Product Datasheet

300PZ Combustible Gas Sensor

Document Purpose

The purpose of this document is to present the performance specification of the 300PZ combustible gas sensor.

This document should be used in conjunction with the Product Safety Datasheet (PSDS 21).

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.

Output signal can drift below the lower limit over time.

Product Data Sheet

Key Features & Benefits:

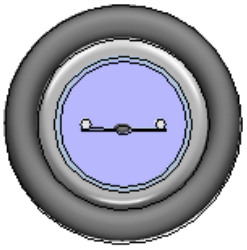
- **Compact, open can design**
- **High poison resistance**

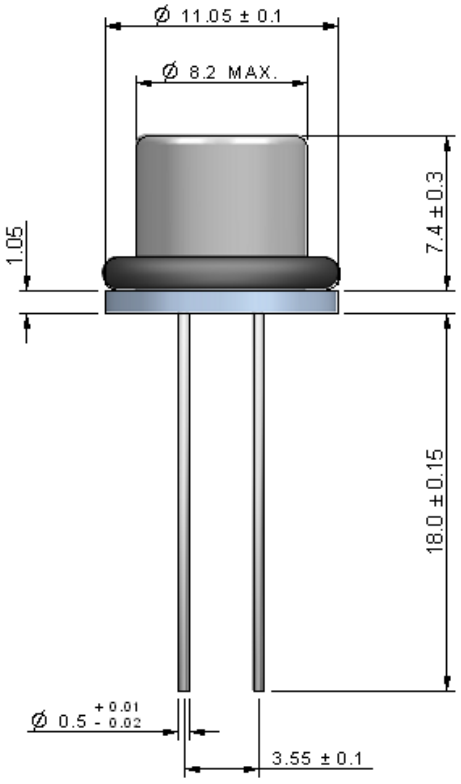
Performance Characteristics

MEASUREMENT	
Operating Principle	Catalytic Oxidation
Gases Detected	Most combustible gases and vapours
Range	0-100% LEL
Sensitivity*	11 to 15 mV/%methane
T90 Response Time*	<15 seconds
Poison Resistance	Highly Resistant
Linearity	Linear up to 5% methane
ELECTRICAL	
Operating Voltage	2.0 ± 0.1 VDC
Detector Operating Current	280 mA in recommended circuit
Resolution	Electronics dependant
MECHANICAL	
Casing Material	Stainless steel 316
Pin Material	KOVAR alloy
Orientation Sensitivity	None
ENVIRONMENTAL	
Operating Temperature Range	-20ºC to +55ºC
Operating Pressure Range	1 atm ± 10%
Operating Humidity Range	0-100% RH non-condensing
LIFETIME	
Long Term Span Drift**	<1% signal/month
Long Term Zero Drift**	<1% $LEL_{methane}$/month
Recommended Storage Temp	0ºC to 20ºC
Shelf life	6 months in sealed container
Expected Operating Life	2 years in clean air

** Measured over a 6 month period

Performance Characteristics





All tolerances ± 0.15 mm

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.

*** Specifications are valid at 20°C, 50% RH and 1013 mBar, 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.**

Product Data Sheet

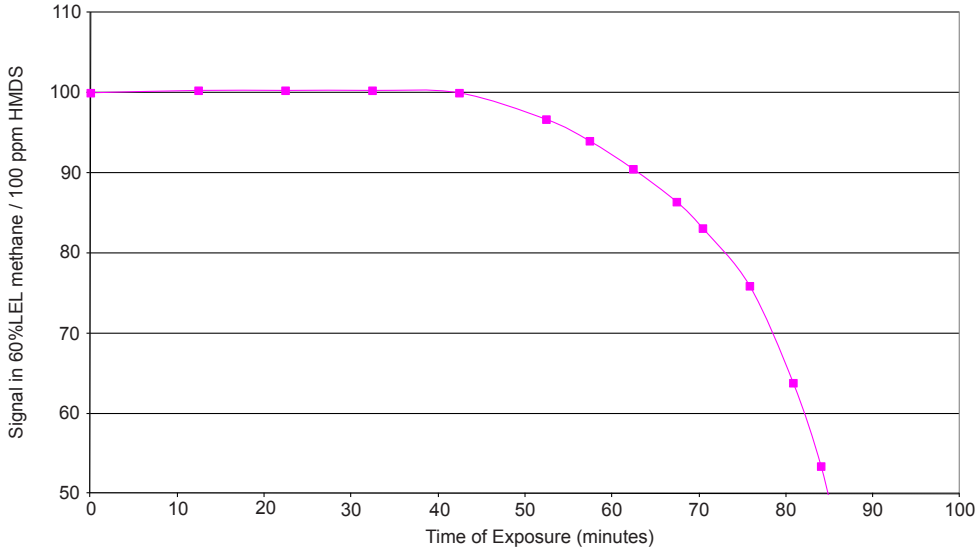
Poison Resistance

The graphs below show the effects of typical silicone and sulfur containing compounds on a 300PZ CiTipeL®. Hexamethyl-disiloxane (HMDS) is chosen as an example of a particularly virulent poison, the effects of which are irreversible. Hydrogen sulfide (H_2S) is also a commonly encountered poison.

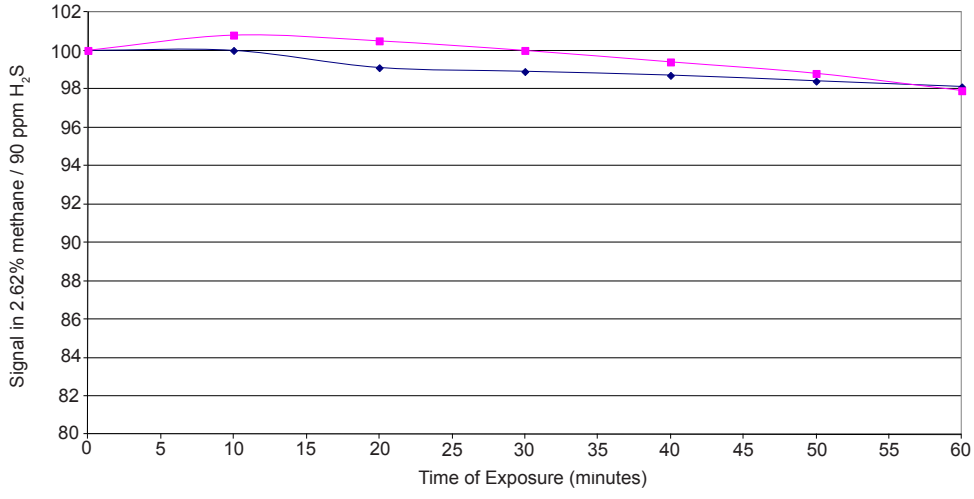
The graphs show the results of accelerated tests on unprotected sensors - in practice it is extremely unlikely continuous levels of even a few ppm of HMDS would be encountered. Similarly, 100 ppm H_2S is approximately seven times the Short Term Exposure Limit in the UK.

The 300PZ will operate for significantly longer in an environment containing silicone oil vapours than a traditional standard sensor. The effect of 100 ppm H_2S is also very small, and upon removal of H_2S the sensor will return to its original sensitivity. In practice, this means the 300PZ can operate for months or years in an environment where a traditional sensor may need replacing after a matter of days or weeks.

Accelerated Life Tests
300PZ - HMDS Poison Resistance



Accelerated Life Tests
300PZ - H_2S Poison Resistance methane



Relative Sensitivity

IMPORTANT NOTE
The relative response data shown below does not form part of the product specification and is supplied for guidance only. For the most accurate measurements, an instrument should be calibrated using the gas under investigation.

The table below shows the variation in response of a CDH300 CiTipeL® 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).

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

Combustible Gas/Vapour	Relative Sensitivity	Combustible Gas/Vapour	Relative Sensitivity
Methane	100	Acetone	45
Propane	70	Methyl Ethyl Ketone	40
n - Butane	65	Toluene	20
n - Pentane	60	Ethyl Acetate	35
n - Hexane	40	Hydrogen	100
n - Heptane	40	Cyclohexane	40
n - Octane	25	Unleaded Petrol	35
Methanol	70	Ethylene	90
Ethanol	50	1,3, Butadiene	70
iso - Propyl Alcohol	40	Acetylene	75

*Each sensitivity has been rounded to the nearest 5%

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.