SLOVENSKI STANDARD
SIST EN 61298-2:1998

01-november-1998

Process measurement and control devices - General methods and procedures for evaluating performance - Part 2: Tests under reference conditions (IEC 61298-2:1995)

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

Prozeßmeß-, -steuer- und -regelgeräte - Allgemeine Methoden und Verfahren für die Bewertung des Betriebsverhaltens -- Teil 2: Prüfungen unter Referenzbedingungen

Dispositifs de mesure et de commande de processus - Méthodes et procédures générales d'évaluation des performances -- Partie 2: Essais dans les conditions de référence

Ta slovenski standard je istoveten z: **EN 61298-2:1995**

ICS:

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control

SIST EN 61298-2:1998 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61298-2

October 1995

ICS 35.240.50

Descriptors: Process measurement and control, measurement and control devices, performance evaluation, methods, general procedures, tests under reference conditions

English version

Process measurement and control devices General methods and procedures for evaluating performance Part 2: Tests under reference conditions (IEC 1298-2:1995)

Dispositifs de mesure et de commande de processus
Méthodes et procédures générales d'évaluation des performances
Partie 2: Essais dans les conditions de référence
(CEI 1298-2:1995)

Prozeßmeß-, -steuer- und -regelgeräte
Allgemeine Methoden und Verfahren für die Bewertung des Betriebsverhaltens
Teil 2: Prüfungen unter Referenzbedingungen
(IEC 1298-2:1995)

This European Standard was approved by CENELEC on 1995-09-20. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 61298-2:1995 E

Foreword

The text of document 65B/229/DIS, future edition 1 of IEC 1298-2, prepared by SC 65B, Devices, of IEC TC 65, Industrial-process measurement and control, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61298-2 on 1995-09-20.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1996-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1996-07-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annex ZA is normative and annex A is informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 1298-2:1995 was approved by CENELEC as a European Standard without any modification.

In the official version, for annex A, Bibliography, the following notes have to be added for the standards indicated:

IEC 68-2-1	NOTE: Harmonized as EN 60068-2-1:1993 (not modified).
IEC 68-2-2	NOTE: Harmonized, together with its supplement 1:1976, as EN 60068-2-2:1993 (not modified).
IEC 68-2-6	NOTE: Harmonized, together with its amendments 1:1983 and 2:1985, as HD 323.2.6 S2:1988, which is superseded by EN 60068-2-6:1995 (IEC 68-2-6:1995 + corrigendum Mar. 1995, not modified).
IEC 68-2-14	NOTE: Harmonized, together with its amendment 1:1986, as HD 323.2.14 S2:1987 (not modified).
IEC 68-2-31	NOTE: Harmonized, together with its amendment 1:1982, as EN 60068-2-31:1993 (not modified).
IEC 654-1	NOTE: Harmonized as EN 60654-1:1993 (not modified).
IEC 801-2	NOTE: Harmonized as EN 60801-2:1993 (not modified).
IEC 801-3	NOTE: Harmonized as HD 481.3 S1:1987 (not modified).
IEC 873	NOTE: Harmonized as EN 60873:1993 (modified).
IEC 1003-1	NOTE: Harmonized as EN 61003-1:1993 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 546-1	1987	Controllers with analogue signals for use in industrial-process control systems Part 1: Methods of evaluating the performance	EN 60546-1	1993
IEC 902	1987	Industrial-process measurement and control Terms and definitions	-	-
IEC 1010-1 (mod)	1990	Safety requirements for electrical equipment for measurement, control and laboratory use Part 1: General requirements		
+ A1 (mod)	1992		EN 61010-1	1993
IEC 1298-1	1995	Process measurement and control devices General methods and procedures for evaluating performance Part 1: General considerations	EN 61298-1	1995

NORME INTERNATIONALE
INTERNATIONAL STANDARD

CEI
IEC
1298-2

Première édition
First edition
1995-07

Dispositifs de mesure et de commande de processus – Méthodes et procédures générales d'évaluation des performances –

Partie 2:
Essais dans les conditions de référence

Process measurement and control devices – General methods and procedures for evaluating performance –

Part 2:
Tests under reference conditions

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE U

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PROCESS MEASUREMENT AND CONTROL DEVICES – GENERAL METHODS AND PROCEDURES FOR EVALUATING PERFORMANCE –

Part 2: Tests under reference conditions

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

2) The formal decisions or agreements of the IEC on technical matters, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.

4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

International Standard IEC 1298-2 has been prepared by sub-committee 65B: Devices, of IEC technical committee 65: Industrial-process measurement and control.

The text of this standard is based on the following documents:

DIS	Report on voting
65B/229/DIS	65B/248/RVD

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

IEC 1298 consists of the following parts, under the general title *Process measurement and control devices – General methods and procedures for evaluating performance:*

- Part 1: General considerations
- Part 2: Tests under reference conditions
- Part 3: Tests for the effects of influence quantities
- Part 4: Evaluation report content

Annex A is for information only.

INTRODUCTION

This standard 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.

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

- Any test method or procedure, already treated in this standard, should be specified and described in the new standard by referring to the corresponding clause of this standard.
- Any particular method or procedure, not covered by this standard, should be developed and specified in the new standard in accordance with the criteria, as far as they are applicable, stated in this standard.
- Any conceptual or significant deviation from the content of this standard, should be clearly identified and justified if introduced in a new standard.

PROCESS MEASUREMENT AND CONTROL DEVICES – GENERAL METHODS AND PROCEDURES FOR EVALUATING PERFORMANCE –

Part 2: Tests under reference conditions

1 Scope

This Internationsl Standard specifies general methods and procedures for conducting tests and reporting on the functional and performance characteristics of process measurement and control devices. The methods and procedures specified in this standard are applicable to any kind of test or 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 standard shall be used, together with any product specific standard specifying special tests.

This part covers tests made under reference conditions.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 1298. At the time of the publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 1298 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standard.

IEC 546-1: 1987, *Controllers with analogue signals for use in industrial-process control systems – Part 1: Methods of evaluating the performance*

IEC 902: 1987, *Industrial-process measurement and control – Terms and definitions*

IEC 1010-1: 1990, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*
Amendment No. 1 (1992)

IEC 1298-1: *Process measurement and control devices – General methods and procedures for evaluating performance – Part 1: General considerations*

3 Definitions

For the purpose of this part of IEC 1298 the following definitions apply. Those marked with an asterisk (*) are identical with those given in IEC 902, but that document has additional notes.

3.1 **DUT**: The device under test.

3.2 **variable***: A quantity or condition whose value is subject to change and can usually be measured (e.g., temperature, flow rate, speed, signal, etc.).

3.3 **signal***: Physical variable, one or more parameters of which carry information about one or more variables which the signal represents.

3.4 **range***: Region of the values between the lower and upper limits of the quantity under consideration.

3.5 **span***: Algebraic difference between the upper and lower limit values of a given range.

3.6 **set point***: A signal representing the reference variable.

NOTE – It may be manually set, automatically set, or programmed.

3.7 **inaccuracy***: Maximum positive and negative deviation from the specified characteristic curve observed in testing a device under specified conditions and by a specified procedure.

3.8 **error***: Algebraic difference between the measured value and the true value of the measured variable.

NOTE – The error is positive when the measured value is greater than the true value. The error is generally expressed as a percentage of the relevant ideal span.

3.9 **maximum measured error**: Largest positive or negative value of error of the average upscale or downscale value at each point of measurement.

3.10 **non-conformity**: Deviation from conformity.

NOTE – Conformity is defined in IEC 902.

3.11 **non-linearity**: Deviation from linearity.

NOTES

1 Linearity is defined in IEC 902.

2 Non-conformity and non-linearity do not include hysteresis.

3.12 **non-repeatability**: See definition of repeatability error in IEC 902.

3.13 **hysteresis**: Property of a device or instrument whereby it gives different output values in relation to its input values depending on the directional sequence in which the input values have been applied.

3.14 **dead band***: Finite range of values within which variation of the input variable does not produce any noticeable change in the output variable.

3.15 **adjustability**: Smallest possible change in output produced by a change to the adjusting mechanism.