

3-axis ultrasonic anemometer



- ▶ 3-axis ultrasonic anemometer
- ▶ Additional meteorological measurements
- ▶ RS485 Modbus-RTU
- ▶ Analog outputs
- ▶ Compass

DNB147 is a three-axis ultrasonic anemometer designed to provide wind speed and direction on three axes (U, V, W components) and other meteorological quantities (temperature, relative humidity and atmospheric pressure).

Technical Specifications

PN	DNB147	
Sensor	Measurements	• Wind speed and direction • Wind speed cartesian components (U, V, W) • Wind direction elevation • Wind gust • Sound speed • Sonic temperature • Air temperature • Relative Humidity • Pressure • Compass
	Wind principle	Ultra-sonic 3 axis (U-V-W)
	Digital Outputs	RS485 Modbus-RTU (all measurements)
	Digital Outputs	Default: 4...20 mA. Programmable: 0...20 mA, 0...1 V, 0...5 V, 0...10 V, 1...5 V (n.5 outputs to be selected from measurement list)
	Compass	YES
	Heater	NO
Wind Speed	Range	0...70 m/s
	Accuracy	± 1% reading
	Resolution	0,01 m/s
Wind Direction	Range	• Azimuth: 0...360°
	Accuracy	±1°
	Resolution	0.1°
	Threshold	Wind speed: >= 0.2 m/s (configurable)

Compass	Principle	Magnetic
	Range	0...360°/10°
	Accuracy	±1°
	Resolution	0.1°
Temperature	Principle	Pt100
	Range	-40...60 °C
	Accuracy	± 0.2 °C; ± 0.15% reading
	Resolution	0.1 °C
Relative Humidity	Principle	Capacitive
	Range	5...98%
	Accuracy	±2.5% @ 23 °C
	Resolution	0.1%
Pressure	Principle	Piezoresistive
	Range	600...1100 hPa
	Accuracy	± 0.4 hPa @ 20 °C
	Resolution	0.1 hPa
	Thermal effects	± 0.8 hPa @ -40...60 °C
	Long term stability	1 hPa within 6 months @ 20 °C
General	Material	Aluminum and plastic
	Power supply	12...30 V DC. Consumption <2 W (typically 110 mA @ 15 V DC)
	Weight / Dimensions	1.2 kg / 659 x 200 mm
	Mounting	- On Ø 33 mm pole - On Ø 50 mm pole (using DNB192 adapter)
	Cable and connector	26 pins (see Accessories)
	Operative limits	-40...+60 °C / max 300 mm/h precipitation
	Protection grade	IP66

Accessories

	DNB192	Mounting adapter for DNB147 on top of Ø 50 mm pole
	DWA805.2	N.26 pins cable L=5 m for DNB147 sensor
	DWA810.2	N.26 pins cable L=10 m for DNB147 sensor
	DWA825.2	N.26 pins cable L=25 m for DNB147 sensor
	DWA850.2	N.26 pins cable L=50 m for DNB147 sensor



Vertical wind speed sensor

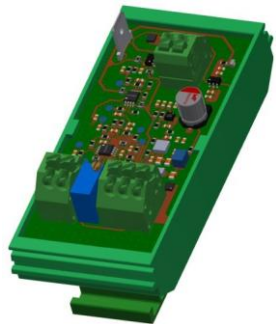
- ▶ Propeller sensor for bidirectional air flow velocity measurements (parallel to rotation axis of the propeller)
- ▶ Used to measure the vertical component of the wind
- ▶ Low threshold sensor

The PRWSA4030 propeller anemometer is a precision, low-threshold air velocity sensor that uses a fast-response propeller. The sensor is suitable for measuring the vertical component of wind speed, so that downdrafts produce a negative signal and updrafts a positive signal. The propeller's geometry is designed to measure only the wind component parallel to its axis of rotation. Therefore, when the flow is perpendicular to the axis, the sensor generates no signal. When the wind arrives at an angle to the axis of rotation, the sensor detects only the axial component of the flow, which is proportional to the cosine of the angle of incidence.

Technical Specifications

PN	PRWSA4030	
Vertical wind speed	Range	• Axial flow: 0...40 m/s • All angles: 0...35 m/s
	Helicoid propeller	Ø 20 cm 4-blade Carbon Fiber Thermoplastic (CFT) helicoid propeller
	Pitch	30.0 cm air passage per revolution
	Distance constant	2.1 m for 63% recovery (for axial flow)
	Accuracy	• $\pm 1\%$ reading (axial flow) • $\pm 3\%$ of the cosine response for elevation $\pm 30^\circ$ angles (using 1,25 multiplier factor to output signal)
	Sensitivity threshold	0.4 m/s (for axial flow)
General	Output	• Analog DC voltage proportional to axial wind component. Polarity reverses with reverse rotation. 1800 rpm (500 mV) = 9.0 m/s (20.1 mph) • 0..2V using EDSCA0001 converter
	Operative temperature	-50...50 °C
	Weight / Dimensions	0.5 kg / L= 43 cm; Ø 2.5 cm (propeller Ø 20 cm)
	Data logger compatibility	Alpha-Log (using EDSCA0001 converter)

Accessories

	EDSCA0001	PRWSA4030 signal converter. • Output 0...2 V = 0...40 m/s (0...1 V: negative signal, 1...2 V: positive signal) • Power supply: 8...30 V DC (consumption: 9 mA) • Mounting: DIN bar
	DYA018	Mounting arm (pole Ø 45...65 mm) L= 650 mm.



▶ *LSI LASTEM is an ISO17025 accredited laboratory for air speed measurements. All sensors manufactured are tested inside this laboratory. LSI LASTEM provides Test reports for any sensor supplied and on request, ISO17025 or ISO9001 calibration certificates.*

