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# Elektrisk utrustning för detektering och mätning av brännbara gaser – Del 1: Allmänna fordringar och provningsmetoder

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

Som svensk standard gäller europastandarden EN 61779-1:2000. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61779-1:2000.

**Nationellt förord**

Europastandarden EN 61779-1:2000

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC

– **IEC 61779-1, First edition, 1998 - Electrical apparatus for the detection and measurement of flammable gases - Part 1: General requirements and test methods**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare utgiven svensk standard SS-EN 50054, utgåva 2, 1998, gäller ej fr o m 2003-06-30.

ICS 17.060

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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.

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 61779-1:2000 E

## 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.

**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

## **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 |
|---|---|---|---|---|
| | | 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.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| 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 | - | - |

# CONTENTS

# 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).

**1.1.4** This standard is applicable to apparatus, including the integral sampling systems of aspirated apparatus, intended to be used for commercial and industrial safety applications.

**1.1.5** This standard does not apply to external sampling systems, or to apparatus of laboratory or scientific type, or to apparatus used only for process control purposes.

### 1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61779. 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 61779 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 60050(351):1975, *International Electrotechnical Vocabulary (IEV) – Chapter 351: Automatic control*

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*

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)*

IEC 60079-15:1987, *Electrical apparatus for explosive gas atmospheres – Part 15: Electrical apparatus, with type of protection "n"*