

Compact, environmentally robust

MAWS301 Automatic Weather Station

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Vaisala's MAWS301 automatic weather station is a new generation weather station especially designed for applications where no commercial power or communications networks are available or economically installed. MAWS301 is a compact, environmentally robust and low power system providing reliable, continuous data on a multitude of meteorological and hydrological parameters.

The complete MAWS301 automatic weather station with a telemetry option installed in Brazil.

Advanced measurement technology

Based on the latest measurements and communications technology, the MAWS301 weather station interfaces with various telecommunications equipment such as PSTN and GSM modems and radio modems as well as satellite transmitters. Imbedded with sophisticated technology, MAWS is the ideal choice for a wide range of meteorological applications requiring reliable and accurate meteorological measurements and low cost-of-ownership. The MAWS301 series of weather stations also provide a planned and economical future upgrade path.

The accurate measurements begin with the sensors. The basic suite of sensors measures wind, pressure, temperature, relative humidity and precipitation. Measurements can also be taken of multi-level soil temperature, soil moisture, solar radiation, net radiation, water level and temperature. The extended set of sensors includes smart sensors such as cloud height ceilometers with cloud coverage algorithm, visibility (MOR), present weather and water quality parameters.

User-friendly and accurate configuration

MAWS is easy to install and set up. The sensors are equipped with ready-made cables and connectors for quick installa-

tion. All modules are easily mounted on DIN rails, allowing easy maintenance. No special tools are needed. Sensor measurements, calculations, data logging and data transmissions are performed according to user-configured programs.

The operation of MAWS can be easily modified with the help of the user-friendly MAWS Lizard II configuration software. Using the ready-made templates and libraries, this set-up program guides the user through the simple set-up routines. Not only is it easy to use, but there are enough set-up options and advanced features to satisfy even the most demanding user.

MAWS301 combines Vaisala's proven sensor technology with a new compact data logger design derived from long expertise and field experience in synoptic, climatological and research applications and in demanding industrial use. The use of a 32-bit CPU, a 16-bit A/D conversion, and advanced software features such as data validation ensure the continuous accuracy of your weather information.

Reliable operations

MAWS is compact and rugged, being tolerant of difficult operating conditions, and its design is weather-proof. Only the highest quality materials are used. BOX501 is a robust enclosure with IP66 (NEMA4X) protection. It comes with a white painted solar radiation shield for additional protection. The cables are of high-quality polyurethane, with molded connectors that are watertight in accordance with the IP68 standard. All the inputs have transient protection and the RF inputs are protected with coaxial surge arrestors.

The built-in quality control software checks the sensor data against the user-set climatological limits and step changes between successive measurements. Statistical calculations are made only when the minimum user-set number of samples is available. The built-in test program monitors several internal parameters.

All of this ensures that the measured data can be relied upon. The design of MAWS



ensures reliable operation at low maintenance costs.

Data output

The data output formats of MAWS can be freely and effortlessly configured by the user to suit the requirements of particular applications. The data transmission can be self-timed, polled or sent automatically when a measured and/or calculated parameter exceeds its alarm threshold.

Each sensor and calculated parameter has its own user-configurable alarm settings. The configurability of the multiple serial channels and telemetry options allows the same equipment to serve several users and applications simultaneously.

Statistical calculations

Statistical calculations include minimum, maximum, average, standard deviation and cumulative values, calculated over user-set periods. The periods are also user-configurable for each calculation. In addition, a library of ready-made calculations is available, including unit conversions, dewpoint, QNH, QFF, QFE, evapotranspiration, frost point, wind chill, heat stress, sunshine duration, etc.

Versatile data logging

MAWS301 provides easy data logging. 1.7 Mbytes of secure

flash memory is available on-board the CPU for the logging of measured and calculated data. An optional compact flash memory module offers expanded memory capacity with removable memory cards up to several tens of Mbytes. This industry standard card is easily removed and data read into the PC for further processing. This secure memory technology does not require regularly changed back-up batteries at all.

Various statistical calculations can be made on-site, thus reducing the amount of data to be transmitted or logged. The logging parameters and schedules are all user-configurable, of course.

Power supply options

MAWS means low power consumption. Typically only a 14 W solar panel is used for powering MAWS301 with options for extended periods of time. A 24 W solar panel as well as a mains (AC) power supply are optional to power even an extended system with communications devices.

There are three alternative sizes of back-up batteries available with capacities of 7, 12 or 24 Ah.

Communications options

MAWS has up to 5 serial ports for interfacing with telemetry, terminals and displays. One

In addition to the standard PSTN modems, BOX501 offers space for optional wireless telemetry equipment such as GSM data modems, radio modems and satellite transmitters.

RS-232 port is the standard. Two optional plug-in modules can be used for enhancing versatile performance:

- DSI485 – isolated RS-485 for distances up to 1,500 meters
- DSU232 – dual RS-232 ports
- DMX501 – fixed line modem for longer distances.

In addition to the standard PSTN modems, BOX501 offers space for optional wireless telemetry equipment such as GSM data modems, radio modems and satellite transmitters. All telemetry equipment is offered complete with all necessary mounting accessories, coaxial surge arrestors, cables and antenna.

Easy upgrading

The design of MAWS301 enables the system to be easily upgraded with new sensors, calculations, output formats and logging schedules at any time to accommodate the user's changing requirements. Software modifications are made using the MAWS Lizard II Set-up program with new sensors simply connected to the free connectors. The large number of sensors and telemetry options coupled with Vaisala's continuous development guarantees an upgrade path far into the future. ■