

Lidar Wind Profiler

Wind Ranger 100/200



- Affordable, compact, eye-safe cw wind lidar
- Innovative frequency modulation of laser signal
- Wind profiling within up to 20 range gates up to 100 m / 200 m height
- Easy and fast transportation and installation
- Set-up at sites where wind masts cannot be mounted
- Easy to operate by web-interface for control and real time visualization
- Built-in quality control
- Automatic system monitoring
- Typical applications include wind farm planning, urban climatology, marine platform instrumentation, etc.



Lidar Wind Profiler **Wind Ranger 100/200**

Laser wavelength	1550 nm, laser class 1M (eye-safe)
Measuring ranges	Wind Ranger 100: 7 ... 100 m Wind Ranger 200: 7 ... 200 m
Max. number of measuring ranges	20, consecutively measured
Range resolution (range dependent)	0.16 m at 10 m, 16 m at 100 m
Range of wind speed	0 ... 60 m/s
Range of wind direction	0 ... 360 °
Range of std. dev. of vertical wind	0.02 ... 3 m/s
Accuracy of wind speed*	0.2 m/s or 2 % at wind speeds > 10 m/s
Accuracy of wind direction*	3 ° at wind speeds > 5 m/s
Accuracy of std. dev. of vertical wind*	0.1 m/s or 5 %
Time resolution	0.5 s (one complete VAD scan)
Averaging time wind profiles	Adjustable, typically 1 .. 30 minutes
Data output and control	Ethernet, Web GUI
Built-in memory	32 GB
Position	GPS
Optional	inclination sensor, compass
Power requirements	100 - 240 VAC, 60 W (optional 24 VDC)
Ambient conditions	-30°C ... + 35 °C, 5 ... 100 %
Weight	approx. 50 kg
Enclosure dimensions (H x W x D)	620 mm x 530 mm x 340 mm

* Observed uncertainty in measurements depends on parameter settings (averaging time, number of measuring heights, etc.) and atmospheric conditions (aerosol distribution, visibility, turbulence). Accuracies are given for 10 minutes averages, 8 measuring ranges, 1 rev./s , moderate turbulence.

The Metek Wind Ranger is a compact, cost efficient and easy to use lidar wind profiler for heights up to 100 m / 200 m. It derives 3D wind vectors from continuous VAD scans (10° tilt angle) at a rotational speed of up to 2 rps. Radial velocities are determined at rates up to 100 Hz. The sequence of measuring ranges is freely configurable.

A unique feature is the frequency modulation of the transmitter. Thus, major limitations of standard CW lidars are overcome:

- No need for external wind direction sensor (Sign of radial wind is detected.).
- No lower threshold of wind speed.
- No bias of height allocation due to low level clouds.

This allows operation within forest clearings, street canyons, etc. where strong vertical wind shear is commonly observed. Stand-alone operation with solar power is feasible thanks to moderate power consumption. Ethernet for local or world wide access and data distribution.

Typical applications of the Wind Ranger include:

- Meteorological systems & networks
- Pollution dispersion parameters
- Air quality studies
- Wake vortex monitoring
- Wind energy
- Climatology at remote sites
- Research stations
- Urban & Industrial Sites
- Marine and offshore platforms
- Airports
- Sport events

