SVENSK STANDARD SS-EN 62585

Fastställd	Utgåva	Sida	Ansvarig kommitté
2013-03-15	1	1 (1+40)	SEK TK 29

Elektroakustik – Metoder för bestämning av korrektioner för att erhålla frifältsrespons för en ljudnivåmätare

Electroacoustics – Methods to determine corrections to obtain the free-field response of a sound level meter

Som svensk standard gäller europastandarden EN 62585:2012. Den svenska standarden innehåller den officiella engelska språkversionen av EN 62585:2012.

Nationellt förord

Europastandarden EN 62585:2012

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 62585, First edition, 2012 - Electroacoustics - Methods to determine corrections to obtain the free-field response of a sound level meter**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 17.140.50

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

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Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62585

October 2012

ICS 17.140.50

English version

Electroacoustics - Methods to determine corrections to obtain the free-field response of a sound level meter

(IEC 62585:2012)

Électroacoustique - Méthode de détermination de corrections pour obtenir la réponse en champ libre d'un sonomètre (CEI 62585:2012)

Elektroakustik - Verfahren zur Ermittlung von Korrekturwerten für die Bestimmung des Freifeld-Frequenzgangs eines Schallpegelmessers (IEC 62585:2012)

CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 62585:2012 E

SEK Svensk Elstandard

Foreword

The text of document 29/770/FDIS, future edition 1 of IEC 62585, prepared by IEC/TC 29 "Electroacoustics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62585:2012.

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)	2013-05-29
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2015-08-29

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

Endorsement notice

The text of the International Standard IEC 62585:2012 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:

IEC 61094-8	NOTE	Harmonised as EN 61094-8.
IEC 61260	NOTE	Harmonised as EN 61260.
IEC 61094-2	NOTE	Harmonised as EN 61094-2.
IEC 61094-3	NOTE	Harmonised as EN 61094-3.

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 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 60942	-	Electroacoustics - Sound calibrators	EN 60942	-
IEC 61094-1	-	Measurement microphones - Part 1: Specifications for laboratory standard microphones	EN 61094-1	-
IEC 61094-5	-	Measurement microphones - Part 5: Methods for pressure calibration of working standard microphones by comparison	EN 61094-5	-
IEC 61094-6	-	Measurement microphones - Part 6: Electrostatic actuators for determination of frequency response	EN 61094-6	-
IEC/TS 61094-7	-	Measurement microphones - Part 7: Values for the difference between free-field and pressure sensitivity levels of laboratory standard microphones	-	-
IEC 61183	-	Electroacoustics - Random-incidence and diffuse-field calibration of sound level meters	EN 61183	-
IEC 61672-1	-	Electroacoustics - Sound level meters - Part 1: Specifications	EN 61672-1	-
IEC 61672-2	-	Electroacoustics - Sound level meters - Part 2: Pattern evaluation tests	EN 61672-2	-
IEC 61672-3	-	Electroacoustics - Sound level meters - Part 3: Periodic tests	EN 61672-3	-
ISO/IEC Guide 98-3	-	Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement (GUM)	-	-
ISO/IEC Guide 99	-	International vocabulary of metrology - Basic and general concepts and associated terms (VIM)	-	-

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INTRODUCTION

The performance specification International Standard for sound level meters, IEC 61672-1, requires that at least one model of sound calibrator, conforming to the requirements of IEC 60942 be specified in the instruction manual for checking and maintaining the correct indication on the display of the sound level meter at the calibration check frequency. The sound level meter manufacturer specifies the adjustment value to be applied to obtain the required indication on the display in response to the sound pressure level generated by the sound calibrator, in order to optimize performance over the complete frequency range.

In addition, various corrections need to be available over a range of frequencies in order for a periodic test of a sound level meter to be performed according to IEC 61672-3. For example, corrections are needed for any effects of the sound level meter case or of accessories such as windscreens on the equivalent free-field sound level. Information on these corrections is also required by users of sound level meters and sound calibrators on a regular basis.

Also, a manufacturer producing a sound level meter to the specifications of IEC 61672-1, may recommend, in the instruction manual, the use of a sound calibrator, comparison coupler or electrostatic actuator to determine the acoustical response of a sound level meter at various frequencies. In this case the manufacturer is required to provide corrections to obtain equivalent sound levels that would be displayed under reference environmental conditions in response to plane progressive sinusoidal waves that are incident from the reference direction at each frequency used for periodic testing. These corrections will either be given in the instruction manual, or the instruction manual will state where they can be found.

ELECTROACOUSTICS – METHODS TO DETERMINE CORRECTIONS TO OBTAIN THE FREE-FIELD RESPONSE OF A SOUND LEVEL METER

1 Scope

This International Standard provides information on the corrections required over a range of frequencies in order for a periodic test of a sound level meter to be performed according to IEC 61672-3. These corrections include:

- corrections for the typical effects of reflections from the case of the sound level meter and diffraction of sound around the microphone;
- corrections for the deviation of the typical microphone frequency response from a uniform frequency response, where the actual microphone response cannot be measured;
- corrections for the influence on the frequency response of a typical microphone of a specified windscreen and any other accessory that is part of the configuration for normal use of the particular sound level meter submitted for testing.

This International Standard includes discussion about uncertainties of measurement of the required corrections. In some instances a maximum permitted expanded uncertainty for the manufacturer or testing laboratory is given. This maximum permitted expanded uncertainty excludes any component due to the variability of different samples of artefact (for example, microphone or windscreen). It should be noted that if large uncertainties of measurement are quoted for each of the individual corrections, when they are combined to account for the configuration of sound level meter under test, the large individual uncertainties may result in a failure to conform to the maximum permitted expanded uncertainties of measurement given in Table A.1 of IEC 61672-1:—[1] and hence a failure of the sound level meter to conform to IEC 61672-1

In addition, this International Standard describes methods for determining these corrections, over the frequency range of interest, and explains the adjustment value at the calibration check frequency to be quoted by the manufacturer of the sound level meter (also required by IEC 61672-3).

When the sound level meter manufacturer recommends the use of a sound calibrator, comparison coupler, or an electrostatic actuator for periodic testing of the acoustical response of a sound level meter at various frequencies, this International Standard describes methods of measurement of the corrections required to adjust the indication on the sound level meter to an equivalent free-field level, over the frequency range of interest. These corrections relate to a specific model of sound calibrator, comparison coupler or electrostatic actuator, microphone and sound level meter (also required by IEC 61672-3).

The aim of this International Standard is to ensure that the adjustment value at the calibration check frequency and all corrections are determined using consistent and appropriate methods.

It is intended that this International Standard will be used by manufacturers to determine adjustment values and corrections, by laboratories performing pattern evaluation tests according to IEC 61672-2, and by laboratories performing periodic tests according to IEC 61672-3. Laboratories performing periodic tests according to IEC 61672-3 will also need to consult this International Standard to ensure that the expanded uncertainties of

[1] Second edition to be published. (A revision of 61672-1:2002.)

measurement for the corrections quoted by the manufacturer do not exceed the maximum permitted values.

The corrections obtained by use of the methods given in this International Standard are the result of measurements made using samples of the devices. It is possible that these corrections may not be totally representative either for all batches produced or over time. Repeating the measurements at regular intervals is recommended to ensure that no changes are required to the corrections stated in the instruction manual.

This International Standard does not specifically cover the case where the sound level meter is fitted with a microphone intended for use in random-incidence sound fields, as information is given in IEC 61183.

2 Normative references

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.

IEC 60942, *Electroacoustics – Sound calibrators*

IEC 61094-1, *Measurement microphones – Part 1: Specifications for laboratory standard microphones*

IEC 61094-5, *Measurement microphones – Part 5: Methods for pressure calibration of working standard microphones by comparison*

IEC 61094-6, *Measurement microphones – Part 6: Electrostatic actuators for determination of frequency response*

IEC/TS 61094-7, *Measurement microphones – Part 7: Values for the difference between free-field and pressure sensitivity levels of laboratory standard microphones*

IEC 61183, *Electroacoustics-Random-incidence and diffuse-field calibration of sound level meters*

IEC 61672-1: —[2], *Electroacoustics – Sound level meters – Part 1: Specifications*

IEC 61672-2, *Electroacoustics – Sound level meters – Part 2: Pattern evaluation tests*

IEC 61672-3, *Electroacoustics – Sound level meters – Part 3: Periodic tests*

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

ISO/IEC Guide 99, *International vocabulary of metrology – Basic and general concepts and associated terms (VIM)*

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2 Second edition to be published. (A revision of 61672-1:2002.)