Vaisala Wind Profiler LAP®-3000

Vaisala LAP®-3000 and optional RASS for mesoscale observations.

Benefits

- Continuous wind data up to 3 km
- Continuous virtual temperature data up to 1.5 km
- Unattended operation
- Minimal periodic maintenance
- New vertical profile every 3-60 minutes

Lower Atmosphere Wind Profiler for your needs

The Vaisala LAP®-3000 is a Doppler beam swinging wind profiler that reliably provides continuous and real-time vertical profiles of horizontal wind speed and direction and vertical velocity up to 3 km above ground level (agl). An optional extended antenna aperture improves the performance by narrowing beam width, increasing antenna gain and reducing side lobes.

When an optional Radio Acoustic Sounding System (RASS) is added to the Vaisala LAP®-3000, it will provide virtual temperature profiles up to 1.5 km agl. These altitudes are maximum values and will change dramatically depending on atmospheric conditions, profiler configuration, installation site and surrounding environment. The LAP®-3000 operates fully unattended and provides continuous data with high vertical and temporal resolution.

Software that suits yours application

The flexible Vaisala LAP-XM® software allows site-specific optimization of system performance, including variable temporal and range resolution, in support of various applications. The operator can choose signal processing parameters, quality control features, and data formats.

The optional Vaisala Graph-XM™ graphical display software provides a wide variety of data visualization schemes including time-height cross sections of wind barbs (vectors), and virtual temperature profiles. The Windows-based data system can archive up to one-year's worth of wind and temperature data in database and text format. Averaged time series, spectra, and moments data can also be archived.

The Vaisala LAP®-3000, which operates under Windows® XP and features a PCI-based architecture and digital signal processing, was jointly developed under a Cooperative Research and Development Agreement (CRADA) with the National Oceanic and Atmospheric Administration (NOAA). Over 130 LAP®-3000 systems have been deployed worldwide.

Applications

- Air quality
- Arctic/antarctic research
- Atmospheric boundary layer research
- Aviation operations
- Defense
- Emergency response
- Global change research
- Mesoscale meteorological forecasting
- Offshore, shipboard observations
- Vertical wind shear & turbulence
- Weather modification

Technical Data

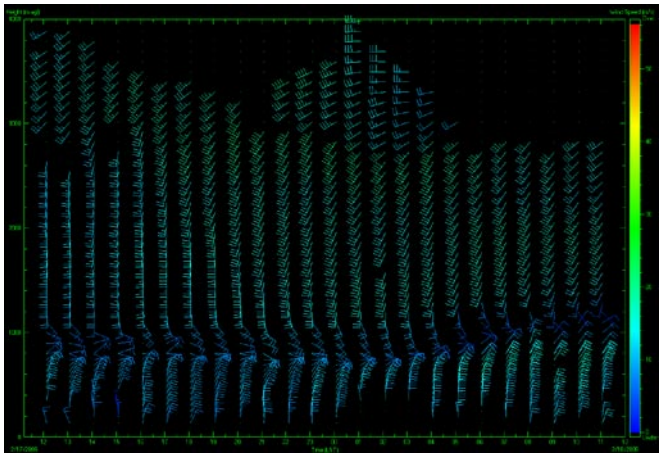
Specification

Operating frequency	Typically 915 or 1290 MHz
Minimum height [1]	120 m
Maximum height [2]	up to 3 km
Range resolution (typical)	60, 100, 200, 400 m Factory configurable 45 – 500 m
Wind speed accuracy	<1 m/s
Wind direction accuracy	<10 °
Wind averaging time	3-60 minutes
RF power output	600 W peak 0.1 – 100 W average
Occupied bandwidth @1290 MHz	Less than 12.5 MHz @ 400 ns pulse (99% ITU)
Antenna	
Type	Electrically steerable micropatch phased-array panels
Gain	~26 dBi ~29 dBi with the extended antenna aperture
RF beam width	~9 ° ~6 ° with the extended antenna aperture
Aperture	2.7 m^2 @ 1290 MHz, 3.0 m^2 @ 915 MHz 6.0 m^2 @ 1290 MHz, 6.2 m^2 @ 915 MHz (extended antenna aperture)
Power requirements	115 VAC/60 Hz; 15 A 230 VAC/50 Hz; 10 A

Options

Hardware Monitor	System monitoring and status reporting
Vaisala Graph-XM™	Graphical display software
Moments display software	Graphical moments data display software
RASS	
Minimum height [1]	120 m
Maximum height [2]	up to 1.5 km, typically varies between 1 – 1.5 km
Range resolution	60, 100, 200, 400 m Factory configurable 45 – 500 m
Temperature accuracy	1 °C
Averaging time	3-60 minutes
RASS aperture	1.2 m^2 x 4 sources
Audio frequency	2-4 kHz, Bragg matched to transmitter frequency
Antenna support stand	For easier access to antenna components
Extended antenna aperture	For improved performance
Extended length cables	For increasing the distance from shelter to antenna
GPS timing receiver	For accurate timekeeping
Hub computer	For remote access and monitoring
Services	Site survey, FAT, SAT, training, installation, extended warranty, service contract.
Other operating frequencies	924, 1280, 1299, 1357.5 MHz

[1] Dependent on clutter environment and available radio frequency emission bandwidth.
[2] Dependent on atmospheric scattering conditions, profiler



Data sample for the Vaisala LAP®-3000.

Vaisala LAP®-3000 with optional RASS for air quality monitoring.

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Reliable.

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