
Microphones and earphones for speech communications (IEC 61842:2002)

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EUROPEAN STANDARD

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English version

Microphones and earphones for speech communications
(IEC 61842:2002)

Microphones et écouteurs
pour communications vocales
(CEI 61842:2002)

Mikrofone und Kopfhörer
für Sprachkommunikation
(IEC 61842:2002)

iTeh STANDARD PREVIEW

This European Standard was approved by CENELEC on 2002-05-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, 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

The text of document 100/450/FDIS, future edition 1 of IEC 61842, prepared by IEC TC 100, Audio, video and multimedia systems and equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61842 on 2002-05-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2003-02-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-05-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annex ZA is normative and annexes A and B are informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61842:2002 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60268-2 NOTE Harmonized as HD 483.2 S2:1993 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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 (including amendments).

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60268-1	1985	Sound system equipment Part 1: General	HD 483.1 S2 ¹⁾	1989
IEC 60268-4	- ²⁾	Part 4: Microphones	EN 60268-4	1999 ³⁾
IEC 60268-7	- ²⁾	Part 7: Headphones and earphones	EN 60268-7	1996 ³⁾
IEC 60318-1	- ²⁾	Electroacoustics - Simulators of human head and ear Part 1: Ear simulator for the calibration of supra-aural earphones	EN 60318-1	1998 ³⁾
IEC 60603-11	1992	Connectors for frequencies below 3 MHz for use with printed boards Part 11: Detail specification for concentric connectors (dimensions for free connectors and fixed connectors)	-	-
IEC 60711	- ²⁾	Occluded-ear simulator for the measurement of earphones coupled to the ear by ear inserts	HD 443 S1	1983 ³⁾
IEC 61094-1	- ²⁾	Measurement microphones Part 1: Specifications for laboratory standard microphones	EN 61094-1	2000 ³⁾
IEC 61094-4	- ²⁾	Part 4: Specifications for working standard microphones	EN 61094-4	1995 ³⁾
ITU-T Recommendation P.51	- ²⁾	Artificial mouth	-	-

1) HD 483.1 S2 includes A1:1988 to IEC 60268-1.

2) Undated reference.

3) Valid edition at date of issue.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ITU-T Recommendation P.370	- ²⁾	Coupling hearing aids to telephone sets	-	-

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INTERNATIONAL STANDARD

IEC 61842

First edition
2002-03

Microphones and earphones for speech communications

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Commission Electrotechnique Internationale
International Electrotechnical Commission
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MICROPHONES AND EARPHONES FOR SPEECH COMMUNICATIONS

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 co-operation 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 express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
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- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61842 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

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

FDIS	Report on voting
100/450/FDIS	100/479/RVD

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

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

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

MICROPHONES AND EARPHONES FOR SPEECH COMMUNICATIONS

1 Scope

This standard applies to the microphone part and earphone part of handsets, headsets or earsets for speech communications, and also to the microphone units and earphone units of built-in handsets, headsets or earsets. The object of this standard is to establish definitions relating to these electroacoustic transducers, and to standardize the characteristics to be specified and the relevant methods of measurement. This does not exclude the use of other methods of measurement which can be shown to give the same or more reliable results.

2 Normative references

The following reference documents are indispensable for the application 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 60268-1:1985, *Sound system equipment – Part 1: General*

IEC 60268-4, *Sound system equipment – Part 4: Microphones*

IEC 60268-7, *Sound system equipment – Part 7: Headphones and earphones*

IEC 60318-1, *Electroacoustics – Simulators of human head and ear – Part 1: Ear simulator for the calibration of supra-aural earphones*

IEC 60603-11:1992, *Connectors for frequencies below 3 MHz for use with printed boards – Part 11: Detail specification for concentric connectors (dimensions for free connectors and fixed connectors)*

IEC 60711, *Occluded-ear simulator for the measurement of earphones coupled to the ear by ear inserts*

IEC 61094-1, *Measurement microphones – Part 1: Specifications for laboratory standard microphones*

IEC 61094-4, *Measurement microphones – Part 4: Specifications for working standard microphones*

ITU-T P.51, *Artificial mouth*

ITU-T P.370, *Coupling hearing aids to telephone sets*

3 Terms and definitions

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

3.1 Classification

3.1.1 handset

assembly for speech communications, which is a handle including a microphone part and an earphone part suitable to be held by the talker's hand

3.1.2

headset

assembly for speech communications, which consists of a holder to put on the talker's head, one or two earphone parts and a microphone part, so as to keep the talker's hands free

3.1.3

earset

assembly for speech communications, which consists of an earphone part and a microphone part, so as to keep the talker's hands free, without a holder to put on the talker's head

NOTE The distinction between an earset and a headset is as complicated as it is between an earphone and a headphone. Table 1 explains the definitions of earphone, headphone, earset and headset used in this standard.

3.1.4

microphone for speech communications:

- a) part of a handset, an earset or a headset, which functions as a microphone (an acousto-electrical transducer)
- b) assembly of a microphone unit for speech communications and a case for measurement purposes, including acoustical circuit elements so as to obtain practical frequency characteristics

NOTE 1 A microphone for speech communications is understood to include devices, if any, such as amplifiers or impedance matching transformers up to the output terminals.

NOTE 2 A microphone for speech communications is called merely "microphone", or "microphone part" of a handset, of an earset or of a headset, in Clause 4 of this standard and beyond.

3.1.5

earphone for speech communications

- a) part of a handset, an earset or a headset, which functions as an earphone (an electro-acoustic transducer)
- b) assembly of an earphone unit for speech communications and a case for measurement purposes, including acoustical circuit elements so as to obtain practical frequency characteristics

NOTE 1 Any component which is intended by the manufacturer as an integral part of the earphone is included during measurements.

NOTE 2 An earphone for speech communications is called merely "earphone", or "earphone part" of a handset, of an earset or of a headset, in Clause 4 of this standard and beyond.

3.1.6

microphone unit for speech communications

acousto-electrical transducer installed in a handset, in an earset or in a headset to pick up the talker's speech in the vicinity of his/her mouth

NOTE The microphone unit for speech communications is called merely a "microphone unit" in Clause 4 of this standard and beyond.

3.1.7

earphone unit for speech communications

electroacoustic transducer installed in a handset, in an earset or in a headset to radiate sound signal in the vicinity of the listener's ear

NOTE The earphone unit for speech communications is called merely an "earphone unit" in Clause 4 of this standard and beyond.

3.1.8

case for unit measurement

case in which a microphone unit or an earphone unit for speech communications is installed for measurement. It includes additional acoustic circuit elements so as to obtain practical frequency characteristics, if necessary

3.2 Devices for measurement

3.2.1

mouthpiece holes

holes bored into the front of the enclosure of a microphone unit for speech communications, to receive the input sound

3.2.2

earcap holes

holes bored into the front of the enclosure of an earphone for speech communications, to radiate the output sound

3.2.3

artificial mouth

sound source for microphone measurement, which can produce the sound field similar to that around an ordinary human mouth

3.2.4

artificial ear

acoustic load for earphone measurement, whose acoustic impedance is similar to that of an ordinary human ear. It includes a microphone for measurement

3.2.5

lip ring

circular ring placed in front of the sound outlet of an artificial mouth for localizing the equivalent lip position

3.2.6

lip plane

outer plane of the lip ring, giving the reference point for finding the measuring position

3.2.7

external d.c. power supply

d.c. power supply for a microphone for speech communications including an amplifier or an electrical impedance converter circuit

3.2.8

additional resistance

electrical resistance for the earphone for speech communications which requires an external resistance for necessary adjustment of characteristics of the device

3.2.9

probe coil

coil for measurement of the external magnetic field of an earphone for speech communications

3.3 Characteristics and performance

3.3.1

sensitivity (V/Pa)

absolute value of the ratio between the open-circuit output voltage from a microphone for speech communications placed at a specified point in the sound field produced by the artificial mouth and the sound pressure in the undisturbed free field at a specified calibration point, the signal frequency being the reference frequency

NOTE Though the specified point for the microphone and the sound pressure calibration point should be identical in general, these points may be different according to this Standard.