



Use cases

- Offshore helidecks on moving vessels

Vaisala Elements Helideck Monitoring System (HMS) software for moving helidecks ensures safety and compliance, providing certified real-time collection, processing, and visualization of accurate meteorological, oceanographic, and helideck motion data.

Intuitive data displays

Real-time observations are accessible through a web browser from any device that shares a network with the Elements embedded web server. Configurable user permissions control exactly who can access which data.

Data is presented on map, table, and dashboard views. Users can design their own dashboards using a drag-and-drop interface with various component types including number boxes, charts, and compasses.

The responsive user interface of Elements scales automatically on desktop, tablet, and phone screens.

Alerting

Elements allows each user to easily set up and switch between warning sets which apply color highlighting to observed values whenever operation-specific limits are exceeded.

Sensor support

Elements is compatible with a wide variety of Vaisala sensors including wind (ultrasonic and lidar), temperature, humidity, pressure, precipitation, lightning, cloud, present weather, and visibility. A selection of third-party sensors are also supported including solar radiation, motion, wave, current, water level, snow depth, and sea temperature sensors.

Configurability

Elements HMS is configured by Vaisala to meet the exact requirements of each system.

Data processing

Elements offers a very flexible platform for real-time data processing including various modules to support meteorological and oceanographic data as well as an interface to integrate custom modules implemented in Python.

Output

Elements supports output to other systems through a wide variety of configurable protocols.

Historical data

Observations are archived in a local SQLite database. Interactive charting and data download features are provided through the browser-based user interface.

High availability

Elements supports installation in a hot-standby setup to provide redundancy in case of server hardware failure.

Status monitoring

Continuously monitoring the status of sensors and data loggers in your measurement network, Elements immediately alerts you to faults so you can maximize the availability of data.

Cloud integration

Elements HMS integrates seamlessly with the Vaisala Elements Online cloud platform to share weather observations outside the local network.

Extend with Xweather services

When connected to Elements Online, the solution can also be extended with data products such as the Xweather global lightning detection network data, recognized as the world's most accurate lightning intelligence, along with weather forecast data and maps.

Maintenance and support

Our software maintenance subscription delivers regular security updates, feature improvements, and compliance with new regulations. Enhanced technical support provides priority access to our Elements experts to ensure the continuous operation of your mission-critical systems.

Technical data

Input device data

Supported Vaisala weather stations and data management units	AWS430 AWS810 DMU801
Supported sensors	Multi-weather: WXT530 Series Wind: WM80, WMT700 Wind lidar: WindCube (vertical), WindCube Offshore Air temperature/humidity: HMP155 Visibility/present weather: FD70, PWD Series Cloud: CL31, CL51, CL61 Lightning: TSS928 Precipitation: RG13 Selected third-party sensors
Supported input interfaces	Serial TCP/IP server or client UDP server TLS server or client SSH client Modbus (RTU/TCP) server or client FTP client File system (supporting third-party SFTP server) Selected third-party interfaces
Supported input data formats	SMSAWS (AWS810/DMU801) Raw sensor messages CSV Text (regular expression) Xweather Lightning (GLD360) Xweather Forecasts (data and MapsGL map layers)
Supported output interfaces	Elements Online Serial TCP/IP server or client UDP client TLS server or client SSH client Modbus (RTU/TCP) server or client OPC-UA FTP client HTTP client SMTP (email) client SNMP server NMEA 0183 File system Selected third-party interfaces including light controllers, relay controllers, and analog outputs
Limits	Maximum number of input sites: 1 Maximum number of wind sensors per site: 2 Maximum number of each supported sensor type (except wind) per site: 2

Software requirements

Server operating systems	Windows 11 (IoT Enterprise LTSC recommended) Windows Server 2022 Windows Server 2025
Client web browsers	Chrome/Edge 109+ Safari 16.3+

Hardware requirements

1 input site	CPU: 4-core RAM: 16 GB Hard drive: 512 GB SSD
Data storage	Integrated SQLite database
RAID mirroring	Recommended
Redundant power supplies	Recommended
Virtual servers	Supported

User interface

Alerts	User-configurable color warning thresholds for observations Audio alarms
Language	English

Security

Web display	HTTP basic authentication IP whitelist SPNEGO “negotiate” Windows single sign-on
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Compliance

Aviation	UK CAP 746 UK CAP 437 version 9 UK HCA HMS Rev 9c (certified) ICAO Annex 3 (partial) WMO 306 (partial)
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Supported features

	Lite	Plus	HMS
User-friendly, customizable browser-based data displays	✓	✓	✓
Accessible from multiple devices within a customer's network	✓	✓	✓
Configurable color warning limits for observations	✓	✓	✓
Charting and downloading historical observations	✓	✓	✓
User authentication	✓	✓	✓
Data input from weather stations	✓	✓	✓
Data input from sensors connected directly		✓	✓
Custom data input formats		✓	✓
Basic meteorological sensors	✓	✓	✓
Cloud, lidar, lightning, and oceanographic sensors		✓	✓
Compliance with aviation standards and report formats		✓	✓
Helicopter operations on moving vessels			✓
Complex real-time data processing		✓	✓
Integration of Xweather products	✓	✓	✓
Integration with Elements Online	✓	✓	✓
MODUBS TCP server and OPC-UA data outputs	✓	✓	✓
Advanced data outputs		✓	✓

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