SLOVENSKI STANDARD

SIST EN 61094-5:2007

januar 2007

Merilni mikrofoni - 5. del: Metode za primerjalno kalibriranje tlaka delujočega standardnega mikrofona (IEC 61094-5:2001)

(istoveten EN 61094-5:2001)

Measurement microphones - Part 5: Methods for pressure calibration of working standard microphones by comparison (IEC 61094-5:2001)

ICS 17.140.50; 33.160.50

Referenčna številka
SIST EN 61094-5:2007(en)

EUROPEAN STANDARD **EN 61094-5**

NORME EUROPÉENNE

EUROPÄISCHE NORM December 2001

ICS 17.140.50

English version

Measurement microphones
Part 5: Methods for pressure calibration of working standard microphones by comparison
(IEC 61094-5:2001)

Microphones de mesure
Partie 5: Méthodes pour l'étalonnage en pression par comparaison des microphones étalons de travail
(CEI 61094-5:2001)

Messmikrofone
Teil 5: Verfahren zur Druckkammer-Kalibrierung von Gebrauchs-Normalmikrofonen nach der Vergleichsmethode
(IEC 61094-5:2001)

This European Standard was approved by CENELEC on 2001-12-04. 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, Malta, 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

Ref. No. EN 61094-5:2001 E

Foreword

The text of document 29/495/FDIS, future edition 1 of IEC 61094-5, prepared by IEC TC 29, Electroacoustics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61094-5 on 2001-12-04.

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) 2002-09-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2004-12-01

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 annexes A, B, C and D are informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61094-5:2001 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 61094-1	1)	Measurement microphones Part 1: Specifications for laboratory standard microphones	EN 61094-1	2000 2)
IEC 61094-2	1992	Part 2: Primary method for pressure calibration of laboratory standard microphones by the reciprocity technique	EN 61094-2	1993
IEC 61094-4	1)	Part 4: Specifications for working standard microphones	EN 61094-4	1995 2)
ISO/IEC GUIDE EXPRES	1995	Guide to the expression of uncertainty in measurement (GUM)	-	-

1) undated reference.

2) valid edition at date of issue.

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Microphones de mesure –

Partie 5:
Méthodes pour l'étalonnage en pression par comparaison des microphones étalons de travail

Measurement microphones –

Part 5:
Methods for pressure calibration of working standard microphones by comparison

International Electrotechnical Commission 3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site http://www.iec.ch

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Международная Электротехническая Комиссия

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For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MEASUREMENT MICROPHONES –

Part 5: Methods for pressure calibration of working standard microphones by comparison

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 61094-5 has been prepared by IEC technical committee 29: Electroacoustics.

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

FDIS	Report on voting
29/495/FDIS	29/497/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.

Annexes A, B, C and D are for information only.

The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

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

MEASUREMENT MICROPHONES –

Part 5: Methods for pressure calibration of working standard microphones by comparison

1 Scope

This part of IEC 61094 is applicable to working standard microphones with removable protection grids meeting the requirements of IEC 61094-4 and to laboratory standard microphones meeting the requirements of IEC 61094-1.

This part of IEC 61094 also describes methods of determining the pressure sensitivity by comparison with either a laboratory standard microphone that has been calibrated according to IEC 61094-2, or another working standard microphone that has been calibrated according to this part of IEC 61094.

Alternative comparison methods based on the principles described in IEC 61094-2 are possible but beyond the scope of this part of IEC 61094.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61094. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 61094 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 61094-1, *Measurement microphones – Part 1: Specifications for laboratory standard microphones*

IEC 61094-2:1992, *Measurement microphones – Part 2: Primary method for pressure calibration of laboratory standard microphones by the reciprocity technique*

IEC 61094-4, *Measurement microphones – Part 4: Specifications for working standard microphones*

ISO/IEC GUIDE EXPRES:1995, *Guide to the expression of uncertainty in measurement (GUM)*

3 Terms and definitions

For the purpose of this part of IEC 61094, the following definitions apply in addition to the definitions given in IEC 61094-1.

3.1
reference microphone
laboratory standard microphone or working standard microphone of previously determined pressure sensitivity

3.2
test microphone
laboratory standard microphone or working standard microphone to be calibrated by comparison with a reference microphone

3.3
monitor microphone
microphone used to measure changes in sound pressure in a coupler

3.4
coupler
device which, when fitted with microphones, forms a gas-filled cavity of predetermined shape and dimensions and provides an acoustic coupling element between the microphones and between the microphones and the sound source

3.5
jig
a device which, when fitted with microphones, holds them with their diaphragms face to face separated by a small distance but does not enclose the space between them

4 Reference environmental conditions

The reference environmental conditions are:

- temperature 23,0 °C
- static pressure 101,325 kPa
- relative humidity 50 %

5 Principles of pressure calibration by comparison

5.1 Principles

5.1.1 General principle

The pressure sensitivity of a measurement microphone is defined in terms of a sound pressure applied uniformly over the diaphragm. Consequently, the pressure sensitivity can only be realised in principle for microphones from which the protection grid can be removed and the diaphragm be exposed to the sound waves.

The principle of these comparison methods is that when the reference microphone and the test microphone are exposed to the same sound pressure either simultaneously or sequentially, the ratio of their pressure sensitivities is given by the ratio of their open-circuit output voltages. The sensitivity (both modulus and phase) of the test microphone can then be calculated from the sensitivity of the reference microphone.

The principle of the method allows the test microphone to be attached to a particular preamplifier and the sensitivity may be referred to the output of that preamplifier.

Multi-frequency measurements can be performed particularly rapidly if a wideband sound source is used and the output voltages of the microphones are analysed in narrow bands.