

ISA-S37.3-1982 (R1995)

Approved September 29, 1995

Standard



**Specifications and Tests
for Strain Gage
Pressure Transducers**



ISA-S37.3 — Specifications and Tests for Strain Gage Pressure Transducers

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Preface

This preface, as well as all footnotes and annexes, is included for informational purposes and is not part of ISA-S37.3.

This standard has been prepared as a part of the service of ISA, the international society for measurement and control, toward a goal of uniformity in the field of instrumentation. To be of real value, this document should not be static but should be subject to periodic review. Toward this end, the Society welcomes all comments and criticisms and asks that they be addressed to the Secretary, Standards and Practices Board; ISA; 67 Alexander Drive; P.O. Box 12277; Research Triangle Park, NC 27709; Telephone: (919) 549-8411; Fax: (919) 549-8288; E-mail: standards@isa.org.

The ISA Standards and Practices Department is aware of the growing need for attention to the metric system of units in general, and the International System of Units (SI) in particular, in the preparation of instrumentation standards, recommended practices, and technical reports. The Department is further aware of the benefits to USA users of ISA standards of incorporating suitable references to the SI (and the metric system) in their business and professional dealings with other countries. Toward this end, this Department will endeavor to introduce SI and acceptable metric units in all new and revised standards to the greatest extent possible. *The Metric Practice Guide*, which has been published by the Institute of Electrical and Electronics Engineers as ANSI/IEEE Std. 268-1992, and future revisions, will be the reference guide for definitions, symbols, abbreviations, and conversion factors.

It is the policy of ISA to encourage and welcome the participation of all concerned individuals and interests in the development of ISA standards, recommended practices, and technical reports. Participation in the ISA standards-making process by an individual in no way constitutes endorsement by the employer of that individual, of ISA, or of any of the standards which ISA develops.

The development of this Standard was initiated as the result of a survey conducted by the Survey Committee on Transducers for Aero-Space Testing (8A-RP37) in December 1960. In addition to the strong need for improved and uniform transducer nomenclature and specification terminology, many of the people surveyed also indicated the need for standardization of performance characteristic specifications, test methods, and electrical requirements for certain classes of transducers used in Aero-Space Testing. Accordingly, five subcommittees were established initially, each to deal with one of these classes of transducers. Subcommittee 8A-RP37.3 (Subcommittee on Strain Gage Pressure Transducers, "SCOSGAPT") was organized on May 1, 1961, to prepare a Recommended Practice for strain gage pressure transducers. Six successive drafts were prepared and submitted for review and comments to a large number of people active in aerospace industries and sciences in which strain gage pressure transducers are used. The final document, ISA-RP37.3 (Guide for Specifications and Tests for Strain Gage Pressure Transducers for Aero-Space Testing), was published by ISA in April 1964. It was revised in 1970 and approved as ANSI Standard MC 6.2 in October 1975.

This Standard was prepared under the direction of Paul S. Lederer (Chairman S37.3) by members of SP37 by updating and expanding the previous version of the document and by obtaining extensive reviews of drafts of the Standard by representatives of transducer users and manufacturers as well as agencies of the U.S. Government. The reviewers were selected from a broad cross-section of all industries and sciences in which transducers are applied for measuring purposes.

This Standard is intended as a guide for technical personnel at user facilities as well as by manufacturers' technical and sales personnel whose duties include specifying, calibrating, testing, or showing performance characteristics of potentiometric pressure transducers. By basing users' specifications as well as technical advertising and reference literature on this Standard, or by referencing portions thereof, as applicable, a clear understanding of the users' needs or of the transducers' performance capabilities, and of the methods used for evaluating or proving performance, will be provided. Adhering to the specification outline, terminology and procedures shown will not only result in simple, but also complete specifications; it will also reduce design time, procurement lead time, and labor, as well as material costs. Of major importance will be the reduction of qualification tests resulting from use of a commonly accepted test procedures and uniform data presentation.

The following individuals served on the 1975 SP37.3 Subcommittee:

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The following individuals served on the ISA Committee SP37, who reaffirmed ISA-S37.3 in 1995:

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

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1 Scope

1.1 This Standard covers strain gage pressure transducers, but primarily those used in measurement systems.

1.2 Included among the specific versions of strain gage pressure transducers to which this Standard is applicable are the following:

- Absolute Pressure Transducers
- Differential Pressure Transducers
- Gage Pressure Transducers
- Sealed Reference Pressure Transducers

2 Purpose

This Standard establishes the following for strain gage pressure transducers.

- 2.1 Uniform minimum specifications for design and performance characteristics
- 2.2 Uniform acceptance and qualification test methods, including calibration techniques
- 2.3 Uniform presentation of minimum test data
- 2.4 A drawing symbol for use in electrical schematics ([See note in Section 3.](#))

3 Drawing symbol

The drawing symbol for measuring a transducer is a square of dimensions 2x by 2x, with an added equilateral triangle, the base of which is the left side of the square. The triangle symbolizes the sensing element. The letter "P" in the triangle designates "pressure" and the subscripts denote the second modifier.