

ISA-S37.10-1982 (R1995)

Approved September 29, 1995

Standard

Specifications and Tests for Piezoelectric Pressure and Sound-Pressure Transducers



ISA-S37.10 — Specifications and Tests for Piezoelectric Pressure and Sound-Pressure Transducers

ISBN 0-87664-382-9

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ISA
67 Alexander Drive
P.O. Box 12277
Research Triangle Park, North Carolina 27709

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NAME	COMPANY
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G. T. Cozad	McDonnell Douglas Corporation
L. Horn	National Bureau of Standards
R. W. Lally	PCB Piezotronics
J. Rhodes	Endevco Corporation

The following individuals served on ISA Committee SP37, who reaffirmed ISA-S37.10 in 1995:

NAME	COMPANY
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P. Bliss, Deceased	Consultant
M. Brigham	The Supply System
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D. Norton	McDermott Energy Svces Inc.
H. Norton	Consultant
M. Tavares	Boeing Defense & Space Group
R. Whittier	Endevco
J. Wilson	Consultant

This standard was reaffirmed by the ISA Standards and Practices Board on September 29, 1995.

NAME	COMPANY
M. Widmeyer, Vice President	Washington Public Power Supply System
H. Baumann	H. D. Baumann & Associates, Inc.
D. Bishop	Chevron USA Production Company
P. Brett	Honeywell, Inc.
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R. Reimer	Allen-Bradley Company
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W. Weidman	Consultant
J. Weiss	Electric Power Research Institute

Contents

1 Scope	7
2 Purpose	7
3 Drawing Symbol	8
4 Characteristics	9
4.1 Design characteristics.....	10
4.2 Performance characteristics	13
4.3 Additional terminology	17
5 Individual acceptance tests and calibrations	18
5.1 Visual inspection.....	18
5.2 Voltage or charge sensitivity, range, and linearity	18
5.3 Proof pressure (pressure transducers) (4.2.2.6).....	20
5.4 Frequency response, resonant frequency and resonant frequency amplification	20
5.5 Transducer capacitance	22
5.6 Shunting resistance	22
5.7 Insulation resistance (for transducers isolated from case ground)	22
5.8 Transducer cable (non-integral).....	22
6 Qualification tests	23
6.1 Transducer seal test (sealed transducer only).....	23
6.2 Cable noise test.	23
6.3 Ambient-pressure sensitivity shift (4.2.1.12).	24
6.4 Vibration error (4.2.1.10)	24
6.5 Linear-acceleration effects (4.2.1.11.f)	24
6.6 Thermal sensitivity shift at maximum and minimum operating temperature (4.2.1.7).	25
6.7 Temperature gradient error (4.2.1.8).	25
6.8 Sensitivity stability (4.2.1.11).	26
6.9 Burst Pressure (pressure transducers) (4.2.1.6)	26
7 Sample data sheets	26
Annex A — References	33
Figures	
1 — Sample data sheet No. 1.....	27
2 — Sample data sheet No. 2.....	29
3 — Sample data sheet No. 3.....	31

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1 Scope

1.1 This standard covers piezoelectric (including ferro-electric) pressure transducers and piezoelectric sound pressure transducers. Pressure and sound-pressure types could be the same instrument differing only in the method of calibration and manner of specifying performance. With the exception of certain impedance and charge measurements, this standard is also applicable to piezoelectric transducers with built-in amplifiers.

Sound pressure transducers sense and measure the pressure oscillations within an elastic fluid medium experiencing stress-strain waves. When installed near the sound source or in the wall of a test object, the transducer behavior relates to its pressure response. When installed in a sound field, considerable interaction occurs at higher frequencies during the measuring transaction, changing the quantity being measured and relating transducer behavior to its free-field or diffuse-field response. Both aspects of transducer behavior are covered in this standard.

1.2 Included among the specific types of piezoelectric pressure transducers to which this standard is applicable are the following:

- a) Piezoelectric pressure transducers for transient pressure measurements
- b) Piezoelectric pressure transducers that, in conjunction with associated electronic equipment, have quasi-dc response to gage pressures
- c) Piezoelectric transducers for sound pressure levels in excess of 100 dB overall re 20 μ Pa associated with fluid-borne noise

1.3 Terminology used in this document is defined in ISA-S37.1, except that additional definitions particularly applicable to piezoelectric pressure and piezoelectric sound-pressure transducers are defined in 4.3 of this document.

2 Purpose

This Standard establishes the following for piezoelectric pressure and piezoelectric sound-pressure transducers.

2.1 Uniform minimum general specifications for describing design and performance characteristics

2.2 Selected uniform acceptance and qualification test methods, including calibration techniques

2.3 Uniform procedures for the presentation of transducer test data

2.4 A drawing symbol for use on measurement system electrical schematics (See Note in [Section 3](#).)