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DATASHEET

AWS810

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Automatic Weather Station AWS810



Vaisala Automatic Weather Station AWS810 has everything that you need for taking accurate and reliable weather measurements. It is a complete communication and data monitoring solution including sensors, electronics, mast, and power supply.

An all-in-one solution with many applications

Vaisala Automatic Weather Station AWS810 is a weather data collection system that automatically measures, processes, and stores meteorological data for professional use. AWS810 can be operated as a standalone unit, or it can be connected with other compatible Vaisala weather stations to form weather observation networks.

AWS810 stations can be used for several applications, such as synoptic, aviation, and agricultural meteorology, hydrology, and climatology. Using the same standard hardware and software for many purposes lowers the cost of training, spare parts, and logistics support.

Validated data from reliable sensors

Vaisala weather stations and instruments are fully compliant with World Meteorological Organization guidelines. The design quality of Vaisala weather stations has been proven with extensive tests in the development phase and on the field.

To ensure continuous accuracy of measurements and calculations, AWS810 includes built-in data quality controls that test sensor data against minimum and maximum limits and changes between successive measurements. The weather station's DMU801 data management unit continuously monitors the status of the sensors to ensure measurement reliability, notifying the user if the status of any sensor becomes invalid. All the sensors operate independently from each other, meaning that an individual sensor failure does not affect the performance of the other sensors.

Data security prioritized

AWS810 provides first-class data security mechanisms to protect your data from security threats and unauthorized access. DMU801 data management unit brings along a number of data security features, such as secure network protocols, secure communication interfaces with industry standard encryption protocols, and dynamic firewall protection. Security development and maintenance, including regular firmware updates, is provided for continuous improvements.

Remote maintenance and station management

The AWS810 Web user interface allows you to adjust settings and fix problems remotely. It is possible to view basic station information, sensor status, and readings, and to set site-specific parameters. Through the Web UI you can also update the firmware and restore factory default settings.

In addition, it is possible to connect AWS810 to Vaisala cloud service for accessing observation data from the sensors.

Features

- Complete solution for weather data collection
- Excellent expandability and flexibility
- Modern security architecture
- WMO-compliant sensors and data validation
- Includes the next generation Vaisala Data Management Unit DMU801
- Enhanced remote maintenance and configuration management
- Vaisala cloud service connectivity
- Powers modern surface weather networks

Technical data

Operating environment

Operating environment	Outdoor use
Use in wet location	Yes
Operating temperature with 28 Ah backup battery or without battery [1]	−40 … +60 °C (−40 … +140 °F)
Operating temperature with 24 Ah backup battery [2]	−40 … +50 °C (−40 … +122 °F)
Extended operating temperature (with insulated enclosure and heating) [1]	−60 … +50 °C (−76 … +122 °F), cold start at −40 °C (−40 °F)
Storage temperature [3]	−60 … +70 °C (−76 … +158 °F)
Operating humidity	0–100 %RH
Pollution degree	2
Maximum operating altitude	3000 m (approx. 9800 ft)

1) Excluding QST102-3, SBS314, SnowVUE, and PAA-36XW. See the manufacturer documentation.
2) Excluding SBS314 and PAA-36XW. See the manufacturer documentation.
3) Excluding backup battery, HMP155, and HMP110. See the manufacturer documentation.

Powering specifications

AC (mains) power	100–240 V AC, −15 % … +10 % 50–60 Hz 6.8 A maximum (100 V AC)
Mains fuse (nominal)	10 A
External DC	15–28 V DC 10 A maximum
Solar panel	70 W, typical 15–28 V DC 6 A maximum (each), 10 A combined (both inputs)
Internal backup battery	12 V / 24–28 Ah (48–56 Ah with 2 batteries)
Overvoltage category	II

ENC652 specifications

IP rating	IP66
UL 50E/NEMA rating	Type 4X
Maximum operating wind speed	75 m/s (168 mph)
Door opening angle	100°
Material	Stainless steel AISI 316L, painted white
Size (enclosure only)	600 × 500 × 207 mm (23.62 × 19.68 × 8.15 in)
Weight (excluding backup battery)	< 30 kg (66 lb) [1]

1) Depends on the selected options.

Measurements

Wind speed and direction
Atmospheric pressure, air temperature, relative humidity, dew point
Rain/precipitation
Visibility and present weather
Global solar radiation, net radiation, UV radiation
Ground temperature, snow depth, water level
Cloud height and sky condition

Standard communication options

Wireless communication	LTE Cat 4 cellular modem (with UMTS/HSPA+ and GSM/GPRS/EDGE support)
Landline communication	RS-232, RS-485, LAN
Ethernet communication	HTTPS, TCP socket, SFTP, FTP
Communication protocols	Modbus TCP ASCII (SMSAWS, CSV)
Satellite communication	Vaisala GOES DCP Transmitter QST102-3
Local maintenance connection	USB-C, browser-based Web UI
For other data validation, calculation, report, mast, powering, sensor, communication data collection software options, and measurement unit conversions, contact Vaisala.	

Compliance

EU directives and regulations	EMC, LVD, RoHS
EMC immunity	EN 61326-1, industrial environment [1] [2] FCC part 15 B, Class B ICES-3 / NMB-3 (Class B)
EMC emissions	CISPR 32 / EN 55032, Class B
Safety	IEC/EN/AS/UL/CSA-C22.2 61010-1
Safety listing (U.S. and Canada)	MET Listed [3]
Cybersecurity	Developed in accordance with ISO/IEC 27001 and IEC 62443-4-1 for secure product development practices
Compliance marks	CE, FCC, RCM, UKCA

1) Excluding EKO MS series and Kipp & Zonen SMP12 pyranometers.
*2) Modem Carrier Module DMX801 complies with EN 61326-1 basic level. Ethernet connection in DMU801 base unit (**eth0**) requires external surge protection to comply with EN 61326-1 industrial environment level.*
3) AWS810 backplate only -option is MET Recognized. Heated/insulated AWS810 option (with insulated enclosure) is not listed.

Environmental compliance

Test	Applied standard or test procedure	Specification
Operation		
Cold	IEC 60068-2-1	−40 °C (−40 °F)
Dry heat	IEC 60068-2-2	+60 °C (+140 °F)
Damp heat	IEC 60068-2-78	+40 °C (+104 °F), 93 %RH
Vibration (sinusoidal)	IEC 60068-2-6	Frequency range 5–200 Hz 1.2 mm/s velocity, 5–12 Hz 0.7 g, 12–200 Hz
Shock	IEC 60068-2-27	5.0 g, pulse duration 11 ms with 100 pulses in each direction
Vibration (random)	IEC 60068-2-64	5–100 Hz
Storage		
Cold [1]	IEC 60068-2-1	−60 °C (−76 °F)
Dry heat [1]	IEC 60068-2-2	+70 °C (+158 °F)
Transport		
Vibration (random)	IEC 60068-2-64	5–200 Hz
Shock	IEC 60068-2-27	18 g, pulse duration 6 ms with 100 pulses in each direction
Rough handling	IEC 600068-2-31	Drop height 25 cm (9.84 in)

1) Excluding backup battery.

Electromagnetic compatibility

Test	Applied standard or test procedure	Specification
Emissions radiated	CISPR 32 / EN 55032, Class B	30 MHz–6 GHz
Emissions conducted to mains (AC)	CISPR 32 / EN 55032, Class B	150 kHz–30 MHz
Emissions conducted to telecommunication lines	CISPR 32 / EN 55032, Class B	150 kHz–30 MHz
Emissions radiated, Class B	FCC part 15 B, Class B	30 MHz–18 GHz
Emissions conducted, Class B	FCC part 15 B, Class B	150 kHz–30 MHz
Emissions, harmonic current	EN 61000-3-2	0–40th harmonic
Immunity to electrostatic discharge	EN 61000-4-2	Contact, HCP ±4 kV Contact, VCP ±4 kV Contact discharge, all conductive parts ±4 kV All discharge, all nonconductive parts ±2 kV, ±4 kV, ±8 kV
Immunity to RF field (80 MHz … 6 GHz)	EN 61000-4-3	10 V/m (80 MHz–1 GHz) 3 V/m (1–6 GHz)
Immunity to electric fast transient	EN 61000-4-4	±2 kV AC, ±1 kV I/O
Immunity to surge	EN 61000-4-5	Line to line ±1 kV (AC and I/O) Line to ground ±2 kV (AC and I/O)
Immunity to conducted RF	EN 61000-4-6	3 V r.m.s. (150 kHz–80 MHz)
Immunity to voltage dips and short interrupts	IEC 61000-4-11	0 % 1 cycle 40 % 10 cycles 70 % 25 cycles 0 % 250 cycles

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