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## Elektriska apparater för detektering och mätning av syre eller brännbara eller giftiga gaser – EMC-fordringar

*Electromagnetic compatibility –*

*Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen*

Som svensk standard gäller europastandarden EN 50270:2015. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50270:2015.

### Nationellt förord

Tidigare fastställd svensk standard SS-EN 50270, utgåva 2, 2006, gäller ej fr o m 2017-10-20.

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ICS 13.320.00

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Denna standard är fastställd av SEK Svensk Elstandard, som också kan lämna upplysningar om **sakinnehållet** i standarden.  
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### *Standarder underlättar utvecklingen och höjer elsäkerheten*

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar 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.

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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.

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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.

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EUROPEAN STANDARD

**EN 50270**

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 13.320

Supersedes EN 50270:2006

English Version

## Electromagnetic compatibility - Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen

Compatibilité électromagnétique - Appareils de détection et de mesure de gaz combustible, de gaz toxique et d'oxygène

Elektromagnetische Verträglichkeit - Elektrische Geräte für die Detektion und Messung von brennbaren Gasen, toxischen Gasen oder Sauerstoff

This European Standard was approved by CENELEC on 2014-10-20. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

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

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## Foreword

This document (EN 50270:2015) has been prepared by CLC/SC 31-9 "Electrical apparatus for the detection and measurement of combustible gases to be used in industrial and commercial potentially explosive atmospheres" of CLC/TC 31, "Electrical apparatus for explosive atmospheres" and by CLC/TC 216 "Gas detectors".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-10-20
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2017-10-20

This document supersedes EN 50270:2006.

EN 50270:2015 includes the following significant technical changes with respect to EN 50270:2006:

- requirements updated according to EN 61326–1:2013;
- aspects related to functional safety considered;
- several requirements of EN 61326–3–2 implemented;
- the hierarchical level between criteria B and C re-inserted by modifying the requirements for B;
- Tables 1 to 4 updated according to above mentioned points;
- Table 5 modified according to new and updated performance standards;
- Table 5 now includes also the requirements for criterion B.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

## 1 Scope

This European Standard specifies requirements for the electromagnetic compatibility (EMC) for electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen which are subject to the performance standards for gas detection apparatus, for example EN 45544 (all parts), EN 50104, EN 50194 (all parts), EN 50291 (all parts), EN 50379 (all parts), EN 50543, EN 50545-1, EN 60079-29-1 or EN 60079-29-4.

NOTE For the purpose of this standard the word 'toxic' covers 'very toxic', 'toxic', 'harmful', 'corrosive', 'irritating', 'sensitising', 'carcinogenic', 'mutagenic' and 'teratogenic'.

This European Standard applies to apparatus intended for use in residential, commercial and light-industrial environments as well as to apparatus intended for use in industrial environments. The apparatus may be AC-, DC- or battery powered.

This European Standard is also applicable to apparatus which is intended for use in hazardous areas which may contain explosive or potentially explosive atmospheres. It covers only normal operation and does not cover safety requirements related to EMC phenomena.

This standard is a product standard which is based on the product family standard EN 61326-1. This product standard takes precedence over the product family standard and over generic standards.

This standard applies to electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen that include functions specified by the manufacturer as being safety functions and can include functions specified as not being safety functions.

All performance standards for the detection and measurement of combustible gases, toxic gases or oxygen include the minimum requirements for functional safety specified in EN 50271. There are also gas detectors and gas detection systems which are intended to be used with safety integrity levels SIL 1 to SIL 3 according to EN 50402 and EN 61508 (all parts). For functional safety in industrial applications, this standard has taken into account those aspects of EN 61326-3-2 relating to the measuring and warning function of the apparatus defined as safety function.

This standard specifies requirements for immunity tests in relation to continuous and transient, conducted and radiated disturbances, including electrostatic discharges, and also for emission tests. The test requirements are specified for each port considered.

Apparatus falling within the scope of this European Standard is classified as follows by the following types.

- Type 1: apparatus intended for use in residential, commercial and light-industrial environments, as described in EN 61000-6-1 and EN 61000-6-3.
- Type 2: apparatus intended for use in industrial environments, as described in EN 61000-6-2 and EN 61000-6-4.

Apparatus of type 1 where the manufacturer claims a safety integrity level should be considered as type 2 apparatus with regard to immunity requirements.

This European Standard does not apply to any of the following:

- apparatus intended for the detection of dusts or mists in air;
- scientific or laboratory based apparatus used only for analysis or measurement;
- apparatus used exclusively for process measurement purposes;
- apparatus for medical purposes;
- apparatus used for breath alcohol measurement
- apparatus intended for the direct measurement of automotive exhaust gases.

## 2 Normative references

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

EN 45544-1, *Workplace atmospheres - Electrical apparatus used for the direct detection and direct concentration measurement of toxic gases and vapours - Part 1: General requirements and test methods*

EN 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*

EN 50291-1, *Electrical apparatus for the detection of carbon monoxide in domestic premises - Part 1: Test methods and performance requirements*

EN 50291-2, *Electrical apparatus for the detection of carbon monoxide in domestic premises - Part 2: Electrical apparatus for continuous operation in a fixed installation in recreational vehicles and similar premises including recreational craft - Additional test methods and performance requirements*

EN 50402, *Electrical apparatus for the detection and measurement of combustible or toxic gases or vapours or of oxygen - Requirements on the functional safety of fixed gas detection systems*

EN 50545-1, *Electrical apparatus for the detection and measurement of toxic and combustible gases in car parks and tunnels - Part 1: General performance requirements and test methods for the detection and measurement of carbon monoxide and nitrogen oxides*

EN 60079-11:2012, *Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i" (IEC 60079-11:2011)*

EN 61000-4-2, *Electromagnetic compatibility (EMC) - Part 4-2: Testing and measuring techniques - Electrostatic discharge immunity test (IEC 61000-4-2)*

EN 61000-4-3:2006 + A1:2008 + A2:2010, *Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3:2006 A1:2007 + A2:2010)*

EN 61000-4-4, *Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test (IEC 61000-4-4)*

EN 61000-4-5:2006, *Electromagnetic Compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test (IEC 61000-4-5:2005)*

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

EN 61000-4-8, *Electromagnetic compatibility (EMC) - Part 4-8: Testing and measuring techniques - Power-frequency magnetic field immunity test (IEC 61000-4-8)*

EN 61000-4-11, *Electromagnetic compatibility (EMC) - Part 4-11: Testing and measuring techniques - Voltage dips, short interruptions and voltage variations immunity tests (IEC 61000-4-11)*

EN 61000-4-29, *Electromagnetic compatibility (EMC) - Part 4-29: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests (IEC 61000-4-29)*

EN 61000-6-1, *Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1)*

EN 61000-6-2, *Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments (IEC 61000-6-2)*

EN 61000-6-3, *Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3)*

EN 61000-6-4, *Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments (IEC 61000-6-4)*

EN 61326-3-2:2008, *Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 3-2: Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) - Industrial applications with specified electromagnetic environment (IEC 61326-3-2:2008)*

EN 61508-1, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 1: General requirements (IEC 61508-1)*

EN 61508-2, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems (IEC 61508-2)*

EN 61508-3, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 3: Software requirements (IEC 61508-3)*

EN 61508-4, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 4: Definitions and abbreviations (IEC 61508-4)*

IEC 60050-161, *International Electrotechnical Vocabulary - Chapter 161: Electromagnetic compatibility*