

# INTERNATIONAL STANDARD



Sound system equipment –  
Part 7: Headphones and earphones

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### SOUND SYSTEM EQUIPMENT –

### Part 7: Headphones and earphones

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**IEC 60268-7 edition 3.1 contains the third edition (2010-01) [documents 100/1621/FDIS and 100/1641/RVD] and its corrigendum (2012-11), and its amendment 1 (2020-09) [documents 100/3316/CDV and 100/1641/RVD].**

**In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.**

International Standard IEC 60268-7 has been prepared by IEC technical committee TC 100: Audio, video and multimedia systems and equipment.

This third edition constitutes a technical revision. This edition contains the following changes:

- clause/subclause renumbering in accordance with ISO/IEC Directives, Part 2;
- addition of a measurement system using HATS;
- addition of details on pinna simulators for high measurement reproducibility, see Annex A.

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

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

The committee has decided that the contents of the base publication and its amendment 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- withdrawn,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 version of this publication may be issued at a later date.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

## INTRODUCTION to Amendment 1

This Amendment 1 contains the following significant technical changes with respect to IEC 60268-7:2010:

- evaluation of free-field compensated frequency response has been added;
- evaluation of diffuse-field compensated frequency response has been added;
- the Bibliography has been updated;
- some normative references have been updated;
- the term "HATS" and its definition has been added.

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## SOUND SYSTEM EQUIPMENT –

### Part 7: Headphones and earphones

#### 1 Scope

This part of IEC 60268, is applicable to headphones, headsets, earphones and earsets, intended to be used on, or in, the human ear. It also applies to equipment, such as pre-amplifiers, passive networks and power supplies which form an integral part of the headphone system.

It does not deal with:

- a) safety, for which reference should be made to ~~IEC 60065~~ IEC 62368-1 or another appropriate standard;
- b) the characteristics of microphones of headsets, for which reference should be made to IEC 60268-4;
- c) earphones and other devices for hearing aids, for which reference should be made to IEC 60118-0;
- d) headphones for audiometry;
- e) headphones and other devices which form part of an active ear-defender system, although some of its provisions may be applicable.

This standard specifies the characteristics which should be included by the manufacturer in specifications, and relevant methods of measurement. It includes a classification of the different types of earphone, mainly characterized by the way in which the transducer is coupled acoustically to the ear, and a classification code which may also be used for marking.

#### 2 Normative references

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 60038, *IEC standard voltages*

IEC 60050(801):1994, *International Electrotechnical Vocabulary – Chapter 801: Acoustics and electroacoustics*

IEC 60068-1, *Environmental testing – Part 1: General and guidance*

IEC 60086-1, *Primary batteries – Part 1: General*

IEC Guide 106, *Guide for specifying environmental conditions for equipment performance rating*

IEC 60263, *Scales and sizes for plotting frequency characteristics and polar diagrams*

IEC 60268-1, *Sound system equipment – Part 1: General*

IEC 60268-2, *Sound system equipment – Part 2: Explanation of general terms and calculation methods*

IEC 60268-11, *Sound system equipment – Part 11: Application of connectors for the interconnection of sound system components*

IEC 60268-12, *Sound system equipment – Part 12: Application of connectors for broadcast and similar use*

IEC 60711, *Occluded-ear simulator for the measurement of earphones coupled to the ear by ear inserts*<sup>1</sup>

IEC TR 60959, *Provisional head and torso simulator for acoustic measurements on air conduction hearing aids*<sup>2</sup>

IEC TS 60318-7, *Electroacoustics – Simulators of human head and ear – Part 7: Head and torso simulator for the measurement of air-conduction hearing aids*

IEC 61672-1, *Electroacoustics – Sound level meters – Part 1: Specifications*

ISO 3741, *Acoustics – Determination of sound power levels of noise sources using sound pressure – Precision methods for reverberation rooms*

ISO 4869-1, *Acoustics – Hearing protectors – Part 1: Subjective method for the measurement of sound attenuation*

ISO 4869-3, *Acoustics – Hearing protectors – Part 3: Measurement of insertion loss of ear-muff type protectors using an acoustic test fixture*

ISO 7619-1, *Rubber, vulcanized and thermoplastic – Determination of indentation hardness – Part 1: Durometer method (Shore hardness)*

### 3 Terms and definitions

IEC 60268-7:2010

For the purposes of this document, the following terms and definitions apply, see also IEC 60050-801 (IEV).

NOTE Any device defined in 3.1 to 3.15 and their connector(s) for electrical input should be regarded as part of the transducer.

#### 3.1

##### **earphone**

electroacoustic transducer by which acoustic oscillations are obtained from electric signals and intended to be closely coupled acoustically to the ear

[IEV 801-27-18]

#### 3.2

##### **headphone**

assembly of one or two earphones on a headband or chinband, the use of which may be optional (e.g. with intra-concha earphones)

#### 3.3

##### **headset**

headphones equipped with a microphone

<sup>1</sup> This publication will be replaced by future IEC 60318-4 (to be published).

<sup>2</sup> This publication is planned to be replaced by future IEC 60318-7 (under consideration).

**3.4****earset**

earphones equipped with a microphone

NOTE This definition is included because the term appears in the catalogue of IEC publications.

**3.5****insert earphone**

small earphone that is attached directly to a connecting element, for example an earmould, inserted into the ear canal

[IEV 801-27-22, modified]

**3.6****intra-concha earphone**

small earphone that fits in the concha cavity, with its acoustic exit close to the entrance of the ear canal

**3.7****supra-aural earphone**

earphone applied externally to the outer ear and intended to rest on the pinna

[IEV 801-27-23, modified]

**3.8****supra-concha earphone**

earphone intended to rest on the ridges of the concha cavity

**3.9****circumaural earphone**

earphone having a cavity large enough to cover the region of the head including the ear

[IEV 801-27-24]

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**3.10****ear shell**

circumaural type of earphone hanging on the ear

**3.11****stethoscopic headphone**

insert headphone by which the earphone(s) is/are coupled to the ears by means of a pair of rigid tubes, so that the assembly resembles a stethoscope

**3.12****acoustically open earphone**

earphone which intentionally provides an acoustic path between the external environment and the ear canal

**3.13****acoustically closed earphone**

earphone which is intended to prevent acoustic coupling between the external environment and the ear canal

**3.14****closed-back earphone**

earphone which does not emit significant sound radiation from the back of the transducer to the external environment