DYACON®

Wind Sensor WSD-1™

Wind Speed, Wind Direction

Modbus RTU (RS-485)

DATA SHEET

FEATURE SUMMARY

- Wind speed
- Wind direction
- Rea-time gust detection
- Anodized aluminum construction
- Stainless steel bearings
- Low power: 1.59 mA
- Non-contact direction sensor
- Modbus RTU slave device
- Extended data output includes averages and gust
- Made in USA

DESCRIPTION

Wind Sensor WSD-1™ is a high-quality meteorological instrument designed for industrial, agricultural, public service, and educational applications.

WSD-1™ is a low-power, digital output anemometer with combined wind vane. The Modbus slave output can be used with the Dyacon Control Module CM-1 or other Modbus host devices, such as programmable logic controllers (PLCs) or data loggers.

In addition to the current speed and direction, **WSD-1** provides 2 minute and 10 minute rolling averages and real-time gust detection. Gust detection captures wind speed and direction and holds the maximum value for 10 min.

The following are measurements provided directly by **WSD-1**:

- Wind Speed (m/s)
- Wind Direction (degrees)
- 2 Minute Average Wind Speed
- 2 Minute Average Wind Direction
- 10 Minute Average Wind Speed
- 10 Minute Average Wind Direction
- Wind Gust Speed
- Wind Gust Direction

KEY FEATURES

Construction: **WSD-1** is made of 6061 machined aluminum. The standard product is gold anodized (MIL-8625 Class 2 Type 1). Sun-fast colors, including clear, electroless black, blue, and red, are available to VARs.

All movement uses stainless steel bearings with synthetic lubricant for long-life operation.

Vane and anemometer cups are user-replaceable without disassembly.

Mechanical construction minimizes snow accumulation.

Wind Direction: The wind direction sensor utilizes a contact-less sensor for high reliability, high accuracy, and, unlike potentiometer sensors, has NO dead spots.

Wind Speed: The anemometer is a 3-cup mechanism utilizing stainless steel bearings.

Data Connection: Power and data is provided through a 4-wire connection. **WSD-1** uses a Modbus RTU slave interface. Drawing 1.59 mA_{avg}, the sensor is suitable for solar powered instrumentation systems.

Mounting: The unique mounting tube can be fitted over standard ¾” conduit, such as that used for antenna towers, or it can be used with standard 1” structural pipe fittings.

WIND SPEED

Operational Range	0 m/s to 50 m/s (0 mph to 112 mph)*
Test Range	0 m/s to 60 m/s (0 mph to 134 mph)
Starting Threshold	<1 m/s (2.2 mph)
Resolution	0.1 m/s (0.2 mph)
Operational Range Accuracy	Better than +/- 3% or +/- 0.3 m/s
Distance Constant	2.1 m (6.7 ft)

WIND DIRECTION

Range	0° to 360°
Threshold	1 m/s (2.2 mph)
Accuracy	+/- 1°
Resolution	0.5°

* Modbus output units are m/s. Miles per hour units are for reference only.

Image 1: As shipped.

ELECTRICAL

Power Input	5 VDC to 24 VDC
Current	<2 mA_{avg} at 12 VDC†

MECHANICAL

Materials	Anodized 6061 aluminum 306 Stainless steel PC, UV-stabilized – cups only
Bearings	Stainless steel
Overall (WxDxH)	15.2 cm x 32 cm x 25.5 cm (6” x 12.5” x 10”)
Cable	4 conductor, 24 AWG, stranded Foil shield w/ drain wire Outdoor rated cable
Weight w/ Cable	675 g (23.8 oz)
Weight w/o Cable	500 g (17.6 oz)
OEM Options	Custom anodizing color (red, black, blue, or clear)

DATA

Protocols	Modbus RTU Slave (RS-485) Half duplex (2-wire)
Min. Request Period	20 ms (Modbus at 19200 bps)
OEM Options	Custom Packet structure and competing device emulation

ENVIRONMENTAL

Operating Temperature	-40°C to 60°C
Storage Temperature	-40°C to 80°C
Operating Humidity	0 to 100%

ACCESSORIES**

Tripod	Tripod-1
Structural Fittings	1” crossover

† Continuous full run mode, reading data once per second.
** Accessories sold separately.