

MEA102 Automatic Weather Station Standard

What is an Automatic Weather Station?

An Automatic Weather Station (AWS) is a sophisticated blend of mechanical, electronic, measurement, recording and telemetry systems. It spends years operating autonomously out in the weather, powered by the sunshine that falls upon it, while reliably collecting and storing physical climate parameters. The cost of an AWS is inextricably linked to the quality of the sensors.

Features of an MEA Standard AWS?

MEA has been building environmental monitoring systems since 1984. Our stations have developed a reputation for quality and data integrity, and are in use in research, agriculture, mining, wind prospecting and industrial environmental monitoring, in Australia and overseas.

Our standard weather stations are built around a sturdy two metre, aluminium, tripod mast. The temperature and relative humidity sensors are mounted within a sensor shelter installed at a height of 1.2m above ground level. Wind instruments are installed on a cross arm at a height of two metres and the cross arm is pre-drilled to allow a solar radiation sensor to be added. The rain gauge has an eight metre cable to allow it to be located at ground level away from the mast. Other sensors such as soil temperature, barometric pressure and soil moisture can be supplied.

Sensors connect to a data logger mounted within a lockable steel enclosure mounted on the mast. The logger has a memory capacity to record at least 30 days of data. The enclosure also houses sensor interfaces, battery and communications modules.

A modem (cellular or landline) is the most common form of data retrieval. For systems which require frequent data downloading, or have a large number of users, a Packet Data Terminal is a more cost effective alternative. The AWS can be downloaded direct to a PC, via a cable link over a maximum of 500 metres, or by radio telemetry.

The AWS is powered by a rechargeable battery and solar panel and is fully self contained.

Magpie software manages the communications between computer and weather station (including remote access) and is used to display and analyse the weather data.

An AWS can calculate statistics such as evaporation (using wind speed, humidity, temperature and solar radiation sensors), degree days, frost hours, chill factors and so on.

When fitted with a modem, the AWS can issue an alarm to a selection of mobile phones using SMS facility.

Weather stations will accept sensors other than climate sensors, including soil moisture, gas and odour, water quality and flows.

Customised weather stations using any selection of sensors, on masts to 100 metres can be designed and manufactured by MEA.

All MEA systems are covered by a 12 month, return to factory warranty. Weather stations are assembled and tested at MEA before shipment, and usually shipped in a timber packing crate. Documentation includes installation instructions and maintenance schedules.



Standard AWS Specifications

Description	Specifications
Data logger	Starlogger, 128k memory, multichannel
Mast	Two metre freestanding tripod
Power supply	5 watt solar panel 12V 7Ah gel
Software	Magpie
Warranty	12 months
Climate sensor options	
Air temperature	-40 to +60°C; $\pm 0.2^\circ\text{C}$ at 20 deg C
Soil temperature	0 to 60°C; $\pm 0.2^\circ\text{C}$
Relative humidity	0-90%; $\pm 2\%RH$; 90-100%; $\pm 3\%RH$
Rainfall	0.2mm tips, 2% accuracy
Leaf wetness	Wet/dry
Solar radiation	0 - 1400 W/m ² $\pm 5\%$
Wind speed	0.5 to 60 m/s $\pm 0.3\text{m/s}$
Wind direction	0 to 355 deg, $\pm 3^\circ$
Barometric pressure	800-1060 hPa ± 0.3 hPa
Soil moisture	Range of content and tension sensor
Communication options	
Data storage capacity	50 days
Onsite download	Yes
Digital cellular phone	Yes
Web access	Yes
Radio	Yes
Removable logger	Yes
Alarms capability	Yes



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