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DATASHEET

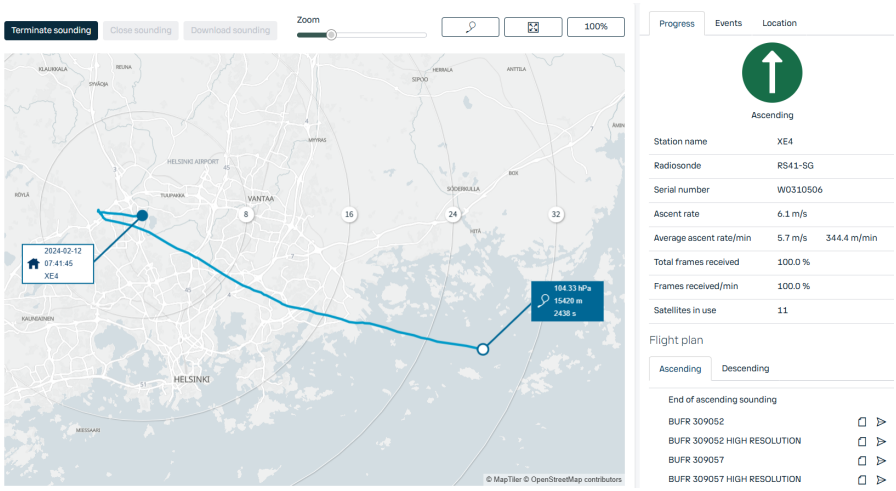
MW51

Vaisala · Authorized Partner

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VAISALA

Cirrus Sounding System MW51



Features

- Consistent, high-quality data
- Easy to operate
- Receives data from several radiosondes simultaneously
- Long telemetry range
- Inbuilt security with regular updates
- Compact design supports portable applications

Vaisala Cirrus® Sounding System MW51 is the foundation of modern meteorological upper-air observations.

Vaisala Cirrus Sounding System MW51 processes, analyses, archives, and relays sounding data. While keeping the best qualities of its predecessors, it introduces significant improvements to radio design, usability, and reliability.

The MW51 system consists of a computer that runs DigiCORA® Software, the Sounding Processing Subsystem SPS511, the ground check device for preparing RS41 radiosondes, and the UHF and GNSS antennas used to receive the radiosonde signal and provide local positioning data. Together with RS41, the MW51 system brings upper-air measurements into a new era. To ensure the system meets the needs of a wide range of Vaisala Radiosonde RS41 customers, various radiosonde ground check device and antenna options are available.

Excellent radio characteristics

The new built-for-purpose Sounding Processing Subsystem SPS511 is sensitive to radiosonde signals, while also being resistant to interference near the meteorological frequency band. This allows for a steady data flow from the radiosonde to the MW51 system, resulting in an accurate atmospheric profile even in demanding radio environments. MW51 also enables using multiple satellite systems with RS41 radiosondes, improving performance in challenging environments.

Multisounding capability

The MW51 system is able to receive and process sounding data from several radiosondes at the same time. One SPS511 can handle data from 8 simultaneous radiosondes.

Sustainable security

The system is designed with security in mind. User access is controlled, while data transfer and remote control use secure communication. You can access the DigiCORA user interface from anywhere within the connected network using a standard web browser. Message authentication prevents tampering of radiosonde communications.

Regular security updates are available for both the DigiCORA application software as well as the embedded SPS511 firmware. This provides the user with additional peace of mind against security threats.

New, intuitive, and visual DigiCORA Software

During a sounding, data can be visualized in a variety of views like graphs, tables and a map. With DigiCORA as a guide, preparing a radiosonde continues to require minimal effort from the user. Performing ozone soundings according to the recommendations of GAW Report 268 has never been easier than with DigiCORA.

Configuring DigiCORA to create a wide range of meteorological messages is easy. Triggers and messages set for the sounding are displayed in a brand-new flight plan layout, which shows the main sounding events relative to the current sounding status.

Compact and portable

Research campaigns require a portable and efficiently transportable sounding system. MW51 supports the CG31 portable antenna set with UHF and GNSS antennas. SPS511 is smaller and lighter and it has an IP54 rating for dust and moisture resistance. It uses conductive cooling, has no moving parts, and features electronics designed on a single signal board to minimize failure points.

Technical data

Performance

Range with Telemetry Antenna RB31	Up to 350 km (217.5 mi)
Range with Telemetry Antenna RM32	200 km (124 mi)
Range with Portable Antenna Set CG31 and Telemetry Antenna RM31N	150 km (93 mi)

System components and compatible radiosondes

Radiosondes	• RS41-SG, RS41-SGE • RS41-SGP, RS41-SGPE • RS41-SGM
Sounding processing subsystem	SPS511
Application software	DigiCORA software
Ground check devices	• RI41 • MWH322
Antennas	• Telemetry Antenna RB31 • Telemetry Antennas RM32 and RM31N • GNSS Antennas GA31 and GA31N • Portable Antenna Set CG31
Weather stations	• AWS810 • AWS310 • MAWS201M TacMet • WXT536 • MAWS301 • MAWS201

System requirements for sounding workstation

Operating system	• Windows® 11 Pro • Windows 10 Pro (64-bit)
Web browser	• Microsoft Edge® latest version • Mozilla Firefox™ latest version • Google Chrome™ latest version
Processor	• 4-core CPU (recommended) • 8-core CPU (for multisounding)
Memory	• 8 GB RAM (minimum) • 16 GB RAM (recommended) • 32 GB RAM (for multisounding)
Hard disk space	160 GB
Graphical processing unit	2 GB or more 667 MHz or faster
Display resolution	1366 × 768 (Full HD, 1920 × 1080 recommended)
USB port	For connecting the ground check device
Serial port	For optional connection of Vaisala Automatic Weather Station. Either integrated serial port or through RS-232 converter
Network adapter	For connecting the sounding processing subsystem
Speakers	For audio notification (optional)

Operating environment

Computer and accessories	
Operating temperature	+10 … +40 °C (+50 … +104 °F) +0 … +45 °C (+32 … +113 °F) with rugged laptop
Storage temperature	−40 … +65 °C (−40 … +149 °F)
Operating humidity	10–90 %RH 10–97 %RH, non-condensing with rugged laptop
Storage humidity	5–95 %RH
Sounding Processing Subsystem SPS511	
Operating temperature	+0 … +45 °C (+32 … +113 °F)
Operating humidity	10–90 %RH 5–100 %RH, with IP-protected power supply
IP rating	IP54
For details, see SPS511 datasheet.	
Ground check devices	
Operating temperature	+10 … +45 °C (+50 … +113 °F)
Operating humidity	10–90 %RH
For details, see RI41 datasheet.	
Antennas	
Operating temperature	−40 … +55 °C (−40 … +131 °F)
Operating humidity	0–100 %RH
Operating precipitation	Unlimited
RB31, RM32, RM31N, CG31, GA31, and GA31N. For details, see separate datasheets.	

Meteorological messages

BUFR	3 09 050 and 3 09 051 (for PILOT data) 3 09 052 and 3 09 057 (for TEMP data) 3 09 053 and 3 09 056 (for descending sounding) All BUFR messages are also available as high resolution variants.
TEMP	TEMP FM35-XI (A, B, C, D)
PILOT	PILOT FM 32-XI (A, B, C, D)
Ozone	WOUDC
Defense	METB2/METB3 (STANAG 4061) METCM (STANAG 4082) METTA (STANAG 4140) METFM

Compliance

Compliance marks	CE

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