SLOVENSKI STANDARD
SIST EN 60318-4:2010

01-september-2010

Nadomešča:
SIST HD 443 S1:2004

Elektroakustika - Simulatorji človeške glave in ušes - 4. del: Simulator zamašenega ušesa za merjenje ušesnih slušalk, spojenih z ušesom prek ušesnih vstavkov (IEC 60318-4:2010)

Electroacoustics - Simulators of human head and ear - Part 4: Occluded-ear simulator for the measurement of earphones coupled to the ear by means of ear inserts (IEC 60318-4:2010)

Akustik - Simulatoren des menschlichen Kopfes und Ohres - Teil 4: Simulator für den abgeschlossenen Gehörgang zur Messung an mittels Ohreinsätzen an das Ohr angekoppelten Ohrhörern (IEC 60318-4:2010)

Electroacoustique - Simulateurs de tête et d'oreille humaines - Partie 4: Simulateur d'oreille occluse pour la mesure des écouteurs couplés à l'oreille par des embouts (CEI 60318-4:2010)

Ta slovenski standard je istoveten z: **EN 60318-4:2010**

ICS:

13.140	Vpliv hrupa na ljudi	Noise with respect to human beings
17.140.50	Elektroakustika	Electroacoustics

SIST EN 60318-4:2010 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60318-4

May 2010

ICS 17.140.50

Supersedes HD 443 S1:1983

English version

Electroacoustics - Simulators of human head and ear - Part 4: Occluded-ear simulator for the measurement of earphones coupled to the ear by means of ear inserts

(IEC 60318-4:2010)

Electroacoustique - Simulateurs de tête et d'oreille humaines - Partie 4: Simulateur d'oreille occluse pour la mesure des écouteurs couplés à l'oreille par des embouts (CEI 60318-4:2010)

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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.

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.

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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 29/662/CDV, future edition 1 of IEC 60318-4, prepared by IEC TC 29, Electroacoustics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60318-4 on 2010-05-01.

This standard supersedes HD 443 S1:1983.

The main changes with respect to the previous edition are listed below:

– extension of the usable frequency range to 100 Hz – 16 000 Hz;

– addition of values of maximum permitted expanded uncertainties to all tolerances.

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)	2011-02-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2013-05-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60318-4:2010 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:

[1] ISO 389-2 NOTE Harmonized as EN ISO 389-2.

[2] ISO 389-5 NOTE Harmonized as EN ISO 389-5.

[3] ISO 389-6 NOTE Harmonized as EN ISO 389-6.

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.

Publication	Year	Title	EN/HD	Year
IEC 61094-4	-	Measurement microphones - Part 4: Specifications for working standard microphones	EN 61094-4	-
ISO/IEC Guide 98-3	-	Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)	-	-

IEC 60318-4

Edition 1.0 2010-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Electroacoustics – Simulators of human head and ear – Part 4: Occluded-ear simulator for the measurement of earphones coupled to the ear by means of ear inserts

Électroacoustique – Simulateurs de tête et d'oreille humaines – Partie 4: Simulateur d'oreille occluse pour la mesure des écouteurs couplés à l'oreille par des embouts

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTROACOUSTICS – SIMULATORS OF HUMAN HEAD AND EAR –

Part 4: Occluded-ear simulator for the measurement of earphones coupled to the ear by means of ear inserts

FOREWORD

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International Standard IEC 60318-4 has been prepared by IEC technical committee 29: Electroacoustics.

This first edition of IEC 60318-4 cancels and replaces IEC 60711, published in 1981 and constitutes a technical revision.

The main changes with respect to the previous edition are listed below:

– extension of the usable frequency range to 100 Hz – 16 000 Hz;
– addition of values of maximum permitted expanded uncertainties to all tolerances.

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

Enquiry draft	Report on voting
29/662/CDV	29/685/RVC

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 60318 series can be found on the IEC website under the title: *Electroacoustics – Simulators of human head and ear.*

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

ELECTROACOUSTICS – SIMULATORS OF HUMAN HEAD AND EAR –

Part 4: Occluded-ear simulator for the measurement of earphones coupled to the ear by means of ear inserts

1 Scope

This part of IEC 60318 describes an occluded-ear simulator intended for the measurement of insert earphones in the frequency range from 100 Hz to 10 000 Hz. It is suitable for air conduction hearing aids and earphones, coupled to the ear by means of ear inserts e.g. ear moulds or similar devices. The occluded-ear simulator is also suitable as the basis for an extension intended to simulate the complete ear canal and the outer ear (for instance in head simulators).

The occluded-ear simulator simulates the acoustic transfer impedance for the occluded normal adult human ear. However, it does not simulate the leakage between an earmould and a human ear canal; therefore, the results obtained with the occluded-ear simulator may deviate from the performance of an insert earphone on a real ear, especially at low frequencies. Moreover, large performance variations among individual ears will occur which should be considered when using the ear simulator.

Above 10 kHz the device does not simulate a human ear, but can be used as an acoustic coupler at additional frequencies up to 16 kHz. Below 100 Hz, the device has not been verified to simulate a human ear, but can be used as an acoustic coupler at additional frequencies down to 20 Hz.

NOTE Due to resonances in the acoustic transfer impedance of the occluded-ear simulator above 10 kHz, high measurement uncertainties, e.g. in the order of 10 dB, can occur in earphone responses. Repeatable results mainly are obtained for insert earphones with high acoustic damping (used for instance in the extended high-frequency audiometry, see the earphones listed in ISO 389-6)[3][1] coupled to the occluded-ear simulator by means of a simple, symmetrically designed and air tight coupling device.

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

ISO/IEC Guide 98-3, *Uncertainty of measurement – Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

3 Terms and definitions

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

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1 Figures in square brackets refer to the Bibliography.