
Irish Standard
I.S. EN 62459:2011&AC:2015

# Sound system equipment - Electroacoustic transducers - Measurement of suspension parts

**I.S. EN 62459:2011&AC:2015**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

EN 62459:2011/AC:2015

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## National Foreword

I.S. EN 62459:2011&AC:2015 is the adopted Irish version of the European Document EN 62459:2011, Sound system equipment - Electroacoustic transducers - Measurement of suspension parts

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 62459:2011/AC:2015

January 2016

ICS 33.160.50

English Version

# Sound system equipment - Electroacoustic transducers - Measurement of suspension parts

Equipements pour systèmes électroacoustiques - Transducteurs électroacoustiques - Mesure des pièces de suspension

Elektroakustische Geräte - Elektroakustische Wandler - Messung der Aufhängungsteile

This corrigendum becomes effective on 25 January 2016 for incorporation in the English language version of the EN.

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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Endorsement notice

The text of the corrigendum IEC 62459:2010/COR1:2015 was approved by CENELEC as EN 62459:2011/AC:2015 without any modification.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 62459

March 2011

ICS 33.160.50

English version

# Sound system equipment - Electroacoustic transducers - Measurement of suspension parts

(IEC 62459:2010)

Equipements pour systèmes électroacoustiques - Transducteurs électroacoustiques - Mesure des pièces de suspension (CEI 62459:2010)

Elektroakustische Geräte - Elektroakustische Wandler - Messung der Aufhängungsteile (IEC 62459:2010)

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CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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 62459:2011 E

## Foreword

The text of document 100/1625/FDIS, future edition 1 of IEC 62459, prepared by IEC TC 100, Audio, video and multimedia systems and equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62459 on 2011-01-02.

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

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) | 2011-10-02 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2014-01-02 |

Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of the International Standard IEC 62459:2010 was approved by CENELEC as a European Standard without any modification.

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# Annex ZA
(normative)

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

The following referenced documents are indispensable for the application of this document. 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 60268-1 | - | Sound system equipment - Part 1: General | HD 483.1 S2 | - |

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IEC 62459

Edition 1.0 2010-01

# INTERNATIONAL STANDARD

colour inside

## Sound system equipment – Electroacoustical transducers – Measurement of suspension parts

IEC 62459:2010(E)

# IEC 62459

Edition 1.0 2010-01

# INTERNATIONAL STANDARD


## Sound system equipment – Electroacoustical transducers – Measurement of suspension parts

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

# SOUND SYSTEM EQUIPMENT – ELECTROACOUSTICAL TRANSDUCERS – MEASUREMENT OF SUSPENSION PARTS

## FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62459 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

This first edition cancels and replaces the IEC/PAS 62459 published in 2006. It constitutes a technical revision. The main changes are listed below:

– descriptions of the methods of measurement are adjusted to the state of the technology;
– addition of Clauses 5 to 13;
– integration of Annex A "Code of practice" at the main part of the standard;
– overall textual review.

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

| FDIS | Report on voting |
|---|---|
| 100/1625/FDIS | 100/1648/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 2.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

A bilingual version of this publication may be issued at a later date.

**IMPORTANT – The "colour inside" logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.**

# INTRODUCTION

The properties of the suspension parts such as spiders and surrounds have a significant influence on the final sound quality of the loudspeaker. This International Standard defines measurement methods and parameters required for development and quality-assurance by suspension-part manufacturers and loudspeaker manufacturers.

Static and dynamic methods have been developed for measuring the suspension parts at small and high amplitudes. Due to the visco-elastic properties of the suspension material (fabric, rubber, foam, paper) the measurement results depend on the measurement conditions and are not comparable between different methods. For example, the properties measured by static method significantly deviate from the dynamic behaviour of the suspension material when excited by an audio signal. This standard defines the terminology, the characteristics which should be specified and the way the results should be reported. The goal is to improve the reproducibility of the measurement, to simplify the interpretation of the results and to support the communication between manufacturers of suspension parts and complete drive units.

# SOUND SYSTEM EQUIPMENT – ELECTROACOUSTICAL TRANSDUCERS – MEASUREMENT OF SUSPENSION PARTS

## 1 Scope

This International Standard applies to the suspension parts of electroacoustic transducers (for example, loudspeakers). It defines the parameters and measurement method to determine the properties of suspension parts like spiders, surrounds, diaphragms or cones before being assembled in the transducer. The measurement results are needed for engineering design purposes and for quality control. Furthermore, this method is intended to improve the correlation of measurements between suspension-part manufacturers and loudspeaker manufacturers.

The measurement methods provide parameters based on linear and nonlinear modelling of the suspension part and uses both static and dynamic techniques.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60268-1, *Sound system equipment – Part 1: General*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

**3.1**
**suspension part**
surround of the cone made of rubber, foam, paper and fabric and the spider which is usually made out of impregnated fabric

**3.2**
**displacement**
$x$
perpendicular direction at the inner rim of the suspension part

**3.3**
**peak displacement**
$x_{peak}$
peak value of the displacement occurring during a dynamic measurement at resonance frequency

**3.4**
**driving force**
$F$
total effect of the restoring force, friction and inertia of both the suspension part and the inner clamping parts at the neck of the suspension