BS EN 61252:1997+A2:2017

BSI Standards Publication

Electroacoustics – Specifications for personal sound exposure meters (IEC 61252:1993)

bsi.

National foreword

This British Standard is the UK implementation of EN 61252:1995, incorporating amendment A1:2001 and including amendment A2:2017. It is identical to IEC 61252:1993, incorporating amendment 1:2000 and including amendment 2:2017. It supersedes BS EN 61252:1997, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment A1 is indicated by [A1] 〈A1〉.

The text of IEC amendment 2:2017 has been provided in its entirety at the beginning of this document. BSI's policy of providing consolidated content remains unchanged; however, in the interest of expediency, in this instance BSI have chosen to collate the relevant content at the beginning of this document.

The UK participation in its preparation was entrusted to Technical Committee EPL/29, Electroacoustics.

A list of organizations represented on this committee can be obtained on request to its secretary.

Specifications in this standard for personal sound exposure meters are consistent, insofar as is practical, with comparable specifications in BS 6698:1986 for integrating-averaging sound level meters. The four principle technical differences from the specifications in BS 6698:1986 are as follows.

a) Sound exposure is measured and displayed rather than equivalent-continuous frequency-weighted sound pressure level or sound exposure level.

b) Accuracy of squaring and intergrating short-duration signals is specified by measurement of the sound exposure of a sequence of repeated constant-amplitude, 1 ms and 10 ms duration, 4 kHz tonebursts rather than by measurement of the response to single 4 kHz tonebursts of varying amplitudes with durations ranging from 1 ms to 1 s, each single toneburst being accompanied by a continuous, in-phase, low-level, 4 kHz background signal.

c) Specifications for a personal sound exposure meter include a limitation on the difference between the sound exposure indicated in response to positive-going and negative-going unipolar pulses.

d) Requirements are not specified for the directional response of the microphone of a personal sound exposure meter intended to be worn on a person.

This standard includes two informative annexes. Annex A provides a table of selected sound exposures and corresponding normalized 8-h-average sound levels. Annex B describes recommendation for tests to verify the performance of a personal sound exposure meter.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Published by BSI Standards Limited 2018

ISBN 978 0 580 95844 1

ICS 17.140.50

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 15 January 1994.

Amendments/corrigenda issued since publication

Date	Text affected
06 September 2001	Implementation of IEC amendment 1:2000 with CENELEC endorsement A1:2001
31 March 2018	Implementation of IEC amendment 2:2017 with CENELEC endorsement A2:2017

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61252:1995/A2

July 2017

ICS 13.140; 17.140.50

English Version

Electroacoustics - Specifications for personal sound exposure meters (IEC 61252:1993/A2:2017)

Electroacoustique - Spécifications des exposimètres acoustiques individuels (IEC 61252:1993/A2:2017)

Elektroakustik - Anforderungen an Personenschallexposimeter (IEC 61252:1993/A2:2017)

This amendment A2 modifies the European Standard EN 61252:1995; it was approved by CENELEC on 2017-05-11. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 CEN-CENELEC Management Centre or to any CENELEC member.

This amendment 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 CEN-CENELEC Management Centre 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

European foreword

The text of document 29/910/CDV, future IEC 61252:1993/A2, prepared by IEC/TC 29 "Electroacoustics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61252:1995/A2:2017.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2018-02-11
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2020-05-11

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

Endorsement notice

The text of the International Standard IEC 61252:1993/A2:2017 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
In Annex ZA of EN 61252:1995, add the following new reference:				
IEC 61000-4-20	2010	Electromagnetic compatibility (EMC) - Part 4-20: Testing and measurement techniques - Emission and immunity testing in transverse electromagnetic (TEM) waveguides	EN 61000-4-20	2010

Annex ZA (normative)
Other international publications quoted in this standard with the references of the relevant 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.

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

IEC publication	Date	Title	EN/HD	Date
60050(801)	1984	*International Electrotechnical Vocabulary (IEV) — Chapter 801: Acoustics and electro-acoustics*	—	—
60651	1979	*Sound level meters*	EN 60651	1994
60801-2	1984	*Electromagnetic compatibility for industrial-process measurement and control equipment — Part 2: Electrostatic discharge requirements*	EN 60801-2	1993
60801-3	1984	*Part 3: Radiated electromagnetic field requirements*	HD 481.3 S1	1987
60804	1985	*Integrating-averaging sound level meters*	EN 60804[a]	1994
60942	1988	*Sound calibrators*	HD 556 S1	1991
[A1] IEC 61000-4-2	1995	*Electromagnetic compatibility (EMC) — Part 4-2: Testing and measurement techniques — Electrostatic discharge immunity test*	EN 61000-4-2	1995
IEC 61000-4-3 (mod)	1995	*Part 4-3: Testing and measurement techniques — Radiated, radio-frequency electromagnetic field immunity test*	EN 61000-4-3	1996
IEC 61000-6-1	1997	*Part 6-1: Generic standards — Immunity for residential, commercial and light-industrial environments*	—	—
IEC 61000-6-2	1999	*Part 6-2: Generic standards — Immunity for industrial environments*	EN 61000-6-2	1999
IEC 61000-6-3	1996	*Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments*	—	— [A1]

Other publications:

ISO 266:1975	*Acoustics — Preferred frequencies for measurements*			
ISO 1683:1983	*Acoustics — Preferred reference quantities for acoustic levels*			
ISO 1999:1990	*Acoustics — Determination of occupational noise exposure and estimation of noise-induced hearing impairment*			
ISO 9612:199x	*Acoustics — Guidelines for the measurement and assessment of exposure to noise in the working environment* (in preparation)			
[A1] CISPR 22 (mod)	1997	*Information technology equipment — Radio disturbances characteristics — Limits and methods of measurement*	EN 55022 + corr. August	1998 1999 [A1]

[a] EN 60804 includes A1:1989 to IEC 804.

IEC 61252

Edition 1.0 2017-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 2
AMENDEMENT 2

Electroacoustics – Specifications for personal sound exposure meters

Electroacoustique – Spécifications des exposimètres acoustiques individuels

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 13.140; 17.140.50

ISBN 978-2-8322-4156-1

FOREWORD

This amendment has been prepared by IEC technical committee 29: Electroacoustics.

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

CDV	Report on voting
29/910/CDV	29/936/RVC

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website 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.

_____

2 Normative references

Add the following new reference:

IEC 61000-4-20:2010, *Electromagnetic compatibility (EMC) – Part 4-20: Testing and measurement techniques – Emission and immunity testing in transverse electromagnetic (TEM) waveguides*

15.5.4 Tests for immunity to power- and radio-frequency fields

Add the following at the end of 15.5.4.6:

An alternative test method using Transverse Electromagnetic (TEM) waveguides may be employed for immunity testing. The requirements that shall be applied for the TEM waveguide are specified in IEC 61000-4-20, and Annex B of IEC 61000-4-20:2010 defines methods of implementing the testing. The performance requirements for the instrument under test are unchanged including the range of frequencies tested and step size.

_____

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 61252
March 1995
+ A1
January 2001

ICS 17.140.50

Descriptors: Electroacoustic equipment, exposure meters, sound pressure, definitions, indicating instruments, specifications, characteristics, instrument sensitivity, marking, technical notices

English version

Electroacoustics — Specifications for personal sound exposure meters

(includes amendment A1:2001)
(IEC 61252:1993 + A1:2000)

Electroacoustique
Spécifications des exposimètres acoustiques individuels
(inclut l'amendement A1:2001)
(CEI 61252:1993 + A1:2000)

Elektroakustik
Anforderungen an Personenschallexposimeter
(enthält Änderung A1:2001)
(IEC 61252:1993 + A1:2000)

This European Standard was approved by CENELEC on 1995-03-06. Amendment A1 was approved by CENELEC on 2000-11-01. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, 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

This page deliberately left blank

Foreword

The text of the International Standard IEC 1252:1993, prepared by IEC TC 29, Electroacoustics, was submitted to the formal vote and was approved by CENELEC as EN 61252 on 1995-03-06 without any modification.

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) 1995-12-15
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1995-12-15

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 Annex A and Annex B are informative. Annex ZA has been added by CENELEC.

Foreword to amendment A1

The text of the document 29/457/FDIS, future amendment 1 to IEC 61252:1993, prepared by IEC TC 29, Electroacoustics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 EN 61252 on 2000-11-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2001-08-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2003-11-01

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 Annex A and Annex B are informative. Annex ZA has been added by CENELEC.

Introduction

According to this International Standard, a personal sound exposure meter is intended to measure sound exposure as the time integral of the square of the instantaneous A-frequency-weighted sound pressure. This operating principle underlies the measurement of sound exposure level according to IEC 804. It is the "equal-energy exchange rate" whereby a doubling (or halving) of the integration time of a constant sound level yields a two-fold increase (or decrease) of sound exposure. Similarly, an increase (or decrease) of 3 dB in a constant input sound level for a constant integration time yields a doubling (or halving) of the sound exposure.

Noise dose meters usually have been designed to indicate noise dose as a percentage of a legal limit. The limit and its definition vary from country to country and are subject to change. To facilitate international comparison of sound exposure records with numerical values of convenient magnitude, this International Standard specifies an instrument that indicates sound exposure in pascal-squared hours. An indication of sound exposure with a unit other than pascal-squared hours is permitted provided the manufacturer specifies a procedure for converting the indication to pascal-squared hours, for example, a display of "dose" as a fraction or a percentage of a specified sound exposure in pascal-squared hours.

The principal application for a personal sound exposure meter is the measurement of sound exposure in the vicinity of a person's head; e.g., for assessment of potential hearing impairment according to Standards such as ISO 1999. The microphone of a personal sound exposure meter may be worn on the shoulder, collar, or other location close to one ear. For many practical situations, such as in a factory where the sound-incidence angle may vary widely during the course of workday, the sound exposure indicated by an instrument worn on a person is likely to be different from that which would be measured in the absence of the person. The influence of the person wearing a personal sound exposure meter should be considered when estimating the sound exposure that would have been measured with the person absent.

1 Scope

1.1 Sound exposure is a physical measure that accounts for both the sound pressure and its duration, at a given location, through an integral-over-time of the square of instantaneous frequency-weighted sound pressure.

1.2 This International Standard is applicable to instruments for measurement of A-frequency-weighted sound exposure resulting from steady, intermittent, fluctuating, irregular, or impulsive sounds. Instruments complying with the specifications of this International Standard are intended to be worn on a person to measure sound exposure. Measurements of sound exposure in the workplace may be useful for determinations of occupational noise exposure, in accordance with ISO 1999 and ISO 9612.

1.3 This International Standard specifies acoustical and electrical performance requirements for personal sound exposure meters of one accuracy grade. The accuracy grade corresponds to that for an integrating sound level meter which complies with the Type 2 requirements of IEC 804 for an A-weighted sound pressure level range from 80 dB to 130 dB and a nominal frequency range from 63 Hz to 8 kHz.

1.4 Tolerances on deviations of an instrument's performance from specified design goals represent the performance capabilities of practical instruments. Personal sound exposure meters are required to operate within the tolerances of this International Standard over specified ranges of environmental conditions.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents listed below. Members of IEC and ISO maintain registers of currently valid normative documents.

IEC 60050(801):1984, *Advance edition of the International Electrotechnical Vocabulary, Chapter 801, Acoustics and electroacoustics*

IEC 60651:1979, *Sound level meters*

IEC 60801-2:1984, *Electromagnetic compatibility for industrial-process measurement and control equipment — Part 2: Electrostatic discharge requirements*

IEC 60801-3:1984, *Electromagnetic compatibility for industrial-process measurement and control equipment — Part 3: Radiated electromagnetic field requirements*

IEC 60804:1985, *Integrating-averaging sound level meters*

IEC 60942:1988, *Sound calibrators*

〈A1〉 IEC 61000-4-2:1995, *Electromagnetic compatibility (EMC) — Part 4: Testing and measurement techniques — Section 2: Electrostatic discharge immunity test.* Basic EMC publication

IEC 61000-4-3:1995, *Electromagnetic compatibility (EMC) — Part 4: Testing and measurement techniques — Section 3: Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-6-1:1997, *Electromagnetic compatibility (EMC) — Part 6: Generic standards — Section 1: Immunity for residential, commercial and light-industrial environments*

IEC 61000-6-2:1999, *Electromagnetic compatibility (EMC) — Part 6-2: Generic standards — Immunity for industrial environments*

CISPR 22:1997, *Information technology equipment — Radio disturbance characteristics — Limits and methods of measurement*

CISPR 61000-6-3:1996, *Electromagnetic compatibility (EMC) — Part 6: Generic standards — Section 3: Emission standard for residential, commercial and light-industrial environments* 〈A1〉

ISO 60266:1975, *Acoustics — Preferred frequencies for measurements*

ISO 61683:1983, *Acoustics — Preferred reference quantities for acoustic levels*

ISO 61999:1990, *Acoustics — Determination of occupational noise exposure and estimation of noise-induced hearing impairment*

ISO 69612:199X, *Acoustics — Guidelines for the measurement and assessment of exposure to noise in the working environment*[1)]

[1)] At present, at the stage of draft.