

Australian Standard[®]

**Acoustics—Instruments for the
measurement of sound
intensity—Measurement with
pairs of pressure sensing
microphones**

[IEC title: Electroacoustics—Instruments for the measurement of sound intensity—Measurement with pairs of pressure sensing microphones]

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Association of Consulting Engineers, Australia
Australian Acoustical Society
Australian and New Zealand Environment and Conservation Council
Australian Hearing Services
Civil Aviation Authority
CSIRO—Division of Applied Physics
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PREFACE

This Standard was prepared by the Standards Australia Committee on Acoustics Instrumentation and Measurement Techniques. It is identical with and reproduced from IEC 1043:1993, *Electroacoustics—Instruments for the measurement of sound intensity—Measurement with pairs of pressure sensing microphones*.

The objective of this Standard is to specify the performance requirements for sound intensity instruments, comprising sound intensity probes and processors, which detect sound intensity by pairs of spatially separated pressure sensing microphones.

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| 1260 Specification for octave-band and fractional octave-band filters (under consideration). (Revision of IEC 225:1966) | — |
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| 9614 Acoustics—Determination of sound power levels of noise sources using sound intensity | — |
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INTRODUCTION

This International Standard specifies the requirements for sound intensity instruments, comprising sound intensity probes and processors, which detect sound intensity by pairs of spatially separated pressure sensing microphones. These instruments, and others employing different detection methods, are still the subject of development.

Sound intensity instruments have two main applications. The first is the investigation of the radiation characteristics of sound sources. The second is the determination of the sound power of sources, especially *in situ*, where sound intensity measurement enables sound power determination to be made under acoustical conditions which render determination by sound pressure measurement impossible.

This International Standard applies to instruments to be used for the determination of sound power in accordance with the requirements of ISO 9614-1 and ensures well-defined performance for instruments used in other applications.

Specifications and tolerances are based on current instrument technology and on typical industrial requirements for dynamic capability index.

Requirements for the verification of performance of probes and processors are written in terms of type tests. A scheme for periodic verification, serving as the basis of the periodic recalibrations required in many countries, is given in annex A.

Probes and processors are treated separately and together; in the latter case they are called "instruments".

AUSTRALIAN STANDARD

**Acoustics—Instruments for the measurement of sound intensity—
Measurement with pairs of pressure sensing microphones****1 Scope**

The primary purpose of this Standard is to ensure the accuracy of measurements of sound intensity applied to the determination of sound power in accordance with ISO 9614-1. To meet the requirements of that standard, instruments are required to analyse the sound intensity in one-third octave or octave bands, and optionally to provide A-weighted band levels. They are also required to measure sound pressure level in addition to sound intensity level to facilitate the use of the field indicators described in ISO 9614-1.

This International Standard only applies to instruments which detect sound intensity by pairs of spatially separated pressure sensing microphones.

This International Standard specifies performance requirements for instruments used for the measurement of sound intensity, and their associated calibrators.

The requirements are intended to reduce to a practical minimum any differences in equivalent measurements made using different instruments, including instruments comprising probes and processors from different manufacturers.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 9614-1: 1993, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 1: Measurement at discrete points*

IEC 651: 1979, *Sound level meters*

IEC 942: 1988, *Sound calibrators*

IEC 1260: 19XX, *Specification for octave-band and fractional octave-band filters* (under consideration). (Revision of IEC 225: 1966)