



SLOVENSKI STANDARD

SIST EN 60770-1:2001

01-junij-2001

Transmitters for use in industrial-process control systems - Part 1: Methods for performance evaluation

Transmitters for use in industrial-process control systems -- Part 1: Methods for performance evaluation

Meßumformer zum Steuern und Regeln in Systemen der industriellen Prozeßtechnik -- Teil 1: Methoden für die Bewertung des Betriebsverhaltens

Transmetteurs utilisés dans les systèmes de conduite des processus industriels -- Partie 1: Méthodes d'évaluation des performances

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Ta slovenski standard je istoveten z: **EN 60770-1:1999**

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25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 60770-1

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English version

**Transmitters for use in industrial-process control systems
Part 1: Methods for performance evaluation
(IEC 60770-1:1999)**

Transmetteurs utilisés dans les
systèmes de conduite des processus
industriels
Partie 1: Méthodes d'évaluation des
performances
(CEI 60770-1:1999)

Meßumformer zum Steuern und Regeln
in Systemen der industriellen
Prozeßtechnik
Teil 1: Methoden für die Bewertung des
Betriebsverhaltens
(IEC 60770-1:1999)

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This European Standard was approved by CENELEC on 1999-04-01. 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, Czech Republic, 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

Foreword

The text of document 65B/361/FDIS, future edition 1 of IEC 60770-1, 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 60770-1 on 1999-04-01.

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) 2000-01-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2002-04-01

This EN 60770-1 is to be used in conjunction with EN 61298-1, EN 61298-2, EN 61298-3 and EN 61298-4.

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.

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The text of the International Standard IEC 60770-1:1999 was approved by CENELEC as a European Standard without any modification.

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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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-1	1990	Environmental testing Part 2: Tests - Tests A: Cold	EN 60068-2-1	1993
IEC 60068-2-2	1974	Part 2: Tests - Test B: Dry heat	EN 60068-2-2 ¹⁾	1993
IEC 60068-2-31	1969	Part 2: Tests - Test Ec: Drop and topple primarily for equipment-type specimens	EN 60068-2-31 ²⁾	1993
IEC 60381-1	1982	Analogue signals for process control systems Part 1: Direct current signals	HD 452.1 S1	1984
IEC 60382	1991	Analogue pneumatic signal for process control systems	EN 60382	1993
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 1993
IEC 60902	1987	Industrial-process measurement and control Terms and definitions	-	-
IEC 61000-4-2	1995	Electromagnetic compatibility (EMC) Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	1995
IEC 61000-4-3 (mod)	1995	Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3	1996
IEC 61000-4-4	1995	Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	1995

1) EN 60068-2-2 includes supplement A:1976 to IEC 60068-2-2.

2) EN 60068-2-31 includes A1:1982 to IEC 60068-2-31.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61000-4-5	1995	Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	1995
IEC 61000-4-6	1996	Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6	1996
IEC 61000-4-8	1993	Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test	EN 61000-4-8	1993
IEC 61000-4-10	1993	Part 4-10: Testing and measurement techniques - Damped oscillatory magnetic field immunity test	EN 61000-4-10	1993
IEC 61000-4-11	1994	Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11	1994
IEC 61000-4-12	1995	Part 4-12: Testing and measurement techniques - Oscillatory waves immunity test	EN 61000-4-12	1995
IEC 61000-4-16	1998	Part 4-16: Testing and measurement techniques - Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz	EN 61000-4-16	1998
IEC 61010-1 (mod)	1990	Safety requirements for electrical equipment for measurement, control and laboratory use Part 1: General requirements	EN 61010-1 ³⁾	1993
IEC 61032	1997	Protection of persons and equipment by enclosures - Probes for verification	EN 61032	1998
IEC 61187 (mod)	1993	Electrical and electronic measuring equipment - Documentation	EN 61187 + corr. March	1994 1995
IEC 61298-1	1995	Process measurement and control devices General methods and procedures for evaluating performance Part 1: General considerations	EN 61298-1	1995
IEC 61298-2	1995	Part 2: Tests under reference conditions	EN 61298-2	1995
IEC 61298-3	1998	Part 3: Tests for the effects of influence quantities	EN 61298-3	1998
IEC 61298-4	1995	Part 4: Evaluation report content	EN 61298-4	1995

3) EN 61010-1 includes A1:1992 to IEC 61010-1.

**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC**

60770-1

Première édition
First edition
1999-02

**Transmetteurs utilisés dans les systèmes
de conduite des processus industriels –**

**Partie 1:
Méthodes d'évaluation des performances**

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[https://standards.iteh.ai/catalog/standards/sist/703bfd96-e89f-4900-92f1-](https://standards.iteh.ai/catalog/standards/sist/703bfd96-e89f-4900-92f1-8799110d1dba/sist-en-60770-1-2001)

**Part 1:
Methods for performance evaluation**

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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For price, see current catalogue*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**TRANSMITTERS FOR USE IN INDUSTRIAL-PROCESS
CONTROL SYSTEMS –**
Part 1: Methods for performance evaluation

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 co-operation 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 express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are 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.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60770-1 has been prepared by subcommittee 65B: Devices, of technical committee 65: Industrial-process measurement and control.

It cancels and replaces IEC 60770, published in 1984.

This standard should be read in conjunction with IEC 61298-1, IEC 61298-2, IEC 61298-3 and IEC 61298-4.

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

FDIS	Report on voting
65B/361/FDIS	65B/376/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.

Annex A is for information only.

TRANSMITTERS FOR USE IN INDUSTRIAL-PROCESS CONTROL SYSTEMS –

Part 1: Methods for performance evaluation

1 Scope and object

This part of IEC 60770 is applicable to transmitters which have either a standard analogue electric current output signal or a standard pneumatic output signal in accordance with IEC 60381-1 or IEC 60382. The tests detailed herein may be applied to transmitters which have other output signals, provided that due allowance is made for such differences.

For certain types of transmitters where the sensor is an integral part, other specific IEC or ISO standards may need to be consulted (e.g. for chemical analysers, flowmeters, etc.)

This standard is intended to specify uniform methods of test for the evaluation of the performance of transmitters with pneumatic or electric output signals.

The methods of evaluation specified in this standard are intended for use by manufacturers to determine the performance of their products and by users or independent testing establishments to verify manufacturers' performance specifications.

The test conditions defined in this standard, for example the range of ambient temperatures and power supply, represent those which commonly arise in use. Consequently, the values specified herein should be used where no other values are specified by the manufacturer.

The tests specified in this standard are not necessarily sufficient for instruments specifically designed for unusually arduous or safety related duties. Conversely, a restricted series of test may be suitable for instruments designed to perform within a more limited range of conditions.

When a full evaluation in accordance with this standard is not required, those tests which are required shall be performed and the results reported in accordance with those parts of the standard which are relevant.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60770. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 60770 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 Standards.

IEC 60068-2-1:1990, *Environmental testing – Part 2: Tests – Test A: Cold*

IEC 60068-2-2:1974, *Environmental testing – Part 2: Tests – Test B: Dry heat*

IEC 60068-2-31:1969, *Environmental testing – Part 2: Tests – Test Ec: Drop and topple, primarily for equipment-type specimens*

IEC 60381-1:1982, *Analogue signals for process control systems – Part 1: Direct current signals*

IEC 60382:1991, *Analogue pneumatic signal for process control systems*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 60902:1987, *Industrial-process measurement and control – Terms and definitions*

IEC 61000-4-2:1995, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 2: Electrostatic discharge immunity test*. Basic EMC Publication

IEC 61000-4-3:1998, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency electromagnetic field immunity test*

IEC 61000-4-4:1995, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 4: Electrical fast transient/bursts immunity test*. Basic EMC Publication

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

IEC 61000-4-6:1996, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 6: Immunity to conducted disturbances induced by radio-frequency fields*

IEC 61000-4-8:1993, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 8: Power frequency magnetic field immunity test*. Basic EMC Publication

IEC 61000-4-10:1993, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 10: Damped oscillatory magnetic field immunity test*. Basic EMC Publication

IEC 61000-4-11:1994, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 11: Voltage dips, short interruptions and voltage variations immunity test*

IEC 61000-4-12:1995, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 12: Oscillatory waves immunity test*. Basic EMC Publication

IEC 61000-4-16:1998, *Electromagnetic compatibility (EMC) – Part 4-16: Testing and measurement techniques – Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz*

IEC 61010-1:1990, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*

IEC 61032:1997, *Protection of persons and equipment by enclosures – Probes for verification*