

# Vaisala Maritime Observation System MAWS420



Meteorological needs on the water are complex, and every ship or platform has a different set of needs. Vaisala Maritime Weather Observation System MAWS420 is among the most advanced and flexible systems on the market. Top-notch anti-corrosive design, coupled with an extended operating temperature range, guarantee high-quality data when you need it most, in any environment.

## Flexible with ease of use

System enclosures can be installed virtually anywhere. Mast or outer wall installation is a snap. Sensors can be installed either on mast sensor arms or further away – using radio links, if necessary. Cabling is factory pre-tested, and weather stations are ready for use immediately after installation. All inputs have transient protection, and mains power and RF inputs are surge protected, meeting IEC 60945 requirements.

## Accurate real-time data

To ensure the safety and efficiency of your offshore operations, real-time metocean data including everchanging wind, wave, and current strength is needed. In shipboard applications for the most accurate true wind calculation the vessel's own gyro compass and navigation system is used providing the required heading and ship speed, direction and location information. All the requirements for data communication given in NMEA 0183

## Features

- Designed to measure prevailing meteorological and oceanographic conditions in various shipboard and offshore applications
- Expandable, open and modular system design to meet the most unique requirements of weather observations in marine environment
- Top-notch anti-corrosive design and EMC characteristics meeting Lloyd's Register and IEC 60945 requirements
- Can be interfaced with large variety of metocean sensors and multiple real-time telemetry options
- Built-in data validation
- Accurate true wind calculation
- Meets requirements for data communication given in NMEA 0183 and IEC 1162-1
- Supports FM 13 SHIP (FM 13 XII) SYNOP and IMMT-3 code formats augmented optionally with visual observations
- Provides surface weather data for Vaisala ASAP semi-automatic shipboard upper-air observations

and IEC 1162-1 are fully supported. A GPS receiver, Inmarsat-C satellite transceiver and electronic compass are also available. No matter what communication systems you use, the MAWS420 supports it – both external and on-board.

## Built-in data validation

Built-in algorithms test each measurement to ensure data quality. For each parameter, tests are carried out on the minimum, maximum and step limits, and the different parameters are crosschecked. When data is entered manually, quality checks ensure that the operator does not enter incorrect values. A built-in testing system also continuously checks the hardware, reporting immediately if a fault occurs. An expansion memory for data storage is also available if not sent to an ancillary system for further use or to be stored on the PC hard drive.

## Advanced ship weather reports

The system processes, displays, stores and transmits fully automated ship weather reports in the universal FM 13 SHIP (FM 13 XII) and IMMT-3 code formats around the globe, in real-time. These reports can be augmented with visual observations entered prior to transmission. Factors such as cloud type; past weather; weather phenomena; waves and swell; as well as sea-ice and/or ice accretion onboard are added using Vaisala Observation Console software, built to the highest standards of usability and quality control.

# Technical Data

## General

Data Collection Platform	Vaisala Data Logger QML201A
Temperature	
Operating *)	-50 ... +60 °C (-58 ... 140 °F)
Storage	-50... +70 °C (-58 ... 158 °F)
Humidity	0 ... 100 % RH

In compliance with Lloyd's Register (LR) Type Approval System, Test Specification Number 1; 2002, Performance and Environmental Test Specification for the Environmentally Tested Products used in Marine and Offshore Applications, and IEC 60945 International Standard, 4th edition, 2002-08, Maritime Navigation and Radiocommunication Equipment and Systems - General Requirements Methods of Testing and Required Test Results, as follows:

Vibration	IEC 60068-2-6 / IEC 60945
Shock	MIL-STD-202G, Method 213B, cond. J
Earthquake	NEBS / Bellcore GR-63-CORE, risk-zone 4
Dry heat	IEC 60068-2-2 / IEC 60068-2-48
Damp heat	IEC 60068-2-30, Test Db
Extreme conditions	IEC 60068-2-3, Test Ca
Low temperature	IEC 60068-2-1 Test Ab/Ad
Rain & spray	IEC 60529 / IEC 60945
Corrosion & salt mist	IEC 60068-2-52, Test Kb
Conducted LF immunity	IEC 61000-4-16
Conducted RF immunity	IEC 61000-4-6
EFT immunity	IEC 61000-4-4
Surge immunity	IEC 61000-4-5
ESD immunity	IEC 61000-4-2
Dielectric tests	IEC 60947-2
Conducted emissions	CISPR 22 **)
Radiated emissions	CISPR 22 **)
RF field immunity	IEC 61000-4-3
Insulation resistance	IEC 60092-504
Power supply short term variation immunity	IEC 61000-4-11
Power supply failure immunity	IEC 61000-4-11 / IEC 60092-504
Compass safe distance	ISO 694 and IEC 61000-4-8

Materials	Acid-proof stainless steel Anodized sea aluminium Plastic
Mast ***)	Tiltable 2/3/4 m pole mast
Enclosure	600(H) x 400 (W) x 200 (D) mm
Weight	Enclosure approx 20 kg Mast with sensors approx 30... 40 kg
Powering ***)	90 ... 264 VAC, 45 ... 65 Hz 8 ...14 VDC recommended (30 VDC max.)
Internal battery	5-10 Ah / 12 V
Battery regulator	Charge/recharge control Temperature compensation Deep discharge protection

Simultaneous inputs from solar and AC power allowed

## Data validation, calculations and reports

<b>DATA QUALITY CONTROL</b>	
Upper / lower climatological limits	Step change validation
	Sensor status indication
	Cross check
Statistical calculations	Averaging over user set periods
	Minimum / maximum values
	Standard deviation
	Cumulative values
Other calculations	Dew point
	QNH, QFE, QFF, pressure tendency
	True & relative wind, wind selection (upwind)
	Corrections for elevation & magnetic variation
<b>Message inputs / outputs</b>	
	NMEA 0183 MVW / XDR message output
	NMEA 0183 HDT / RMC / VTG / GLL message input
	Vaisala sounding system data interface
<b>Weather data reports (w/ Vaisala Observation Console sw)</b>	
	WMO FM 13
	WMO IMMT-3
	Custom reports

## Standard sensor options \*\*\*)

Wind speed & direction	WINDSONIC, WMT50, WS425
Atmospheric pressure	PMT16A, PTB220
Air temperature, relative humidity & dew point	QMH102, HMT330
Rain / precipitation	Model 50202, DRD11A
Water temperature	DTS12W
Solar radiation / sun duration	CMP3, CMP6, CMP11, CUV4, SD4
Digital compass	QCO201
Position and time	GPS-17-HVS
Cloud height & coverage / vertical visibility	CL31
Visibility & present weather	PWD10, PWD20, PWD12, PWD22, FD12HA, FD12PHA

## Standard communication options \*\*\*)

Satellite communication	Iridium, Inmarsat-C, Argos / SCD GOES, GMS, METEOSAT ****)
Wireless communication	UHF, VHF, GSM, GPRS, Voice radio
Landline communication	RS232, RS485 bus, PSTN, Fixed line, LAN, Optical fibre
Data displays	DD50, WD30(TU), WD50, Pocket / Laptop / Tabletop PC

\*) FOR FURTHER EXTENDED RANGE, PLEASE CONTACT VAISALA  
\*\*) limits according to IEC 60945

\*\*\*) for other mast, solar powering, sensor and communication options, please contact Vaisala

\*\*\*\*) applicable only for fixed platforms



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