IEC 61298-3

Edition 3.0 2026-06

INTERNATIONAL STANDARD

REDLINE VERSION

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

ICS 25.040.40

ISBN 978-2-8327-1318-1

IEC 61298-3:2026-06 RLV(en)

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

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IEC 61298-3 has been prepared by sub-committee 65B: Devices and process analysis, 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 document;
b) contents of subclauses referring to EMC and electrical safety have been deleted, only leaving reference to the IEC standards.

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

Draft	Report on voting
65B/1314/FDIS	65B/1331/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– withdrawn, or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 standard 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 the Process Measurement Transmitters (PMT) which are standardized by 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 be clearly 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 ~~measurement and control devices~~ instrumentation except process measurement transmitters (PMT) which are standardized by IEC 62828 series. 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 tests for the effects of influence quantities.

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 61298-1:1995, *Process measurement and control devices – General methods and procedures for evaluating performance – Part 1: General considerations*~~

~~IEC 61298-2:1995, *Process measurement and control devices – General methods and procedures for evaluating performance – Part 2: Tests under reference conditions*~~

~~IEC 61298-4:1995, *Process measurement and control devices – General methods and procedures for evaluating performance – Part 4: Evaluation report content*~~

IEC 60068-2-1, *Environmental testing - Part 2-1: Tests - Test A: Cold*

IEC 60068-2-2, *Environmental testing - Part 2-2: Tests - Test B: Dry heat*

IEC 60068-2-6, *Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)*

IEC 60068-2-30, *Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 + 12 h cycle)*

IEC 60068-2-31, *Environmental testing - Part 2-31: Tests - Test Ec: ~~Drop and topple~~ Rough handling shocks, primarily for equipment-type specimens*

IEC 60654-1~~:1993, *Operating conditions for*~~, *Industrial-process measurement and control equipment - Operating conditions - Part 1: Climatic conditions*

IEC 60654-2~~:1992~~, *Operating conditions for industrial-process measurement and control equipment - Part 2: Power*

IEC 60654-3~~:1983~~, *Operating conditions for industrial-process measurement and control equipment - Part 3: Mechanical influences*

IEC 61298-1:2026, *Process measurement and control devices - General methods and procedures for evaluating performance - Part 1: General considerations*

IEC 61298-2:2026, *Process measurement and control devices - General methods and procedures for evaluating performance - Part 2: Tests under reference conditions*

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

~~IEC 61326 (all parts), *Electrical equipment for measurement, control and laboratory use – EMC requirements*~~

IEC 61326-1~~:2005~~, *Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements*

~~IEC 61000-4-2:2001, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test. Basic EMC publication*~~

~~IEC 61000-4-3:2002, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test. Basic EMC publication*~~

~~IEC 61000-4-4:2004, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test. Basic EMC publication*~~

~~IEC 61000-4-5:1995, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test. Basic EMC publication*~~

~~IEC 61000-4-6:2006, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*~~

~~IEC 61000-4-8:2001, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test. Basic EMC publication*~~

~~IEC 61000-4-11:2004, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests . Basic EMC publication*~~

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IEC 61000-4-2, *Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61000-4-4, *Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test*

IEC 61000-4-5, *Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test*

IEC 61000-4-6, *Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61000-4-8, *Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test*

IEC 61000-4-11, *Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase*

IEC 61010-1, *Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirement*

IEC 61326 (all parts), *Electrical equipment for measurement, control and laboratory use - EMC requirements*

~~IEC 61326-2-3:2006, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-3: Particular requirements – Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning*~~

IEC 61326-2-5~~:2006~~, *Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-5: Particular requirements - Test configurations, operational conditions and performance criteria for field devices with field bus interfaces according to IEC 61784-1~~, CP 3/2~~*

IEC 61326-3-1~~:2008~~, *Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 3-1: Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) - General industrial applications*

IEC 61326-3-2~~:2008~~, *Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 3-2: Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) - Industrial applications with specified electromagnetic environment*

IEC 61508 (all parts), *Functional safety of electrical/electronic/programmable electronic safety-related systems*

IEC 61511 (all parts), *Functional safety - Safety instrumented systems for the process industry sector*

IEC 61784-1 (all parts), *Industrial networks - Profiles*

IEC 62061, *Safety of machinery - Functional safety of safety-related control systems*

IEC 62262, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

IEC 62828 (all parts), *Reference conditions and procedures for testing industrial and process measurement transmitters*

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