagnetic compatibility of fans (CISPR 14-1 and CISPR 14-2, IEC 61000-3-2, IEC 61000-3-3).

## 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.

IEC 60704-2-7, *Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 2-7: Particular requirements for fans*

IEC 62301, *Household electrical appliances – Measurement of standby power*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

NOTE When the term "voltage" is used, it implies an RMS value unless otherwise specified.

### 3.1

#### **comfort fan**

fan primarily designed for creating air movement around or on part of a human body for personal cooling comfort, including fans that can perform additional functionalities such as lighting

Note 1 to entry: A comfort fan is hereinafter also referred to by the term "fan".

### 3.2

#### **conventional fan**

comfort fan with a propeller having two or more blades, with free inlet and outlet of air

**3.3****tower fan**

comfort fan for use on the floor having a vertically elongated design of the cross-flow type, tangential type, centrifugal type or impeller type with a free inlet and outlet of air

**3.4****bladeless fan**

comfort fan of any type that is not fitted with a propeller

**3.5****ceiling fan**

conventional fan provided with a device for suspension from the ceiling of a room so that the blades rotate in a horizontal plane with the diameter of the blade not larger than 1 800 mm

**3.6****table fan**

comfort fan intended for use on a table

Note 1 to entry: Table fans have a maximum adjustable or non-adjustable height of less than 1 200 mm.

**3.7****pedestal fan**

comfort fan mounted on a pedestal of fixed or variable height

Note 1 to entry: Pedestal fans have a minimum adjustable height or non-adjustable height equal to or greater than 1 200 mm.

**3.8****wall bracket fan**

comfort fan for mounting on the wall

**3.9****ceiling bracket fan**

comfort fan for mounting on the ceiling

**3.10****louvre fan**

comfort fan having moving louvre which provides a continuously changing multi-directional air flow

**3.11****rated fan flow rate**

air flow rate assigned to the fan by the manufacturer

Note 1 to entry: The rated fan flow rate is expressed in m<sup>3</sup>/min.

**3.12****service value**

ratio of the calculated maximum fan flow rate [m<sup>3</sup>/min] to the measured fan power input [W]

Note 1 to entry: The service value is also known as the "coefficient of performance (COP)".

**3.13****fan power input**

power input of the fan operating at its maximum flow rate, measured with the oscillation mechanism and the moving louvre, if any, turned off

Note 1 to entry: The power inputs for other functions, such as lighting are not included.

**3.14****rated voltage**

voltage assigned to the fan by the manufacturer

**3.15****rated frequency**

frequency assigned to the fan by the manufacturer

**3.16****maximum fan flow rate**

air flow rate of the comfort fan at its maximum setting [ $\text{m}^3/\text{min}$ ], measured at the fan outlet with the oscillating mechanism and the moving louvre, if any, turned off

**3.17****oscillating mechanism**

capability of the comfort fan to automatically vary the direction of the air flow while the fan is operating

**3.18****fan sound power level**

A-weighted sound power level of the comfort fan while providing the maximum fan flow rate, measured at the outlet side

**3.19****moving louvre**

grill provided at the air outlet of louvre fans, which is used to control the direction of the air flow by its rotation or position

**3.20****equivalent sweep size diameter of bladeless fan**

value obtained by dividing the perimeter of the bladeless fan air outlet by 3,14

Note 1 to entry: The perimeter is obtained by measuring the length of the rope that wraps along the complete enclosure of the bladeless fan's air outlet.

**4 Information provision**

Manufacturers shall provide the following information in the instructions:

- a) rated fan flow rate  $\text{m}^3/\text{min}$  (rounded to one decimal place);
- b) service value  $(\text{m}^3/\text{min})/\text{W}$  (rounded to one decimal place);
- c) standby power consumption  $\text{W}$  (rounded to one decimal place);
- d) sound power level  $\text{dB(A)}$ .

**5 Tests****5.1 General conditions for testing****5.1.1 Atmospheric conditions**

Unless otherwise specified, the test procedures and measurements shall be carried out under the following conditions:

- temperature:  $20\text{ °C} \pm 5\text{ °C}$ , in case of doubt the temperature shall be  $23\text{ °C} \pm 2\text{ °C}$ ;
- relative humidity:  $50\% \pm 30\%$ ;
- air pressure:  $86\text{ kPa}$  to  $106\text{ kPa}$ .

NOTE Temperature and humidity conditions within the specified ranges are required for good repeatability and reproducibility.

Care should be taken to avoid changes in temperature and relative humidity during the test.

**5.1.2 Conditioning of test equipment**

Measuring equipment to be used for the tests shall be stored for at least 16 h at the atmospheric conditions specified in 5.1.1 prior to the test.

**5.1.3 Voltage and frequency**

The tests shall be conducted at the rated voltage. Fans designed for DC only shall be operated at DC. Fans designed for both AC and DC shall be operated at AC. Fans not marked with rated frequency shall be operated at either  $50\text{ Hz} \pm 1\text{ Hz}$  or  $60\text{ Hz} \pm 1\text{ Hz}$  as is common in the country of use and with a total harmonic distortion  $\leq 5\%$ .