Product Data Sheet

Product Datasheet

1 LEL 75C Combustible Gas Sensor

Document Purpose

The purpose of this document is to present the performance specification of the 1 LEL 75C Combustible Gas sensor.

This document should be used in conjunction with the 1 LEL 75 Characterisation Note, the Operating Principles (OP01), Instructions for Safe Use and the Product Safety Datasheet (PSDS 22).

The data provided in this document are valid at 20°C, 50% rH and 1013 mBar for 3 months from the date of sensor manufacture. For guidance on sensor performance outside of these limits, please refer to the 1 LEL 75 Characterisation Note.

Output signal can drift below the lower limit over time. For guidance on the safe use of the sensor, please refer to the Operating Principles OP01 and the Instructions for Safe Use.

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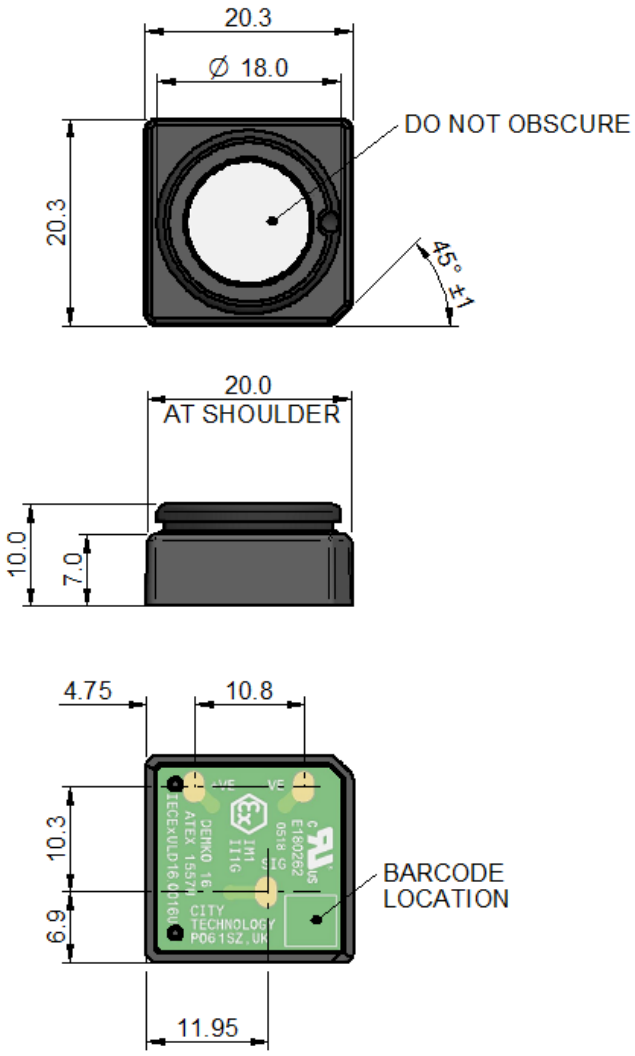
Key Features & Benefits:

- Low profile design with small form factor
- Designed to meet industry performance standards
- Enhanced performance over an extended environmental range
- Approved to IP67
- RoHS Compliant
- Approved for use in Zone 0 applications

Performance Characteristics

MEASUREMENT	
Operating Principle	Catalytic Oxidation
Gases Detected	Combustible gases and vapours up to C6
Nominal Range	0-100% LEL
Inboard Filter	To remove H_2S
Inboard Filter Capacity	1000 ppm hr minimum
Additional Filter	Silica filter to improve silicone resistance
Sensitivity*	31 ± 5 mV/%CH_4 (TBA)
Response Time (T_{90})*	<20 seconds (methane) at 20ºC
Poison Resistance	Resistance to H_2S poisoning Superior Silicone resistance
Resolution	1%LEL
Output Linearity	Linear 3%vol.CH_4 (Refer to Characterisation Note)
ELECTRICAL	
Operating Voltage	3.3 ± 0.05 VDC
Operating Current	84 mA maximum
Power Requirement	280 mW maximum
MECHANICAL	
Weight	<5 g
Outer Body Material	PPS Fortron 1140L4
Position Sensitivity	None
ENVIRONMENTAL	
Ideal Storage Temperature	0ºC to +20ºC
Operating Temperature Range	-40ºC to +60ºC (Refer to Characterisation Note for performance at < -20ºC)
Operating Pressure Range	600 to 1200 mBar
Operating Humidity Range	0-95%rH non-condensing
LIFETIME	
Storage Life	6 months in sealed container
Long Term Output Drift	<3% signal/month
Long Term Baseline Drift	<5% $LEL_{methane}$/month
Expected Operating Life	5 years in air

Product Dimensions



Note: * Fits recommended Connector

All dimensions in mm
All tolerances ±0.15 mm unless otherwise stated

*** Specifications are valid at 20°C, 50% RH, 1013 mBar and flow rate of 300 ml/minute, using City Technology recommended circuitry. Performance characteristics outline the performance of sensors supplied within the first 3 months. Output signal can drift below the lower limit over time.**

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List of Applicable Standards

- CENELEC EN 50303:2000 - Group I, Category M1 equipment intended to remain functional in atmospheres endangered by firedamp and/or coal dust
- CENELEC EN 60079-0:2012+A11:2013 - Explosive atmospheres – Part 0: Equipment. General requirements
- CENELEC EN 60079-1:2014 - Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
- CENELEC EN 60079-11:2012 - Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"
- IEC 60079-0 Ed. 6 + Corr. 1 + Corr. 2 + I-SH 01 + I-SH 02 - Explosive atmospheres – Part 0: Equipment. General requirements
- IEC 60079-1 Ed. 7 - Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
- IEC 60079-11 Ed. 6 + Corr. 1 + I-SH 01 + I-SH 02 + I-SH 03 - Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"
- UL 60079-0 Ed. 6 - Explosive atmospheres – Part 0: Equipment. General requirements
- UL 60079-1 Ed. 7 - Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
- UL 60079-11 Ed. 6 - Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"
- CSA C22.2 NO. 60079-0:15 - Explosive atmospheres – Part 0: Equipment. General requirements
- CSA C22.2 NO. 60079-1:16 - Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
- CSA C22.2 NO. 60079-11:14 - Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"

Approval Body: UNDERWRITERS LABORATORIES INC®

File Number: E 180262

Certificate Number: DEMKO 16 ATEX 1557U
IECEx ULD 16.0016U

ATEX Marking: 0518 IM1 II1G

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Protection Concept Markings

ATEX Marking :	Ex da ia I Ma Ex da ia IIC Ga
UL Marking :	Class 1 Zone 1 AEx da ia IIC Ga
Canadian Marking :	Ex da ia I Ma Ex da ia IIC Ga

Entity Parameters

- Ui = 12 Volts
- Ii = 3.3 Amps
- Pi = 1.3 Watts
- Ci = 0
- Li = -0

- Ui = 5 Volts
- Ii = 3.3 Amps
- Pi = 1.3 Watts
- Ci = 0
- Li = -0

Schedule of Limitations (Denoted by U After the Certificate Number)

- The sensors have been evaluated for a service temperature range of -40°C to +60°C.
- With regard to thermal ignition, the sensors have been evaluated as suitable for Group I use or for Group II use with temperature code T4 for the stated service temperature range for Ui = 5 V.
- For group I applications with Ui > 5 V, the sensors must be installed in an enclosure preventing ingress of coal dust.
- The device has not been assessed for resistance to impact or drop. The device shall be installed in a suitably certified enclosure, per type of protection and in accordance with IEC 60079-0.
- The device has an external non-metallic surface greater the 400 mm^2. It is therefore at risk of build-up of electrostatic charge. The device shall be installed within an enclosure and limited to 400 mm^2 of material exposure.
- With regard to breather thermal temperature, including safety factor of 1.2 - breather surface 99.244°C.

SAFETY NOTE
This sensor is designed to be used in safety critical applications. To ensure that the sensor and/or instrument in which it is used, are operating properly, it is a requirement that the function of the device is confirmed by exposure to target gas (bump check) before each use of the sensor and/or instrument. Failure to carry out such tests may jeopardize the safety of people and property.