AS/NZS 60079.29.4:2011
IEC 60079-29-4 Ed.1.0 (2009)

AS/NZS 60079.29.4:2011

Australian/New Zealand Standard™

Explosive atmospheres

Part 29.4: Gas detectors—Performance requirements of open path detectors for flammable gases

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-014, Explosive Atmospheres. It was approved on behalf of the Council of Standards Australia on 1 June 2011 and on behalf of the Council of Standards New Zealand on 13 May 2011.
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The following are represented on Committee EL-014:

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We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-014, Explosive Atmospheres.

The objective of this Standard is to establish the specific requirements for design, construction and performance testing of electrical equipment for open path detection of flammable gases and vapours. It is complementary to AS/NZS 60079.29.1, which applies to the other detection techniques available for this purpose. It is intended to be read in conjunction with AS/NZS 60079.0 for its electrical protection.

This Standard is identical with, and has been reproduced from, IEC 60079-29-4 Ed.1.0 (2009), *Explosive atmospheres, Part 29-4: Gas detectors—Performance requirements of open path detectors for flammable gases*.

As this Standard is reproduced from an international standard, the following applies:

(a) Its number appears on the cover and title page while the international standard number appears only on the cover.

(b) In the source text 'this part of IEC 60079-29' should read 'this part of AS/NZS 60079.29'.

(c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard IEC		*Australian/New Zealand Standard* AS/NZS	
60079	Explosive atmospheres	60079	Explosive atmospheres
60079-0	Part 0: Equipment—General requirements	60079.0	Part 0: Equipment—General requirements
60079-29-1	Part 29-1: Gas detectors—Performance requirements of detectors for flammable gases	60079.29.1	Part 29.1: Gas detectors—Performance requirements of detectors for flammable gases

Only normative references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

It should be noted that many other parts of IEC 60079 are now published as identically-numbered parts of AS/NZS 60079. The latter should be referenced when necessary.

The term 'informative' has been used in this Standard to define the application of the annex to which it applies. An 'informative' annex is only for information and guidance.

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1 Scope

This part of IEC 60079-29 specifies performance requirements of equipment for the detection and measuring of flammable gases or vapours in ambient air by measuring the spectral absorption by the gases or vapours over extended optical paths, ranging typically from one metre to a few kilometres.

Such equipment measures the integral concentration of the absorbing gas over the optical path in units such as LFL metre for flammable gases.

NOTE 1 Actual values of concentration can be deduced only where it can be established that the concentration is uniform over the optical path, for example in very short optical paths (<100 mm). In such cases, the equipment is within the scope of IEC 60079-29-1.

NOTE 2 This standard is based upon present absorption techniques using infrared radiation. Other techniques and applications may require additional test considerations (e.g. pressure test).

Equipment falling within the scope of this standard is classified by the following types:

Type 1: an optical transmitter and receiver, located at either end of a path through the atmosphere to be monitored.

Type 2: an optical transceiver (i.e. combined transmitter and receiver) and a suitable reflector, which may be a topographic feature or a retroreflector, located at either end of a path through the atmosphere to be monitored.

This standard is also applicable when an equipment manufacturer makes any claims regarding any special features of construction or superior performance that exceed the minimum requirements of this standard. All such claims shall be verified and the test procedures should be extended or supplemented, where necessary, to verify the claimed performance. The additional tests shall be agreed between the manufacturer and the test laboratory and identified and described in the test report.

This standard does not apply to any of following:

a) equipment intended to provide range resolution of gas concentration (e.g. Light direction and ranging (LIDAR));

b) equipment consisting of a passive optical receiver without a dedicated optical source;

c) equipment intended to measure the local volumetric concentration of gas (point sensors);

d) equipment intended for the detection of dusts or mists in air;

e) equipment for cross stack monitoring;

f) equipment intended for the detection of explosives; and

g) equipment intended only for the identification of individual gas or vapour components, (e.g. Fourier transform infrared spectroscopy (FTIR)).

This standard is applicable to equipment which is intended for use in hazardous or non-hazardous areas, or both. Equipment for use in hazardous areas is also required to have explosion protection (see 4.1.1).