

**Product: XgardIQ Sensor Module**

**Subject: Technical Specification**

Document reference: M070056

Issue 2 April 2016



<b>Product:</b>	<b>XgardIQ</b>
<b>Sensor Module Part Number:</b>	<b>XIQ-BD</b>
<b>Gas Type:</b>	<b>Ethanol (C<sub>2</sub>H<sub>6</sub>O)</b>
Sensor Technology:	Pellistor

**Environmental Specification:**

Temperature Range:	+10°C to +75°C (see notes regarding ethanol flash-point)
Humidity Range for Operation/Storage:	0 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 contaminants (see Product Notes).
Pressure Range:	Atmospheric +/-10%

**Performance Characteristics:**

Expected Operating Life:	>36 months in air if operated within stated environmental limits and not exposed to excessive gas concentrations or contaminants (see Product Notes).
Storage Life:	6 months from date of manufacture.
T90 Response Time:	~23 seconds
Minimum Display Resolution:	1%LEL
Linearity	<3% of full-scale
Long Term Sensitivity Drift:	<5% per year

**Configuration:**

XgardIQ Display Name:	Ethanol
Range:	0-100%LEL
Maximum User-Selectable Range:	0-100%LEL
Minimum Recommended User-Selectable Range:	0-20%LEL
Alarm 1 Threshold	20%LEL
Alarm 2 Threshold	40%LEL
Stabilisation Time	60 seconds

## Product Notes and Calibration Instructions:

Crowcon recommends ethanol sensors are initially calibrated on commissioning and re-calibrated every 6 months minimum.

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

Crowcon recommends calibration is performed where practical using 50%LEL ethanol ( $C_2H_6O$ ) in air at a flow-rate of 0.5 - 1 litre per minute. The sensor must be zeroed in clean air before calibration is performed.

**Note:** Ethanol has a flashpoint of 12-13° Celsius; below this temperature decreasingly low vapour concentrations can be formed and detection and calibration become impractical. Even at ambient 20°C; liquid ethanol may have to be vaporised to enable calibration.

XgardIQ allows cross-calibration using easily obtainable and usable vapours where the target gas is impractical for calibration. When using the Calibration menu, the user will be offered a choice of calibrating with the target gas (ie ethanol), or two others (propane and pentane). The cross-calibration gas must be applied in the concentration shown on-screen: in this case 0.85% (50%LEL) propane or 0.55% (50%LEL) pentane; XgardIQ will automatically calibrate so that the sensor responds correctly to ethanol.

The correction factors are detailed below for reference, however these are already stored in the sensor module configuration and thus the user just needs to choose the gas type and proceed.

**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.

**Note:** Pellistors can suffer from loss of sensitivity if exposed to poisons or inhibitors such as silicones, sulphides, chlorine, lead or halogenated hydrocarbons. Sensors must be tested regularly with gas to verify response. In applications where such compounds are present we recommend the use of infrared flammable gas sensors.

The operational life of the pellistors depends on the application and the amount of gas and contaminants to which the pellistor has been exposed. Under normal conditions (6 monthly calibration with periodic exposure to calibration gas) the life expectancy is 3-5 years.

The sinter should be inspected regularly; a blocked sinter may prevent gas from reaching the sensor.

**Note:** modules will be calibrated in compliance with EN60079-20-1:2010 where 100% LEL ethanol = 3.1% volume.

### Measured Cross Calibration Data:

0.85% Vol. (50%LEL) Propane ( $C_3H_8$ ) = 38%LEL Ethanol. Cross calibration factor = **0.76**

0.55% Vol. (50%LEL) Pentane ( $C_5H_{12}$ ) = 30%LEL Ethanol. Cross calibration factor = **0.6**

Note: The cross calibration factors have been measured at 20°C (nominally) and at 50%LEL concentration of the gases specified above. Extrapolated ethanol readings may vary at higher temperatures.

### Safety Information:

XgardIQ sensor modules are designed to detect gases or vapours in air, and not inert or oxygen deficient atmospheres.

Maintenance and calibration operations must be performed by qualified service personnel.

**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.