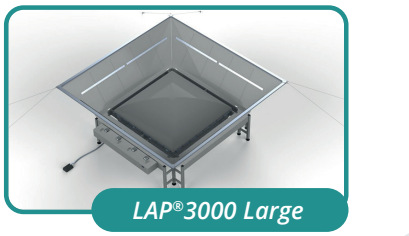
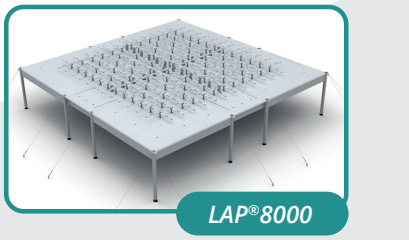
RADAR WIND PROFILERS

Scintec is ISO 9001 quality certified

LAP®3000 Standard



LAP®3000 Large



LAP®8000

LAP Series

Features

- Vertical profiles of wind speed and direction in the lower troposphere
- Efficient radar antennas using phased-array technology
- 5 beams, 4 horizontally tilted and 1 vertical
- Integrated clutter screen
- SIRP digital IF processor for unmatched performance
- Powerful software for Windows
- Extensive self-test and real-time monitoring
- Modular, robust design
- Long service life

Applications

- Weather analysis
- Forecasting
- Severe weather
- Spaceports
- Defense
- Atmospheric research
- Aerostat operation
- Unmanned aerial vehicles operation
- Climate research
- Air quality
- Emergency response
- Airport wind shear and turbulence

SCINTEC

LAP Series

RADAR WIND PROFILERS

The Scintec **LAP® Series** Radar Wind Profilers provide continuous and real-time tropospheric profiles of horizontal wind speed, wind direction, vertical wind speed and turbulence with high resolution in time and height.

The operating principle is based on the scattering of electromagnetic pulses at inhomogeneities in the air with subsequent Doppler analysis of the backscattered signal. The wind vector is derived using the Doppler Beam-Swinging method.

The LAP® Series Radar Wind Profilers support a wide range of applications in aviation, science, air quality, and weather forecasting. They work automatically and virtually maintenance free.

LAP® Series Radar Wind Profilers are economic to operate and suited for use in a variety of environments including meteorological networks, airports, spaceports, industrial plants, and even unmanned remote sites.

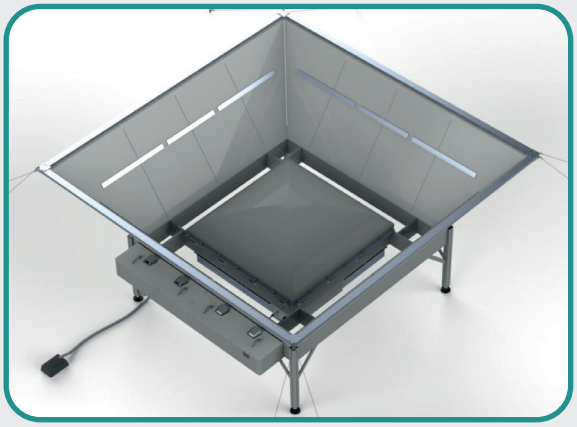
Rack with LAP®3000 Indoor Units

- LAP® Radar Processor Unit
- LAP® Modulator, IF, and Interface Unit
- LAP® Monitoring Unit
- LAP®3000 Power Supply Unit

Rack with LAP®8000 Indoor Units

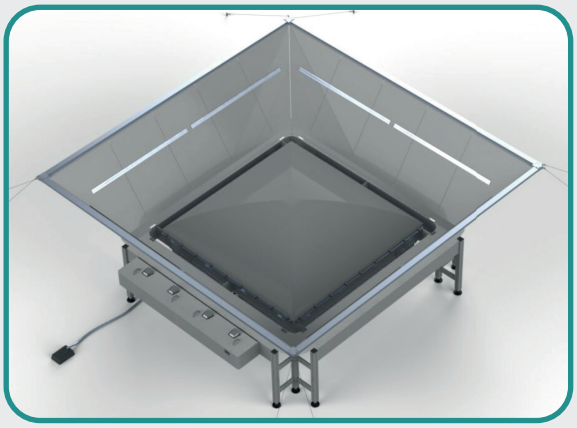
- LAP®8000 Power Amplfier Supply Unit
- LAP®8000 Power Supply Unit
- LAP® Radar Processor Unit
- LAP® Monitoring Unit
- LAP® Modulator, IF, and Interface Unit
- LAP®8000 Transmit / Receive Unit
- LAP®8000 Power Amplifier Unit
- LAP®8000 Circulator and Limiter Unit
- LAP®8000 6-Way Divider Unit
- LAP®8000 Phase Shifter Unit
- LAP®8000 Phase Shifter Interface Unit

MODELS



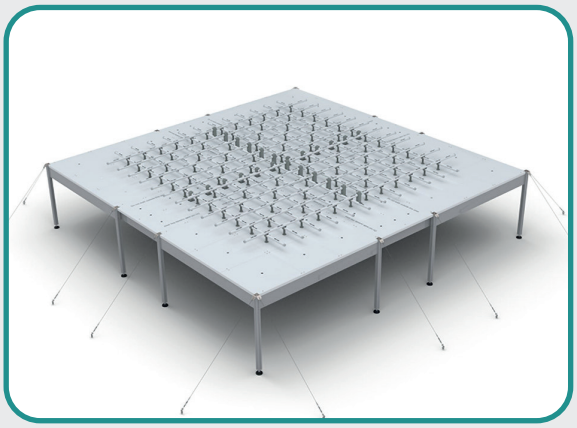
Radar Wind Profiler LAP®3000 - Standard Antenna

The Scintec LAP®3000 is the standard model of the LAP®3000 Radar Wind Profilers for reliable and continuous wind measurements up to a height of ~4 km above the ground with proven performance. The integrated clutter screen yields good ground-clutter suppression.



Radar Wind Profiler LAP®3000 - Large Antenna

The larger antenna aperture of this LAP®3000 Radar Wind Profiler model provides the highest performance and clutter resilience. It is used for the most critical applications. It allows reliable and continuous wind measurements up to a height of ~5 km above the ground.

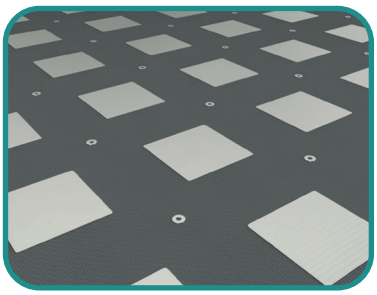


Radar Wind Profiler LAP®8000

The Scintec LAP®8000 Radar Wind Profiler operates on a lower radio frequency and achieves the highest vertical measurement range. With its large antenna area, it provides wind measurements up to a height of ~8 km above the ground.

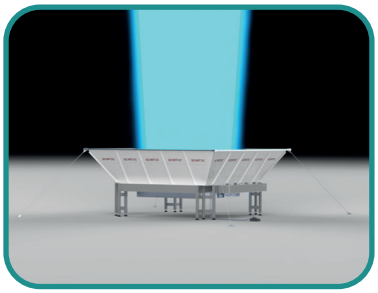
For all wind profiler models, a variety of radio-frequency variants are available for use in different regions worldwide. Consult Scintec for support.

COMPETITIVE ADVANTAGES



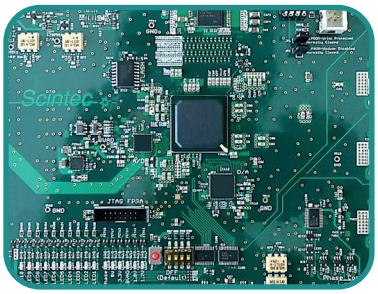
Phased Array Antennas

All LAP® Series Radar Wind Profilers use phased-array antennas. This means that the antennas consist of a large number of individual elements which are emitting and receiving with varying phase relations. The same antennas can point into and receive from different directions without movement and the whole antenna areas are used at any pointing direction, resulting in maximum efficiency (power-aperture product). Since only one static antenna area is used for any pointing direction, installation does not require much space and with the LAP®3000, the clutter screen is even effectively integrated to provide optimum ground clutter suppression.



True Vertical Beams

Fluctuations of the vertical wind are fundamentally related to turbulence and convection. The measurement of vertical wind variance is a key to quantify the strength of atmospheric turbulence, often expressed in terms of the kinetic energy dissipation rate (EDR). In order to measure the vertical wind variance with a wind profiler, it is essential to use an antenna with true (and not calculated) vertical pointing direction. Unlike a rotating dish or most reflector antennas, the phased-array antennas of the LAP® Series Radar Wind Profilers provide true vertical beams for a precise measurement of atmospheric turbulence.

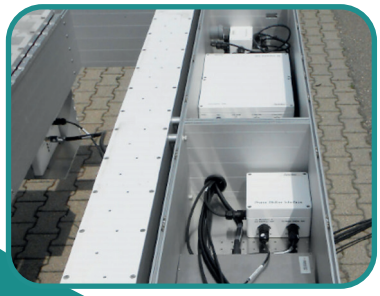


All New Digital Signal Processor SIRP

The new SIRP Digital IF Processor was specifically designed for radar wind profilers and offers characteristics never found in wind profiler signal processing before. It combines vertical signal oversampling, 16 bit binary pulse coding, true Gaussian matched filters, and freely programmable height gates. The revolutionary ACNS (Advanced Coherent-Noise Suppression) technique cancels distinct radio frequency interferences and improves data quality at sites prone to radio pollution. All these features result in higher data quality, better height coverage, and a perfect match to the user's specific needs.

Groundbreaking Operation Software

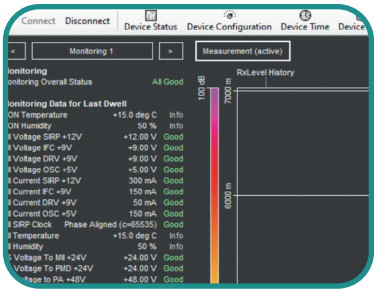
The SRun Operation Software for Windows brings an entirely new level of performance, comfort, and flexibility to the world of wind profilers. A variety of graphical data representations, data output formats and data transfer options matches all needs and data environments. SRun provides real-time data output during the measurements and also permits the user to reprocess previously recorded data using different system settings. All software-control is menu-driven and an auto-configuration option even optimizes the system without the need of user interaction.



Fully Modular Design

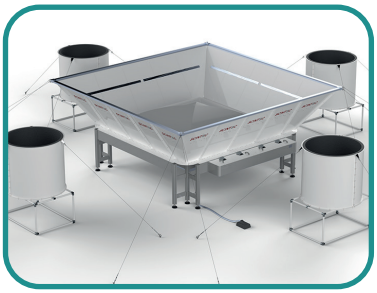
In addition to its performance characteristics, system uptime is a key factor in determining the quality of a radar wind profiler. With many profilers being operated within critical application environments such as at airports, the LAP® Series Radar Wind Profilers have been expertly manufactured for years in large quantities by the global market leader, which results in an unparalleled reliability. Moreover, a fully modular design allows most repairs to be done within minutes. Scintec keeps a large number of modules in stock for worldwide distribution if ever needed.

COMPETITIVE ADVANTAGES



Extensive Self-Test

The critical modules of the LAP® Series Radar Wind Profilers are equipped with built-in diagnostic tools which digitally communicate with a dedicated Monitoring Unit. This Monitoring Unit continuously verifies the proper function of all components and creates and logs an extensive functionality report in user-defined intervals. The system status is stored together with the output data and optionally reported to the user's data environment over protocols such as SNMP. A summary of the system status is displayed on a toggling monitoring screen.



RASS Extension for Precise Temperature Measurements

For all LAP® Series Radar Wind Profilers, a Radio Acoustic Sounding System (RASS) is available for remote temperature measurements. Compared to other methods of remote temperature sensing, the RASS technique is unsurpassed when it comes to accuracy and vertical resolution. RASS works with all kinds of clouds and precipitation and is longterm calibration-free.

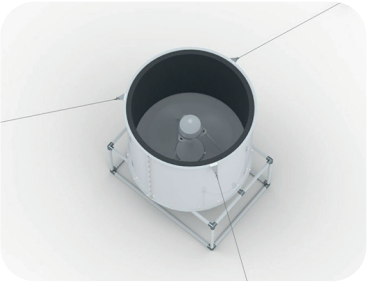
SERVICES OFFERED

Factory acceptance test, site acceptance test, installation, factory training, and on-site training.

ACCESSORIES

Uninterruptible Power Supply (UPS)

The UPS provides backup power to a LAP®3000 or a LAP®8000 Radar Wind Profiler for at least 20 minutes of full system operation. The UPS is connected to the LAP® Monitoring Unit, which monitors the status of the UPS: mains operation, battery operation, or low-battery alert. When the UPS battery charge level becomes too low, the measurement is automatically stopped and the computer system shuts down in a controlled manner. Once power is restored, the system restarts and resumes measurement automatically without manual intervention.



RASS Extension

The RASS Extension adds the capability for measuring temperature profiles to a LAP®3000 or a LAP®8000 Radar Wind Profiler.

Learn more about the complete list of extensions and accessories on **www.scintec.com**

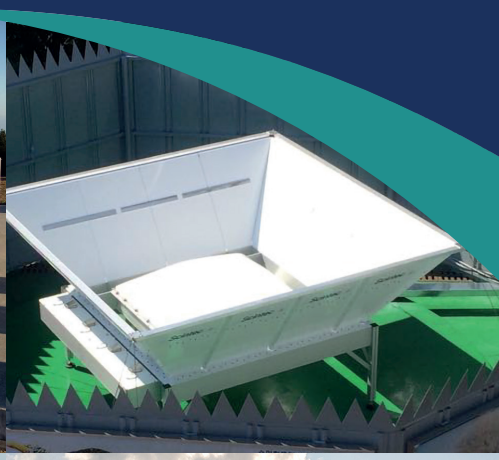
SPECIFICATIONS

Description	LAP®3000 Standard Antenna	LAP®3000 Large Antenna	LAP®8000	Remarks
Operating frequency	915 MHz, 1280 MHz, 1290 MHz, 1299.21 MHz, or 1357.5 MHz	915 MHz, 1280 MHz, 1290 MHz, 1299.21 MHz, or 1357.5 MHz	437.5 MHz or 449 MHz	other operating frequencies available on request
Antenna type	flat antenna with micro-patch phased array. Electronically steered.	flat antenna with micro-patch phased array. Electronically steered.	flat antenna with coaxial-collinear phased array. Grid of 2 x 12 antennas stacked in 2 layers. Electronically steered	
Antenna aperture	3 m^2	6.7 m^2	28 m^2	
Antenna radiating elements	64 elements for 915 MHz, 144 elements for 1280 MHz, 1290 MHz, 1299.21 MHz, 1357.5 MHz	144 elements for 915 MHz, 324 elements for 1280 MHz, 1290 MHz, 1299.21 MHz, 1357.5 MHz	216 elements	number of simultaneously radiating phased-array elements
Antenna directivity gain	24.9 dBi for 915 MHz, 28.1 dBi for 1280 MHz, 28.2 dBi for 1290 MHz, 28.2 dBi for 1299.21 MHz, 28.6 dBi for 1357.5 MHz	28.7 dBi for 915 MHz, 31.6 dBi for 1280 MHz, 31.7 dBi for 1290 MHz, 31.8 dBi for 1299.21 MHz, 32.1 dBi for 1357.5 MHz	29.2 dBi for 437.5 MHz, 29.3 dBi for 449 MHz	
Number of beams	5 beams: 4 oblique beams and 1 vertical beam			
Beam tilt angle	22.4° for 915 MHz, 15.8° for 1280 MHz, 15.7° for 1290 MHz, 15.6° for 1299.21 MHz, 14.9° for 1357.5 MHz	14.7° for 915 MHz, 15.8° for 1280 MHz, 15.7° for 1290 MHz, 15.6° for 1299.21 MHz, 14.9° for 1357.5 MHz	15.0°	tilt angle from zenith for the oblique beams.
Beam width	10.4° for 915 MHz, 7.2° for 1280 MHz, 7.1° for 1290 MHz, 7.1° for 1299.21 MHz, 6.8° for 1357.5 Mhz	6.7° for 915 MHz, 4.8° for 1280 MHz, 4.8° for 1290 MHz, 4.7° for 1299.21 MHz, 4.5° for 1357.5 MHz	7.0° for 437.5 MHz, 6.8° for 449 MHz	full width between -3 dB points in one-way transmission pattern.
Transmitter output power	800 W for 915 MHz, 1000 W for 1280 MHz, 1290 MHz, 1299.21 MHz, 700 W for 1357.5 MHz	800 W for 915 MHz, 1000 W for 1280 MHz, 1290 MHz, 1299.21 MHz, 700 W for 1357.5 MHz	2000 W	peak envelope power, nominal
Pulse width	265 to 3340 ns	265 to 3340 ns	400 to 3340 ns	configurable via software
Minimum measurable wind height	100 m	100 m	200 m	dependent on pulse width, meteorological conditions, and surrounding clutter environment
Maximum measurable wind height	up to 4 km in clear air and beyond in precipitation	up to 5 km in clear air and beyond in precipitation	up to 8 km in clear air and beyond in precipitation	dependent on configuration, meteorological conditions, and environment
Height resolution	40 to 500 m	40 to 500 m	60 to 500 m	configurable via software. Defined by pulse width
Wind speed accuracy	< 1 m/s			
Wind direction accuracy	< 10°			

SPECIFICATIONS

Description	*LAP®3000 Standard Antenna*	*LAP®3000 Large Antenna*	*LAP®8000*	Remarks
Measurement range of horizontal wind components	-100 to 100 m/s			larger measurement ranges configurable via software
Measurement range of vertical wind components	-20 to 20 m/s			larger measurement ranges configurable via software
Averaging time	3 to 60 min			configurable via software. Typically 10 to 60 min. Running averages supported with update intervals down to 1 min
Output data	horizontal wind speed and direction, wind components U/V/W, standard deviations of wind, backscatter, precipitation fall speed, moments, spectra, time series of I/Q samples, quality flags			
Data displays	wind barbs, vector plots, time vs. height color plots, profile plots, time series plots, spectra plots, tabular displays			
Data reprocess	output data can be recalculated by reprocessing time series, spectra, moments, or main data			
Configuration	configuration with graphical user interface. No manual editing of configuration files required			
Real-time monitoring	real-time monitoring during measurement includes monitoring of internal voltages, currents, temperature, RF power			
Self-test	fully automatic self-test includes testing of internal voltages, currents, RF power, system noise, dynamic range, external RF interferences			
File formats	supported output file formats include standard ASCII formats, NetCDF, WMO BUFR, NOAA Winds, CMA (China), MRI (Japan), KWPN (Korea), LAP-XM compatible, Avimet XML, user-defined formats			other and customized output file formats available on request
Network data output	automatic data transfer to external servers via FTPS, FTP, TCP, UDP, shared network folders			
Network plot output	automatic creation of plot image files and transfer to external servers via FTPS, FTP, shared network folders. Live plots via web browser, customizable			
Network time synchronization	automatic time synchronization with an external network time server via NTP			
Network supervision	system status can be retrieved via SNMP or status files			
Operating system compatibility	Windows 11, Windows 10, Windows Server 2025, Windows Server 2022, Windows Server 2019			
Dimensions of antenna structure	4.2 x 4.2 x 2.3 m	5.1 x 5.1 x 2.3 m	7.4 x 7.4 x 1.8 m	LAP®3000: including integrated clutter fence
Installation area for antenna structure	7.4 x 7.4 m	8.2 x 8.2 m	11 x 11 m	including guy wires and ground-mounting, without RASS extension
Operating conditions for outdoor components	temperature: -40°C to +50°C; relative humidity: 0% to 100%			
Operating conditions for indoor components	temperature: +10°C to +35°C; relative humidity: 0% to 80%, non-condensing			
Power requirements	AC power input: 100 to 240 V, 50 to 60 Hz, single-phase, 2300 W. Average power consumption: typically 100 to 350 W	AC power input: 100 to 240 V, 50 to 60 Hz, single-phase, 2300 W. Average power consumption: typically 100 to 350 W	AC power input: 100 to 240 V, 50 to 60 Hz, single-phase, 3600 W. Average power consumption: typically 200 to 750 W	

Installations worldwide



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