

# Instructions for Safe Use of the 1 Series LEL Pellistor Range

## Instructions specific to hazardous area installations (reference European ATEX Directive 2014 / 34 / EU)

### Marking

#### Product Marking

CITY TECHNOLOGY

P06 1SZ, UK

MODEL DESIGNATION – eg. 1LEL75

SERIAL NUMBER (to include year of manufacture) – eg. 096 (September 2016)

0518



DEMKO 16 ATEX 1557U

IECEx ULD 16.0016U

E 180262

### Instructions for Safe Installation

- Pellistors are not sensitive to orientation and can be mounted in any orientation with no significant effect on performance. The mounting method should ensure a gas tight seal.
- Sensor pins must not be soldered to, as excessive heat may damage the sensor. Connectors are available to assist in mounting the sensors to PCBs. Please contact City Technology for further details.
- The equipment has not been assessed as a safety related device (as referred to by ATEX Directive 2014 / 34 / EU).
- Ensure that installation of the equipment is carried out by suitably trained personnel in accordance with the applicable code of practice.
- This sensor is not a standalone device. It is the responsibility of the detector / instrument manufacturer or designer that uses the sensor to ensure that the sensors are connected to ground with a maximum impedance of  $10^9 \Omega$ .
- The repair of flamepaths is not intended.
- Opening of the device voids the type of protection.

## Instructions for Safe Use

- 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.
- Certain substances are known to have a detrimental effect on catalytic elements as used in the 1 Series Gas Sensing Head.
- The 1 series range of pellistors are 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 jeopardise the safety of people and property. Use of the sensor outside of these parameters may result in inaccurate gas measurement and possible sensor damage.
- Excessive vibration and shock can result in mechanical breakage of the sensor.

### 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 and 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.

- The certification of this equipment relies upon the following materials used in its construction;  
**Enclosure material:** PPS  
**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.

## Operating Ratings

<b>Measurement Range</b>	0 % to 100 % LEL	<b>Operating Temperature Range</b>	Refer to Schedule of Limitations
<b>Operating Voltage</b>	3.30 Vdc $\pm$ 0.1 Vdc	<b>Operating Pressure Range</b>	600 mBar to 1200 mBar
<b>Max. Detector Operating Current</b>	84 mA	<b>Operating Humidity Range</b>	5 %RH to 95 %RH non-condensing
<b>Max. Power Consumption</b>	280 mW		

## 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”

## 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

- $U_i = 12$  Volts
- $I_i = 3.3$  Amps
- $P_i = 1.3$  Watts
- $C_i = 0$
- $L_i = -0$
- $U_i = 5$  Volts
- $I_i = 3.3$  Amps
- $P_i = 1.3$  Watts
- $C_i = 0$
- $L_i = -0$

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

- The sensors have been evaluated for a service temperature range of  $-40^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ .
- With regard to thermal ignition, the sensors have been evaluated as suitable for Group I use for the stated service temperature range for  $U_i = 5$  V, or for Group II use with temperature code T4 for the stated service temperature range for  $U_i = 12$  V.
- For Group I applications with  $U_i > 5$  V and  $U_i \leq 12$  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. Ensure that the device is 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 than  $400\text{ mm}^2$ . It is therefore at risk of build-up of electrostatic charge. The device should be installed within an enclosure and limited to  $400\text{ mm}^2$  of material exposure.
- With regard to breather thermal temperature, including safety factor of 1.2 - breather surface  $99.244^{\circ}\text{C}$ .

## Return of Faulty Product

MICROpeL sensors are non-repairable products. Faulty products should be returned to the manufacturer address below, accompanied by the manufacturers RMA form (found within the quality section of [www.citytech.com](http://www.citytech.com)).

Manufacturer Address : City Technology Ltd.,  
City Technology Centre,  
Walton Road,  
Portsmouth,  
Hampshire,  
Great Britain,  
PO6 1SZ

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