Datasheet & Installation Guide
Dynalab Wind Direction Sensor [DWD 8601M]

Internet of Things

Solar Energy

Table of Contents

MODEL 3

DATASHEET 3

Introduction 3

Specifications 3

Wiring Diagram ..... **Error! Bookmark not defined.**

INSTALLATION 4

Guidelines 4

Tools and Materials Needed 4

Location Recommendation 4

Mounting 5

Orientation 6

Example Installations 6

Calibration 6

Connection Diagram 6

Sensor Maintenance 6

Disclaimer 7

MODEL

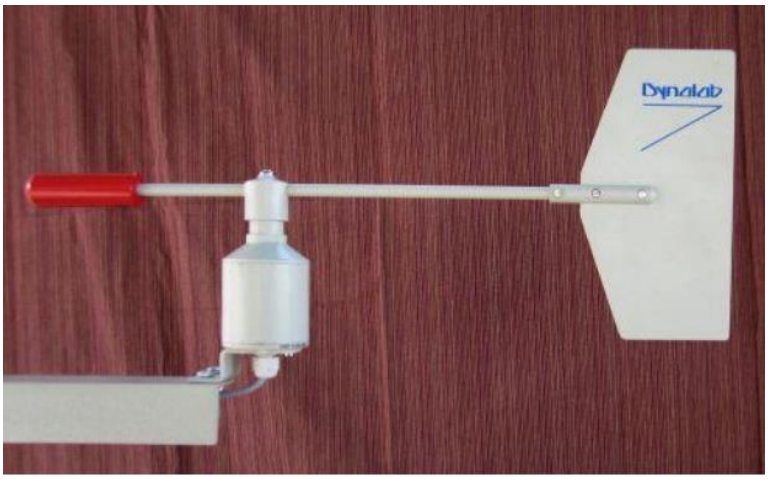
DWD 8601MB

DATASHEET

Introduction

Theory of Operation

DWD 8601MB wind vane is a counter balanced, low threshold wind vane. A Linear, wire wound endless potentiometer is coupled to the vane by an SS shaft. As the vane turns, it rotates a stainless-steel shaft which is coupled to the potentiometer. This potentiometer has excellent linearity, very low starting torque. The use of single wiper increases the life expectancy of the potentiometer.

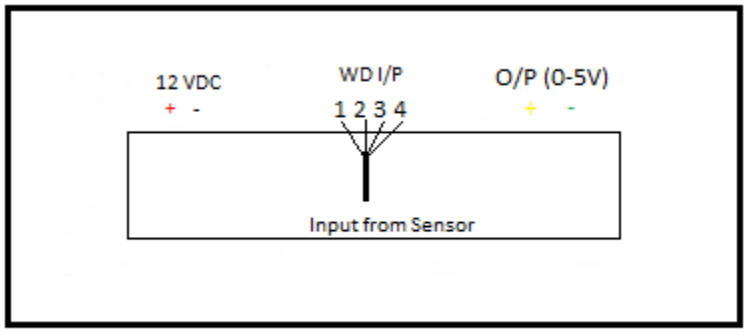


The north of the wind vane is marked on its body. This line is to be aligned with actual North with the help of a prismatic compass, at the time of installation. Sensor gives minimum resistance at North (i.e., 0 degree approximately 20 ohms). The resistance output is linearly proportional to the position of the wind vane. This Resistance converted to a voltage in t he Inte rface unit in such a way that 0 degrees to 360 degrees covers a range of 0 to 5 volt.

Specifications

Wind Direction Sensor	Wind Vane
Sensing	Vane coupled to linear endless potentiometer
Starting threshold	± 05 meters/sec
Range	0 – 360 degrees from North
Output Types	A. 0 – 5 VDC (default) B. MODBUS RTU (optional)
Operating Input Voltage	12 V DC
Resolution	1 degree
Accuracy	+/- 3 degrees
Operating Temperature	-40 to + 60 degree Celsius
Construction of sensor body	- Brass housing, stainless steel shaft and aluminum vane - Brass epoxy coated body

Wiring Diagram for sensor with 0-5V Output



Signal Conditoner box for converting TTL output to 0-5V

Input- 12V DC
WD I/p- Input from Sensor
Output-0-5V

INSTALLATION

Guidelines

The wind speed sensor comes in two different parts. We have the sensor body and the vane which is to be mounted on the sensor body.

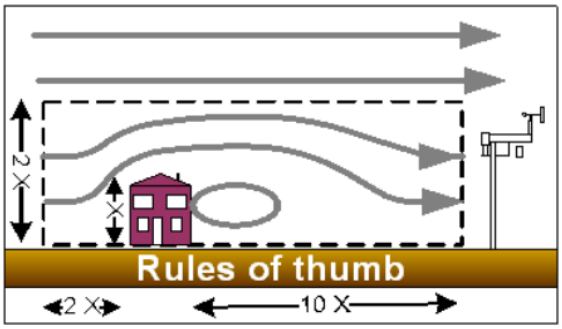
Tools and Materials Needed

Please make sure you have all the necessary material as mentioned below:

- Wire cutters and stripper
- Multi meter
- Electrical tapes to cover the wire
- Cable ties
- Adjustable Wrench
- Screwdriver

Location Recommendation

In order to report accurate weather information, you must take care in deciding where to place your weather station. The process of deciding how and where to install your weather station is called "Siting". Siting is the single most important factor in ensuring accurate readings. In fact, siting influences the accuracy of weather readings much more than the quality of the weather instruments themselves.



When selecting your mounting system, take into consideration that you will occasionally need to access the anemometer for preventive maintenance. Use the following guidelines to determine the best location for mounting the wind speed sensor

- Allow sufficient clearance for the wind sensor.
- Install the anemometer in a location where wind flow is unobstructed by trees and nearby buildings.

- **Rule of Thumb-** Near a building, mount the sensors outside the zone of influence. Horizontally this extends roughly twice the height of the building upstream and ten times downstream. Vertically it extends to about twice the height of the structure

If the requirement is to measure the true local conditions

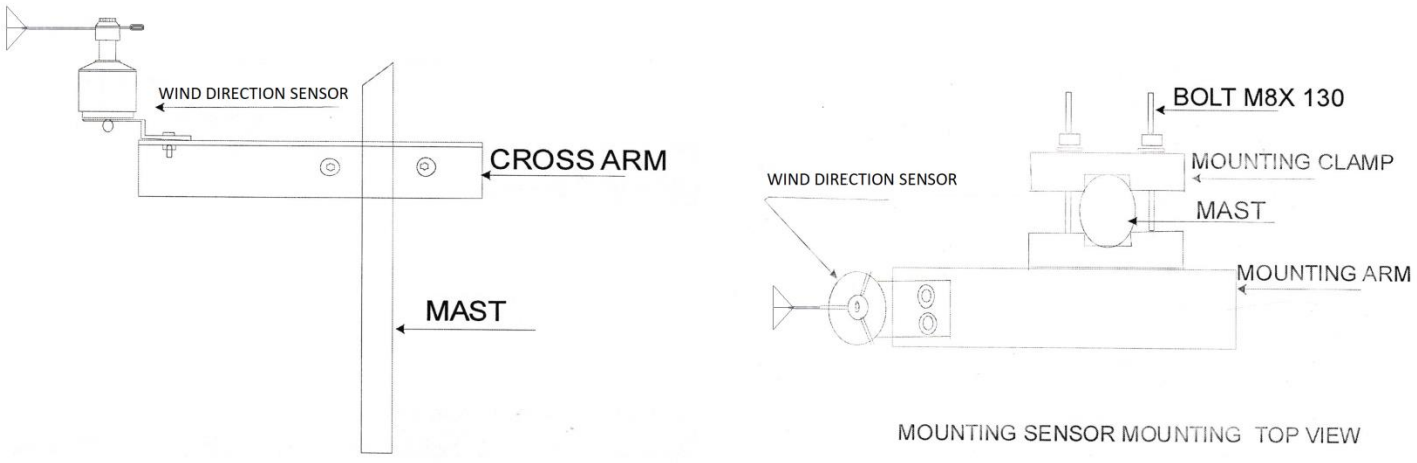
- Mount the sensor so that the wind cups are at least 7 feet (2.1 m) above obstructions such as trees or buildings that may obstruct wind flow
- Mount the sensor as the highest object for 50 feet in all directions.

Mounting

The Wind Direction sensor contains a flat plate which helps to mount it on any flat LEVEL surface**.**

Caution:
The wind direction sensor must be mounted in an ***upright position****; otherwise, water can enter and destroy it.*

To prevent damaging the wind vane properly mount the sensor/bracket combination on the mast before fitting the vane unit whenever possible



Steps for mounting:

1. Mounting cross arms are supplied which are to be mounted on a mast of diameter of about 50 mm (above figure). Each cross arm is provided with sensor clamping blocks, nuts/bolts and bushings for clamping
2. Wind speed sensor is mounted on one cross arm.
3. Height of the surrounding obstacles is to be considered
4. The cables from the sensor are to be properly routed through a suitable conduit and brought to the interface unit for connection.

Local Testing: Spinning the wind vane assembly will produce a output. To verify sensor output, monitor this signal with either a translator module, data logger or an ohmmeter.

Caution
Do not Open the sensor bottom. This can permanently damage the sensor and void warranty.

Guidelines for Securing Cables

- To prevent fraying or cutting of cables, secure them so they will not whip about in the wind.
- Secure cable to a metal pole using cable ties or by wrapping tape around both the cables and the pole.
- Place clips or ties every 3' – 5' (1 – 1.6 m).

Orientation

Wind direction must be calibrated to true North. A compass or GPS is required to calibrate the wind direction. Consider a digital compass or GPS for improved accuracy. To calculate the difference between magnetic north and true north for your location (magnetic declination), link here. You need to know your longitude and latitude first based on your address link here.

Example Installations

NA

Calibration

- If using Modbus sensor then the Wind Direction Sensor is factory calibrated.

- If using analog output senor then use the following info to calibrate.
  - Output - 0 to 5 VDC (: 0 - 360 deg)

If the cable length is insufficient for the installation, additional cable can be added to the existing cable. If this is done, an accuracy de-rating factor must be added to the overall wind speed accuracy of this sensor.

It is highly recommended that the calibration be checked annually

Connection Diagram

A. For ANALOG output connections, please search for '*Installation Guide – Analog Sensors*' on: www.trackso.in/documentation
B. For MODBUS output connections, please search for '*Installation Guide – MODBUS Sensors*' on: www.trackso.in/documentation

Sensor Maintenance

- Maintenance includes inspection of mechanical operation and cleaning.
- Rotate vane assembly; look for smooth rotation and a gradual stop.
- Inspect mounting hardware for secure fasteners; mounting pipe must be vertical.
- Replace any loose or corroded fasteners.
- It is recommended to check the ball bearings of the direction sensor and the vane every year. If the vane is not rotating smoothly or it creates detectable noise, the bearings must be replaced.
- Clean any accumulation of dirt, dust, or bird droppings that may affect proper rotation of the vane. Use only soapy water and a soft cloth. Never use solvents or abrasive cleansers. Do not immerse the anemometer in water.
- Inspect the cable and connections.

Disclaimer

Sensor: This sensor is a low-cost alternative to the Class 1/Class 2 sensors of the same type. Since this sensor fall under no class, there will be some variation in the real vs. expected values. If you wish to minimise the error/deviation in output values, we recommend that you purchase Class 1/Class 2 sensor.

Please note, we do not manufacture the sensor but only sell them along with our TrackSo IoT service. We do not guarantee the output/performance of the sensor.

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