



Beacon Station BWS500



Vaisala Beacon Station BWS500 is a compact weather station for environmental monitoring. The complete solution provides measurements, data collection, and data visualization in one package. BWS500 includes Vaisala Beacon Edge Gateway EGW501, a selected set of sensors, powering equipment, and mounting accessories. To maximize ease-of-use, the station comes with a data plan and a variety of service packages to choose from.

Complete solution

BWS500, when combined with data management and visualization software, includes the required hardware and software for managing your weather data. You can select to use Vaisala Wx Beacon for measurement data visualization.

BWS500 is suitable for a variety of applications and can be scaled to support both small and large-scale weather observation networks – from harbor and port weather to complementing national weather forecast networks.

Sensors for various measurement needs

The sensor selection of BWS500 includes the proven Vaisala measurement sensor Vaisala Weather Transmitter WXT536 and the next generation air quality sensor Vaisala Air Quality Transmitter AQT530. WXT536 measures 6 of the most important weather parameters: air pressure, temperature, humidity, rainfall, wind speed, and wind direction. AQT530 provides measurement data of the most important urban pollutant gases (NO₂, NO, O₃, CO) and particles (PM₁₀, PM_{2.5}, PM₁). You can choose to have one or both sensors in your BWS500 configuration.

Later, Vaisala extends the sensing capabilities of the station with even more sensors.

Secure data connectivity

BWS500 takes care of the measurements, as well as data storage and transfer with Vaisala Beacon Edge Gateway EGW501. EGW501 provides

secure data transfer between the sensors and Wx Beacon. The integrated SIM card and cellular data plan make the station ready for use as soon as it is installed.

Powering with AC (mains) or solar panel

For sites where AC (mains) power is available, there is a power supply unit for running the station on AC (mains) power.

For those looking for a portable solution, an environmentally friendly solar panel with a power supply unit including a high-capacity battery is available. The solar panel in conjunction with low power consumption make BWS500 an ideal choice for data applications in remote locations.

To ensure sufficient power supply, solar power can be used only when the non-heated WXT536 is selected for BWS500 configuration.

Plug and play

A range of options for mast, tripod, and wall mounting are available for the station hardware, enabling optimal installation regardless of the location.

BWS500 is easy to install and requires minimal configuration. Simply install and connect the devices, and start gathering data.

Data sharing and management

The Vaisala Wx Beacon software collects and visualizes measurement data from the station. Once you have an account in Vaisala Wx Beacon, share the data to third-party services and systems through an open API.

Features

- Compact end-to-end solution for various weather observation applications
- Accurate, high-quality weather data with proven Vaisala Weather Transmitter WXT536 and air quality data with Vaisala Air Quality Transmitter AQT530
- Solar panel powering for installations at remote locations
- Secure software platform and data communications
- Remote monitoring service for carefree operation
- Data visualization with Wx Beacon and open API for third-party integrations

Technical data

Operating environment

Operating environment	Outdoor use
Use in wet location	Yes
Operating temperature	-40 ... +55 °C (-40 ... +131 °F) ¹⁾
Storage temperature	-40 ... +70 °C (-40 ... +158 °F) ¹⁾
Operating humidity	0 ... 100 %RH
Pollution degree	2
Maximum operating altitude	2000 m (approx. 6500 ft)
IP rating	
WXT536	IP65, with mounting kit IP66
AQT530	IP65 ²⁾
EGW501	IP67
PSU501/PSU502	IP65

¹⁾ Excluding AQT530. See AQT530 specifications.
²⁾ Specified for gas measurement device only.

Powering

Powering options	<ul style="list-style-type: none">Power supply unit for AC (mains) power and solar panel use (PSU501) or solar panel use (PSU502)DC input without power supply unit
AC (mains) power	100 ... 240 V AC, ±10 % 50 ... 60 Hz 800 mA
AC (mains) fuse, internal (non-replaceable)	Type 3, 1.5 kV / 3kA
AC (mains) cable connection	<ul style="list-style-type: none">Conductor cross section (flexible): 0.75 ... 2.5 mm² (20 ... 14 AWG)Cable lead-through: for 6 ... 12.5 mm (0.24 ... 0.49 in) cable
External DC	15 ... 32 V DC Max. 2 A
Solar panel ¹⁾	20 W for Vaisala-provided solar panel
Solar panel input	<ul style="list-style-type: none">Absolute maximum: 0 ... 32 V DCOperating: 15 ... 32 V DCMaximum 6 A
Battery	Lead-acid battery
Battery capacity	12 V DC, 7 Ah
Overvoltage category	II
Power consumption ²⁾	
EGW501	< 1.5 W, typical
Power output (power supply units)	
PSU501	30 W
PSU502	20 W

¹⁾ Solar panel feasibility and operation depends on the installation location and the amount of sunshine.
²⁾ For power consumption of sensors, see the relevant sensor documentation.

Radio module

Acceptance	CE (Europe), EAC/CE (Ukraine), FCC (USA), IC (Canada), RCM (Australia and New Zealand), Giteki (Japan)
SIM card type	Mini-SIM
Frequency bands	
LTE-FDD	B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/ B13/ B18/ B19/ B20/ B25/ B26/ B28
LTE-TDD	B38/ B39/ B40/ B41
WCDMA	B1/ B2/ B4/ B5/ B6/ B8/ B19
GSM	B2/ B3/ B5/ B8

Sensor options

Vaisala Weather Transmitter WXT536 ¹⁾

WXT536, heated ²⁾

WXT536, non-heated

Vaisala Air Quality Transmitter AQT530 ²⁾

Gases only (NO₂, NO, O₃, CO)

Particles only (PM₁₀, PM_{2.5}, PM₁) ³⁾

Gas (NO₂) and particles (PM₁₀, PM_{2.5}, PM₁)

Gases (NO₂, NO, O₃, CO) and particles (PM₁₀, PM_{2.5}, PM₁)

¹⁾ WXT536 comes with mounting adapter, cable, and bird kit.

²⁾ Not available when BWS500 is solar-powered.

³⁾ PM₁ is used as an indicative measurement.

Communication options

Wireless communication	4G LTE / 3G / 2G
Maintenance communication	USB 3.0 Web UI (locally)
Data collection and visualization	Vaisala Wx Beacon
Data interfaces	<ul style="list-style-type: none">Vaisala Wx Beacon open APILightweight machine-to-machine (LwM2M) interface
Sensor interfaces	RS-485 Modbus

Mounting options

Mast 4 m (13 ft 1 in) ¹⁾	DKP204
Mast 3 m (9 ft 10 in) ¹⁾	DKP203
Mast 2 m (6 ft 7 in) ¹⁾	DKP202
Tripod 3 m (9 ft 10 in) ²⁾	DKT504
Wall mounting kit for gateway	ASM213843
Wall mounting kit for power supply units	ASM213949
Mast mounting kit for gateway	ASM213841
Mast mounting kit for power supply units	ASM213841

¹⁾ Installation to concrete foundation. Optional accessories: leveling/welding plate, tilt division flange, support guy wire set, and lightning protection kit.

²⁾ Tripod comes with a toolkit, including tools bag, hammer, and ground pegs.

Compliance

EU directives and regulations	EMC, LVD, RED, RoHS
EMC compatibility	EN 61326-1, industrial environment CISPR 32 / EN 55032, Class B EN 301489-1 FCC part 15, class B ICES-3 (B)
Electrical safety	EN 61010-1
Cold	IEC 60068-2-1
Dry heat	IEC 60068-2-2
Vibration	IEC 60068-2-6 IEC 60068-2-64
Change of temperature	IEC 60068-2-14
Damp heat, cyclic	IEC 60068-2-30
Rough handling	IEC 60068-2-31
Damp heat	IEC 60068-2-78
Compliance marks	CE, EAC/CE, FCC, IC, RCM, UKCA

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