

SLOVENSKI STANDARD

SIST EN 50056:1997

01-junij-1997

**Electrical apparatus for the detection and measurement of combustible gases -
Performance requirements for group I apparatus indicating up to 100 % (v/v)
methane in air**

Electrical apparatus for the detection and measurement of combustible gases -
Performance requirements for Group I apparatus indicating up to 100 % (v/v) methane in
air

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Elektrische Geräte für das Aufspüren und die Messung brennbarer Gase -
Anforderungen an das Betriebsverhalten von Geräten der Gruppe I mit einem
Meßbereich bis zu 100 % (V/V) Methan in Luft

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Appareils électriques de détection et de mesure des gaz combustibles - Règles de
performances des appareils du Groupe I pouvant indiquer jusqu'à 100 % (v/v) de
méthane dans l'air

Ta slovenski standard je istoveten z: EN 50056:1991

ICS:

13.320	Alarmni in opozorilni sistemi	Alarm and warning systems
29.260.20	Električni aparati za eksplozivna ozračja	Electrical apparatus for explosive atmospheres

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en

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EUROPEAN STANDARD

EN 50056

NORME EUROPEENNE

EUROPÄISCHE NORM

June 1991

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Descriptors: Electrical apparatus, explosive atmosphere, mine susceptible to firedamp, detector, measuring apparatus, flammable gas, combustible gas, characteristic

ENGLISH VERSION

**ELECTRICAL APPARATUS FOR THE DETECTION AND
MEASUREMENT OF COMBUSTIBLE GASES
PERFORMANCE REQUIREMENTS FOR GROUP I APPARATUS
INDICATING UP TO 100 % (v/v) METHANE**

Appareils électriques de détection et de mesure des gaz combustibles Règles de performances des appareils du Groupe I pouvant indiquer jusqu'à 100 % (v/v) de méthane dans l'air

Elektrische Geräte für das Aufspüren und die Messung brennbarer Gase Anforderungen an das Betriebsverhalten von Geräten der Gruppe I mit einem Meßbereich bis zu 100 % (V/V) Methan

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Up-to-date list 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, 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

FOREWORD

This European Standard has been prepared by the CENELEC Subcommittee SC 31-9, Gas detectors.

The text of the draft was approved by CENELEC as EN 50056 on 10 December 1990.

The following dates were fixed:

- | | |
|--|------------------|
| → latest date of publication of an identical national standard | (dop) 1992-03-01 |
| - latest date of withdrawal of conflicting national standards | (dow) 1992-03-01 |

For products which have complied with the relevant national standard before 1992-03-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1997-03-01.

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European Standards referred to in European Standard EN 50 056

EN 50 054 (1991) Electrical apparatus for the detection and measurement
of combustible gases.
General requirements and test methods.

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1 Scope

1.1 This European Standard specifies performance requirements for Group I (as defined in European Standard EN 50 054) portable, transportable and fixed apparatus for the detection and measurement of methane concentrations in mine air. The apparatus, or parts thereof, are intended for use in mines susceptible to firedamp and shall meet the general requirements and test methods specified in European Standard EN 50 054.

NOTE. The use of Group I apparatus may not be permitted without the additional and prior approval of the relevant authority in mines under its jurisdiction, see Note 1 under Clause 1.1 of European Standards EN 50 054.

1.2 This European Standard is restricted to apparatus intended for the detection and measurement of volume ratios of methane in air from 0 % (v/v) up to 100 % (v/v).

NOTE. Apparatus covered by this European Standard will normally be intended to operate in volume ratios greater than 5 % (v/v).

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2 Definitions

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For the purposes of this European Standard, the definitions given in European Standard EN 50 054 apply.

3 General requirements

The apparatus shall comply with the general requirements specified in clause 3 of European Standard EN 50 054.

It shall be verified that the contents of the instruction manual are in accordance with the requirements specified in European Standard EN 50 054.

4 Performance requirements

4.1 General

The normal conditions for test are specified in clause 4.3 of EN 50 054. Compliance shall be determined in accordance with the test methods specified in clause 4.4 of EN 50 054.

4.2 Unpowered storage

After being submitted to the conditions specified in clause 4.4.2 of EN 50 054, the apparatus shall meet the requirements specified in 4.3 to 4.25 of this European Standard.

4.3 Calibration curve (not applicable to alarm-only apparatus)

Each of the three indications (after correction using the manufacturer's calibration curve, if necessary) obtained for each of the four gas volume ratios shall not differ from these volume ratios by more than $\pm 3\% \text{ (v/v)}$ methane or $\pm 5\% \text{ of the indication}$, whichever is the greater.

4.4 Drift (continuous duty apparatus)

The medium term variation shall not exceed $\pm 3\% \text{ (v/v)}$ methane or $\pm 5\% \text{ of the indication}$, whichever is the greater, in air and in the standard test gas.

4.5 Drift (spot reading apparatus)

The variation of the indication shall not exceed $\pm 3\% \text{ (v/v)}$ methane or $\pm 5\% \text{ of the indication}$, whichever is the greater, in air and in the standard test gas.

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4.6 Alarm

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The alarm shall operate during every cycle of the test. If a latching alarm is provided, the manual reset action shall be checked during every cycle.

4.7 Temperature

The variation of the indication from that at 20° C , over the temperature range:

- a) -10° C to 0° C , shall not exceed $\pm 7\% \text{ (v/v)}$ methane or $\pm 15\% \text{ of the indication}$ and,
- b) 0° C to $+ 40^\circ \text{ C}$, shall not exceed $\pm 5\% \text{ (v/v)}$ methane or $\pm 10\% \text{ of the indication}$.

whichever is the greater.

4.8 Pressure

The variation of the indication from that at 101.3 kPa, over a pressure range of 92 kPa to 115 kPa, shall not exceed $\pm 7.5\%$ (v/v) methane or $\pm 15\%$ of the indication, whichever is the greater.

4.9 Humidity

At 40°C , the variation of the indication from that at 55 % relative humidity (r.h.) over a humidity range of 5 % r.h. to 90 % r.h., shall not exceed $\pm 5\%$ (v/v) methane or $\pm 10\%$ of the indication, whichever is the greater.

4.10 Air speed

The variation of the indication over a range of air speeds from 0 m/s to 6 m/s shall not exceed $\pm 3\%$ (v/v) methane or $\pm 5\%$ of the indication, whichever is the greater.

4.11 Pumping rate

The variation of the indication shall not exceed $\pm 3\%$ (v/v) methane or 5 % of the variation, whichever is the greater.

4.12 Orientation

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4.12.1 Portable apparatus. The variation in the indication shall not exceed $\pm 5\%$ (v/v) methane or $\pm 10\%$ of the indication whichever is the greater.

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4.12.2 Fixed and transportable apparatus. The variation in the indication shall not exceed $\pm 3\%$ (v/v) methane or $\pm 5\%$ of the indication whichever is the greater.

4.13 Vibration (applicable only to machine-mounted apparatus)

During the vibration test, the apparatus shall not suffer any loss of function and shall not give a false alarm or fault signal. The apparatus shall not suffer damage resulting in hazard or loss of function.

At the conclusion of the vibration test and after the apparatus sensor has been exposed to clean air followed by the standard test gas, the variation of the indication from that determined prior to the test shall not exceed $\pm 3\%$ (v/v) methane or $\pm 5\%$ of the indication, whichever is the greater.

4.14 Drop test (applicable to portable apparatus and remote sensors)

The apparatus shall not suffer damage resulting in hazard or loss of function.

The variation of the indication shall not exceed $\pm 3\%$ (v/v) methane or $\pm 5\%$ of the indication, whichever is the greater.