

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

The European Standard EN 50270:1999 has the status of a
British Standard

ICS 13.320; 33.100.20

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW



Document Sharing Hub

National foreword

This British Standard is the English language version of EN 50270:1999.

The UK participation in its preparation was entrusted by Technical Committee GEL/31, Electrical apparatus for use in explosive atmospheres, to Subcommittee GEL/31/19, Gas detectors, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 11 and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

This British Standard, having been prepared under the direction of the Electrotechnical Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 October 1999

© BSI 10-1999

ISBN 0 580 32820 1

Amendments issued since publication

Amd. No.	Date	Comments

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 1998-10-01. 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

©1999 CENELEC — All rights of exploitation in any form and by any means reserved worldwide for CENELEC members.

Foreword

This European Standard was prepared by 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 explosive atmospheres. The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50270 on 1998-10-01.

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) 1999-10-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1999-10-01

Contents

	Page
Foreword	2
1 Scope	3
2 Normative references	3
3 Definitions	4
4 Immunity tests	5
4.1 Test conditions	5
4.2 Performance criteria	5
4.3 Requirements	5
5 Emission tests	6
Figure 1 — Examples of ports	4
Table 1 — Immunity — Enclosure port	6
Table 2 — Immunity — I/O ports	7
Table 3 — Immunity — D.C. input power ports	8
Table 4 — Immunity — A.C. input power ports	9
Table 5 — Immunity — Functional earth port	10
Table 6 — Performance requirements	11

1 Scope

This European Standard specifies requirements for the electromagnetic compatibility (EMC) for electrical apparatus for the detection and measurement of combustible gases, toxic¹⁾ gases or oxygen. This standard applies to apparatus intended for use in the residential, commercial and light-industrial environment as well as to apparatus intended for use in the industrial environment. The apparatus may be a.c.-, d.c.- 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.

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 requirements are specified for each considered port.

These requirements have been selected so as to ensure an adequate level of compatibility for apparatus at the appropriate locations. The levels do not however cover extreme cases which may occur in any location but with an extremely low probability of occurrence.

NOTE In special cases situations will arise where the level of disturbance may exceed the levels specified in this standard, e.g. where an apparatus is installed in proximity to industrial, scientific or medical (ISM) equipment as specified in EN 55011 or where a hand-held transmitter is used in close proximity to an apparatus. In these instances special mitigation measures may have to be employed.

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

Type 1: apparatus intended for use in the residential, commercial and light-industrial environment, as described in EN 50081-1 and EN 50082-1.

Type 2: apparatus intended for use in the industrial environment, as described in EN 50081-2 and EN 50082-2.

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 intended for the direct measurement of automotive exhaust gases.

2 Normative references

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.

prEN 45544, *Workplace atmospheres — Electrical apparatus used for direct detection and direct concentration measurement of toxic gases and vapours*.

EN 50020, *Electrical apparatus for potentially explosive atmospheres — Intrinsic safety “i”*.

EN 50054, *Electrical apparatus for the detection and measurement of combustible gases*.

EN 50081-1, *Electromagnetic compatibility — Generic emission standard — Part 1: Residential, commercial and light industry*.

EN 50081-2, *Electromagnetic compatibility — Generic emission standard — Part 2: Industrial environment*.

EN 50082-1, *Electromagnetic compatibility — Generic immunity standard — Part 1: Residential, commercial and light industry*.

EN 50082-2, *Electromagnetic compatibility — Generic immunity standard — Part 2: Industrial environment*.

EN 50104, *Electrical apparatus for the detection and measurement of oxygen — Performance requirements and test methods*.

prEN 50194, *Electrical apparatus for the detection of combustible gases in domestic premises*.

ENV 50204, *Radiated electromagnetic field from digital radio telephones — Immunity test*.

EN 50241, *Specification for open path apparatus for the detection of combustible or toxic gases and vapours*.

EN 55011, *Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment*.

EN 61000-4-2, *Electromagnetic compatibility (EMC) — Part 4: Testing and measuring techniques — Section 2: Electrostatic discharge requirements*.

¹⁾ The word “toxic” is used in accordance with its dictionary definition and includes “harmful”, “toxic” and “very toxic” meanings.