

3D Ultrasonic Wind Speed and Direction Sensor

»Product Introduction

The HY-W3DS2E is a miniaturized 3D ultrasonic anemometer with a compact design (measurement path of only 35 mm) that monitors real-time data in a 3D coordinate system, including wind speed, wind direction, and pitch angle. It is used for atmospheric monitoring, weather reporting, and research on airflow systems in environmental protection.

It provides 3D measurement data on airflow, and data output can be customized to meet user requirements.

The HY-W3DS2E is compact, lightweight, and has no moving parts, making it easy to maintain. It can be mounted on fixed or mobile platforms for real-time 3D airflow measurement and is suitable for installation on small aerial vehicles such as unmanned aerial systems (UAS).

Made of resin, it weighs only 110 g and offers low aerodynamic drag; the HY-W3DS2-B is made of 316 stainless steel and features an internal heating element, making it suitable for continuous operation in harsh natural environments.

»Technical Indicators

Parameters		HY-W3DS2	HY-W3DS2-B
Wind Speed	Range	0–60m/s(Can be expanded to 75m/s)	
	Accuracy	± (0.5 m/s + 0.03×V)	
	Resolution	0.01m/s	
Pitch Angle		±60°	
Wind Direction	Range	0–360° (0° and 360° coincide)	
	Accuracy	±3° (V ≥ 1 m/s)	
	Resolution	1°	
Temperature/Humidity/pressure*		-50℃ ~ +80℃/ 0–100%RH/ 300–1100hPa(Requires installation of a louvered guard)	
Speed of Sound*		300–370m/s	
Wind Temperature*		-40℃ ~ 70℃	
Electronic Compass/GPS		√	×
Ultrasonic Output Frequency		1Hz (Standard) ; 2Hz、5Hz、10Hz (Optional)	
Unit		m/s、knots、mph、kph、ft/min	
Digital/Analog Output Interfaces		RS232/RS485 (Choose one)	
Baud Rate		4800–19200	
Protection		IP65	
Operating Range		-40 ℃ — 80 ℃; 0— 100% RH	
EMI Shielding		EN 61000-6-2 Standard	
Power/Power consumption		VDC 9–30 (30mA@12V)	VDC 9–30 (30mA@12V) ; Heating VDC 24 (3A@24V)
Size/Weight		Φ110×270mm/110g	Φ110×270mm/480g
Materials		Black Resin	316 Stainless Steel

»Applications

- • Atmospheric Monitoring and Research (U, V, W Vector Outputs)
- • Monitoring of Turbulence in Surface Air for Emergency Response Operations
- • Monitoring of Updrafts on Slopes in Weather Modification Operations
- • Monitoring of Wind-Induced Flutter in Large Bridges



»Key Features

- Compact design with a measurement path of only 35 mm
- Real-time 3D data: wind speed, wind direction, and tilt
- Data output can be customized to meet user requirements
- No moving parts, compact, lightweight, and easy to maintain
- Made of resin, weighs only 110 g, with low aerodynamic drag
- HY-W3DS2-B: 316 stainless steel with internal heating element for harsh natural environments

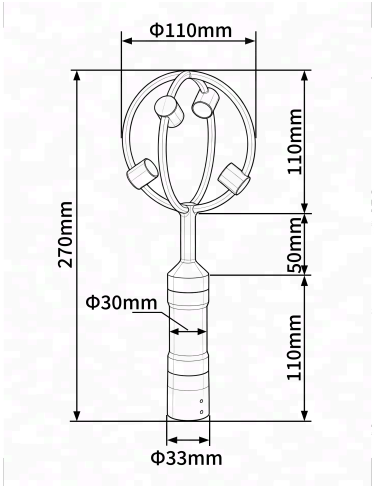
»Product Showcase



HY-W3DS2



HY-W3DS2-B



Size