

DISCLAIMER

This document presents specifications, cross sensitivities, and calibration information on select Watchgas sensors. All specifications presented in this document reflect the performance of standalone sensors. For instrument specifications, please refer product data-sheets and manuals.

Actual sensor characteristics may differ when the sensor is installed in different instruments.

As sensor performance may change over time, specifications provided are for brand new sensors.

All specifications have been verified under the following environmental conditions:

Temperature	20°C (68°F)
Relative humidity (non condensing)	60%
Ambient pressure	1,013 mbar (1 atm)

Specifications are subject to change without notice.

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DEFINITIONS

Sensor Type

Production type of sensor.

Sensor ID

Unique identify number for selecting the sensor.

Range

The normal operating concentration of a sensor where the best linearity is found. Exceeding the normal operating range may result in erroneous readings and long recovery times.

Resolution

The least significant the display or the minimum amount of chemical that the sensor can

Response Time(t90)s

The time for a sensor to reach 90% of its final stable reading. Typically an exposure of twice the t90 time is required to get a stable reading. Response times of sensors and instruments may be different.

The response time of instrument is dependent on sensor response time and test conditions like calibration gas flow rate, temperature etc.

Drift

The amount the sensor output may change over time, expressed in %.

Temperature Range

The normal operating temperature of the sensor. Sensors embody physico-chemical processes, which slow down when cooled and speed up when heated. Storing and using detectors outside in the winter may result in low readings if not recalibrated at the temperature of use. Storing detectors in hot cars in the summer may result in high readings and even dry out the sensors. Allowing a meter to return to normal operating temperature typically restores readings.

Storage Life

The recommended maximum time a sensor should be stored in its original packaging before being installed in an instrument.

Expected Operating Life

The expected useable life of the sensor after it is installed, as long as the "Storage Life" was not exceeded before installation.

Warranty

The time from shipment up to a replacement a sensor free of charge, or at reduced charge, in case of failure.

Calibration Gas

Recommended calibration gas concentration. A lower concentration might not give a stable calibration, while higher concentrations might use up the sensor prematurely. However, if the sensor is operated outside the typical range, it is recommended to use a calibration gas as close as possible to the actual concentrations and gas type being measured.

Cross - sensitivity

Every sensor has some cross-sensitivity, where the sensor responds to other gases that are not filtered out and can react on the electrode. It is very important to be aware of potentially cross-sensitive compounds when interpreting data.

SENSORS FOR OXYGEN

WG O ₂ P/N: Air-O ₂ -010	
Sensor Type	Electrochemical
Sensor ID	2
Range	0 - 25% Vol.
Resolution	0.1% Vol.
Response Time(t90)s	< 15
Temperature Range	-30°C - 55°C (-22°F - 131°F)
Expected Operating Life	2 years in air
Warranty	2 years
Calibration Gas	18% O ₂
Zero Gas	99.9% N ₂

SENSORS FOR COMBUSTIBLE GASES AND VAPORS

WG LEL-CAT P/N: Air-LEL-010	
Sensor Type	Catalytic bead
Sensor ID	1
Range	0 - 100%
Resolution	1% LEL
Response Time(t90)s	< 10 (methane)
Drift	< 5% signal / month
Storage Life	2 years in sealed container
Expected Operating Life	2 years in air
Warranty	1 year
Calibration Gas	50% LEL Methane, Balance Air

Response Data	
Gas/Vapor	% Relative Sensitivity
Methane	100
Hydrogen	106
Ethylene	96
Propane	82
Isobutane	74
n-Pentane	67
Hexanes	50

Response of the LEL sensor to a range of gases at the same LEL, expressed as percent of Methane response (=100). These data are for guidance only. For the most accurate measurements, the instrument should be calibrated with the target gas.

WG LEL-NDIR P/N: Air-LELD-010	
Sensor Type	NDIR (Non-dispersive infrared)
Sensor ID	6
Range	0 - 100%
Resolution	1% LEL
Response Time(t90)s	< 10 / 30
Accuracy	±0.1% vol. or 5 % of reading (whichever is greater)
Temperature Range	-40°C - 60°C (-40°F - 160°F)
Storage Life	2 years in sealed container
Expected Operating Life	2 years in air
Warranty	1 year
Calibration Gas	50% LEL CH ₄ , Balance Air or N ₂

SENSORS FOR TOXIC GASES

WG CO P/N: Air-CO-010	
Sensor Type	Electrochemical
Sensor ID	32
Range	0 - 2000 ppm
Resolution	1 ppm
Response Time(t90)s	< 30
Drift	< 5% per annum
Storage Life	2 years in sealed container
Expected Operating Life	2 years in air
Warranty	2 years
Calibration Gas	50 ppm CO balance air

WG CO-LR P/N: Air-COLR-010	
Sensor Type	Electrochemical
Sensor ID	39
Range	0 - 50 ppm
Resolution	20 ppb
Response Time(t90)s	from zero to 10 ppm < 20
Drift	< 10% per annum
Temperature Range	-30°C - 50°C (-22°F - 122°F)
Storage Life	6 months i n sealed container
Expected Operating Life	50% signal > 36 month
Warranty	1 year
Calibration Gas	15 ppm CO balance air

WG CO-HR P/N: Air-COHR-010	
Sensor Type	Electrochemical
Sensor ID	19
Range	0 - 10000 ppm
Resolution	5 ppm
Response Time(t90)s	from zero to 2000 ppm < 50
Drift	< 1% per annum
Temperature Range	-30°C - 50°C (-22°F - 122°F)
Storage Life	6 months in sealed container
Warranty	1 year
Calibration Gas	2000 ppm CO balance air

Cross - Sensitivity Data		
Gas	Conc.	Response
Hydrogen Sulphide	50 ppm	0 ppm
Sulphur dioxide	20 ppm	0 ppm
Hydrogen	100 ppm	< 30 ppm
Nitric Oxide	50 ppm	< 10 ppm
Ethanol	200 ppm	< 1 ppm
Ammonia	50 ppm	0 ppm
Chlorine	15 ppm	< 1 ppm
Ethylene	100 ppm	96 ppm
Acetylene	100 ppm	90 ppm

Cross - Sensitivity Data		
Gas	Conc.	Response
Hydrogen Sulphide	5 ppm	< 0.005ppm
Sulphur dioxide	5 ppm	< 0.005ppm
Hydrogen	100 ppm	< 10 ppm
Nitric dioxide	5 ppm	< -0.1 ppm
Nitric oxide	5 ppm	< -0.1 ppm
Ammonia	20 ppm	< 0.02 ppm
Chlorine	5 ppm	< 0.005 ppm
Ethylene	100 ppm	< 0.5 ppm

Cross - Sensitivity Data		
Gas	Conc.	Response
Hydrogen Sulphide	20 ppm	< 0.02 ppm
Sulphur dioxide	20 ppm	< 0.02 ppm
Hydrogen	400 ppm	< 300 ppm
Nitric dioxide	10 ppm	< 0.01 ppm
Nitric oxide	50 ppm	< 0.05 ppm
Ammonia	20 ppm	< 0.02 ppm
Chlorine	10 ppm	< 0.02 ppm
Ethylene	400 ppm	< 240 ppm

SENSORS FOR TOXIC GASES

WG CO comp. H ₂ P/N: Air-CO ₂ -010	
Sensor Type	Electrochemical
Sensor ID	3
Range	0 - 2000 ppm
Resolution	1 ppm
Response Time(t90)s	from zero to 400 ppm < 30
Drift	< 6% per annum
Temperature Range	-30°C - 50°C (-22°F - 122°F)
Storage Life	6 months in sealed container
Expected Operating Life	80% signal > 24 month
Warranty	1 year
Calibration Gas	50 ppm CO balance air

Cross - Sensitivity Data		
Gas	Conc.	Response
Nitric dioxide	10 ppm	< -0.01ppm
Chlorine	10 ppm	< 0.01ppm
Nitric Oxide	500 ppm	< -10 ppm
Sulphur dioxide	20 ppm	< 0.02 ppm
Ethylene	400 ppm	< 20 ppm
Ammonia	20 ppm	< 0.02 ppm
H ₂ sensitivity @900 ppm H ₂ in 900 ppm CO		
H ₂ @ 10°C	900	< 18 ppm
H ₂ @ 20°C	900	< 36 ppm
H ₂ @ 30°C	900	< 54 ppm

WG H ₂ S P/N: Air-H ₂ S-010	
Sensor Type	Electrochemical
Sensor ID	4
Range	0 - 100 ppm
Resolution	0.1 ppm
Response Time(t90)s	from zero to 20 ppm < 30
Drift	< 3% per annum
Temperature Range	-30°C - 50°C (-22°F - 122°F)
Storage Life	6 months in sealed container
Expected Operating Life	80% signal > 24 month
Warranty	1 year
Calibration Gas	10 ppm H ₂ S balance N ₂

Cross - Sensitivity Data		
Gas	Conc.	Response
Carbon monoxide	400 ppm	< 6ppm
Sulphur dioxide	20 ppm	< 2ppm
Hydrogen	400 ppm	< 0.8 ppm
Nitric dioxide	10 ppm	< -2 ppm
Nitric oxide	50 ppm	< 2ppm
Ammonia	20 ppm	< 0.02 ppm
Chlorine	10 ppm	< -2.5 ppm
Ethylene	400 ppm	< 2 ppm

WG H ₂ S-HR P/N: Air-H ₂ SHR-010	
Sensor Type	Electrochemical
Sensor ID	33
Range	0 - 2000 ppm
Resolution	0.5 ppm
Response Time(t90)s	from zero to 400 ppm < 25
Drift	nd
Temperature Range	-30°C - 50°C (-22°F - 122°F)
Storage Life	6 months in sealed container
Expected Operating Life	80% signal > 24 month
Warranty	1 year
Calibration Gas	200 ppm H ₂ S balance N ₂

Cross - Sensitivity Data		
Gas	Conc.	Response
Carbon monoxide	400 ppm	< 6 ppm
Sulphur dioxide	20 ppm	< 0.4 ppm
Hydrogen	400 ppm	< 1 ppm
Nitric dioxide	10 ppm	< -2 ppm
Nitric oxide	50 ppm	< 5 ppm
Ammonia	20 ppm	< 0.02 ppm
Chlorine	10 ppm	< -2.5 ppm
Ethylene	400 ppm	< 2 ppm

SENSORS FOR TOXIC GASES

WG SO ₂ P/N: Air-SO ₂ -010	
Sensor Type	Electrochemical
Sensor ID	9
Range	0 - 50 ppm
Resolution	0.1 ppm
Response Time(t90)s	from zero to 10 ppm < 35
Drift	< 4% per annum
Temperature Range	-30°C - 50°C (-22°F - 122°F)
Storage Life	6 months in sealed container
Expected Operating Life	80% signal > 24 month
Warranty	1 year
Calibration Gas	10 ppm SO ₂ balance N ₂

Cross - Sensitivity Data		
Gas	Conc.	Response
Hydrogen Sulphide	20 ppm	< 0.6 ppm
Carbon Monoxide	400 ppm	< 6.4 ppm
Hydrogen	400 ppm	< 1.2 ppm
Nitric oxide	50 ppm	< ±1 ppm
Nitric dioxide	10 ppm	< -10 ppm
Ammonia	20 ppm	< 0.1 ppm
Chlorine	10 ppm	< -0.6 ppm
Ethylene	400 ppm	< 160 ppm

WG NH ₃ P/N: Air-NH ₃ -010	
Sensor Type	Electrochemical
Sensor ID	11
Range	0 - 100 ppm
Resolution	1 ppm
Response Time(t90)s	< 80
Drift	< 1% per month
Temperature Range	-30°C - 50°C (-22°F - 122°F)
Storage Life	6 months in sealed container
Expected Operating Life	24 months
Warranty	1 year
Calibration Gas	50 ppm NH ₃ balance N ₂

Cross - Sensitivity Data		
Gas	Conc.	Response
Hydrogen Sulphide	50 ppm	< 0.1 ppm
Carbon Monoxide	100 ppm	< 0.1 ppm
Hydrogen	100 ppm	< 0.1 ppm
Isopropanol	1000 ppm	< 0.1 ppm
Chlorine	1 ppm	< 0.1 ppm
Carbon Dioxide	5000 ppm	< 0.1 ppm

WG HCN P/N: Air-HCN-010	
Sensor Type	Electrochemical
Sensor ID	17
Range	0 - 100 ppm
Resolution	0.1 ppm
Response Time(t90)s	from zero to 30 ppm < 70
Drift	nd
Temperature Range	-30°C - 50°C (-22°F - 122°F)
Storage Life	6 months in sealed container
Expected Operating Life	80% signal > 12 month
Warranty	1 year
Calibration Gas	10 ppm HCN balance N ₂

Cross - Sensitivity Data		
Gas	Conc.	Response
Hydrogen Sulphide	20 ppm	< 60 ppm
Carbon Monoxide	400 ppm	< 0.4 ppm
Hydrogen	400 ppm	< 0.4 ppm
Nitric oxide	50 ppm	< 0.5 ppm
Nitric dioxide	10 ppm	< -18 ppm
Ammonia	20 ppm	< 0.2 ppm
Chlorine	10 ppm	< -1.2 ppm
Ethylene	80 ppm	< 0.8 ppm

SENSORS FOR TOXIC GASES

WG CL ₂ P/N: Air-Cl ₂ -010	
Sensor Type	Electrochemical
Sensor ID	16
Range	0 - 50 ppm
Resolution	0.1 ppm
Response Time(t90)s	< 60
Drift	< 1% per month
Temperature Range	-20°C - 40°C (-4°F - 104°F)
Storage Life	6 months in sealed container
Expected Operating Life	24 months
Warranty	1 year
Calibration Gas	10 ppm CL ₂ balance N ₂

Cross - Sensitivity Data		
Gas	Conc.	Response
Hydrogen Sulphide	50 ppm	n.a.
Carbon Monoxide	100 ppm	0 ppm
Hydrogen	100 ppm	0 ppm
Chlorine Dioxide	1 ppm	0.5 ppm
Carbon Dioxide	5000 ppm	0 ppm
Isopropanol	1000 ppm	n.a.
Nitric oxide	25 ppm	n.a.
Ammonia	100 ppm	0 ppm
Bromine	1 ppm	1.0 ppm
Fluorine	1 ppm	0.4 ppm
Ozone	0.25 ppm	0.05 ppm
Sulfur Dioxide	20 ppm	3.5 ppm

WG NO ₂ P/N: Air-NO ₂ -010	
Sensor Type	Electrochemical
Sensor ID	10
Range	0 - 20 ppm
Resolution	0.1 ppm
Response Time(t90)s	from zero to 10 ppm < 50
Drift	< %-20 to - 40 per annum
Temperature Range	-30°C - 50°C (-22°F - 122°F)
Storage Life	6 months in sealed container
Expected Operating Life	80% signal > 24 months
Warranty	1 year
Calibration Gas	5 ppm NO ₂ balance N ₂

Cross - Sensitivity Data		
Gas	Conc.	Response
Hydrogen Sulphide	20 ppm	< -7 ppm
Carbon Monoxide	400 ppm	< 0.4 ppm
Hydrogen	400 ppm	< 0.4 ppm
Nitric oxide	50 ppm	< -2.5 ppm
Ozone	200 ppm	< 240 ppm
Ammonia	200 ppm	< 0.02 ppm
Chlorine	10 ppm	< 8 ppm
Ethylene	50 ppm	< 0.05 ppm
Carbon Dioxide	5% vol.	< 0.005% vol.

WG NO P/N: Air-NO-010	
Sensor Type	Electrochemical
Sensor ID	21
Range	0 - 250 ppm
Resolution	0.2 ppm
Response Time(t90)s	from zero to 50 ppm < 45
Drift	< 5% per annum
Temperature Range	-30°C - 50°C (-22°F - 122°F)
Storage Life	6 months in sealed container
Expected Operating Life	80% signal > 24 months
Warranty	1 year
Calibration Gas	25 ppm NO balance N ₂

Cross - Sensitivity Data		
Gas	Conc.	Response
Hydrogen Sulphide	20 ppm	< 6 ppm
Carbon Monoxide	400 ppm	< 0.4 ppm
Hydrogen	400 ppm	< 0.4 ppm
Nitric dioxide	50 ppm	< 2.5 ppm
Carbon Dioxide	5% vol.	< 0.005% vol.
Ammonia	20 ppm	< 0.02 ppm
Chlorine	10 ppm	< 1.5 ppm

SENSORS FOR CO₂

WG CO ₂ -LR P/N: Air-CO ₂ L-010	
Sensor Type	NDIR (Non-dispersive infrared)
Sensor ID	39
Range	0 - 10000 ppm
Resolution	10 ppm
Response Time(t90)s	< 30
Zero Drift	< ±1% signal / month
Accuracy	±10% of the reading, applied gas
Temperature Range	-20°C - 50°C (-4°F - 122°F)
Expected Operating Life	> 5 years
Warranty	1 year
Calibration Gas	5000 ppm CO ₂ , Balance N ₂
Zero Gas	N ₂

WG CO ₂ P/N: Air-CO ₂ -010	
Sensor Type	NDIR (Non-dispersive infrared)
Sensor ID	5
Range	0 - 5% vol.
Resolution	0.01% vol.
Response Time(t90)s	< 30
Zero Drift	< ±1% signal / month
Accuracy	±10% of the reading, applied gas
Temperature Range	-20°C - 50°C (-4°F - 122°F)
Expected Operating Life	> 5 years
Warranty	1 year
Calibration Gas	5000 ppm CO ₂ , Balance N ₂
Zero Gas	N ₂

SENSORS FOR CO₂

WG CO ₂ -HR P/N: Air-CO ₂ H-010	
Sensor Type	NDIR (Non-dispersive infrared)
Sensor ID	26
Range	0 - 100% vol.
Resolution	0.1% vol.
Response Time(t90)s	< 30
Zero Drift	< ±2% vol / month
Accuracy	±10% of the reading, @20°C applied gas
Temperature Range	-20°C - 50°C (-4°F - 122°F)
Expected Operating Life	> 5 years
Warranty	1 year
Calibration Gas	50% vol. CO ₂ , Balance N ₂
Zero Gas	N ₂

Change log

- V1.0 Intial version
- V1.1 Changed margens cells overlap on pages
- V1.2 Changed header to AirWath sensor specifications
Added PN
- V1.3 Changed the document into the correct
WatchGas lay-out