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Elektroakustične naprave - 4. del: Mikrofoni (IEC 60268-4:2010)

Sound system equipment - Part 4: Microphones (IEC 60268-4:2010)

Elektroakustische Geräte - Teil 4: Mikrofone (IEC 60268-4:2010)

Equipements pour systèmes électroacoustiques - Partie 4: Microphones (CEI 60268-4:2010)

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

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July 2010

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English version

**Sound system equipment -
Part 4: Microphones
(IEC 60268-4:2010)**

Equipements pour systèmes
électroacoustiques -
Partie 4: Microphones
(CEI 60268-4:2010)

Elektroakustische Geräte -
Teil 4: Mikrofone
(IEC 60268-4:2010)

STANDARD PREVIEW
This European Standard was approved by CENELEC on 2010-07-01. 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.
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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.

<https://standards.iteh.ai/catalog/standards/sist/a5118176-1c22-444b-bb23-1c1b03d05c8a/en-60268-4:2010>

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, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 100/1678/FDIS, future edition 4 of IEC 60268-4, 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 60268-4 on 2010-07-01.

This European Standard supersedes EN 60268-4:2004.

The main changes with respect to EN 60268-4:2004 are the following:

- correction of noise measurement;
- added annex for digital microphones;
- added requirement for tolerances in data to be specified.

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

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) 2011-04-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2013-07-01

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 60268-4:2010 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

- | | |
|------------------|----------------------------------------------------|
| IEC 61606 series | NOTE Harmonized in EN 61606 series (not modified). |
| IEC 61672-1:2002 | NOTE Harmonized as EN 61672-1:2003 (not modified). |

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced 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.

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 60065 (mod) + A1 (mod) | 2001 2005 | Audio, video and similar electronic apparatus - Safety requirements | EN 60065 + corr. August + A1 + A11 | 2002 2007 2006 2008 |
| IEC 60268-1 + A1 + A2 | 1985 1988 1988 | Sound system equipment - Part 1: General | HD 483.1 S2 - - ¹⁾ | 1989 - - |
| IEC 60268-2 + A1 | 1987 1991 | Sound system equipment - Part 2: Explanation of general terms and calculation methods | HD 483.2 S2 - ²⁾ | 1993 - |
| IEC 60268-3 | 2000 | Sound system equipment - Part 3: Amplifiers | EN 60268-3 + corr. January | 2000 2002 |
| IEC 60268-5 + A1 | 2003 2007 | Sound system equipment - Part 5: Loudspeakers | EN 60268-5 + A1 | 2003 2009 |
| IEC 60268-11 + A1 + A2 | 1987 1989 1991 | Sound system equipment - Part 11: Application of connectors for the interconnection of sound system components | HD 483.11 S3 - - ³⁾ | 1993 - - |
| IEC 60268-12 + A1 + A2 | 1987 1991 1994 | Sound system equipment - Part 12: Application of connectors for broadcast and similar use | EN 60268-12 - + A2 ⁴⁾ | 1995 - 1995 |
| IEC 61000-4-2 | 1995 | Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test | EN 61000-4-2 ⁵⁾ | 1995 |
| IEC 61000-4-3 + A1 | 2006 2007 | Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test | EN 61000-4-3 + A1 | 2006 2008 |

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

²⁾ HD 483.2 S2 includes A1 to IEC 60268-2.

³⁾ HD 483.11 S3 includes A1 + A2 to IEC 60268-11.

⁴⁾ EN 60268-12 includes A1 to IEC 60268-12.

⁵⁾ EN 61000-4-2 is superseded by EN 61000-4-2:2009, which is based on IEC 61000-4-2:2008.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|---------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------|
| IEC 61265 | 1995 | Electroacoustics - Instruments for measurement of aircraft noise - Performance requirements for systems to measure one-third-octave band sound pressure levels in noise certification of transport-category aeroplanes | EN 61265 | 1995 |
| IEC 61938 | 1996 | Audio, video and audiovisual systems - Interconnections and matching values - Preferred matching values of analogue signals | EN 61938 + corr. February | 1997 1997 |
| ISO 354 | 2003 | Acoustics - Measurement of sound absorption in a reverberation room | EN ISO 354 | 2003 |
| ITU-T Recommendation P.51 | 1996 | Artificial mouth | - | - |

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INTERNATIONAL STANDARD

Sound system equipment –
Part 4: Microphones

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SOUND SYSTEM EQUIPMENT –**Part 4: Microphones**

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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- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60268-4 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

This fourth edition cancels and replaces the third edition published in 2004, and constitutes a technical revision.

The main changes with respect to the previous edition are the following:

- correction of noise measurement,
- added annex for digital microphones,
- added requirement for tolerances in data to be specified.

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

| FDIS | Report on voting |
|---------------|------------------|
| 100/1678/FDIS | 100/1707/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.

A list of all parts of the IEC 60268 series, under the general title “*Sound system equipment*”, can be found on the IEC website.

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

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

A bilingual edition of this document may be issued at a later date.

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SOUND SYSTEM EQUIPMENT –

Part 4: Microphones

1 Scope

This part of IEC 60268 specifies methods of measurement for the electrical impedance, sensitivity, directional response pattern, dynamic range and external influences of sound system microphones, and also details the characteristics to be specified by the manufacturer.

It applies to sound system microphones for all applications for speech and music. It does not apply to measurement microphones, but it does apply to each audio channel of microphones having more than one channel, for example for stereo or similar use. It is also applicable to flush-mounted microphones and to the analogue characteristics of microphones with digital audio output.

For the purposes of this International Standard, a microphone includes all such devices as transformers, pre-amplifiers, or other elements that form an integral part of the microphone, up to the output terminals specified by the manufacturer.

NOTE The characteristics specified in this standard do not completely describe the subjective response of the microphone. Further work is necessary to find new definitions and measurement procedures for a later replacement by objective characteristics of at least some of the subjective descriptions used to describe microphone performance.

2 Normative references

[SIST EN 60268-4:2010](https://standards.iteh.ai/catalog/standards/sist/a5118176-1c22-444b-bb23-62c1805d895e/sist-en-60268-4-2010)

<https://standards.iteh.ai/catalog/standards/sist/a5118176-1c22-444b-bb23-62c1805d895e/sist-en-60268-4-2010>

The following referenced 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 60065:2001, *Audio, video and similar electronic apparatus – Safety requirements*
Amendment 1 (2005)

IEC 60268-1:1985, *Sound system equipment – Part 1: General*
Amendment 1 (1988)
Amendment 2 (1988)

IEC 60268-2:1987, *Sound system equipment – Part 2: Explanation of general terms and calculation methods*
Amendment 1 (1991)

IEC 60268-3:2000, *Sound system equipment – Part 3: Amplifiers*

IEC 60268-5:2003, *Sound system equipment – Part 5: Loudspeakers*
Amendment 1 (2007)

IEC 60268-11:1987, *Sound system equipment – Part 11: Application of connectors for the interconnection of sound system components*
Amendment 1 (1989)
Amendment 2 (1991)

IEC 60268-12:1987, *Sound system equipment – Part 12: Application of connectors for broadcast and similar use*
Amendment 1 (1991)
Amendment 2 (1994)

IEC 61000-4-2:1995, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3:2006, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*
Amendment 1 (2007)

IEC 61265:1995, *Electroacoustics – Instruments for measurement of aircraft noise – Performance requirements for systems to measure one-third-octave-band sound pressure levels in noise certification of transport-category aeroplanes*

IEC 61938:1996, *Audio, video and audiovisual systems – Interconnections and matching values – Preferred matching values of analogue signals*

ISO 354:2003, *Acoustics – Measurement of sound absorption in a reverberation room*

ITU-T Recommendation P.51:1996, *Artificial mouth*

3 General conditions

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3.1 General

Special reference is made to IEC 60268-1, concerning:

- units and system of measurement;
- frequencies of measurement;
- quantities to be specified and their accuracy (see also 4.7);
- marking (see also 6.1);
- ambient conditions;
- filters, networks and measuring instruments for noise specification and measurement;
- individual specifications and type specifications;
- graphical presentation of characteristics;
- scales for graphical presentation;
- personal safety and prevention of spread of fire;
- method of producing a uniform alternating magnetic field;
- search coils for measuring the magnetic field strength,

and to IEC 61938 concerning powering of microphones.

3.2 Measurement conditions

3.2.1 General

For convenience in specifying how microphones shall be set up for measurement, a set of conditions has been defined in this recommendation under the title of "rated conditions".

Three ratings are basic to the formulation of these concepts: