



SLOVENSKI STANDARD

SIST EN 61779-1:2000

01-december-2000

Nadomešča:
SIST EN 50054:2000

Električne naprave za odkrivanje in merjenje vnetljivih plinov - 1. del: Splošne zahteve in preskusne metode (IEC 61779-1:1998; spremenjen)

Electrical apparatus for the detection and measurement of flammable gases -- Part 1: General requirements and test methods

Elektrische Geräte für die Detektion und Messung brennbarer Gase -- Teil 1: Allgemeine Anforderungen und Prüfverfahren

Appareils électriques de détection et de mesure des gaz combustibles -- Partie 1: Règles générales et méthodes d'essai

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Ta slovenski standard je istoveten z: EN 61779-1:2000

ICS:

| | | |
|-----------|---|--|
| 13.320 | Alarmni in opozorilni sistemi | Alarm and warning systems |
| 29.260.20 | Električni aparati za eksplozivna ozračja | Electrical apparatus for explosive atmospheres |

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EUROPEAN STANDARD

EN 61779-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2000

ICS 17.060

Supersedes EN 50054:1998

English version

Electrical apparatus for the detection and measurement of flammable gases**Part 1: General requirements and test methods
(IEC 61779-1:1998, modified)**

Appareils électriques de détection et de mesure des gaz combustibles
Partie 1: Règles générales et méthodes d'essai
(CEI 61779-1:1998, modifiée)

Elektrische Geräte für die Detektion und Messung brennbarer Gase
Teil 1: Allgemeine Anforderungen und Prüfverfahren
(IEC 61779-1:1998, modifiziert)

This European Standard was approved by CENELEC on 2000-01-01. 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.

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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 IEC 61779-1:1998 was considered by the CENELEC Sub-Committee SC 31-9, Electrical apparatus for the detection and measurement of combustible gases to be used in industrial and commercial potentially explosive atmospheres, and it was agreed that the standard could be harmonised as a European Standard with common modifications.

The resulting draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 61779-1 on 2000-01-01.

This European Standard supersedes EN 50054:1998.

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) 2001-01-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2003-06-30

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A and ZA are normative and annexes B and C are informative.

Annex ZA has been added by CENELEC.

Guidance for the selection, installation, use and maintenance of gas detecting apparatus are set out in EN 50073, Guide for selection, installation, use and maintenance of apparatus for the detection and measurement of combustible gases or oxygen.

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and covers essential requirements of EC Directive 94/9/EC.

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Endorsement notice

The text of the International Standard IEC 61779-1:1998 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

Introduction Delete.

1 General

1.1.1 **Delete** note 1, **renumber** note 2 as note 1 and note 3 as note 2.

1.2 **Delete** reference to ISO 2738, ISO 4003, ISO 4022 and the IEC 60079 series of standards.

Add:

EN 50073:1999, *Guide for selection, installation, use and maintenance of apparatus for the detection and measurement of combustible gases or oxygen*

EN 50270:1999, *Electromagnetic compatibility : Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen*

prEN 50271, *Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen - Requirements and tests for apparatus using software and/or digital technologies*

3 General requirements

3.1.2 **Replace** by :

Electrical assemblies and components shall comply with the construction and test requirements of 3.2 and clause 4, where applicable. In addition, parts of the flammable gas detection apparatus intended for use in hazardous areas shall employ materials, and comply with the construction and explosion protection as specified in the appropriate regulations for explosion protection.

3.1.3 **Replace** by "IEC text deleted".

3.1.4 **Replace** the note by :

NOTE - Specific test requirements are being developed in prEN 50271.

3.3 & 3.4 **Renumber** these subclauses as clause 6 and modify as follows:

6 Information for use**6.1 Labelling and marking**

Replace the first two paragraphs by:

The apparatus shall comply with the marking requirements contained in the relevant regulations covering electrical apparatus for explosive atmospheres referred to in 3.1.2, as applicable.

The apparatus shall be marked with the number of the part of EN 61779 with which the performance is claimed to comply. The marking shall be adjacent to that required by the regulations referred to in 3.1.2.

Add:

f) where necessary, with all information essential to their safe use."

6.2 Instruction manual

Replace the note under c) by:

NOTE - Users are referred to EN 50073.

3.5 **Delete** this subclause.

4 Test methods

4.4.21 **Replace** this subclause by:

4.4.21 Electromagnetic compatibility

The apparatus shall be set up under normal conditions, in accordance with 4.3, and then shall be subjected to the tests specified in EN 50270.

4.4.24.2 **Delete** the first occurrence of this clause number to make it a second paragraph of 4.4.24.1.

In the final sentence of the note **replace** "IEC 61779-6" by "EN 50073".

4.4.25 **Delete**.

Annex C Bibliography

Delete references to EN 50055 to EN 50058.

Add:

- IEC 60079-0 1983 Electrical apparatus for explosive gas atmospheres
Part 0: General requirements
- IEC 60079-1 1990 Electrical apparatus for explosive gas atmospheres
Part 1: Construction and verification test of flameproof enclosures of electrical apparatus
- IEC 60079-2 1983 Electrical apparatus for explosive gas atmospheres
Part 2: Electrical apparatus – Type of protection "p"
- IEC 60079-5 1967 Electrical apparatus for explosive gas atmospheres
Part 5: Sand-filled apparatus
- IEC 60079-6 1995 Electrical apparatus for explosive gas atmospheres
Part 6: Oil immersion "o"

- IEC 60079-7 1990 Electrical apparatus for explosive gas atmospheres
Part 7: Increased safety "e"
- IEC 60079-10 1986 Electrical apparatus for explosive gas atmospheres
Part 10: Classification of hazardous areas
NOTE Harmonized as EN 60079-10:1996.
- IEC 60079-11 1991 Electrical apparatus for explosive gas atmospheres
Part 11: Intrinsic safety "i"
- IEC 60079-13 1982 Electrical apparatus for explosive gas atmospheres
Part 13: Construction and use of rooms or buildings protected by pressurization
- IEC 60079-14 1984 Electrical apparatus for explosive gas atmospheres
Part 14: Electrical installations in explosive gas atmospheres (other than mines)
NOTE Harmonized as EN 60079-14:1997.
- IEC 60079-15 1987 Electrical apparatus for explosive gas atmospheres
Part 15: Electrical apparatus, with type of protection "n"
- IEC 60079-18 1992 Electrical apparatus for explosive gas atmospheres
Part 18: Encapsulation "m"
- IEC 60079-19 1993 Electrical apparatus for explosive gas atmospheres
Part 19: Repair and overhaul for apparatus used in explosive atmospheres (other than mines or explosives)
- IEC 60079-20 1996 Electrical apparatus for explosive gas atmospheres
Part 20: Data for flammable gases and vapours relating to the use of electrical apparatus

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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> |
|------------------------|-------------------|--|--------------|-------------|
| | | Guide for selection, installation, use and maintenance of apparatus for the detection and measurement of combustible gases or oxygen | EN 50073 | 1999 |
| | | Electromagnetic compatibility : Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen | EN 50270 | 1999 |
| | | Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen - Requirements and tests for apparatus using software and/or digital technologies | prEN 50271 | |
| IEC 60050-351 | 1975 ¹ | International electrotechnical vocabulary - Chapter 351: Automatic control | - | - |
| IEC 61000-4-1 | 1992 | Electromagnetic compatibility (EMC) Part 4-1: Testing and measurement techniques - Overview of immunity tests | EN 61000-4-1 | 1994 |
| 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 |
| ISO 6142 | 1981 | Gas analysis - Preparation of calibration gas mixtures - Weighing methods | - | - |
| ISO 6145-1 | 1986 | Gas analysis - Preparation of calibration gas mixtures - Dynamic volumetric methods Part 1: Methods of calibration | - | - |

¹ IEC 60050-351:1975 is superseded by IEC 60050-351:1998.

| <u>Publication</u> | <u>Year</u> | <u>Title</u> | <u>EN/HD</u> | <u>Year</u> |
|--------------------|-------------|--|--------------|-------------|
| ISO 6145-3 | 1986 | Part 3: Periodic injections into a flowing gas stream | - | - |
| ISO 6145-4 | 1986 | Part 4: Continuous injection method | - | - |
| ISO 6145-6 | 1986 | Part 6: Sonic orifices | - | - |
| ISO 6147 | 1979 | Gas analysis - Preparation of calibration gas mixtures - Saturation method | - | - |

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INTERNATIONAL STANDARD

IEC 61779-1

First edition
1998-04

Electrical apparatus for the detection and measurement of flammable gases – Part 1: General requirements and test methods

*Appareils électriques de détection et de mesure
des gaz combustibles –*

*Partie 1:
Règles générales et méthodes d'essai*

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

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For price, see current catalogue*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRICAL APPARATUS FOR THE DETECTION
AND MEASUREMENT OF FLAMMABLE GASES –****Part 1: General requirements and test methods**

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.
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- 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 61779-1 has been prepared by subcommittee 31L: Electrical apparatus for the detection of flammable gases, of IEC technical committee 31: Electrical apparatus for explosive atmospheres.

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

| FDIS | Report on voting |
|-------------|------------------|
| 31L/47/FDIS | 31L/52/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 forms an integral part of this standard.

Annexes B and C are for information only.

A bilingual version of this standard may be issued at a later date.

INTRODUCTION

Guidance for the selection, installation, use and maintenance of gas detecting apparatus are set out in IEC 61779-6: Electrical apparatus for the detection and measurement of flammable gases – Part 6: Guidelines for the selection, installation, use and maintenance¹⁾.

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¹⁾ To be published.

ELECTRICAL APPARATUS FOR THE DETECTION AND MEASUREMENT OF FLAMMABLE GASES –

Part 1: General requirements and test methods

1 General

1.1 Scope

1.1.1 This part of IEC 61779 specifies general requirements for construction and testing and describes the test methods that apply to portable, transportable and fixed apparatus for the detection and measurement of flammable gas or vapour concentrations with air. The apparatus, or parts thereof, are intended for use in potentially explosive atmospheres (see 2.1.8) and in mines susceptible to firedamp. This standard is supplemented by the following standards, concerning the specific requirements for the performance of the various types of apparatus:

IEC 61779-2: *Performance requirements for group I apparatus indicating up to a volume fraction of 5 % methane in air*

IEC 61779-3: *Performance requirements for group I apparatus indicating up to a volume fraction of 100 % methane in air*

IEC 61779-4: *Performance requirements for group II apparatus indicating up to a volume fraction of 100 % lower explosive limit*

IEC 61779-5: *Performance requirements for group II apparatus indicating up to a volume fraction of 100 % gas*

NOTE 1 – IEC 61779-1, in association with the standards referred to above, is intended to provide for the supply of apparatus giving a level of safety and performance suitable for general purpose applications. However, for specific applications, a prospective purchaser (or an appropriate authority) may additionally require the apparatus to be submitted to particular tests or approval. For example, group I apparatus (i.e. apparatus to be used in mines susceptible to firedamp) may not be permitted to be used without the additional, prior approval of the relevant authority in mines under its jurisdiction. Such particular tests/approval are to be regarded as additional to and separate from the provisions of the standards referred to above and do not preclude certification to or compliance with these standards.

NOTE 2 – Group I and group II apparatus indicating up to a volume fraction of 100 % methane and group II apparatus indicating up to a volume fraction of 100 % gas are suitable for use only with the specific gases for which they have been calibrated.

NOTE 3 – For the purpose of this standard, the terms "lower flammable limit (LFL)" and "lower explosive limit (LEL)" are deemed to be synonymous, and likewise the terms "upper flammable limit (UFL)" and "upper explosive limit (UEL)" are deemed to be synonymous. For ease of reference, the two abbreviations LFL and UFL may be used hereinafter to denote these two sets of terms. It should be recognized that particular authorities having jurisdiction may have overriding requirements that dictate the use of one of these sets of terms and not the other.

1.1.2 This standard is applicable when an apparatus manufacturer makes any claims regarding any special features of construction or superior performance that exceed these minimum requirements. All such claims shall be verified and the test procedures shall be extended or supplemented, where necessary, to verify the claimed performance. The additional tests shall be agreed between the manufacturer and test laboratory.

1.1.3 This standard is applicable to flammable gas detection apparatus intended to provide an indication, alarm or other output function, the purpose of which is to give a warning of a potential explosion hazard and, in some cases, to initiate automatic or manual protective action(s).