BRITISH STANDARD

BS EN 60651:1994
IEC 60651:1979
Incorporating Amendment No. 1

Specification for

Sound level meters

The European Standard EN 60651:1994, with the incorporation of amendments A1:1994 and A2:2001, has the status of a British Standard

ICS 17.140.50

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This British Standard, having been prepared under the direction of the Electronic Equipment Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 July 1994

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National foreword

This British Standard has been prepared under the direction of the Electronic Equipment Standards Policy Committee and is the English language version of EN 60651:1994 *Sound level meters*, including amendments A1:1994 and A2:2001, published by the European Committee for Electrotechnical Standardization (CENELEC). It is identical with IEC 60651:1979 including amendments 1:1993 and 2:2000, published by the International Electrotechnical Commission (IEC).

Amendment A1 was incorporated with the original BS EN 60651:1994. Amendment A2 has therefore been incorporated into BS EN 60651 as Amendment No. 1.

BS EN 60651:1994 replaces BS 5969:1981 which is withdrawn.

It should be noted that IEC 651 amendment 1:1993 contains an error which has been notified to IEC. Until such time as the error is corrected the following information applies to BS EN 60651:1994. In Appendix D (normative): Equations for design-goal frequency weightings equations (D1) and (D2) are to be read as follows.

For the C-weighting:

$$R_c(f) = \frac{12\,200^2 f^2}{(f^2 + 20{,}6^2)\,(f^2 + 12\,200^2)} \qquad \text{(D1)}$$

For the B-weighting:

$$R_B(f) = \frac{12\,200^2 f^3}{(f^2 + 20{,}6^2)\,(f^2 + 12\,200^2)\,(f^2 + 158{,}5^2)^{1/2}} \qquad \text{(D2)}$$

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 29 and a back cover.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60651

January 1994

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Supersedes HD 425 S1:1983

Descriptors: Sound level meters, precision, requirements, testing, properties, definitions

English version

Sound level meters

(including amendments A1:1994 and A2:2001)

(IEC 60651:1979 + A1:1993 + A2:2000)

Sonomètres
(inclut les amendments A1:1994 et A2:2001)
(CEI 60651:1979 + A1:1993 + A2:2000)

Schallpegelmesser
(enthält Änderungen A1:1994 und A2:2001)
(IEC 60651:1979 + A1:1993 + A2:2000)

This European Standard was approved by CENELEC on 1993-12-08. 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

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Foreword

As a consequence of the IEC-CENELEC Agreement, HD 425 S1:1983 (IEC 651:1979) was submitted to the CENELEC voting procedure for conversion into a European Standard.

The text of the International Standard was approved by CENELEC as EN 60651 on 8 December 1993.

The following dates were fixed.

— latest date of publication of an identical national standard (dop) 1994-12-01
— latest date of withdrawal of conflicting national standards (dow) —

Annexes designated "normative" are part of the body of the standard. In this standard, Appendix A, Appendix B, Appendix C and Annex ZA are normative.

Foreword of EN 60651/A1:1994

The text of document 29(CO)203, as prepared by IEC Technical Committee No. 29: Electroacoustics, was submitted to the IEC-CENELEC parallel vote in March 1993.

The reference document was approved by CENELEC as amendment A1 to EN 60651 on 8 December 1993.

The following dates were fixed:

— latest date of publication of an identical national standard (dop) 1994-12-01
— latest date of withdrawal of conflicting national standards (dow) 1994-12-01

Annexes designated "normative" are part of the body of the standard. In this standard, Appendix D and Annex ZA are normative.

Foreword to amendment A2

The text of document 29/458/FDIS, future amendment 2 to IEC 60651:1979, prepared by IEC TC 29, Electroacoustics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A2 to EN 60651:1994 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 E is informative. Annex ZA has been added by CENELEC.

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1 Scope

1.1 General

This standard describes instruments (sound level meters) for the measurement of certain frequency and time weighted sound pressure levels.

1.2 Types

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

1.3 Tolerances

The specifications for Types 0, 1, 2 and 3 sound level meters have the same centre values and differ only in the tolerances allowed. Tolerances generally broaden as the type number increases and differ for the various types to a degree which affects manufacturing costs significantly.

1.4 Characteristics specified

This standard specifies the following characteristics of sound level meters:

a) directional characteristics;

b) frequency weighting characteristics;

c) time weighting, detector and indicator characteristics;

d) sensitivity to various environments.

1.5 Tests specified

This standard specifies electrical and acoustical tests to verify compliance with the characteristics specified (see Sub-clause **1.4**). It also describes the method for absolute sensitivity calibration.

2 Object and general requirements

2.1 Object

Owing to the complexity of operation of the human ear, it is not possible at present to design an objective noise measuring apparatus to give results which are absolutely comparable, for all types of noise, with those obtained by subjective methods. However, it is considered essential to standardize an apparatus by which sounds can be measured under closely defined conditions so that results obtained by users of such apparatus are always reproducible within stated tolerances.

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

2.2 Applications

The Type 0 sound level meter is intended as a laboratory reference standard. Type 1 is intended especially for laboratory use, and for field use where the acoustical environment can be closely specified and/or controlled; the measurement accuracy possible with such an instrument will generally not be realized under ordinary conditions. The Type 2 sound level meter is suitable for general field applications. Type 3 is intended primarily for field noise survey applications to determine whether an established noise limit has been significantly violated.

Sound level meters intended for field use have to meet rigorous environmental specifications. Other sound level meters are only used in laboratories where the environment is controlled, and it is not justifiable to require such instruments to meet the design constraints imposed on field instruments. The distinction is provided for in Sub-clauses **8.5** and **8.6** which specify additional requirements for instruments intended for field use.

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