

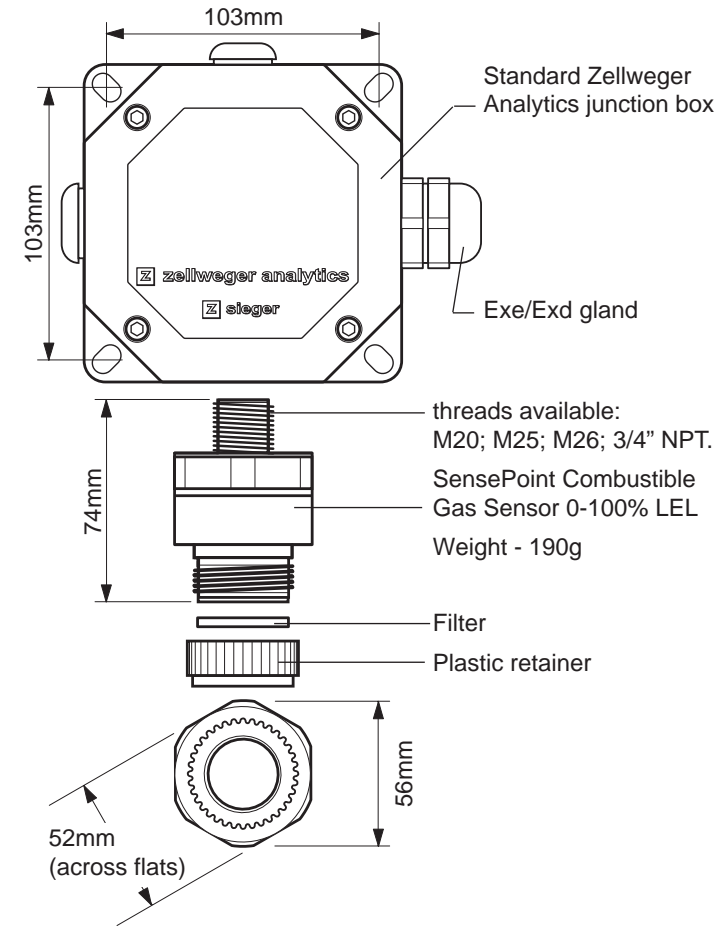
- Operating temperature limit
-55°C to +80°C (see certification)
- Operating humidity limit
20% to 90% RH continuous
10% to 99% RH intermittent - non condensing
- Operating pressure limits
90 to 110 k Pa
- Warm up time
no greater than 10 minutes
- Voltage range
2.9 V to 3.5 V bridge (at 200mA)
- Power consumption
700mW
- Signal output
mV bridge
- Calibration flow rate
recommended between 1 and 1.5 l/min
- Poisoning
the sensing elements may become inactive after extensive exposure to silicones, halogenated hydrocarbons, heavy metals and sulphur compounds.
- Expected operating life
5 years
- IP rating
IP66/67
- Certification
CE **Ex** Exd G1 IIC T6 -55 to +65°C
CE **Ex** Exd G1 IIC T5 -55 to +80°C
UL approved via IEC 79 (pending)

This product complies with the relevant CE standards concerning performance: EMC to BS EN50081 parts 1 & 2, BS EN50082 parts 1 & 2 and EN 50054.

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- Explosive gas atmosphere
A mixture in air of flammable materials in the form of gas vapour or mist in which, after ignition, combustion spreads throughout the unconsumed mixture.
- Lower explosive limit (LEL)
The volume of flammable gas or vapour in air below which an explosive gas atmosphere will not be formed.
- Exd
Flame proof or explosion proof within the confines of European standards EN50014 and EN50018. An enclosure that can withstand the pressure developed during the internal explosion of an explosive mixture and which prevents transmission of the explosion to the explosive atmosphere surrounding the enclosure.
- Exe
Increased safety within the confines of European standards EN50014 and EN50019 applied to electrical apparatus that does not produce arcs or sparks in normal service, in which additional measures are applied so as to give increased security against the possibility of excessive temperatures.
- PPS
Polymer Polyphenylene Sulphide, suitable for use in most chemical environments (eg acids, aldehydes, ketones, alkalais, petroleum, aromatic hydrocarbons, alcohols, ethers, esters and most chlorinated hydrocarbons). Avoid immersion in solvents for extended periods. For further details contact Zellweger Analytics Ltd.

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- Sensor 2106B1200 (M20)
- Sensor 2106B1201 (M25)
- Sensor 2106B1202 (M26)
- Sensor 2106B1204 (3/4 NPT)
- Weather protection 02000-A-1640
- Sensor filter 00780-F-0018
- Flow housing 02000-A-1645
- Collecting cone 02000-A-1642
- Junction box (std) 00780-A-0100
- High temperature junction box 555-090-038
- High temperature weather protection 00780-A-0076

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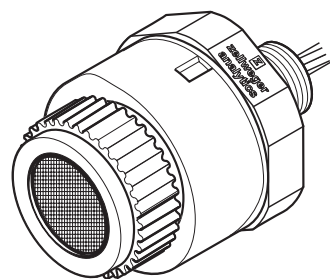
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2106M0501



SENSEPOINT

operating instructions

**SensePoint LEL
Combustible Sensor**



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1. INTRODUCTION

INTRODUCTION

SensePoint is a sealed disposable sensor for the detection of flammable gases and is designed for use with an approved junction box.

It employs a catalytic pellistor sensor device which is used as part of a bridge measuring circuit.

Sensepoint is certified for hazardous areas to EN50018 and is protected against water and dust ingress to IP66/67.

The sensor is available in M20, M25, M26 or 3/4 NPT thread versions. All accept accessories from the specified range.

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This publication is not intended to form the basis of a contract, and the company reserved the right to amend the design and specification of the instruments without notice.



2:1 WARNINGS

- This apparatus is not suitable for use in oxygen enriched atmospheres (>21%). Oxygen deficient atmospheres (>10%V/V) may suppress sensor output.
- The device must be installed in accordance with the certificate number xxxxxxxx.
- Refer to local or national regulations relative to installation at the site.
- Operator should be fully aware of the action to be taken if the gas concentration exceeds an alarm level.

2:2 PRECAUTIONS

- Atmospheres above 100% LEL may suppress the sensor reading.
- Do not modify or alter the sensor construction as essential safety requirements may be invalidated.
- Install using certified Exe or Exd junction box, connectors and glanding.
- Dispose of in accordance with local disposal regulations. Materials used -Fortron® (PPS-Polyphenylene Sulphide).

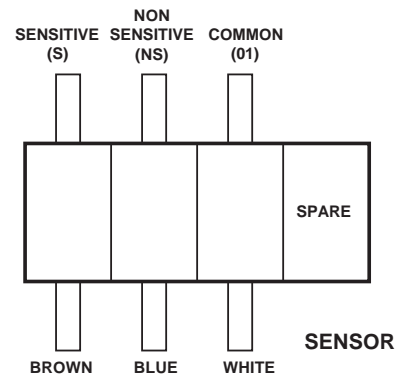
3:1 INSTALLATION

The Unit must be fitted into a suitably approved Exe or Exd junction box fitted with a suitably approved cable gland. This should be correctly installed before use. Cabling should be multicore three wire minimum, of conductor size 2.5 mm² max.

The sensor should be fitted into a threaded hole within the junction box and locked in place with a lock nut. Ensure that junction box thread is compatible with sensor thread.

The sensor should be installed in a location free from direct heat source. It should be fitted such that it either points downwards or horizontally. It is not recommended that the sensor points upwards.

Wiring connections are:-



Unit requires 200mA current with nominal 3V supply.

Installation to be performed by qualified installation engineer with power disconnected.

3.2 CALIBRATION

Prior to calibration, allow sensor to warm up for approximately 10 minutes.

First zero control system with no gas present on the sensor. If combustible gas is suspected to be in the vicinity of the SensePoint, flow clean air through the flow housing (see below).

Remove grey filter retainer or accessory and replace with flow housing. Attach tube, the other end to be attached to a regulated cylinder containing either air for a zero or a known concentration of gas at approximately the sensor alarm point (e.g. 50% LEL methane in air).

Pass gas through the flow housing at a flow rate of approximately 1 to 1.5 l per minute. Allow the sensor 2 to 3 minutes to stabilise. At the control room ensure reading from sensor is zero for air or the same as gas concentration. If necessary, adjust control card span to read correct gas concentration.

Sensors should be calibrated at concentrations representative of those to be measured. It is always recommended that SensePoint is calibrated with the target gas it is to detect. If this is not possible cross calibration can be used.

Cross Calibration Procedure

When the SensePoint sensor is to be calibrated with a gas which is different to the gas/vapour to be detected, the following cross calibration procedure should be followed.

Table 1 lists gases according to the reaction they produce at a given detector. An eight star (8*) gas produces the highest output while a one star (1*) gas produces the lowest output. (These are not applicable at ppm levels.)

To calibrate the SensePoint sensor, obtain the star rating for both the test gas and the gas to be detected from table 1. These values may then be used in table 2 to obtain the required meter setting when a 50% LEL test gas is applied to the detector.

If a sensor is to be used to detect a gas other than that for which it was calibrated, the required correction factor may be obtained from table 3. The meter reading should be multiplied by this number in order to obtain the true gas concentration.

IMPORTANT

- Since combustible sensors require oxygen for correct operation, a mixture of gas in air should be used for calibration purposes.
- Assuming an average sensor performance, the sensitivity information in tables 1 to 3 is normally accurate to ± 20%.

Table 1: Star Rating of Gases

Gas	Star Rating	Gas	Star Rating
Acetone	4*	Hexane	3*
Ammonia	7*	Hydrogen	6*
Benzene	3*	Methane	6*
Butane	4*	Octane	3*
Diethyl ether	4*	Propan-2-ol	4*
Ethane	6*	Propane	5*
Ethanol	5*	Styrene	2*
Ethyl acetate	3*	Tetra hydrofuran	4*
Ethylene	5*	Xylene	2*

Table 2: Meter Settings

* Calibration Gas	* Rating of Gas to be Detected							
	8*	7*	6*	5*	4*	3*	2*	1*
8*	50	62	76	95	-	-	-	-
7*	40	50	61	76	96	-	-	-
6*	33	41	50	62	78	98	-	-
5*	26	33	40	50	63	79	100	-
4*	21	26	32	40	50	63	80	-
3*	-	21	26	32	40	50	64	81
2*	-	-	-	25	31	39	50	64
1*	-	-	-	-	25	31	39	50

Note: These settings must only be used with a calibration gas concentration of 50% LEL.

Cross Calibration example:

- Target gas to be detected is Butane. Calibration gas available is Methane (50% LEL).
- Look up star rating for each (Table 1):
Butane 4*, Methane 6*
- Check meter settings for 50% LEL calibration gas (Table 2).
- The control card meter should be therefore be set to 78% to give an accurate reading for Butane using 50% LEL Methane as a calibration gas.

Table 3: Meter Multiplication Factors

Unit calibrated To Detect	Unit used to detect							
	8*	7*	6*	5*	4*	3*	2*	1*
8*	1.00	1.24	1.52	1.89	2.37	2.98	3.78	4.83
7*	0.81	1.00	1.23	1.53	1.92	2.40	3.05	3.90
6*	0.66	0.81	1.00	1.24	1.56	1.96	2.49	3.17
5*	0.53	0.66	0.80	1.00	1.25	1.58	2.00	2.55
4*	0.42	0.52	0.64	0.80	1.00	1.26	1.60	2.03
3*	0.34	0.42	0.51	0.64	0.80	1.00	1.27	1.62
2*	0.26	0.33	0.40	0.50	0.63	0.79	1.00	1.28
1*	0.21	0.26	0.32	0.39	0.49	0.62	0.78	1.00

3:3 FAULT FINDING

Sensor reads non zero all time.

- gas could be present, ensure there is no flammable gas in atmosphere.

Sensor reads non zero when no gas is present.

- adjust zero of control system.

Sensor reads low when gas applied.

- adjust control span.

Sensor reads high when gas applied.

- adjust control span.

Sensor reads zero when gas applied.

- check wiring.
- check dust protection cap removed.
- check sinter is not obstructed.
- replace sensor if poisoning is suspected.

Changing filters

- Remove grey plastic retainer or accessory.
- Remove old filter and replace with fresh filter.
- Replace retainer.

