

Ultrasonic Wind Sensor

Model: WS80BN

FCC ID: WA5WS80BN

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1. Introduction

Thanks for your purchasing this WS80 6-in-1 Ultrasonic Sensor. This device measures wind speed, wind direction, temperature, humidity, UV Index and solar radiation. The Ultrasonic Sensor is solar powered and sends data to the console via a low-power radio. The data can be streamed by GW1000 Wi-Fi Gateway (sold separately) or HP2550 console display (sold separately); and can be viewed on our WS View mobile application after the Wi-Fi configuration done.

To ensure the best product performance, please read this manual and retain it for future reference.

The Ultrasonic Sensor is solar powered and sends data to the console via a low-power radio.

2. Get Started

2.1 Parts List

One 6-in-1 Ultrasonic Sensor
One mounting arm with base
One Set of U-bolts for installation
One User Manual

3. Overview

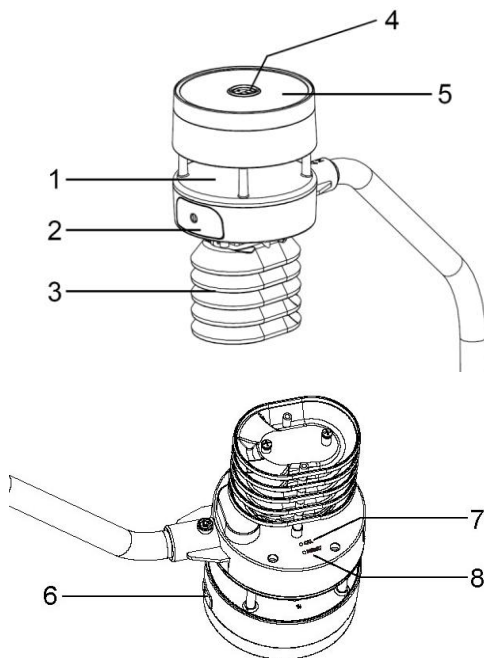


Figure 1

1. Sonic wind sensor	5. Solar Power
2. Battery compartment	6. USB port
3. Temperature & humidity	7. Calibration button
4. Light sensor, LED indicator	8. Reset button

4. Setup Guide

4.1 Install batteries

Insert 2XAA batteries in the battery compartment. The LED indicator(on the top of the sensor) will turn on for 3 seconds and normally flash once every 4.75 seconds (the sensor transmission update period).

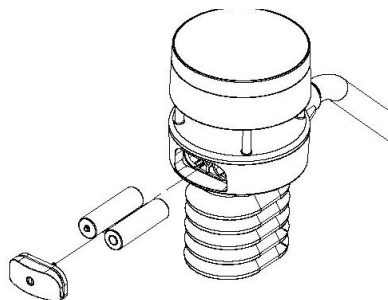


Figure 2

Note: If no LED light up or is lighted permanently, make sure the battery is inserted the correct way or a proper reset is happened. Do not install the batteries backwards. You can permanently damage the outdoor sensor

We recommend lithium batteries for cold weather climates, but alkaline batteries are sufficient for most climates. We do not recommend rechargeable batteries. They have lower voltages, do not operate well at wide

temperature ranges, and do not last as long, resulting in poorer reception.

5. Mounting

Before you mount

Before installing your outdoor sensor in the permanent location, we recommend operating the device for one week in a temporary location with easy access. This will allow you to check out all of the functions, insure proper operation and familiarize you with the weather station and calibration procedures.

1. Install the base on a pole(1.25inch~2inch) as Figure 3

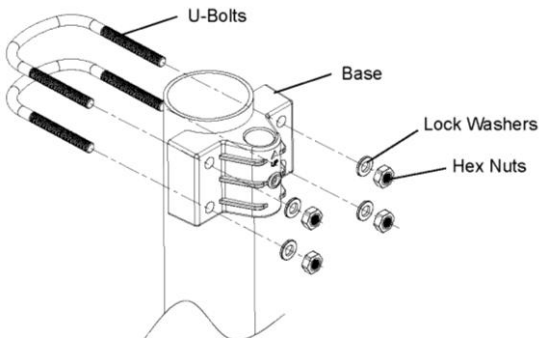


Figure 3

2. Attaching Arm to Ultrasonic Sensor as Figure 4.

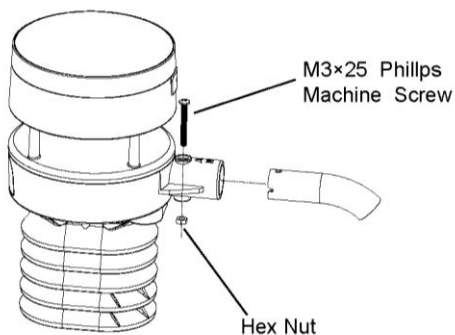


Figure 4

3. Insert the arm into the base as Figure 5. Be sure to line up the small hole in the arm with the holes in the base. Insert the machine screw through the holes in the base and arm.

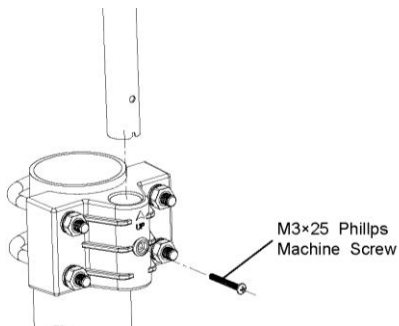


Figure 5

4. There is an arrow icon with "N" words (Figure 6) representing the direction of North. The sensor body has to be adjusted so that the "N" indication is facing to real north direction in your location. A compass device is recommended to help adjust direction. Permanent wind direction error will be introduced when the outdoor sensor is not installed in right direction

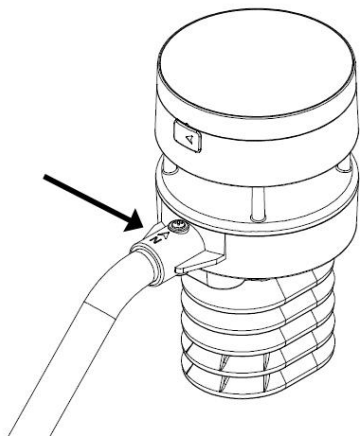


Figure 6

6. Calibration

The ultrasonic sensor has been calibration before leaving the factory. We do not recommend that customers do calibration by themselves.

Customers use this feature only when the wind speed does not return to zero when there is no wind

After the product works normally, use a cloth or sponge with good water absorption (prevent the echo of the ultrasonic waves) to completely wrap the air inlet.

With an open ended paperclip, press and hold the CAL button for three seconds, the top LED light will be on. After releasing the CAL button, place the product on the table. After five seconds, the top LED light will flash. At this time it is in the calibration mode. Wait for the LED to flash, the calibration is over, and the product automatically enters the normal working mode.

7. Wi-Fi Configure with gateway

If you want to view the Ultrasonic Sensor data on your mobile application, you need to pair this device

with our GW1000 Wi-Fi Gateway or HP2550 display console (sold separately).

6.1 Pair with Gateway or display console

Please follow the tips to pair your sensor(s) with the Wi-Fi Gateway or HP2550 display console:

- (1). Power on the gateway first (with USB connection) or HP2550 display console (with adaptor connection)
- (2). Power on the Ultrasonic sensor.
- (3). The RF status indicator of the gateway will light on steady, and light off once when it receives the data from the optional sensor(s) once.
- (4). If work normally, you can forward to the Wi-Fi connection operation.

6.2 Wi-Fi Connection

For this part, please refer to the manual of the GW1000 Wi-Fi gateway or HP2550 Wi-Fi Weather Station.

Any question, please contact the customer service.

8. View Online Data on WS View

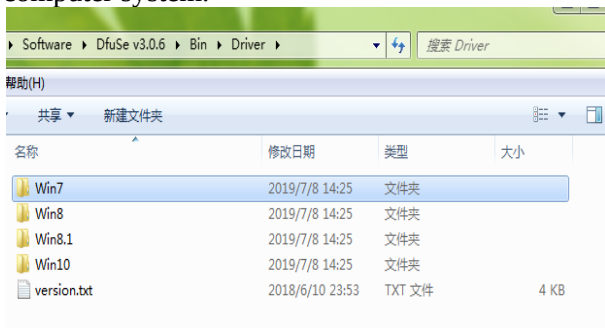
When the Wi-Fi configuration is done, you can view the live data of your rainfall sensor on the WS View application.



9. Firmware upgrade

1. Download and install the Dfuse_Demo_V3.0.6 software. Open the installation path; choose to to

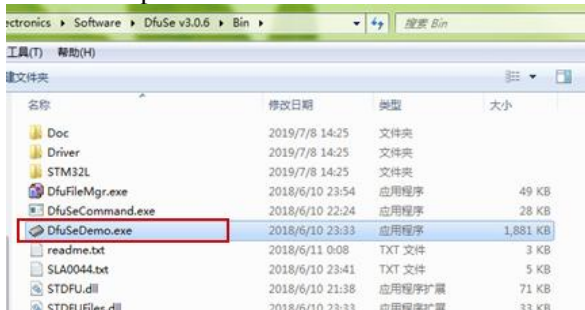
install the STM32 driver according to the computer system.



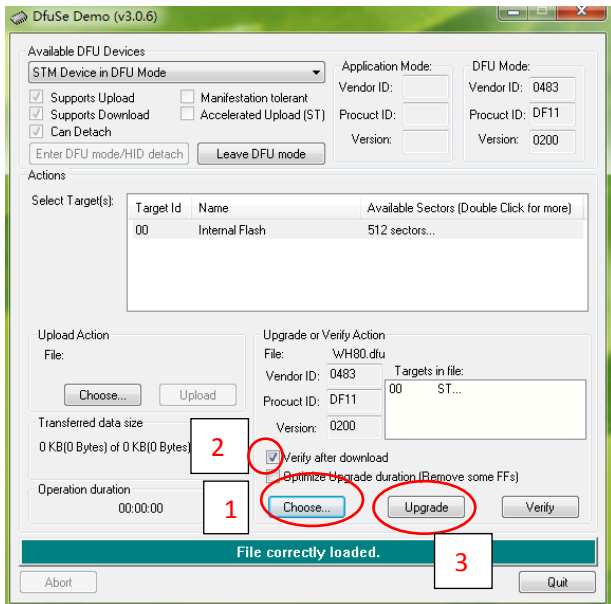
2. After the USB driver is installed, connect the Ultrasonic sensor to the computer with a USB cable. In the Device Manager of the computer, you can see that the USB has been recognized and the STM Device in DFU Mode



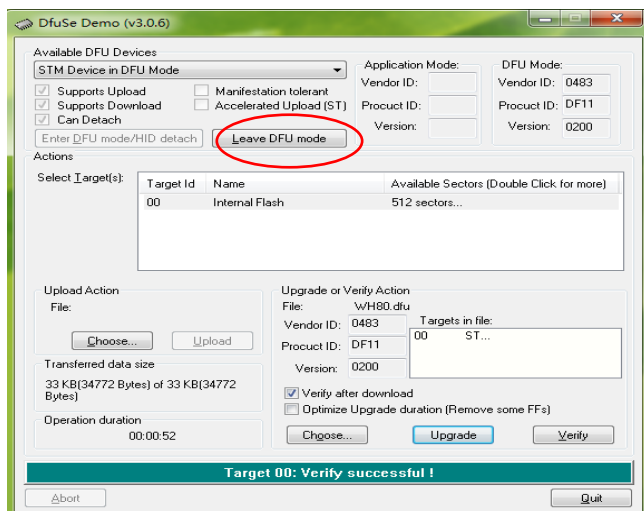
3. Open the software DfuSeDemo.exe under the installation path



4. Select the DFU file, then check the Verify after download option, and click Upgrade to upgrade the firmware.



5. The upgrade completion interface is as follows. Click Leave DFU mode and finish the upgrade.



10. Specification

10.1 Wireless Specifications:

Transmission distance in open field: 300m(1000 ft)

Sensor reporting interval: 4.75 seconds

RF Frequency: 915 MHz

10.2 Measurement Specification

Measurement	Range	Accuracy	Resolution
Wind speed	0~40m/s	<10m/s, +/-0.5m/s	0.1M/S

		$\geq 10\text{m/s}$, $\pm 5\%$	
Wind direction	$0\sim 359^\circ$	$\pm 5^\circ$	1°
Temperature	$40\sim 60^\circ\text{C}$	$\pm 1^\circ\text{C}$	0.1°C
Humidity	$1\sim 99\%$	$\pm 5\%$	1%
Light	$0\sim 300\text{Klux}$	$\pm 15\%$	10Lux
UVI	$1\sim 15$	± 2	1

10.3 Power consumption

Ultrasonic sensor: 2xAA Alkaline batteries (not included). The primary power source is the solar panel. The batteries provide backup power when there is limited solar energy

11. 7. FCC Statement

Statement according to FCC part 15.19:

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Statement according to FCC part 15.21:

Any changes or Modifications not expressly approved

by this company could void the user's authority to operate the equipment.

Statement according to FCC part 15.105:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.