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Process measurement and control devices - General methods and procedures for evaluating performance -
Part 1: General considerations

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Process measurement and control devices - General methods and procedures for evaluating performance - Part 1: General considerations

FOREWORD

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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 61298-1:2008. 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 61298-1 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 third edition cancels and replaces the second edition published in 2008. This edition constitutes a technical revision.

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

a) Process measurement transmitters (PMT) have been removed from the scope of this standard.

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

Draft	Report on voting
65B/1304/FDIS	65B/1329/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.

A list of all parts of the IEC 61298 series, under the general title *Process measurement and control devices - General methods and procedures for evaluating performance*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,

– withdrawn, or

– revised.

INTRODUCTION

This document is ~~not intended as a substitute for existing standards, but is rather~~ intended as a reference document for any future standards developed within the IEC or other standards organizations, concerning the evaluation of process instrumentation~~. Any revision of existing standards should take this standard into account~~, except process measurement transmitters (PMT) which are standardized by the IEC 62828 series.

This common standardized basis ~~should~~ can be utilized for the preparation of future relevant standards, as follows:

– any test method or procedure, already treated in this document, ~~should~~ will be specified and described in the new standard by referring to the corresponding clause of this document. Consequently new editions of this document are revised without any change in numbering and scope of each clause;

– any particular method or procedure, not covered by this document, ~~should~~ will be developed and specified in the new standard in accordance with the criteria, as far as they are applicable, stated in this document;

– any conceptual or significant deviation from the content of this document ~~should~~ will clearly be identified and justified if introduced in a new standard.

1 Scope

This part of IEC 61298 specifies general methods and procedures for conducting tests and reporting on the functional and performance characteristics of process instrumentation except process measurement ~~and control devices~~ transmitters (PMT) which are standardized by the IEC 62828 series. ~~The methods and procedures specified in this standard are applicable to any type of process measurement and control device.~~ The tests are applicable to any such devices characterized by their own specific input and output variables, and by the specific relationship (transfer function) between the inputs and outputs and include analogue and digital devices. For devices that require special tests, this document ~~should~~ can be used together with any product specific standard specifying special tests.

This document covers general principles which apply to the IEC 61298 series.

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 60050-300, *International Electrotechnical Vocabulary (IEV) - Part 300: Electrical and electronic measurements and measuring instruments - Part 311: General terms relating to measurements - Part 312: General terms relating to electrical measurements - Part 313: Types of electrical measuring instruments - Part 314: Specific terms according to the type of instrument,* available at https://www.electropedia.org/

IEC 60050-351, *International Electrotechnical Vocabulary (IEV) - Part 351: Control technology,* available at https://www.electropedia.org/

~~IEC 60410:1973, *Sampling plans and procedures for inspection by attributes*~~

IEC 61298-2, *Process measurement and control devices - General methods and procedures for evaluating performance - Part 2: Tests under reference conditions*

IEC 61298-3, *Process measurement and control devices - General methods and procedures for evaluating performance - Part 2: Tests for the effects of influence quantities*

IEC 61298-4, *Process measurement and control devices - General methods and procedures for evaluating performance - Part 4: Evaluation report content*

~~ISO 31 (all parts), *Quantities and units*~~

ISO/IEC 80000 (all parts), *Quantities and units*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-300, IEC 60050-351 and 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
variable
quantity or condition whose value is subject to change and can usually be measured (e.g. temperature, flow rate, speed, signal, etc.)

[SOURCE: ~~IEV 351-21-01~~ IEC 60050-351:2013, 351-41-01, modified – The first preferred term, "variable quantity", has been removed, the definition has been amended and the 3 notes to entry have been removed.]

~~**3.2**~~
~~**signal**~~
~~physical quantity, one or more parameters of which carry information about one or more variables which the signal represents~~
~~[IEV 351-21-51, modified]~~

3.2
range
range of values defined by the two extreme values, within which a variable can be measured within the specified accuracy

[SOURCE: ~~IEV 351-27-11~~ IEC 60050-311:2001, 311-03-14, modified – The definition has been amended and the note to entry has been removed.]

3.3
span
algebraic difference between the values of the upper and lower limits of the measuring range

[SOURCE: IEC 60050-311:2001, 311-03-13]

3.4
inaccuracy
maximum positive and negative deviation from the specified characteristic curve observed in testing a device under specified conditions and by a specified procedure

Note 1 to entry: Accuracy is defined in IEC 60050-300:2001, 311-06-08.

3.5
error
algebraic difference between the indicated value and a comparison value of the measured variable

Note 1 to entry: The error is positive when the indicated value is greater than the comparison value. The error is generally expressed as a percentage of the relevant ideal span.

[SOURCE: ~~IEV 351-27-04~~ IEC 60050-192:2024, 192-03-02, modified – The definition has been amended, Note 1 to entry has been amended and Note 2 to entry has been removed.]