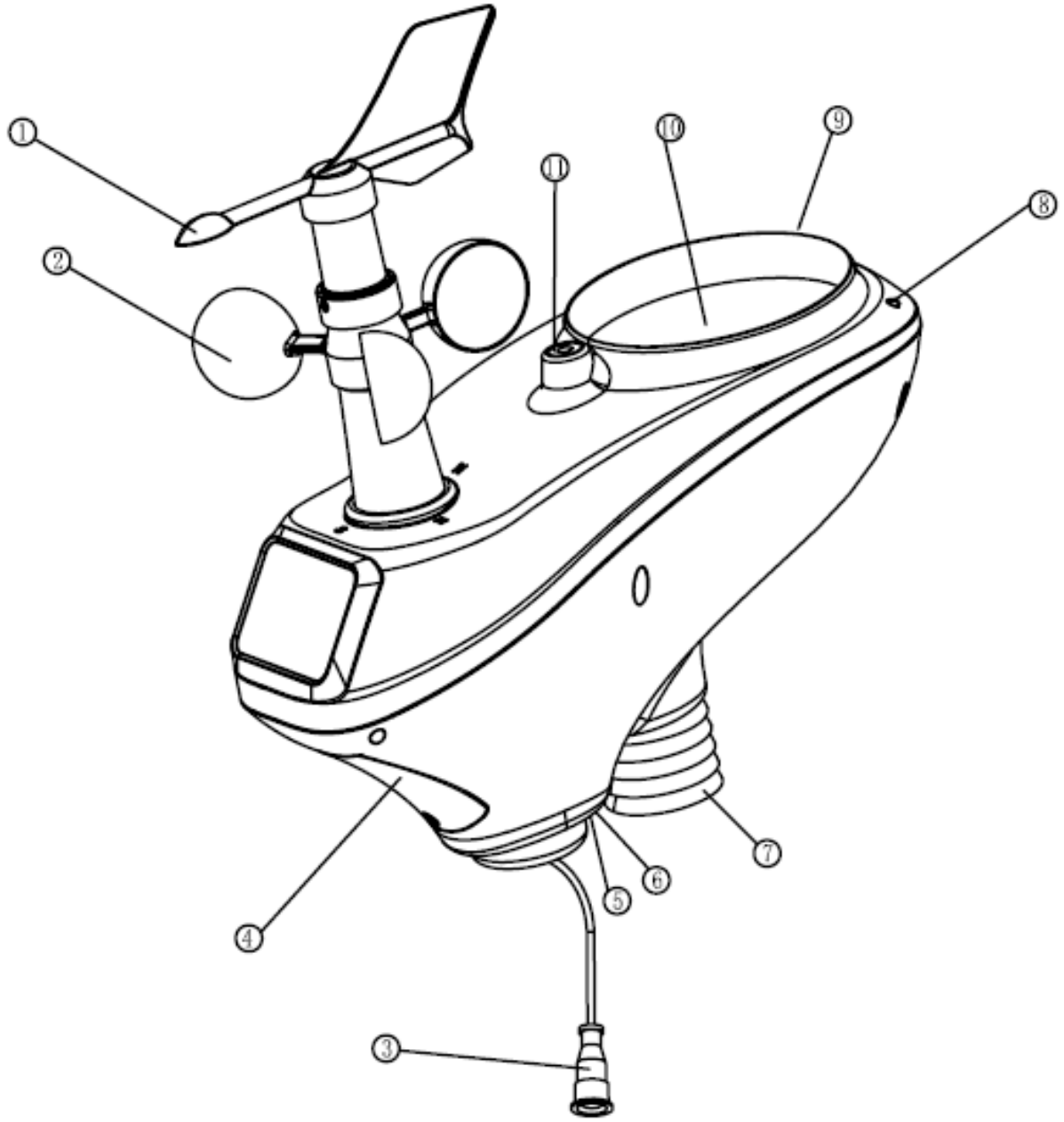
Weather Station with RS485
(w atmospheric pressure)

manual

OVERVIEW



1. Wind Vane
2. Wind Speed Sensor
3. connector to extend the cable
4. Battery compartment
5. LED Indicator: light on for 4s if the unit power up.
6. Reset button
7. Thermo-hygro sensor
8. UV sensor
9. Light sensor
10. Rain collector
11. Bubble level

Package Contents

The weather station consists of the following parts.

QTY	Item
1	Outdoor sensor(Thermo-hygrometer / Rain Gauge / Wind Speed Sensor /Transmitter)
1	Wind Vane
1	Stainless Steel Tube (D32*H200mm)
1	U style Stainless Steel Loop
1	Zip bag for 1pc Allen wrench
1	Cable with USB connector

Installation

Before placing and installing all components of the weather station at there final destination, please set up the weather station with all parts being nearby for testing the correct function.

Outdoor sensor

1. Attach the wind vane

Push the wind vane into the shaft. as shown in figure 1.

Tighten the set screw with the Allen Wrench (included) as shown in figure 2. Make sure the wind vane spin freely.

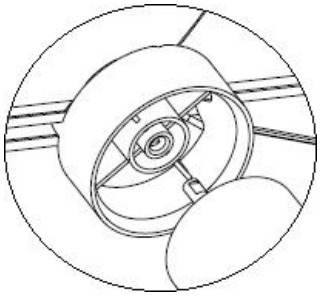


Figure 1

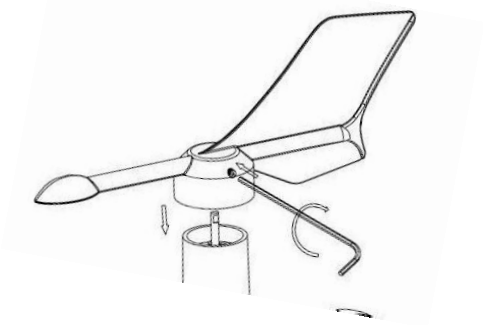


Figure 2

2. Install Mounting Pole

Insert the pole into the base, as shown in figure 3. Spin the lid onto the base as shown in figure 4.

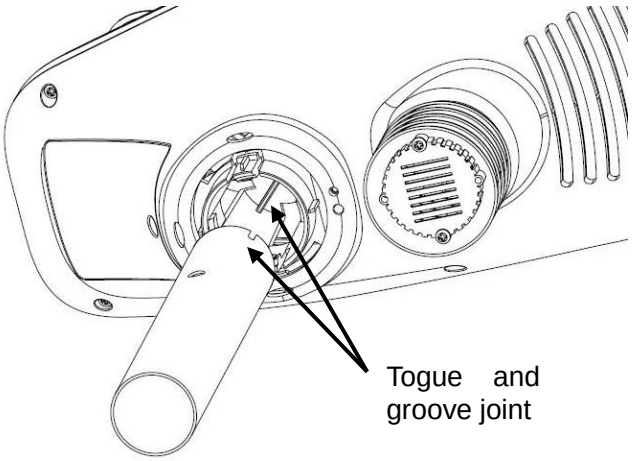


Figure 3

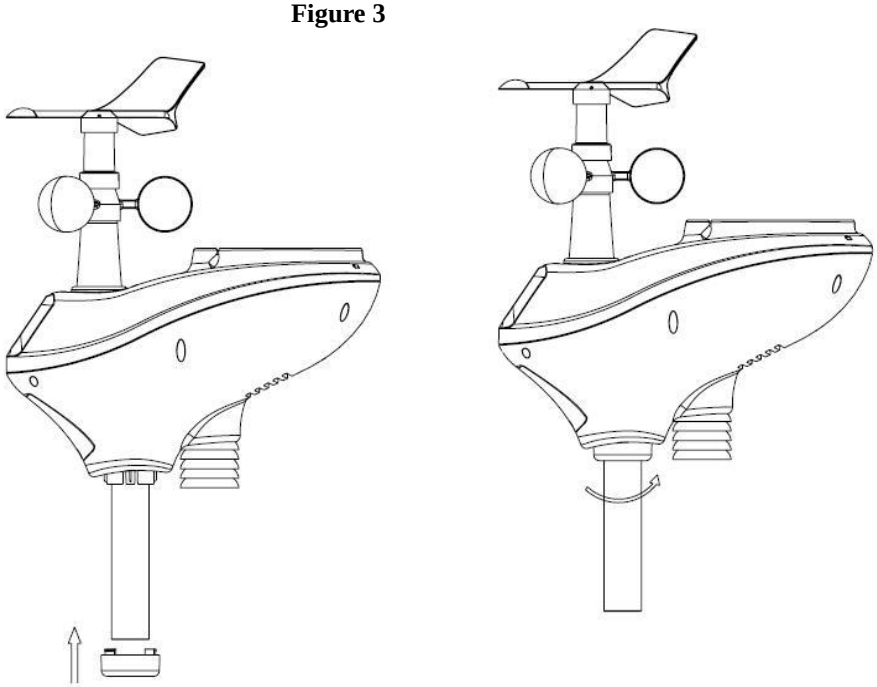


Figure 4

3. Install Batteries

Locate the battery door on the thermo-hygrometer / rain gauge transmitter, as shown in Figure 5. Turn the set screw counter clockwise to loosen the screw to open the battery compartment. Insert 3XAA batteries in the battery compartment The LED indicator on the back of the transmitter will turn on for four seconds and normally flash once every 16 seconds (the sensor transmission update period).

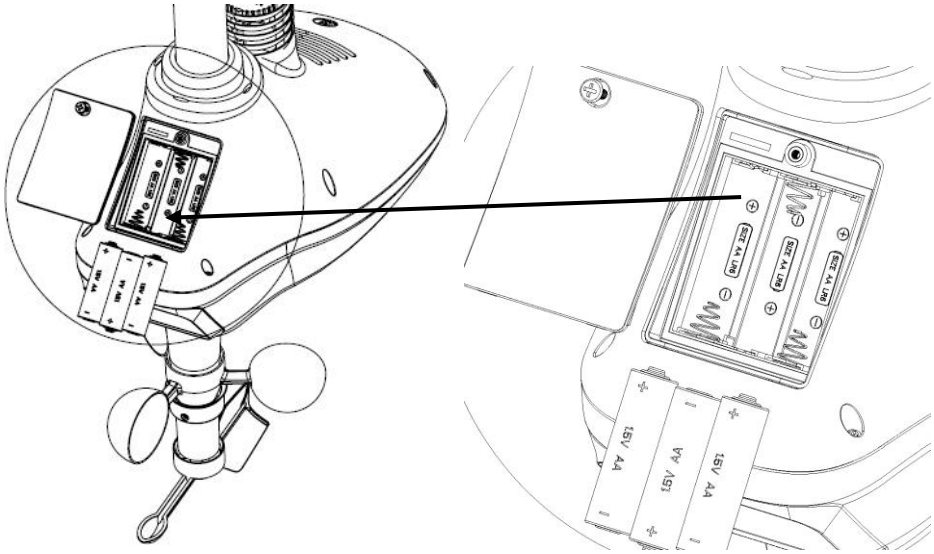


Figure 5

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 thermo-hygrometer.

4. Mount outdoor sensor

Fasten the mounting pole to your mounting pole or bracket (purchased separately) with the two U-bolts, mounting pole brackets and nuts, as shown in Figure 6.

Tighten the mounting pole to your mounting pole with the U-Bolt assembly, as shown in Figure 7..

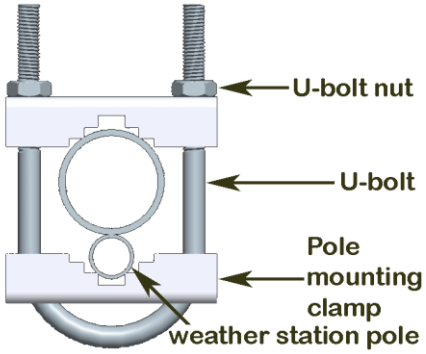


Figure 6

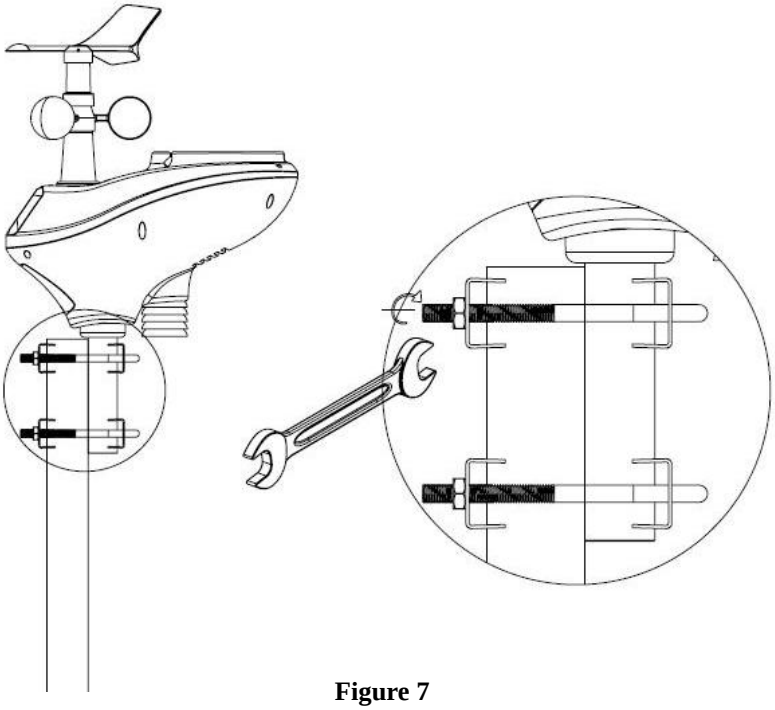


Figure 7

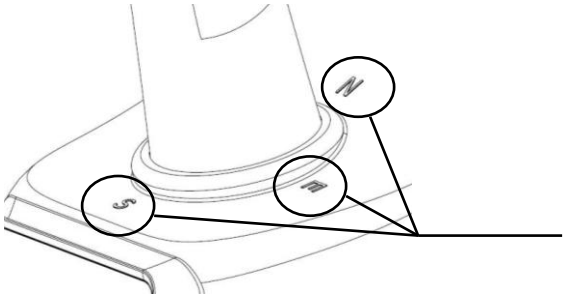


Figure 8

there are four alphabet letter of “N”,”E”,”S”and “W” representing for the direction of North, East, South and West, as Figure 8. Wind direction sensor has to be adjusted so that the directions on the sensor are matching with your real location. Permanent wind direction error will be introduced when the wind direction sensor is not positioned correctly during installation.

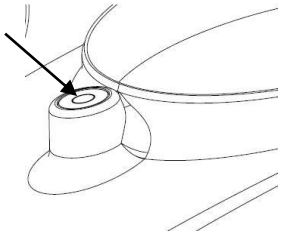


Figure 9

Level the sensors

Use the bubble level on the rain sensor as a guide to verify that sensors are level.

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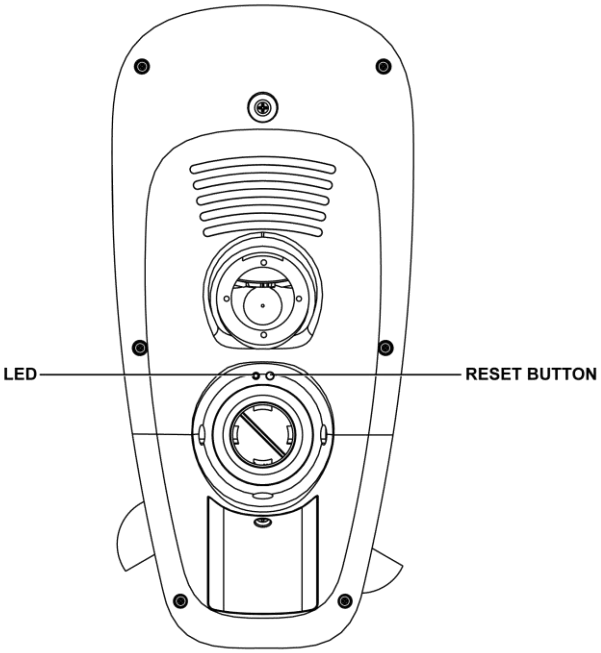
5. Reset Button and Transmitter LED

In the event the ourdoor sensor is not transmitting, reset the outdoor sensor.

With an open ended paperclip, press and hold the **RESET BUTTON** for three seconds to completely discharge the voltage.

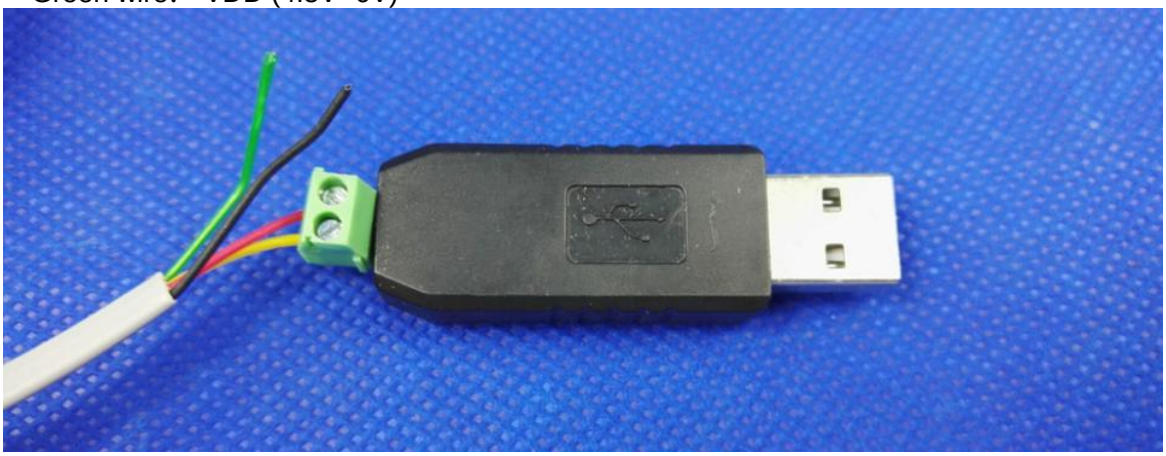
Take out the batteries and wait one minute, while covering the solar panel to drain the voltage.

Put batteries back in and resynchronize with console by powering down and up the console with the sensor about 10 feet away.



6. Connect to USB connector (4 wire cable)：

Black wire： GND
Red wire： USB A (D+)
Yellow wire： USB B (D-)
Green wire： VDD (4.5V -6V)



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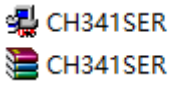
7. USB connector connect to computer:

Install the drive “CH341SER”。



8. open the software(for testing purpose):

Select the correct port com: (eg.COM1)

Baud:9600, Parity: NONE, Bits: 8, Stop:1

Remark: Customer can design the software to receive the data, and store in the server.

9. Data received explanation:

Total 42 data (hex)：21 bytes

(example you received data as：24 0D 14 62 A4 38 22 05 00 1C 00 03 00 15 18 FF F9 01 8A 9E XX)

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1st、2nd： 24 (identify tx type)

3rd、4th： 0D (security code)

5th、6th、7th： 146 (wind direction)
(explanation: 146(HEX) =0001, 0100,0110 (Binary)
(Bit8=0, Bit 7=0, Bit 6=0, Bit 5=0, Bit 4=1, Bit 3=0, Bit 2=1, Bit 1=0, Bit 0=0,)
Wind direction is:B0 0001, 0100 = 20 (decimal)
So, wind direction is: 20°

8th,9th,10th： 2A4 (Temperature)
(explanation:2A4 (HEX)= B0010 1010 0100 =676(Decimal)
calculation： (676-400)/10=27.6
so temperature is: 27.6℃

11th、12th：38 (Humidity)
（Explanation:38(HEX)=56(D), so it is 56%）

13th、14 th：22 (wind speed)
(explanation:
22 (HEX) = B 0010 0010
(Bit8=0, Bit 7=0, Bit 6=0, Bit 5=1, Bit 4=0, Bit 3=0, Bit 2=0, Bit 1=1, Bit 0=0,)
So, the data is: B0 0010 0010 = 34 (D)
calculation：34/8*1.12=4.76
So, wind speed is: 4.75 m/s.

15th、16th：05 (gust speed)
(explanation: gust speed: 5 *1.12= 5.6 m/s)

17th-20 th： 001c (accumulation rainfall)
(explanation: accumulation rainfall: 28 mm)

21th-24th： 0003 (UV)
(explanation: UV: uW/cm2)

25th-30th： 001518 (LIGHT)
(explanation: Light:5400/10=540 LUX)

31th、32th：FF CRC (crc value)

33th、34 th：F9 checksum value (sum of previous 16 types)

35th-40th: 018A9E (barometric pressure)
(explanation: pressure:101022/10=1010.22 hpa)

41th、42 th：xx checksum value (for barometric pressure)

Remark:
1. wind speed coefficiency is:1.12m/s/1 time，Rain coefficiency: 0.3mm/time
2. UART format: baud rate:9600, parity:NONE, bits:8, stop:1
3. wind speed*8, means that the result is 8 times than the original, please divide 8, then multiple 1.12 (coefficiency)
4. data sending interval is:16s, communication rate: 9600 (fixed)

Specifications

Temperature range	:	-30˚C--60˚C
Accuracy	:	+ / - 1 °C
Resolution	:	0.1˚C
rel. humidity range	:	10%～99%
Accuracy	:	+/- 5%
Rain volume display	:	0 – 9999mm
Accuracy	:	+ / - 10%
Resolution	:	0.3mm (if rain volume < 1000mm) 1mm (if rain volume > 1000mm)
Wind speed	:	0-50m/s (0~100mph)
Accuracy:		+/- 1m/s (wind speed< 5m/s) +/-10% (wind speed > 5m/s)
Light	:	0-300k Lux
Accuracy	:	+/-15%
Air Pressure	:	300-1100hPa (8.85-32.5inHg)
Accuracy	:	+/-3hpa （700-1100hPa）
Measuring interval	:	16 sec