

## NBL-S-HS

### Intelligent multi-parameter handheld tester



#### I product description

This instrument is used to quickly measure agricultural environmental parameters such as soil temperature and humidity, PH value, salinity, conductivity, etc., and display it in real time through the display screen, and store the data in the internal chip of the speed tester. After the measurement is completed, the data in the recorder can be downloaded to the calculation through the attached software, which is convenient for research or preservation.

Using a variety of agricultural environmental sensors and transmitters specially developed by our company, one machine is multi-purpose. This instrument consists of a handheld instrument, a soil temperature and humidity sensor, a salinity sensor, a PH meter, a UBS data cable, a portable suitcase and other parts. Widely used in agriculture, forestry, geological exploration, plant cultivation and other fields. The types of sensors will continue to increase in the future, so stay tuned.

This instrument can be widely used in meteorology, environmental protection, agriculture and forestry, hydrology, storage, scientific research and other fields.

#### II Features

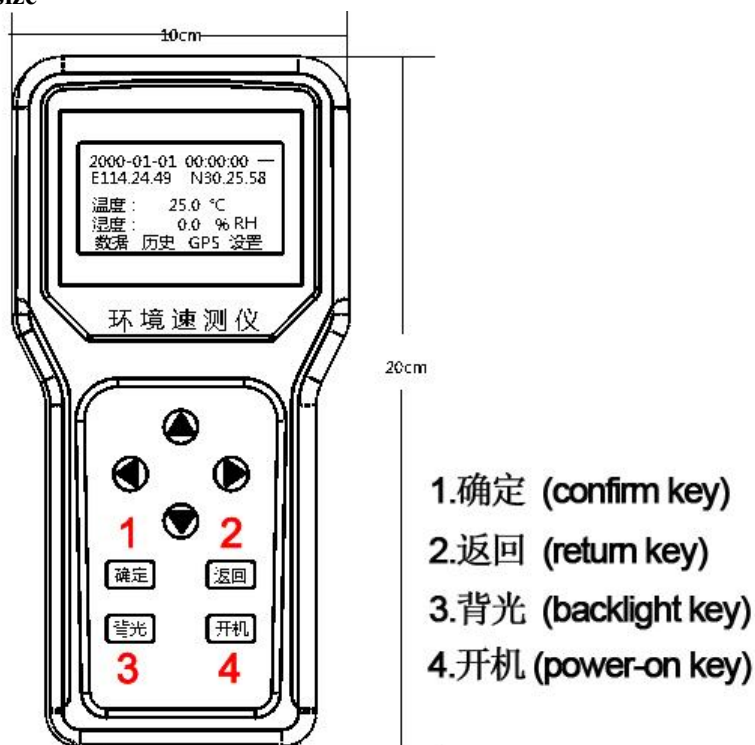
1. Small and beautiful, easy to carry, touch buttons, large-screen dot-matrix LCD display, full English menu operation.
2. The sensor probes are consistent, and the sensor interfaces of different meteorological parameters can be interchanged without affecting the accuracy.

3. The instrument can automatically identify the sensor type without manually setting the measurement elements.
4. Meteorological parameters can be added, only sensors can be purchased, and there is no need to configure the host.
5. Data storage function, can store up to 22528 pieces of data, you can view the data on the host, or import it into the computer.
6. The sampling interval can be set manually or separately from the computer at any time, and the data can be automatically recorded and stored.
7. Automatically record and store data, and the data saved in the host will not be lost after power failure.
8. The instrument has built-in GPS, with latitude and longitude positioning function. The information (longitude, latitude) of the measuring point can be accurately located, and the positioning accuracy: four decimal places, less than 5 m.
9. After the acquisition instrument is connected to the computer, the stored and recorded data can be backed up and saved in EXCEL format, which is convenient for later recall.

### III Technical Parameter

| Environmental parameters | Measurement parameters                               | Range      | Resolution | Accuracy  |
|--------------------------|--|------------|------------|-----------|
|                          | soil temperature                                     | 50--80℃    | 0.1℃       | ±0.5℃     |
|                          | soil moisture  | 0--100%    | 0.1%RH     | ±3%RH     |
|                          | soil salinity  | 0-8000mg/L | 1mg/L      | ±50mg/L   |
|                          | Soil EC  | 0-10mS/cm  | 0.01mS/cm  | ±5% mS/cm |
|                          | Soil PH  | 0-14PH     | 0.01PH     | ±0.02PH   |
| Power supply             | Lithium-ion battery                                  |            |            |           |
| Communications           | USB  |            |            |           |
| storage                  | 20,000 pieces of data                                |            |            |           |
| size                     | Host: 100×200×28 mm<br>Whole machine: 405×100×100 mm |            |            |           |
| Hosts weight             | About 0.5KG  |            |            |           |
| work environment         | -20℃~80℃; 5%RH~95%RH                                 |            |            |           |

#### IV Product size



#### V Soil Moisture Meter Software

This soil pH speed tester software can run on Windows 2000 and above operating systems, download and display the historical data recorded by the instrument. The data is stored in Flash and can be called by other software.

#### VI Instructions

1: Button description: There are 8 buttons on the instrument: parameter plus (▲), parameter minus (▼), Previous parameter (◀), next parameter (▶), confirm key, return key, backlight key, power-on key.

The backlight key and the power-on key can be used directly in any interface of the device.

2: Operating Instructions:

① Backlight key: In any interface, you can turn on/off the device screen backlight by pressing the backlight key.

② Power on and off: Press and hold the power button for 3 seconds, the instrument will start to enter the measurement state; press the power button again and release it, it will prompt whether to shut down, press the OK button and then shut down.

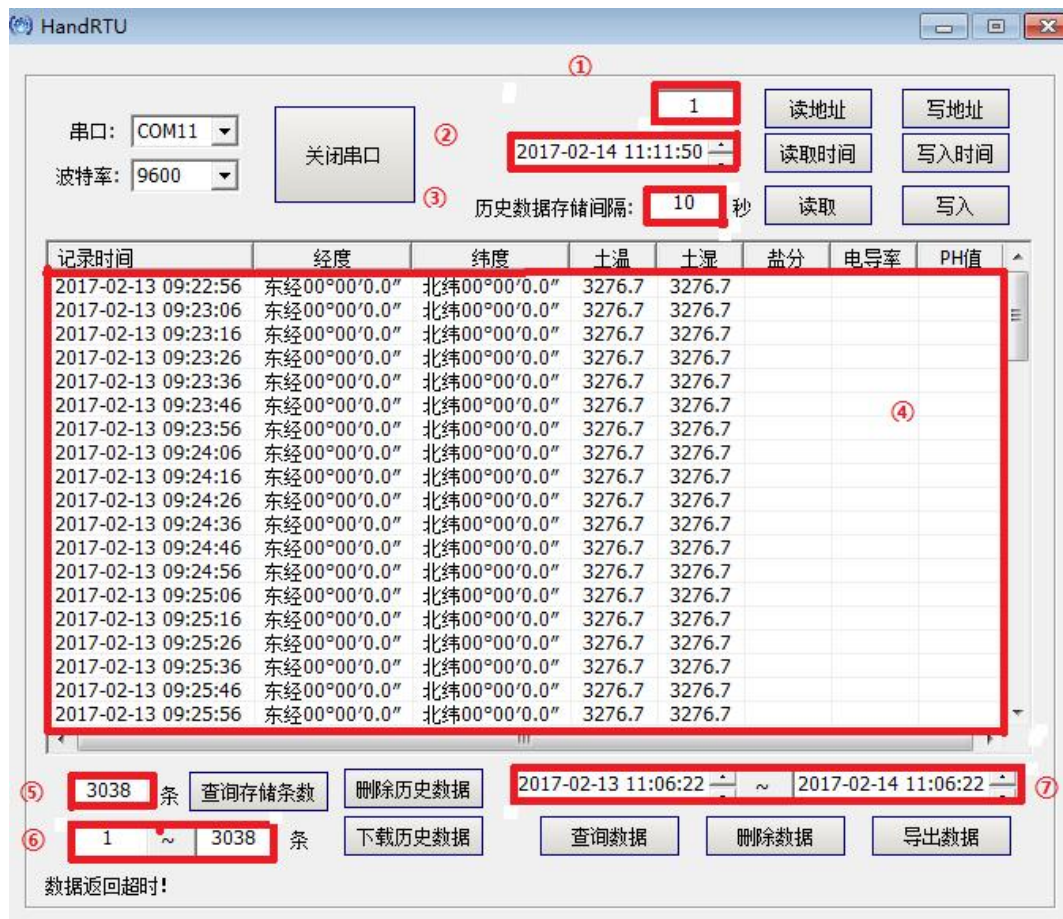
- ③Measurement data: After power on, press the left and right keys to select the "Data" interface, and connect the air hole head of the sensor to the air needle head of the instrument, and the measurement data of the sensor can be displayed in real time. The name displays "missed", and the corresponding data displays "-----".
- ④Inquiry and display of historical data: After power on, press the left and right keys to select the "History" interface, and press the parameter plus and minus keys to view the stored historical data; if you need to locate the historical data you want to view, you can Parameter plus, minus and up and down parameters are selected by the four keys to display historical data items. After viewing, press the return key to exit the data item selection function.
- ⑤GPS positioning: After powering on, press the left and right keys to select the "GPS" interface, and wait for about 1 minute to display the latitude and longitude information (positioning can only be performed outdoors); press the "OK" key to enter the GPS detailed information display interface.
- ⑥System settings: After power on, press the left and right keys to select the "Settings" interface, the interface will jump to 8 settings sub-menu interfaces, press the left, right, up and down keys to select the sub-menu to be set, and the "OK" key to enter the settings,
- ⑦Time setting: In the setting interface, adjust to the time setting, and press the OK key to start adjusting the system time. First enter the annual adjustment state, the target parameter to be adjusted will be flashed to remind, use the parameter plus and minus buttons to adjust. Press another parameter to adjust the month, day, hour, minute, second, week in turn, and finally press the OK key to confirm the adjustment time, otherwise press the Back key.
- ⑧Automatic storage time interval: The self-storage time interval (10s-30min) can be set under the historical data of the setting interface.
- ⑨Communication settings: The local address can be set under the communication settings in the setting interface.
- ⑩ Power check: You can check the remaining power status under the battery information in the setting interface.
- ⑪Parameter reset: In the parameter reset on the setting interface, the system parameters can be reset and all historical data can be deleted.

### 3: PC software description:

(1) Software installation: Double-click the included HandRTU\_setup.exe program, select the installation language (English), confirm to start the automatic installation, and click Next until it is completed.

(2) Software login: Take out the USB data cable, connect the speed tester to the computer, run the shortcut of the Desktop Mountain software, open the device manager of the computer to check the serial port number, select the serial port number and baud rate in the main interface of the software, and then open the serial port.

(3) The main interface of the software (as shown in the figure below):



I. Read and write address: Click the read address button to display the address of the host in the red window of No. ①, click the write address button to write the address of the red window of No. ① to the host.

II. Read and write time: Click the read time button to display the system time of the host in the red

window of ②, click the write time to write the system time of the computer to the host.

III. Set the data storage time interval: Click the read button, the storage time interval parameter set in the read host is displayed in the red window of No. ③, click the write button to write the time in the No. 3 window to the system data storage time interval.

IV. Download historical data: First, click the Query Stored Number button to display the current number of data stored by the host in the ⑤ window, and then set the data range to be downloaded in the ⑥ window (note that only the history in the ⑤ window can be downloaded. data) Click to download historical data to display historical data in the ④ window.

V. Export historical data: Set the time range of historical data in the No. ⑦ window, and then click the Export Data button to export the excel form of historical data.