

# **ISA-S37.12-1982 (R1995)**

Approved September 29, 1995

Standard

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# **Specifications and Tests for Potentiometric Displacement Transducers**



ISA-S37.12 — Specifications and Tests for Potentiometric Displacement Transducers

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

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## Preface

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This preface, as well as all footnotes and annexes, is included for informational purposes and is not a part of ISA-S37.12.

This standard has been prepared as a part of the service of ISA 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. 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. Towards 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. Certain metric units that are part of the SI system are in common accepted pressure measurement that is convertible to kilopascals by multiplying by 100.

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.

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, testing, or showing performance characteristics of strain-gage linear Potentiometric Displacement 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 procedure and uniform data presentation.

The development of this standard was initiated as the result of a survey conducted in December 1960. A total of 240 questionnaires was sent out to transducer users and manufacturers. A strong majority indicated in their replies a need for transducer standardization. As potentiometric displacement transducers were one of the types shown to be most in need of standardization, a project subcommittee, SP37.12, Potentiometric Displacement Transducers, was formed under the cognizance of SP37, Transducers for Aerospace Testing, and a standard was drafted and reviewed extensively, and revised in 1976. The reviewers were selected from a broad cross-section of all industries and sciences in which transducers are applied for measuring purposes.

The following individuals served as members of the 1977 SP37.12 Subcommittee:

<b>NAME</b>	<b>COMPANY</b>
R. Bronson, Chairman	Lockheed Electronics Company, Inc.
M. Brown	Bourns, Inc.
J. Kauker	Binary Controls
K. Posey, PE	URS/Forest & Cotton
R. Richard	National Aeronautics & Space Administration
D. Veatch	National Aeronautics & Space Administration

The following individuals served as members of the SP37 Committee who reaffirmed SP37.12 in 1995:

<b>NAME</b>	<b>COMPANY</b>
E. Icayan, Chairman	Westinghouse Hanford Co.
J. Weiss	Electric Power Research Inst.
P. Bliss, Deceased	Consultant
M. Brigham	The Supply System
D. Hayes	LA Dept. Water & Power
M. Kopp	Validyne Corp.
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A. Mobley	3M Co.
J. Mock	Consultant
D. Norton	McDermott Energy Svces Inc.
H. Norton	Consultant
M. Tavares	Boeing Defense & Space Group
R. Whittier	Endevco
J. Wilson	

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

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M. Widmeyer, Vice President	Washington Public Power Supply System
H. Baumann	H. D. Baumann & Associates, Inc.
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H. Dammeyer	Phoenix Industries, Inc.
R. Dieck	Pratt & Whitney
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T. McAviney	Metro Wastewater Reclamation District
A. McCauley, Jr.	Chagrin Valley Controls, Inc.
G. McFarland	Honeywell Industrial Automation and Controls

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**COMPANY**

J. Mock	Consultant
E. Montgomery	Fluor Daniel, Inc.
D. Rapley	Rapley Engineering Services
R. Reimer	Allen-Bradley Company
R. Webb	Pacific Gas & Electric Company
W. Weidman	Consultant
J. Weiss	Electric Power Research Institute
J. Whetstone	National Institute of Standards & Technology
C. Williams	Eastman Kodak Company
G. Wood	Graeme Wood Consulting
M. Zielinski	Fisher•Rosemount

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## 1 Scope

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**1.1** This Standard covers potentiometric displacement transducers, primarily those used in measuring systems.

### NOTES

1. These specifications are not intended to cover transducers used in hazardous (classified) locations as specified in the National Electric Code.
2. Transducers for use in nuclear power plants must conform to additional U.S. Nuclear Regulatory Commission Requirements not specifically called out in this Standard.

**1.2** Included among the specific versions of potentiometric displacement transducers to which this Standard is applicable are the following:

Angular Displacement Transducers  
Linear Displacement Transducers

**1.3** Terminology used in this document is defined in ISA-S37.1. Additional terms considered applicable to potentiometric displacement transducers are defined in 4.3 of this document. An asterisk appears after those terms defined in S37.1. A double asterik appears after those terms defined in 4.3 of this standard.

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## 2 Purpose

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This Standard establishes the following for potentiometric displacement 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

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## 3 Drawing symbol

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**3.1** The drawing symbol for a potentiometric displacement transducer is a square with an added equilateral triangle, the base of which is the left side of the square.