

**Product: XgardIQ Sensor Module**

**Subject: Technical Specification**

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<b>Product:</b>	<b>XgardIQ</b>
<b>Sensor Module Part Number:</b>	<b>XIQ-AG</b>
<b>Gas Type:</b>	<b>Oxygen (O<sub>2</sub>)</b>
Sensor Technology:	Electrochemical

**Environmental Specification:**

Temperature Range:	-20°C to +50°C.
Humidity Range for Operation/Storage:	15 to 99%rh non-condensing
Recommended Storage Temperature	20°C
Warranty Period:	12 months if operated within stated environmental limits and not exposed to excessive gas concentrations or humidity.
Pressure Range:	Atmospheric +/-10%

**Performance Characteristics:**

Expected Operating Life:	24 months in air if operated within stated environmental limits and not exposed to excessive gas concentrations or humidity. Oxygen sensors must be replaced every two years.
Storage Life:	3 months from date of manufacture.
T90 Response Time:	~10 seconds
Minimum Display Resolution:	0.1%
Linearity	<5% of full-scale
Long Term Sensitivity Drift:	<5% per year

**Configuration:**

XgardIQ Display Name:	O2
Standard Range:	0-25%
Maximum User-Selectable Range:	0-30%
Minimum Recommended User-Selectable Range:	0-5%
Alarm 1 Threshold	19% Falling*
Alarm 2 Threshold	17% Falling*
Stabilisation Time	60 seconds

\*Note: standard alarm thresholds are configured for applications where there risk is a risk of oxygen depletion. In applications where oxygen enrichment may occur (eg where oxygen cylinders are stored) it is recommended the user sets a rising alarm threshold of 23.5%.

## Product Notes and Calibration Instructions:

Crowcon recommends O<sub>2</sub> sensors are initially calibrated on commissioning and re-calibrated every 6 months minimum. Zeroing of the sensor is not routinely necessary, but if required can be performed by applying 100% nitrogen.

It is recommended that the sensor is bump-tested periodically by applying nitrogen to verify that alarms are triggered.

Please refer to the XgardIQ installation, operating and maintenance instructions for information on performing sensor zero and calibration.

Crowcon recommends calibration is performed using 20.9% Oxygen (O<sub>2</sub>) in nitrogen at a flow-rate of 0.5 - 1 litre per minute.

**Note:** if a dust filter accessory is fitted to the sensor, calibration must be performed with the filter in-place. Filters must be inspected regularly and replaced as soon as they show signs of contamination. A dust filter will affect the T90 response time of the sensor: response time may be significantly longer than shown on this datasheet.

## Cross-Sensitivity Data

TLV levels (ie ppm concentrations) of toxic gases will not cause a response on the sensor.

### **Note: Oxygen Depletion in Helium Applications.**

The response of the sensor is dependent on the rate of diffusion of oxygen through a capillary. This in turn is a function of the relative molecular weight of oxygen to that of the background gas. Helium has a very low molecular weight compared to pure nitrogen (the majority constituent of air). The sensor will produce a greater response to oxygen in a background of helium than a background of nitrogen; this enhancement is greater the more the helium dilutes the air. Thus the XgardIQ transmitter may display an oxygen concentration higher than is actually present if the instrument is not compensated correctly.

Example: at an actual oxygen concentration of 19% where the helium concentration is 9.5% and the nitrogen concentration is 71.5%, the sensor reads 20% oxygen; at 15% oxygen (helium concentration 28.6%) it reads 18%.

Setting alarms: the main consideration is to ensure that the oxygen deficiency alarm is activated at the correct and appropriate concentration. Calibrate in air as usual but where the oxygen depletion risk is from *helium*, raise the alarm level from 19% (the typical alarm 1 level) to 20%. If helium dilutes the air such that the concentration of oxygen is reduced to 19%, the sensor will read 20% and so will activate the alarm at the right level.

For Nitrogen, Argon or CO<sub>2</sub> depletion risk applications the standard alarm settings of 19/17% are still appropriate.

### **Disclaimer:**

The data contained on this document is provided for guidance purposes only and is correct at the time of issue. Performance data is typical as measured at Crowcon; no guarantees can be made on the performance of individual products. Environmental specifications are specific to the sensor listed, and may differ from those shown on the gas detector datasheet.