

# Electroacoustics - Specifications for personal sound exposure meters

EVS

**EESTI STANDARDI EESSÕNA**

**NATIONAL FOREWORD**

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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**  
**(IEC 1252:1993)**

Electroacoustique  
Spécifications des exposimètres  
acoustiques individuels  
(CEI 1252:1993)

Elektroakustik  
Anforderungen an  
Personenschallexposimeter  
(IEC 1252:1993)

This European Standard was approved by CENELEC on 1995-03-06. 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**

### 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with the EN have to be withdrawn (dow) 1995-12-15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 annexes A and B are informative.  
Annex ZA has been added by CENELEC.

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### Endorsement notice

The text of the International Standard IEC 1252:1993 was approved by CENELEC as a European Standard without any modification.

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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
50(801)	1984	International Electrotechnical Vocabulary (IEV) - Chapter 801: Acoustics and electro-acoustics	-	-
651	1979	Sound level meters	EN 60651	1994
801-2	1984	Electromagnetic compatibility for industrial-process measurement and control equipment - Part 2: Electrostatic discharge requirements	EN 60801-2	1993
801-3	1984	Part 3: Radiated electromagnetic field requirements	HD 481.3 S1	1987
804	1985	Integrating-averaging sound level meters	EN 60804*	1994
942	1988	Sound calibrators	HD 556 S1	1991

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)

\* EN 60804 includes A1:1989 to IEC 804

## Foreword

The text of 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 to EN 61252:1995 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 C is informative.  
Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of amendment 1:2000 to the International Standard IEC 61252:1993 was approved by CENELEC as an amendment to the European Standard without any modification.

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**Annex ZA**  
(normative)

**Normative references to international publications  
with their corresponding European publications**

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
<b>Add:</b>				
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	-	-
CISPR 22 (mod)	1997	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement	EN 55022 + corr. August	1998 1999

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# **ELECTROACOUSTICS –**

## **SPECIFICATIONS FOR PERSONAL SOUND EXPOSURE METERS**

### **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 50(801): 1984, *Advance edition of the International Electrotechnical Vocabulary, Chapter 801, Acoustics and electroacoustics*

IEC 651: 1979, *Sound level meters*

IEC 801-2: 1984, *Electromagnetic compatibility for industrial-process measurement and control equipment – Part 2: Electrostatic discharge requirements*

IEC 801-3: 1984, *Electromagnetic compatibility for industrial-process measurement and control equipment – Part 3: Radiated electromagnetic field requirements*

IEC 804: 1985, *Integrating-averaging sound level meters*

IEC 942: 1988, *Sound calibrators*

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.\**

### 3 Definitions

For the purposes of this International Standard, the following definitions apply. Definitions are consistent with corresponding definitions in IEC 50(801).

**3.1 sound exposure:** Time integral of squared, instantaneous A-frequency-weighted sound pressure over a specified event, for example, a working day.

#### NOTES

1 Although the primary SI unit for sound exposure is the pascal-squared second, for measurements of sound exposure in the workplace, the more-convenient derived unit, the pascal-squared hour, is used in this International Standard.

2 In symbols, (A-weighted) sound exposure is

$$E = \int_{t_1}^{t_2} p_A^2(t) dt \quad (1)$$

where  $p_A^2(t)$  is the square of instantaneous A-frequency-weighted sound pressure as a function of time  $t$  for an integration time period starting at  $t_1$  and ending at  $t_2$ . The unit of sound exposure  $E$  is pascal-squared hours if A-weighted sound pressure  $p_A$  is in pascals and the running time  $t$  in hours.

**3.2 equivalent-continuous A-weighted sound pressure level; time-average sound level:** In decibels, ten times the logarithm to the base ten of the ratio of the time-mean-square, A-frequency-weighted sound pressure, during an averaging time period  $T$ , to the square of the standard reference sound pressure.

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\* At present, at the stage of draft.