AQMesh

Small sensor air quality monitoring system

The best small sensor air quality monitoring system, AQMesh pods can measure just one gas or up to six gases, particles, noise and wind speed & direction. Humidity, pressure and pod temperature are always measured.

EASY TO INSTALL

AQMesh pods are neat, compact and easy install within just a few minutes and experienced technical staff are not required. A 90 second installation video shows just how quick it is to be up and running.

MONITOR EXACTLY WHERE MONITORING IS REQUIRED

With wireless or ethernet communications using the global mobile network, LAN or PoE and a choice of power options, including batteries, mains supply or a bespoke solar pack, AQMesh can be installed in almost any location.

LOW COST OF OWNERSHIP

AQMesh pods require very little maintenance and there is a very low ongoing cost. All we recommend is the electrochemical sensors are replaced every two years, and we replace all sensors for free during the first year.

PROVEN TO LAST IN THE FIELD

AQMesh has been on the market and in the field since 2012, with some customers still successfully operating the exact same pods they received seven years ago.

DATA MANAGEMENT FLEXIBILITY

AQMesh processes and stores all readings on its bespoke secure server which can be accessed by a website login or API to integrate with other systems, or it can be simple emailed to you at your preferred schedule.

ACCURATELY MEASURE THE TARGET POLLUTANT

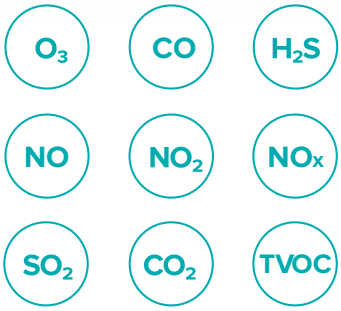
Meaningful correction of cross-gas effects and interference from environmental conditions is consistently delivered through proven and traceable processing.

NO_2 MEASUREMENTS THAT CAN BE RELIED ON

Whilst some manufacturers use a calculation to give an NO_2 reading, AQMesh uses a unique O_3-filtered NO_2 sensor for accurate, direct measurement of NO_2.

REPEATABLE, TRACEABLE RESULTS

The carefully developed data processingalgorithms used by AQMesh are fully traceable and fixed by version number, and, unlike other systems, have been achieved with no use of machine learning or artificial intelligence.



PROVEN TRACK RECORD & STABILITY

AQMesh performance and long-term baseline stability has been proven over many years of independent global co-location trials against certified reference equipment, providing AQMesh with a wealth of datasets that no other manufacturer has access to.

MEASURE ACCURATELY ACROSS EVERY CONTINENT

Development through extensive global co-location comparison trials in all seasons across each continent means AQMesh can operate in the widest possible range of environments and conditions.

OUTSTANDING GLOBAL CUSTOMER SUPPORT

AQMesh prides itself on the level of global customer support it provides to its distributors and end users before, during and after sale. There is no cost for technical support and location is not a barrier.

MONITORING OPTIONS

- AQMesh can be specified to monitor a single gas or up to 6 gases, as well as PM, noise and wind speed & direction
- Measures gases NO, NO_2, O_3, CO, SO_2 and H_2S using the latest generation of electrochemical sensors
- CO_2 monitoring with a NDIR sensor
- Measures particulates PM1, PM2.5 and PM10 with a light-scattering optical particle counter
- Noise monitoring with an omnidirectional microphone
- Meteorological sensor for wind speed and direction measurement
- Measures relative humidity, pod temperature, atmospheric pressure as standard

GASES

Sensor	Type	Units	Range[#1]	LOD	LOC[#2]	Precision[#3]	Accuracy[#4]
NO	Electrochemical	ppb or µg/m3	0-20,000 ppb	<1 ppb	<5 ppb	>0.9	1 ppb
NO_2	Electrochemical	ppb or µg/m3	0-20,000 ppb	<1 ppb	<5 ppb	>0.85	4 ppb
NOx	Electrochemical	ppb or µg/m3	0-40,000 ppb	<2 ppb	<10 ppb	>0.9	4 ppb
O_3	Electrochemical	ppb or µg/m3	0-20,000 ppb	<1 ppb	<5 ppb	>0.9	5 ppb
CO	Electrochemical	ppb or µg/m3	0-1,000,000 ppb	<30 ppb	<50 ppb	>0.8	20 ppb
SO_2	Electrochemical	ppb or µg/m3	0-100,000 ppb	<2 ppb	<10 ppb	>0.7	20 ppb
H_2S	Electrochemical	ppb or µg/m3	0-100,000 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
CO_2	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	20Hz – 20kHz	>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°

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SPECIFICATIONS

Specifications subject to change without notice

Sensor	Expected lifespan
Electrochemical	2 years#8
NDIR	5 years
Solid state	5 years
Omnidirectional microphone	5 years
Optical particle counter	2 years#8

Power	
External DC	9 – 24V DC lifespan >5 years
Lithium metal battery pack#10	9-15 months - Estimate, gas only 1 month - Estimate, with particulates
External high capacity battery pack	22-38 months - Estimate, gas only 2-4 months - 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

Physical	
Enclosure ABS, protection	IP65
Environmental Temperature range:	-20°C to +50°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

Communications	
Data sent to server by cellular network. Worldwide coverage 4G/5G LTE Cat M1/NB1 Optional: Ethernet and PoE	
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

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

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