LS-200
Instructions for Split Micro Control Box

Please carefully read the safe operation items in the instructions before the installation and operation of equipment to guarantee the correct installation and safe handling of the equipment.

⚠ Safety Regulations

Danger:

- Distinguish the lead of sensor and power line from output relay interface.
- Misconnection or overload of relay is not allowed;
  All connection alterations shall be carried out when the power is off.

Warning:

The control box is not allowed to be used in water or excessively humid environment, or the circumstances at high temperature or with strong electromagnetic interference or high corrosion.

Attention:

- The supply voltage shall be consistent with the voltage marked on the control box with its stability guaranteed;
- The lead of sensor is recommended to be kept away from the power line appropriately for avoidance of possible interference introduced.
- Please use round cables of CAT 5e (CAT.5E24AWG) or above specifications with the maximum constraint length of 200 meters to guarantee the normal communication between the main control panel and display board far away.

Main function

Temperature measurement, display and control; refrigeration, defrosting, fan and light control; alarm; manual startup and shutdown; failure warning of temperature sensor; clock display; connection with our cloud platform and mobile phone APP through WIFI, 4G and Bluetooth.

Technical parameters

Power supply	100~256VAC,50/60Hz
Overall power consumption	Smaller than 10W
Temperature measurement range	-49°C~119°C/-56°F~246.2°F
Temperature measurement accuracy	-20°C~50°C±1°C, other±1.5°C; -4°F~122°F±2°F, other ±3°F
Temperature control range	-49°C~119°C/-56°F~246.2°F
Temperature resolution	0.1°C/1°C or 1F
Storage temperature	-20°C~75°C/-4°F~167°F
Working temperature	-10°C~65°C/14°F~149°F
Type of sensor	NTC (10KΩ/25°C, B value 3435K)
Length of sensor line	2 meters (including the length of probe)

Input		Output					Communication
Temperature measurement	Digital quantity	Alarm	Compressor	Fan	Light	Defrosting	
3	3	10A	110V: 1.5HP 220V: 3HP	16A	16A	30A	RS485/WIFI/ Bluetooth

Operation and display panel

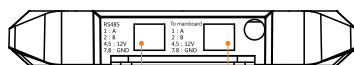Defrosting indicator lamp

Refrigeration indicator lamp

Fan indicator lamp

Unlock indicator lamp

Communication indicator lamp

Alarm indicator lamp

Light indicator lamp

AUX Auxiliary indicator lamp

Force defrosting button

Pause/Exit button

Setting/Unlock

Lower button

Upper button/Light button

RS485   To mainboard

Operation and display panel

|	
	Long press for 5 seconds and enter the force defrosting mode (defrosting conditions met)/short press and release, enter HACCP alarm view with HACCP function enabled
	Long press for 2 seconds to unlock/short press to enter user settings menu F01/long press to enter system settings menu F06
	Switch parameter code/adjust parameter value/when auxiliary output acts as light, short press to turn on light and short press again to turn off light
	Switch parameter code/adjust parameter value/short press and release to enter temperature view state, P1 display
	Long press for 5 seconds to pause/long press to stop/short press to return/short press to enter clock adjustment state

3

Quick operations guide

• Button unlock

In normal operation interface, the buttons will be locked after 10 seconds without button operation. The button lock indicator lamp is on and no relevant operations can be performed. In case of button lock lamp on, long press [⚙] for over 2 seconds to turn off the lamp. Then, the buttons are unlocked and relevant operations are available.

• User settings menu (F01--F05)

After buttons are unlocked in operation state, short press [⚙] and release and control temperature F01 will be shown in the display window. Enter user settings menu, press [▲] or [▼] to switch parameter codes in order. Press [⚙] to enter the corresponding parameters and adjust the parameters through [▲] or [▼]. After the parameter values are modified, press exit button [▶II] to save the modified values and return to parameter code interface. Press [▶II] again or do not press any button for 10S to automatically exit from the menu and save the parameters.
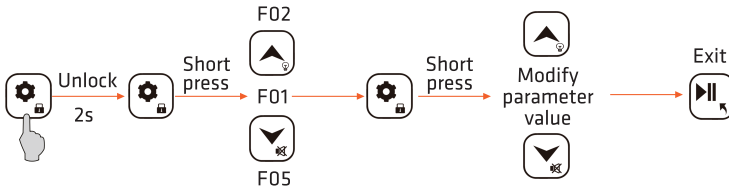
• System settings (F06--F52)

Long press [⚙] for over 5 seconds in normal operation state with no button locked;

(1) In case of no system password setting, follow above procedures for display F06, ①: press [▲] or [▼] to switch parameters and the parameters will be shown through the switch among F06--F52; press [⚙] to display the parameter values and adjust the values through [▲] or [▼]. Press [▶II] or do not press any button for 10S to save the data and return to the parameter item interface. Press [▶II] again or do not press any button for 10S to exit from the parameter setting interface and save the modified parameter values.

(2) In case of system password setting, i.e. F32 value is not 0 and the display window will show PAS. Press [⚙] to enter the password parameter value of F32 and then enter system settings menu for F06 display. Follow the procedures of above process ①.

4
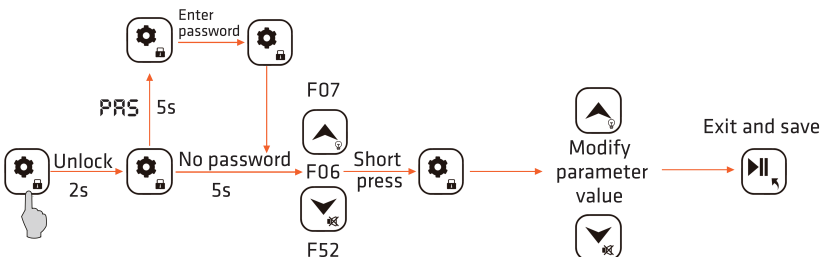
• Clock setting

In case of large difference between the clock and actual time in normal operation state with no button locked, time can be adjusted through setting. The detailed method is as follows: short press �യ️ and the year number flashes to enter the clock adjustment state. Press ⏶ or ⏷ to increase or decrease the year number and press ⚙ button to save the year number. Then the month number flashes. Press ⏶ or ⏷ to increase or decrease the month number and press ⚙ button to save the month number. Then the day number flashes. Press ⏶ or ⏷ to increase or decrease the day number and press ⚙ button to save the day number. The hour number flashes. Press ⏶ or ⏷ to increase or decrease the hour number and press ⚙ button to save the number. Then the second number flashes. Press ⏶ or ⏷ to increase or decrease the second number and press ⚙ button to save the number and exit from clocking setting. In case of no operation for 10S in time setting interface, the system will automatically exit from the interface. Time can also be adjusted through mobile phone APP or remote control of the platform;
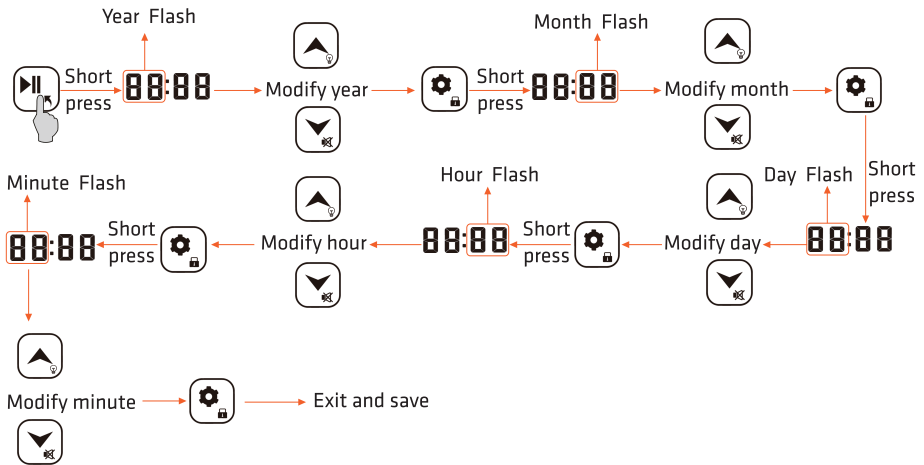
• Startup and shutdown setting

In normal operation state, long press ⏯ for over 5 seconds and the display will show PAC. The system will be in operation suspension state, which is subject to F45 setting time. Then, the system will operate normally. In the suspension state, long press ⏯ for 5 seconds to show OFF. The system is off. OFF on the screen means shutdown of the controller as well as all outputs. Long press ⏯ for over 5 seconds and the system will operate normally; remote startup and shutdown are available through platform setting.

• P1-P4 parameter value view

In normal operation state with no button locked, short press and release ⏷ to display P1 and enter the temperature view interface. Switch P1, P2, P3 and P4 through ⏶ or ⏷. Press ⚙ to enter corresponding temperature view interface during the display of P codes. Press ⏶ or ⏷ again to return to P codes interface. In the interface, short press ⏯ to exit from temperature view interface; P1: main storage temperature; P2: defrosting probe; P3: alternative sensor; P4: compressor current.

5

Compressor

• The following conditions shall be met for normal startup of the compressor:

①The equipment starts normally without startup delay of compressor

②The equipment is not in defrosting or drip mode

③There is no pressure control alarm or probe failure

④The storage temperature is no smaller than the control temperature set F01+F02; or the hot gas defrosting starts

⑤The time after startup of magnetic valve is no smaller than V01 (in case of F51=1). **This item is only valid with the negative pressure function is started**

Other: The storage temperature is no smaller than the control temperature set F01+F02+C05 (the compressor starts up when the night energy-saving mode is enabled with above ①②③⑤conditions met). **The relation is only valid with the night energy-saving mode enabled.**
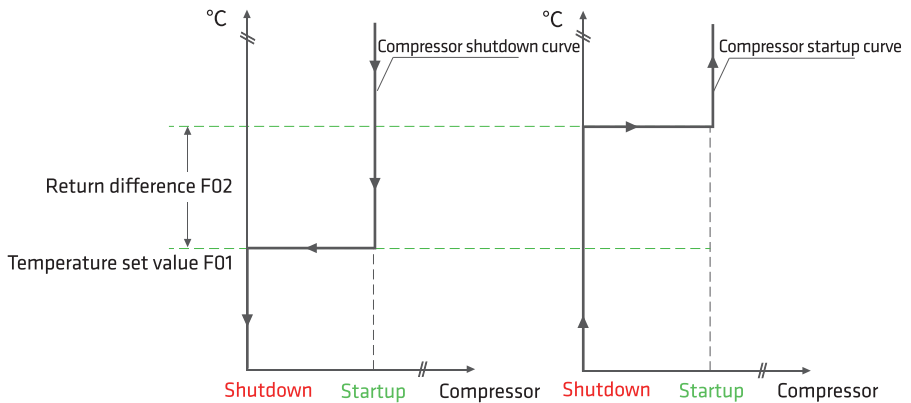
• Basic protection of compressor:

The startup and shutdown of compressor shall be subject to a certain time interval. ❄ Flashing on the panel means that the equipment has received the compressor startup request, but the compressor is still under protection and will start after the protection time expires. Users can set the safe startup / shutdown time for compressor through below parameters.

Minimum startup time - F08

The minimum working time after startup of compressor;
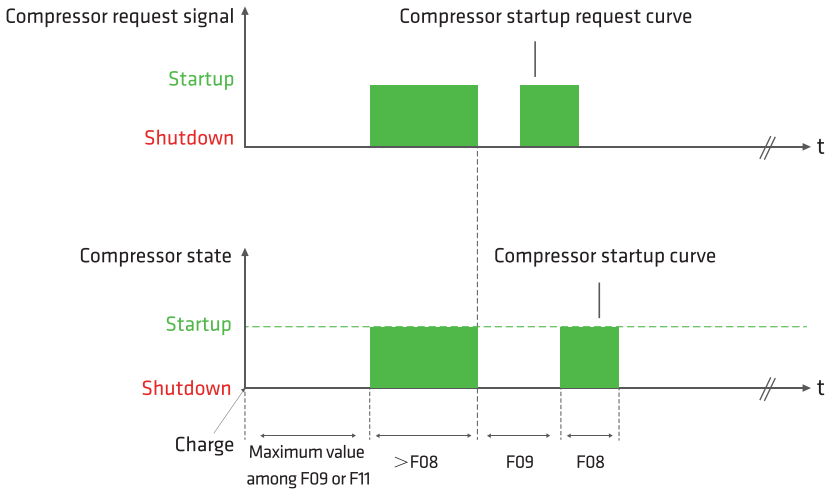
Minimum shutdown time - F09

The minimum shutdown time between two startups of compressor;

Powered initial startup delay - F11

When the equipment is power on, it can start up after F09 and F11 protection rime. The overall protection time is not the sum of the two protection time, but the longer one. Compressor can only start up after the longer protection time.

6

Compressor request signal — Compressor startup request curve

Startup

Shutdown

t

Compressor state — Compressor startup curve

Startup

Shutdown

Charge

Maximum value among F09 or F11 | ＞F08 | F09 | F08

• Force refrigeration:

In the non-defrosting, non-refrigeration, non-defrosting or drip, non-compressor shutdown alarm, non-parameter setting or non-parameter view state, in case of the storage temperature larger than shutdown temperature but smaller than startup temperature, press ⌃ for over 5 seconds to enter the force refrigeration state. The refrigeration indicator lamp flashes when the compress delay is smaller than the set delay time; the indicator lamp is on when the compressor delay is larger than the set time. Remote force refrigeration is available through platform setting;

Defrosting

• **The following conditions shall be met to start the defrosting function**
　①Defrosting cycle F03>0
　②Defrosting time F04>0
　③Defrosting measurement temperature < defrosting termination temperature F05
The defrosting function will stop where any condition above is not met.
Attention:
F20 defrosting type (1: electric defrosting 2: hot gas defrosting) **electric defrosting by default**
F21 defrosting sensor (0: disabled 1: enabled) **enabled by default**
F22 defrosting drip time (0-20)min **3 minutes by default**
F23 powered initial defrosting delay (0-99)min **0 minute by default**
F24 defrosting sensor calibration (–12.0--12.0)°C/(-21.6--21.6)°F **0 minute by default**
F25 defrosting cycle timing method: 0: controller working time; 1: compressor accumulation time
　　　controller working time by default
F26 display mode during defrosting: 0: measurement value of actual storage temperature sensor; 1: measurement value of the storage temperature sensor at the beginning of defrosting cycle; 2: deF; 3: settings **deF display of temperature default**
F27 defrosting startup mode (1: cyclical defrosting; 2: real-time clock defrosting) **cyclical defrosting by default**
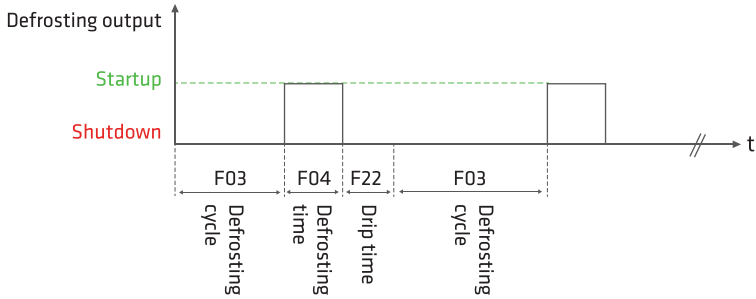
• Defrosting drip time F22:

After defrosting, there may be water on the surface of evaporator. Refrigeration at such a moment will lead to icing on the surface of evaporator. Therefore, some time shall be spared to allow the water to flow away, which is called the drip time.

• Real-time defrosting:

Please refer to below real-time clock defrosting parameters.

• Force defrosting:

Long press for 5 seconds with no button locked and no defrosting, then the system enter force defrosting state with defrosting conditions met. In defrosting state, long press force defrosting button to exit from defrosting state and enter defrosting drip state. Remote force defrosting is also available through platform setting;

Fan

Fan startup F28 in non-defrosting state	-1~-30	Fan starts up 1-30 minutes earlier than compressor	0 by default, simultaneous startup
	0~30	Fan starts up 0-30 minutes later than compressor	
	C	Fan operates continuously	
Fan shutdown F29 in non-defrosting state	0~30	Fan shuts down 0-30 minutes later than compressor	0 by default, simultaneous shutdown
	C	Fan operates continuously	

In defrosting state, when F30=l, the fan shuts down; when F30=2, the fan starts up.

Light

In parameter default state, ①the function of F35 parameter digital quantity 1is defined as: door switch ②the function of F39 parameter light relay is defined as: press unlock button, and in unlocked state, press ⏶ to turn on the light in case of no parameter setting and door switch off. Then, 💡 is on; press ⏶ again to turn off the light and 💡 will be off.

Attention: When the door switch is on, the light is constantly on and cannot be turned off. The following procedures are effective to turn on and off the light only when the door switch is off.

Operation of alternative sensor and compressor

In normal operation state, in case of alternative sensor enabled, it will be applied for temperature control when the main storage temperature sensor fails to work. In case the alternative sensor fails as well, the compressor shall be subject to operation of 15 minutes and shutdown of 30 minutes for several times; in case of alternative sensor disabled, the compressor shall still be subject to operation of 15 minutes and shutdown of 30 minutes for several times.

Door switch function

In case of door switch function enabled and when the product is power on, the current door switch frequency state and open time are available to be uploaded to the cloud platform through the pipe-line communication module without local data storage. Above data shall be re-counted when the product is power off and on again.

Water pump control (F39=4、 F40=4)

When refrigeration function starts, open water pump at first and start the compressor after the water pump has completed the prefilling time set. When refrigeration stops and the compressor shuts down, the water pump shuts down after the set shutdown delay rime.

Alarm output

In operation state, when any of the following conditions occurs and the parameter F18=2 with the buzzer ringing and alarm relay operating, it is available to press and release any button to eliminate the ringing of buzzer.

◑ Special note: The high temperature alarm means the storage temperature is no smaller than the control temperature F01+F02+F13. In case of powered initial high temperature alarm or initial alarm after defrosting, the high temperature alarm occurs when the alarm time exceeds F17; in case it is not the initial high temperature alarm and occurs when the duration is no smaller than F16, the fault code E5 and current storage temperature will be alternatively shown in the temperature display window. When the storage temperature of is smaller than the control temperature F01+F02+F13-F15, the alarm will be eliminated.

◑ Special note: The low temperature alarm means the storage temperature is smaller than the control temperature F01-14. In case of powered initial alarm, the low temperature alarm occurs when the alarm time exceeds F17; in case it is not the initial alarm and its duration no smaller than F16, the low temperature alarm occurs and the fault code E6 and current storage temperature will be alternatively shown in the temperature display window. When the storage temperature is larger than the control temperature, the alarm will be eliminated.

◑ Note: High and low temperature alarms will not occur in defrosting state and with door switch on;

Alarm code

Code	Content	Remarks	Code	Content	Remarks
E1	Short circuit of storage temperature probe		E11	HACCP common alarm	
E2	Open circuit of storage temperature probe		E12	HACCP emergency alarm	
E3	Short circuit of defrosting probe		E13	Failure of alternative sensor	
E4	Open circuit of defrosting probe		E14	Unit maintenance	
E5	High temperature alarm	Storage temperature ≥ control temperature F01+F02+F13	E15	Overcurrent alarm	
E6	Low temperature alarm	Storage temperature < control temperature F01-F14	E16	Parameter storage error alarm	
E7	Door swicth alarm		E17	High humidity (reserved)	Humidity >= high humidity alarm value H04
E8	Man in cold storage alarm	The alarm resets 20 minutes after the reset	E18	Low humidity (reserved)	Humidity <= low humidity alarm value H05
E9	External alarm		Err	Communication error between display board and mainboard	
E10	Pressure protection alarm				

HACCP alarm view

In normal operation state with no button locked and F46=1, short press and release ❄. The temperature display area shows "ALr" and clock display area shows "ACP" (high and low temperature alarm). Short press ⏶ or ⏷ to page up and down to switch the alarm code between "PF" (power failure alarm), "Pt" (maximum and minimum temperature) and "ACP".

• Date and time of high and low temperature alarm view

In case of high and low temperature alarm and "ACP" display in clock display area, short press ⚙ and the upper digital tube shows "STA" and the lower tube shows "01Ht". Press ⌃ or ⌄ to page up and down for alarm order and type (e.g. 02Lt, or 02Ht etc.). The clock display area shows "01Ht". Short press ⚙ . The upper digital tube shows "STA" and the lower tube shows the alarm time (e.g. 1255). Press ⌃ to display the date (e.g. 0620 display for June 20). Press ⌄ to display the time and then press ⌃ or ⌄ to switch between the alarm time and date. Short press ▶ǁ button to exit from the current alarm time view interface. The upper digital tube shows "STA", while the lower tube shows "01Ht". Short press ▶ǁ button again and the system returns to the previous menu. The upper digital tube shows "ALr", while the lower tube shows "ACP";

• Date and time of power failure alarm view

When the upper digital tube shows "ALr" and the clock display area shows "PF", short press ⚙ in case of power failure alarm. The upper digital tube shows "AnC", while the lower tube shows "01PF". Press ⌃ or ⌄ to change "02Ht" or "03Ht" (if any). In case of "01PF" display, short press ⚙ and the upper digital tube shows "SPF" with the lower tube showing the power failure time (e.g. 12:55). Press ⌃ or ⌄ to switch between the alarm time and date and the display of lower digital tube switches between alarm time (e.g. 12:55) and alarm date (e.g. 0620 display for June 20).

• Date and time of maximum and minimum temperature alarm view

When the upper digital tube shows "ALr" and the clock display area shows "Pt", short press ⚙ to enter the maximum and minimum temperature alarm view interface. The upper digital tube shows "AtP", while the lower tube shows "01Ht" (the maximum temperature). Press ⌃ or ⌄ to change "01Ht" or "02Lt" (the minimum temperature). In case of "01Ht" display, short press ⚙ and the upper digital tube shows the maximum temperature with the lower tube showing the alarm time. Press ⌃ or ⌄ to switch between the time and date of the maximum alarm temperature, (date format, e.g. 0620 display for June 20). Short press ▶ǁ to exit from the previous menu and short press ▶ǁ again to exit from the view state.

HACCP alarm clear: When the system operation time is larger than drH, the system will automatically clear all HACCP alarm storage values.

Attention: The system can store 30 high and low temperature alarms and 10 power failure alarms at most.

MODBUS communication

MODBUS-RTU communication slave machine mode has been applied in the system with Baud rate of 9600, no odd-even check, 8 digital bits and 1 stop bit. MODBUS-RTU command 03 (Read Holding Registers) and 06 (Write Single Register) are available.

Instruction of Optional Networking

LS-200 has three networking modes: WIFI/4G/Bluetooth. Users can choose three networking selection modes (i.e. WIFI+ Bluetooth/4G+ Bluetooth/Bluetooth) according to their needs.

Preparatory work

1)Before configuring networking operation, power-off operation shall be carried out on the equipment.

2)Insert the SIM card first, if 4G networking is required.

  Please connect your mobile phone to the WIFI that you need to use first, if WIFI networking is required.

  Please turn on the Bluetooth of your mobile phone first, if Bluetooth networking is required.

3)Download the "Elitech iCold" app from the mobile app store.

WIFI Networking Configuration Operations

• Register and login

  Please register for the first time according to Step 1 and follow the instructions to operate on the registration window.

  Please fill in your registered name and password, and follow steps 2-4 in the figure below.

  Follow the instructions.

Elitech iCold

Innovation Preceding All

Username/Email ——— ②

Password ——— ③

☑ Remember Password

Login ——— ④

Forgot password?   Register ——— ①

12

• Add your device

Click "+" to add your device after logging in and operate as instructed in Step 5 in the following picture.

| ☰ | My Device | + | ⑤ |
| Q Enter Device Name or Model | | | |
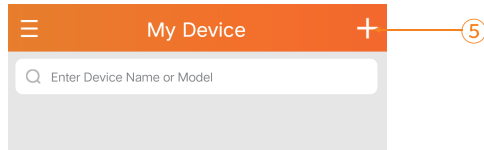
1) Add device GUID
2) Scan QR code to add your device, as shown in Step 6 of the figure below; Or manually enter GUID (20 bits), as shown in Step 7 of the following figure;
3) Customize the device type name, as shown in Step 8 of the figure below;
4) Click the "add now" button, as shown in Step 9 of the figure below;
5) Press the "add now" button in the pop-up window, and then click OK.

←	Add Device	▤	⑥
🔖 Device GUID			⑦
🏷 Device Name			⑧
💬 (GMT+08:00)Shanghai			
Note: Click the QR code on top right to add device automatically.			
Add			⑨

☞ Note: The QR code and GUID are at the top left of the device.

• Enter the WIFI password

The following window pops up after Step 9. Enter the WIFI password connected to the mobile phone at Step 10, and then power on the device. Operate Step 11 in 5 seconds later, and the page will pop up the window "connecting to the network".
The connection process takes about 5 ~ 30 seconds.
Click Return and the home page will display the device online after the networking configuration.

13

Configure Wi-Fi

Make sure your device is in config mode before any operation. See details in User Manual.

NI

123456789 ⑩

Entered Configuration ⑪
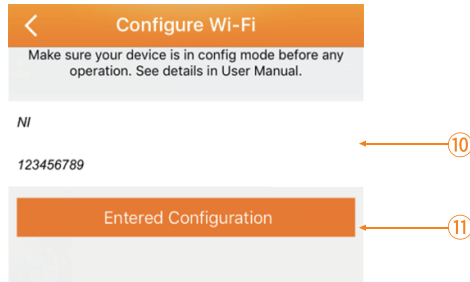
☞ Note:
1. Please power off the device first, and then repeat steps 5 ~ 11 if the device fails to connect to the network.
2. WIFI configuration needs to be completed within 2 minutes after the device is powered on. If it exceeds 2 minutes, it is required to disconnect the device for 1 minute, then switch on the power and reconfigure WIFI networking.

4G Networking Configuration Operation

If the device has been successfully added, the network does not need to be configured again, and the SIM card can be directly plugged in to automatically connect to the network.
Configure 4G networking according to the following steps, if the user adds a device for the first time.

• Configuration of mobile terminal to 4G networking
Refer to Steps 1-9 in the WIFI Configuration.
Automatically exits the configuration page after networking completed, and the home page will show that the device is online

• Web-side configuration networking
Login Account Number
Open the browser, enter the website of Elitech website- www.i-elitech.com in the address bar, fill in the user name and password, and click Login. Follow steps 1-5 in the following figure. Click the left corner to register first, and follow Steps 2-5 after registration.

14
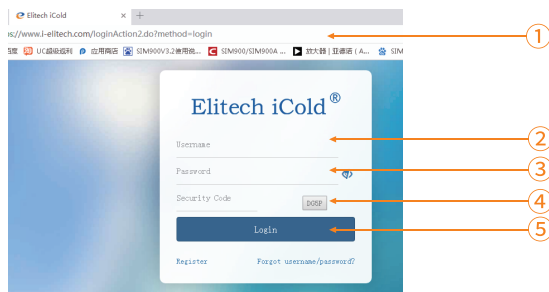
Add device

Click Project Center > > Default Project > > Add Device in turn, and follow Steps 6-8 in the following figure after logging in.
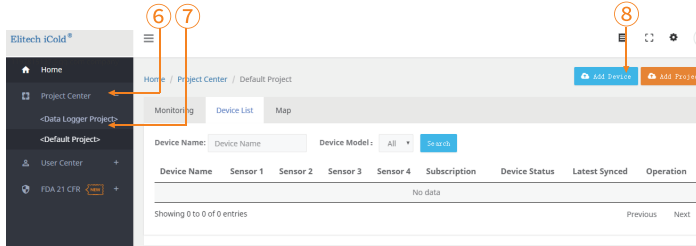
Then, enter the GUID of the device to be networked and defined device name on the information window popping up for Add Device, and then click Next. Follow Steps 9-11 in the following figure.
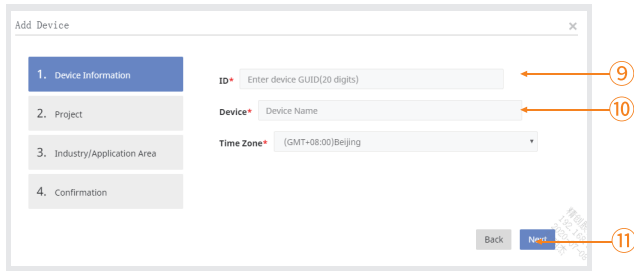
Select the default project and click next. Follow Steps 12-13 in the following figure.
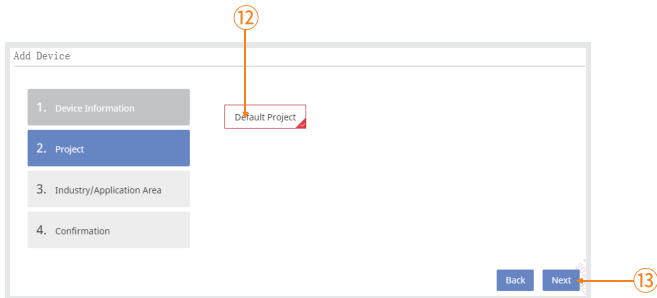
Select the device usage scenario and click next. Follow steps 14-15 in the following figure.
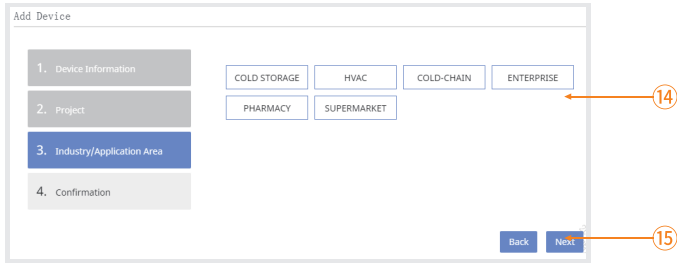
Display the information added by the device, and click Finish after confirming it is correct. Follow Step 16 of the figure below.
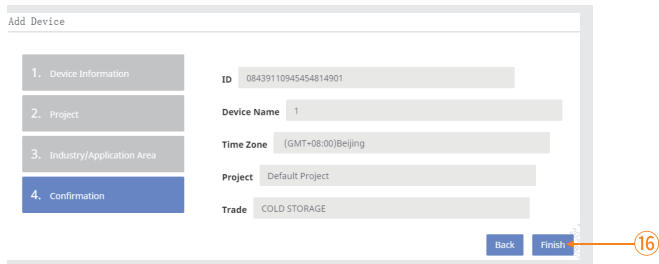
Refresh the page after device added and display the added devices.

WIFI Reset Operation

Press ⬇ and display P1 for a short time, in the non-key locking state, after the equipment is powered on. Press ⬆ or ⬇ to search and display P6 for many times, press ⚙ for a short time and temperature display box will display the WIFI connection status number at this time. Press ❄ for 5 seconds in this state, and a reset rst will occur. At this time, no key needs to be pressed, and the WIFI reset is completed when it is converted to the temperature display state.

☞ Note: After reset operation, it is recommended to restart the device.Find P6 in the lower part, which is the WIFI signal status and shows 34 as the WIFI connection is successful.

SIM Installation

Power off the device before inserting the SIM card.

Bluetooth Networking Configuration Operation

Search and download the "Elitech iCold" app in the mobile app store, install it, turn on the Bluetooth function of the mobile phone, power up the controller, and turn on the APP.

Elitech iCold
Innovation Preceding All

- IoT
- Data Logger
- Bluetooth Thermostat
- NFC Temperature Tag
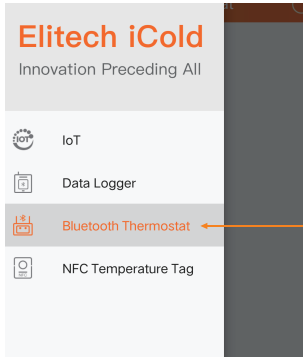
Click on the upper left corner of the homepage of the page, wait until the left picture appears, and select the Bluetooth controller

Open the positioning according to the prompt.

Bluetooth Thermostat

HJ-580jc_A
38:66:78:00:0A:CD
27.2℃
LS-200
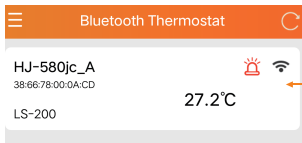
Click here to connect to the product. On this page, if you short press the defrost button on the controller, a red background will display a prompt. This function is used to identify the device when multiple devices are not connected

← HJ-580jc_A   Rename

Real Time

Online   Alarm

2.0℃   27.2℃   0.0℃
ON   OFF

Temperature

0.0 A   1 time   27.2℃
Comp current   Door switch num   Defrost Temperature

Powered on

Device Model:LS-200   MAC:38:66:78:00:0A:CD

Common Operations

User Menu   Night Mode   Quick Setup

Parameter Configurations   Alarm   User Manual
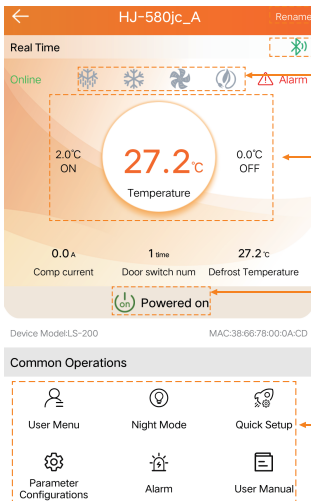
Click to modify the name

Click to disconnect the Bluetooth connection

Display output status

Display real-time temperature and start and stop temperature

Switching equipment

Can be set

17

The basic function parameter codes are as follows:

Menu	Menu functions	Scope	Default value
F01	Controlling temperature	(-49...100)°C/(-56...212)°F	0.0
F02	Control of return difference	(0.1...20.0)°C/(0.1...36.0)°F	2.0°C/3.6°F
F03	Defrosting cycle	(0...99) h	6
F04	Defrosting time	(0...99) min	30
F05	Defrosting termination temperature	(0...99.0)°C/(0..210)°F	8.0°C/36.4°F

The extended function parameter codes are as follows:

Menu	Menu functions	Scope	Default value
F06	Upper limit of temperature setting	(F01..100)°C/(F01...212)°F	100.0°C/212°F
F07	Lower limit of temperature setting	(-49.0...set)°C/(-56.0...set)°F	-49.0°C/-56.0°F
F08	Minimum startup time	(0...15) min	0
F09	Minimum downtime	(0...15) min	0
F10	Temperature correction for main sensor	(-12.0...12.0)°C/ (-21.6...21.6)°F	0.0
F11	Initial power-on start delay	(0...30) min	2
F12	Energy saving mode at night (1: on, 2: off), specific C parameter	(1...2)	2
F13	High temperature alarm: storehouse temperature ≥ control temperature F01+F02+F13	(0...30)°C/(0...54)°F	10°C/18°F
F14	Low temperature alarm: storehouse temperature < control temperature F01-F14	(0...30)°C/(0...54)°F	10°C/18°F
F15	Alarm backlash	(1...10)°C/(1...18)°F	2°C/3.6°F
F16	Alarm delay	(0...99)min	30
F17	First alarm delay after power-on or defrosting	(0...99)min	20
FI8	The buzzer is off for alarming (1: on and 2: off)	(1...2)	1

F19	Door switch alarm delay	(0...120)min	30
F20	Defrosting type (1: electric defrosting, 2: hot gas defrosting)	(1...2)	1
F21	Defrosting sensor (0: disable, 1: enabled)	(0...1)	1
F22	Defrosting dripping time	(0...20)min	3
F23	Initial power-on defrosting delay	(0...99)min	0
F24	Defrosting sensor correction	(-12.0...12.0)°C/ (-21.6...21.6)°F	0
F25	Timing mode of defrosting period: 0: working time of controller; 1: compressor accumulation time	0-1	0
F26	Display mode during defrosting: 0: Display actual warehouse temperature sensor measurement value; 1: Display the measured value of the warehouse temperature sensor at the beginning of defrosting cycle; 2: Display deF; 3: Display set temperature	0-3	2
F27	Defrosting start mode (1: Cycle defrosting, 2: Real time clock defrosting)	(1...2)	1
F28	-30~-1: The fan starts 1-30 minutes earlier than the compressor 0-30: The fan lags to start for 0-30 minutes later than the press; C: Continuous operation	(-30...30..c)	0
F29	Fan shutdown mode: 0 ~ 30: the fan lags behind the compressor for 0 ~ 30 minutes to shut down; C: Continuous operation	(0...30...c)	0
F30	The fan stops running during defrosting (1: Yes, 2: No)	(1...2)	1
F31	Alternate sensor selects 0: not enabled; 1: Enable (see parameter b for details)	(0...1)	1

F32	Parameter entry password	(0...999)	0
F33	Decimal display (1: Yes, 2: No)	(1...2)	1
F34	Fahrenheit display (1: Celsius, 2: Fahrenheit)	(1...2)	1
F35	Definition of digit set 1 function; 0: shield; 1: defined as defrosting; 2: auxiliary input; 3: door switch; 4: external alarm; 5: pressure switch; 6: People alarm in the cold storage,	0-6	3
F36	Digital quantity 2 function definition; 0: shield; 1: defined as defrosting; 2: auxiliary input; 3: door switch; 4: external alarm; 5: pressure switch; 6: People alarm in the cold storage,	0-6	5
F37	Selection of digital quantity 1 type input (0: Normally closed valid, 1: Normally open valid)	0-1	1
F38	Digital set 2 type input selection (0: Normally closed valid, 1: Normally open valid)	0-1	1
F39	Function definition of light relay; 0; shielding; 1: alarm output; 2: auxiliary output; 3: light relay; 4. output of condensate pump; 5: humidification output	0-5	3
F40	Definition of alarm relay function; 0; Shielding; 1: Alarm output; 2: auxiliary output; 3: light relay; 4. Output of condensate pump; 5: humidification output; 6: solenoid valve output (negative pressure shutdown)	0-6	1

F41	Door switch input purpose: 0: compressor and evaporation fan are closed; 1: Close evaporation fan; 2. Turn on the storehouse lamp; 3. The compressor and evaporation fan are closed and the warehouse lamp is turned on; 4. The evaporation fan is turned off and the warehouse lamp is turned on;	0-4	2
F42	Pre-filling time of water pump	3~255 sec	3
F43	Water pump shutdown delay	3~255 sec	5
F44	Allowable number of alarm times of pressure switch (within 15 minutes). If this value is exceeded, the compressor will no longer be turned on and needs to be restarted without power supply.	1-5	3
F45	Pause time setting (the time when the system enters pause mode to work)	1-120 min	30
F46	HACCP function settings (0: not enabled; 1: enabled) refer to HACCP parameters for details	0-1	0
F47	Compressor unit maintenance time (0: function off)	0-365 d	0
F48	Compressor protection current	1-30A	15
F49	Current protection delay	1-60 sec	10
F50	Humidity detection (0: not used; 1 used) See H parameter (reservation function) for details.	0-1	0
F51	Negative pressure shutdown function: 0: Off; 1: On; See the following parameter setting V parameter for details	0-1	0
F52	RS485 mailing address	1-127	1

Note: When F51=1, F40 is automatically set to 6; In the default parameter state, E10 is reported.

• **Clock defrosting parameter (enabled when F27=2, press ⚙ to enter this menu operation)**

No.	Parameters	Parameter setting description	Scope	Default value
1	d01	1st defrosting start hour	(0...23)hour	0
2	d02	1st defrosting start minute	(0...59)min	0
3	d03	2nd defrosting start hour	(0...23)hour	0
4	d04	2nd defrosting start minute	(0...59)min	0
5	d05	3rd defrosting start hour	(0...23)hour	0
6	d06	3rd defrosting start minute	(0...59)min	0
7	d07	4th defrosting start hour	(0...23)hour	0
8	d08	4th defrosting start minute	(0...59)min	0
9	d09	5th defrosting start hour	(0...23)hour	0
10	d10	5th defrosting start minute	(0...59)min	0
11	d11	6th defrosting start hour	(0...23)hour	0
12	d12	6th defrosting start minute	(0...59)min	0
13	d13	7th defrosting start hour	(0...23)hour	0
14	d14	7th defrosting start minute	(0...59)min	0
15	d15	Maximum defrosting times per day for same time	0-7	0

• **Related parameters of Backup sensor (enabled when F31=I, press ⚙ to enter)**

No.	Parameters	Parameter setting description	Scope	Default value
1	b01	Channel 3 sensor function setting; 1. After the failure of the warehouse temperature sensor, the sensor is automatically used to control the temperature; 2. It is used as a warehouse temperature sensor, only for measurement, not for control; 3. It is used together with the storehouse temperature sensor to control the start and stop of the compressor at the average temperature.	1-3	1
2	b02	Standby sensor temperature correction	(-12.0...12.0)°C/(-21.6...21.6)°F	0

3	b03	High temperature alarm value of standby sensor	(F65-120)°C/(F65-248)°F	50°C/122°F
4	b04	Low temperature alarm value of standby sensor	(-50-F64)°C/(-58-F65)°F	-20°C/-4°F
5	b05	Over-temperature alarm delay for backup sensor	0-120min	30

• **HACCP-related parameters (enabled when F46=l, press ⚙ to enter)**

No.	Parameters	Parameter setting description	Scope	Default value
1	SHi	Output parameter of emergency high temperature alarm: once the temperature is greater than the upper temperature limit set by SHi, the controller will immediately generate emergency high temperature HACCP alarm without delay. The accuracy of this parameter is 0.1°C, and the display of alarm depends on the parameter set by H50.	SHH~99.0°C/(SHH~210)°F	35°C/95°F
2	SLi	Output parameter of emergency low temperature alarm: once the temperature is less than the lower temperature limit set by SLi, the controller will immediately generate emergency low temperature HACCP alarm without delay. The accuracy of this parameter is 0.1℃, and the display of alarm depends on the parameter set by H50.	(-49.0~SLH)°C/(-56.2..SLH)°F	-35°C/-31°F
3	SHH	HACCP high temperature alarm parameter: When the controller is greater than the parameter set here and the time exceeds the time set by parameter drA, HACCP high temperature alarm will be generated. The accuracy of this parameter is 0.1°C, and the alarm display depends on the parameter set by H50.	SLH~99.0°C/ SLH~210°F	30°C/ 86°F

| 4	SLH	HACCP low temperature alarm parameter: When the controller is less than the parameter set here and the time exceeds the time set by parameter rA, HACCP low temperature alarm will be generated. The accuracy of this parameter is 0.1°C, and the display of alarm depends on the parameter set by H50.	-49.0~SHH°C/(-56.2..SHH)°F	-30°C/-22°F
5	drA	HACCP alarm delay.	0~99 min	10
6	drH	HACXP alarm reset time setting: HACCP alarm will be automatically reset after the controller is turned on and the time set by this parameter. If it is set to 0, HACCP alarm record will be stored	0~254 h	0
7	H50	When HACCP alarm is generated, the alarm output form is set: H50=0,	0-2	0
8	H52	HACCP alarm sensor setting: H52=1, mainly HACXP alarm sensor; H52=2, none; H52=3, standby sensor	1-3	1

• **Humidity function related parameters H menu (enabled when F50=l, press** 🔧 **to enter) (function reservation)**

No.	Parameters	Parameter setting description	Scope	Default value
1	H01	Humidity setting value (humidification stop value) When humidity > = H01, the humidification output is turned off;	50-90%	80%
2	H02	Humidity output period	1-255 min	1
3	H03	Humidity output time	0-255 sec	0
4	H04	High humidity alarm value	H05+1---95%	90%
5	H05	Low humidity alarm value	20~(H04-1)%	50%
6	H06	Humidity alarm delay	0-255 min	15

No.	Parameters	Parameter setting description	Scope	Default value
1	V01	Solenoid valve advances compressor start time	1-255 sec	30 sec
2	V02	Maximum lag solenoid valve stop time of compressor	1-255 sec	200 sec
3	V03	The 3rd channel digital value switch type (0: valid when normally closed valid; 1: valid when normally open) is used for low voltage switch detection.	0-1	0

Wiring Diagram
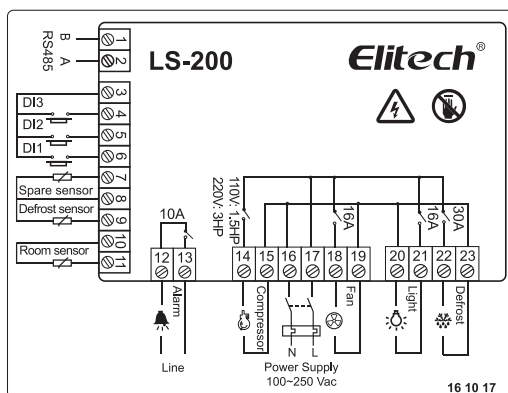
The digital input 3 is the parameter V03 to be set for low voltage detection of negative pressure shutdown; If the compressor, fan, lighting and defrosting relays are closed, the direct output voltage between the corresponding connection terminals is 100~250VAC; Voltage cannot be output between alarm terminals, which is a passive switch.

Elitech®

Elite of technology

V1.0