



enLink Air - Wireless Air Quality Monitor

Specifications

Frequency range	868 / 915 MHz*
Protocol	LoRa®
Receiver sensitivity	-135dBm @ 980bps
RF Transmit power	Up to +18dBm
Antenna	Integrated
Certifications	Pre-certified radio regulatory approvals: 868 & 915 MHz spectrum CE RoHS
Voltage	12-24V Volts DC. 1 Amp (max)
Processor	ARM® Cortex® M0+
Air circulation fan	Built in, automatically controlled, long life, fan for forced air circulation
Dimensions	200mm x 100mm x 40mm
Weight	150g (depending on sensor options)
Orientation	Vertical wall mounting or horizontal ceiling mounting
Operating	-10 – 60°C 0 – 95%RH, Non-Condensing
Case materials	Aluminium profile AlMgSi 0,5. Silver anodized Plastic parts ASA+PC-FR. Black (RAL 9005)



Temperature



Humidity



Light level



VOC's



Pressure



CO₂



O₂



Sound



Particles

x4

Plus 4 Gases

Sensor Characteristics (For sensors fitted as standard)

Temperature	<p>Accuracy: $\pm 0.2^{\circ}\text{C}$ (typical) Repeatability: $\pm 0.1^{\circ}\text{C}$ Conversion time: 6.35ms</p>
Humidity	<p>Accuracy: $\pm 2\%$ (typical) Repeatability: $\pm 0.1\%$ Response time: 15s</p>
Pressure	<p>Accuracy: $\pm 0.12\text{hPa}$ (equivalent to $\pm 1\text{m}$ in altitude) Range (with full accuracy): 300 – 1100hPa Resolution: 0.18Pa</p>
Light level	<p>Less than 4% error Precision optical filtering to match human eye: Rejects > 99% of IR (typical). Range: 0.01 lux to 83,000 lux Light source variation (incandescent, halogen, fluorescent): 4%</p>
Particulate Matter	<p>Particles measured: PM2.5 & PM10 Sensing method: Laser-based light scattering particle sensing Concentration range: 0 – 1,000 $\mu\text{g}/\text{m}^3$</p> <p>Accuracy: 0 $\mu\text{g}/\text{m}^3$ to 100 $\mu\text{g}/\text{m}^3 \pm 15 \mu\text{g}/\text{m}^3$ 100 $\mu\text{g}/\text{m}^3$ to 1000 $\mu\text{g}/\text{m}^3 \pm 15 \%$</p> <p>Resolution: 0.3 μm - 5 μm to give PM2.5 and PM10 particle count Response Time: < 6s (t90) Sensor life expectancy: > 7 years Maintenance Interval: No maintenance required</p>
Sound	<p>Sensitivity: -26dB FS $\pm 1\text{dB}$ SNR: 65dBA Dynamic Range: 91dBA Acoustic Overload Point: 120dB SPL Total Harmonic Distortion: 0.2% (Typical) @ 105dB SPL</p>
O ₂	<p>Sensing method: Fluorescence-based optical technology</p> <p>Accuracy: <2% ppO₂ Pressure ± 5 mbar</p> <p>Range: 0-25% O₂ Resolution: 0.01% Response Time: < 30s (t90, typical) Sensor life expectancy: > 5 years Maintenance Interval: No maintenance required</p>
VOC's	<p>IAQ Index 0 to 500 (see below) Response time: (tT33-63%) 1 s Sensor life expectancy: > 10 years Maintenance Interval: No maintenance required</p>
CO ₂	<p>Sensing method: Optical. Non-dispersive infrared (NDIR) Accuracy: $\pm 3\%$ Range: 0 – 2,000 ppm Extended range 0 – 10,000 ppm Response time: 3 minutes (t90) Sensor life expectancy: >15 years Maintenance Interval: No maintenance required</p>

Selection Guide / Ordering Information

Part Number	Temperature	Humidity	Light Level	VOC's	Pressure	CO ₂	O ₂	Sound	Particulates PM2.5-PM10
ENL-AIR	●	●	●	●	●	●	●	●	●

Order part number **ENL-AIR** for base enLink Air model with the sensors listed in the table above.

The base enLink Air model can be enhanced with up to four gas sensors from the sensor selection guide in the section below.

Example 1, to order the unit with a Carbon Monoxide sensor the part number is:

ENL-AIR, AQS-CO-100M

Example 2, to order the unit with Carbon Monoxide, Ozone, Ammonia (0-100ppm) and Nitrogen Dioxide (0-20ppm) sensors the part number is:

ENL-AIR, AQS-CO-100M, AQS-O3-1, AQS-NH3-100, AQS-NO2-20

Sensor Selection Guide

Parameter	Type	Range	Units	Part Number	Calibration Certificate	Specific Gravity (SG) NTP*	Distribution
°C	Temperature	-40 - 85	°C	Fitted as standard	Factory Calibrated		
%RH	Humidity	0 - 100	%	Fitted as standard	Factory Calibrated		
Pa	Pressure	300 - 1100	hPa	Fitted as standard	Factory Calibrated		
LUX	Ambient Light	0.01 - 83k	lux	Fitted as standard	Factory Calibrated		
PM	Particulate Matter	0 - 1,000	µg/m3	Fitted as standard	Factory Calibrated		
Sound	Decibels, A Weighted	91dBa	dB(A)	Fitted as standard			
O2	Oxygen	0 - 25	%vol	Fitted as standard	Factory Calibrated	1.1044	Evenly Distributed
VOC	Volatile Organic Compounds	0 - 500	IAQ	Fitted as standard	Factory Calibrated	1	Evenly Distributed
CO2	Carbon Dioxide	0 - 2000	ppm	Fitted as standard	✓	1.5189	Floor to Middle
NH3	Ammonia	0 - 100	ppm	AQS-NH3-100	✓	0.59	Ceiling / roof
NH3	Ammonia	0 - 100	ppm	AQS-NH3-100E	✓	0.59	Ceiling / roof
NH3	Ammonia	0 - 500	ppm	AQS-NH3-500	✓	0.59	Ceiling / roof
NH3	Ammonia	0 - 1000	ppm	AQS-NH3-1000E	✓	0.59	Ceiling / roof
CO	Carbon Monoxide	0 - 100	ppm	AQS-CO-100M	✓	0.9667	Evenly Distributed
CH2O	Formaldehyde	0 - 10	ppm	AQS-CH2O-10	✓	1.067	Evenly Distributed
NO	Nitric Oxide	0 - 100	ppm	AQS-NO-100E	✓	1.037	Evenly Distributed
NO	Nitric Oxide	0 - 250	ppm	AQS-NO-250	✓	1.037	Evenly Distributed
NO	Nitric Oxide	0 - 2000	ppm	AQS-NO-2000	✓	1.037	Evenly Distributed
Air Pollutants	Air Pollutants: CO, Ammonia, Ethanol, H2, Methane / Propane / Iso-Butane.	30 – 500	ppm	AQS-AP-500		1	Evenly Distributed
H2S	Hydrogen Sulphide	0 - 100	ppm	AQS-H2S-100M	✓	1.1763	Floor to Middle
H2S	Hydrogen Sulphide	0 - 500	ppm	AQS-H2S-500M	✓	1.1763	Floor to Middle
H2S	Hydrogen Sulphide	0 - 1000	ppm	AQS-H2S-1000	✓	1.1763	Floor to Middle
NO2	Nitrogen Dioxide	0 - 20	ppm	AQS-NO2-20	✓	1.58	Floor to Middle

NO ₂	Nitrogen Dioxide	0 - 50	ppm	AQS-NO2-50M	✓	1.58	Floor to Middle
NO ₂	Nitrogen Dioxide	0 - 50	ppm	AQS-NO2-50E	✓	1.58	Floor to Middle
NO ₂	Nitrogen Dioxide	0 - 100	ppm	AQS-NO2-100M	✓	1.58	Floor to Middle
NO ₂	Nitrogen Dioxide	0 - 1000	ppm	AQS-NO2-1000M	✓	1.58	Floor to Middle
NO ₂	Nitrogen Dioxide	0 - 2000	ppm	AQS-NO2-2000	✓	1.58	Floor to Middle
O ₃	Ozone	0 - 1	ppm	AQS-O3-1	✓	1.66	Floor to Middle
SO ₂	Sulphur Dioxide	0 - 20	ppm	AQS-SO2-20	✓	2.264	Floor
SO ₂	Sulphur Dioxide	0 - 2000	ppm	AQS-SO2-2000	✓	2.264	Floor

*NTP - Normal Temperature and Pressure - is defined as 20°C (293.15K, 68°F) and 1 atm (101.325 kN/m², 101.325 kPa, 14.7 psia, 0 psig, 30 in Hg, 760 torr)

Sensors are grouped according to Specific Gravity (SG). Gas sensors should be used on the same enLink Air unit when the gases are Evenly Distributed and from the same SG band.

Examples:

Oxygen + Carbon Dioxide (Oxygen is evenly distributed and Carbon Dioxide is heavier than air.)

Oxygen + ~~Carbon Dioxide~~ + Ammonia. (Ammonia and Carbon Dioxide have different SG and therefore need to be in separate enLink Air units.)

Oxygen + Ammonia. (Oxygen is evenly distributed and Ammonia is lighter than air.)

(enLink Air must be mounted at the correct height for the gases to be measured).

Temperature (°C)

Features

- Factory calibrated
- High accuracy digital sensor
- Excellent stability at high humidity

Specifications

Measurement:	Temperature °C
Operating Principle:	Digital
Measurement Range (full accuracy):	5°C to +60°C
Expected Operating Life:	> 10 years
Long Term Sensitivity Drift:	< 2% per month
Calibration:	Factory Calibrated
Resolution:	0.1°C
Accuracy (full range):	± 0.2°C
Temperature Range:	-20°C to +50°C
Humidity Range (non-condensing):	0 – 100 %RH
Response Time:	< 1 seconds
Storage Temperature:	-65 °C to +150 °C
Orientation Sensitivity:	None
Part Number:	Fitted as standard to enLink Air

Humidity (%RH)

Features

- Factory calibrated
- High accuracy digital sensor
- Excellent stability at high humidity

Measurement:	Relative Humidity %RH
Operating Principle:	Digital
Measurement Range (full accuracy):	0 – 100 %RH
Expected Operating Life:	> 10 years
Long Term Sensitivity Drift:	0.25 %RH per year
Calibration:	Factory Calibrated
Resolution:	0.1 %RH
Accuracy (full range):	± 2 %RH
Temperature Range:	-20°C to +70°C
Response Time:	< 1 seconds
Storage Temperature:	-65 °C to +150 °C
Orientation Sensitivity:	None
Part Number:	Fitted as standard to enLink Air

Pressure (Pa)

Features

- Factory calibrated
- High accuracy digital sensor

Measurement:	Relative Humidity %RH
Operating Principle:	Digital
Measurement Range (full accuracy):	300 – 1100 hPa
Expected Operating Life:	10 years
Long Term Sensitivity Drift:	1 hPa per year
Calibration:	Factory Calibrated
Resolution:	0.18 hPa
Accuracy (full range):	± 0.6 hPa
Temperature Range:	0°C to +65°C
Response Time:	< 10 seconds
Storage Temperature:	-45 °C to +85 °C
Orientation Sensitivity:	None
Part Number:	Fitted as standard to enLink Air

Ambient Light (lux)

Features

- Factory calibrated
- High accuracy digital sensor
- Precision optical filtering to match human eye (rejects >99% of IR)

Measurement:	Ambient Light lux
Operating Principle:	Digital
Measurement Range (full accuracy):	0.01 – 83k lux
Expected Operating Life:	10 years
Sensitivity Drift:	0.01 % per °C
Calibration:	Factory Calibrated
Resolution:	0.01 lux
Accuracy (> 40 lux):	± 2%
Temperature Range:	0°C to +65°C
Response Time:	< 1 seconds
Storage Temperature:	-65 °C to +105 °C
Orientation Sensitivity:	None
Part Number:	Fitted as standard to enLink Air

Particulate Matter PM2.5 and PM10

Features

- Laser-based light scattering particle sensing
- Concentration range: 0 µg/m³ to 1,000 µg/m³
- Fully calibrated
- Long life
- High reliability
- High resolution

Specifications

Gas Detected:	Air Particles	
Operating Principle:	Laser-based light scattering particle sensing	
Measurement Range (full accuracy):	0 – 1000 µg/m ³	
Expected Operating Life:	> 7 years (20,000 hrs continuous)	
Calibration:	NA	
Resolution:	0.3 µm - 5 µm to give PM2.5 and PM10 particle count	
Accuracy:	0 µg/m ³ to 100 µg/m ³ 100 µg/m ³ to 1000 µg/m ³	± 15 µg/m ³ ±15 %
Temperature Range:	-10°C to +50°C	
Humidity Range (non-condensing):	0 – 95% RH	
Response Time (T90):	< 6 seconds	
Storage Temperature:	-30°C to +65°C	
Orientation Sensitivity:	None – Fan operated	
Part Number:	Fitted as standard to enLink Air	

Oxygen (O₂)

Features

- Advanced optical technology rather than short-life electrochemical
- Long life due to non-depleting sensing principle
- Self-correcting for pressure and altitude variations

Specifications

Gas Detected:	Oxygen O ₂
Operating Principle:	Fluorescence-based optical technology
Measurement Range:	0 – 25% O ₂
Expected Operating Life:	> 5 years
Calibration:	Factory calibrated
Resolution:	0.01%
Accuracy:	< 2% Full Scale ppO ₂
Temperature Range:	-30°C to +60°C
Pressure Range:	500 – 1200 mbar
Humidity Range (non-condensing):	0 – 99% RH
Response Time (T90):	< 30 seconds
Pressure Range (O₂):	0 – 300mbar ppO ₂
Storage Temperature:	-30°C to +60°C
Orientation Sensitivity:	None
Part Number:	AQS-O2-25

Volatile Organic Compounds VOC's (IAQ)

Features

- Factory calibrated
- Digital Indoor Air Quality sensor

Specifications

Measurement:	Relative Humidity %RH
Operating Principle:	Metal Oxide Adsorption
Measurement Range (full accuracy):	0 – 500 IAQ
Expected Operating Life:	10 years
Long Term Sensitivity Drift:	4% per year
Calibration:	Factory Calibrated
Resolution:	1 IAQ
Accuracy:	± 3%
Temperature Range:	-40°C to +85°C
Humidity Range (non-condensing):	10 – 95% RH
Response Time:	< 2 seconds
Storage Temperature:	-45 °C to +85 °C
Orientation Sensitivity:	None
Part Number:	Fitted as standard to enLink Air

Indoor air quality (IAQ) classification and colour coding ¹

IAQ Index	Air Quality
0 – 50	Good ²
51 – 100	Average
101 – 150	Little Bad
151 – 200	Bad
201 – 300	Worse
301 - 500	Very Bad

¹ According to the guidelines issued by the German Federal Environmental Agency, exceeding 25 mg/m³ of total VOC leads to headaches and further neurotoxic impact on health.

² Software auto-calibrates the low and high concentrations applied during testing to IAQ of 25 and 250, respectively

Compliant to the ISO16000-29 standard “Test methods for VOC detectors”.

bVOC mixture with Nitrogen as carrier gas

Molar fraction	Compound	Certified accuracy
5 ppm	Ethane	5 %
10 ppm	Isoprene /2-methyl-1,3 Butadiene	5 %
10 ppm	Ethanol	5 %
50 ppm	Acetone	5 %
15 ppm	Carbon Monoxide	2 %

Carbon Dioxide (CO₂)

Features

- Advanced optical NDIR technology rather than short-life electrochemical
- Long life due to non-depleting sensing principle
- Self-correcting for pressure and altitude variations
- High reliability
- High resolution

Specifications

Gas Detected:	Carbon Dioxide CO ₂
Operating Principle:	Non-dispersive infrared (NDIR)
Measurement Range (full accuracy):	0 – 2000 ppm
Expected Operating Life:	> 15 years
Calibration:	Manufacturer Calibration Certificate
Resolution:	0.1 ppm
Accuracy:	+/- 3% of Reading
Temperature Range:	0°C to +50°C
Humidity Range (non-condensing):	0 – 95% RH
Response Time (T90):	< 60 seconds
Storage Temperature:	0°C to +20°C
Orientation Sensitivity:	None
Part Number:	Fitted as standard to enLink Air

Ammonia (NH₃)

Features

- Hydrous electrolyte
- Highly sensitive
- Very selective - no CO₂ interference

Specifications

Gas Detected:	Ammonia NH ₃	
Operating Principle:	Amperometric, 3-electrode	
Measurement Range (full accuracy):	AQS-NH3-100	100 ppm
	AQS-NH3-500	500 ppm
	AQS-NH3-1000	1000 ppm
Expected Operating Life:	> 18 months	
Long Term Sensitivity Drift:	< 2% signal per month	
Calibration:	Manufacturer Calibration Certificate	
Resolution:	AQS-NH3-100	<0.5 ppm
	AQS-NH3-500	3 ppm
	AQS-NH3-1000	5 ppm
Accuracy:	< 1% Full Scale	
Temperature Range:	-20°C to +40°C	
Pressure Range:	900 – 1100 mbar	
Humidity Range (non-condensing):	15 – 90% RH	
Response Time (T90):	< 90 seconds	
Storage Temperature:	0°C to +20°C	
Orientation Sensitivity:	None	
Part Number:	AQS-NH3-100 AQS-NH3-500 AQS-NH3-1000	

Carbon Monoxide (CO)

Features

- Long life
- High reliability
- High resolution

Specifications

Gas Detected:	Carbon Monoxide CO
Operating Principle:	Amperometric, 3-electrode
Measurement Range (full accuracy):	0 – 100 ppm
Expected Operating Life:	> 5 years
Long Term Sensitivity Drift:	< 1% per month
Calibration:	Manufacturer Calibration Certificate
Resolution:	0.1 ppm
Accuracy:	< 1% Full Scale
Temperature Range:	-40°C to +50°C
Pressure Range:	800 – 1200 mbar
Humidity Range (non-condensing):	10 – 95% RH
Response Time (T90):	< 60 seconds
Storage Temperature:	0°C to +20°C
Orientation Sensitivity:	None
Part Number:	AQS-CO-100M

Formaldehyde (CH₂O)

Features

- 3- electrode electrochemical sensor

Specifications

Gas Detected:	Formaldehyde CH ₂ O
Operating Principle:	Electrochemical, 3-electrode
Measurement Range (full accuracy):	0 – 10 ppm
Expected Operating Life:	2 years
Long Term Sensitivity Drift:	< 2% per month
Calibration:	Manufacturer Calibration Certificate
Resolution:	0.1 ppm
Accuracy:	< 2%
Temperature Range:	-20°C to +50°C
Humidity Range (non-condensing):	15 – 90% RH
Response Time (T60):	< 30 seconds
Storage Temperature:	5°C to +20°C
Orientation Sensitivity:	None
Part Number:	AQS-CH2O-10

Air Pollutants

Features

- Metaloxide MEMS sensor

Specifications

Gas Detected:	Air Pollutants: CO, Ammonia, Ethanol, H ₂ , Methane / Propane / Iso-Butane.	
Operating Principle:	Metaloxide MEMS	
Measurement Range (full accuracy):	Detectable Gas* Carbon Monoxide CO Ethanol C ₂ H ₅ OH Hydrogen H ₂ Ammonia NH ₃ Methane CH ₄	Range 1 – 1000ppm 10 – 500ppm 1 – 1000ppm 1 – 500ppm > 1000ppm
<small>*The air Pollutants sensor is sensitive to the above gases but is unable to distinguish between them.</small>		
Expected Operating Life:	> 2 years	
Long Term Sensitivity Drift:	< 2% per month	
Calibration:	Manufacturer Calibration Certificate	
Resolution:	0.1 ppm	
Accuracy:	N/A	
Temperature Range:	-20°C to +50°C	
Humidity Range (non-condensing):	15 – 90% RH	
Response Time (T60):	< 30 seconds	
Storage Temperature:	5°C to +20°C	
Orientation Sensitivity:	None	
Part Number:	AQS-AP-500	

Ozone (O₃)

Features

- Fixed organic gel electrolyte
- Long life
- High reliability
- High resolution

Specifications

Gas Detected:	Ozone O ₃
Operating Principle:	Amperometric 3-electrode with Organic Electrolyte
Measurement Range:	0 – 1ppm
Expected Operating Life:	> 18 months
Long Term Sensitivity Drift:	< 10% per 6 months
Calibration:	Manufacturer Calibration Certificate
Resolution:	0.02ppm
Accuracy:	< 10% Full Scale
Temperature Range:	-20°C to +40°C
Pressure Range:	500 – 1200 mbar
Humidity Range (non-condensing):	15 – 90% RH
Response Time (T90):	< 60 seconds
Storage Temperature:	-20°C to +40°C
Orientation Sensitivity:	None
Part Number:	AQS-O3-1

Specifications are subject to change without notice