



COHERENT DOPPLER WIND LIDAR



Introduction

The Coherent Doppler Wind Lidar developed by Zhice Yunlian takes laser as detection medium, coherent detection as frequency discrimination method, optical fiber as light transmission channel between each component, and atmospheric aerosol particles with diameter of $0.01\sim 3\mu\text{m}$ as detection targets.

It obtains high-precision local atmospheric wind field information with high temporal and spatial resolution and supports continuous observation, which has become one of the effective instruments for atmospheric wind field measurement at present.





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Parameters

Physical Specifications

Item	Parameter
Dimension	(400±10)mm × (650±10)mm × (1400±10)mm
Weight	≤60kg

Technical Performance Indicators 1

Item	Parameter
Laser Wavelength	1550nm
Scanning Mode	Doppler Beam Swing (DBS)
Scanning Azimuth Range	0~360°
Maximum Vertical Detection Range	≥3km
Minimum Blind Zone Distance	≤60m
Maximum Sampling Distance	≥10km
Spatial Resolution	Distance: 15~120m optional; Angle: ≤0.5°
Temporal Resolution of Wind Profile	≤1min
Scanning Azimuth Speed	≥20°/s (adjustable)
Pointing Accuracy	≤0.1°

Technical Performance Indicators 2

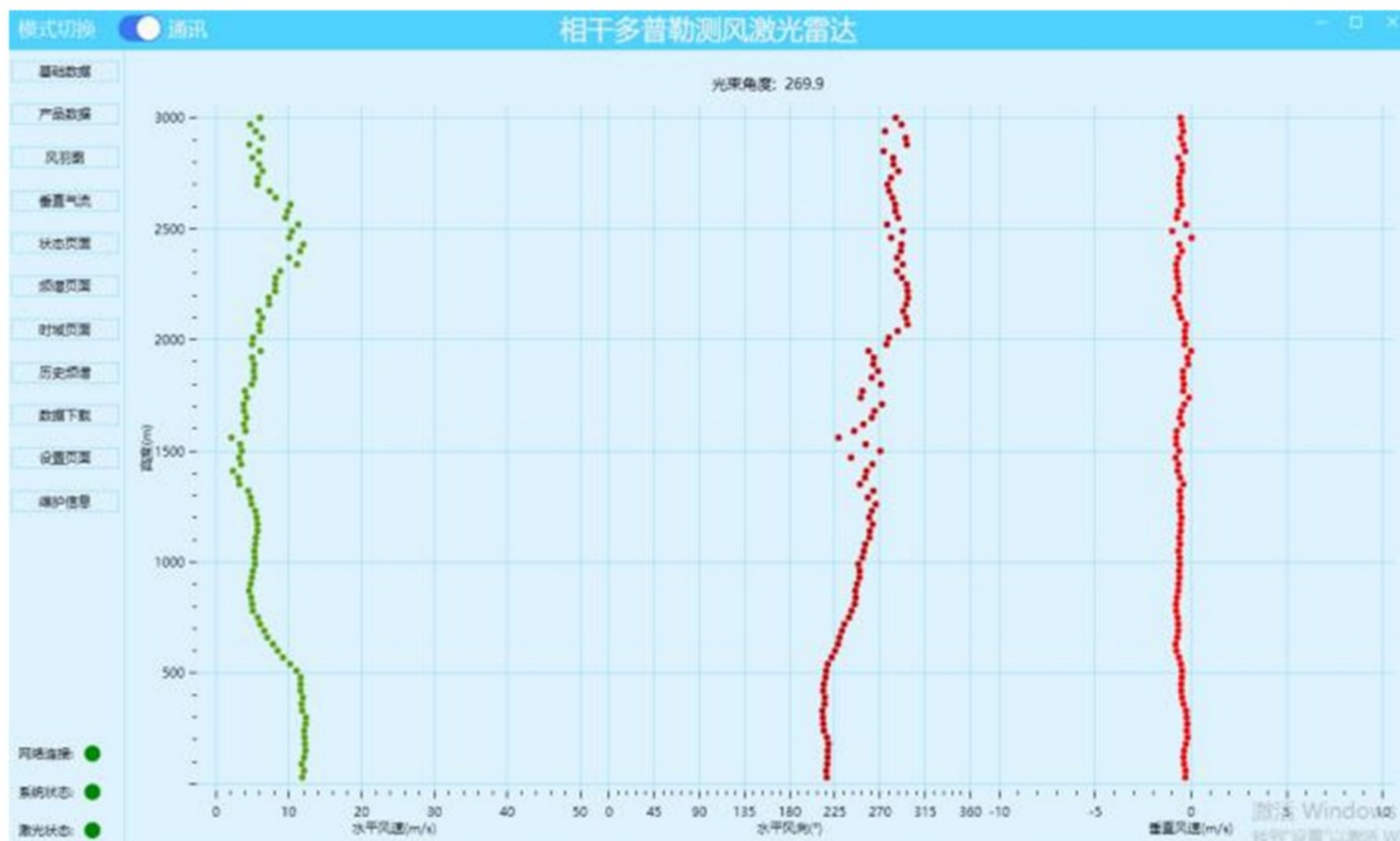
Item	Parameter
Radial Wind Speed Measuring Range	-50~50m/s
Radial Wind Speed Measurement Error	≤0.1m/s
Radial Wind Speed Resolution	≤0.01m/s
Horizontal Wind Speed Measuring Range	≥50m/s
Horizontal Wind Speed RMSE (below 3km altitude)	≤0.8m/s
Horizontal Wind Speed Resolution	≤0.1m/s
Vertical Airflow Measuring Range	-20~20m/s
Vertical Airflow Measurement Accuracy	≤0.3m/s
Wind Direction Measuring Range	0~360°
Wind Direction Resolution	≤0.1°
Horizontal Wind Direction RMSE	≤8°
Output Data Products	Radial velocity, spectral width, signal-to-noise ratio, horizontal wind speed, wind direction, vertical airflow, etc.

Environmental Adaptability

Item	Parameter
Operating Temperature	Outdoor unit: -40~50°C; Indoor unit: 10~30°C
Storage Temperature	Outdoor unit: -40~60°C; Indoor unit: 5~60°C
Maximum Humidity	Outdoor unit: ≥95%RH (35°C); Indoor unit: ≥90%RH (30°C)
Operating Altitude	≤3000m above sea level



Computer Software Interface



Profile Data Visualization Interface

Taking height (vertical axis) and time (horizontal axis) as dimensions, it displays wind field information at different altitude layers. The left panel lists early warning types such as severe turbulence and wind shear; the color bar on the right corresponds to wind speed range (0–40m/s).



PPI Scanning Interface

Taking horizontal distance (horizontal axis) and height (vertical axis) as dimensions, it displays horizontal wind field distribution under a fixed elevation angle. Green and red scatter points correspond to different wind speed intervals; the bottom marks horizontal distance and radial velocity scales.