AQMesh | Technical specification

Gas algorithm V5.3.2, PM algorithm V3.0h*

GASES

Sensor	Type	Units	Range[#1]	LOD	LOC[#2]	Precision[#3]	Accuracy[#4]
NO	Electrochemical	ppb or µg/m³	0-6,700 ppb	<1 ppb	<5 ppb	>0.9	1 ppb
NO2	Electrochemical	ppb or µg/m³	0-4,900 ppb	<1 ppb	<5 ppb	>0.85	4 ppb
NOx	Electrochemical	ppb or µg/m³	0-11,600 ppb	<2 ppb	<10 ppb	>0.9	4 ppb
O3	Electrochemical	ppb or µg/m³	0-1,700 ppb	<1 ppb	<5 ppb	>0.9	5 ppb
CO	Electrochemical	ppb or µg/m³	0-8,000 ppb	<30 ppb	<50 ppb	>0.8	20 ppb
SO2	Electrochemical	ppb or µg/m³	0-1,100 ppb	<2 ppb	<10 ppb	>0.7	20 ppb
H2S	Electrochemical	ppb or µg/m³	0-10,000 ppb	<1 ppb	<5 ppb	>0.7	1 ppb
TVOC[#11]	Electrochemical	ppb	0-2,500 ppb	<10 ppb	<50 ppb	>0.95	0.05 ppm
CO2	NDIR	ppm or mg/m³	0-5,000 ppm	<1 ppm	<1 ppm	>0.9	50 ppb

PARTICLES

Sensor	Type	Units	Range[#1]	LOD	Precision[#3]	Accuracy[#4]
PM1[#5]	Optical particle counter	µg/m³	0-100,000 µg/m³	0 µg/m³	>0.9	5 µg/m³
PM2.5[#5]	Optical particle counter	µg/m³	0-150,000 µg/m³	0 µg/m³	>0.9	5 µg/m³
PM4[#5]	Optical particle counter	µg/m³	0-225,000 µg/m³	0 µg/m³	>0.9	5 µg/m³
PM10[#5]	Optical particle counter	µg/m³	0-250,000 µg/m³	0 µg/m³	>0.85	5 µg/m³
PM_Total[#5]	Optical particle counter	µg/m³	0-350,000 µg/m³	0 µg/m³	>0.85	5 µg/m³

ADDITIONAL SENSORS

Sensor	Type	Units	Range[#1]	LOD	Precision[#3]	Accuracy[#4]
Pod temperature	Solid state	°C or °F	-20°C to 100°C	0.1°C	>0.9	2°C
Pressure	Solid state	mb	500 to 1500 mb	1 mb	>0.9	5 mb
Humidity	Solid state	%	0 to 100%	1% RH	>0.9	5% RH
Noise[#6]	Omnidirectional mic	dB	35 to 100 dB SPL	20 Hz – 20 kHz	>0.8	1 dB

WIND SPEED & DIRECTION SENSOR

Sensor	Type	Units	Range	Resolution	Accuracy[#7]
Wind speed	Solid state	m/s	0 to 30 m/s	0.01 m/s	2%
Wind direction	Solid state	° degrees	0 to 359 °	1 °	2 °

SENSOR LIFE

Sensor Type	Expected lifespan	Notes
Electrochemical	2 years[#8]	See AQMesh standard operating procedure
NDIR	5 years	See AQMesh standard operating procedure
Solid state	5 years	See AQMesh standard operating procedure
Omnidirectional microphone	5 years	See AQMesh standard operating procedure
Optical particle counter	2 years[#8]	Maintenance dependent on application & settings[#9]

POWER

Option	Expected lifespan	Notes
External DC	>5 years	9 – 24V DC
Lithium metal battery pack[#10]	9-15 months 1 month	Estimate, gas only Estimate, with particulates
External high capacity battery pack[#10]	22-38 months 2-4 months	Estimate, gas only Estimate, with particulates
NiMH rechargeable battery pack	1 month	Estimate, gas only Not recommended for particulates
Solar power pack	>5 years	Change internal lead-acid battery every 24 months

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PHYSICAL

Enclosure	ABS, protection IP65
Environmental	Temperature range:-20°C to +40°C Humidity range: 15 to 95% RH
Mounting	Pod supplied with mounting bracket for walls / posts
Approx. size & weight	Length: 170 mm Width: 220 mm Height (excl antenna): 250mm Height (incl antenna): 430mm Weight: 2 – 2.7kg

DATA ACCESS & COMMUNICATIONS

Communication	Raw data sent to server by cellular network. Worldwide coverage 4G/5G LTE Cat M1/NB1 with 2G fallback, within the following bands:- B1 (2100), B2 (1900), B3 (1800), B4 (AWS 1700), B5 (850), B8 (900), B12 (700), B13 (700), B18 (800), B19 (800), B20 (800), B26 (850), B28 (700)
Measurement period	Variable, from 1 minute to 1 hour
Transmission frequency	Variable, from 5 minutes to 12 hour intervals
Server software	Web browser based Processing of sensor output to give reading Database storage on secure server
Data access	Tables, graphs Data download Multi-user access

Product designs and specifications are subject to change without prior notice.

The user is responsible for determining the suitability of the product.

*h denotes when used with optional heated inlet for PM monitoring

#1 From sensor manufacturer's specification. This data was derived from independent lab tests. Standard test conditions are 20°C and 80% RH and in the absence of interfering gases. Tested range is-30°C to +30°C.

#2 Readings provided below this level, however due to interferences the level of uncertainty is greater than at higher levels of the target pollutant.

#3 Typical correlation co-efficient derived from extensive global co-location comparison testing against certified reference.

#4 Best "out of the box" accuracy without any local scaling/calibration against reference.

#5 Mass estimation based on standardisation of particle shape and density. Range is based on optical range of 0.3-30µm particle size.

#6 Noise measures average noise and peak noise. Peak noise is the highest recorded value over the gas reporting interval while average noise is calculated using all noise samples over the same period.

#7 Wind speed and direction stated accuracy is at 12m/s

#8 Electrochemical sensors and particle sensors carry a 12-month warranty.

#9 Detail of maintenance required is listed in the standard operating procedure.

#10 Subject to carrier restrictions on dangerous goods.

#11 Values are based on testing for Ethylene Oxide (EO) and correction factors will affect these results