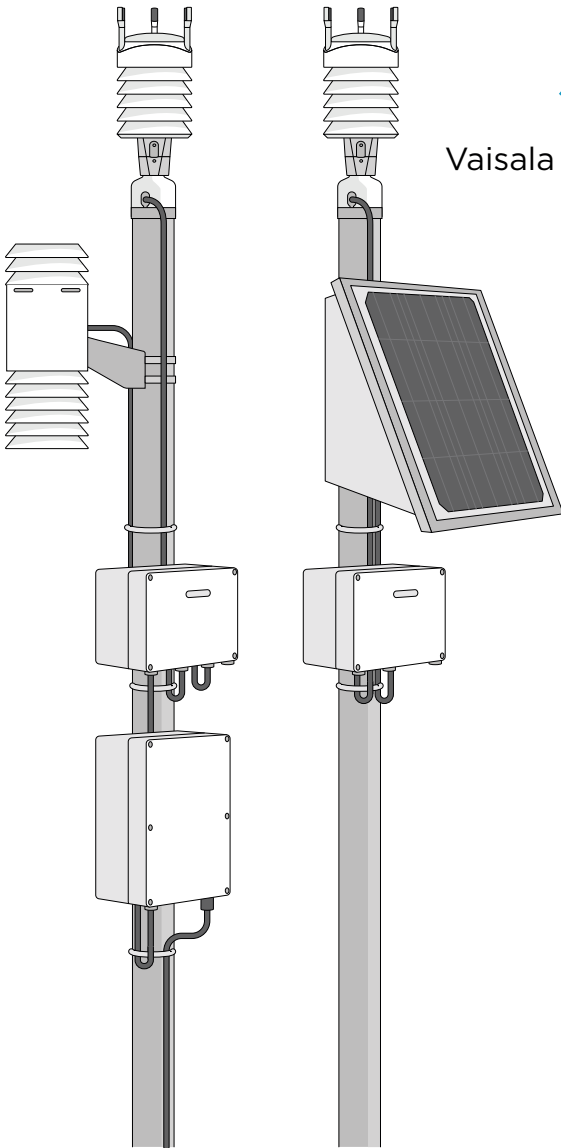# Setup Guide

Vaisala Beacon Station BWS500
Mast Installation
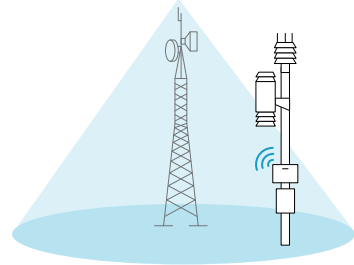
VAISALA

Vaisala Beacon Station BWS500

Vaisala Beacon Station BWS500 is a compact weather station for environmental monitoring. This product is intended for outdoor use and can be used in wet locations.

For the most reliable measurements, choose a site that represents the conditions that you wish to measure. Nearby buildings, trees, and heat sources can distort the measurements.

Clean the device with a soft cloth and water when needed.

Follow the recommended installation order, as well as local and state legislation and regulations on occupational safety.

Check that the installation site is within the cellular network coverage area of your network operator.
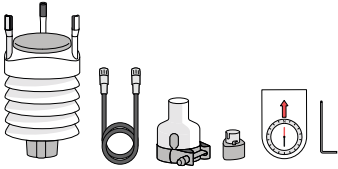
For powering BWS500, the site must have one of the following:
- Power supply lines for AC (mains) power
- Sufficient amount of sunshine for solar panel and DC powering
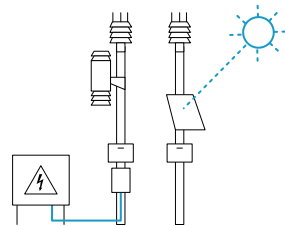
Vaisala Weather Transmitter WXT536

WXT536 measures pressure, temperature, humidity, precipitation, wind speed, and wind direction.

- Weather Transmitter WXT536
- M12 cable to connect WXT and EGW
- Mounting kit for Ø 30 mm (1.18 in) pole mast
- Mounting adapter and mounting kit for Ø 60 mm (2.36 in) pole mast (optional item)
- Compass for aligning WXT to North (available as accessory)
- Allen key 2.5 mm (included with mounting kit)

Vaisala Air QualityTransmitter AQT530

AQT530 measures gaseous pollutants and particles in the ambient air.
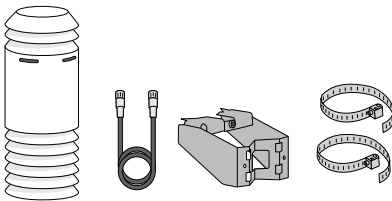
- Air quality transmitter AQT530
- M12 cable to connect AQT and EGW
- Mounting bracket with 2 steel bands
- 7 mm socket wrench or slot head screwdriver (not included)
- 10 mm wrench (not included)

Vaisala Beacon Edge Gateway EGW501

EGW501 handles data transfer between sensors and Vaisala cloud.
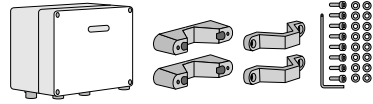
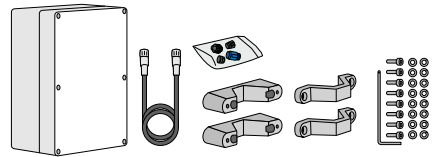- Vaisala Beacon Edge Gateway EGW501
- 2 x pole mast brackets or wall mounting plate with screws and washers
- Allen key 5 mm

Power Supply Unit PSU501 for AC (mains) or AC/DC power

PSU501 is for sites where AC (mains) power is available. Alternatively, PSU501 can function as AC/DC power supply unit. PSU501 contains a backup battery to ensure operation during power failure or outage.

Power Supply Unit PSU502 for DC power

PSU502 is for use with the solar panel or for external DC. When combined with solar panel, PSU502 converts solar energy into DC power and stores it in a battery.

- Power Supply Unit PSU501 or PSU502
- M12 cable to connect PSU and gateway
- AC connector (only for PSU501)
- 2 x pole mast brackets or wall mounting plate with screws and washers
- Allen key 5 mm

Solar Panel SOL502

Solar panel can be combined with PSU501/PSU502 to provide solar energy to the system.
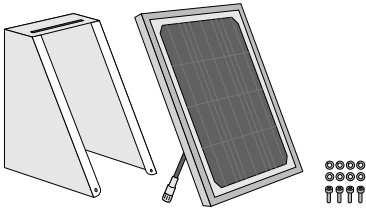
• Solar panel and solar panel holder
• Screws and washers

Note! To ensure sufficient power supply, solar power can be used only with non-heated version of WXT536 (not AQT530 or heated WXT536).

Wall mounting kit for EGW501 and PSU501/PSU502

EGW501 and PSU501/PSU502 can be mounted on the wall with wall mounting kit.
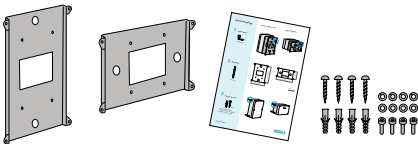
• Wall mounting plates and mounting instructions.
• Screws and wall plugs. Use wall plugs and screws that are suitable for the wall material.

Viewing the observations in Vaisala Wx Beacon

Vaisala Wx Beacon is cloud-based software for viewing measurement data from Vaisala sensors.
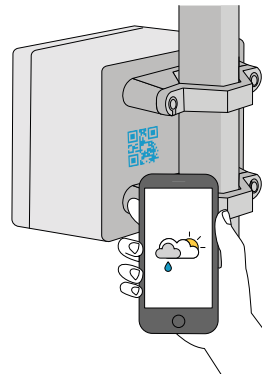
Wx Beacon collects the data automatically. Check the observations from your account in Wx Beacon.

To use Wx Beacon, you need a computer or mobile device with Internet connection.
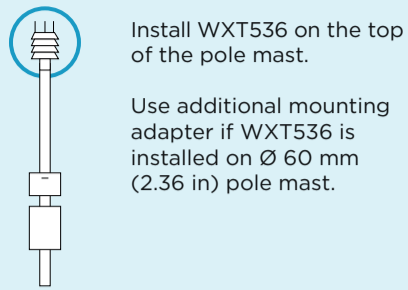
wxbeacon.vaisala.com

Tip: Scan the QR code on the back of the gateway to access read-only view of the measurement data in Wx Beacon.

1 Install sensors
Weather transmitter WXT536 (optional)
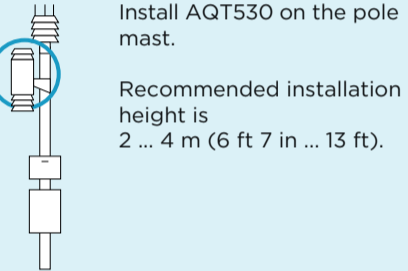
Install WXT536 on the top of the pole mast.

Use additional mounting adapter if WXT536 is installed on Ø 60 mm (2.36 in) pole mast.

Ø 30 mm (1.18 in)   Ø 60 mm (2.36 in)

1.1 Lead the sensor cable through the mounting kit, and for 60-mm (2.36 in) masts, also through the mounting adapter.
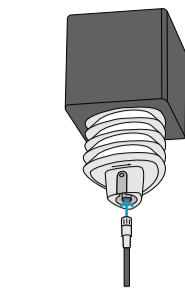
1.2 Keep the upper part of the protective cushion on and connect and tighten the cable.
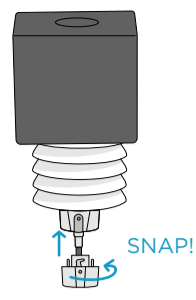
SNAP!

1.3 Insert the mounting kit adapter and turn it firmly until you feel the adapter snap into the locked position.

⚠ Check that the sensor is aligned to North.

Ø 30 mm (1.18 in)   Ø 60 mm (2.36 in)
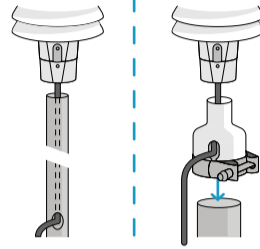
1.4 Run the sensor cable through the mounting adapter. Attach the sensor to the mounting adapter or mast. Tighten mounting adapter with wrench.
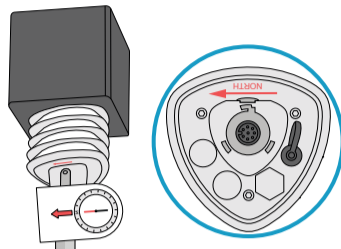
1.5 Align the sensor so that the arrow points to North.

1.6 Tighten the fixing screw to keep the sensor firmly in place.

Remove the protective cushion.

Install sensors
Air quality transmitter AQT530 (optional)

Install AQT530 on the pole mast.

Recommended installation height is 2 ... 4 m (6 ft 7 in ... 13 ft).

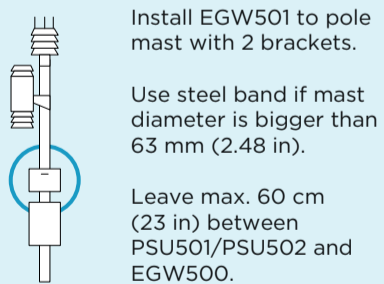**Note!** Minimum distance to gateway is 1 m (3 ft).

🚫 Avoid installing the device next to trees or other vegetation.

🚫 Avoid mounting the device to direct sunlight or near other heat sources.

🚫 Make sure that power lines or generators cannot affect the performance.

1.1 Attach steel bands to the bracket. Attach bracket to the pole mast and tighten the screws in steel bands.

1.2 Connect the sensor cable to AQT530.

1.3 Attach AQT530 to the mounting bracket. Tighten the screw and nut to keep AQT530 firmly in place.
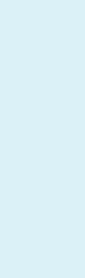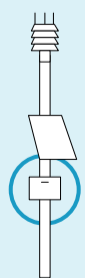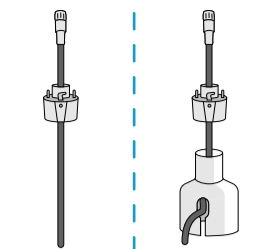
2 Install gateway EGW501

Install EGW501 to pole mast with 2 brackets.

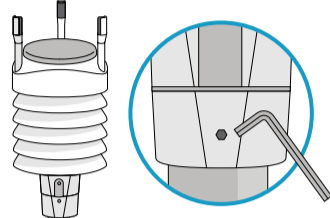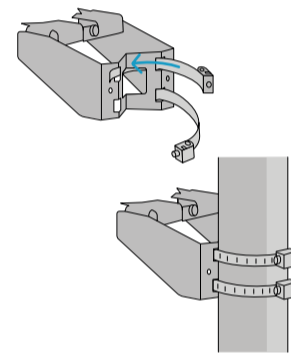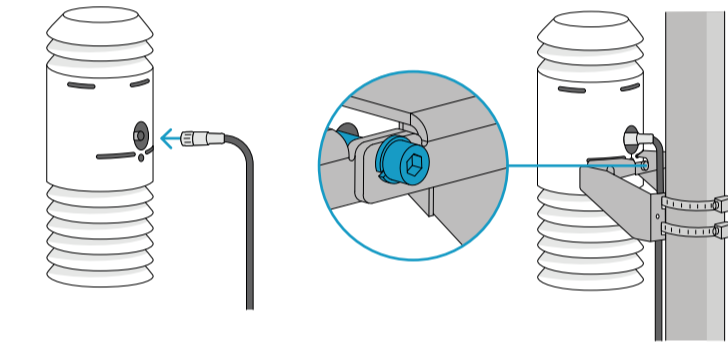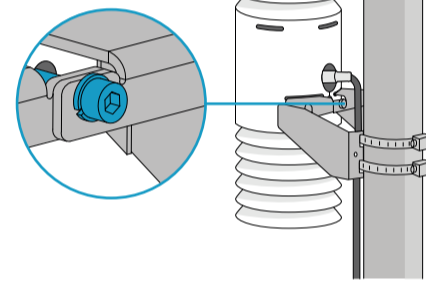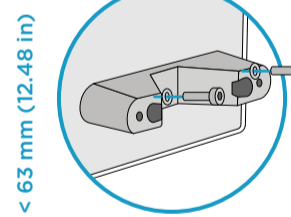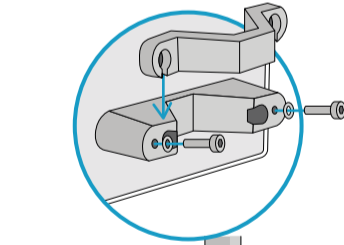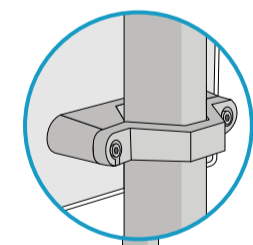Use steel band if mast diameter is bigger than 63 mm (2.48 in).

Leave max. 60 cm (23 in) between PSU501/PSU502 and EGW500.

Pole mast Ø < 63 mm (12.48 in)

Pole mast Ø > 63 mm (2.48 in)

2.1 Attach 2 pole mount brackets to gateway with 4 screws.
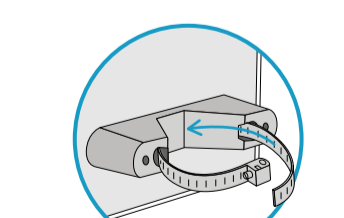
2.2 Attach gateway to pole mast.

2.3 Tighten all screws evenly to keep power supply unit or gateway firmly in place.

3 Install power unit
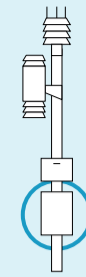## Option 1: PSU501 AC (mains) power

Install PSU501 on pole mast with 2 brackets.

Use steel band if mast diameter is bigger than 63 mm (2.48 in).

Min. installation height 100 cm (40 in).

PSU501

3.1 Attach 2 pole mount brackets to PSU501 with 4 screws.

3.2 Attach PSU501 to the pole mast.

3.3 Tighten all screws evenly to keep the power supply unit frmly in place.

Install power unit
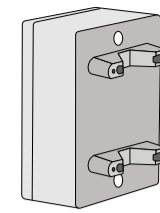## Option 2: PSU502/PSU501 with solar panel

Wipe solar panel clean before installation.
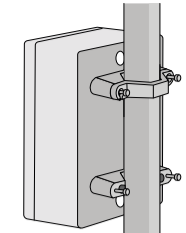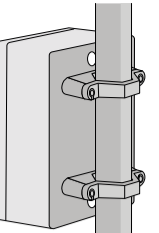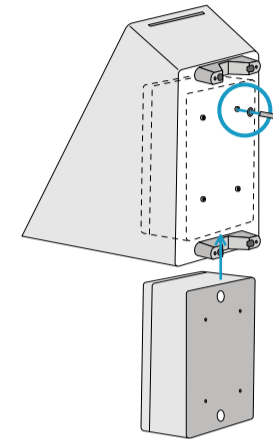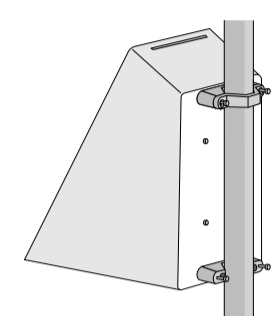
Orient PSU502 and solar panel towards the midday sun.

Install with 2 pole mount brackets.

Use steel band if mast diameter is bigger than 63 mm (2.48 in).
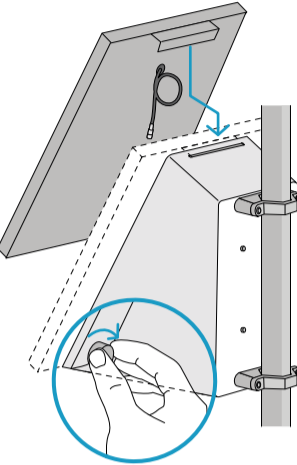
PSU502 with solar panel

3.1 Place PSU502 to solar panel frame and secure with 4 screws. Attach 2 pole mount brackets to the frame with 4 screws.

3.2 Attach PSU502 with solar panel frame to the pole mast.

3.3 Tighten all bracket screws. Slide the solar panel to the holder and tighten the screws inside the holder.
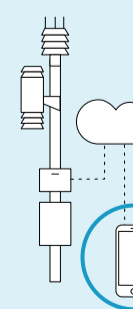
4 Connect cables and power up the station

For AC (mains) powered PSU501, AC connector must be prepared before connecting cables.

Tie cables to the mast with cable ties.

⚠ Connecting power cable to gateway turns station automatically on if power is available from battery or other power source.

Powering specifications

EGW501:
Operating voltage:
9 - 32 VDC
2 A

PSU501:
Input power:
100 - 240 VAC
50 - 60 Hz
800 mA

PSU502:
Input power:
15 - 32 VDC
Max. 2 A

4.1 Connect WXT and AQT to gateway.

4.2 Connect power source to power unit as shown depending on your power unit.
- Option 1: PSU501
- Option 2: PSU502

4.3 Connect PSU to gateway

EGW501   AQT530   WXT536

Option 1:
PSU501 AC (mains) and optional DC

AC (mains) power

Read AC connector preparation instructions from *Preparing AC (mains) power connector*.

DC power source is optional for PSU501. System uses DC if AC (mains) is not available.

Option 2:
PSU502 DC

Solar panel

CAUTION! Sensor cables are not interchangeable. Incorrect cable can cause damage and prevent or limit operation.

5 Verify connection to cloud

First connection to cloud may take up to 15 minutes.

You can also check the observations from your account in **wxbeacon.vaisala.com**
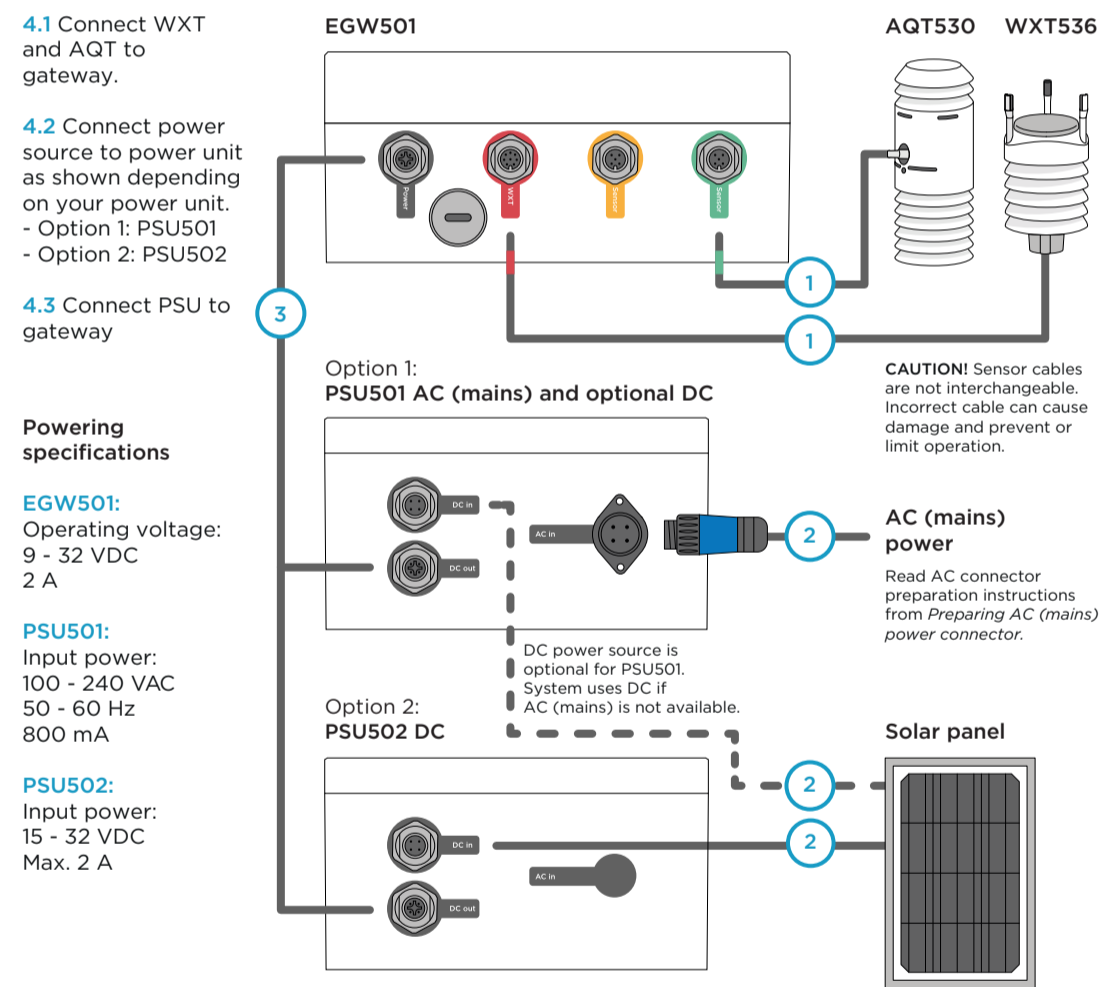
Powering status	⚡ LED	
Powering up...	• • • • •	Green blinking fast
Power OK	—	Green steady, after 60 minutes blinking slowly
Battery voltage low	• • • • •	Red blinking fast
Error	—	Red steady

Connection status	📶 LED	
Connecting...	• • • • •	Green blinking fast
Connection OK	—	Green steady, after 60 minutes blinking slowly
Connection failed	—	Red steady

5.1 Check powering and connection from the front panel LED indicators.
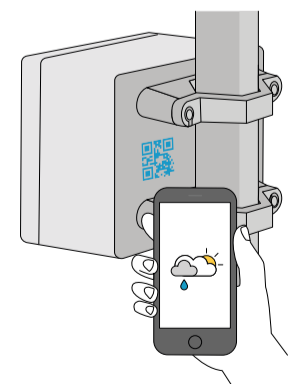
5.2 Scan the QR code on the back of the gateway to access read-only view of the measurement data in Wx Beacon.

Safety note

⚠ WARNING!

Alerts you to a serious hazard. If you do not read and follow instructions carefully at this point, there is a risk of injury or even death.

⚠ CAUTION!

Warns you of a potential hazard. If you do not read and follow instructions carefully at this point, the product could be damaged or important data could be lost.

ⓘ NOTE

Highlights important information on using the product.

⚠ **WARNING!** Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

⚠ **WARNING!** If the equipment is used in a manner not specified by Vaisala, the protection provided by the equipment may be impaired.

⚠ **WARNING!** Assess the risks from the installation work. Take into account also the effects of local weather conditions. Do not perform installation procedures when there is a risk of thunderstorm or lightning activity in the area.

⚠ **WARNING!** The AC (mains) supply line must be equipped with an overcurrent protection device (a fuse or a circuit breaker). The current rating of the overcurrent protection device must be aligned with the cable size used to connect the PSU501. Unless local regulations state otherwise, use a maximum of 6 A device for 0.75 mm² (AWG 18) cables, a maximum of 10 A device for 1 mm² (AWG 17) cables and a maximum of 16 A device for 1.5 mm² (AWG 15) cables. Do not replace the mains supply cord with a cord that has a lower rating than specified.

⚠ **WARNING!** Only licensed experts may install electrical components. They must adhere to local and state legislation and regulations.

⚠ **WARNING!** Keep away from live circuits. Operating personnel must observe safety regulations at all times.

⚠ **WARNING!** Do not replace the battery with a battery of an incorrect type. If you do, there is a risk of explosion. Dispose of used batteries according to statutory regulations.

⚠ **WARNING!** Check that the instrument has not been damaged during transportation. Do not install or operate a damaged instrument.

⚠ **WARNING!** Do not disassemble the instrument unless instructed to do so in AQT530 maintenance instructions to avoid exposure to laser radiation.

⚠ **CAUTION!** Improper modification can damage the product or lead to malfunction. Any modification voids your warranty.

⚠ **CAUTION!** EGW501 requires a separation distance of at least 20 cm (7.87 in). This distance must be maintained between the user and the device when the device is operating.

ⓘ Vaisala Air Quality Transmitter AQT530P incorporates a laser particle counter. AQT530 is classified as a Class 1 laser device in accordance with International Standard IEC/EN 60825-1. The laser is contained in an enclosure, preventing direct physical access to laser radiation. A Class 1 laser is safe under all conditions of normal use.

ⓘ To prevent electrostatic discharge, avoid touching component contacts or connectors.

Wear personal protective equipment (PPE).

Electrostatic Discharge (ESD) can damage electronic circuits. Vaisala products are adequately protected against ESD for their intended use. However, it is possible to damage the product by delivering electrostatic discharges when touching, removing, or inserting any objects in the equipment housing.
To avoid delivering high static voltages to the product, touch a conductive part of the equipment chassis with your other hand before touching ESD-sensitive components.

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