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Reference conditions and procedures for testing industrial and process measurement transmitters -
Part 2: Specific procedures for pressure transmitters

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IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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Reference conditions and procedures for testing industrial and process measurement transmitters - Part 2: Specific procedures for pressure transmitters

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 62828-2:2017. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 62828-2 has been prepared by subcommittee 65B: Measurement and control devices, of IEC technical committee 65: Industrial-process measurement, control and automation. It is an International Standard.

This second edition cancels and replaces the first edition published in 2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) revision according to the latest IEC rules;
b) comparison with the general part of IEC 62828-1;
c) additions and more precise definitions in the "Terms and definitions" clause;
d) correction of the calculation formulas for the measurement error;
e) more precise formulation of long-term drift;
f) extension of additional tests;
g) transfer of the annex "Example of signal current range for a 4 to 20 mA PMT" in IEC 62828-1;
h) new Annex C "Main characteristics for pressure transmitters".

The text of this International Standard is based on the following documents:

Draft	Report on voting
65B/1308/FDIS	65B/1319/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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– reconfirmed,
– withdrawn, or
– revised.

The language used for the development of this International Standard is English.

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This International Standard is to be used in conjunction with IEC 62828-1:2026.

A list of all parts in the IEC 62828 series, published under the general title *Reference conditions and procedures for testing industrial and process measurement transmitters*, can be found on the IEC website.

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INTRODUCTION

Most of the current IEC standards on industrial and process measurement transmitters are rather old and were developed having in mind devices based on analogue technologies. Today's digital industrial and process measurement transmitters are quite different from those analogue transmitters: they include more functions and newer interfaces, both towards the computing section (mostly digital electronic) and towards the measuring section (mostly mechanical). Even if some standards dealing with digital process measurement transmitters already exist, they are not sufficient, since some aspects of the performance are not covered by appropriate test methods.

In addition, existing IEC test standards for industrial and process measurement transmitters are spread over many documents, so that for manufacturers and users it is difficult, impractical and time-consuming to identify and select all the standards to be applied to a device measuring a specific process quantity (pressure, temperature, flow, level, etc.).

To help manufacturers and users, it was decided to review, complete and reorganize the relevant IEC standards and to create a more suitable, effective and comprehensive standard series that provides in a systematic way all the necessary specifications and tests required for different industrial and process measurement transmitters.

To solve the issues mentioned above and to provide an added value for the stakeholders, the new standard series on industrial and process measurement transmitters covers the following main aspects:

– applicable normative references;
– specific terms and definitions;
– typical configurations and architectures for the various types of industrial and process measurement transmitters;
– hardware and software aspects;
– interfaces (to the process, to the operator, to the other measurement and control devices);
– physical, mechanical and electrical requirements and relevant tests; clear definition of the test categories: type tests, acceptance tests and routine tests;
– performance (its specification, tests and verification);
– environmental protection, hazardous areas application, functional safety, etc.;
– structure of the technical documentation.

To cover in a systematic way all the topics to be addressed, the IEC 62828 series is organized in several parts. At the moment of the publication of this document, the IEC 62828 series consist of the following parts:

– *IEC 62828-1: General procedures for all types of transmitters;*
– *IEC 62828-2: Specific procedures for pressure transmitters;*
– *IEC 62828-3: Specific procedures for temperature transmitters;*
– *IEC 62828-4: Specific procedures for level transmitters;*
– *IEC 62828-5: Specific procedures for flow transmitters*.

~~In preparing IEC 62828 (all parts), many test procedures were taken, with the necessary improvements, from IEC 61298 (all parts). As IEC 61298 (all parts) is currently applicable to all process measurement and control devices, when IEC 62828 (all parts) is completed, IEC 61298 (all parts) will be revised to harmonise it with IEC 62828 (all parts), taking out from its scope the industrial and process measurement transmitters. During the time when the scope of IEC 61298 (all parts) is being updated, the new IEC 62828 series takes precedence for industrial and process measurement transmitters.~~

1 Scope

This part of IEC 62828 establishes specific procedures for testing pressure process measurement transmitters (PMT) used in measuring and control systems for industrial processes and for machinery ~~control systems~~.

A pressure PMT can feature a remote seal to bring the process variable to the sensing element in the PMT. When the remote seal cannot be separated from the PMT, the complete device is tested.

For general test procedures, reference is made to IEC 62828-1, which is applicable to all types of process measurement transmitters.

NOTE In industrial and process applications, to indicate the process measurement transmitters, it is common also to use the terms "industrial transmitters", or "process transmitters".

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 62828-1:2026, *Reference conditions and procedures for testing industrial and process measurement transmitters - Part 1: General procedures for all types of transmitters*

IEC 61518, *Mating dimensions between differential pressure (type) measuring instruments and flanged-on shut-off devices up to 413 bar (41,3 MPa)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62828-1 and in IEC 61518 as well as the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

– IEC Electropedia: available at https://www.electropedia.org/

– ISO Online browsing platform: available at https://www.iso.org/obp

3.1
absolute pressure
p_{abs}
pressure using absolute vacuum as the datum point

~~Note 1 to entry: The CDD code of this entry for Electronic Data Exchange is ABB181.~~

[SOURCE: IEC 61987 #ABB181 in the IEC common data dictionary]

3.2
ambient atmospheric pressure
p_{amb}
pressure exerted by the atmospheric air at a given altitude and temperature

Note 1 to entry: The atmospheric pressure decreases with the altitude by about 10 Pa/m (Pascal per meter).