

# AQMesh | Technical specification



## MEASUREMENTS

SENSOR	TYPE	UNITS	RANGE <sup>#1</sup>	LOD	LOC <sup>#2</sup>	PRECISION <sup>#3</sup>	ACCURACY <sup>#4</sup>
NO	Electrochemical	ppb or $\mu\text{g}/\text{m}^3$	0–20,000ppb	<1ppb	<5ppb	>0.9	1ppb
NO2	Electrochemical	ppb or $\mu\text{g}/\text{m}^3$	0–20,000ppb	<1ppb	<5ppb	>0.85	4ppb
NOx	Electrochemical	ppb or $\mu\text{g}/\text{m}^3$	0–40,000ppb	<2ppb	<10ppb	>0.9	4ppb
O3	Electrochemical	ppb or $\mu\text{g}/\text{m}^3$	0–20,000ppb	<1ppb	<5ppb	>0.9	5ppb
CO	Electrochemical	ppb or $\mu\text{g}/\text{m}^3$	0–1,000,000ppb	<30ppb	<50ppb	>0.8	20ppb
SO2	Electrochemical	ppb or $\mu\text{g}/\text{m}^3$	0–100,000ppb	<2ppb	<10ppb	>0.7	20ppb
H2S	Electrochemical	ppb or $\mu\text{g}/\text{m}^3$	0–100,000ppb	<1ppb	<5ppb	>0.7	1ppb
TVOC	Electrochemical	ppm	0–2.5ppm	<0.1ppm	<0.25ppm	>0.95	0.05ppm
CO2	NDIR	ppm or $\text{mg}/\text{m}^3$	0–5,000ppm	<1ppm	<1ppm	<0.9	30ppm

SENSOR	TYPE	UNITS	RANGE <sup>#1</sup>	LOD <sup>#2</sup>	PRECISION <sup>#3</sup>	ACCURACY <sup>#4</sup>
PM1 <sup>#5</sup>	Optical particle counter	$\mu\text{g}/\text{m}^3$	0–100,000 $\mu\text{g}/\text{m}^3$	0 $\mu\text{g}/\text{m}^3$	>0.9	5 $\mu\text{g}/\text{m}^3$
PM2.5 <sup>#5</sup>	Optical particle counter	$\mu\text{g}/\text{m}^3$	0–150,000 $\mu\text{g}/\text{m}^3$	0 $\mu\text{g}/\text{m}^3$	>0.9	5 $\mu\text{g}/\text{m}^3$
PM4 <sup>#5</sup>	Optical particle counter	$\mu\text{g}/\text{m}^3$	0–225,000 $\mu\text{g}/\text{m}^3$	0 $\mu\text{g}/\text{m}^3$	>0.9	5 $\mu\text{g}/\text{m}^3$
PM10 <sup>#5</sup>	Optical particle counter	$\mu\text{g}/\text{m}^3$	0–250,000 $\mu\text{g}/\text{m}^3$	0 $\mu\text{g}/\text{m}^3$	>0.85	5 $\mu\text{g}/\text{m}^3$
PM_Total <sup>#5</sup>	Optical particle counter	$\mu\text{g}/\text{m}^3$	0–350,000 $\mu\text{g}/\text{m}^3$	0 $\mu\text{g}/\text{m}^3$	>0.85	5 $\mu\text{g}/\text{m}^3$

SENSOR	TYPE	UNITS	RANGE <sup>#1</sup>	LOD	PRECISION <sup>#3</sup>	ACCURACY <sup>#4</sup>
Pod temp	Solid state	°C or °F	–20°C to 100°C	0.1°C	>0.9	2°C
Pressure	Solid state	mb	500 to 1500mb	1mb	>0.9	5mb
Humidity	Solid state	%	0–100%	1% RH	>0.9	5% RH
Noise <sup>#6</sup>	Omnidirectional mic	dB	35 to 100dB SPL	20Hz–20kHz	>0.8	1dB

SENSOR	TYPE	UNITS	RANGE	PRECISION	ACCURACY <sup>#7</sup>
Wind speed	Solid state	m/s	0–30m/s	0.01m/s	2%
Wind direction	Solid state	° degrees	0–359°	1°	2°

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## SENSOR LIFE

SENSOR	UNITS	ACCURACY
Electrochemical	2 years <sup>#8</sup>	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 <sup>#8</sup>	Maintenance dependent on application & settings <sup>#9</sup>

## POWER

OPTION	EXPECTED LIFESPAN	NOTES
External DC	>5 years	9-24V DC
Lithium metal battery pack <sup>#10</sup>	9-15 months 1 month	Estimate, gas only Estimate, with particulates
External high capacity battery pack <sup>#10</sup>	22-28 months 2-4 months	Estimate, gas only Estimate, with particulates
NiMH rechargeable battery pack	1 month	Estimate, 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 +40°C Humidity range 15 to 95% relative humidity
Mounting	Pod supplied with mounting bracket for walls/posts
Approximate size	Length 170mm Width 220mm Height (excluding antenna) 250mm Height (including antenna) 420mm
Approximate weight	2 to 2.7kg

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## COMMUNICATIONS

Communication	Raw data sent to server by cellular network Worldwide coverage 4G/5G LTE Cat M1/NB1 with 2G fallback
Server software	Web browser based Processing of sensor output to give reading Database storage on secure server

## DATA

Access options	Secure web application login Secure API feed Secure data download in Excel
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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 12ms/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