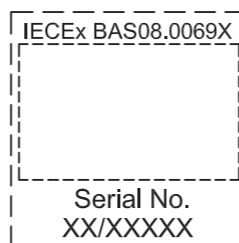
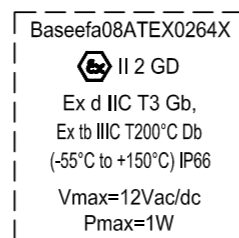
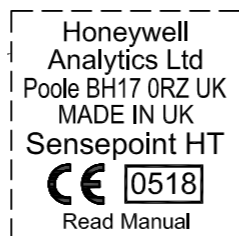


The following table provides a list of possible faults related to the sensor together with possible causes and remedies.

Fault	Cause/Remedy
Sensor reads non zero all the time	Gas could be present, ensure there is no combustible gas in the atmosphere.
Sensor reads non zero when no gas is present	Adjust the control system zero setting.
Sensor reads low when gas is applied	Adjust the control system span setting.
Sensor reads high when gas is applied	Adjust the control system span setting.
Sensor reads zero when gas is applied	1. Check the wiring. 2. Check that the protective disc has been removed from the filter housing. 3. Check that the filter is not dirty/obstructed. 4. Replace the sensor if poisoning is suspected.

The following certification information is imprinted on adjacent faces in three separate blocks on the hexagonal part of the sensor body.



Dimensions:	See diagram in Installation section.
Operating temperature range:	-55°C to +150°C.
Operating humidity range:	20% to 90% RH continuous. 10% to 99% RH intermittent - noncondensing.
Operating pressure range:	90 to 110 k Pa.
Warm up time:	Less 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 or sulphur compounds.
Expected operating life:	5 years.
IP rating:	IP65 standard; IP66 with Weather Protection.
CE:	The sensor complies with relevant CE directives.
ATEX Certification:	II 2 GD Ex d IIC Gb T3 Tamb -55° to +150°C tb IIC T200°C Db IP66 Baseefa08ATEX0264X IECEx BAS08.0069X.

Description	Part Number
Complete replacement sensor:	
• M20 version	2106B2310
• M25 version	2106B2311
• 3/4 NPT version	2106B2312
Stainless steel filter	00780-F-0018
Filter Housing	00780-C-0038
High Temperature Junction Box*	2052D0001
High Temperature Weather Protection	00780-A-0076

* Note: the certified temperature range of the high temperature junction box is limited to -50°C to +150°C



The Sensepoint High Temperature (HT) Combustible Gas Sensor is a sealed disposable sensor for the detection of flammable gases. It must be fitted into a suitably approved Ex e or Ex d high temperature junction box (e.g. FEEL Flameproof Enclosures) fitted with an approved cable gland for external wiring (e.g. Peppers Cable Glands, Series A3LF or CR3 CROLOCK Series).

The sensor features a Filter Housing that retains a stainless steel mesh filter. It employs a catalytic pellistor sensor device which is used as part of a bridge measuring circuit.

Sensepoint HT is certified for hazardous areas to EN60079 / EN61241 and is protected against water and dust ingress to IP66. The sensor is available in M20, M25 and 3/4 NPT thread versions. The sensor accepts accessories from a specified range (see Accessories & Spare Parts).

Information notices

The types of information notices used throughout this handbook are as follows:

WARNINGS

Indicates hazardous or unsafe practice that could result in severe injury or death to personnel.

Caution: Indicates hazardous or unsafe practice which could result in minor injury to personnel, or product or property damage.

Note Provides useful/helpful/additional information.

If more information outside the scope of this technical handbook is required please contact Honeywell Analytics.

Associated Documents

Sensepoint Gas Sensors Technical Handbook Part No: 2106M0502

WARNINGS

1. This unit is intended for use at a normal, or reduced, levels of atmospheric oxygen and pressure only, i.e. less than 21% oxygen and less than 1.1 bar. Oxygen deficient atmospheres (less than 10%V/V) may suppress the sensor output.
2. Refer to local or national regulations relative to installation at the site. For Europe see EN60079-29-2, EN60079-14 and EN61241-14.
3. Operators should be fully aware of the action to be taken if the gas concentration exceeds the alarm level.
4. Installation should consider not only the best placing for gas leakage related to potential leak points, gas characteristics and ventilation, but also where the potential of mechanical damage is minimized or avoided.

CAUTIONS

1. Atmospheres above 100% LEL may suppress the sensor reading.
2. Do not modify or alter the sensor construction as essential safety requirements may be invalidated.
3. Install using suitably approved and certified Ex e or Ex d high temperature junction box, connectors and glands.
4. Dispose of in accordance with local disposal regulations. Materials used - Stainless Steel.
5. This equipment is designed and constructed as to prevent ignition sources arising, even in the event of frequent disturbances or equipment operating faults.
Note: The control card must have a suitably rated fuse.

ATEX Special Conditions for Safe Use

The integral supply cables must be mechanically protected and terminated in a suitable terminal or junction facility.

Equipotential bonding is to be provided by the mounting arrangements.

The sensor enclosure provides ingress protection IP66 only when the sensor is provided with the weather guard and mounted with the sinter pointing downwards.

Find out more

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We Save Lives



Please Note:

While every effort has been made to ensure accuracy in this publication, no responsibility can be accepted for errors or omissions. Data may change, as well as legislation, and you are strongly advised to obtain copies of the most recently issued regulations, standards, and guidelines. This publication is not intended to form the basis of a contract.

3. INSTALLATION

The Sensepoint HT Combustible Gas Sensor must be fitted into a suitably approved Ex e or Ex d high temperature junction box fitted with an approved cable gland for external wiring. The sensor requires a 200mA current supply, nominal 3V, derived from a suitable control card.

Only a qualified installation engineer should install the sensor.

Install the sensor in a location free from direct heat sources. For optimum protection against water ingress ensure that the sensor is installed facing downwards. See the Sensepoint Gas Sensors Technical Handbook for installation in a duct or in forced air conditions.

1. Isolate all associated power supplies and ensure that they remain OFF during the installation procedure. Ensure a gas free atmosphere.

2. Install the high temperature junction box.

See the manufacturer's instructions.

3. Remove the junction box lid.

4. Fit the Sensepoint HT sensor to the junction box.

Ensure that the junction box thread and the sensor thread are compatible. Push the sensor wires through the cable entry in the junction box and screw the sensor body firmly home into the entry. Lock the sensor in place with a suitable lock-nut.

5. Connect the sensor wiring to the junction box terminal strip.

See the subsequent wiring diagram. Use multicore cable, three wire minimum, of conductor size 2.5mm² max.

6. Fit a suitable gland to the box, secure the control system cable and connect the field wiring to the terminal strip.

See the subsequent wiring diagram.

7. Refit the junction box lid.

8. Unscrew the filter housing from the sensor body and remove the filter from the filter housing.

Discard the filter housing with protective disc. The filter housing material cannot withstand high temperatures.

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4. CALIBRATION

To calibrate the Sensepoint HT sensor carry out the following procedure:

1. Obtain the star rating for the calibration gas and the gas to be detected from table 1.

2. Using table 2, look up the correction factor.

3. Multiply the Calibration Gas concentration (in %LEL) by the correction factor to get the effective concentration.

4. Use the effective concentration when setting up the control card during the calibration procedure.

Important Notes:

1. Since combustible sensors require oxygen for correct operation, a mixture of gas in air should be used for calibration purposes.

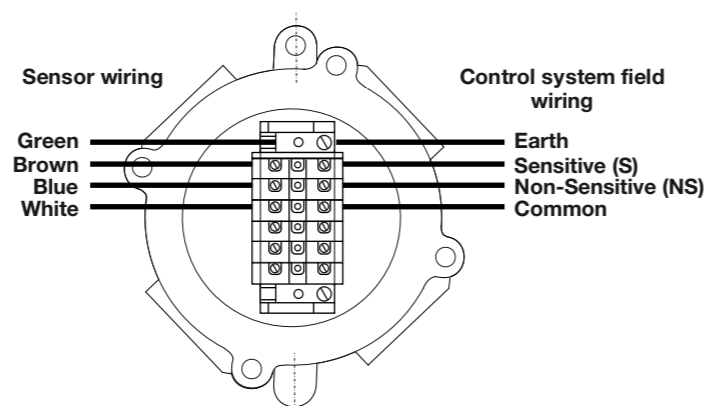
2. Assuming an average sensor performance, the sensitivity information in Tables 1 and 2 is normally accurate to ± 20%.

Table 1 – Star Rating of gases

Gas	CAS Number	LEL (%v/v)	Star Rating
Acetone	67-64-1	2.5	5
Ammonia	7664-41-7	15.0	7
Benzene	71-43-2	1.2	3
Butane	106-97-8	1.4	4
Butanone	78-93-3	1.8	4
Butyl Acetate	123-86-4	1.3	2
Butyl Acrylate	141-32-2	1.2	2
Cyclohexane	110-82-7	1.2	4
DiEthyl Ether	60-29-7	1.7	4
Ethane	74-84-0	2.5	5
Ethanol	64-17-5	3.1	5
Ethyl Acetate	141-78-6	2.2	4
Ethylene	74-85-1	2.3	5
Heptane	142-82-5	1.1	3

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3. INSTALLATION

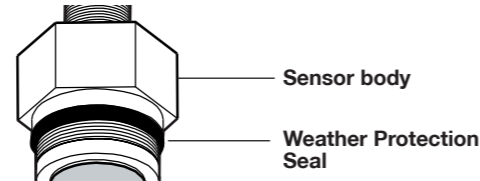


Note: Earth equipotential bonding must be achieved either by the sensor's integral earth conductor or via the sensor rear mounting thread.

9. If the sensor is installed:

- indoors - discard the filter.
- outdoors - fit the previously removed filter (if required) to the High Temperature Weather Protection accessory (Part No: 00780-A-0076) and fit the accessory to the sensor.

Fit the seal supplied with the Weather Protection accessory to the sensor body. Screw the accessory firmly onto the sensor until it seats against the sensor body hexagon.



10. Power-up the system and check for correct operation.

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4. CALIBRATION

Hexane	110-54-3	1.0	3
Hydrogen	1333-74-0	4.0	6
Methane	74-82-8	4.4	6
Methanol	67-56-1	5.5	5
MIBK	108-10-1	1.2	3
Octane	111-65-9	0.8	2
Pentane	109-66-0	1.4	3
Propan-2-ol	67-63-0	2.0	3
Propane	74-98-6	1.7	4
Propylene	115-07-1	2.0	5
Styrene	100-42-5	1.1	2
TetraHydroFuran	109-99-9	1.5	3
Toluene	108-88-3	1.1	3
TriEthylAmine	121-44-8	1.2	4
Xylene	1330-20-7	1.0	2

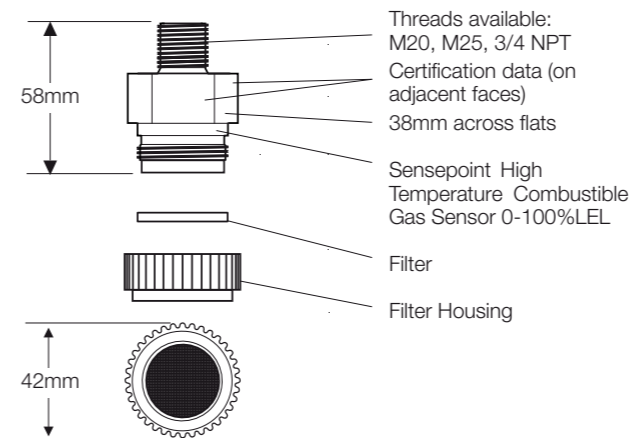
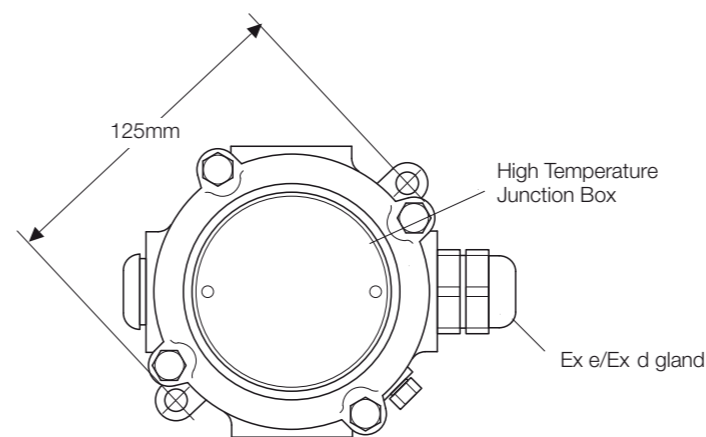
Table 2 Meter Multiplication Factors

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

Note: These settings must only be used with a calibration gas concentration of 50% LEL. All data at standard temperature and pressure.

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3. INSTALLATION



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4. CALIBRATION & MAINTENANCE

Example

- Target gas to be detected is Butane. The calibration gas available is 46%LEL Methane.
- The star rating of Methane is 6 and Butane is 4.
- From Table 2, the correction factor is 1.56.
- The control card should therefore be told the concentration is (46.0 x 1.56) = 72%LEL in order to give an accurate reading for Butane using Methane as a calibration gas.

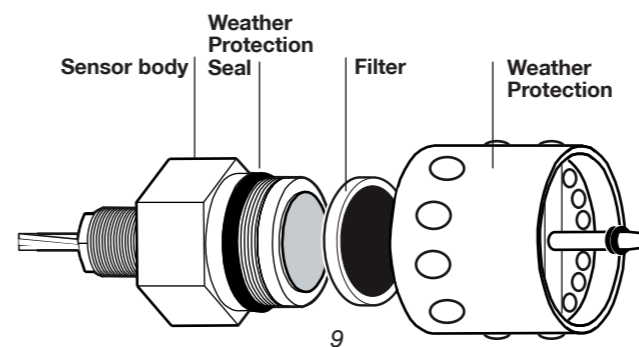
5. MAINTENANCE

Only a qualified installation engineer should service the sensor. Ensure power is off before carrying out any maintenance procedures.

The only maintenance required is sensor replacement and filter changing (if fitted to an accessory). To replace the complete sensor refer to the Sensepoint Gas Sensors Technical Handbook. To replace the filter carry out the following procedure:

- Remove the High Temperature Weather Protection accessory.
- Remove the old filter and replace with a fresh filter.
- Replace the Weather Protection accessory.

Ensure the Weather Protection seal is in place. Screw the accessory firmly onto the sensor until it seats against the sensor body hexagon.



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4. CALIBRATION

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

For calibration in fast flow conditions using a Weather Protection, see the Sensepoint Gas Sensors Technical Handbook.

Prior to calibration, allow the sensor to warm up for approximately 10 minutes. Re-calibration should only be attempted by qualified service personnel.

1. Zero the control system with no gas present on the sensor.

If combustible gas is suspected to be in the vicinity of Sensepoint HT flow clean air over the sensor using a flow housing (see below).

2. Fit a flow housing and connect a cylinder of either air, for a zero, or a known concentration of gas in air, at approximately the alarm point (e.g. 50% LEL), to the flow housing.

3. Pass the gas through the flow housing at a flow rate of approximately 1 litre to 1.5 litre/min.

4. Allow the sensor to stabilise.

5. When gassing with air, adjust the control card to indicate zero.

6. For span, the control card should be adjusted to indicate the concentration of the target gas being applied.

Remove the flow housing and the gas supply.

Cross Calibration Procedure

Caution: Where the user calibrates any sensor using a different gas, responsibility for identifying and recording calibration rests with the user. Refer to the local regulations where appropriate.

When calibrating the Sensepoint HT sensor 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 the 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)

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EC Declaration of Conformity

The undersigned of
Honeywell Analytics Limited
 4 Sinsford Road
 Poole
 Dorset
 BH17 9RZ
 United Kingdom

Declares that the product listed below:

SENSEPOINT HT Combustible Gas Sensor

Sensepoint HT is a catalytic flammable hydrocarbon gas sensor designed for high temperature use and certified for use in potentially explosive atmospheres.

Conforms to the provisions of the following European Directive(s), when installed, operated, serviced and maintained in accordance with the installation/operating instructions contained in this product documentation:

2004/108/EC EMC Directive
 94/9/EC ATEX Directive – Equipment for use in Potentially Explosive Atmospheres

The standards and/or technical specifications referenced below have been applied or considered:

Harmonised Standard	Description
EN 50270:2006	Electromagnetic compatibility. Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen
EN 60079-0:2012	Explosive atmospheres. Equipment. General requirements
EN 60079-1:2007	Explosive atmospheres. Equipment protection by flameproof enclosures "d"
EN 60079-29-1:2007*	Explosive atmospheres. Gas detectors. Performance requirements of detectors for flammable gases
EN 60079-31:2009	Explosive atmospheres. Equipment dust ignition protection by enclosure "t"

* When used with an approved controller

Notified Body for ATEX Standards Ltd Rockhead Business Park Stadon Lane Bilston Derbyshire S617 9FZ	Certificate Number BBS690ATEX0204K	Quality Assurance Notification Number SIRA 11 ATEX M618
	Type Approval II 2 G D Ex d IIC T3 Gb Ex tb IIC 200°C Db (-55°C ≤ Ta ≤ 150°C) IP66	

Year of CE Marking: 1999

Signature: *[Signature]*
 Name: Richard King
 Authorised Signatory
 Date: 10th January 2013
 Declaration Number: 2004Y0004_03/A03939
 Declaration of Conformity in accordance with EN ISO/IEC 17050-1:2010

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