

Vaisala Air Quality Transmitter AQT420 for Measuring Pollution Gases and Particles



Applications

- Urban air quality networks
- Industrial emission monitoring
- Safety monitoring
- Roadside and tunnel monitoring
- Mobile measurement
- Building automation
- Air quality research

Features

- Measures up to four most common air pollutants NO₂, SO₂, CO and O₃. Other gases (H₂S, VOC) configurable
- Intelligent algorithms that compensate for aging and environmental conditions
- Compact design, easy to deploy in the field
- Low power consumption (typically 0.5W)
- Wireless Internet connection with an optional 2/3G modem
- RS232 and RS485 interfaces for local connectivity (eg. Modbus support)
- Easy integration and open API

New Value in Air Quality Measurements

Vaisala Air Quality Transmitter AQT420 revolutionizes air quality measurements. It offers totally new value for money by providing a near reference measurement performance. AQT420 measures the most common gaseous pollutants nitrogen dioxide (NO₂), sulphur dioxide (SO₂), carbon monoxide (CO) and ozone (O₃) with default configuration, plus Particulate Matter (PM_{2.5} and PM₁₀) in the ambient air. The AQT420 measurement performance is based on proprietary advanced algorithms that enable ppb measurements at an affordable price using electrochemical sensors. The algorithms compensate the impact of ambient conditions and aging on

the sensor elements and remove the need for costly gas sampling and conditioning equipment.

Easy to Deploy in Networks

AQT420 has been specifically designed for air quality monitoring networks in urban areas, road networks or around industrial sites and airports. Thanks to its small weight and compact size it is ideally suited for deployment even in large air quality networks. The measurement data is sent wirelessly to a web-based database with GSM Module or is available locally via a serial interface. Depending on local conditions the AQT420 has a maintenance and calibration interval of 12-24 months.



Technical Data

General

Data protocols	HTTP (open API), SMS, Modbus, ASCII	
Serial data interface	RS-485	
Console interface	RS-232	
2/3G connection for Internet protocols	Quad-band 850/900/1800/1900 MHz GSM/GPRS/EDGE + 2100 MHz UMTS	
Power and data connector	Standard 8-pin M12 male	
Operating voltage	8 – 30 VDC	
Power consumption	Typ. 0.5 W, max. 2 W	
Operating environment	-30 – 50 °C, RH 15 – 95 %	
Protection class	IP65	
Enclosure materials	Anodized aluminium, stainless steel	
Dimensions	128(w) x 185(h) x 128(d) mm	
Weight	1250 g (without 2/3G modem)	
Warranty	2 years (sensors not included)	

Conformity

EMC	IEC/EN 61326-1, IEC/EN61000-4-2/3/4/5/6, CISPR 221	
GSM/UMTS	FCC 47 parts 15 and 24, EN 301 511, EN 301 489-1/7, EN 60950-1:2006	

Ordering Information

Base Unit	AQT420
Accessories included	Calibration certificate and user manual
Options	CO sensor
	NO sensor
	H ₂ S sensor
	O ₃ sensor
	2/3G modem
	Mounting kit
	Installation cable (2 m)
	Installation cable (5 m)
	Installation cable (10 m)
	PC connection cable

Measurement Specifications

Temperature range	-40 – 85 °C
Temperature resolution	0.1 °C
Temperature accuracy	±0.3 °C, repeatability ±0.1 °C
Humidity range	0-100 %RH (non-considering)
Humidity resolution	0.1 %RH
Humidity accuracy	±2 %RH, repeatability ±0.2 %RH
Pressure range	800 – 1100 mbar
Pressure resolution	1 mbar
Pressure accuracy	<±1 % FS
Particle counter channels	PM _{2.5} and PM ₁₀
Particle counter resolution	1 µg/m ³
Sampling interval	1 – 1440 minutes
Response time	<60 seconds
Factory calibration	12-24 months dependent of local conditions

Gas Measurement Specifications

GAS	RANGE	MIN. DETECTION	RESOLUTION	PRECISION	LINEARITY	UNIT
SO ₂	0 – 2	0.005	±0.001	<±1 % FS	<±1 % FS	ppm
NO ₂	0 – 2	0.005	±0.001	<±1 % FS	<±1 % FS	ppm
CO	0 – 10	0.01	±0.01	<±2 % FS	<±2 % FS	ppm
O ₃	0 – 2	0.005	±0.01	<±3 % FS	<±2 % FS	ppm

Particle Measurement Specifications

Particle range	0.3 – 20 µm (spherical equivalent)
Response time	<60 s
Sampling interval	1 – 1440 minutes
Sample flow rate	0.5 SLM (integrated vacuum pump)
Units	µg/m ³
Measurement range for PM _{2.5}	0 – 2000 µg/m ³
Measurement range for PM ₁₀	0 – 5000 µg/m ³
Measurement resolution	0.1 µg/m ³

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