JAKAR®
MEASUREMENT & CONTROL

OM-UIS1500-16

User's Guide

CE

Portable Multi-Channel Universal Input Data Logger

Operational Instructions

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Attentions

1) If there is water on the shell of the recorder, do not pull and insert USB, type-C, sensor and USB flash disk, so as to prevent the electronic circuit from short circuit in case of water. Short circuit may cause damage to the instrument..

2)The recorder adopts ABS + PC synthetic engineering plastic, which is comfortable to handle, scratch resistant, durable and easy to scrub and clean. In case of failure, it must be repaired by authorized professionals. Please do not repair or refit yourself.

Table of Contents

Section 1 Product Introductions

1.1 Introductions

The S1500 series product is a portable paperless data logger. With 8/12/16 channel universal input and thermocouple input function, it can detect thermocouple, RTD, NTC, DC current, DC voltage, frequency, pulse count and other signals at the same time, and the collected data can be vividly displayed through various forms such as digital interface, bar graph interface, real-time curve, etc. The device has rich peripheral interfaces such as USB, TF card, RJ45, WIFI, etc. It is a portable recording instrument with rich functions, highly integrated and intelligent.

1.2 Appearance

1.3 Features

1. Multi-channel input, supports up to 16 channels of input.
2. Support multiple signal types input, support multiple signal input such as DC voltage, DC current, thermocouple, RTD, NTC, frequency, pulse count, etc.
3. Support multiple types of thermocouple input, wide temperature detection range (-270-2320℃).
4. With rich peripheral interfaces such as USB, TF card, RJ45, etc., it can export and transfer recorded files through U disk and external TF card, and conduct real-time data monitoring on WEB through the RJ45 interface.
5. It has the signal acquisition function of current and voltage transmitters, and each part is self-defining to display, which is convenient for connecting different types of sensor transmitters.
6. High-rate sampling, 16-channel signal acquisition is completed within 1S.
7. The data storage capacity is large, a single record file can record up to 100,000 records, and the total data storage capacity is at least 8 million records.
8. With rich data display and analysis functions, it can show digital display, bar graph display, single-channel detailed information display, real-time curve drawing and historical curve query.
9. It has multiple recording modes such as immediate recording, timing recording, and timing stop, making the recording function more convenient and intelligent.

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1.4 Model

Model	Function description
OM-UIS1500-16	16 Channels Universal Input Logger

1.5 Device Overview

- Handheld Mode

  Note：Don’t block the cold junction compensation holes, which may affect the accuracy of data acquisition.

- Wall Hanging Mode

  The device is suspended on the wall by two hanging holes on the back of the device.

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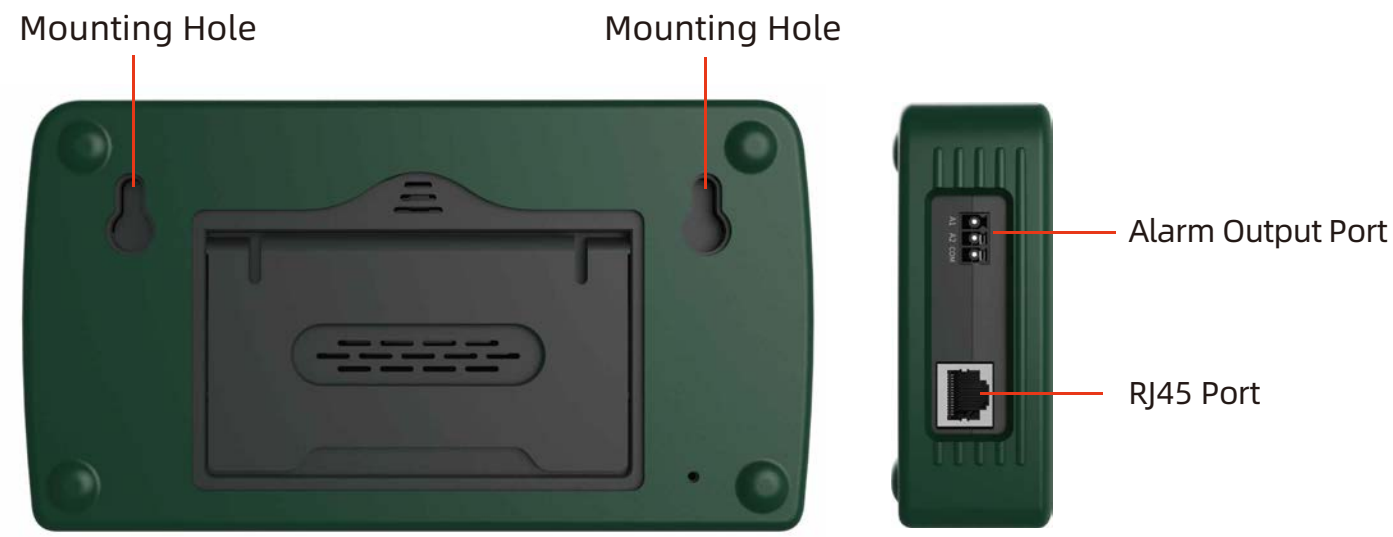
- Tabletop Kickstand

  Use the supporting plate on the back to make the device stand on the desktop



1.6 Buttons and Ports

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Button/Ports	Details
Power button	1、To power on and power off the device, hold down the Powerbutton for a few seconds.
HOME button	1、Press this key to return to the main interface
TYPE-C port	1、It can charge the internal rechargeable lithium battery. 2、It can supply power to the outside of the equipment to make the equipment work normally. When the external power adapter is connected, the power supply of the equipment will come from the external power supply without consuming battery power.
USB 2.0 port	1、To transfer the internal data to the U disk. The format of transfer file is CSV. 2、The main board can be upgraded through U disk.
SD card port	1、 Internal data can be transferred to SD card. 2、 The main board can be upgraded through SD card.
RJ45 pot	1、 The device can be used as a web server and the properties can be read and configured through the web page. 2、 The device can be used as a web server and the real-time data can be viewed through the web page. 3、 The device can be used as FTP server and the historical data file can be downloaded through the web page. 4、 The device can be used as FTP server and the main board can be upgraded through web page.
Alarm output port	1、 Support 2-way optocoupler open-drain alarm output

1.7 Operational Steps

❶ Power on → ❷ channel configuration → ❸ configuration complete → ❹ start recording

❺ enter the digital/bar-chart/real-time curve interfaces to view data information →

❻ record complete (stop recording) → ❼ export data to U disk or SD card in the data storage interface (view historical data in the historical curve interface). Please refer to the detailed description of each interface for detailed usage guideline.

Note: Please configure the channels before starting recording, otherwise cannot view digits/bar charts/real-time curves may not show correctly in corresponding interfaces.

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1.8 Technical Specifications

1.8.1 Technical Specifications

Main parameters	
Dimensions	189.3*103.5*39mm（With Protection）
Display	5 inch capacitive touch screen, resolution 800 * 480
Number of channels	8-channel/12-channel/16-channel thermocouple input
Storage capacity	Single record capacity: 100000 records ; Total data recording capacity: 8 million records
Internal storage	32GB
External transfer	U disk (standard USB2.0 communication interface), SD card
Ethernet	Transmission rate: 10m / 100M bit / s , full duplex and half duplex
Battery capacity	5000mAh
Battery life	One quick charge per day, 3-5 years life time
Battery type	Rechargeable lithium battery pack
Battery working hours	5-8 hous, the actual working time is related to the brightness of the display screen and the sampling time setting.
Sampling frequency	Fastest 1s
Recording frequency	Fastest 1s
Data format	CSV file format
Working temperature	-10-50℃
Storage temperature	-20-60℃
Relative temperature	5% - 95% RH, no condensation
Shell material	PC + ABS material and The protective sleeve is made of 68 degree silicone.

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1.8.2.Input Signal

RTD input (cold jucntion compensation-cjc excluded), accuracy (cold jucntion compensation-cjc excluded), CJC error: ± 1.5 ℃

Type	Measuring range（℃）	Resolution（℃）	Maximum allowable error（℃）
Two-Wire PT100	-200-850℃	0.01	±1.0
Three-Wire PT100	-200-850℃	0.01	±0.5
Four-Wire PT100	-200-850℃	0.01	±0.1

Thermocouple input (excluding cold junction error), accuracy does not include cold junction compensation error, cold junction compensation error: ±1.5℃

Type	Measuring range（℃）	Resolution(℃)	Maximum allowable error（℃）
K	-270 to +1370℃ (probe dependent)	0.01	±0.5℃ (probe dependent)
J	-200 to +760℃ (probe dependent)	0.01	±0.5℃ (probe dependent)
E	-270 to +980℃ (probe dependent)	0.01	±0.5℃ (probe dependent)
T	-270 to +400℃ (probe dependent)	0.01	±0.5℃ (probe dependent)
R	-50 to +1760℃ (probe dependent)	0.01	±2℃ (probe dependent)
S	-50 to +1760℃ (probe dependent)	0.01	±2℃ (probe dependent)
N	-270 to +1300℃ (probe dependent)	0.01	±2℃ (probe dependent)
B	600 to +1820℃ (probe dependent)	0.01	±2℃(600~1820) (probe dependent)
C	0 to +2320℃ (probe dependent)	0.01	< 425℃ : ±4.5℃, 425-2320℃ :1.0% (probe dependent)

Thermistor input

Type	Measuring range（℃）	Resolution（℃）	Maximum allowable error（℃）
NTC-10K	-25-150℃	0.01	±0.50%FS
NTC-2252	-25-150℃	0.01	±0.50%FS

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DC current / voltage input

Type	Resolution	Max permissible errors (%FS)
(1-5) V	0.001V	±0.1%
(0-10) V		
(0-5) V		
(0-100) mV	0.001mV	
(4-20) mA	0.001mA	±0.1%
(0-20) mA		
(0-10) mA		

Frequency and Pulse input

Type	Measuring range	Max permissible errors
Frequency	0~99KHz	±2Hz
Pulse/Count	0-4，000,000,000 Pulses	

Section 2. Attentions

1. The system time cannot be changed during recording.
2. After the data is transferred, the internal stored data will not be deleted automatically and needs to be deleted manually.
3. Please turn off the equipment when it is not used for a long time.
4. When the power is lower than 10%.
5.After the device is turned off, the user needs to wait for 3S to turn it on again.
6. Do not block the cooling hole when using, so as not to affect the performance of the equipment.
7. When the internal storage has been used to 90%-97%, it will prompt:The device memory is over 90%,move or delete stored data before continuing.When 100% has been used, it will prompt:The device memory is 100% full,move or delete stored data before continuing.
8. When connecting the signal wire, please connect it according to the wiring diagram, and pay attention to distinguish the positive and negative poles.
9. When the internal storage prompt is insufficient, please clean up the internal storage data in time. If the storage is full, the first recorded data will be overwritten by the later recorded data.
10. Do not cover the cold end compensation hole when in use (especially when holding, do not cover the cold end compensation hole with your fingers), otherwise the accuracy of measurement data will be affected.
11. Alarm backlash can only enter a value greater than or equal to 0
12. Frequently switching on & off the machine may lead to error code of the instrument. If there is, restart the instrument to recover.
13. The accuracy of equipment time will decrease with time, and the time error is ±1 minute / month.

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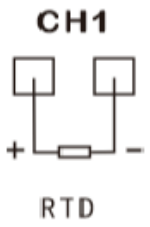
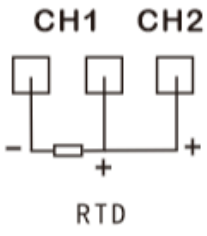
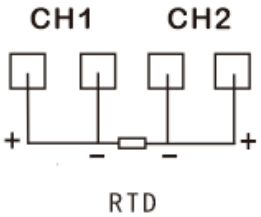
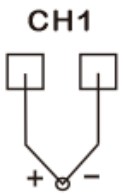
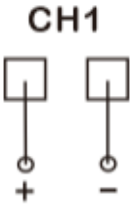
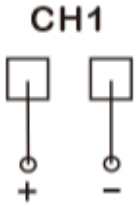
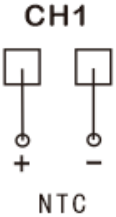
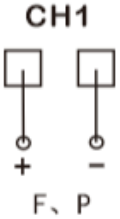
Section 3 Thermocouple input port

3.1 Connection Mode

The following picture shows the input port of the thermocouple,wiring method is shown in the interface diagram

RTD input（Two-wiresystem）	RTD input（Three-wiresystem）
	
RTD input（Four-wiresystem）	Thermocouple input
	
DC voltage input	DC current input
	
Thermistor input	Frequency/ Pulse input
	

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Section 4 Interface and function description

4.1 Menu Bar

(1) Device Name:

User defined, 24 characters, LOGGER by default.

(2) Recording status indicator

Standby: gray;

Recording / auto stop: green flashing;

Delay recording: yellow flashing.

(3)Alarm prompt:

This icon appears when there is alarm information; when the device is normal or enters the alarm interface.

After viewing the alarm information, the alarm prompt icon disappears.

(4)U disk prompt:

The icon will be displayed after the U disk is inserted and successfully identified. The icon will disappear after the U disk is pulled out.

(5)SD card prompt:

After the SD card is inserted and successfully identified, the icon will be displayed. After the SD card is pulled out, the icon will disappear.

(6)Storage status prompt:

When the percentage of internal storage reaches 90%, the storage icon becomes yellow. The percentage reaches 100%, the icon becomes red. The icon does not display unless the percentage of storage >90%.

(7)Bluetooth function prompt:

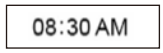
When BLE is connected, the icon will be displayed. When BLE is disconnected, the symbol will disappear.

(8)WiFi prompt:

When the WiFi function is on, the signal strength will be displayed at the same time; When the WiFi function is off, it will not be displayed.

(9)Power prompt:

The current battery power is displayed in real time. The symbol is green when normal; yellow when the power is less than 20% and more than 10%, to remind the user to charge; red when the power is less than 10%, and there is a charging symbol when charging.



(10)System time indication:

In the format of hour and minute. Seconds are prompted by colon flashing.

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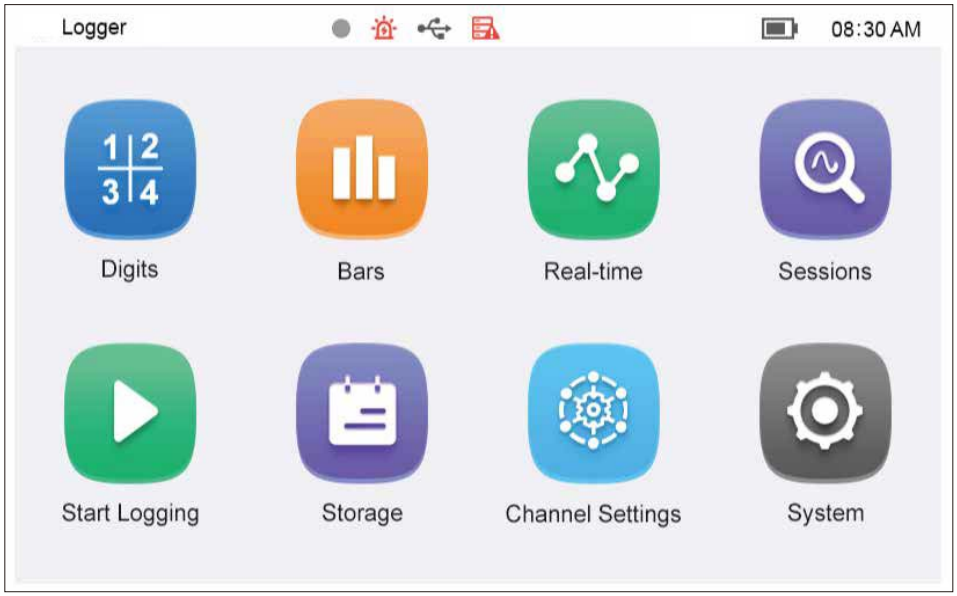
4.2 Main interface

The main interface displays 8 function icons: digital display, bar chart screen, real-time curve, historical curve, start / stop recording, data storage, channel setting and system setting.



4.3 Digital Display

- Click digital display in the main interface to enter the digital display interface. The digital display interface has three arrangement modes: 2 * 4 (4 rows and 2 columns), 3 * 4 (4 rows and 3 columns) and 4 * 4 (4 rows and 4 columns). The arrangement mode is automatically switched according to the number of channels of the device.

- The digital display interface displays the channel number (ch1 ~ ch16), corresponding value (up to 6 digits), unit (mV、V、mA、℃), alarm status (HH, HI, LO, LL). Overrun alarm, font display with red mark. HI, LO alarm status display in red, no flash, HH, LL alarm status red flash.

- Click the corresponding channel to view the detailed information of the channel. The detailed information of the instrument panel includes the upper and lower limits of the range, the real-time value, the unit and the channel number. The information on the right side of the instrument panel includes the channel type, the upper and lower limits of the range, the maximum value, the minimum value, the average value and the corresponding value of each alarm type. Click "scale" to clear the value, and click the arrow icon in the upper left corner to return to the digital display interface.

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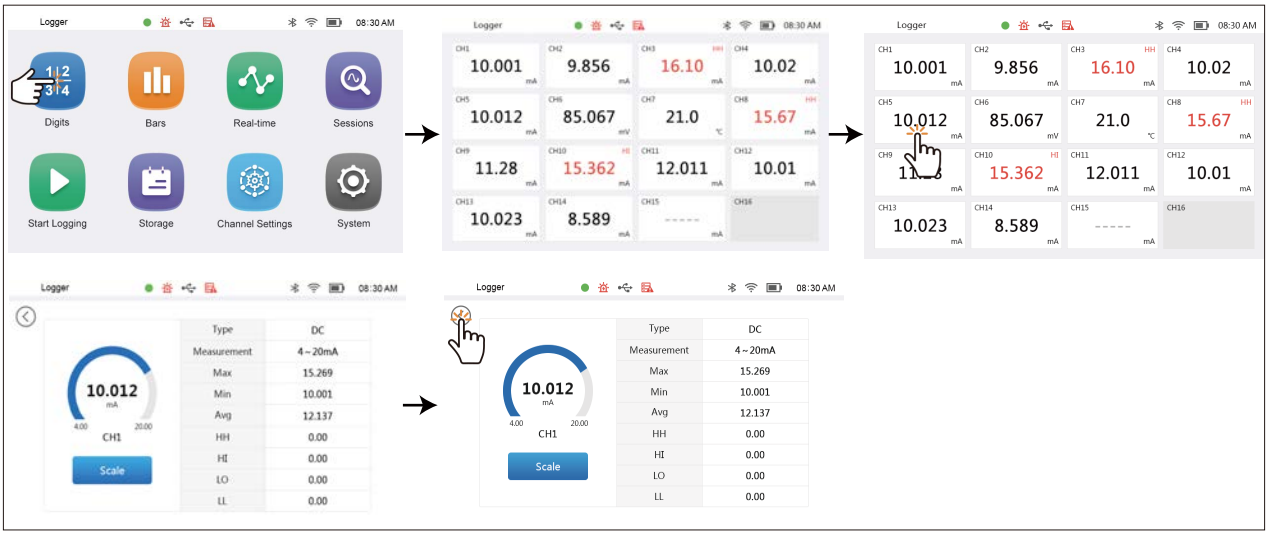
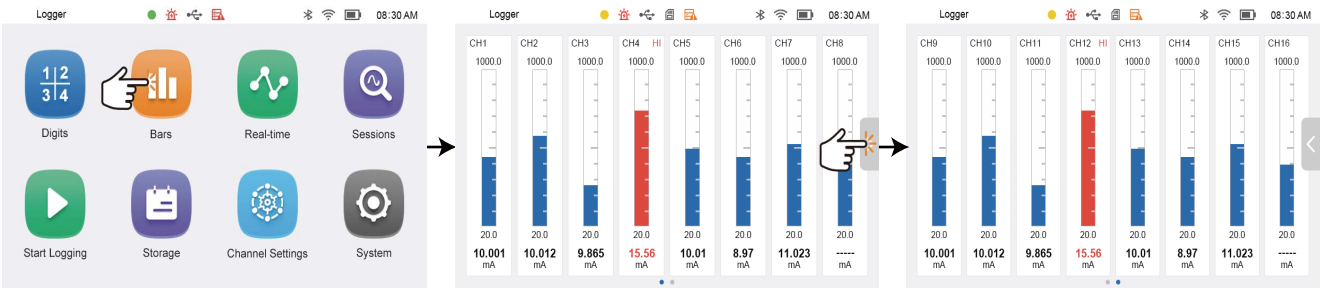


Digital display

4.4 Bar Chart Screen

- Click the bar graph screen in the main interface to enter the bar graph display interface. The bar graph display interface has two arrangement modes: 1 * 8 and 1 * 6. The arrangement mode is automatically switched according to the number of channels of the equipment.
- The channel number (ch1 ~ ch16), real-time value, unit, upper and lower limits of signal and alarm status of analog input are displayed. When the value is normal, it will be blue, and when the value exceeds the limit, it will be red.
- When there are two pages displayed, there are two small circles at the bottom, and the small circle filled represents the current page. Click the arrow on the right side of the interface to turn the page.



Bar chart screen

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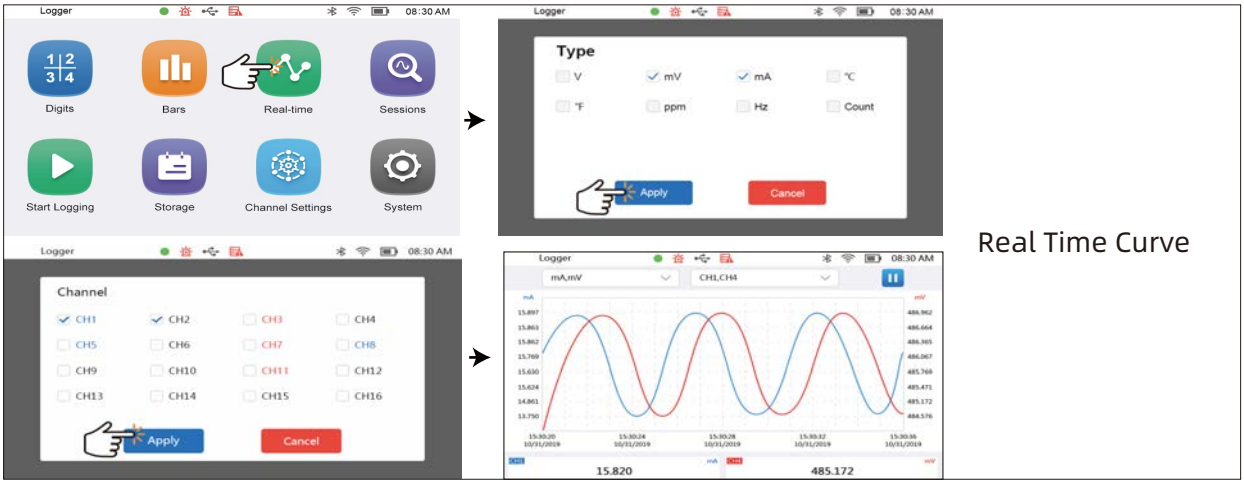
4.5 Real Time Curve

- As shown in the figure below, from left to right at the top of the interface are: unit selection, channel selection, start / pause icon. The bottom is the channel number and the latest real-time value. The color of the channel number is the same as that of the corresponding channel curve, and the bottom channel unit is corresponding to the left and right ordinates.

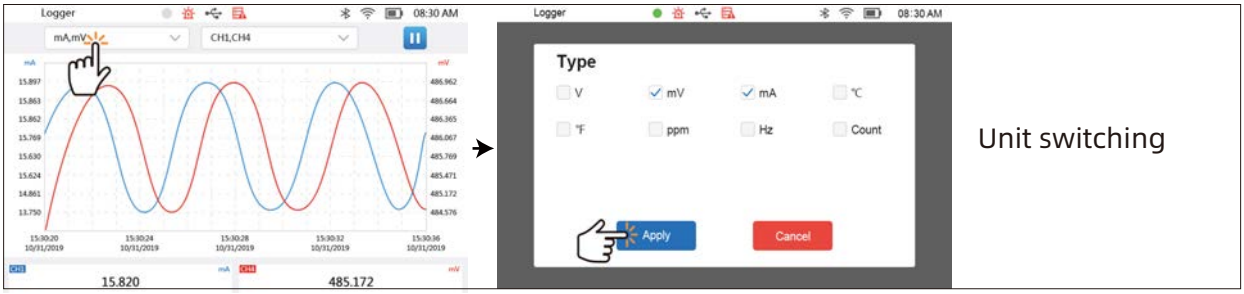
- **Unit selection:** click the type selection drop-down arrow to open the type selection interface. Click the box in front of the type to check the type to be displayed, and then click apply. At most, two different type can be checked to display at the same time.

- **Channel selection:** click the channel selection drop-down arrow to open the channel selection interface. Click the box in front of the channel to check the channel to be displayed, and then click apply. You can only check 6 corresponding channels at most.

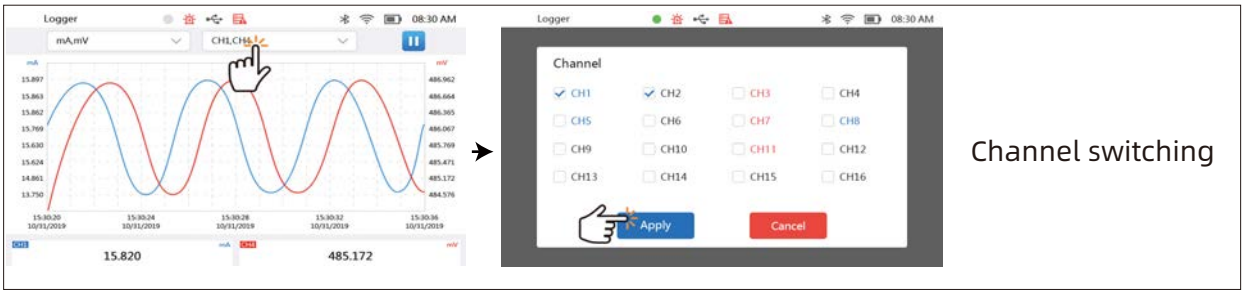
- **Start / pause:** click the start / pause icon. At the beginning, the real-time curve will be updated in real time. When pausing, the real-time curve will stop on the current page and will not be updated.



Real Time Curve



Unit switching



Channel switching

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4.6 Historical Curve

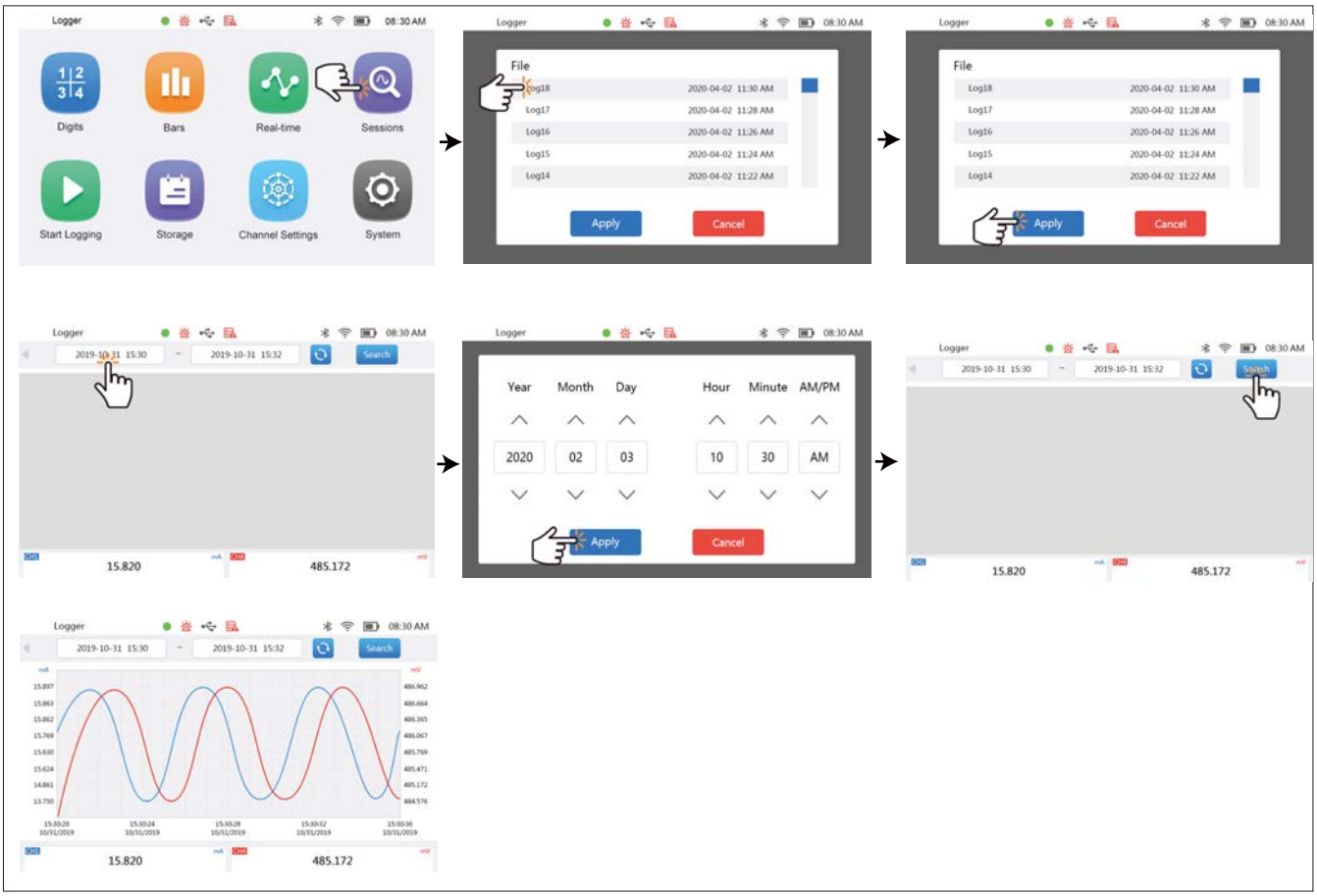
- As shown in the figure below, from left to right at the top of the interface are: record file selection, unit selection, channel selection; channel number and maximum / minimum value are displayed at the bottom (click the channel box to switch the maximum and minimum values), the digits' color of channel in box is consistent with the curve's color of corresponding channel, and the unit at the bottom is consistent with the left and right ordinate unit.

- Click the right arrow in the upper right corner to set the start and end time of data query, click the refresh symbol to refresh the data, and click search to search the historical data.

- The mode of unit and channel selection is the same as that of real-time curve.

- File selection is shown in the figure below, slide up and down the right slider to view the file, click the file you want to select, and then click apply.

- Time selection is shown in the figure below. Click the up and down arrows to set the time. Click apply to confirm the set time.



Historical Curve

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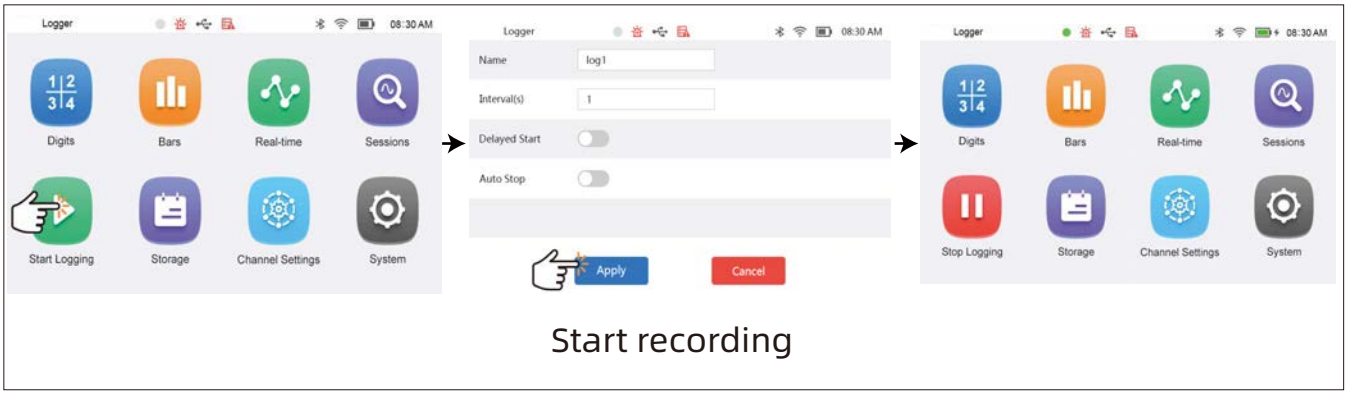
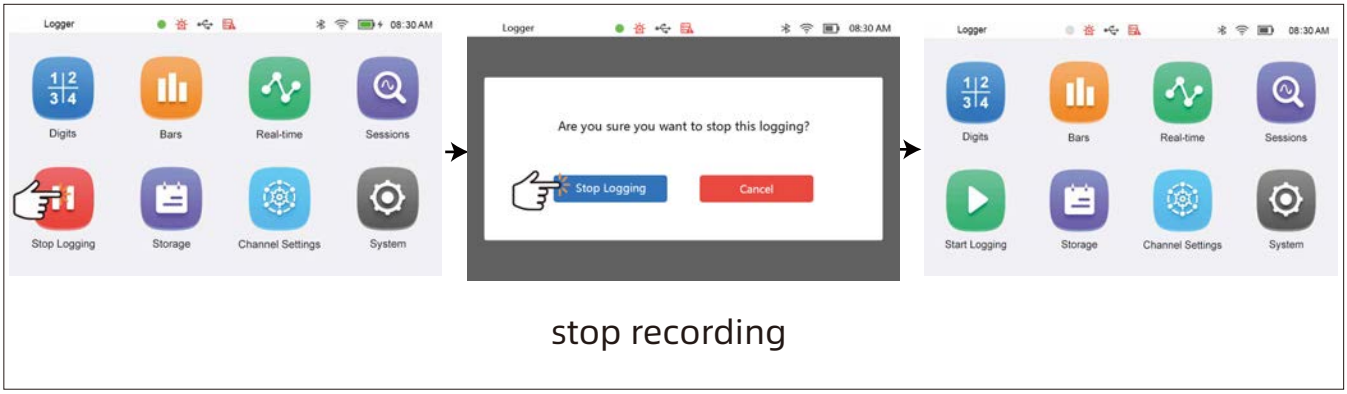
4.7 Start / stop recording



Start recording



stop recording

(1) Record file name: customizable, up to 24 bytes. The default is Log1, log2 .

(2) Record interval: customizable, the shortest is 1 second, the longest is 86400 seconds (24h), only integer can be input.

(3) Delayed start: click the on / off icon to turn on / off the delayed start. The delayed start time can be set when it is turned on.

(4) Auto stop: click the on / off icon to turn on / off auto stop. When it is turned on, you can set the time of auto stop.

Set record

After setting the corresponding information, click apply to start recording, click Cancel to cancel the operation, and then return to the main interface.

After starting recording, if return to the main interface, the start recording icon will becomes the stop recording icon. Click the stop recording icon to pop up the stop recording pop-up window.

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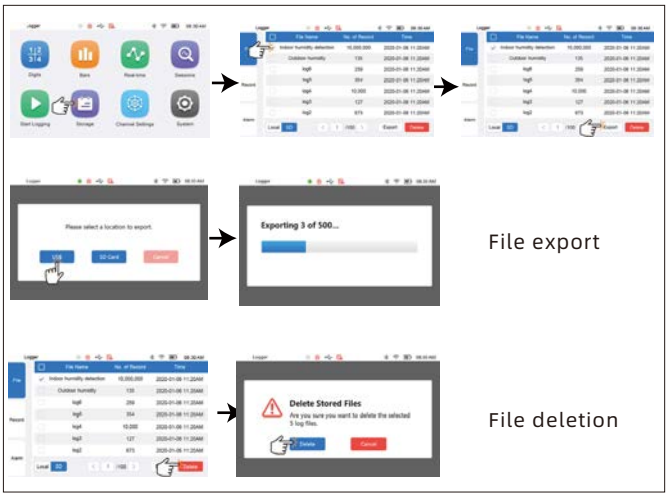
4.8 Data Storage

4.8.1 Record documents



Click the box in front of the file to check the corresponding file. Click the top box to check all the files on the current page.Record the corresponding information at the bottom of the file interface

(1) Local: select local data

(2) SD card: select the data of the SD card

(3) Page forward

(4) Current page number: Click to enter the page number you want to jump to.

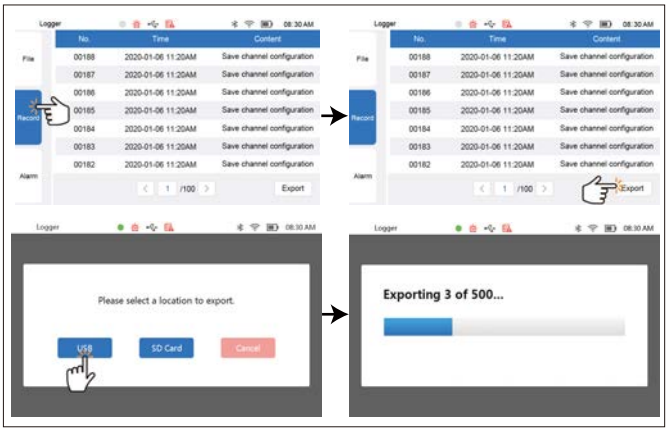
(5) Total number of pages

(6) Page backward

(7) Transfer (Export): Click this icon, the transfer method (USB, SD card) will pop upClick the pop-up window and select the corresponding method.

(8) Delete: Click Delete, a confirmation pop-up window will pop up to confirm whether you want to delete.

4.8.2 Operation log



Information at the bottom of the operation log interface:

(1) Page forward

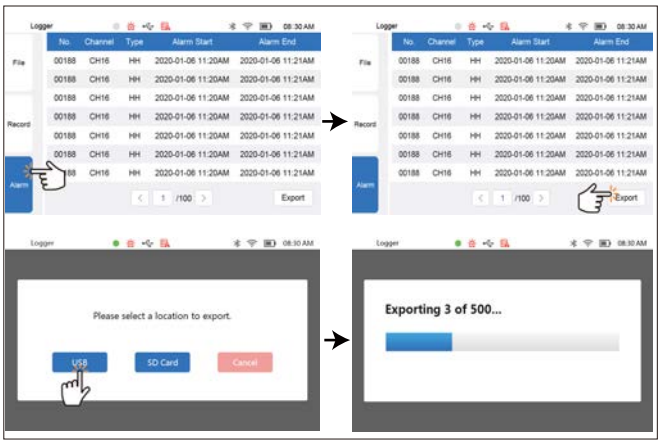
(2) Current page number: Click to enter the page number you want to jump to.

(3) Total pages

(4) Page back

(5) Transfer (export): click this icon to export the records of all historical operationlogs to U disk or SD card in CSV format. The transfer mode (USB, SD card) pop-up window will pop up. Select the corresponding mode.

4.8.3 Alarm log



Information at the bottom of the alarm log port:

(1) Page forward

(2) Current page number: Click to enter the page number you want to jump to.

(3) Total pages

(4) Page back

(5) Transfer (export): click this icon to save all the historical alarm days When the log file is exported to U disk or SD card in CSV file format, it will pop up

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4.9 Channel Setting

The numbers on the left side of the channel setting ports are CH1 ~ CH16, Channel disabled / channel not configured: Ring gray; Channel configured successfully: Ring Blue; Currently selected channel: Green filling.

The icon on the top of the interface is signal type, which indicates from left to right: Disabled (the channel is not used), RTD (PT100), TC (thermocouple), DC voltage, DC current, thermistor, pulse (only used on channel 1).

The four icons at the bottom of the interface from left to right are: alarm, calibration, update and synchronization.

In channel settings, after clicking synchronize all, you must click the update button. If you need to exit the channel setting, exit after about 1s after clicking the update button.

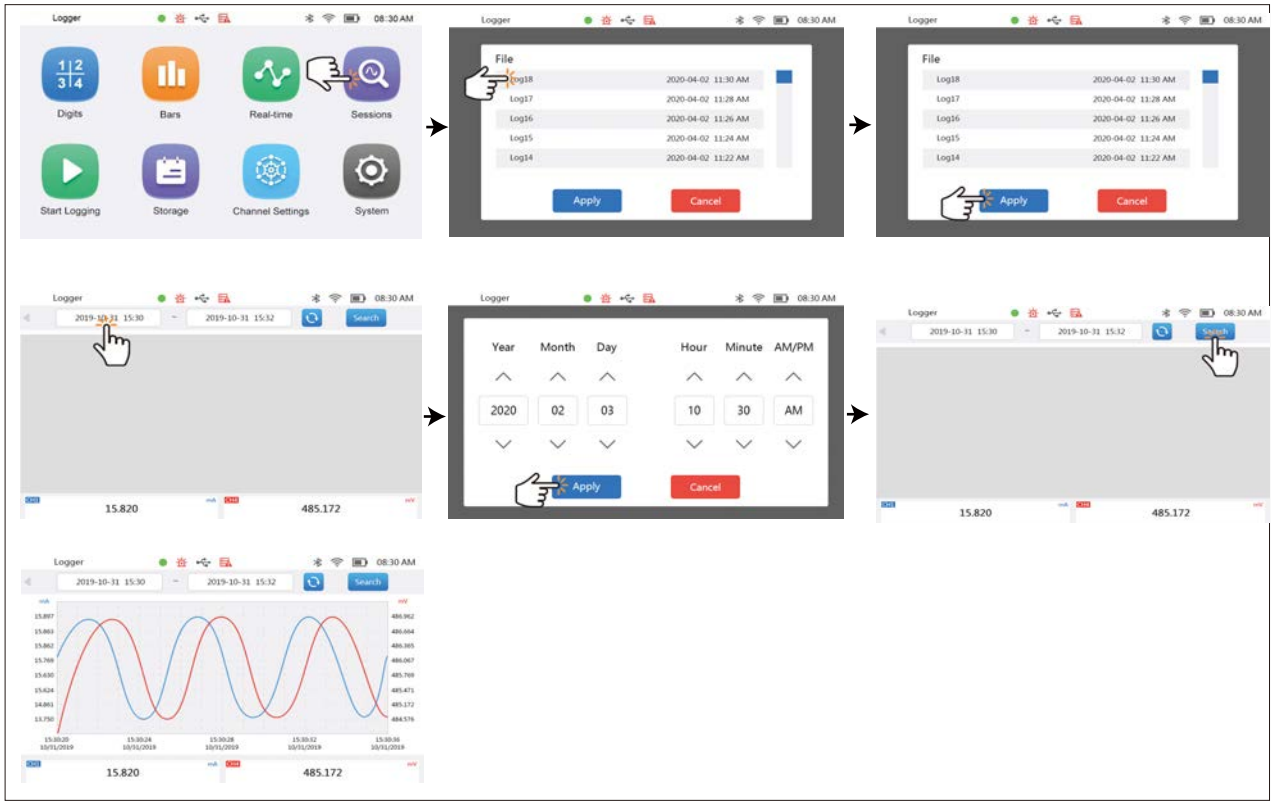
4.9.1 Channel setting

Steps: click the corresponding channel → select the corresponding signal type → set the signal measurement type → set alarm and calibration (this item is set according to personal needs) → click Update (complete the channel configuration, if you want all channels to be the same, click sync all, and then click Update to set successfully).

Note: the pulse / frequency signal is only available on channel 1.

Note: ① pulse / frequency signal is only available in channel 1.

② Only odd channel can set PT100 three wire and PT100 four wire channel modes. When the channel is set to PT100 three wire or PT100 four wire, the adjacent even channel will be occupied, and the channel connector will appear between the two channels. If it is changed to other modes, the channel connector will disappear.



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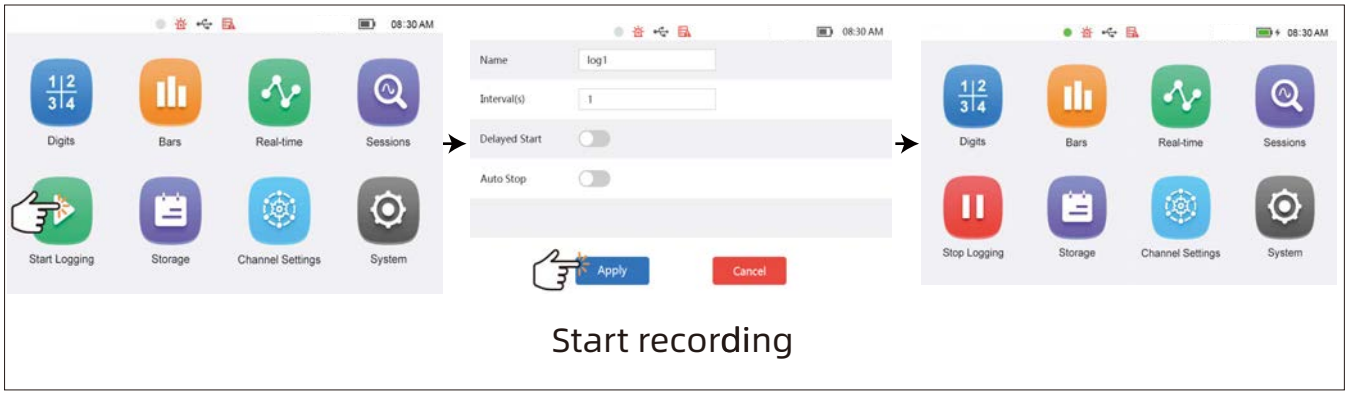
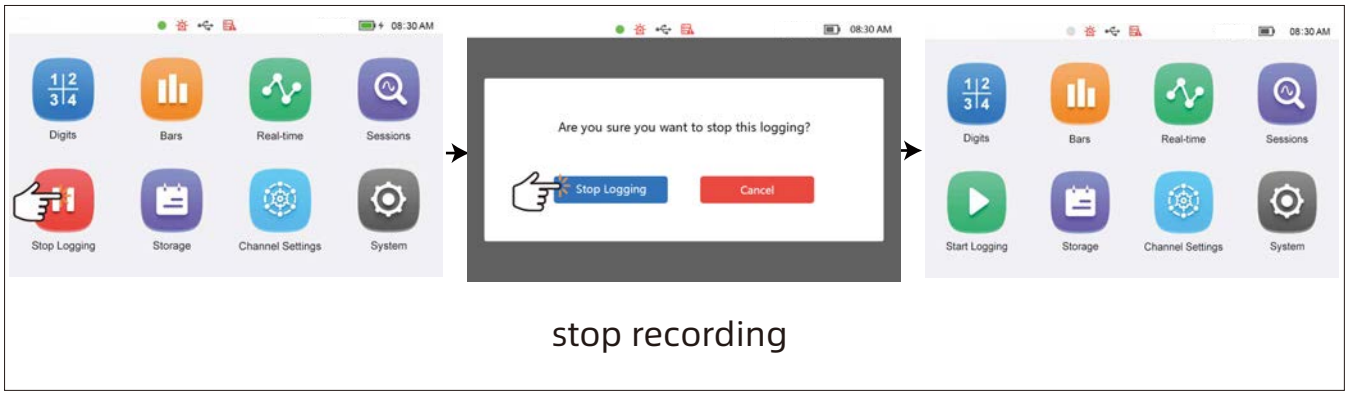


Start recording



stop recording

4.9.2 Alarm setting

Click the alarm to enter the alarm interface, and click the alarm on / off button (green means open, gray means close). If the alarm is opened, the alarm value and return value can be set. Click apply to set successfully.

Note: alarm settings can only be set for the current channel. If you want to set alarms for all channels, you need to click each channel to set. (when synchronizing all, the alarm settings are not synchronized)

Alarm types	Alarm value range
HH	-999999~999999
HI	-999999~999999
LO	-999999~999999
LL	-999999~999999
Alarm Return	0~999999

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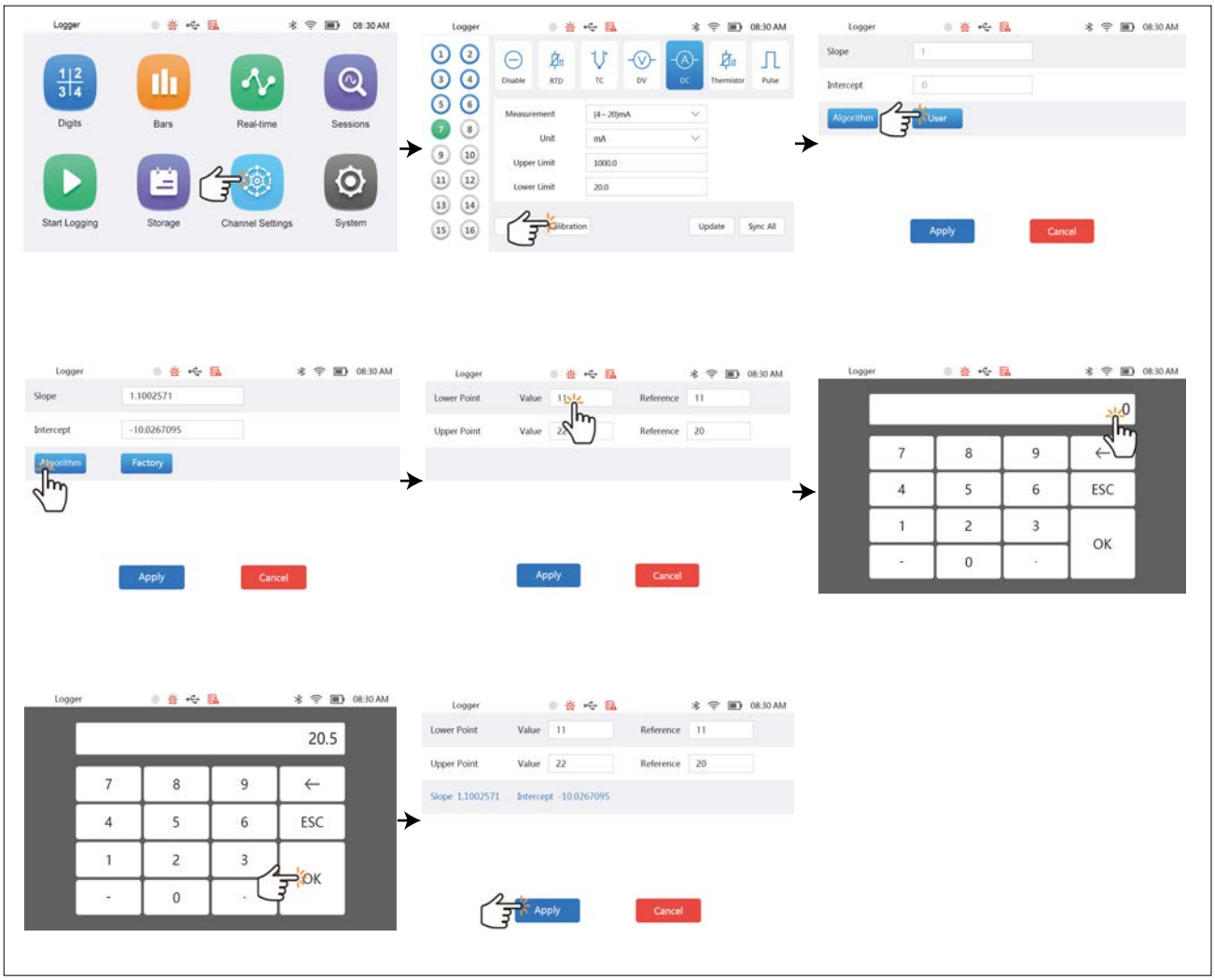
4.9.3 Calibration setting

Slope: the slope value can be input.

Intercept: intercept value can be entered.

Algorithm: click the icon to enter the calibration algorithm wizard interface. In the algorithm wizard interface, you only need to input the measured values and standard values of the low calibration point and the high calibration point to calculate the calibration slope and intercept. Click apply to automatically fill the calculated calibration parameters into the calibration parameters in the calibration setting interface. Click Apply in the calibration setting interface , the calibration parameter values will be saved.

Factory calibration: when the default slope and intercept are modified, the factory calibration option will be displayed. Click factory calibration to calibrate with factory parameters.
Note: The calibration setting can only be set for the current channel. If you want to calibrate all the channels,need to click to each channel to set.



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4.10 System Settings

On the left side of the system setting interface are four functional options: system information, system display, sampling storage and network setting.

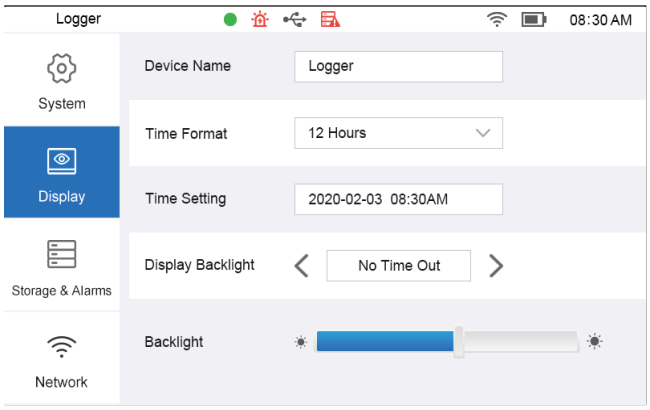
4.10.1 system information and program upgrade

(1) Serial number
(2) Hardware version number
(3) software version number; program upgrade (when u disk / SD card is inserted,When the upgrade program is detected in the USB flash disk / SD card,Program upgrade options will bedisplayed)
(4) Used storage space
(5) Remaining storage space
(6) Number of records
(7) Factory calibration time
(8) Restore factory settings

system information

4.10.2 system display

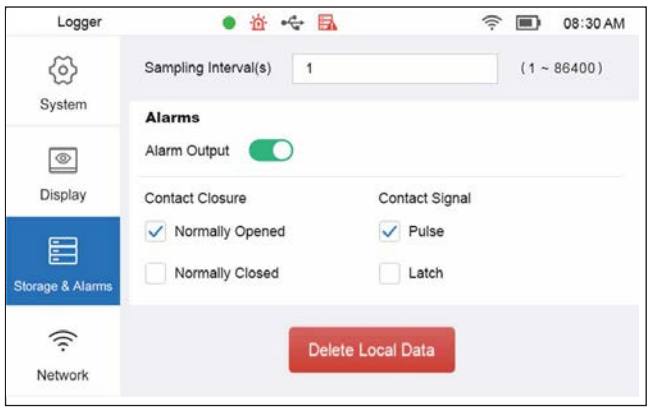
(1) Click time format to set 12 hours / 24 hours mode.
(2)Click time setting, click up and down arrow to set year, month, day, hour, minute, morning and afternoon.
(3) Click the left and right arrows on the backlight display to adjust the information screen time (1min, 10min, 30min, no time out).
(4) Slide the backlight brightness slider left and right to adjust the backlight brightness.



system display

4.10.3 sampling storage

(1) Sampling interval: Click to set the sampling interval in seconds.
(2) Storage location: click the drop-down arrow to select the local / SD card as the storage location.
(3) Delete local data
(4) Delete SD card data
(5) Delete alarm data



sampling storage

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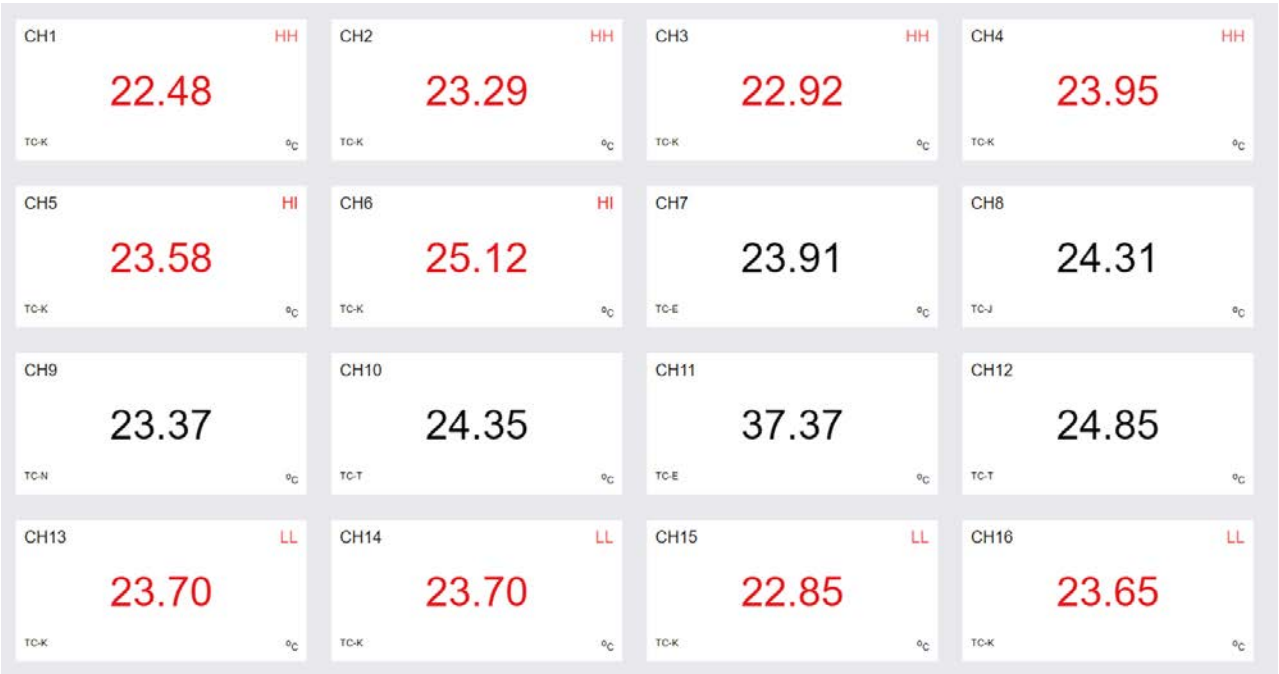
4.10.4 network settings

Ethernet settings (this mode DHCP option cannot be checked)
(1)Enter the corresponding IP address, subnet mask and gateway information.
(2) Click Update to update to the latest information.

network settings

4.11 Web settings

Enter the IP address of the device in the address bar on the web page, and then click enter to enter the web interface. You can remotely operate the device. The setting on the web interface is similar to that on the device. Please refer to the above setting method. After setting, click Submit and the parameters and information will be synchronized to the device.
Note: The IP address of the device is inCheck in System Settings→Network Settings.
(Web real-time data graph)



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Section 5 Daily maintenance

- When there is any foreign matter on the display screen, use a soft cloth to wipe the foreign matter away gently.
- When there is residual foreign matter on the protective sleeve, use soft cloth and soft detergent to remove the foreign matter.
- Please do not place the equipment under the sun, so as to avoid damage to the equipment shell or color change.

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