



HUATO

User's Guide



S400W

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S400W Series Wireless Temperature and Humidity Data Logger User Manual

HUATO

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Section 1 Introduction

S400 wireless temperature and humidity data logger is a high speed, intelligent device developed by HUATO which combines the advantages of its relevant devices. With built-in memory and Zigbee wireless transmission function, it can record 8192 readings as well as remotely monitoring warehouse, lab, refrigerator, cold storage room, etc. With its 2.4G transmission ability, wiring is not required to build a monitoring network, reliable and easy to use.

Section 1.1 - Features

(1) Zigbee to RJ45 DTU technical parameters

- Wireless/wired transmission speed: 115, 200 bps
- Maximum 64 wireless logger terminals.
- Number of supported frequency bands: 15 frequency bands
- Wireless interface: Zigbee ad hoc network, automatically find the best link to transmit data
- Built-in RJ45 interface to transmit received data to server through LAN
- Can be used as a relay/gateway at the same time
- Power supply: DC 12V

(2) Zigbee wireless data logger technical parameters

- Zigbee 2.4G
- LCD screen
- Resolution: 0.1% C / 0.1% RH
- LED + buzzer alarm for exceptional data
- 2 in 1 sensor made in Switzerland
- Configurable record interval: 2s - 24h
- Transmission recovery function
- Wireless/wired transmission speed: 115, 200 bps.
- Maximum transmission range: 100-500 meters

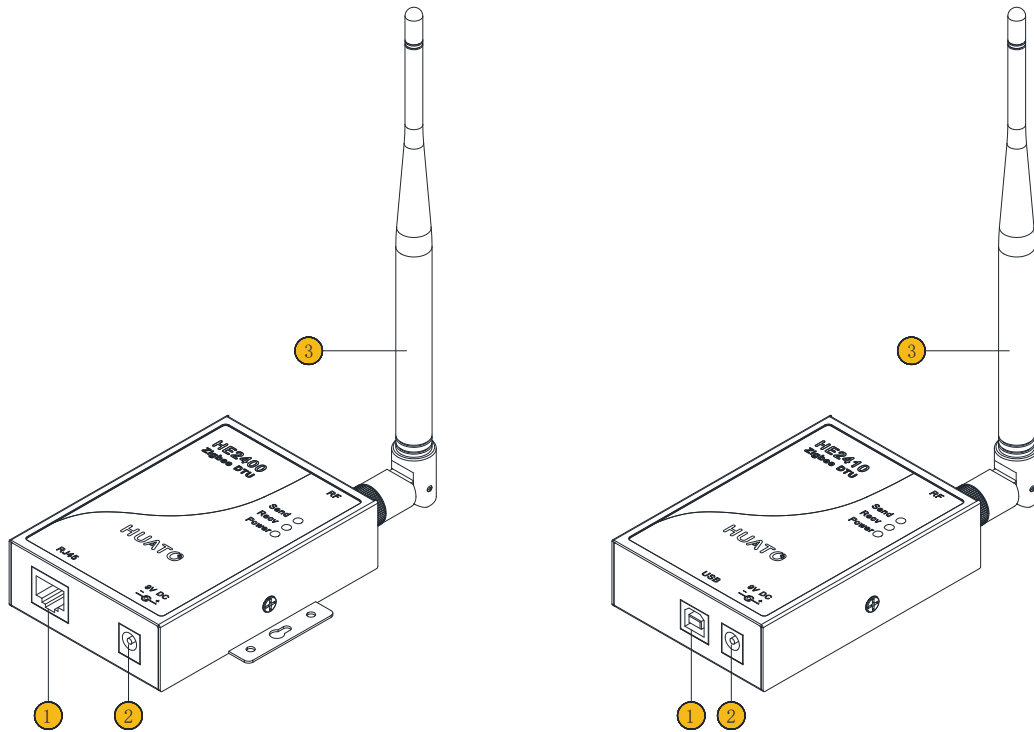
Section 1.2 - Applications

Widely used in agricultural research, food, medicine, warehouse, cold storage, refrigerator, machine room, chemical industry, meteorology, environmental protection, electronics, laboratory and other applications of temperature & humidity monitoring, typical customers include China National Museum, State Grid Corporation Archives, Hong Kong Nanyang Tobacco, Shanghai Taste Candy, BGI Research Institute, Jiangsu Academy of Agricultural Sciences and other well-known entities.

Section 1.3 - Data Logger Models

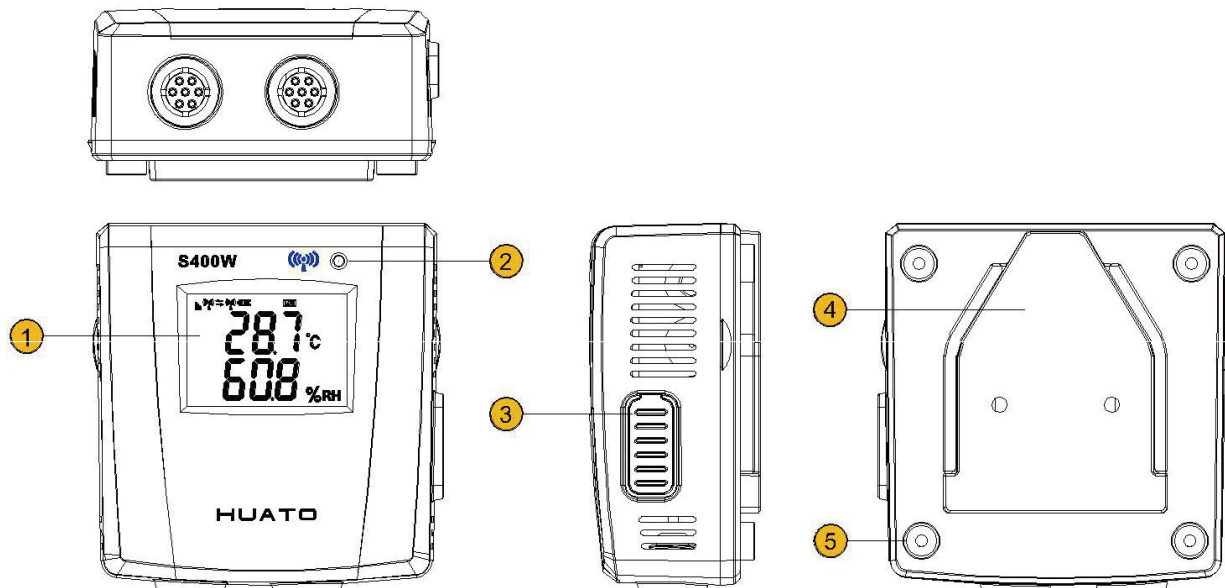
Model	Measurement Accuracy	Measurement Range	Sensor type	Remark
S400W-TH	$\pm 0.5\text{ }^{\circ}\text{C}/\pm 3\%\text{RH}$	-20~ 70 $^{\circ}\text{C}$ 0~100%RH	Internal temperature & humidity integrated sensor	1.5V AA battery * 4, 9VDC, LCD dual figures
S400W-EX	$\pm 0.5\text{ }^{\circ}\text{C}/\pm 3\%\text{RH}$	-40~ 85 $^{\circ}\text{C}$ 0~100%RH	External temperature & humidity integrated sensor	1.5V AA battery * 4, 9VDC, LCD dual figures
S400W-ET	$\pm 0.5\text{ }^{\circ}\text{C}$	-40~ 85 $^{\circ}\text{C}$	Single channel external temperature sensor	1.5V AA battery * 4, 9VDC, LCD single figures
S400W-EK	$\pm(1-2\%\text{FS})$	-100~ 300 $^{\circ}\text{C}$	External thermocouple temperature sensor	1.5V AA battery * 4, 9V DC, LCD single figure, ultra-low temperature detection
S400W-DT	$\pm 0.5\text{ }^{\circ}\text{C}$	-40~ 85 $^{\circ}\text{C}$	Dual-channel external temperature sensor	1.5V AA battery * 4, 9VDC, LCD dual figures
S400W-T	$\pm 0.5\text{ }^{\circ}\text{C}$	-40~ 85 $^{\circ}\text{C}$	Single-channel external temperature sensor	1.5V AA battery * 4, 9VDC, LCD single figures
S400W-EPT	$\pm 0.5\text{ }^{\circ}\text{C}$	-40~ 120 $^{\circ}\text{C}$	External PT100 pin sensor	1.5V AA battery * 4, 9VDC, LCD dual figures
S400W-DP				
S400W-CO2	0~20%/±70PPM +/-5%	0~ 20000PPM		
S400W-TH-ND	$\pm 0.5\text{ }^{\circ}\text{C}/\pm 3\%\text{RH}$	-20~ 70 $^{\circ}\text{C}$ 0~100%RH	Internal temperature and humidity integrated sensor	1.5V AA battery * 4, 9V DC, no LCD display
S400W-EX-ND	$\pm 0.5\text{ }^{\circ}\text{C}/\pm 3\%\text{RH}$	-40~ 85 $^{\circ}\text{C}$ 0~100%RH	External temperature and humidity integrated sensor	1.5V AA battery * 4, 9V DC, no LCD display
S400W-ET-ND	$\pm 0.5\text{ }^{\circ}\text{C}$	-40~ 85 $^{\circ}\text{C}$	Single-channel external temperature senso	1.5V AA battery * 4, 9VDC, LCD dual figures
S400W-EK-ND	$\pm(1-2\%\text{FS})$	-200~ 480 $^{\circ}\text{C}$	External thermocouple temperature sensor	1.5V AA battery * 4, 9V DC, LCD single figure, ultra-low temperature detection
S430W-TH	$\pm 0.3\text{ }^{\circ}\text{C}/\pm 3\%\text{RH}$	-20~ 70 $^{\circ}\text{C}$ 0~100%RH	Internal temperature and humidity integrated sensor	1.5V AA battery * 4, 9VDC, LCD dual figures
S430W-EX	$\pm 0.3\text{ }^{\circ}\text{C}/\pm 3\%\text{RH}$	-40~ 85 $^{\circ}\text{C}$ 0~100%RH	External temperature and humidity integrated sensor	1.5V AA battery * 4, 9VDC, LCD dual figures

Section 1.4 - HE2400 & HE2410 DTU appearance



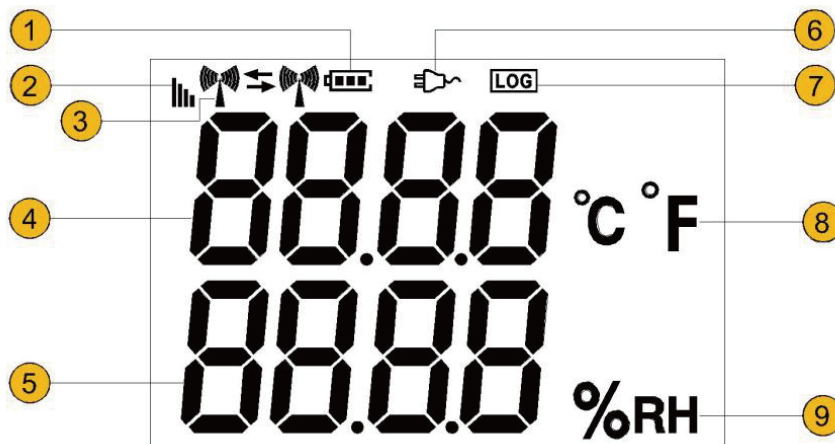
HE2400	HE2410
1 Ethernet interface (RJ45)	1 USB interface
2 DC 12V	2 DC 12V
3 Antenna	3 Antenna

Section 1.5 - S400W series wireless logger with LCD display



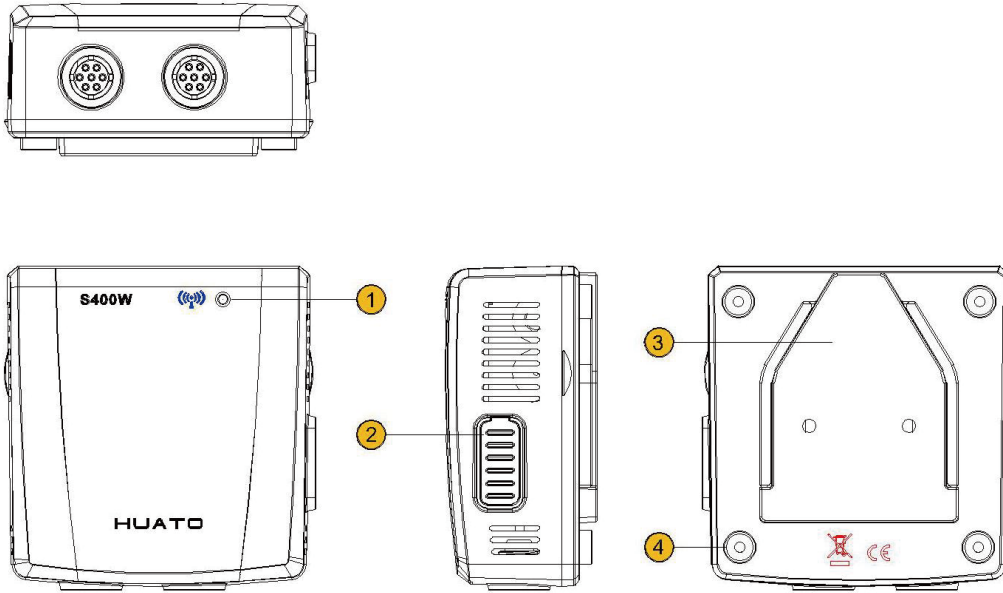
① LCD display area	④ Wall mounting panel
② LED indicator: temperature and humidity alarm, flashing light and sound alarm	⑤ Rear cover screw position
③ USB and DC power connector	

Section 1.6 - Explanation of S400W Series LCD Symbols



- | | | |
|------------------|----------------------------|------------------------|
| ① Battery power | ④ Temperature display area | ⑦ Logging |
| ② Signal quality | ⑤ Humidity display area | ⑧ Celsius / Fahrenheit |
| ③ Wireless | ⑥ DC power | ⑨ Humidity unit |

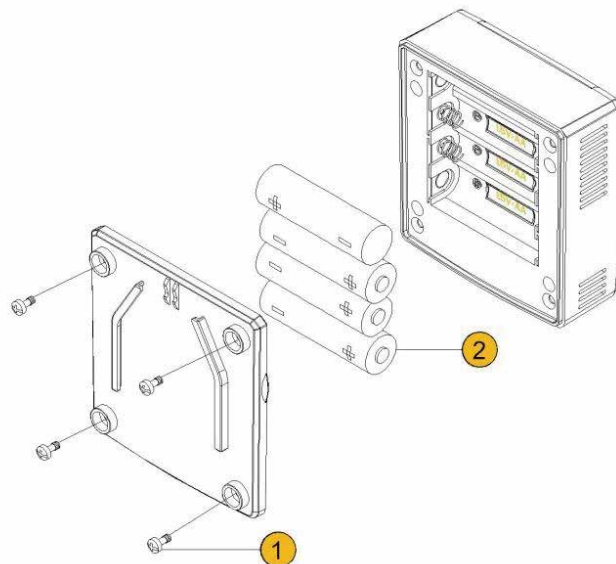
Section 1.7 - S400W-ND series wireless temperature and humidity logger without LCD display



1 LED Indicator	3 Wall Mounting Board
2 USB and DC power connectors	4 Rear cover screw position

Section 1.8 - Install the battery

- 1 Use a screwdriver to loosen the fixing screws from the back cover, and install four 1.5V AA
- 2 batteries into the battery compartment according to the directions



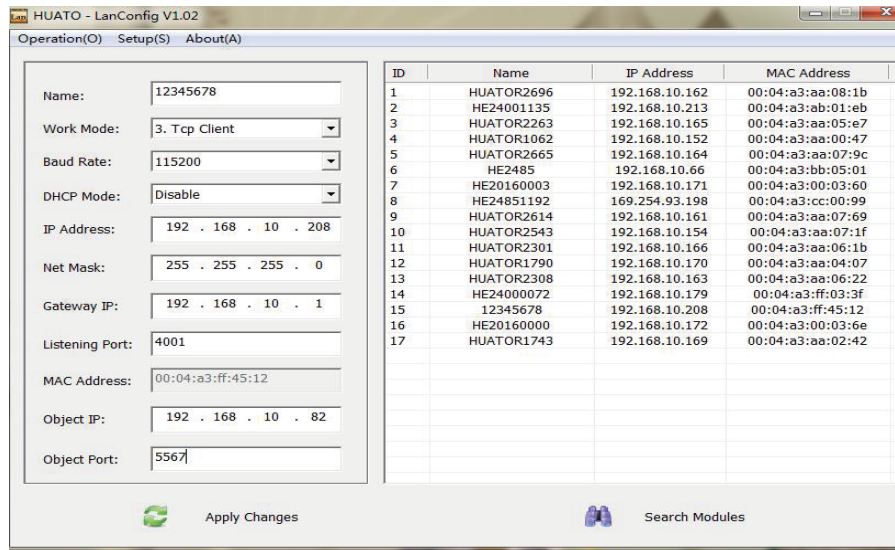
Section 2 Software User's Guide

2.1 Installing the software

- (1) Put the Monitor software CD into the CD-ROM drive, and install ToMonitor_V8 software to the computer hard disk. (Note: It is recommended NOT to install it on the drive C to prevent the losing data caused by operating system crashing).
- (2) Open the installation folder and find the ToMonitor icon.
- (3) This instrument may use HE2400 or HE2410 DTU to upload data. In case of HE2410, you need to install the driver. Find the USB_Driver directory on the CD-ROM and click the Setup.exe program. A dialog box pops up and click the "INSTALL" button. It will take a while, to install the driver to the computer. Driver is not needed for HE2400.

2.2 Setting the RJ45 module of the HE2400 wireless base station

Plug the HE2400 into a 12V power supply, plug in the ethernet cable, open Lanconfig program in the folder, and a pop-up interface will be shown as below:



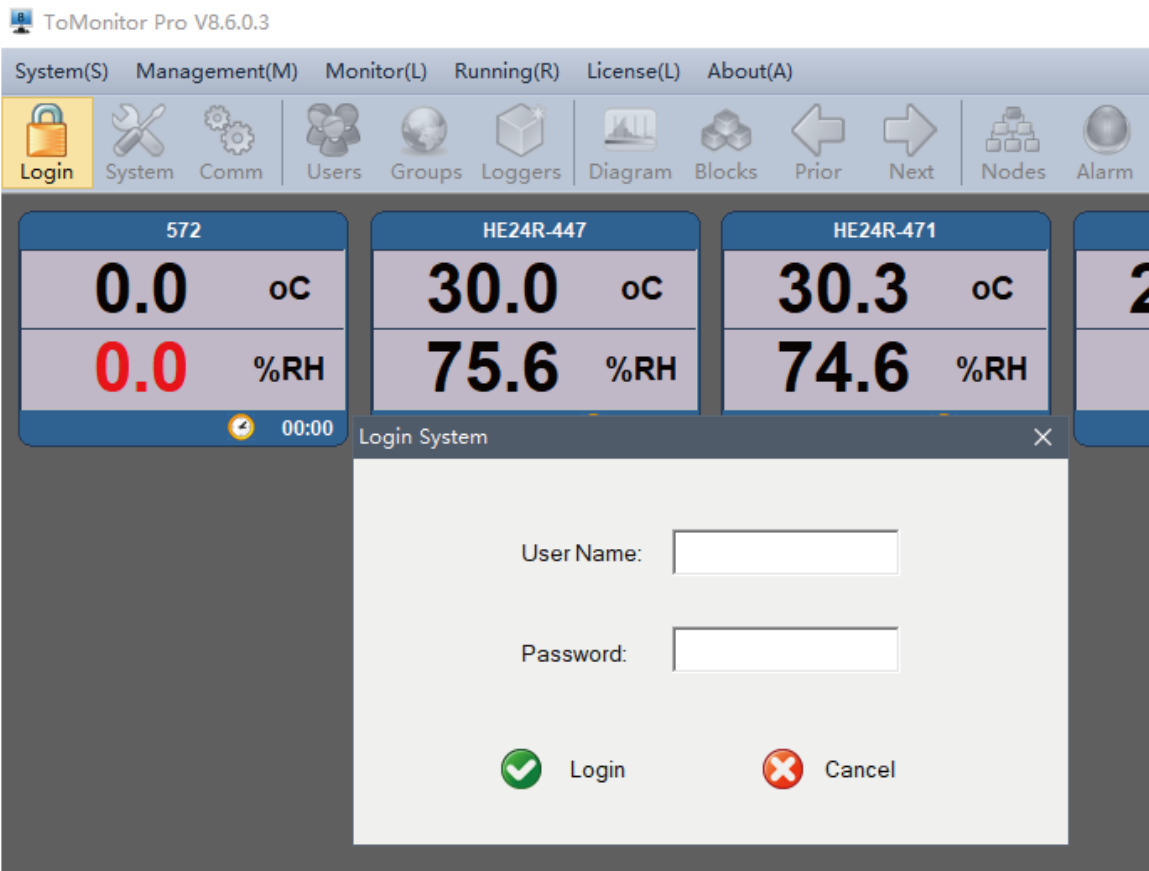
- (1) Click [Search Modules] to search for devices. The names and IP addresses of all the DTU connected to the LAN will be displayed in the right of the window.
Note: LanConfig software uses UDP broadcast protocol for module search, please make sure that the software is not blocked by firewall or antivirus software.
- (2) Select the serial number of the found HE2400 DTU and double-click to obtain the attributes.
- (3) Name: instrument name, can be modified according to actual needs. (Note: The factory setting is the instrument's serial number)
- (4) Work Model: Set to TCP Client mode.
- (5) Baud Rate: set to 115, 200
- (6) DHCP Mode: select Disable to turn it off. It is recommended to choose a fixed IP address to ensure network stability.

- (7) Address: IP address / Subnet mask / Gateway IP gateway, modify the IP information according to current LAN configuration, the IP address will be assigned to HE2400 DTU (Note: This IP address should not conflict with any IP address of other instruments)
- (8) Object IP: this IP address is the fixed IP address of the control computer.
- (9) Object Port: default is 4588, which should be consistent with the TCP listening port of ToMonitor software.
- (10) Click [Apply Changes] to submit the changes, a " Device Information Changed Successfully " dialog box will pop up, and finally click Confirm.

2.3 ToMonitor software guide

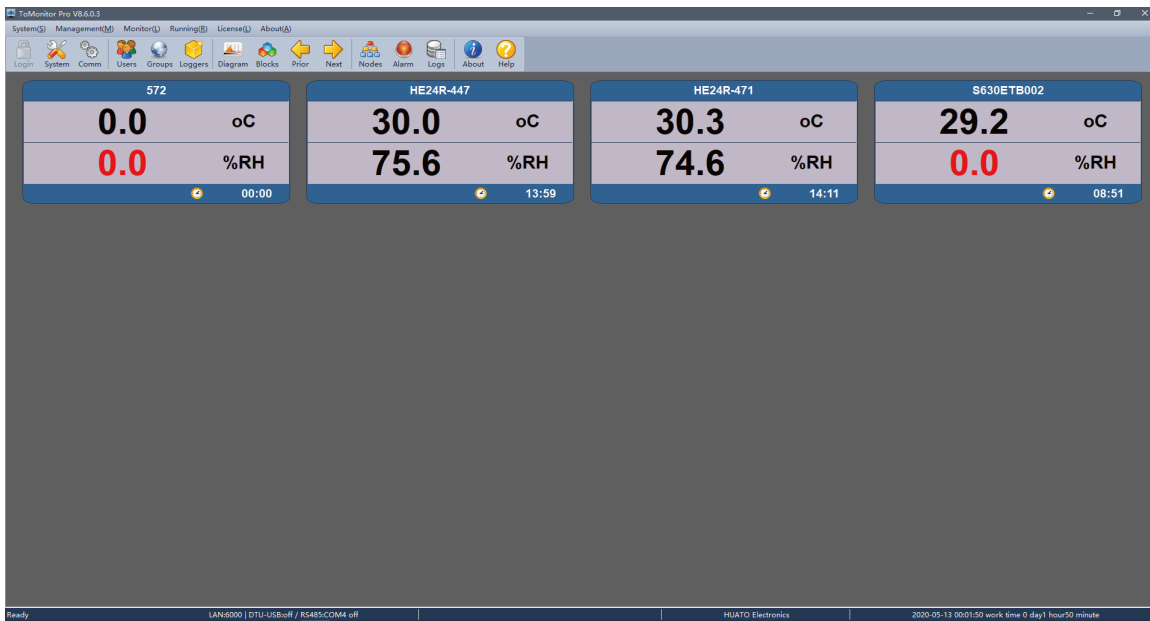
2.3.1 Run the software

Power on the instrument, connect the control computer to HE2400 through ethernet or to HE2410 through USB interface.




Double-click the program icon and click [Login] button to enter the login interface as below. The initial user name and password are both "admin" (case insensitive).

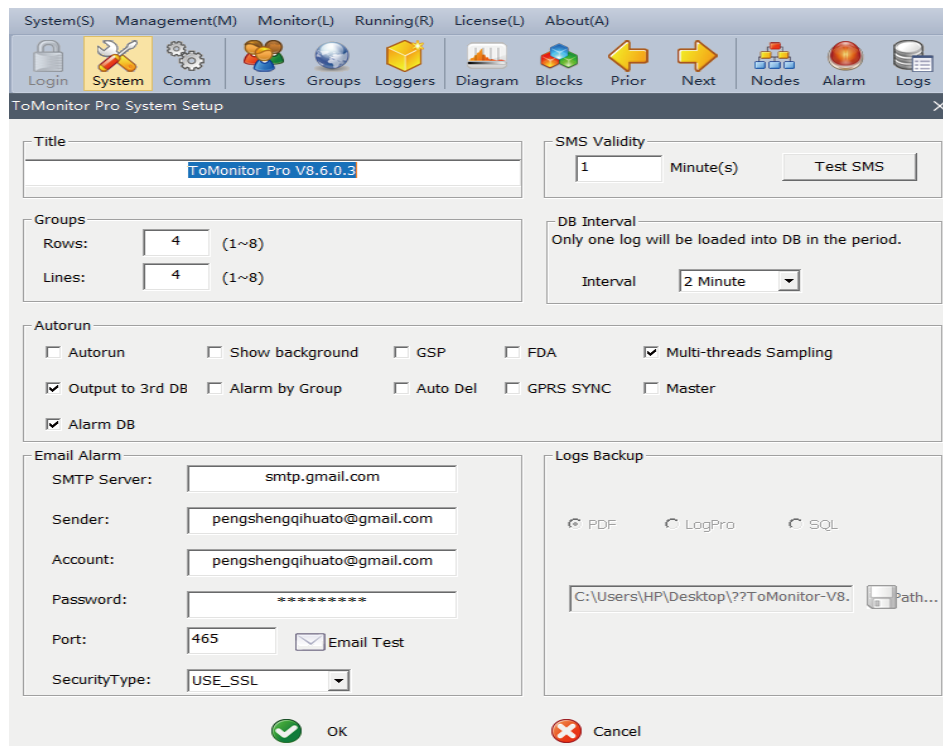
After successfully login into ToMonitor software, all the menu keys on the toolbar are active, as shown in the following figure:



2.3.2 System settings

Click the  button, the following dialog pops up:

- (1) Software name: Customize the software name according to actual needs.
- (2) Set the number of rows and columns about how the panels are arranged.
- (3) Recording interval

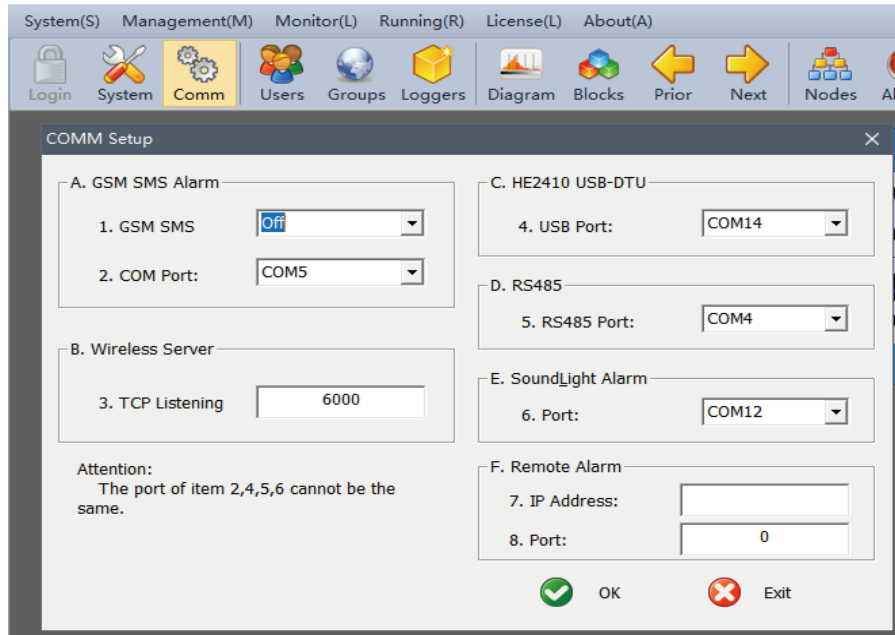


2.3.4 Communication settings

Click the  button, the following dialog pops up:

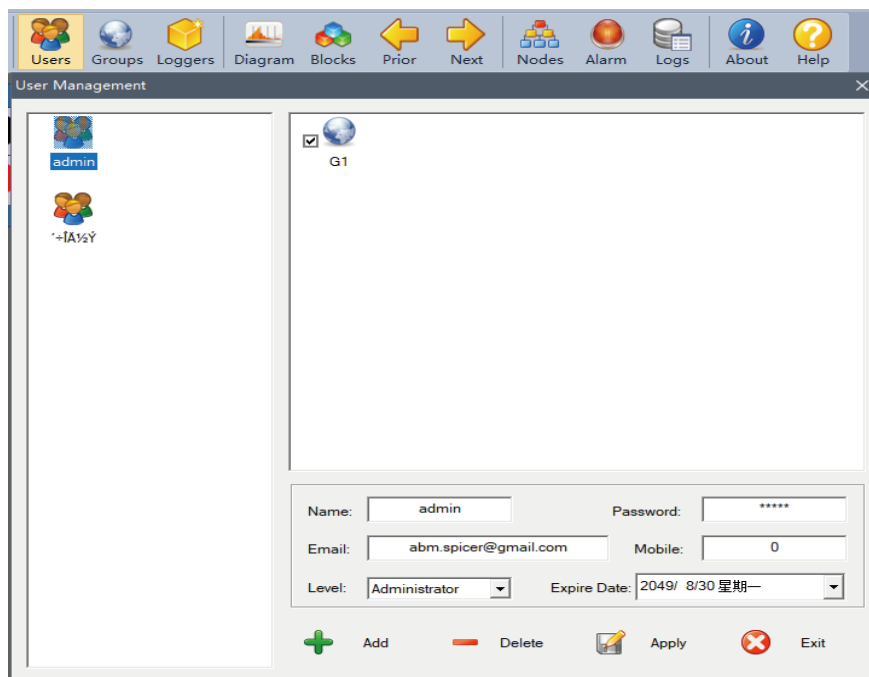
DTU server port settings:

- a. TCP listening port (RJ45): 4588 (HE2400 DTU refers to this port)
- b. USB Port (USB): Port selection COM1 ~ COM9 (HE2410 refers to this port, the port number should be the same as actual USB port number connected to HE2410)



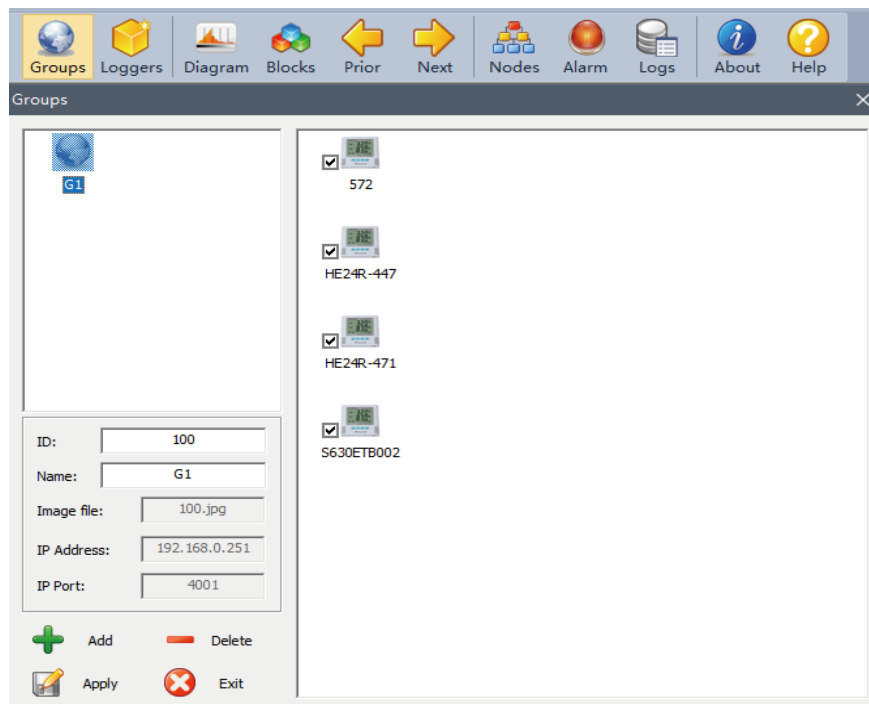
2.3.5 User management

Click the  button, the following dialog pops up, add user names as needed:




2.3.6 Group management

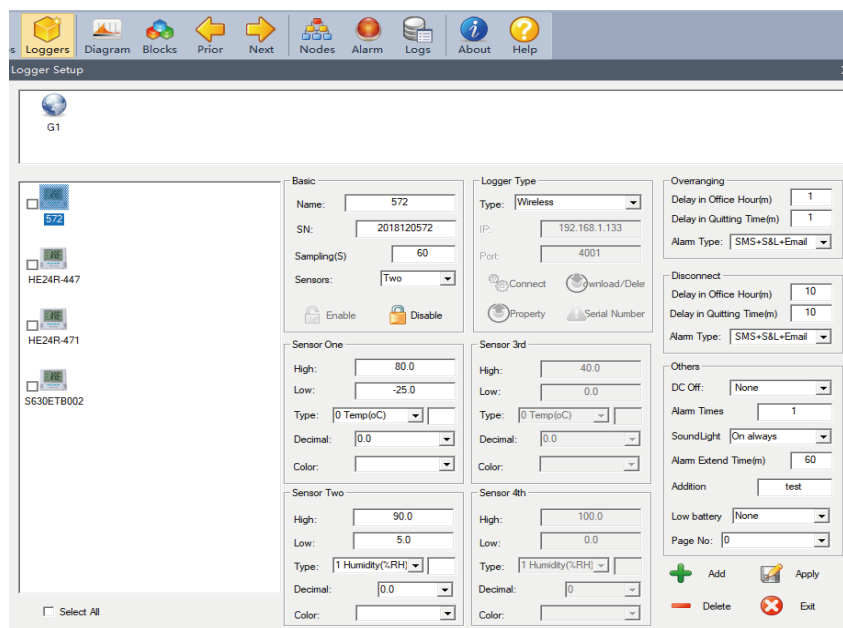
Click the  button to pop up the following dialog, add groups as needed:



Note: After adding a new logger, group must be specified, otherwise the newly added logger will not be displayed in the monitoring window.

2.3.7 Device management

Click the  button, the following dialog pops up:



(1) [Basic setting] Logger parameters setting

Name: a logger can be named according to the actual situation. The name of each instrument cannot be duplicated.

Serial number: enter the 10-digit serial number according to the sticker attached to the logger.

Instrument type: set to "Wireless instrument".

Sampling interval (seconds): The refresh interval of the instrument data can be set according to the actual need.

Number of sensors: select single channel to display only 1 channel (one channel for temperature logger), select dual channel to display 2 channels (two channels for temperature and humidity logger).

(2)[Sensor 1]

Upper threshold: the upper threshold can be set. When measurement exceeds the set value, the monitored value will be displayed in red. Please also set the alarm method to send the alarm information according to the actual need.

Lower threshold: the lower threshold can be set. When measurement exceeds the set value, the monitored value will be displayed in red. Please also set the alarm method to send the alarm information according to the actual need.

Type: Temperature / Humidity (Please choose according to the type of the logger.)

(3) [Sensor 2]

Upper / lower thresholds: The upper and lower thresholds can be set according to the actual need. When the set value is exceeded, the monitored value will be displayed in red, and the alarm information will be sent according to the set alarm method.

Type: Temperature / Humidity

Sound and light alarm: It can be selected to close working hours only or always open.

Add: first select one of the logger in the dialog, display the properties, enter the new name and serial number, set other parameters according to the actual need, and then click Add.

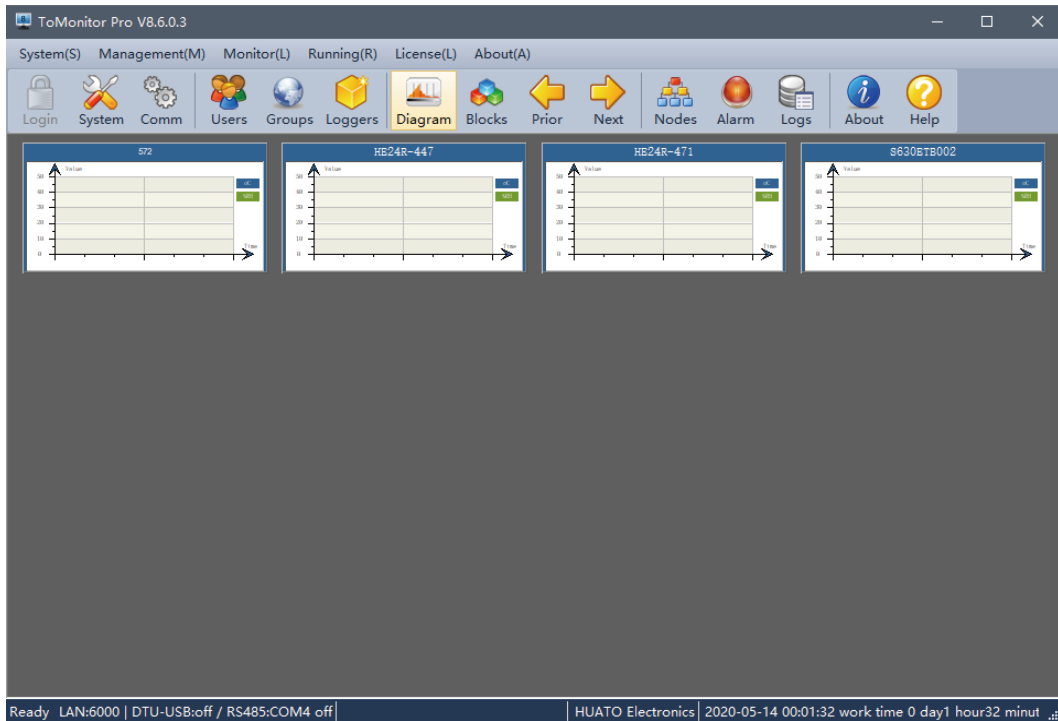
Modify: first select one of the logger in the dialog, set the relevant parameters according to the actual need, click the modify button to confirm, and then click OK after the successful message.

Delete button function: first select one of the logger in the dialog box, click the delete button to confirm the deletion, and then click OK after the successful message .

Exit button: Click the exit button to exit the device management dialog.

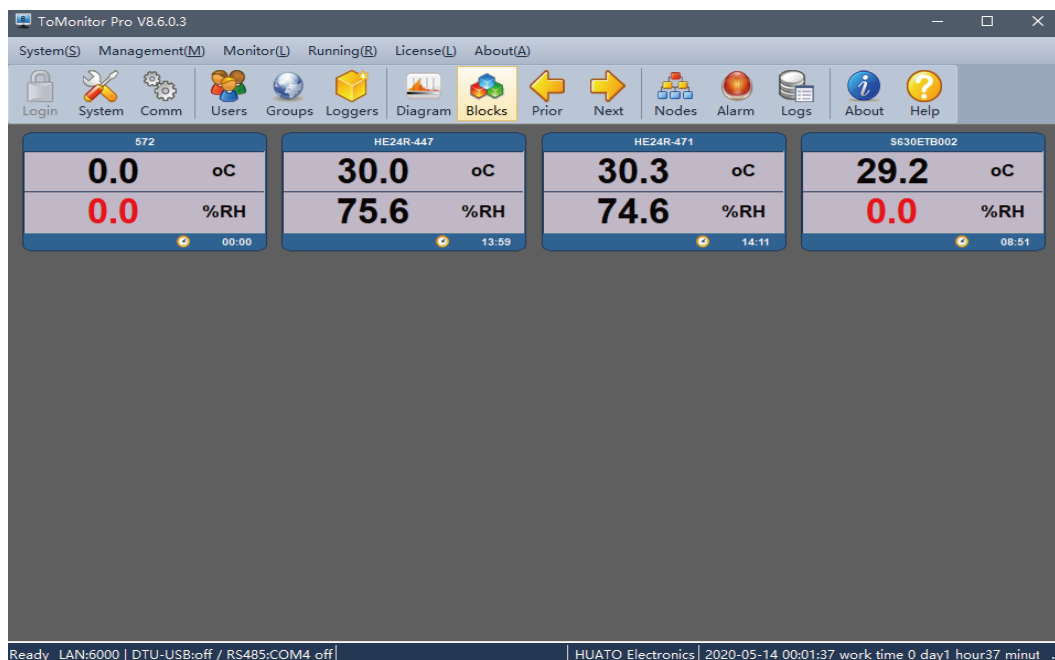
2.3.8 Real-time curve button

Click the  button, all the data will be displayed in the form of curves, as shown below:




2.3.9 Text display button


Click the  button, all the data will be displayed in the form of curves, as shown below:



2.3.10 Previous Area / Next Area Button

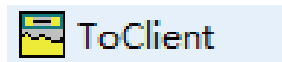
Click the  button to switch the window page to view the monitoring data. The up, down, left and right buttons on the keyboard can also be used.

2.3.11 Group list button

Click the  button to show or hide the group list.

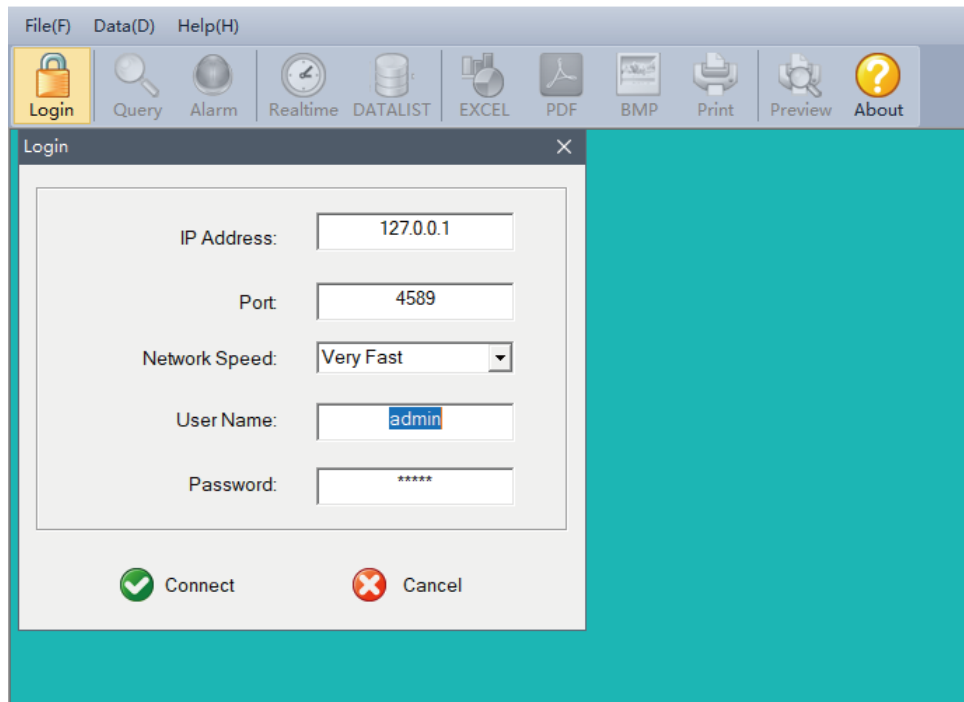
2.4 View the exported data

(1) Double click the ToClient icon in the Huato software folder and run the software, as shown below:



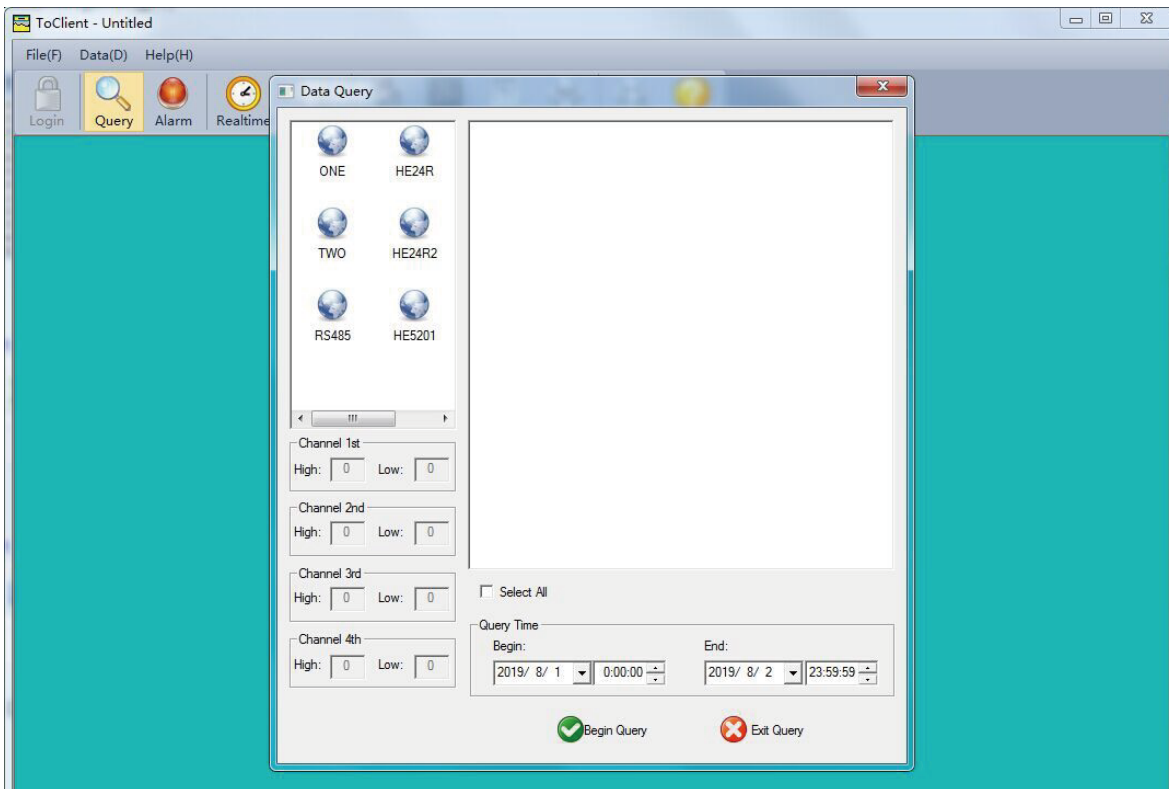
(Note: ToClient requires ToMonitor to be running, otherwise you will get a prompt of 'fail to connect to the server' and cannot view the data)

(2) Login connection



(Note: The port number is the [LAN] number displayed in the bottom of ToMonitor software plus 1, the default user name and password are both admin)

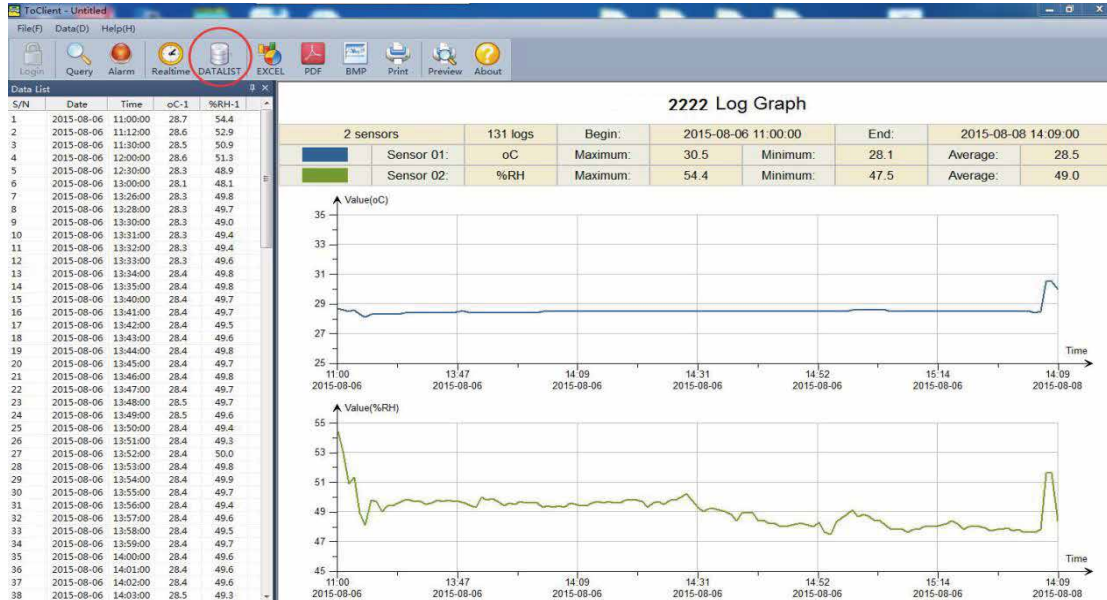
(3) Click the [Query Logger] icon to pop up the following dialog. Check the instrument to be queried, select the time period to be queried, and click [Start Query]



(4) The following dialog pops up to view the corresponding data analysis chart.



(5) Click the [Query Data] icon to pop up the following dialog to view real-time data.



(6) Click [PDF] to export the queried data as a PDF file, and click [BMP] to export the analysis chart as a BMP image file.

Section 3 Precautions

3.1 Notes

- The waterproof index of this logger is IP34. If there is moisture on the case, do NOT perform USB connection operation to prevent the electronic circuit from being short-circuited with water, which may damage the instrument.
- The logger adopts ABS engineering fireproof plastic shell, please prevent the device from corrosion of acid and alkali chemicals.
- If a malfunction occurs, it must be repaired by an authorized professional. Please do NOT repair or modify it by yourself.
- The four 1.5V lithium batteries equipped with this instrument cannot be recharged or short-circuited, otherwise danger may occur. Please dispose of used batteries properly to protect the environment.

3.1 Notes

- The LCD display becomes low lighted

Cause: the battery power is low or the environment temperature is too low or too high.

Solution: replace the battery. If it is caused by the environment temperature, please take the logger out of the environment immediately to avoid damage to the logger.

- The LOG indicator disappears

Reason: when the battery power is too low, there will not be enough power to maintain the recording function on the logger.

Solution: replace the battery