TQ05

Hand-held Weather Station User Manual





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1. System overview

TQ05 is a hand-held micro-weather station that integrates multiple functions in one, which is lightweight and durable, does not require any moving parts, maintenance and on -site calibration, and can simultaneously output real-time data such as wind speed, wind direction,temperature, humidity, air pressure, PM2.5, PM10, noise, carbon dioxide, rainfall, etc. The device is composed of several sensors, measure wind speed and wind direction by using the time difference of ultrasonic wave propagation in the air. The device can freely choose the test elements, comes with a 2.4 inch touch screen, which can display the test data in real time. The device comes with a specially designed handle, which is convenient for users to hold with one hand. Built-in Bluetooth module, which can use the special APP mobile software provided by our company to configure the device parameters on the mobile phone, especially suitable for field inspection and on-site debugging.

1.1 Function features

- With 2.4 inch LCD touch screen, can watch the monitoring data in real time, with clear display and comprehensive content.
- Free collocation of measurement elements to facilitate on-site testing requirements.
- Large capacity rechargeable battery, up to 36 hours of battery life.
- Optional mounting bracket, can be fixed for a long time, easy to operate.
- Large capacity data storage, can store up to 260,000 data, using the Type-C line to export data.

1.2 Technical parameters

Parameter name	Scope or interface	Instruction
	USB	Type-C to USB cable is connected to computer to export data
Power supply	Battery	Three 18650 battery power supply
Data storage	260,000 pieces	
Battery life	≤36h(This condition applies only to specific configuration modes)	
Precision	Wind speed	±(0.2m/s±0.02*v)(v is the true wind speed)
	Wind direction	±3°
	Humidity	±3%RH(60%RH,25℃)
	Temperature	±0.5℃(25℃)
	Air pressure	±0. 15kPa@25℃ 101kPa
	Noise	±0.5dB(Intonation in reference, 94dB@1kHz

	PM2.5	Particulate count efficiency:50%@0.3μm, 98%@>=0.5μm. PM2.5 precision：±3%FS(@100μg/m³, 25℃, 50%RH)
	CO2	±(50ppm+ 3%F • S) (25℃)
	Light intensity	±7%(25℃)
	Total solar radiation	≤±3%@150W/m²
Range	Wind speed	0~60m/s
	Wind direction	0~359°
	Humidity	0%RH~99%RH
	Temperature	-40℃~+80℃
	Air pressure	0-120kPa
	Noise	30dB~ 120dB
	PM10 PM2.5	0-1000μg/m³
	Light intensity	0~200 thousand Lux
	Total solar radiation	0~1800W/m²
Long stability	Temperature	≤0. 1℃/y
	Humidity	≤1%/y
	Air pressure	-0. 1kPa/y
	Noise	≤3dB/y
	PM10 PM2.5	≤1%/y
	CO2	≤1%/y
	Light intensity	≤5%/y
	Total solar radiation	≤±3%
Temperature And humidity response time	Temperature	≤25s(1m/s wind speed²)
	Humidity	≤8s(1m/s wind speed²)
Response time	Wind speed	1s
	Wind direction	0.5s
	Air pressure	≤2s
	Noise	≤3s
	PM10 PM2.5	≤90s
	CO2	It is generally less than 180 seconds when there is a 90% step change
	Light intensity	≤2
	Total solar radiation	≤10s
	Typical precision	±5%(from labs data)
	Resolution	Standard 0. 1mm

Optical rainfall parameter	Max instantaneous rainfall	24mm/min
	Rain-sensitive diameter	6cm

1Temperature and humidity response time is τ63 time.

2Wind speed is the wind speed of the transmitter inner sensitivity material area, when test environment wind speed is 10^{-2}m/ms, wind direction is perpendicular to the transmitter collector, the wind speed of transmitter inner sensitivity components area is about 1m/s.

1.3 Product models

TQ05 is the hand-held weather station basic model, and customer can freely select the specific monitoring elements.

TQ05-				Hand-help weather station
	USB-			USB export data
		-1		Ultrasonic hand-help weather station
				Without bracket
			M8	With triangle bracket

Below table shows the selected elements of this equipment, user can select the needed elements per it(PM and carbon dioxide can not be selected at the same time):

Name			
Air temperature	Air humidity	Optical rainfall	Light intensity
Wind speed	Noise	Air pressure	PM2.5
Wind direction	PM10	Total solar radiation	Carbon dioxide

1.4 Equipment dimension drawing





2. Equipment installation

2.1 Inspection before installation

Device list:(Different selection, different equipment quantity, please refer tot he field reality for details)

Hand-help weather station equipment 1pc

Portable triangle bracket 1pc(optional)

Portable trolley case 1pc(optional)

Installation seat 1pc(optional)

Portable carrying case(optional)

Data cable 1pc

Certificate of conformity, warranty card

2.2 Installation

When the equipment is transported to the place of use, the instrument must be placed in a special packing box. After opening the box, do not discard any packaging materials, and they can be used again if the device needs to be transported frequently. After arriving at the site, take the device out of the packing box, turn on the power switch to detect the on-site data then. If the device is equipped with a tripod, the device can also be mounted on the tripod for use.

(1) Assemble the tripod

Take out the tripod, pull the three locks in turn, pull out the rod, lock the latch, stretch the tripod and secure it

(2) Install the instrument

Take out the hand-held weather station, align to the tripod upper connector, pick up the device and install it to the tripod.

(3) Power-on test

Long press the power key on device bottom for 3s, the device will be turned on after heard a “Di” sound, you can view the device screen display, or use Bluetooth to connecting software for view. Long press the power key on device bottom for 3s, the device will be powered off after

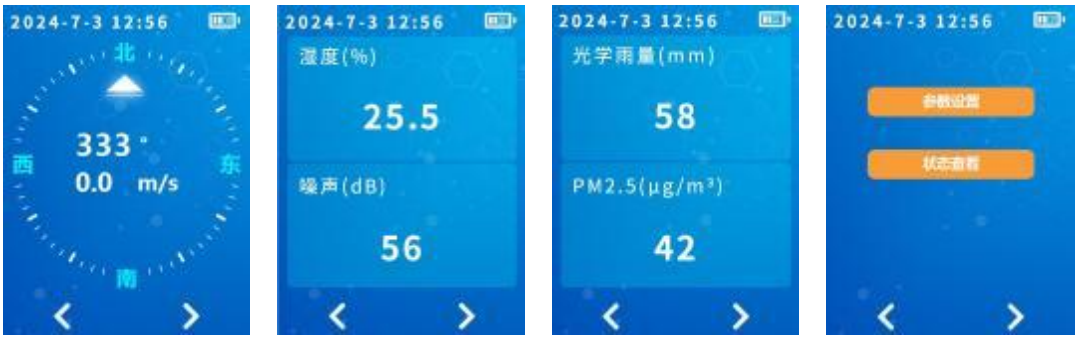
heard two “Di” sounds.



3. Screen display

3.1 Real-time data

Turn on the power switch, the data will be displayed on the screen and will be refreshed at real-time. You can click left or right button to change page, the time and battery power will be displayed on the top of the screen.



Note: When the finger touches to switch screen operating, the display may be slow or stuttering if the switch frequency is too fast or touch the screen frequently, that is a normal phenomenon. When you use finger to do screen operating, please do not use fingernail or other hard object, to avoid unresponsive operation or screen damage issue.

3.2 Parameter settings

Click parameter configuration button on the main interface, input configuration password(default password is 8888), you can enter the parameter configuration interface.



Data store interval: Set the device data store interval, the range is 20s~65535s, default is 60s. **Screen off time:** Set the screen off time, the range is 15s~65535s, default is 60s.

Revise the setting password: Revise the four digit password that to enter parameter setting interface, default password is 8888.

Select the display elements: Set the display elements that need to be displayed on the real- time data interface, the element real-time data will be displayed as 0 after ticked if the purchased elements do not contain it.

Factor coefficient setting: Set the ticked element coefficient, real-time data display is the processing value.

Coefficient A： Set the element data coefficient A. **Coefficient B：** Set the element data coefficient B.

Calculation formula: Y=AX+B, X is the original value, Y is the processing value.

3.3 Status check

Click status check button to enter status check interface.



Address code: Device uniquely identifies of 8-bit address.

The remaining storage space: Check the remaining storage space of the current data store.

Version no.: The device current software version

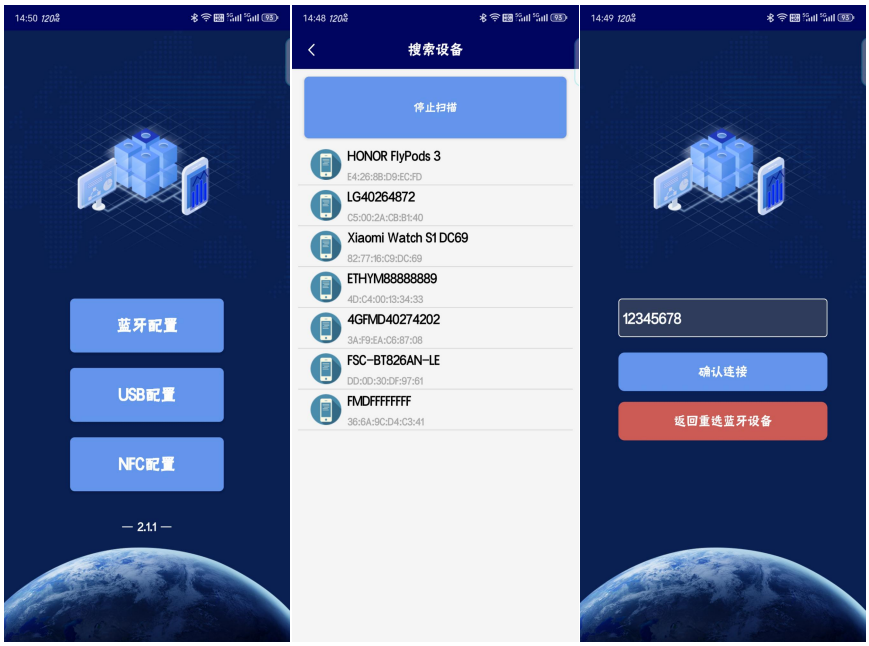
Click 'Clear Stored Data' button can clear the host current total stored data. Click 'Clear Accumulated Rainfall' button can clear the device accumulated rainfall data to zero, which is convenient to recalculate the rainfall data in the next use.

4. Bluetooth parameter configuration

1) The device supports Bluetooth configuration. You need to scan the code with your Android phone via QQ or browser to download the configuration software "Multi-functional Parameter Configuration" APP. You can also contact our company's staff to obtain it.

2) After the download is complete, turn on Bluetooth, open the APP interface (Figure 1), click on Bluetooth configuration to connect the device, add the device name HSQXZ and the device address. For example, if the device address is 12345678, select HSQXZ12345678 (Figure 2), and enter the password (default password 12345678) to log in (Figure 3).

3) After logging in, check the names of the parameters you need to modify, click "Read", and after reading, you can read the real-time data displayed on the screen, modify the elements to be displayed and their coefficients, as well as change various parameters of the device.



4.1 Real-time Data

Under this interface, you can swipe left or right to view the real-time data of various elements detected by the device. You can also view the 2-hour minute-level precipitation forecast and the 24-hour meteorological trend forecast chart.



4.2 Parameter Configuration

Click on "Basic Parameters" to enter the basic parameter configuration interface. Check the elements you want to read and click "Read Parameters" at the bottom of the interface to obtain the basic parameter information of the device. Modify the selected basic parameters and click "Send Parameters" to send the modified parameters to the device.



5. Configuration software usage description

It will generate a 

icon on the desktop after software installation is finished, double click can open the software.

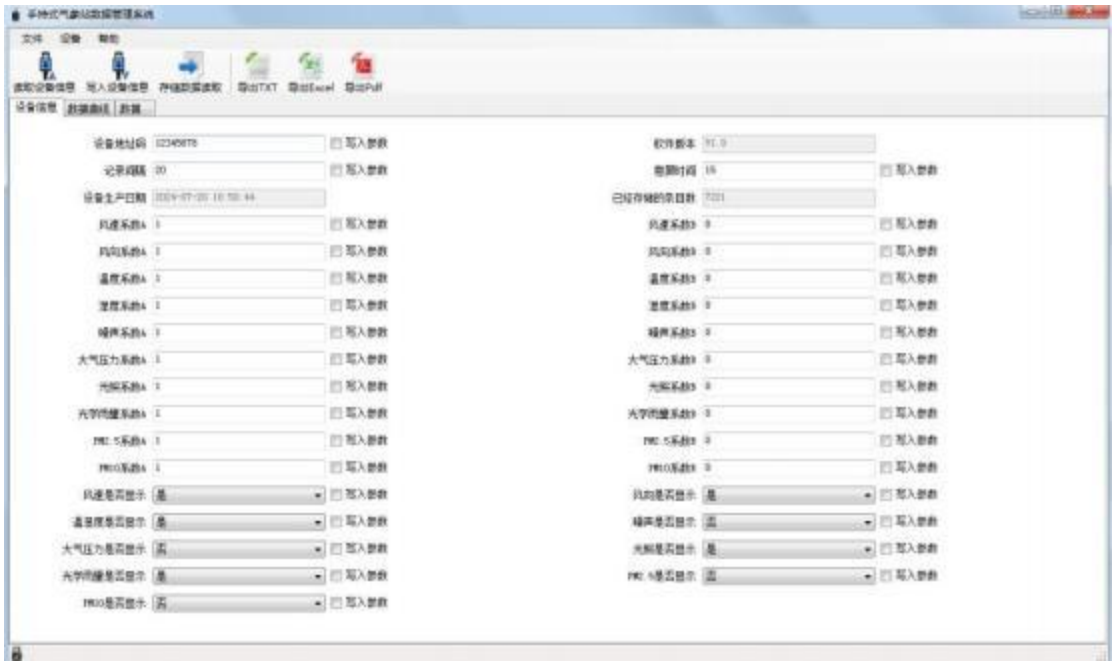
5.1 Device information

Connect the device to the computer through the USB data cable, open the software will automatically read the device information, after finish editing the device parameters, click "Write device information", you can write the parameters to the device.



It should be noted that after the modified parameter, tick modify parameter, and click ‘Write device information’, then this parameter can be written to the device. This function is set to

facilitate the modification of other parameters when modifying individual parameters.



Device production date: Factory default, can be checked but not modified.

The stored items quantity: The current stored recording items quantity of detector(all devices total recording items quantity).

5.2 Basic information

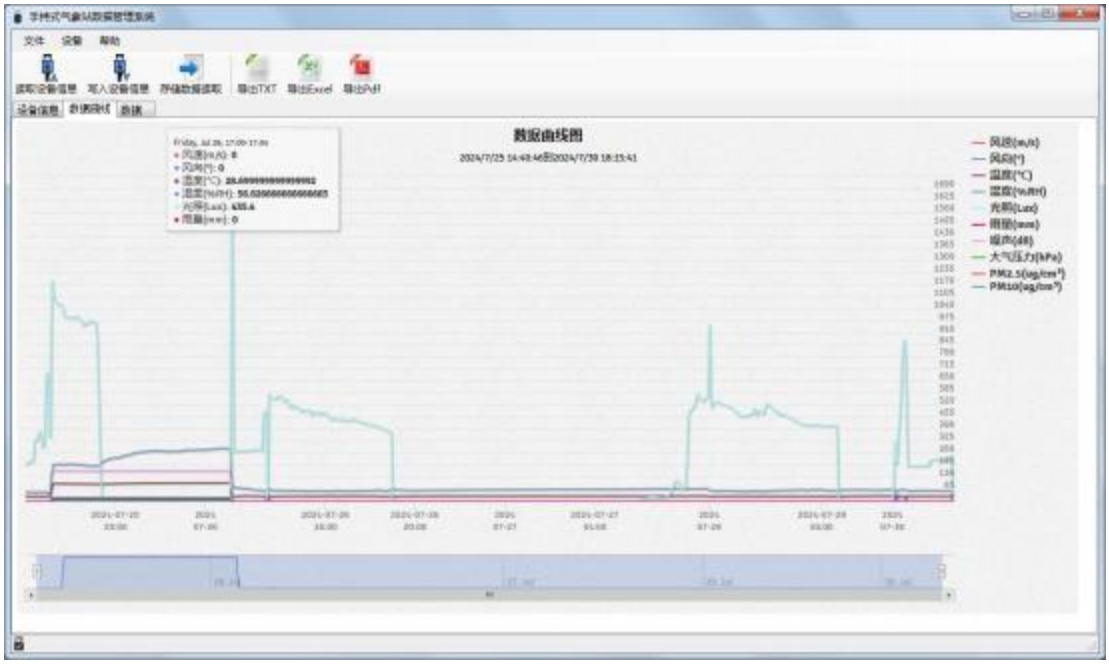
Click “Read parameter” to read the device basic information, if parameter modification is needed, after finish parameter modification, click “Write parameter” to send parameter to the device.

5.3 Import data

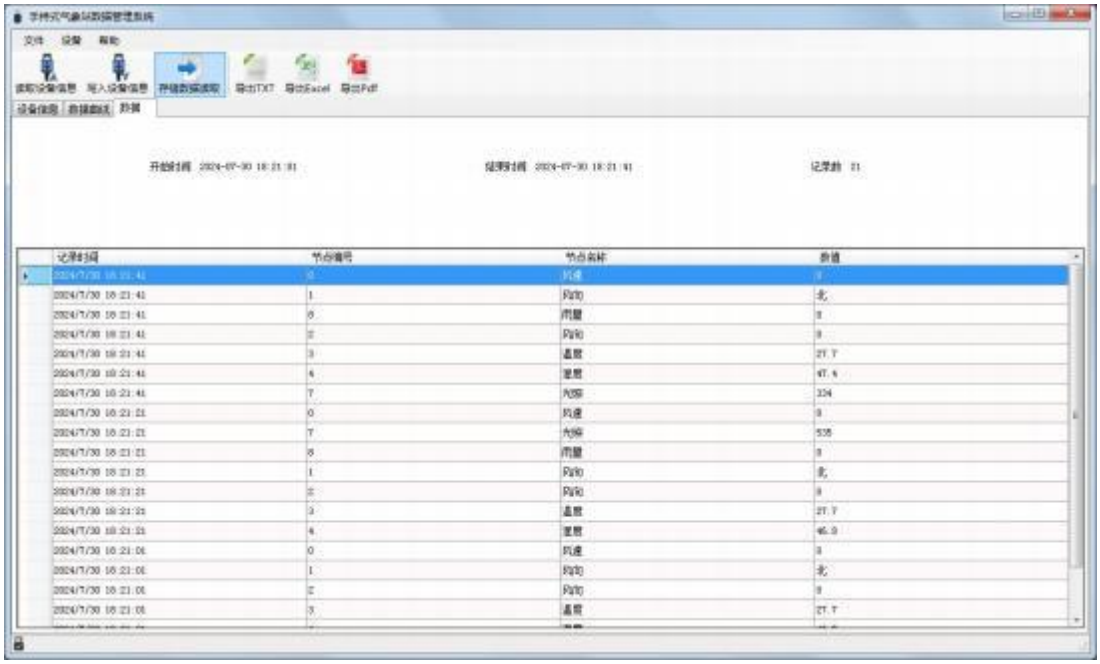
Connect the logger to computer via USB cable and open the handheld weather station

configuration software. The software will automatically read "Read device information", then click "Read stored data", you can import the data stored in the detector to the configuration

software.

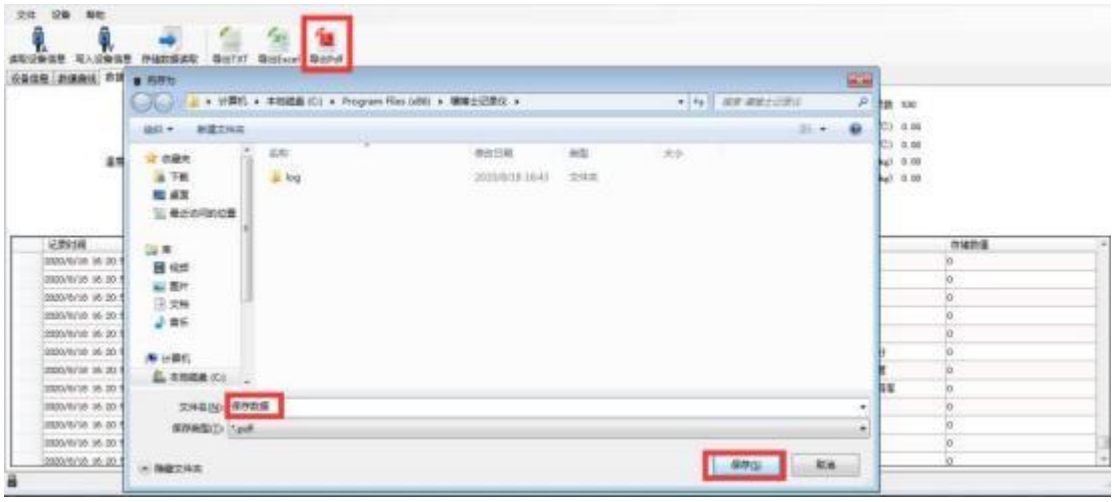


Click data, you can view the stores history data and also the history data curve.



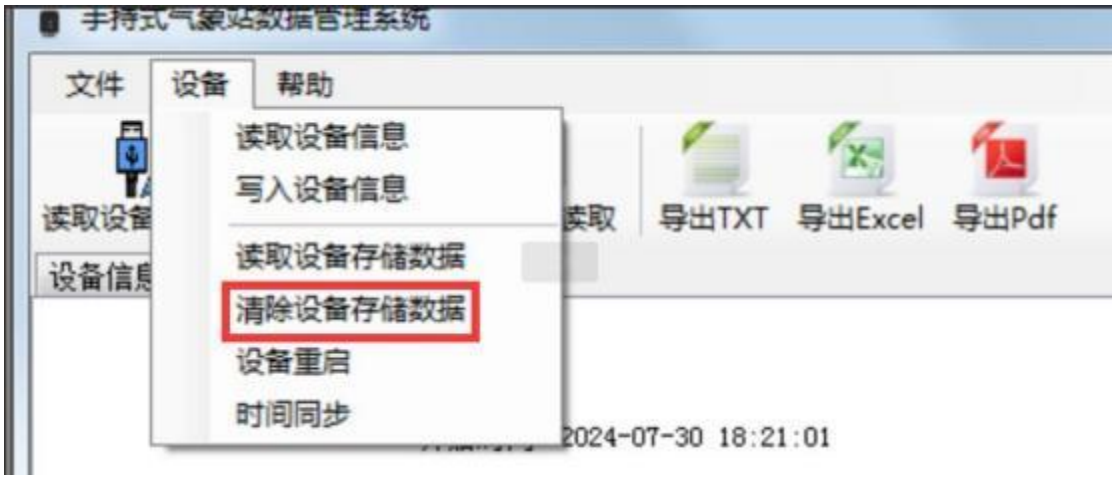
5.4 Export data

Select the export format(TXT/Excel/PDF) on the toolbar, you can export the data and save it to the specified path(take PDF as an example), will prompt if the data be exported successful.



5.5 Clear device data

Click “Device” on the toolbar, click “Clear device stored data” in the drop-down menu, you can clear the device data. Software will prompt ”Data clear successful” after finish clearing.



You can also use “Device restart” and “Time synchronization” to do restarting and timing operation to the device.