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.

Features

- Compact end-to-end solution for various weather observation applications
- Accurate, high-quality weather data with Vaisala WXT530 Series Weather Transmitters and air quality data with Vaisala Air Quality Transmitter AQT530 and Vaisala CARBOCAP® Carbon Dioxide Probe GMP252
- 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

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 WXT530 Series Weather Transmitters, Vaisala Air Quality Transmitter AQT530, and Vaisala CARBOCAP Carbon Dioxide Probe GMP252. WXT530 series sensors measure air pressure, temperature, humidity, rainfall, wind speed, and wind direction. AQT530 provides measurement data of the most important urban pollutant gases (NO_2, NO, O_3, CO) and particles (PM_{10}, $PM_{2.5}$, PM_1). GMP252 measures carbon dioxide concentration up to 10 000 ppm CO_2.

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.

Flexible powering solution

Power Supply Unit PSU501 is the powering solution for BWS500, designed to ensure uninterrupted power supply (UPS) to the station. PSU501 can be used in sites where AC (mains) power is available, and in cases where AC (mains) is not available PSU501 can work together with an environmentally friendly solar panel or other DC power source.

PSU501 is suitable for both portable and fixed installations.

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 a non-heated version of WXT530 series sensor 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, you can share the data to third-party services and systems through an open API.

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 [1]
Pollution degree	2
Maximum operating altitude	2000 m (approx. 6500 ft)
IP rating	
WXT530 series	IP65, with mounting kit IP66
AQT530	IP65 [2]
GMP252 (probe body)	IP65
EGW501	IP67
PSU501	IP65

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

Powering

Powering options	• Power supply unit PSU501 for AC (mains) power and solar panel/ external DC power use • 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	• Conductor cross-section (flexible): 0.75 ... 2.5 mm^2 (20 ... 14 AWG) • Cable lead-through: for 6 ... 12.5 mm (0.24 ... 0.49 in) cable
External DC / Solar panel input	15 ... 32 V DC Max. 2 A
Solar panel [1]	20 W for Vaisala-provided solar panel
Battery	Lead-acid battery
Battery capacity	12 V DC, 7 Ah
Overvoltage category	II
Power output (PSU501)	30 W
Power consumption [2]	
EGW501	< 0.75 W, typical

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.

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	• Vaisala Wx Beacon open API • Lightweight machine-to-machine (LwM2M) interface
Sensor interfaces	RS-485 Modbus

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
Freezing rain	NWS 8.0
Compliance marks	CE, EAC/CE, FCC, IC, RCM, UKCA

Radio module

Acceptance	CE (Europe), EAC/CE (Ukraine), FCC (USA), IC (Canada), RCM (Australia and New Zealand), Giteki (Japan) [1]
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

1) For a full list of global availability, see www.vaisala.com/en/bws500-support.

Sensor options

Vaisala WXT530 Series Weather Transmitter (heated or non-heated)
Vaisala Air Quality Transmitter AQT530
Vaisala Carbon Dioxide Probe GMP252

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 (DKP204 only), and lightning protection kit.
2) Tripod comes with a toolkit, including tools bag, hammer, and ground pegs.

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