VAISALA

Air Quality Transmitter AQT400 Series

for Measuring Pollution Gases and Particles

Vaisala Air Quality Transmitter AQT400 Series measures the pollution content of ambient air. The series consists of two products, AQT410 and AQT420.

Applications

- Urban air quality networks
- Industrial emission monitoring
- Safety monitoring
- Roadside monitoring
- Building automation
- Air quality research

New Value in Air Quality Measurements

AQT400 Series revolutionizes air quality measurements. It offers totally new value for money by providing a near reference measurement performance.

With default configuration, AQT410 and AQT420 measure the most common gaseous pollutants: nitrogen dioxide (NO_2), sulphur dioxide (SO_2), carbon monoxide (CO), and ozone (O_3). In addition to all this, AQT420 also measures particulate matter ($PM_{2.5}$ and PM_{10}) in the ambient air.

The series' measurement performance is based on proprietary advanced algorithms that enable parts per billion (ppb) measurements at an affordable price by using electrochemical sensors. The algorithms compensate for the impact of ambient conditions and aging on the sensor elements and remove the need for costly gas sampling and maintenance equipment.

Easy to Deploy in Networks

AQT400 Series has been specifically designed for air quality monitoring networks in urban areas, road networks, or around industrial sites and transportation hubs. 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 gateway or is

available locally via a serial interface. Depending on local conditions, AQT400 Series device has a maintenance and calibration interval of 12–24 months.
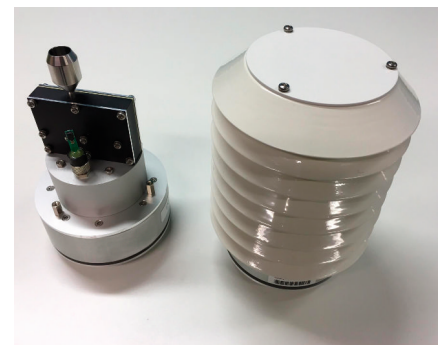
Technical Data

Gas Measurement Performance

Gas	Range	Detection Limit	Accuracy in Field Conditions [1]
NO_2	2000 ppb	5 ppb	±25 ppb
O_3	2000 ppb	5 ppb	±60 ppb
CO	10 000 ppb	10 ppb	±200 ppb
SO_2	2000 ppb	5 ppb	±50 ppb

[1]   90 % confidence interval in comparing with reference instrument, includes T and %RH dependence in typical field conditions and sensor drift during calibration interval. Electrochemical cell replacement interval 12–24 months, depending on local conditions.

Particle Measurement Performance

Particle counter channels	$PM_{2.5}$ and PM_{10}
Particle diamater range	0.3 ... 10 µm (spherical equivalent)
Sampling time	60 s
Sampling interval	10 min
Sample flow rate	0.9 SLM
Measurement range	$PM_{2.5}$: 0 ... 2000 µg/m^3 PM_{10}: 0 ... 5000 µg/m^3
Measurement resolution	0.1 µg/m^3

Humidity, Temperature and Pressure Measurement Performance

Humidity accuracy	0 ... 90 %RH: ±5 %RH 90 ... 100 %RH: ±8 %RH
Humidity resolution	0.1 %RH
Temperature accuracy for sensor element at +20 °C (+68 °F)	±0.3 °C (0.17 °F)
Temperature resolution	0.1 °C
Pressure accuracy	±10 hPa
Pressure resolution	1 hPa

Ambient condition measurements indicative primarily for compensation purposes

Inputs and Outputs

Operating voltage	8 ... 30 VDC
Power consumption	AQT410: • Typical: 0.5 W • Maximum: 1 W AQT420: • Typical: 0.7 W • Maximum: 2 W

Data Connection Specifications

Data protocols	Modbus® ASCII, ASCII CSV
Serial data interface	RS-485
Maintenance interface	RS-232

Operating Environment

Operating temperature	-30 ... +40 °C (-22 ... +104 °F) Limited performance: -40 ... +50 °C (-40 ... +122 °F)
Operating humidity	15 ... 95 %RH, non-condensing
Operating pressure	800 ... 1200 hPa
EMC compliance	EN/IEC 61326-1 EN 55032 Class B
IP rating	IP65

Mechanical Specifications

Dimensions (H × W × D)	AQT410: 125 × 125 × 128 mm (4.92 × 4.92 × 5.04 in) AQT420: 185 × 128 × 128 mm (7.28 × 5.04 × 5.04 in)
Weight	AQT410: 0.7 kg (1.52 lb) AQT420: 1.25 kg (2.76 lb)
Enclosure material	Anodized aluminium, stainless steel
Power and data connector	Standard 8-pin M12 male

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