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Replacement sensing elements (including hydrophobic barrier):

| Gas Type                  | Replacement Cell |
|---------------------------|------------------|
| O <sub>2</sub> 0-25%VOL   | 2106B1830        |
| SO <sub>2</sub> 0-15ppm   | 2106B1820        |
| Cl <sub>2</sub> 0-5ppm    | 2106B1810        |
| CO 0-200ppm               | 2106B1806        |
| H <sub>2</sub> S 0-50ppm  | 2106B1801        |
| NO 0-100ppm               | 2106B1818        |
| NH <sub>3</sub> 0-50ppm   | 2106B1813        |
| H <sub>2</sub> 0-1,000ppm | 2106B1817        |
| NO <sub>2</sub> 0-10ppm   | 2106B1822        |

- Weather protection..... 02000-A-1635
- Flow housing (standard)..... 02000-A-1645
- Flow housing (for adsorbent gases)..... 02000-A-3120
- Junction box (standard)..... 2430-0021

To reorder a complete new sensor, see the label on the product leads, or contact Honeywell Analytics.

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Installing the sensor with a Sensepoint XCD RTD Transmitter

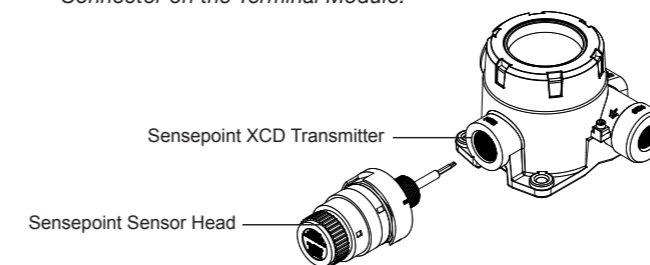
The Sensepoint toxic sensor can be mounted directly to the bottom entry of the Sensepoint XCD RTD transmitter or remotely to a suitable junction box.

**D.1 Local Sensor Mounting**

To mount a sensor directly to the Sensepoint XCD RTD transmitter follow the procedure below:

1. Remove the transmitter's cover by loosening the locking screw and unscrewing the cover in a counter-clockwise direction
2. Remove the display module by firmly pulling it away from the enclosure without twisting it
3. Feed the sensor wires through the bottom entry into the terminal area
4. Firmly screw the sensor thread into the bottom entry
5. Connect the sensor wires to the terminals as shown in section D.3

*Note: Ensure that none of the wires in the terminal area cause an obstruction when refitting the Display Module. Ensure that the socket on the Display Module is fully engaged in the Display Module Connector on the Terminal Module.*



**D.2 Remote Sensor Mounting**

A remotely mounted sensor should be mounted using a suitable junction box or approved electrical conduit scheme.

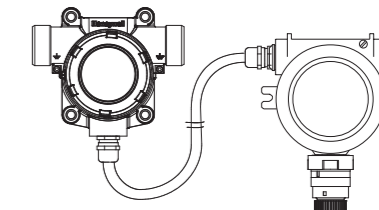
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To remotely mount the sensor, follow the procedure below:

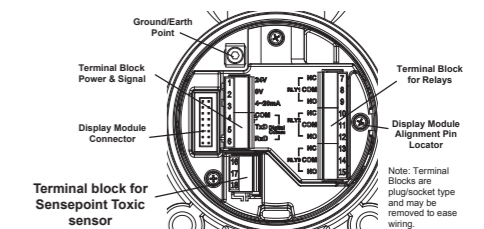
1. Select a suitably certified junction box
2. Fit the sensor to the junction box as described in section 4.1
3. Connect the junction box to the transmitter using suitable cable and cable glands

*Note: The maximum cable length between the remotely mounted sensor and the XCD RTD transmitter is 100 feet (30 m).*

4. Terminate the wires from the sensor in the transmitter as shown in section D.3



**D.3 Terminal connections**



| Terminal Module Connections |           |            |                           |
|-----------------------------|-----------|------------|---------------------------|
| Terminal Number             | Marking   | Connection | Description               |
| 16                          | +VE(Red)  | +24 Vdc    | Sensor Connection for RTD |
| 17                          | -VE(Blue) | 4-20mA     |                           |
| 18                          |           |            | Unused                    |

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Sensepoint Toxic Sensor (CSA approved version)

1. INTRODUCTION & 2. ASSOCIATED DOCUMENTATION

**1. INTRODUCTION**

Sensepoint is for the detection of toxic gases and is designed for use with an approved junction box.

It employs an electrochemical cell sensor device which is gas specific and used as part of a 4-20mA loop powered measuring circuit. The sensor includes a voltage clamp within a sealed explosion proof enclosure and an electrochemical cell driver and cell within an intrinsically safe portion of the sensor.

Different sensor versions detect different gases. Sensors are available for the detection of H<sub>2</sub>S, CO, Cl<sub>2</sub>, NH<sub>3</sub>, H<sub>2</sub>, SO<sub>2</sub>, NO, NO<sub>2</sub>, O<sub>2</sub>. The sensor is available with 3/4 NPT thread versions. It accepts accessories from the specified range. Should you require information outside the scope of these instructions please contact Honeywell Analytics.

This product is certified for use in hazardous areas and is protected against water and dust ingress to IP65, or IP67 if approved weather protection is fitted.

**2. ASSOCIATED DOCUMENTATION**

2106M0502 Sensepoint Technical Handbook.

Refer to the relevant control system manual for connection information.

3. SAFETY



**3.1 WARNINGS**

- This device is not suitable for use in oxygen enriched atmospheres (>21%V/V). Oxygen deficient atmospheres (<6%V/V) may suppress the sensor output.
- Installation should be in accordance with relevant local and national legislation, standards, and codes of practice.
- The operator should be fully aware of the action to be taken if the gas concentration exceeds an alarm level.
- The ECC (electrochemical cell) contains a small quantity of acid.
- Installation should consider not only the best placing for gas detection related to potential leak points, gas characteristics and ventilation, but also where the potential of mechanical damage is minimized or avoided.
- Electrostatic risk - Do not rub or clean with solvents. Clean with a damp cloth. High velocity airflows and dusty environments can cause hazardous electrostatic charges.

**3.2 CAUTIONS**

- Exposures to gas above the design range of the sensor may require the sensor to be re-calibrated.
- Do not modify or alter the sensor construction as essential safety requirements may be invalidated.
- Install Sensepoint using a suitable junction box appropriate to the rating of the area where it is installed.
- Sensors should be disposed of in accordance with local disposal regulations. Materials used:  
**Sensor:** Fortron® (PPS-polyphenylene sulphide),  
**Cell:** PPO (modified polyphenylene oxide).
- This equipment is designed and constructed as to prevent ignition sources arising, even in the event of frequent disturbances or equipment operating faults. The electrical input is protected with a fuse.
- Do not access the interior of the Sensepoint gas sensor when hazardous (explosive) gas or dust is present. Ensure o-ring is fitted and body is fully tightened when gas cell is replaced.

Find out more

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4.1 INSTALLATION

The Unit should be fitted to a suitable junction box appropriate to the rating of the area where it will be installed. The sensors should be fitted to a tapped hole within the enclosure. Cabling should be multicore, two wires plus screen, conductor size 14AWG (2.5mm<sup>2</sup>) max. Suitable conduit should be used appropriate to the rating of the area where the unit is installed, e.g. Class I Div. 2. Please refer to local and national electrical regulations. Sensors are supplied pre-calibrated.

The apparatus should be installed in a location free from dusts and direct heat sources.

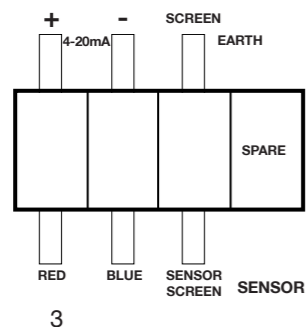
For optimum protection against water ingress ensure that the sensor is installed facing downwards.

Installation is to be performed by a qualified installation engineer, with the power to the unit disconnected.

For oxygen versions, remove the neoprene stopper and snap the RFI screen and internal hydrophobic assembly (supplied separately) into place (page 9).

See the technical handbook for details of installation in a duct or in forced air conditions.

Wiring connections are:-



4.3 FAULT FINDING

Sensor reads non-zero all the time:

- Gas could be present, ensure that there is no target gas in the atmosphere. Background or other volatile organic gases, eg. solvents, can interfere with the operation of the sensor.

Sensor reads non-zero when no gas is present:

- adjust the zero on the control card.

Sensor reads low when gas is applied:

- adjust the span on the control card.
- for oxygen versions, check that the neoprene plug has been removed from under the plastic retainer.

Sensor reads high when gas is applied:

- adjust the span on the control card.

Sensor reads zero when gas is applied:

- check the wiring.
- check the dust protection cap has been removed.
- check that the sensor is not obstructed.
- replace the sensor if failure is suspected.
- for oxygen versions, check that the neoprene plug has been removed from under the plastic retainer.

Cannot adjust span or zero at control card:

- refer to the technical handbook.

Note: The screen from the Sensepoint Toxic sensor should be connected to the screened cable entering the junction box. The earth should be terminated at one end only and it is recommended the termination should be made at the control card end of the cable.

The unit requires a nominal 18 to 30V, 30 mA current-loop-powered supply.

4.2 CALIBRATION

Sensepoint for toxic gas detection is supplied pre-calibrated, however, for increased accuracy in specific applications, on-site calibration is recommended.

Re-calibration should only be attempted by qualified service personnel. Calibration should only be attempted after the sensor has been installed and powered for a time exceeding the warm up time (Table 1).

First zero the control system with no gas present on the sensor. If target gas is suspected to be in the vicinity of Sensepoint, flow clean air over the sensor using a flow housing (see below).

Fit a flow housing and connect a cylinder of either air, for a zero, or a known concentration of gas (approximately 50% FSD) to the flow housing using nylon or PTFE tubing. Tubing lengths should be kept to a minimum to avoid extending the speed of response. Connect the outlet of the flow housing to a safe exhaust area. Pass the gas through the flow housing at a flow rate of approximately 1 l to 1.5 l per minute.

5.1 CHANGING ELECTROCHEMICAL CELL AND INTERNAL FILTER

- Unscrew and remove the plastic retainer (or accessory if fitted) from the sensor.
- Remove the old internal hydrophobic assembly by pushing against the snap fit, through one of the retaining slots, with a small flat bladed screwdriver. The assembly will pop out. Do not attempt to lever the assembly out as this may damage the housing.
- Remove the internal metal gauze insert.
- Open the enclosure by unscrewing the sensor cap assembly from the sensor main body, ensuring that the electrochemical cell does not rotate with the cap.
- a. Toxic  
Gently pull the old electrochemical cell from the pcb. (Dispose of this in accordance with the local regulations).
- b. Oxygen  
For oxygen Sensepoint, unscrew the old cell connections. Support the screw pillars during removal and refitting of the oxygen cell screws.
- Remove the new cell from its packaging and remove the shorting link across the base of cell.
- a. Plug the new cell into the pcb. (toxic cell)
- b. Screw in the new cell via the metal tabs. (oxygen cell)
- Screw the sensor cap assembly back onto the sensor main body.
- Fit the new internal metal gauze assembly.
- Fit the new internal hydrophobic assembly.

Allow the sensor to stabilise. When gasing with air, adjust the control card to indicate zero. 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.

Note: for oxygen, the span gas is normally air at 20.8%v/v O<sub>2</sub>. The control card should be adjusted to indicate this when the sensor is in either clean ambient air, or in a flow of 20.8%v/v O<sub>2</sub> in nitrogen from a cylinder. A zero adjustment is not normally required, however it is recommended that the alarm levels are tested using a cylinder of a lower concentration of oxygen in nitrogen.

See Table 1 for details of concentrations and times to be used. If the controller cannot be spanned, consult the technical handbook.

For calibration using the Weather Protection in high flow applications refer to the technical handbook.

Note: The sensor should now be calibrated. See Section 4.2

- Replace the plastic retainer or accessory.
- In the event of an apparatus failure, return unit to Honeywell Analytics.

5.2 CHANGING THE EXTERNAL HYDROPHOBIC BARRIER

Remove the plastic retainer (or accessory). Remove the old external hydrophobic barrier and replace with the new one. Replace the plastic retainer.

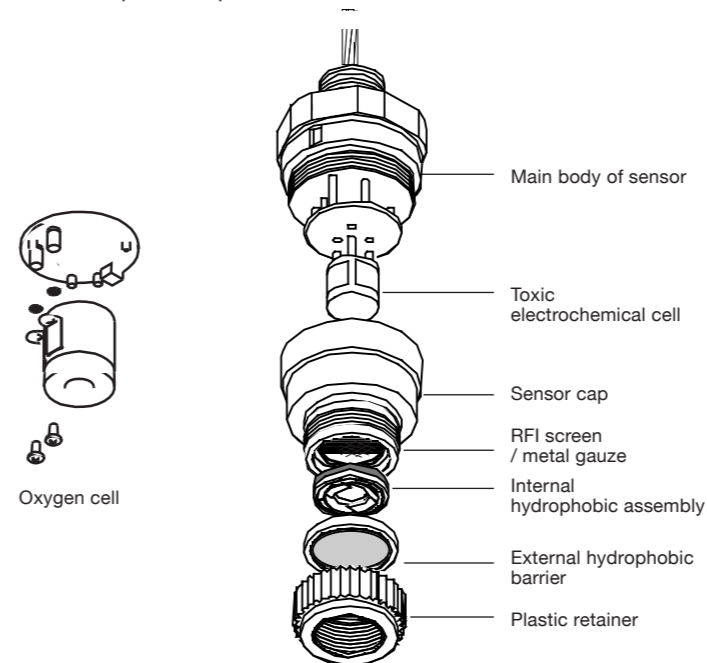


Table 1:

| Gas              | Range          | Recommended Test Concentration | Warm up Time | Application Time | Operating Temp. |               |
|------------------|----------------|--------------------------------|--------------|------------------|-----------------|---------------|
|                  |                |                                |              |                  | MIN.            | MAX.          |
| H <sub>2</sub> S | 0 to 20 ppm    | 10 ppm                         | 3mins        | 3 mins           | -4°F (-20°C)    | 122°F (+50°C) |
| H <sub>2</sub> S | 0 to 50 ppm    | 20 ppm                         | 3mins        | 3 mins           | -4°F (-20°C)    | 122°F (+50°C) |
| H <sub>2</sub> S | 0 to 100 ppm   | 50 ppm                         | 3mins        | 3 mins           | -4°F (-20°C)    | 122°F (+50°C) |
| CO               | 0 to 100 ppm   | 50 ppm                         | 3mins        | 3 mins           | -4°F (-20°C)    | 122°F (+50°C) |
| CO               | 0 to 200 ppm   | 100 ppm                        | 3mins        | 3 mins           | -4°F (-20°C)    | 122°F (+50°C) |
| CO               | 0 to 500 ppm   | 250 ppm                        | 3mins        | 3 mins           | -4°F (-20°C)    | 122°F (+50°C) |
| Cl <sub>2</sub>  | 0 to 5 ppm     | 3 ppm                          | 5mins        | 10 mins          | -4°F (-20°C)    | 122°F (+50°C) |
| Cl <sub>2</sub>  | 0 to 15 ppm    | 10 ppm                         | 5mins        | 10 mins          | -4°F (-20°C)    | 122°F (+50°C) |
| O <sub>2</sub>   | 0 to 25% v/v   | 19% v/v                        | 5mins        | 1 mins           | 5°F (-15°C)     | 104°F (+40°C) |
| NH <sub>3</sub>  | 0 to 50 ppm    | 25 ppm                         | 3mins        | 10 mins          | -4°F (-20°C)    | 104°F (+40°C) |
| NH <sub>3</sub>  | 0 to 1000 ppm  | 500 ppm                        | 3mins        | 10 mins          | -4°F (-20°C)    | 104°F (+40°C) |
| H <sub>2</sub>   | 0 to 1000 ppm  | 500 ppm                        | 3mins        | 3 mins           | 23°F (-5°C)     | 104°F (+40°C) |
| H <sub>2</sub>   | 0 to 10000 ppm | 3000 ppm                       | 3mins        | 3 mins           | 23°F (-5°C)     | 104°F (+40°C) |
| SO <sub>2</sub>  | 0 to 15 ppm    | 10 ppm                         | 3mins        | 5 mins           | 5°F (-15°C)     | 104°F (+40°C) |
| SO <sub>2</sub>  | 0 to 50 ppm    | 20 ppm                         | 3mins        | 5 mins           | 5°F (-15°C)     | 104°F (+40°C) |
| NO               | 0 to 100 ppm   | 50 ppm                         | 12hrs        | 5 mins           | 23°F (-5°C)     | 104°F (+40°C) |
| NO <sub>2</sub>  | 0 to 10 ppm    | 5 ppm                          | 1hr          | 5 mins           | 5°F (-15°C)     | 104°F (+40°C) |

Operating temperature range:  
see table 1.

Operating humidity range:  
20% to 90% RH continuous.  
10% to 99% RH intermittent - non condensing.

Operating pressure range:  
90 to 110 k Pa.

Warm up time:  
see table 1.

Voltage range:  
18 to 30 V at sensor.

Power consumption:  
0.9 W Max.

Signal output:  
4 to 20 mA loop powered.

Calibration flow rate:  
recommended between 1 and 1.5 l/min.

Expected operating life:  
H<sub>2</sub>S, CO, no less than 24 months.  
NH<sub>3</sub>, Cl<sub>2</sub>, H<sub>2</sub>, SO<sub>2</sub>, NO<sub>2</sub>, NO, O<sub>2</sub> no less than 12 months.

IP rating:  
IP65 standard.  
IP67 with weather protection.

Certification:  
cCSAus Class I, Division 2, Groups B, C & D  
Certificate number 2404330