



SLOVENSKI STANDARD
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Gas analyzers - Expression of performance - Part 3: Paramagnetic oxygen analyzers

Gas analyzers - Expression of performance -- Part 3: Paramagnetic oxygen analyzers

Gasanalysegeräte - Angabe zum Betriebsverhalten -- Teil 3: Paramagnetische Sauerstoffanalysegeräte

Analyseurs de gaz - Expression des qualités de fonctionnement -- Partie 3: Analyseurs d'oxygène paramagnétiques

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EUROPEAN STANDARD

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NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2002

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**Gas analyzers -
Expression of performance
Part 3: Paramagnetic oxygen analyzers
(IEC 61207-3:2002)**

Analyseurs de gaz -
Expression des qualités
de fonctionnement
Partie 3: Analyseurs d'oxygène
paramagnétiques
(CEI 61207-3:2002)

Gasanalysegeräte -
Angabe zum Betriebsverhalten
Teil 3: Paramagnetische
Sauerstoffanalysegeräte
(IEC 61207-3:2002)

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This European Standard was approved by CENELEC on 2002-05-01. 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, Malta, 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

Foreword

The text of document 65D/79/FDIS, future edition 2 of IEC 61207-3, prepared by SC 65D, Analyzing equipment, of IEC TC 65, Industrial-process measurement and control, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61207-3 on 2002-05-01.

This European Standard supersedes EN 61207-3:1999.

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) 2003-02-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-05-01

This European Standard shall be used in conjunction with EN 61207-1.

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

Annexes designated "informative" are given for information only.

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

Annex ZA has been added by CENELEC.

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Endorsement notice

SIST EN 61207-3:2002

The text of the International Standard IEC 61207-3:2002 was approved by CENELEC as a European Standard without any modification. <https://standards.iteh.ai/catalog/standards/sist-en-61207-3-2002>

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>
IEC 60654-1	1993	Industrial-process measurement and control equipment - Operating conditions Part 1: Climatic conditions	EN 60654-1	1993
IEC 61115	1992	Expression of performance of sample handling systems for process analyzers	EN 61115	1993
IEC 61207-1	1994	Expression of performance of gas analyzers Part 1: General	EN 61207-1	1994
ISO 9001	2000	Quality management systems Requirements	EN ISO 9001	2000
ISO 9002	1994	Quality systems - Model for quality assurance in production, installation and servicing	EN ISO 9002	1994
ISO 9003	1994	Quality systems - Model for quality assurance in final inspection and test	EN ISO 9003	1994

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61207-3

Deuxième édition
Second edition
2002-04

**Analyseurs de gaz –
Expression des qualités de fonctionnement –**

**Partie 3:
Analyseurs d'oxygène paramagnétiques**

iTeh STANDARD PREVIEW

**Gas analyzers –
Expression of performance –**

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**Part 3:
Paramagnetic oxygen analyzers**

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**GAS ANALYZERS –
EXPRESSION OF PERFORMANCE –**

Part 3: Paramagnetic oxygen analyzers

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.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 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 61207-3 has been prepared by subcommittee 65D: Analyzing equipment, of IEC technical committee 65: Industrial-process measurement and control.

This second edition cancels and replaces the first edition published in 1998 and constitutes a technical revision.

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

FDIS	Report on voting
65D/79/FDIS	65D/86/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.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

Annexes A and B are for information only.

This standard shall be used in conjunction with IEC 61207-1.

IEC 61207-3 constitutes part 3 of a series of publications under the general title *Gas analyzers – Expression of performance*:

- Part 1: General
- Part 2: Oxygen in gas (utilizing high-temperature electrochemical sensors)
- Part 3: Paramagnetic oxygen analyzers
- Part 6: Photometric analyzers
- Part 7: Infra-red analyzers

Parts 4 and 5 are under consideration.

The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

The contents of the corrigendum of January 2003 and May 2003 have been included in this copy.

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INTRODUCTION

Paramagnetic oxygen analyzers respond to partial pressure and not volumetric concentration. They are used in a wide range of industrial, laboratory and other applications where the rated measuring range of the analyzer is between 0 % to 1 % and 0 % to 100 %, at reference pressure.

Only a few gases display paramagnetism (for example, oxygen, nitric oxide and nitrogen dioxide). Oxygen has a particularly strong paramagnetic susceptibility (see annex A). By employing this particular property of oxygen, analyzers have been designed which can be highly specific to the measurement in most industrial applications, where, for example, high background levels of hydrocarbons may be present.

There are several different techniques described for measuring the paramagnetic properties of oxygen, but three main methods have evolved over many years of commercial application.

The three methods are:

- automatic null balance;
- thermomagnetic or magnetic wind;
- differential pressure or Quincke.

These methods all require the sample gas to be clean and dry, though some versions work at elevated temperatures so that samples that are likely to condense at a lower temperature can be analyzed.

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Because of this requirement, analyzers often require a sample system to condition the sample prior to measurement.

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GAS ANALYZERS – EXPRESSION OF PERFORMANCE –

Part 3: Paramagnetic oxygen analyzers

1 Scope and object

This part of IEC 61207 applies to the three main methods outlined in the introduction. It considers essential ancillary units and applies to analyzers installed indoors and outdoors.

NOTE Safety critical applications can require an additional requirement of system and analyzer specifications not covered in this standard.

This standard is intended

- to specify terminology and definitions related to the functional performance of paramagnetic gas analyzers for the measurement of oxygen in a source gas;
- to unify methods used in making and verifying statements on the functional performance of such analyzers;
- to specify what tests should be performed to determine the functional performance and how such tests should be carried out;
- to provide basic documents to support the application of standards of quality assurance (ISO 9001, ISO 9002 and ISO 9003).

2 Normative references

[SIST EN 61207-3:2002](https://standards.iteh.ai/catalog/standards/sist/57e8fb57-e56e-465e-88ad-212e95e561f3/sist-en-61207-3-2002)

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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.

IEC 60654-1:1993, *Industrial-process measurement and control equipment – Operating conditions – Part 1: Climatic conditions*

IEC 61115:1992, *Expression of performance of sample handling systems for process analyzers*

IEC 61207-1:1994, *Expression of performance of gas analyzers – Part 1: General*

ISO 9001:2000, *Quality management systems – Requirements*

ISO 9002:1994, *Quality systems – Model for quality assurance in production, installation and servicing*

ISO 9003:1994, *Quality systems – Model for quality assurance in final inspection and test*