



AQMesh

Technical specification

GASES

| Sensor | Type | Units | Range ^{#1} | LOD | LOC ^{#2} | Precision ^{#3} | Accuracy ^{#4} |
|---------------------|-----------------|---------------------------------|---------------------|----------|-------------------|-------------------------|------------------------|
| NO | Electrochemical | ppb or $\mu\text{g}/\text{m}^3$ | 0-20,000 ppb | <1 ppb | <5 ppb | >0.9 | 1 ppb |
| NO ₂ | Electrochemical | ppb or $\mu\text{g}/\text{m}^3$ | 0-20,000 ppb | <1 ppb | <5 ppb | >0.85 | 4 ppb |
| NO _x | Electrochemical | ppb or $\mu\text{g}/\text{m}^3$ | 0-40,000 ppb | <2 ppb | <10 ppb | >0.9 | 4 ppb |
| O ₃ | Electrochemical | ppb or $\mu\text{g}/\text{m}^3$ | 0-20,000 ppb | <1 ppb | <5 ppb | >0.9 | 5 ppb |
| CO | Electrochemical | ppb or $\mu\text{g}/\text{m}^3$ | 0-1,000,000 ppb | <50 ppb | <50 ppb | >0.8 | 20 ppb |
| SO ₂ | Electrochemical | ppb or $\mu\text{g}/\text{m}^3$ | 0-100,000 ppb | <5 ppb | <10 ppb | >0.7 | 20 ppb |
| H ₂ S | Electrochemical | ppb or $\mu\text{g}/\text{m}^3$ | 0-100,000 ppb | <1 ppb | <5 ppb | >0.7 | 1 ppb |
| TVOC ^{#11} | Electrochemical | ppm | 0-2.5 ppm | <0.1 ppm | <0.25 ppm | >0.95 | 0.05 ppm |
| CO ₂ | NDIR | ppm or mg/m^3 | 0-5,000 ppm | <1 ppm | <1 ppm | >0.9 | 30 ppm |

PARTICLES

| Sensor | Type | Units | Range ^{#1} | LOD | Precision ^{#3} | Accuracy ^{#4} |
|---------------------------------|--------------------------|--------------------------|------------------------------------|----------------------------|-------------------------|----------------------------|
| PM ₁ ^{#5} | 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 $\mu\text{g}/\text{m}^3$ |
| PM _{2.5} ^{#5} | 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 $\mu\text{g}/\text{m}^3$ |
| PM ₄ ^{#5} | 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 $\mu\text{g}/\text{m}^3$ |
| PM ₁₀ ^{#5} | 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 ^{#5} | 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 $\mu\text{g}/\text{m}^3$ |

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 | ms ⁻² | 0 to 30 ms ⁻² | 0.01 ms ⁻² | 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} | >24 months | Dependent on measurement strategy & pod spec |
| External high capacity battery pack ^{#10} | >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 | 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 |
| 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 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.

*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 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⁻²

#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