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Quick Guide

Air Quality Transmitter

AQT400

VAISALA

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AQT400 Quick Guide

Introduction to AQT400

Vaisala Air Quality Transmitter AQT400 measures the pollution content of ambient air. The AQT400 series consists of two products, AQT410 and AQT420. Both models measure four gases (CO, NO_2, SO_2, and O_3) and weather data, such as humidity, air pressure, and temperature in the ambient air. AQT420 additionally includes a laser particle counter for $PM_{2.5}$ and PM_{10} particulate measurements.

You can send the measuring data from the air quality transmitter to local systems through a serial interface.

AQT400 is enclosed in an IP65-rated weatherproof casing and can be installed outdoors. The units are compact but robust with no moving parts and low power consumption. AQT400 can be used in conjunction with a PC, data logger, or other device.

The following features and components are available in AQT410 and AQT420:

- Gas measuring (CO, NO_2, SO_2, and O_3)
- Installation kit
- Installation cable
- Configuration cable

The following feature is available only in AQT420:

- Particle measuring ($PM_{2.5}$ and PM_{10})

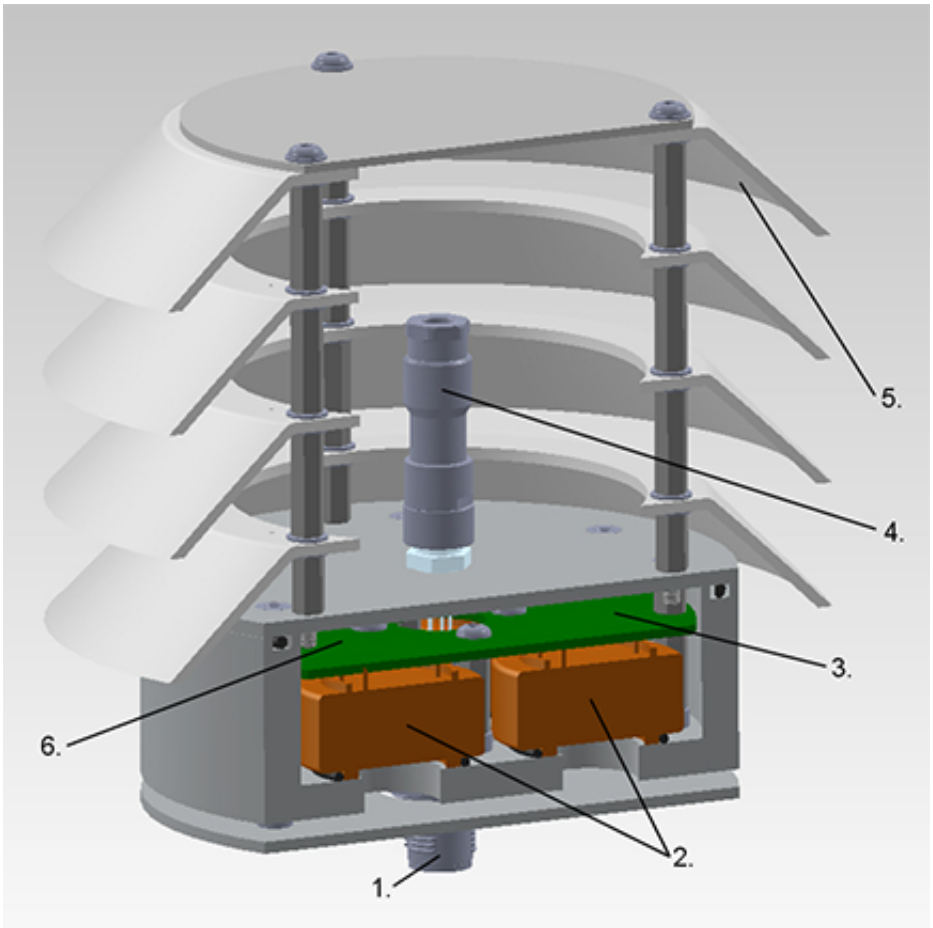

Figure 1 Structure of AQT410

1 M12 connector
2 Sensor elements (four sensors per unit)
3 Main electronics board
4 Combined temperature and humidity sensor
5 Radiation shield
6 Integrated pressure sensor

Installation to Mast or Wall

Install the air quality transmitter to a height of 1.5 ... 4 m from the ground. Applicable local standards and guidelines may influence the installation height.

To reduce the build-up of deposits, handle the unit with lint-free gloves and remove all grease from the surface after the installation

Vaisala recommends to use the installation kit to install both models onto a mast or a wall.

1. Fix AQT400 to a mounting plate with three M3 screws.

2. Use U bolts included in the installation kit to mount the air quality transmitter, for example, onto a mast. Optimally, the tube or mast is at least 3 mm thick and 35 … 45 mm in outside diameter.
3. Pass the M12 connection cable along the tube and use appropriate strain relief to the cable.

Connecting Cables

Connect the 8-pin M12 connection cable to the male connector in AQT400, and manually tighten the outer sleeve. Connect the other end of the connection cable to an external power source or to any other necessary systems. Do not switch on the power source yet.

Only use the recommended cable types and lengths.

AQT400 uses 8 … 30 V direct-current voltage. Use a power source that complies with this voltage. The power source must be able to supply at least 5 W, although AQT400 normally uses less power than that.

Isolate any unused cable wires at the terminating equipment/user end. To preserve the EMC performance, maintain the cable screen integrity in places where the cables are cut and re-connected, such as junction boxes, plugs and sockets.

CAUTION! Do not exceed the specified input voltage range.

In case of power failure, Vaisala recommends using a rechargeable battery or an uninterrupted power source (UPS). If the unit loses power for a few seconds, it may disrupt the measuring for several hours if the power supply is not redundant.

Using Serial Interfaces

The 8-pin M12 connector provides RS-232 and RS-485 serial interfaces which can be used to change the settings or output measurements.

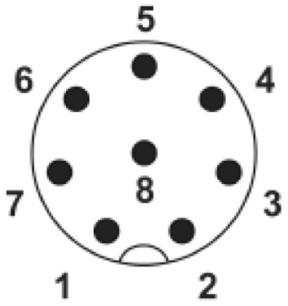

Figure 2 Pin-out of M12 Connector

1	RS-232/RS-485 GND	White
2	RS-232 RX (input)	Brown
3	RS-232 TX (output)	Green
4	No connection (floating)	Yellow
5	RS-485 B (-)	Grey
6	RS-485 A (+)	Pink
7	Power GND	Blue
8	Power 8–30 VDC	Red

RS-232 Serial Interface

The RS-232 interface is used to control AQT400 either with a command line interface or with AQT Configuration Tool. Use the following settings:

- 115200 bps
- 8N1 (8 data bits, no parity, one stop bit)
- no flow control (disable with the command line interface)

RS-485 Serial Interface

The RS-485 interface is used to control AQT400 either with a command line interface or with AQT Configuration Tool. RS-485 interface uses the following default settings:

- 4800 ... 115200 bps (default value is 9600 bps)
- 7E1 (7 data bits, even parity, one stop bit)
- 120 Ω termination

Change the serial interface and protocol settings through a control connection. The interface supports the following data transfer protocols: Modbus ASCII and ASCII formatted text with comma separated values.

When using the RS-485 interface, use a protected and twisted pair cable with both ends terminated with a 120 ohm termination resistor. AQT400 has been terminated by default. To remove the termination, contact Vaisala technical support.

Installing AQT Configuration Tool

System Requirements: Microsoft Windows XP, Windows Vista, Windows 7, Windows 8, or Windows 10.

1. Download the AQT Configuration Tool installer from www.vaisala.com. Save the file on your computer.
2. Start the installer. Windows may ask whether you trust the program. Click **Run**.
3. The installer window opens. The installer recommends you to close all other applications before the installation. To start the installation, click **Next**.

4. Accept the default installation location or click **Browse** to select a different location. To continue the installation, click **Next**.
5. The installer shows the destination location and the Start Menu folder of the program. To continue the installation, click **Install**.
6. The installer installs the program. To exit the installer, click **Finish**.

Stabilization Period

When AQT400 is switched on, let the unit stabilize for at least 24 hours before using the measurement results. To ensure optimal measuring accuracy, Vaisala recommends a stabilization period of 48 hours. The units take measurements during the stabilization period, but they are marked as invalid.

Further Information

For more information on using AQT400, see ***AQT400 User Guide***.

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