Wind Speed Smart Sensor (Part # S-WSA-M003)

The Wind Speed smart sensor is designed to work with HOBO® Station loggers. The smart sensor has a plug-in modular connector that allows it to be added easily to a HOBO Station. All sensor parameters are stored inside the smart sensor, which automatically communicates configuration information to the logger without the need for any programming or extensive user setup.

Inside this Package

- Wind Speed smart sensor

Specifications	Wind Speed Smart Sensor
Measurement Range	0 to 45 m/sec (0 to 100 mph)
Accuracy	±1.1 m/sec (2.4 mph) or ±4% of reading, whichever is greater
Resolution	0.38 m/sec (0.8 mph)
Service Life	> 5 year life typical, factory replaceable mechanism
Distance Constant	3 m (9.8 ft)
Starting Threshold	≤ 1 m/sec (2.2 mph)
Maximum Wind Speed Survival	54 m/sec (120 mph)
Measurement Definition	Wind speed: Average wind speed over logging interval Gust: Fastest 2 second gust during the logging interval
Operating Temperature Range	-40° to +75°C (-40° to +167°F)
Environmental Rating	Sensor and Cable Jacket: Weatherproof
Housing	Three cup polycarbonate anemometer: Modified Teflon® bearings and hardened beryllium shaft with ice shedding design
Dimensions	19.0 x 8.1 cm (7.5 x 3.2 in)
Weight	300 g (10 oz)
Bits per Sample	Wind Speed: 8 Gust Speed: 8
Number of Data Channels *	2
Measurement Averaging Option	No
Cable Length Available	3.0 m (9.8 ft)
Length of Smart Sensor Network Cable *	0.5 m (1.6 ft)
Part Number	S-WSA-M003
CE Specification	This product meets CE specification EN61326 criterion C for ESD, criterion C for Radiated Immunity, criterion B for Fast Transient, criterion A for Conducted Immunity, and criterion A for Power Frequency Magnetic Fields. To minimize measurement errors due to ambient RF, use the shortest possible probe cable length and keep the probe cable as far as possible from other cables.

* A single HOBO Weather Station can accommodate 15 data channels and up to 100 m (328 ft) of smart sensor cable (the digital communications portion of the sensor cables).

Onset Part #: MAN-S-WSA
Doc #: 6064-C

Placement and Mounting Considerations

- The Wind Speed smart sensor should be mounted vertically in a location free of wind shadows.
- For accurate wind speed measurements, mount the sensor at a distance of at least five times the height of the nearest tree, building, or other obstruction.
- Be sure to secure the sensor cable with cable ties to protect the cable from damage.
- Ground wire must be used. Attach it to the mounting pole or tripod.
- Although the wind sensor is designed to operate in 100+ mph winds, it can be damaged with improper handling. Store the sensor in its shipping box until you are ready to install it.
- Refer to the *HOBO Station Tri-pod Setup Guide* for more information.

Mounting the Sensor to a Tri-pod

Accessories

- Full Cross Arm (Part # M-CAA)
- Half Cross Arm (Part # M-CAB)

Mounting the Sensor to a Tri-pod Cross Arm

Accessories

- Full Cross Arm (Part # M-CAA)
- Half Cross Arm (Part # M-CAB)

Steps

1. Mount Sensor to Mounting Pole.

   Insert the sensor onto the mounting, as shown below.

Figure 1: Attach Wind Speed Sensor to Mounting Pole

2. Insert Mounting Pole into Cross Arm.

   Secure the ground wire to the lug nut on the cross arm.

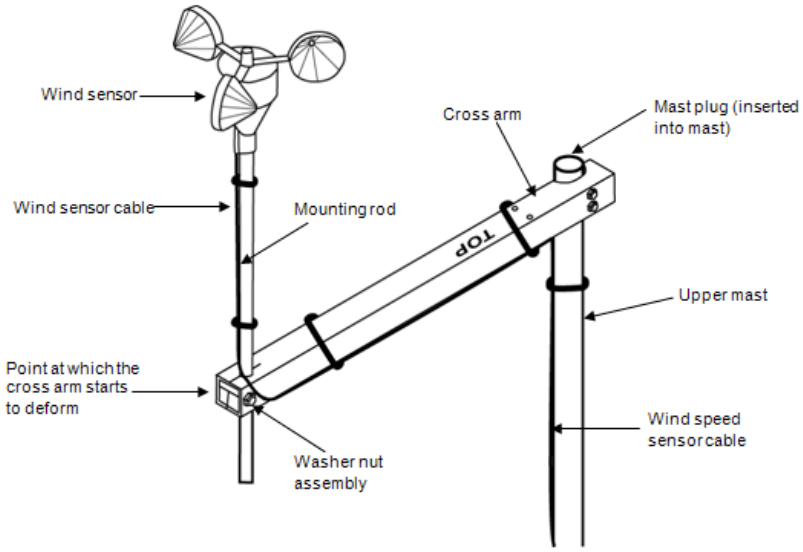

Figure 2: Attach Mounting Pole to Cross Arm

3. Insert a 1/4-20 x 1 3/4 inch hex head bolt with a flat washer on it through the 1/4 inch hole on the end of the cross arm. Tighten with a 7/16 inch wrench until snug.
4. Install another flat washer and nylock nut on the bolt, allowing the black mounting rod to protrude 1/2 inch (1.3 cm) from the bottom of the cross arm.
5. Tighten the nut and bolt until the rod is clamped in place and the cross arm just starts to deform.
6. Adjust the height of the sensor in the cross arm as necessary.

   You can adjust the sensor height by raising and lowering the entire mast, the wind sensor on the cross arm, or a combination of both.

   a) Loosen the tri-clamp bolts and raise or lower the entire mast so that the wind sensor is close to the desired height. Make sure there is at least 5 cm (2 inches) of mast extending below the lower tri-clamp.

   b) Make sure the upper mast dimple is still facing north (if in northern hemisphere) and then re-tighten the tri-clamps. Once the tri-clamp bolts are tight, tighten the lock nuts to lock the bolts in place. This requires two wrenches: one to hold the bolt and one to tighten the lock nut against the tri-clamp.

   c) Loosen the bolt on the wind sensor mounting rod and raise or lower it as necessary so the center of the wind sensor anemometer cups is at the desired height. Re-tighten the bolt.
7. Secure the sensor cable to the bottom of the cross arm with cable ties. The gray tube in the middle of the sensor cable (not shown) is weatherproof and should be securely mounted to the cross arm with cable ties.

8. Secure Cables

   Use cable ties to secure the sensor cables to the cross arm, bracket, and mast. The sensor cables should run below the cross arm and brackets to minimize the chance of birds pecking and damaging the cables. Cable ties should be spaced no more than .3 m (1 foot) apart.

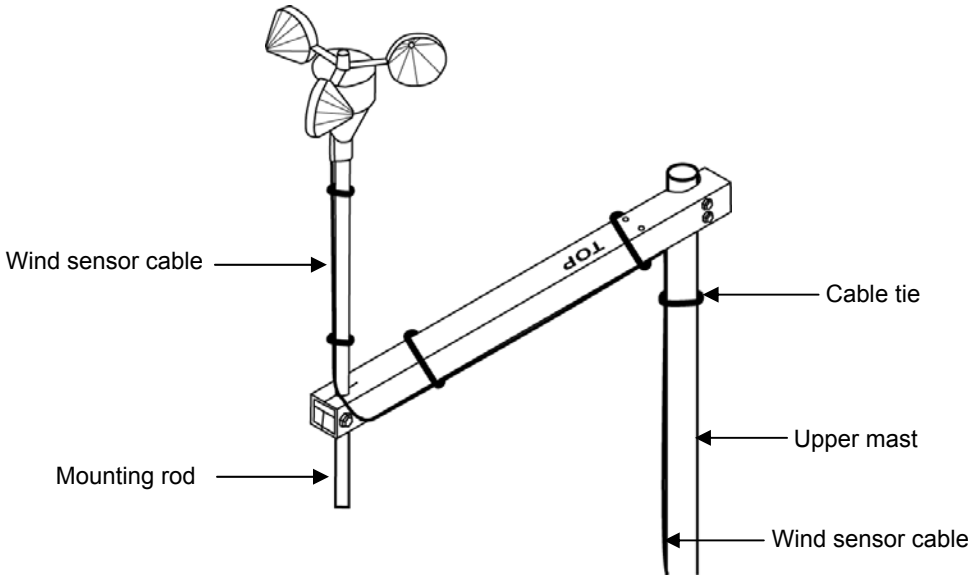

Figure 3: Securing the wind sensor cable

Mounting the Sensor to a Pole

- Loosely secure the sensor mounting pole with two hose clamps (not included), as shown in Figure 2.
- Adjust the height of the cross arm as necessary.
- Tighten the hose clamps making sure that the sensor remains vertical.
- Secure the sensor cable with cable ties. The gray tube on the sensor cable is weatherproof and should be mounted outside the logger and secured with cable ties.

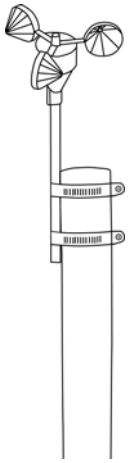

Figure 4: Sensor Mounted on Pole

Connecting the Sensor to a Logger

To start using the Wind Speed smart sensor, stop the logger and insert the modular jack into an available port. If a port is not available, use a 1-to-2 adapter (Part # S-ADAPT), which allows you to plug in two sensors into one port. The next time the HOBO Station is used, it will automatically detect the new smart sensor. Note that the HOBO Station supports a maximum of 15 data channels; this smart sensor requires two data channels for wind speed and gust. Launch the logger and verify that the sensor is functioning correctly.

Operation

The Wind Speed smart sensor measures both average wind speed and gust wind speed. Average speed is the average wind speed over the logging interval. Gust speed is the maximum wind speed for the logging interval based on two second sub-intervals. If the logging interval is set at 2 seconds (or less), the gust speed and average speed will be the same.

Maintenance

The Wind Speed smart sensor does not require any maintenance other than an occasional cleaning. If dust, cobwebs, salt or other contaminants collect in the cups of the anemometer, rinse the sensor with mild soap and fresh water.

Verifying Sensor Accuracy

It is recommended that you check the accuracy of the Wind Speed smart sensor annually. The Wind Speed smart sensor cannot be calibrated. Onset uses precision components to obtain accurate measurements. If the smart sensor is not providing accurate data, then it may be damaged or possibly worn out if it has been in use for several years. If you are unsure of the smart sensor's accuracy, you can send the smart sensor back to Onset for re-certification and replacement of the mechanism if needed. Contact Onset or your dealer for a Return Merchandise Authorization (RMA) number before sending the sensor.