



Datasheet & Installation Guide Dynalab Wind Speed Sensor [DWA 8602M]

Internet of Things

Solar Energy



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MODEL

DWA 8602M



DATASHEET

Introduction

Dynamalab Weather Technologies anemometer is a fast response, low threshold up to electronic anemometer. When rotated by wind, a chopper on the anemometer shaft interrupts infrared light beam 18 times per revolution, generating pulses from a phototransistor. The signal is amplified and fed through a line driver who can drive 500 meters of cable. The frequency is proportional to wind speed. The anemometer is provided with 3 pin connector for easy replacement.

The anemometer comes with 10 meters of shielded cable.

Specifications

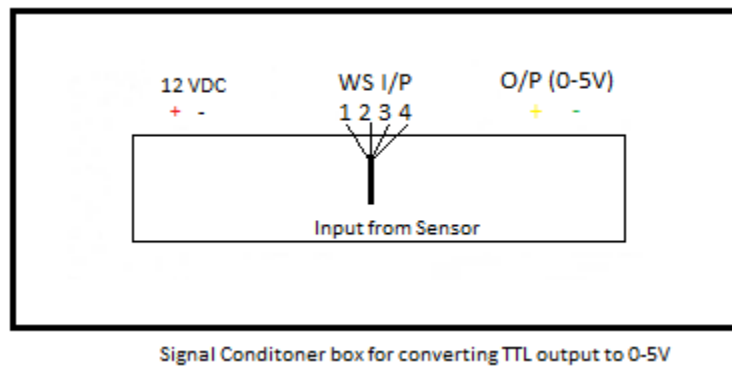
Wind speed Sensor	3 Cup Anemometer
Sensing	3 cup assembly mounted on friction free shaft and coupled to a chopper
Starting threshold	0.25 meters/sec
Range	0 to 50 meters/sec
Distance Constant	2.5 m
Operating temp	-50 Degrees C to +65 Degrees C **
Output	A: 0-5 V (Default) B: Modbus RS485 (optional)
Operating Input Voltage	12 VDC
Accuracy	Better than 0.5 m/s up to 10 m/s, +/- 2% F S above 10 m/s
Diameter of cup	50 mm
Diameter of cup assembly	165 mm
Construction of sensor body	Brass housing and stainless-steel shaft



suitable mounting assembly provided

** suitable heating arrangement required for sensor to operate from -50 degrees c to +65 degrees c (external 24 v/50ah power for heater to be provided by user)

Wiring Diagram for sensor with 0-5V Output



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

INSTALLATION

Guidelines

The wind speed sensor comes in three different parts. We have the sensor body, the anemometer cup wheel and an Allen key to mount the cup wheel on the sensor body. There are different ways to mount the sensor.

Tools and Materials Needed

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

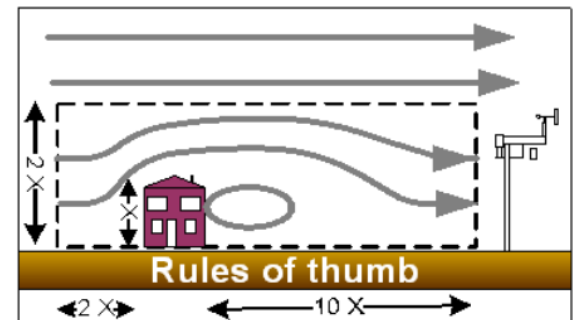
- Wire cutters and stripper
- Multi meter
- Screwdriver
- Electrical tapes to cover the wire
- Cable ties
- Adjustable Wrench
- Allen wrench (Supplied with sensor)

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.



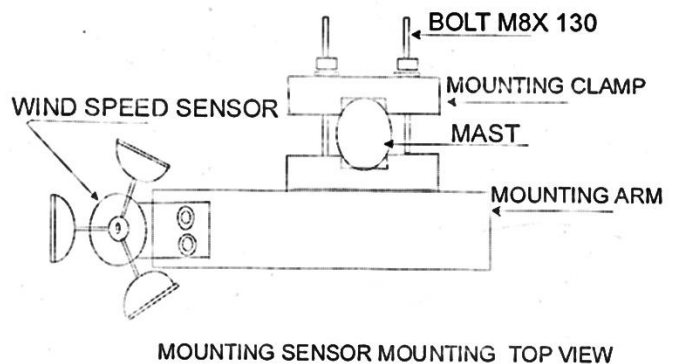
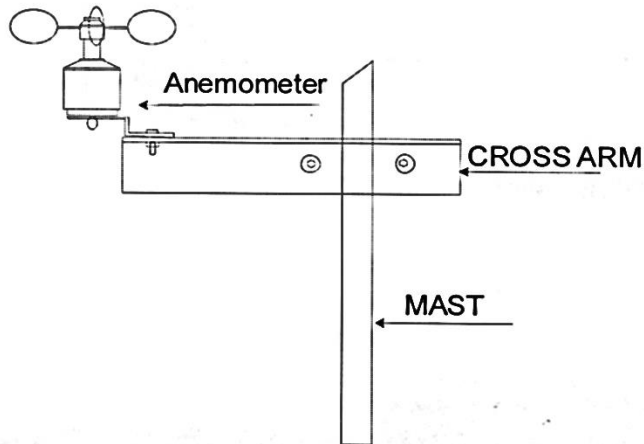
- Install the anemometer in a location where wind flow is unobstructed by trees and nearby buildings.
- **Rule of Thumb-** Near a building, mount the sensors outside the zone of influence. Horizontally this extends roughly twice the height of the building upstream and ten times downstream. Vertically 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 Anemometer can be mounted using the three holes in the bottom mounting plates. This allows mounting on any flat LEVEL surface.



WIND SPEED SENSOR INSTALLATION

Caution:

The anemometer must be mounted in an **upright position**; otherwise, water can enter the anemometer and destroy it.

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

Orientation: The Anemometer should be mounted with its axis as close to vertical as possible to provide for the best measurement of horizontal wind movement

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 anemometer cup assembly will produce a series of pulses. 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).

Example Installations



Signal Conditioner Mounting

Calibration

- If using Modbus sensor then the Wind speed Sensor is factory calibrated.
- If using analog output sensor then use the following info to calibrate.
Output - 0 to 5 VDC (0 to 70 meters/sec)

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 wind cup 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.
- Inspect the cable and connections.
- It is recommended to check the ball bearings of the anemometer every year. If the cup wheel is not rotating smoothly or it creates detectable noise, the bearings/sensors must be replaced.
- Clean any accumulation of dirt, dust, or bird droppings that may affect proper rotation of the wind speed sensor. Use only soapy water and a soft cloth. Never use solvents or abrasive cleansers. Do not immerse the anemometer in water.

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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