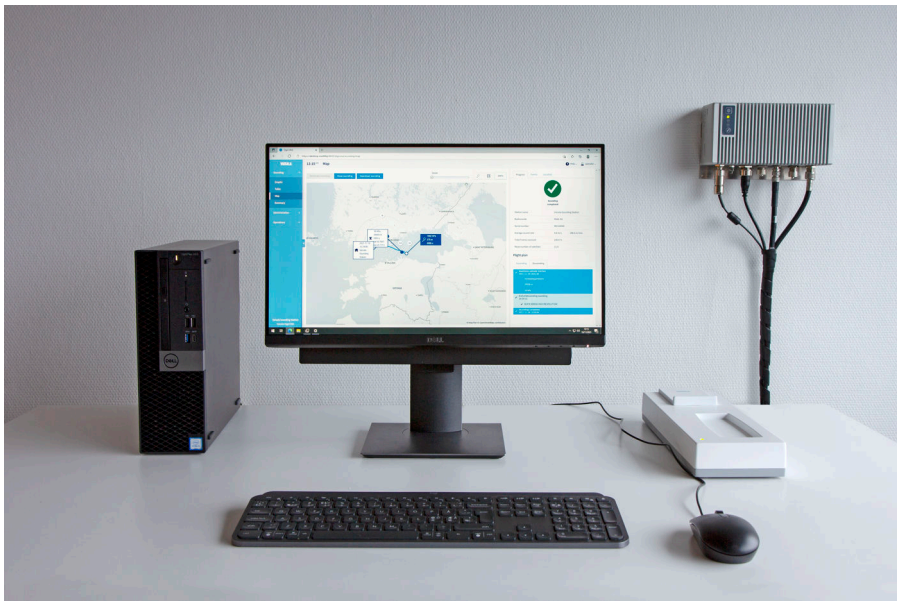
Cirrus® Sounding System MW51



Features

- Consistent, high-quality data
- Easy to operate
- Good tolerance to near-band interference
- Long telemetry range
- Inbuilt IT 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 predecessor MW41, 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 RI41 / RI41-B Ground Check Devices for preparing RS41 radiosondes, and the UHF and GPS 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. If desired, the DigiCORA user interface can be accessed from anywhere within the connected network using a standard web browser.

Excellent radio characteristics

The new built-for-purpose Vaisala Cirrus® 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.

Sustainable IT security

The system is designed with security in mind. User access is controlled, while data transfer and remote control use secure communication.

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 IT 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.

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

Variable field conditions and locations for research campaigns pose demands on the sounding system, which needs to be portable as well as efficiently built for transport. MW51 continues to support the portable antenna set CG31 with both UHF and GPS antennas, and SPS511 is notably smaller and lighter than its predecessor.

With an IP rating of IP54, SPS511 tolerates dust and moisture well. SPS511 uses conductive cooling and has no moving parts. The electronics are designed on one signal board to minimize points of failure.

Technical data

Performance

Range with Directional antenna RB31	Up to 350 km (217.5 mi)
Range with Omnidirectional antenna RM32	200 km (124 mi)
Range with Omnidirectional antennas CG31 and RM31N	150 km (93mi)

System components and compatible radiosondes

Radiosondes	• RS41-SG • RS41-SGP
Sounding processing subsystems	Vaisala Cirrus Sounding Processing Subsystem SPS511
Application software	DigiCORA® Software
Ground check devices	• RI41 • RI41-B with barometer module
Antennas	• Vaisala Directional UHF Antenna RB31 • Omnidirectional UHF antennas RM32 and RM31N • Vaisala GPS Antenna GA31/N • Vaisala portable (UHF + GPS) antenna set CG31

Minimum system requirements for sounding workstation

Operating system	Windows 10 Pro 64-bit (English)
Web browser	• Microsoft Edge® latest version • Mozilla Firefox® latest version • Google Chrome™ latest version
Processor	Intel Pentium Dual Core or equivalent (Quad Core recommended)
Memory	8 GB RAM (16 GB RAM recommended)
Hard disk space	160 GB
Display resolution	1366 × 768 (Full HD, 1920 × 1080 recommended)
USB port	For connecting the ground check device
Serial port	For optional future connection of Automatic Weather Station. Either integrated serial port or via USB / 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) +10 … +45 °C (+50 … +113 °F) with rugged laptop
Storage temperature	−40 … +65 °C (−40 … +149 °F)
Operating humidity	10 … 90 %RH
Storage humidity	5 … 95 %RH
Sounding Processing Subsystem SPS511	
Operating temperature	0 … +45 °C (+32 … +113 °F)
Storage temperature	−40 … +65 °C (−40 … +149 °F)
Operating humidity	5 … 100 %RH (condensing)
IP rating	IP54
Ground check devices	
RI41 and RI41-B. See separate datasheets for details.	
Antennas	
RB31, RM32, RM31N, CG31 and GA31 or GA31N. See separate datasheets for details.	

Meteorological messages

BUFR messages	BUFR 3'09'050 and BUFR 3'09'051 (for PILOT data) BUFR 3'09'052 and BUFR 3'09'057 (for TEMP data) BUFR 3'09'053 and BUFR 3'09'056 (for descending sounding after balloon burst) All BUFR messages are also available as high resolution variants.
TEMP messages	TEMP FM35-XI

Future DigiCORA releases will have enhanced compatibility with other Vaisala products, as well as more available features and meteorological messages.

VAISALA

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