SVENSK STANDARD SS-EN 60079-29-4

| Fastställd | Utgåva | Sida | Ansvarig kommitté |
|---|---|---|---|
| 2010-11-22 | 1 | 1 (1+38) | SEK TK 31 |




# Explosiv atmosfär – Del 29-4: Gasdetektorer (gasvarnare) – Linjedetektorer för detektering av brännbara gaser

*Explosive atmospheres – Part 29-4: Gas detectors – Performance requirements of open path detectors for flammable gases*

Som svensk standard gäller europastandarden EN 60079-29-4:2010. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60079-29-4:2010.

**Nationellt förord**

Europastandarden EN 60079-29-4:2010

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC

– **IEC 60079-29-4, First edition, 2009**[*)] **- Explosive atmospheres - Part 29-4: Gas detectors - Performance requirements of open path detectors for flammable gases**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 50241-1, utgåva 1, 1999, SS-EN 50241-1/A1, utgåva 1, 2004 och SS-EN 50241-2, utgåva 1, 1999, gäller ej fr o m 2013-04-01.

[*)] Corrigendum, August 2010, till IEC 60079-29-4:2009, är inarbetat i standarden.

ICS 29.260.20

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: SEK, Box 1284, 164 29 KISTA
*Telefon*: 08 - 444 14 00. *Telefax*: 08 - 444 14 30
*E-post*: sek@elstandard.se. *Internet*: www.elstandard.se

## *Standarder underlättar utvecklingen och höjer elsäkerheten*

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

## *SEK är Sveriges röst i standardiseringsarbetet inom elområdet*

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

## *Stora delar av arbetet sker internationellt*

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

## *Var med och påverka!*

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

SEK Svensk Elstandard
Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 60079-29-4

April 2010

ICS 29.260.20

Supersedes EN 50241-1:1999 + A1:2004, EN 50241-2:1999

English version

# Explosive atmospheres - Part 29-4: Gas detectors - Performance requirements of open path detectors for flammable gases

(IEC 60079-29-4:2009, modified)

Atmosphères explosives -
Partie 29-4: Détecteurs de gaz -
Exigences d'aptitude à la fonction
des détecteurs de gaz inflammables
à chemin ouvert
(CEI 60079-29-4:2009, modifiée)

Explosionsfähige Atmosphäre -
Teil 29-4: Gasmessgeräte -
Anforderungen an das Betriebsverhalten
von Geräten mit offener Messstrecke
für die Messung brennbarer Gase
(IEC 60079-29-4:2009, modifiziert)



CENELEC

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

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**



Ref. No. EN 60079-29-4:2010 E

SEK Svensk Elstandard

## Foreword

The text of document 31/819/FDIS, future edition 1 of IEC 60079-29-4, prepared by IEC Technical Committee 31, Equipment for explosive atmospheres, was submitted to the IEC-CENELEC parallel vote.

A draft amendment, prepared by the CENELEC SC 31-9, Electrical apparatus for the detection and measurement of combustible gases to be used in industrial and commercial potentially explosive atmospheres, of Technical Committee CENELEC TC 31, Electrical apparatus for potentially explosive atmospheres, was submitted to the formal vote.

The combined texts were approved by CENELEC as EN 60079-29-4 on 2010-04-01.

EN 60079-29-4:2010 supplements and modifies the general requirements of EN 60079-0. Where a requirement of this standard conflicts with a requirement of EN 60079-0, the requirement of this standard shall take precedence.

This European Standard supersedes EN 50241-1:1999 + A1:2004 and EN 50241-2:1999.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

| | | |
|---|---|---|
| – latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2011-01-01 |
| – latest date by which the national standards conflicting with the amendment have to be withdrawn | (dow) | 2013-04-01 |

Annexes ZA, ZZ and ZY have been added by CENELEC.

## Endorsement notice

The text of the International Standard IEC 60079-29-4:2009 was approved by CENELEC as a European Standard with agreed common modifications as given below.

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

| | |
|---|---|
| ISO 6142 | NOTE Harmonized as EN ISO 6142 |
| ISO 6144 | NOTE Harmonized as EN ISO 6144 |
| ISO 6145 | NOTE Harmonized as EN ISO 6145 |

# Annex ZA
(normative)

## Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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 |
|---|---|---|---|---|
| - | - | Electromagnetic compatibility - Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen | EN 50270 | - |
| - | - | 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 | EN 50271 | - |
| IEC 60079 | Series | Explosive atmospheres | EN 60079 | Series |
| IEC 60079-0 | - | Explosive atmospheres - Part 0: Equipment - General requirements | EN 60079-0 | - |
| IEC 60079-29-1 (mod) | - | Explosive atmospheres - Part 29-1: Gas detectors - Performance requirements of detectors for flammable gases | EN 60079-29-1 | - |
| IEC 60825-1 | - | Safety of laser products - Part 1: Equipment classification and requirements | EN 60825-1 | - |

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# EXPLOSIVE ATMOSPHERES –

# Part 29-4: Gas detectors – Performance requirements of open path detectors for flammable gases

## 1 Scope

This part of IEC 60079-29 specifies performance requirements of equipment for the detection and measuring of flammable gases or vapours in ambient air by measuring the spectral absorption by the gases or vapours over extended optical paths, ranging typically from one metre to a few kilometres.

Such equipment measures the integral concentration of the absorbing gas over the optical path in units such as LFL metre for flammable gases.

NOTE 1 Actual values of concentration can be deduced only where it can be established that the concentration is uniform over the optical path, for example in very short optical paths (<100 mm). In such cases, the equipment is within the scope of IEC 60079-29-1.

NOTE 2 This standard is based upon present absorption techniques using infrared radiation. Other techniques and applications may require additional test considerations (e.g. pressure test).

Equipment falling within the scope of this standard is classified by the following types:

**Type 1:** an optical transmitter and receiver, located at either end of a path through the atmosphere to be monitored.

**Type 2:** an optical transceiver (i.e. combined transmitter and receiver) and a suitable reflector, which may be a topographic feature or a retroreflector, located at either end of a path through the atmosphere to be monitored.

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

This standard does not apply to any of following:

a) equipment intended to provide range resolution of gas concentration (e.g. Light direction and ranging (LIDAR));
b) equipment consisting of a passive optical receiver without a dedicated optical source;
c) equipment intended to measure the local volumetric concentration of gas (point sensors);
d) equipment intended for the detection of dusts or mists in air;
e) equipment for cross stack monitoring;
f) equipment intended for the detection of explosives; and
g) equipment intended only for the identification of individual gas or vapour components, (e.g. Fourier transform infrared spectroscopy (FTIR)).

This standard is applicable to equipment which is intended for use in hazardous or non-hazardous areas, or both. Equipment for use in hazardous areas is also required to have explosion protection (see 4.1.1).

This standard applies to portable, transportable and fixed equipment intended for commercial and industrial applications.

NOTE 3 This standard is intended to provide for the supply of equipment giving a level of performance suitable for general purpose applications. However, for specific applications a prospective purchaser or an appropriate authority may additionally require equipment to be submitted for particular tests or approval. Such tests or approval are regarded as additional to and separate from the provisions of the standards referred to above.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60079 (all parts), *Explosive atmospheres*

IEC 60079-0, *Explosive atmospheres – Part 0: Equipment – General requirements*

IEC 60079-29-1, *Explosive atmospheres – Part 29-1: Gas detectors – Performance requirements of detectors for flammable gases*

IEC 60825-1, *Safety of laser products – Part 1: Equipment classification and requirements*

IEC 61000-4-1, *Electromagnetic compatibility (EMC) – Part 4-1: Testing and measurement techniques – Overview of IEC 61000-4 series*

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