SLOVENSKI STANDARD
SIST EN 60804:2002

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SIST EN 60804:1998
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Zvokomeri z integracijskim povpreļenjem (IEC 60804:2000)

Integrating-averaging sound level meters (IEC 60804:2000)

Integrierende mittelwertbildende Schallpegelmesser (IEC 60804:2000)

Sonomètres intégrateurs moyenneurs (CEI 60804:2000)

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English version

Integrating-averaging sound level meters
(IEC 60804:2000)

Sonomètres intégrateurs moyenneurs
(CEI 60804:2000)

Integrierende mittelwertbildende
Schallpegelmesser
(IEC 60804:2000)

This European Standard 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, Czech Republic, 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

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Foreword

The text of document 29/459/FDIS, future edition 2 of IEC 60804, prepared by IEC TC 29, Electroacoustics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60804 on 2000-11-01.

This European Standard supersedes EN 60804:1994 and its amendment A2:1994.

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) 2001-08-01

– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2003-11-01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, annexes B and ZA are normative and annexes A, C and D are informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60804:2000 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding 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 (including amendments).

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 60050-801	1994	International Electrotechnical Vocabulary (IEV) - Chapter 801: Acoustics and electroacoustics	-	-
IEC 60651	1979	Sound level meters	EN 60651	1994
IEC 60942	1997	Electroacoustics - Sound calibrators	EN 60942	1998
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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Integrating-averaging sound level meters

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

INTEGRATING-AVERAGING SOUND LEVEL METERS

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60804 has been prepared by IEC technical committee 29: Electroacoustics.

This second edition of IEC 60804 cancels and replaces the first edition, published in 1985, and its amendments 1 (1989) and 2 (1993).

The text of this standard is based on the first edition, amendments 1 and 2 and on the following documents:

FDIS	Report on voting
29/459/FDIS	29/473/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 3.

Annex B forms an integral part of this standard.

Annexes A, C and D are for information only.

The committee has decided that the contents of this publication will remain unchanged until 2001. At this date, the publication will be

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

INTEGRATING-AVERAGING SOUND LEVEL METERS

1 Scope

1.1 General

This standard describes instruments for the measurement of frequency-weighted and time-averaged sound pressure levels. Optionally, sound exposure levels may be measured. This standard is consistent with the relevant requirements of IEC 60651, but specifies additional characteristics which are necessary to measure the equivalent continuous sound pressure level, L_{eq}, of steady, intermittent, fluctuating and impulsive sounds.

NOTE Standardization of an instrument for the measurement of the equivalent continuous sound pressure level and optionally the sound exposure level does not imply that these quantities completely characterize the psychological and physiological effects of sound on man.

Though a complete integrating sound level meter is specified, the combination of a conventional sound level meter that satisfies IEC 60651 and an accessory or "plug-in" that provides the averaging capability is admissible if the complete system satisfies this standard.

The instrument is called "integrating-averaging sound level meter", but the short form "integrating sound level meter" or "averaging sound level meter" may also be used. In this standard, "integrating sound level meter" is used.

There are some important differences between the time-averaging characteristics of an integrating sound level meter and those of a conventional sound level meter. These differences are discussed in annex A.

1.2 Types

This standard specifies integrating sound level meters of four degrees of accuracy, designated Types 0, 1, 2 and 3.

For each type, the specification for directional characteristics and frequency weighting and amplifier characteristics are identical to those of IEC 60651. Averaging and indicator specifications differ from IEC 60651, and it should be noted that they are identical for Types 2 and 3 instruments.

The mark "R" on the instrument, if any, indicates that this instrument is calibrated for diffuse field (see 2.3.3 and 9.1).

1.3 Characteristics specified

1.3.1 This standard specifies the following characteristics and test methods for integrating sound level meters:

a) integrating and averaging characteristics;

b) indicator characteristics;

c) overload sensing and indicating characteristics.

1.3.2 Integrating sound level meters shall also comply with the requirements in IEC 60651 as follows:

a) directional characteristics (clause 5);

b) frequency weighting characteristics (6.1 and 6.2);

c) sensitivity to various environments (clause 8).

1.4 Tolerances

The specifications for Types 0, 1, 2 and 3 integrating sound level meters have the same centre values and differ only in the tolerances allowed. Tolerances broaden as the type number increases.

1.5 Test specified

This standard specifies electrical and acoustical tests to verify compliance with the characteristics specified (see 1.3).

1.6 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

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

IEC 60651:1979, *Sound level meters*

IEC 60942:1997, *Electroacoustics – Sound calibrators*

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*

2 Object and general requirements

2.1 Object

The object of this standard is to ensure specified accuracy and stability of an integrating sound level meter and to reduce to the practical minimum any differences in equivalent measurements taken with instruments of various makes and models which satisfy the requirements of this standard.

2.2 Applications

The Type 0 integrating sound level meter is intended as a laboratory reference standard. Type 1 is intended for laboratory use and for field use where the acoustical environment can be closely specified and/or controlled. The Type 2 integrating sound level meter is suitable for general field applications. Type 3 is intended primarily for field noise survey applications.

Typical applications for the integrating sound level meter are

a) measurement of industrial noise that could produce hearing damage or be annoying;

b) measurement of community noise (traffic, residential, industrial sites, airports) that may be annoying or violate regulations;

c) measuring the average sound pressure level around a noisy product or other sound source, in which case the integrating capability may be used to determine an average in space as well as time.

The integrating sound level meter is well-suited for measurement of the equivalent continuous sound pressure level of impulsive sounds. Such impulsive sounds have high peak amplitude and duration as short as 1 ms.

NOTE The measurement of impulses with durations below 1 ms should be regarded as an extrapolation because testing is not required below 1 ms.

Integrating sound level meters intended for field use shall meet rigorous environmental specifications.

Integrating sound level meters are usually designed to be hand-held or bench-mounted. It is anticipated, however, that units to be worn on a person may also become available.

2.3 General requirements

2.3.1 Frequency weighting

An integrating sound level meter shall have the frequency weighting characteristic designated A as specified in IEC 60651.

Other frequency weighting characteristics such as the C-weighting or the Lin (Flat) weighting, specified in IEC 60651 are optional.

2.3.2 Averaging and integration

The integrating sound level meter shall be capable of measuring the equivalent continuous A-weighted sound pressure level (see 3.3). Optionally, the integrating sound level meter may be capable of measuring sound exposure level (see 3.4).