VAISALA

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.

Maintenance made easier

For AWS810 networks, the Vaisala Observation Network Manager NM10 software provides a powerful browser-based interface for 24/7 monitoring, access, and control of all your observation sites. Continuous, reliable observations improve the performance of your weather services and weather-critical operations, while shorter site visits and correct maintenance actions save time and money.

Even without the optional NM10 software, it is possible to adjust settings and fix problems remotely. The AWS810 Web user interface allows the user to view basic station information, sensor status, and readings, to set site-specific parameters, and to perform many other functions using a graphical user interface.

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
- Easy remote monitoring of network status using optional NM10 software
- Powers modern surface weather networks

Technical data

Operating environment

Operating environment	Outdoor use
Use in wet location	Yes
Operating temperature [1]	−40 ... +60 °C (−40 ... +140 °F)
Extended operating temperature (with insulated enclosure and heating)	−60 ... +50 °C (−76 ... +122 °F), cold start at −40 °C (−40 °F)
Storage temperature [2]	−60 ... +70 °C (−76 ... +158 °F)
Operating humidity	0 ... 100 %RH
Pollution degree	2
Maximum operating altitude	3000 m (approx. 9800 ft)

1) Excluding backup battery, QMD202, QST102-3, cellular modem, QMN101, RG13(H), SR50A, and PAA-36 X W. See the manufacturer documentation.
2) Excluding cellular modem, HMP155, and HMP110. See the manufacturer documentation.

Powering specifications

AC (mains) power	100 ... 240 V AC ±10 % 50 ... 60 Hz ±10 % 5.6 A maximum (120 V AC)
Mains fuse (nominal)	10 A
External DC	15 ... 28 V DC Heated option: 24 V DC ±2 10 A maximum
Solar panel	70 W, typical 15 ... 30 V DC 10.5 A maximum
Internal backup battery	12 V / 26 Ah or 12 V / 52 Ah
Backup battery fuse	10 A
Overvoltage category	II

Compliance

EU directives	EMC, LVD, RoHS
EMC compatibility	EN 61326-1, industrial environment [1]
Electrical safety	EN 61010-1

1) Modem Carrier Module DMX801 complies with EN613216-1 basic level. Ethernet connection requires external surge protection to comply with EN613216-1 industrial environment level.

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) / 85 ... 95 %RH
Vibration (sinusoidal)	IEC 60068-2-6 IEC 60945	5 ... 13.2 Hz, 1 mm (0.04 in) amplitude 13.2 ... 200 Hz, 0.7 g
Shock	IEC 60068-2-27 MIL-STD-202G, 213B	6.0 g, 11 ms, functional shock 30 g, 11 ms
Storage		
Cold [1]	IEC 60068-2-1	−60 °C (−76 °F)
Dry heat [1]	IEC 60068-2-2	+70 °C (+158 °F)
Damp heat	IEC 60068-2-78	+40 °C (+104 °F) / 85 ... 95 %RH
Transport		
Vibration (random)	IEC 60068-2-64	10 ... 500 Hz, a (rms) = 18.7 m/s^2
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 50 cm (19.69 in)

1) Excluding backup battery.

EMC compliance

Test	Applied standard or test procedure	Specification
Emissions radiated	CISPR 32 Class B (EN 55032)	30 MHz ... 2 GHz
Emissions conducted to mains (AC)	CISPR 32 Class B (EN 55032)	150 kHz ... 30 MHz
Emissions conducted to telecommunication lines	CISPR 32 Class B (EN 55032)	150 kHz ... 30 MHz
Emissions, harmonic current	EN 61000-3-2	0 ... 40th harmonic
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	4 kV AC, 1 kV I/O
Immunity to surge	EN 61000-4-5	2 kV / 1 kV AC, 1 kV I/O
Immunity to conducted RF	EN 61000-4-6	10 V e.m.f. (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

ENC652 specifications

Approvals	UL 50 / UL 50E-listing
IP rating	IP66
NEMA rating	NEMA 4X
Material	Stainless steel AISI 316, 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]
Maximum wind speed	75 m/s (168 mph)

1) Depends on the selected options.

Measurements

Wind speed and direction
Athmospheric 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 communications options

Wireless communication	LTE Cat 4 cellular modem (with UMTS/HSPA+ and GSM/GPRS/EDGE support)
Landline communication	RS-232, RS-485, LAN
Data collection software	Vaisala Observation Network Manager NM10
Maintenance	USB host device with Web UI

For other data validation, calculation, report, mast, powering, sensor, communication data collection software options, and measurement unit conversions, contact Vaisala.

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