

Technical specification | Gas algorithm v5.0, PM algorithm V3.0 (and V3.0h)

Measurement

Sensor	Sensor type	Units	Range ^{#2}
NO	Electrochemical	ppb or µg/m3	0 to 4,000 ppb
NO2	Electrochemical	ppb or µg/m3	0 to 4,000 ppb
NOx	Electrochemical	ppb or µg/m3	0 to 8,000 ppb
O3	Electrochemical	ppb or µg/m3	0 to 1,800 ppb
CO	Electrochemical	ppb or µg/m3	0 to 6,000 ppb
SO2	Electrochemical	ppb or µg/m3	0 to 10,000 ppb
H2S	Electrochemical	ppb or µg/m3	0 to 100,000 ppb
CO2	NDIR	ppm or mg/m3	0 to 5,000 ppm
Pod temperature	Solid state	°C or °F	-20°C to 100°C
Pressure	Solid state	mb	500 to 1500 mb
Humidity	Solid state	%	0 to 100%
Noise	Omnidirectional mic	dB	35 to 100 dB SPL
Particle count	Optical particle counter	Particles/cm3	0.30 to 30 µm
PM1 ^{#1}	Optical particle counter	µg/m3	0 to 200 µg/m3
PM2.5 ^{#1}	Optical particle counter	µg/m3	0 to 500 µg/m3
PM10 ^{#1}	Optical particle counter	µg/m3	0 to 1,000 µg/m3
Lat, long, alt	GPS	decimal	N/A

Performance

Sensor	Limit of confidence ^{#3}	Typical precision to ref ^{#4}	Typical mean prescaled accuracy ^{#5}
NO	< 5 ppb	>0.9 R2	+/- 5 ppb
NO2	< 10 ppb	>0.85 R2	+/- 10 ppb
NOx	< 10 ppb	>0.9 R2	+/- 10 ppb
O3	< 5 ppb	>0.9 R2	+/- 10 ppb
CO	< 50 ppb	>0.8 R2	+/- 0.05 ppm
SO2	< 10 ppb	>0.7 R2	+/- 5 ppb
H2S	< 5 ppb	>0.7 R2	+/- 5 ppb
CO2	< 1 ppm	>0.9 R2	+/- 30 ppm
Sensor	Limit of detection	Typical precision to ref ^{#4}	Typical mean prescaled accuracy ^{#5}
Pod temperature	0.1°C	>0.9 R2	+/- 2°C
Pressure	1 mb	>0.9 R2	+/- 5 mb
Humidity	1% RH	>0.9 R2	+/- 5% RH
Average noise ^{#6}	20 Hz to 20 kHz	>0.8 R2	+/- 1 dB
Peak noise ^{#6}	20 Hz to 20 kHz	N/A	+/- 3 dB
Particle count	0 particles	>0.9 R2 variable	N/A
PM1 (v2.5)	0 µg/m3	>0.85 R2 variable	+/- 15 µg/m3 variable
PM2.5 (v2.5)	0 µg/m3	>0.85 R2 variable	+/- 20 µg/m3 variable
PM10 (v2.5)	0 µg/m3	>0.75 R2	+/- 30 µg/m3 variable
PM1 (v2.5h)	0 µg/m3	>0.9 R2 variable	+/- 5 µg/m3 variable
PM2.5 (v2.5h)	0 µg/m3	>0.9 R2 variable	+/- 5 µg/m3 variable
PM10 (v2.5h)	0 µg/m3	>0.85 R2 variable	+/- 5 µg/m3 variable
GPS	<0.5m	N/A	+/- 3m radius

Sensor life

Sensor type	Expected lifespan	Notes
Electrochemical	2 years ^{#7}	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	1 year (minimum) ^{#7}	Maintenance dependent on application & settings ^{#8}

Power

Option	Expected lifespan	Notes
External DC	>5 years	9 – 24V DC
Lithium metal battery pack ^{#9}	>24 months	Dependent on measurement strategy & pod spec
External high capacity battery pack ^{#9}	>60 months	Dependent on measurement strategy & pod spec
NiMH rechargeable battery pack	>4 months	Dependent on measurement strategy & pod spec
Solar power pack	>5 years	Change internal lead-acid battery every 24 months

Physical

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

Data access and communications

Communications	Measurement period	Transmission frequency	Server software	Data access
Raw data sent to remote server via 2G or 3G SIM (a data access contract is required)	Variable, from 1 minute to 1 hour	Variable, from 5 minutes to 12 hour intervals	Web browser based, processing of sensor output to give reading, database storage on secure server	Tables, graphs, data download, multi-user access, password controlled, optional API data access

Product designs and specifications are subject to change without prior notice.
The user is responsible for determining the suitability of the product.
#1 Mass estimation based on standardisation of particle shape and density.
#2 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.
#3 Readings provided below this level, however due to interferences the level of uncertainty is greater than at higher levels of the target pollutant.
#4 Results based on field testing around the world versus certified reference or equivalence methods at hourly intervals, in extreme and varied conditions.
#5 Average variance to reference equivalence methods at hourly intervals from field testing around the world, in extreme and varied conditions.
#6 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 Electrochemical sensors and particle sensors carry a 12-month warranty.
#8 Detail of maintenance required is listed in the standard operating procedure.
#9 Subject to carrier restrictions on dangerous goods.