

Vaisala Wind Profiler LAP[®]-3000



© 1999 S. McLaughlin. All Rights Reserved

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 frequent profiles of horizontal wind speed and direction and vertical velocity up to 3 km above ground level (agl). An extended antenna aperture option improves the profiler performance by narrowing beam width, increasing gain and reducing side lobes of the antenna array.

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 location and surrounding environment. The LAP[®]-3000 operates fully unattended and provides

continuous data with high vertical and temporal resolution.

Software that suits your application

The Vaisala LAP[®]-3000 wind profiler control and signal processing software, LAP-XM[®], runs on a multi-core processor in the Windows operating system. LAP-XM[®] allows user defined configuration of the sampling parameters, signal processing and quality control algorithms, and multiple configurable data output formats, to provide customers location and application specific profiler operation.

Up to one-year of wind and/or virtual temperature data may be stored on the radar processor. Averaged time series, spectra, and moments data can also be archived.

The Vaisala LAP[®]-3000 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
- 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 ³	<1 m/s
Wind direction accuracy	<10 °
Wind averaging time ³	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

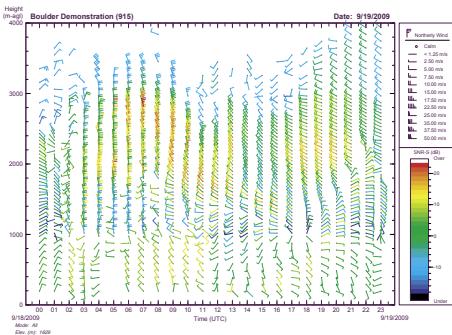
Options

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
Range resolution	60, 100, 200, 400 m
	Factory configurable 45 – 500 m
Temperature accuracy	1 °C
Averaging time	1 - 60 minutes
RASS aperture	1.2 m ² x 4 sources
Audio frequency	1.8 - 4 kHz,
	Audio frequency range chosen to assure a Bragg match for the meteorological conditions and profiler operating 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, 1290, 1294.xxx, 1357.5 MHz

¹ Dependent on transmit pulse duration and surrounding clutter environment.

² Dependent on transmit pulse duration, atmospheric scattering conditions, profiler configuration, installation location, and surrounding environment.

³ Validity of data dependent on an averaging period duration sufficient to provide spacial homogeneity between sampled volumes.



Data sample for the Vaisala LAP®-3000.



Vaisala LAP®-3000 with optional RASS



For more information, visit
www.vaisala.com or contact
us at sales@vaisala.com

Ref. B210640EN-B ©Vaisala 2010
This material is subject to copyright protection, with all
copyrights retained by Vaisala and its individual partners. All
rights reserved. Any logos and/or product names are trademarks
of Vaisala or its individual partners. The reproduction, transfer,
distribution or storage of information contained in this brochure
in any form without the prior written consent of Vaisala is strictly
prohibited. All specifications — technical included — are subject
to change without notice.

