Product: XgardIQ Sensor Module
Subject: Technical Specification
Document reference: M070078
Issue 3 November 2017

Product:	**XgardIQ**
Sensor Module Part Number:	**XIQ-CT**
Gas Type:	**Ethanol (C$_2$H$_6$O)**
Sensor Technology:	Infrared (IR)

Environmental Specification:

ATEX and IECEx Approved Ambient Temperature Range	-20ºC to +55ºC
Operational Temperature and Humidity Range:	+10ºC to +55ºC 0 to 95% RH non-condensing
Recommended Storage Temperature and Humidity Range	-25ºC to +85ºC 0 to 95% RH non-condensing
Warranty Period:	24 months if operated within stated environmental limits.
Pressure Range:	700 to 1300 mBar

Performance Characteristics:

Expected Operating Life:	>10 years if operated within stated environmental limits.
Storage Life:	Unlimited if stored at 20˚C in the original packaging in a clean environment.
T90 Response Time:	<45 seconds @ 0.5 litre per minute flow rate
Minimum Display Resolution:	1%LEL
Linearity	Maximum deviation: +/-0.35% volume
Long Term Sensitivity Drift:	Negligible

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*

*Please note thermal stabilisation time of sensor in Product Notes

Product Notes and Calibration Instructions:

Crowcon recommends IR Ethanol sensors are initially calibrated on commissioning and bump-tested every 12 months minimum. Re-calibration is only necessary where the sensor reading deviates significantly from the applied test gas concentration.

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

Important: to allow for thermal stabilisation of the sensor, it is essential that the sensor module is left powered for at least 1 hour after insertion before attempting to zero or calibrate. The sensor may be zeroed in clean air after 1 hour of being powered.

Crowcon recommends calibration and bump tests are performed where practical using 50%LEL ethanol (C_2H_6O) in air or nitrogen 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 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 target gas (i.e. 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 factor is detailed below for reference, however, this is already stored in the sensor module configuration and thus the user just needs to choose the gas type and proceed.

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

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: 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) = 47%LEL Ethanol. Cross calibration factor = **0.93**
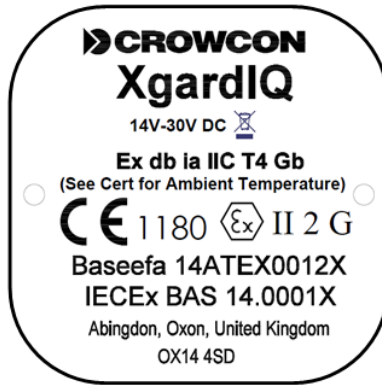0.55% Vol. (50%LEL) Pentane (C_5H_{12}) = 39%LEL Ethanol. Cross calibration factor = **0.77**

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:

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

Important note: the IR sensor module must only be used with XgardIQ transmitters bearing the certification label shown below.

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XgardIQ

14V-30V DC

Ex db ia IIC T4 Gb
(See Cert for Ambient Temperature)

CE 1180 ⟨Ex⟩ II 2 G

Baseefa 14ATEX0012X
IECEx BAS 14.0001X

Abingdon, Oxon, United Kingdom
OX14 4SD

The IR sensor module <u>must not</u> be fitted to transmitters manufactured before August 2016 unless the transmitter has been upgraded to the latest hardware and certification status by Crowcon.

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.