

INTERNATIONAL STANDARD

IEC 61779-2

First edition
1998-04

Electrical apparatus for the detection and measurement of flammable gases –

Part 2: Performance requirements for group I apparatus indicating a volume fraction up to 5 % methane in air

*Appareils électriques de détection et de mesure
des gaz combustibles –*

*Partie 2:
Règles de performances des appareils du groupe I pouvant
indiquer une fraction volumique jusqu'à 5 %
de méthane dans l'air*



Reference number
IEC 61779-2:1998(E)

Numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series.

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* See web site address on title page.

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL APPARATUS FOR THE DETECTION AND MEASUREMENT OF FLAMMABLE GASES –

Part 2: Performance requirements for group 1 apparatus indicating a volume fraction up to 5 % methane in air

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International Standard IEC 61779-2 has been prepared by subcommittee 31L: Electrical apparatus for the detection of flammable gases, of IEC technical committee 31: Electrical apparatus for explosive atmospheres.

This standard should be read in conjunction with IEC 61779-1.

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

FDIS	Report on voting
31L/48/FDIS	31L/53/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.

A bilingual version of this standard may be issued at a later date.

ELECTRICAL APPARATUS FOR THE DETECTION AND MEASUREMENT OF FLAMMABLE GASES –

Part 2: Performance requirements for group 1 apparatus indicating a volume fraction up to 5 % methane in air

1 Scope

1.1 This part of IEC 61779 specifies requirements for group I (as defined in part 1) 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. The requirements and test methods applicable to the apparatus covered by this standard are specified in part 1.

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 of 1.1.1 of part 1.

1.2 This standard is restricted to apparatus intended for the detection and measurement of volume ratios of methane in air from a volume fraction of 0 % up to, but not exceeding, a volume fraction of 5 %.

2 Definitions

For the purpose of this part of IEC 61779, the definitions given in part 1 apply.

3 General requirements

The apparatus shall comply with the general requirements specified in part 1 and with the performance requirements specified in clause 4 of this standard.

Compliance shall be determined in accordance with the appropriate test requirements and methods, including initial calibration, specified in part 1.

It shall be verified that the contents of the manufacturer's instruction manual are in accordance with the requirements specified in part 1.

4 Performance requirements

4.1 General

The normal conditions for tests are specified in 4.3 of part 1. Compliance shall be determined in accordance with the test methods specified in 4.4 of part 1.

4.2 Unpowered storage

After being submitted to the conditions specified in 4.4.2 of part 1, the apparatus shall meet the requirements specified in 4.3 to clause 5 of this standard.

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

After initial adjustment with the standard test gas, each individual indication in the three sets of indications (after correction using the manufacturer's calibration curve, if necessary) obtained for each of the four gas volume ratios distributed over the measuring range shall not differ from these volume ratios by more than a volume fraction of $\pm 0,1$ % methane or ± 5 % of the indication, whichever is the greater.

4.4 Stability (continuous duty apparatus)

Continuous duty apparatus shall comply with the following requirements:

a) short-term stability

The short-term variation shall not exceed a volume fraction of $\pm 0,1$ % methane or ± 5 % of the indication, whichever is the greater.

b) long-term stability (fixed and transportable apparatus)

The long-term variation shall not exceed a volume fraction of $\pm 0,1$ % methane or ± 5 % of the indication, whichever is the greater.

c) long-term stability (portable apparatus)

The long-term variation shall not exceed a volume fraction of $\pm 0,1$ % methane or ± 5 % of the indication, whichever is the greater.

4.5 Stability (spot-reading apparatus)

The variation shall not exceed a volume fraction of $\pm 0,1$ % methane or ± 5 % of the indication, whichever is the greater.

4.6 Alarm

The alarm(s) shall operate during the test. If a latching alarm is provided, the manual reset action shall be checked.

4.7 Temperature

The variation of the indication from that at 20 °C, over the temperature range -10 °C to $+40$ °C, (temperatures for test: -10 °C, 20 °C, 40 °C), shall not exceed a volume fraction of $\pm 0,2$ % methane or ± 10 % of the indication, whichever is the greater.

4.8 Pressure

The variation of the indications at 80 kPa and 120 kPa from the indication at 100 kPa shall not exceed a volume fraction of $\pm 0,2$ % methane or ± 30 % of the indication, whichever is the greater, in air and in the standard test gas.

4.9 Humidity

The variation of the indications at 20 % RH and 90 % RH from the indication at 50 % RH, at $+40$ °C, shall not exceed a volume fraction of $\pm 0,2$ % methane or ± 10 % of the indication, whichever is the greater.

4.10 Air velocity

The variation of the indication shall not exceed a volume fraction of $\pm 0,1$ % methane or ± 5 % of the indication, whichever is the greater.

4.11 Flow rate

The variation of the indication shall not exceed a volume fraction of $\pm 0,1$ % methane or ± 5 % of the indication, whichever is the greater.

4.12 Orientation

The variation of the indication shall not exceed a volume fraction of $\pm 0,1$ % methane or ± 5 % of the indication, whichever is the greater.