HWS3000
Operational Description

Ver：1.1
2017.03.03

1. PRODUCT OVERVIEW

1.1. General Description

HWS3000 is a well-designed, portable and professional handheld weather station, supporting measurement of temperature, humidity, pressure, wind speed and wind direction. The design meets the strict requirement of ergonomics and aeronautical meteorology, adopting the concept of modular, fixed and digital sensor, creating the structure design on traditional automatic weather station, greatly improving its protective capacity and durability. High-strength uvioresistant ABS plastic alloy makes it possible for long-term exposure under solar radiation. Highly integrated electronic circuit design makes it possible that small size body contains several times of functions, making outdoor meteorological observation more convenient.

HWS3000 Handheld Weather Station is widely used in the meteorological observations of aviation & navigation, airdrop & air-landing, nuclear-chemical monitoring, transportation observation, emergency rescue, mobile meteorology, etc.

Safety and Cautions

HWS3000 is a well-designed handheld weather station. Non-professional maintenance personnel of the company, please do not conduct repair and modification. Due to man-made causes of equipment in adnormal work, damage or indirect economic losses, the Company shall not be liable.

Before installing and using this weather station, please read the chapter for instructions on Safety and Cautions.
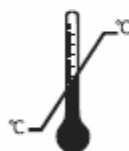
Protection Class

The protection class of HWS3000 Handheld Weather Station is IP-54 or IP-56 (Model AMY).

Safty Certifications

HWS3000 Handheld Weather Station has passed CE, FCC, C-TICK, VCCI, etc.

Working Environment

HWS3000 Handheld Weather Station could work in the temperature -30℃~50℃ or -40℃~70℃(Model AMY). Do not use the device out of the working temperature range; do not use the device in corrosive environment.

Electrical Environmental Protection WEEE

When the handheld weather station is scrapped, please send the e-waste back to us to support the electrical environmental protection.

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, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

Attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This product 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 product 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 product 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.

Product Picture and Description

HWS3000
Handheld Weather Station
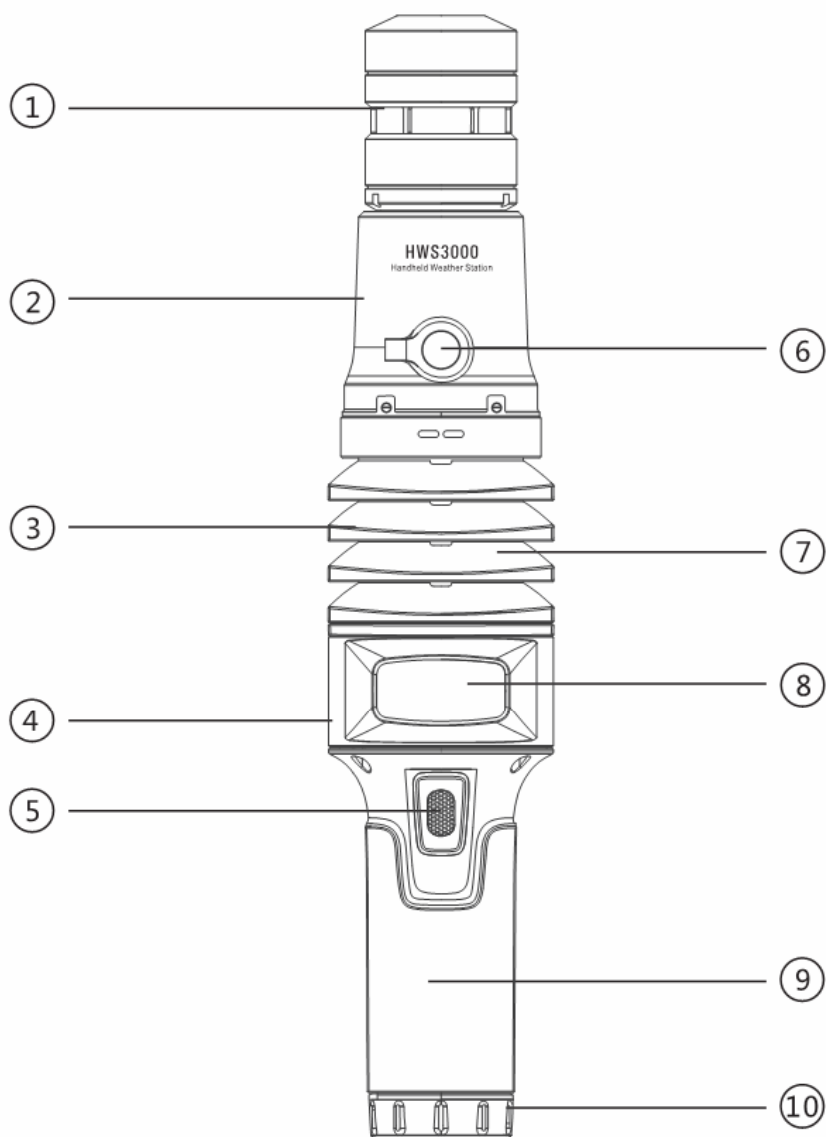
1 Ultrasonic wind speed and wind direction sensor

2 Pressure sensor

3 Ventilation louver

4 Information processing module

5 Multifunction key

6 Pressure calibration interface

7 Temperature and humidity sensor

8 Display

9 Handle(Battery inside)

10 End cover
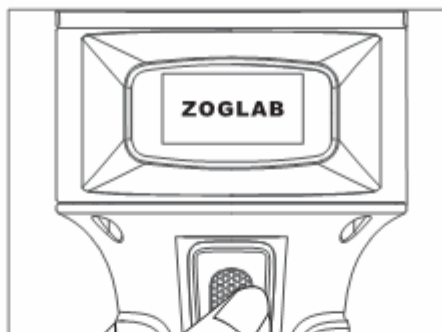
Display

HWS3000 uses OLED display, and its display information as bellow:
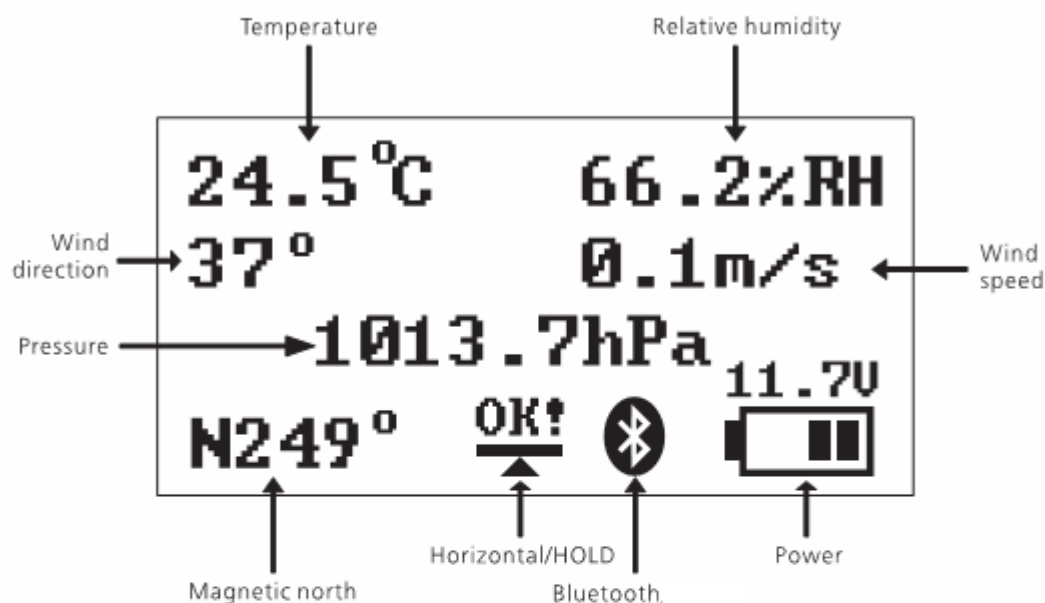
| Name	Function description
Temperature	Temperature value
Relative humidity	Relative humidity value
Wind direction	Wind direction value
Wind speed	Wind speed value
Pressure	Pressure value
Magnetic north	Magnetic north value
Horizontal/HOLD	OK! It could be read normally when the device is in the horizontal state
	The device is on left deviation or leaning forward state
	The device is on right deviation or backforward state
	HOLD The environmental measurement is in the data hold state
Bluetooth	Bluetooth on/off indication
Power	Battery charge level information and voltage indication

Power on/off

Press and hold the multifunction key, the screen will show "ZOGLAB", then release it
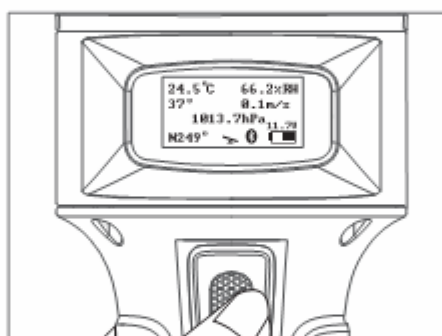
After open for a few seconds, the display shows the measured value
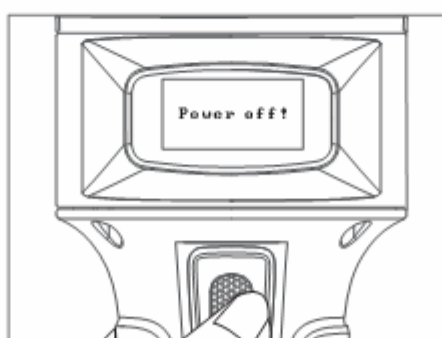
Press and hold the multifunction key until the display shows "Power off!", then release it

ⓘ To ensure the accuracy of the temperature and humidity measurements, place the HWS3000 in the environment under test for a period of time. Time is related to the air velocity of test environment, usually varying from decades of seconds to 5 minutes.

Means of Application

HWS3000 is designed to be portable and easy to use. For Mobile use, just lift it up by grabbing the handle. For fixed use, you could place it on the professional support or multifunctional transport tube.Refer as bellow:

Mobile Application
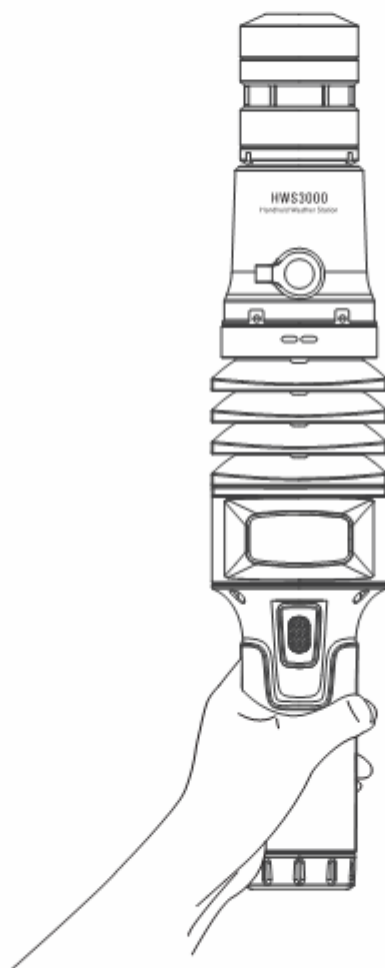
☑ When measuring wind speed and wind direction, it is requested to keep it at horizontal and north-pointed state. It is not recommended for holding by hand for a long time.

Fixed Application
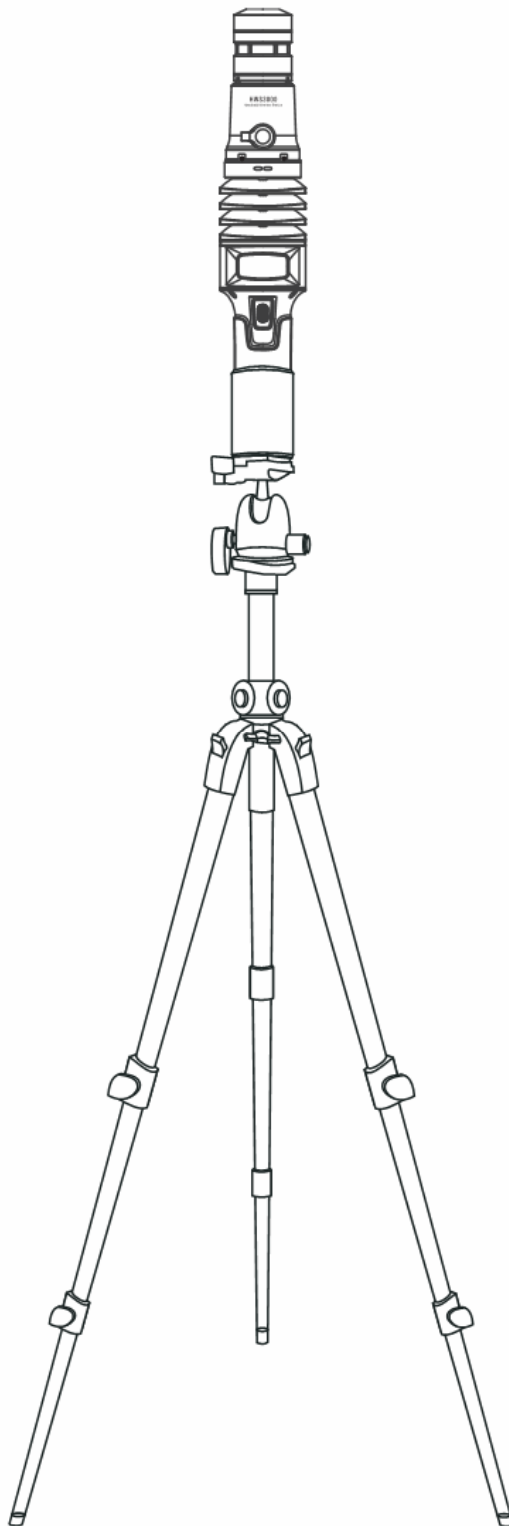
It is requested to put on a more stable place if using the special support or multifunctional transport tube in order to avoid falling down.

Operation Indication

To ensure the accuracy of wind speed and wind direction when reading value, it is requested to keep HWS3000 Handheld Weather Station at horizontal and north-pointed state. HWS3000 has the function of horizontal and magnetic north indication, so you could make adjustment for the station according to the steps as bellow:
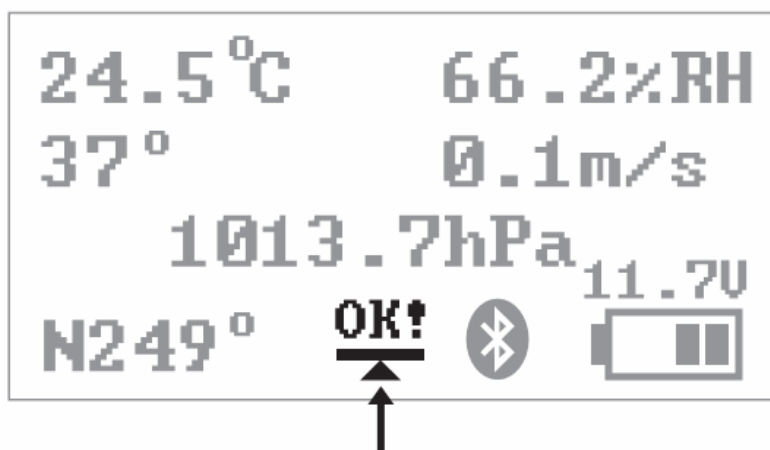
Horizontal Indication
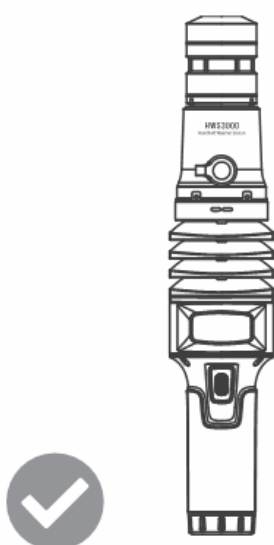
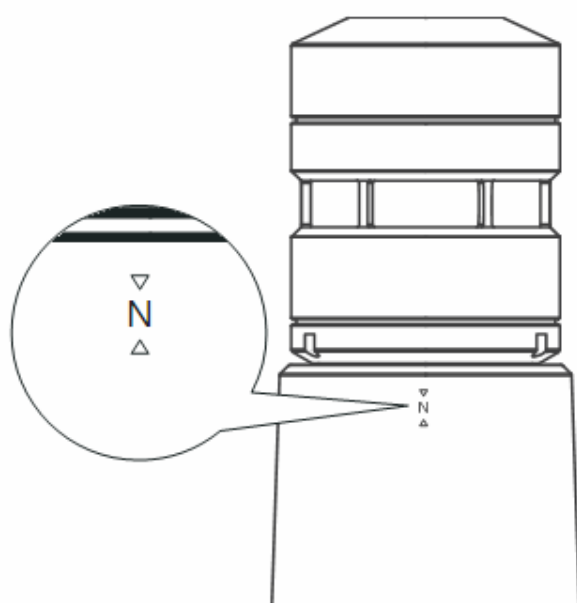Place the HWS3000 horizontally at a tilted angle of less than ± 5 °
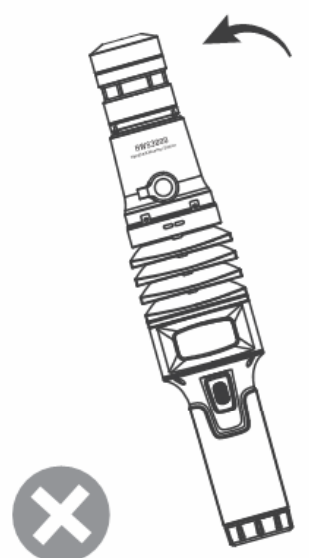
The accurate value of wind speed and wind direction can not be obtained when tilting


```
24.5°C      66.2%RH
37°          0.1m/s
    1013.7hPa
N249°   OK!  ⁕  11.7V
```
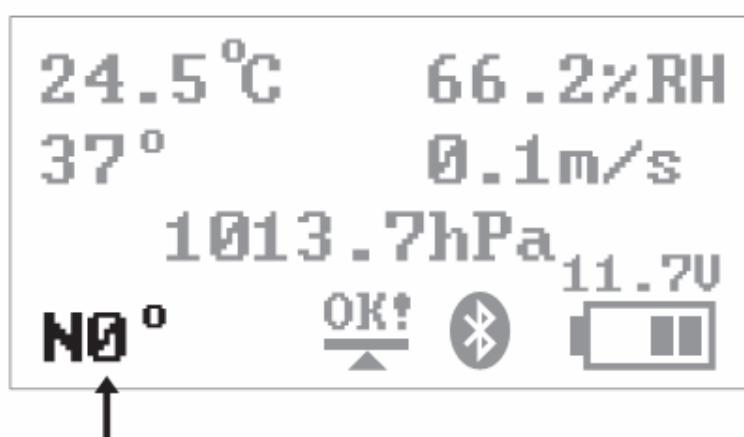
Display shows icon " OK! ", it means HWS3000 is at horizontal state

Magnetic North Indication

The mark "N" of HWS3000 should face the north pole or using automatic correction by using the built-in digital compass.

"N" North-pointed mark

```
24.5°C      66.2%RH
37°         0.1m/s
    1013.7hPa
                11.7V
N0°     OK!  ☆  ▮▮▯
```

Place the HWS3000 horizontally and rotate slowly. When the magnetic north angle is indicated near "0 °", it means that "N" is aligned with the North Pole.

☑ The automatic correction function via using the built-in digital compass is switched on by software.

Atmosphere & Environment

Value Hold

HWS3000 has a function of "value hold". When the measured environment is not convenient to read data, it can conduct "value hold" and read later. Operation steps as bellow:

In the process of measurement, press the multifunction key, so that the data will be held and can be read at convenience.
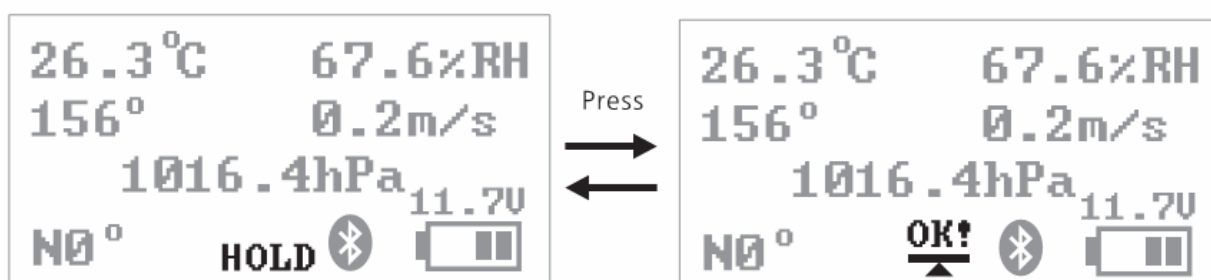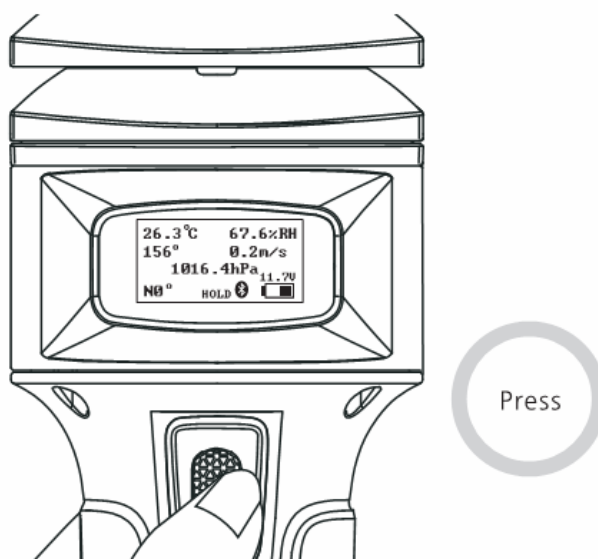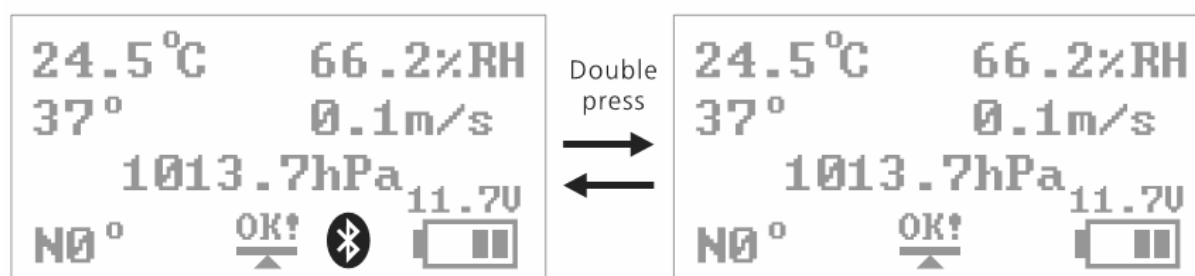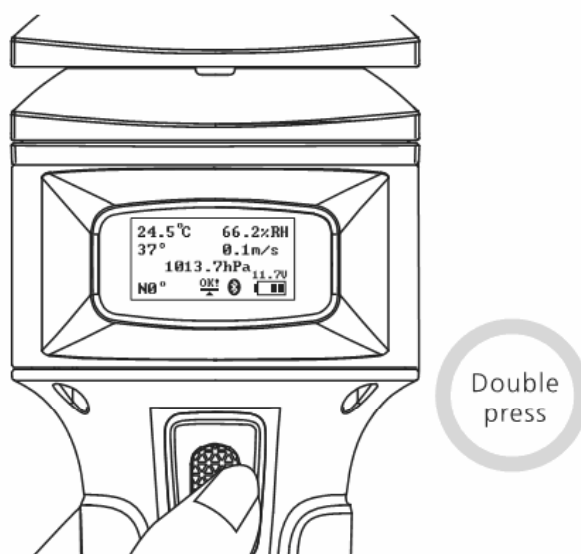

Press

Press

☑ Press the multifunction key to change between HOLD and normal status.

Bluetooth

HWS3000 has the function of "Bluetooth ", take Bluetooth for example: Start "Bluetooth" to connect with the display terminal(Refer to page 54). The steps to start "Bluetooth" as bellow:

Double press the multifunction key, icon ✦ will show on the display, namely the Bluetooth is on; while double press the key again, the icon ✦ will disappear, namely the Bluetooth is off.

☑ Double press the multifunction key could control the Bluetooth on and off.

❗ To turn off the Bluetooth could reduce the power consumption to extend the operation time; but when the measured value of HWS3000 needs to be obtained by other display terminals, Bluetooth must be open.

Battery

HWS3000 is equipped with the removable battery. When the battery power is really low(The icon "▭" shows on display)or automatic shutdown, it is requested to change or charge the battery.

Battery Replacement

Battery is on the bottom of the handle, please change the battery according to the steps as bellow:
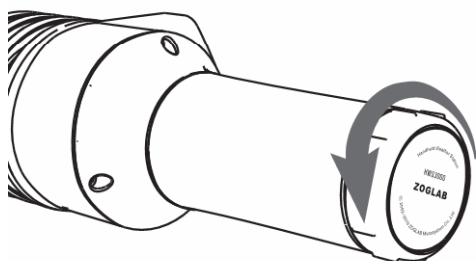
❶ Unscrew the end cover counterclockwise
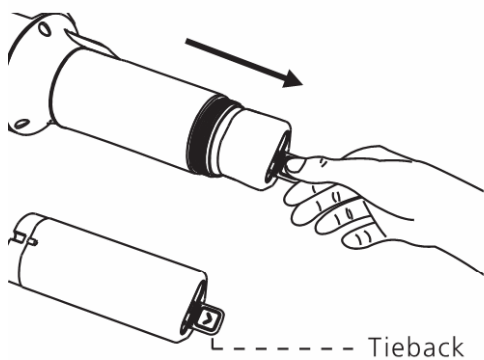
Tieback

❷ Pull the battery out to recharge(Refer to page 51)

Parallel

❸ Insert the fully charged battery back into the device(Note that the tieback is parallel to the screen)and tighten the tail cover clockwise

Battery Charge

Remove the battery, connecting the power adapter and power on, then you can charge the batt
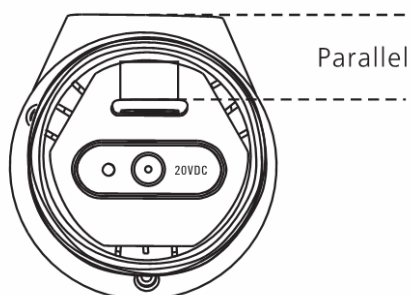
- Charging indicator is lit red means under charging;
- Charging indicator is lit green or off means that the charging is done.

Charging indicator
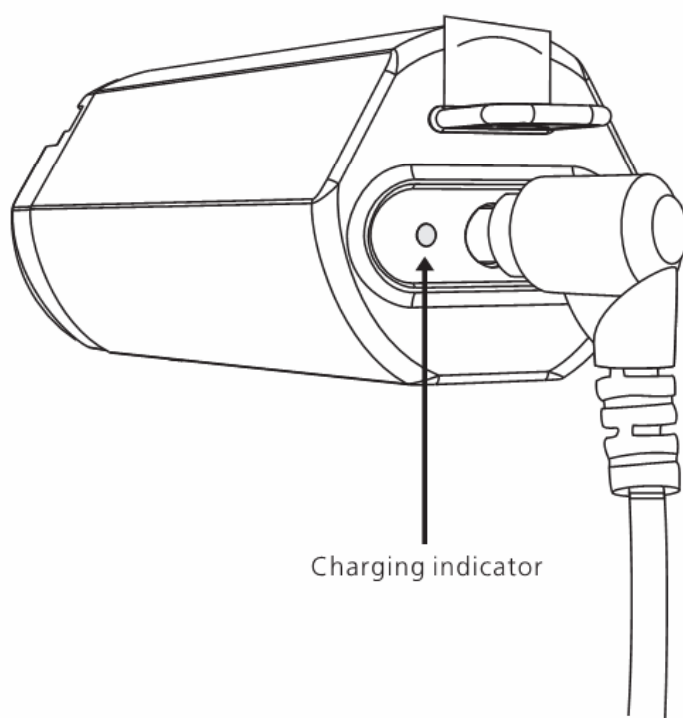
It is not recommended to use the device while the battery is under charging. The heat generated by the battery charging will affect the measurement accuracy of temperature and humidity .

Technical Specification

Measuring Specification

T measuring range	-30℃~50℃
T measuring accuracy	±0.3℃ , ±0.2℃(5℃~35℃)
T resolution	0.1℃
RH measuring range	0%RH~100%RH
RH measuring accuracy	±3%RH(10%RH~90%RH) , ±5%RH(90%RH~100%RH)
RH resolution	0.1%RH
Pressure measuring range	300hPa~1100hPa
Pressure measuring accuracy	±0.3hPa(0℃~50℃) , ±0.5hPa(-30℃~0℃)
Pressure resolution	0.1hPa
Wind speed measuring range	0~50m/s
Wind speed measuring accuracy	±0.5m/s(0~15m/s) , ±4%(>15m/s)
Wind speed resolution	0.1m/s
Wind direction measuring range	0~360°
Wind direction measuring accuracy	±2°(≤±10°) , ±4°(>±10°)
Wind direction resolution	1°

General Specification

|	
Communication interface	RS232/485 , BT
Pressure calibration interface	Φ5 interface
Power supply	100~240VAC 1.3A , 50/60Hz
Battery	18650×3
Battery life	Continuous work for 8 hours
Working environment	-30℃~50℃ , 10%RH~95%RH(Non condensing)
Dimensions	Φ82.0×413.5 mm
Weight	1.0kg
Certificates	CE, FCC, VCCI, C-TICK

Bluetooth Parameters

Operating Frequency Band   2.4GHz-2.48GHz unlicensed ISM band

Output Power Class   Class 2

Bluetooth Version   2.1+EDR

Modulation Type   GFSK;8DPSK; π/4DQPSK

Data Rate（Mbps）   1Mbps

Antenna Type   Dipole

Antenna Gain   0dBi

RF Conducted Power   -6~4 dBm

Channels List：

2402	2403	2404	2405	2406	2407	2408	2409	2410
2411	2412	2413	2414	2415	2416	2417	2418	2419
2420	2421	2422	2423	2424	2425	2426	2427	2428
2429	2430	2431	2432	2433	2434	2435	2436	2437
2438	2439	2440	2441	2442	2443	2444	2445	2446
2447	2448	2449	2450	2451	2452	2453	2454	2455
2456	2457	2458	2459	2460	2461	2462	2463	2464
2465	2466	2467	2468	2469	2470	2471	2472	2473
2474	2475	2476	2477	2478	2479	2480		

Product Dimensions

413.5

55.0

HWS3000
Handheld Weather Station

47.4

82.0
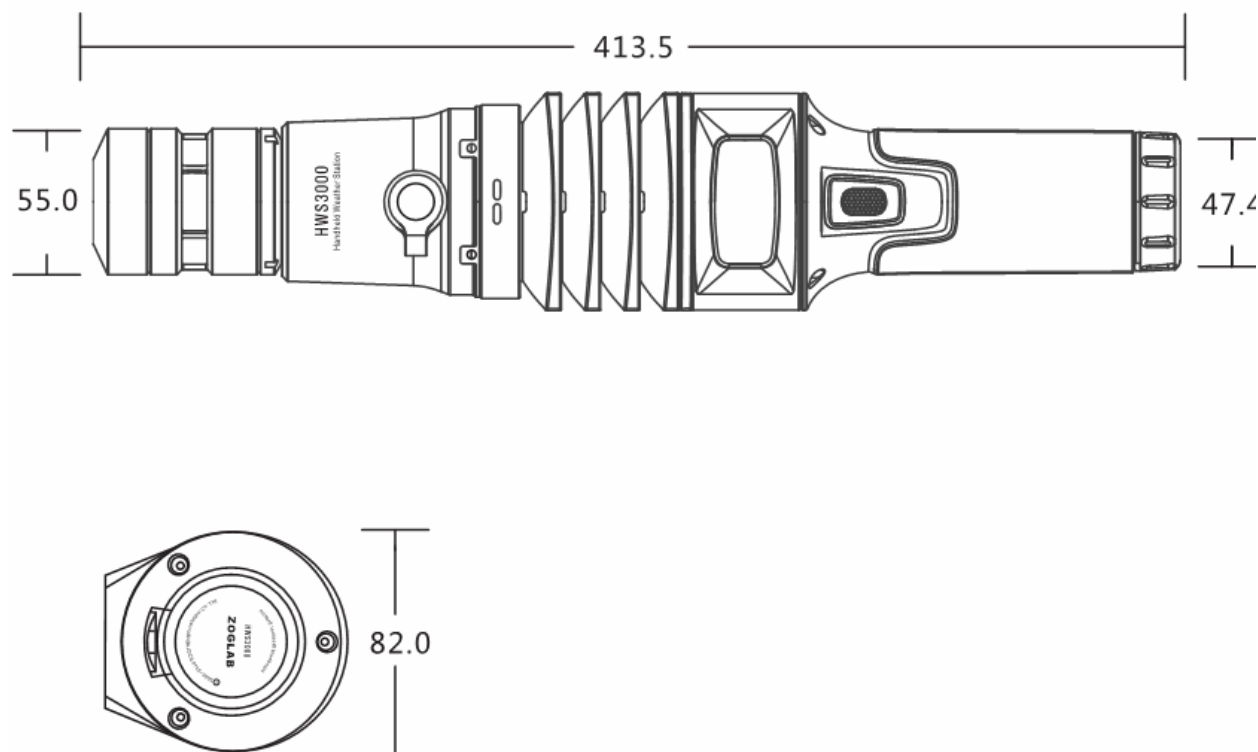
Naming Conventions

- HWS3000 AMY   Wide measuring range and high accuracy
- HWS3000 STD   High accuracy
- HWS3000 LTD   General accuracy