SLOVENSKI STANDARD
SIST EN 61115:1998

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Expression of performance of sample handling systems for process analyzers (IEC 61115:1992)

Expression of performance of sample handling systems for process analyzers

Angabe zum Betriebsverhalten von Probenhandlungssystemen für Prozeßanalysengeräte

Expression des qualités de fonctionnement des systèmes de manipulation d'échantillon pour analyseurs de processus

Ta slovenski standard je istoveten z: **EN 61115:1993**

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ENGLISH VERSION

Expression of performance of sample handling systems for process analyzers (IEC 1115:1992)

Expression des qualités de fonctionnement des systèmes de manipulation d'échantillon pour analyseurs de processus (CEI 1115:1992)

Angabe zum Betriebsverhalten von Probenhandhabungssystemen für Prozeßanalysengeräte (IEC 1115:1992)

This European Standard was approved by CENELEC on 1993-09-22. 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 61115:1993 E

FOREWORD

The CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 1115:1992 could be accepted without textual changes, has shown that no common modifications were necessary for the acceptance as European Standard.

The reference document was submitted to the CENELEC members for formal vote and was approved by CENELEC as EN 61115 on 22 September 1993.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1994-10-01
- latest date of withdrawal of conflicting national standards (dow) 1994-10-01

Annexes designated "normative" are part of the body of the standard. Annexes designated "informative" are given only for information. In this standard, annexes A, B, C and ZA are normative and annexes D and E are informative.

ENDORSEMENT NOTICE

The text of the International Standard IEC 1115:1992 was approved by CENELEC as a European Standard without any modification.

ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD WITH THE REFERENCES OF THE RELEVANT 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.

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

IEC Publication	Date	Title	EN/HD	Date
359	1987	Expression of the performance of electrical and electronic measuring equipment	-	-

Other publications:

ISO 31 - Quantities and units - Parts 0 to 13
ISO 1000:1981 - SI units and recommendations for the use of their multiples and certain other units

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Expression des qualités de fonctionnement des systèmes de manipulation d'échantillon pour analyseurs de processus

Expression of performance of sample handling systems for process analyzers

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

EXPRESSION OF PERFORMANCE OF SAMPLE HANDLING SYSTEMS FOR PROCESS ANALYZERS

FOREWORD

1) 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.

2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.

3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

This International Standard has been prepared by Sub-Committee 66D: Analyzing equipment, of IEC Technical Committee No. 66: Electrical and electronic test and measuring instruments, systems and accessories.

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

DIS	Report on Voting
66D(CO)12	66D(CO)15

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

Annexes A, B and C are normative and annexes D and E are informative.

In this standard, the following print types are used:

- requirements and definitions: in roman type;
- NOTES: in smaller roman type;
- terms used throughout this standard which have been defined in clause 3: **bold roman type.**

INTRODUCTION

Most process or environmental analyzers are designed to work within specified limits of the properties of the sample fluid (e.g. pressure, dew-point) at the sample inlet as well as the outlet [1,2]. Moreover, process analyzers may need auxiliary fluids or other utilities for their correct function.

It is the purpose of a sample handling system to connect one or more process analyzers with one or more source fluids and the environment, so that the requirements of the analyzer are met, and so that it is possible for the analyzer to work properly over an acceptable period of time with an economically justified amount of maintenance work. (See annex A for the description of the purpose, functions and properties of sample handling systems.)

Sample handling systems may fulfill the following functions [1]:

- sample extraction;
- sample transport;
- sample conditioning;
- exhaust stream disposal;
- supply of utilities;
- sample stream switching;
- performance monitoring and control.

Some of the functions can be completely or partly fulfilled by components which are integral parts of an analyzer or which are external to the sample handling system. For the purpose of this standard these components are not considered part of the sample handling system.

The design of a sample handling system depends on the properties of the source fluid, the process analyzer, and the disposal points. Furthermore, the design depends on the properties required for the complete measuring device. Testing a sample handling system is very important. Due to the variety of system configurations and requirements for a system, many different test procedures are applied in practice, but in this standard only the test procedures which are used in most cases are specified. User and manufacturer may agree on additional test procedures, but these are not covered in this standard.

EXPRESSION OF PERFORMANCE OF SAMPLE HANDLING SYSTEMS FOR PROCESS ANALYZERS

1 Scope and object

1.1 *Scope*

This International Standard specifies the tests which should be carried out to determine the functional performance of sample handling systems. In addition it specifies the information to be provided by the manufacturers and users of such systems.

It is applicable to:

a) systems handling gaseous or liquid samples for process analyzers used for any ultimate purpose, e.g. process control, emission, ambient air monitoring, etc.;

b) complete systems and system components;

c) power supplies and instrumentation for providing and controlling other utilities necessary for process analyzers or sample handling system components, only in so far as they are a functional part of the system;

d) facilities for maintaining system performance;

e) facilities for maintaining the performance of the process analyzer if these are part of the sample handling system and not the analyzer.

NOTES

1 This standard has been prepared in accordance with the general principles set out in IEC 359.

2 Requirements for general principles concerning quantities, units and symbols are given in ISO 1000 and recommendations for the use of their multiples and of certain other units in ISO 31.

1.1.1 *Aspects excluded from scope*

This standard does not cover:

- general aspects of process analyzers (see IEC 746 for electrochemical analyzers);

NOTE - An IEC standard is in preparation for gas analyzers.

- electric safety requirements (see IEC 348);

- safety aspects concerning explosive or toxic hazards;

- aspects concerning applications where regulations or legal metrology are involved, such as atmospheric pollution. For such aspects more elaborate work going on inside ISO such as ISO 6712 applies;

- requirements for output signals (see IEC 381-1 and IEC 381-2);

- influence of environmental conditions (see IEC 68).

1.1.2 *Equipment excluded from scope*

This standard does not apply to:

- systems for handling solid samples;
- equipment intended for use in explosive gas atmospheres (see IEC 79 parts 0 to 12).

1.2 *Object*

This standard is intended

- to specify and to unify the general aspects in the terminology and definitions related to the functional performance of sample handling systems for process analyzers;

- to specify the tests which, in most cases, should be performed to determine the functional performance of sample handling systems;

- to specify what information should be available for the manufacturer of sample handling systems. This information may be provided by the user or the manufacturer of process analyzers or by the manufacturer of sample handling system components;

- to specify what information should be available for the user of sample handling systems.

2 Normative references

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

2.1 *IEC standards*

IEC 359: 1987, *Expression of the performance of electrical and electronic measuring equipment.*

2.2 *ISO standards*

ISO 31: *Quantities and units - Parts 0 to 13.*

ISO 1000: 1981, *SI units and recommendations for the use of their multiples and certain other units.*

NOTE - See annex E for informative references of ISO and IEC standards.

3 Definitions

3.1 *General definitions*

(See annex A and figures A.1 and A.2 for a description of sample handling systems.)

3.1.1 **Process analyzer**

An analytical instrument connected to a source fluid that automatically provides output signals giving information in relation to a quantity of one or more components present in a fluid mixture or in relation to physical or chemical properties of a fluid which depend on its composition.

NOTE - For on-line or extractive process analyzers a sample stream is extracted from the source fluid and transported to the analyzer. With an in-line or *in situ* analyzer the measurement is performed within the source fluid.

3.1.2 **Sample handling system**

A system which connects one or more process analyzers with the source fluid, disposal points and utilities.

NOTES

1 A sample handling system may extract the required sample stream from one or more source fluids and condition it in order to meet all the input requirements of the process analyzer so that an accurate measurement of the properties under investigation is possible. The system may also ensure the appropriate disposal of exhaust streams and the supply of utilities as necessary. Instrumentation for ensuring the proper function of a sample handling system component or for facilitating maintenance work is considered part of the sample handling system if it is a functional part of it.

2 See annex A and figures A.1 and A.2 for a description of sample handling systems.

3 Figure 1 gives a schematic example for the use of terms describing the functions of sample transport and exhaust stream disposal.

3.1.3 **Sample extraction**

The function of those parts of a sample handling system which extract the required sample stream from the source fluid.

NOTE - The sample stream should be extracted in such a way that it is truly representative of the source fluid.