

Combustible Gas Sensor Specification

MICROpeL™ 75 Miniature Combustible Gas Sensor

Performance Characteristics

Gases Detected	Most combustible gases and vapours
Range	0-100% LEL
Operating Voltage	3.30V d.c.
Detector Operating Current	78±6mA
Poison Resistance	Resistant to H ₂ S poisoning Superior Silicone resistance
H₂S filter lifetime	typically 1000ppm hr
Output Sensitivity	31±5 mV/%methane
T₉₀ Response Time	<5 seconds (methane)
Operating Temperature Range *	-40°C to +55°C
Long Term Sensitivity Drift	<3% signal/month
Long Term Zero Drift	<5%LEL _{methane} /month
Warranty Period	12 months from date of despatch

* For low temperature applications please refer to the MICROpeL application note.

N.B. Flow rate of 500 mls min⁻¹. Conditions at 20°C, 50%RH, and 1013mBar unless otherwise noted.

Relative Sensitivity

The table below shows the response variation of a MICROpeL™ 75 on exposure to a range of gases and vapours at the same %LEL concentration. The figures are experimentally derived and expressed relative to the methane signal (=100).

Gas/Vapour	Relative Sensitivity*	Gas/Vapour	Relative Sensitivity*
Methane	100	Acetone	65
Propane	60	Methyl ethyl ketone	55
n-Butane	70	Toluene	55
n-Pentane	60	Ethyl acetate	50
n-Heptane	50	Hydrogen	125
n-Octane	45	Cyclohexane	60
Methanol	105	Unleaded petrol	55
Ethanol	80	Ethylene	100
Iso-propyl alcohol	60		
Acetylene	95		

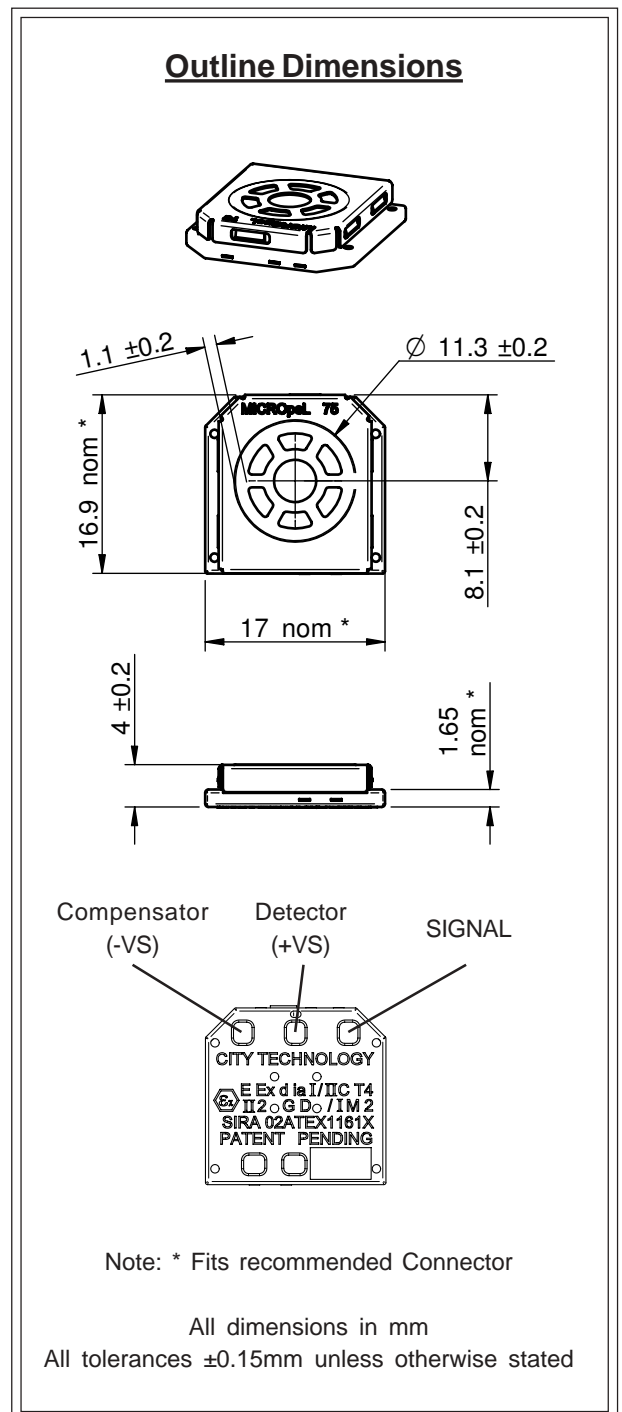
*Each sensitivity has been rounded to the nearest 5%

Note: The results are intended for guidance only. For the most accurate measurements an instrument should be calibrated using the gas under investigation.



Enhanced Features

- Excellent shock resistance and reduced orientation effects

Outline Dimensions



Product Approvals

Approval Body:	<u>SIRACERTIFICATIONSERVICE</u>
Test Standard:	EN 50014:1997 (amendments A1 and A2) EN 50018:2000 EN 50020:1994 EN 50281-1-1:1998
	
Certification Code:	E Ex d ia I/ICT4 (Tamb -40°C to +55°C), Pmax 0.8W
Certification Number:	Sira 02ATEX1161X
Atex Marking:	 II2GD/IM2 C 0518

Instructions specific to hazardous area installations (reference European ATEX Directive 94 / 9/ EC, Annex II, 1.0.6.)

The following instructions apply to equipment covered by certificate number Sira 02ATEX1161X;

1. The equipment may be used with flammable gases and vapours with apparatus groups IIA, IIB and IIC and with temperature classifications T1, T2, T3 and T4.
2. The equipment is certified for use in ambient temperatures of -40°C to +55°C.
3. The equipment has not been assessed as a safety related device (as referred to by Directive 94 / 9 / EC Annex II, clause 1.5).
4. Installation of the equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice (e.g. EN 60079-14)
5. Inspection and maintenance of this equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice (e.g. EN 60079-17).
6. Repair of this equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice (e.g. EN 60079-19).
7. The 'X' suffix to the certificate number relates to the following conditions for safe use;
 - 7.1. The product shall be protected from mechanical stresses caused by impact and drop tests prescribed in EN50014:1997 clause 23.4.3.
 - 7.2. The MICROpel™ 75 is designed to be connected to a gas detector which shall provide an intrinsically safe supply and having a maximum output power (P_o) not greater than 0.8 Watt.
8. It is recommended that confirmation of adequate sensor performance be conducted on a regular basis by means of a defined, sensor calibration procedure. The calibration frequency will depend upon the environment in which the sensor is operated and on the perceived level of risk from the build up of flammable atmospheres.

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9. The certification of this equipment relies upon the following materials used in its construction;

Enclosure Material: PEI, PPS or PTFE

Flame arrester: Stainless steel 316 mesh

If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised.

Aggressive substances: e.g. acidic liquids or gases that may attack metals, or solvents that may affect polymeric materials.

Suitable precautions: regular checks as part of routine inspections or establishing from the material's data sheet that it is resistant to specific chemicals.

10. The MICROpeL™ is available in several formats. Each will carry the certification shown in 10.1 on the sensor and as shown in 10.2 on the packaging:

10.1 CITY TECHNOLOGY

MODEL DESIGNATION

E Ex d ia 1/11C T4

SERIAL NUMBER (to include year of manufacture)

Sira 02ATEX1161X

⊕112 G D / 1M2

The sensor may also contain information relevant to other certification bodies

10.2 CITY TECHNOLOGY AND/OR CITY TECHNOLOGY LOGO.

MODEL DESIGNATION

E Ex d ia 1/11C T4 (Tamb -40°C to + 55°C)

Pi=0.8W

IP6X

The packaging may also contain information relevant to other certification bodies, as well as information e.g. patent numbers, of a non-certification nature.

11. Certain substances are known to have a detrimental effect on catalytic elements as used in the MICROpeL™ series.

Poisoning: some compounds will decompose on the catalyst and form a solid barrier over the catalyst surface. This action is cumulative and prolonged exposure will result in an irreversible decrease in sensitivity. The most common of these substances are: lead or sulphur containing compounds; silicones; phosphates.

Inhibition: certain other compounds, especially hydrogen sulphide and halogenated hydrocarbons, are absorbed or form compounds that are absorbed by the catalyst. The resultant loss of sensitivity is temporary and in most cases a sensor will recover after a period of operation in clean air.

In applications where it is suspected that poisons or inhibitors may be present, suitable protection for the MICROpeL™ should be provided.



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Approval Body: UNDERWRITERS LABORATORIES INC.

Test Standard: UL913



Product Categories: Class I, Division 1, Groups A,B,C and D.

File Number: E180262

Conditions of Acceptability

1. These devices shall be installed in a suitable enclosure in accordance with the end product standard.
2. These devices shall be used within their specified electrical ratings.
3. These devices are intended for use in intrinsically safe circuits or within intrinsically safe devices.
4. Temperature test is to be performed on end use product.

Approval Body: CANADIAN STANDARDS ASSOCIATION

Test Standards: CAN/CSA E60079-0:02, Part 0



CAN/CSA E60079-1:02, Part 1

CAN/CSA E60079-11:02, Part 11

CAN/CSA - C22.2.No 157-92

Product Categories: Class I, Division 1, Groups A, B, C, D and T3C

File Number: 103143

Notes

1. The sensor (operating voltage 3.3V) is suitable as intrinsically safe for Class I, Division 1, Groups A, B, C, D, T3C when connected in compatible intrinsically safe gas detector circuits under assessed fault conditions.
2. Certified as a component where the combustible gas performance tests shall be conducted on the gas detector, and final assembly subject to acceptance by CSA. The final assembly of the gas detector shall determine the markings or suitability in the appropriate hazardous location.
3. The sensor shall be protected from mechanical stresses caused by impact and drop tests. The applicable tests shall be conducted in the final assembly.

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