



Air Quality Transmitter AQT400 Series

for Measuring Pollution Gases and Particles



Features

- Measures 4 pollutant gases. Available gases: NO₂, NO, CO, O₃, SO₂, and H₂S
- Intelligent algorithms that compensate for environmental conditions and for the aging of the sensor element
- Compact design; easy to deploy in the field
- Low power consumption (typically 0.5 W)
- Wireless Internet connection with Vaisala Multi-Observation Gateway MOG100
- RS-232 and RS-485 interfaces for local connectivity (such as Modbus® support)
- Easy integration and open API

Vaisala Air Quality Transmitter AQT400 Series measures the pollution content of ambient air. The series consists of 2 products, AQT420 and AQT410.

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 measuring up to 6 most important pollutants in one compact package.

The AQT400 series comes in 2 versions: AQT410 for gases only and AQT420 for gases and particles. AQT410 is available in 3 different gas configurations:

- NO₂, NO, O₃, and CO
- NO₂, O₃, CO, and SO₂
- NO₂, CO, SO₂, and H₂S

These can be complemented with PM_{2.5} and PM₁₀ measurements by selecting the AQT420 version.

The measurement performance of AQT400 series 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 is 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 a gateway solution or is available locally through a serial interface. Depending on local conditions, AQT400 series devices have 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 |
| NO | 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 |
| H ₂ S | 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 diameter range | 0.6 ... 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 | |

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 |

Inputs and Outputs

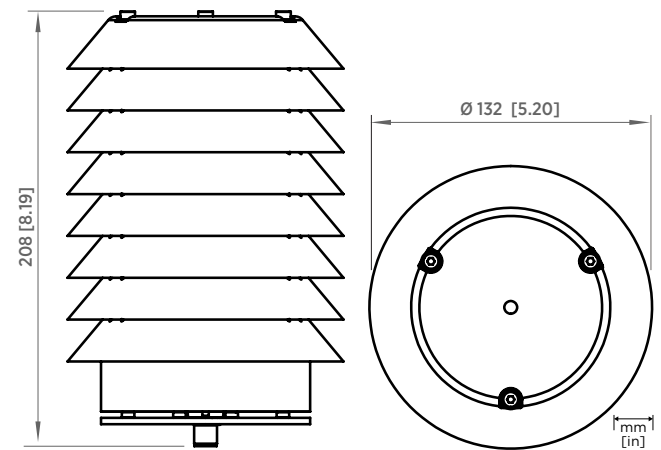
| | |
|-------------------|--|
| Operating voltage | 8 ... 30 VDC |
| Power consumption | AQT420: • Typical: 0.7 W • Maximum: 2 W AQT410: • Typical: 0.5 W • Maximum: 1 W |

Data Connection Specifications

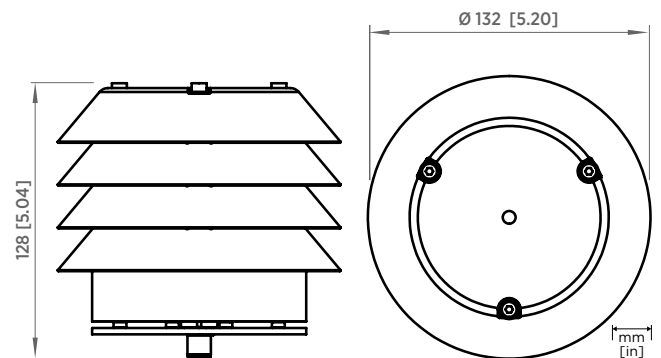
| | |
|-----------------------|---|
| Data protocols | Modbus® ASCII Modbus® RTU ASCII CSV |
| Serial data interface | RS-485 |
| Maintenance interface | RS-232 |

Mechanical Specifications

| | |
|----------------------------|---|
| Dimensions (H × Ø) | AQT420: 208 × 132 mm (8.19 × 5.20 in) AQT410: 128 × 132 mm (5.04 × 5.20 in) |
| Weight | AQT420: 1.25 kg (2.76 lb) AQT410: 0.7 kg (1.52 lb) |
| Material, base module | Anodized aluminum |
| Material, radiation shield | Polycarbonate (PC) |
| Color, radiation shield | White (RAL9003) |
| Power and data connector | Standard 8-pin M12 male |



AQT420 Dimensions



AQT410 Dimensions