



Ultra-Low Temperature Freezer

Operation Manual

The following product models are applicable:

Q5128

abm abm[®]

Cutting-edge control technology:

High-precision microcomputer temperature control system, platinum resistance temperature sensor, with temperature that can be accurately set in the set range;
LED/LCD touch screen with clear display, good man-machine interaction interface, simple operation and more accurate temperature control;

Refrigeration system:

High-efficiency compressor and EBM fan with strong power, energy conservation and high efficiency;

Double-layer foaming thermal insulation door, surrounding design of multi-patent external door system, which can effectively prevent cooling loss;

The freezer body is made of high-performance vacuum insulation material, which greatly improves the insulation effect;

Humanized design:

New power-assisted door handle, easy to open;

A special file box to make the recording simpler and more convenient;

Adjustable shelf structure, convenient for storing items;

Universal wheels and fixed feet to move and fix more conveniently;

Security system:

Keyboard lock and password protection function to prevent arbitrary adjustment of operating parameters;

Remote alarm and various alarm system (sensor failure, high temperature, low temperature, door opening, power failure, etc.) to ensure the safe storage of items in the cabinet;

Protection functions such as startup delay and shutdown interval to ensure reliable operation of products;

Door lock to prevent door opening without authorization.

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1. Application Notes

Thank you for choosing our products! For your safe and convenient use and reasonable maintenance of the equipment, please read the Operation Manual carefully before use and keep it properly for reference.

The equipment operator can copy some chapters of this operation manual, but only for internal use, for example, to instruct the user how to deal with emergencies. These chapters are clearly marked in the catalog of the manual.

We have no obligation and responsibility for any instrument damage caused by the user's failure to use the equipment according to the instructions or the method specified by the manufacturer.

Due to the rapid improvement of our products, the functions described in the instructions may be inconsistent with those of the products you purchased. Please refer to the physical functions.

- Please read carefully the Attention and Safety Precautions in 2. Safety Instructions.
- During transportation or use, no violent vibration or collision is allowed and the freezer shall be kept away from rain. Store in a clean room with good ventilation, humidity no more than 80%, and no corrosive gas.
- The ultra low-temperature freezer (hereinafter referred to as equipment) can only be operated by trained and authorized personnel.
- Maintenance of the equipment can only be completed by us or an agent authorized by us.
- If the operator encounters any situation not mentioned in this manual, please contact us or the agent authorized by us for the correct handling method.
- If the equipment is not used according to the method specified in the specification, it may be damaged.
- Try to use the accessories provided by us. If users would like to use other accessories, we will not be responsible for the adverse consequences caused therefrom.

- Equipment must be inspected and maintained regularly to ensure good operation of the equipment.



Warning:








After each access, be sure to dry the water stains around the sealing strip to prevent freezing. Wear protective gloves when storing items in the equipment, and beware of frostbite!












Tips






















- ◆ Always use protective equipment correctly (including clothes, gloves, goggles, etc.)
- ◆ Always keep good hygiene habits
- ◆ Each personnel is to be responsible for his or her own safety

2. Safety Instructions

When using this product for the first time, please pay attention to the meaning of the following warning signs and carefully read the safety precautions, so that you can use this equipment safely and correctly.

 Warning! Failure to observe the precautions may result in serious personal injury or death.	 Attention! Failure to observe the precautions may result in personal injury or equipment failure and related property losses
 Must be grounded	 Risk of Explosion This sign indicates the risk of explosion when using volatile and explosive chemicals.
 Beware of hand pinching	 Beware of low temperature
 Beware of fire	

 Warning: Failure to follow precautions may result in serious personal injury or death.
 If a CO2 backup system is adopted, the equipment use site must have good ventilation, High concentrations of CO2 in the air will endanger the life of personnels. In the case of poor ventilation, please consider other measures to ensure a safe working environment.
 To avoid electric shock, do not touch the equipment with wet hands. Equipment shall not be grounded through gas pipeline, water supply pipeline, telephone line or lightning rod, which may easily cause electric shock.
 This equipment can only be installed by professional technicians or after-sales maintenance personnel, it may cause electric shock or fire.
 Be sure to install the equipment on a solid and flat ground and take due care to prevent tipping over. If the ground is not solid enough or the installation location is not appropriate, it may cause the equipment to fall over and cause equipment damage or personal injury.
 Please handle the power cord carefully to avoid short circuits or open circuits. Please turn off the power before pulling out the power plug. Hold the power plug carefully and pull it out. Do not pull the wires of the power plug. Otherwise, it may cause electric shock or fire due to short circuits.
 Please insert the power plug into the outlet tightly to ensure firmness and reliability, so as to avoid electric leakage. After installation, the power plug must be within reach, so that the power plug can be unplugged in time in case of emergency.
 Separate special outlets must be used and grounded reliably. The cross-sectional area of the copper conductor in the wall connected with the outlet must be more than 4mm ² . Do not lengthen the power cord without authorization to avoid heating or fire.
 Do not use the power supply that is not specified in the equipment design, so as to avoid overheating, short circuit and other faults. For example, connecting 110V rated voltage products to 220V power supply may cause faults such as overheating and equipment burning. For detailed input voltage AC please refer to Specification(Rated voltage ±10%). If the operating voltage is too low or too high, a suitable automatic voltage stabilizer must be installed.
 Please place the equipment stably and avoid shaking
 Do not place the equipment in a dangerous area, and do not operate the equipment near flammable items to prevent explosion or fire accidents.

	Do not place the equipment in areas exposed to the sun or rain, so as to prevent danger such as short circuit or overheating.
	Do not tilt or lay the equipment sideways, and do not impact the equipment body. Refrigeration systems are installed in the equipment, which is easy to be damaged by tilt or impact.
	Please place the equipment in a dry and dust-free environment to avoid risks such as overheating, and short circuit.
	In case of unexpected sound, smell, smoke, etc. when the power is turned on, please unplug the power in time and contact the manufacturer or supplier.
	Please place the equipment in a dry and ventilated environment, and ensure that the equipment vents and instrument surfaces are not blocked or shielded by walls or other objects; Do not use it in a poorly ventilated environment to prevent damage caused by heat released by equipment.
	It is forbidden to disassemble and modify this equipment without authorization, so as to avoid potential safety hazards. In these cases, we will not bear any responsibility for accidents.
	It is forbidden to put inflammable and explosive dangerous goods, strong corrosive acids, alkalis and other items unsuitable for the equipment in the equipment.
	When storing toxic, harmful or radioactive materials, please use the equipment in safe areas. Improper use may cause harm to human health or environment.
	Metal objects such as nails or iron wires shall not be inserted into any aperture and gap or any outlet of the equipment, otherwise electric shock or injury may be caused due to accidental contact between the above objects and moving parts.
	In order to ensure normal operation, ventilation and heat dissipation of the equipment, the back, left and right sides of the freezer body should be at least 30cm away from the wall, and the air inlet and outlet is not obstructed.
	This equipment must be connected to a ground wire, and the equipment conductor terminal must be protected.
	Note: Failure to observe the precautions may result in personal injury or equipment failure and related property losses.
	It is forbidden to store living animals, flowers or other items with strict temperature requirements in the equipment.
	The temperature in the freezer is very low during operation. Do not touch the liner surface covering plate and frozen objects with your hands without wearing protective gear or frostbite may occur.
	Hold the handle and close the door to avoid pinching your fingers; When the equipment is not used for a long time, please unplug it and pack it for storage.
	When restarting the equipment after power failure or power off, please check the equipment settings first, otherwise the stored items may be damaged due to the change of settings.
	The equipment can be used for item preservation, not as production equipment.
	Keep the keys properly, so as to avoid accidents when children open the door accidentally.
	When handling the equipment, please be careful not to tip over the equipment, so as to prevent equipment damage or personal injury.
	When handling, it shall be lifted from the bottom, with the inclined plane not greater than 45°, and it shall be handled with care. Please use the equipment in safe areas. Improper use may cause harm to human health or environment.
	Pay attention to checking the filter screen regularly and clean it if necessary, so as to avoid the temperature rise or failure of the equipment caused by poor ventilation due to dust jam.

4.2 Installation Site

In order to operate the equipment normally and obtain the best performance level, the installation site of the equipment shall meet the following requirements:

- ✦ It cannot be installed in a narrow and closed space, and the door of the room shall not be smaller or lower than this equipment, which shall at least ensure the normal access of the equipment, so as to avoid the maintenance difficulties in case of equipment failure, which may result in damage to stored items due to the failure to repair the equipment in time;
- ✦ The installation floor must be solid, flat, non-combustible and able to bear the weight of the equipment during operation;
- ✦ It shall be with good ventilation, and direct sunlight shall be avoided.
- ✦ Each equipment needs to use a power outlet independently. Please ensure that the plug and outlet are firmly connected;
- ✦ Check the working voltage before use. In areas with unstable voltage, consider using a voltage stabilizer suitable for the equipment load to ensure that the input voltage requirements in the installation environment are met.
- ✦ Equipment shall be reliably grounded. If the power cord outlet is equipped with grounding wire, check whether the grounding is good before use. If the outlet is not equipped with grounding wire, it must be installed by professional engineers and technicians.

4.3 Preparation before use:

1. Remove the outer packaging of all products (including the protective foam in the packaging box)



Warning: Don't put the plastic bags within the reach of children, so as to prevent suffocation accidents.

2. Inventory of accessories: Please check the accessories and materials according to the packing list.
3. Cleaning: Clean the product before use.
4. Adjust anti-skid leveling feet: Please use a wrench to rotate the fixing foot clockwise so that the fixing foot extends outward and is supported on the ground. Ensure that the equipment will not move when in use.

4.4 First Power-on

When using the equipment for the first time, please follow these steps:

1. After the equipment is placed, leveled and cleaned, let it stand for at least 24 hours, and then power it on to ensure the normal operation of the equipment.
2. Under no-load condition, connect the power cord to a special outlet with appropriate specifications.
3. After switching on, turn on the power switch of the equipment (if the auxiliary cooling system is installed, turn off the switch first).
4. Set the required temperature in the freezer (in order to ensure the best performance of the freezer, if the user needs to use the freezer at a storage temperature below -80°C , please set the temperature at -80°C when using it for the first time. After the system runs stably at -80°C for 3~4 hours, the temperature can be further lowered to below -80°C).
5. In case of an alarm after power-on for the first time, select the mute button to eliminate the alarm sound.
6. Check whether the operating temperature of the equipment reaches the required value, observe the normal start and stop of the equipment for more than 24 hours, and put a small amount of items in the freezer after confirming normal performance.
7. Please store items in batches, with the items not exceeding 1/3 of the freezer volume each time. Ensure that the equipment is running properly for more than 12 hours before putting in the next batch of items).
8. Try not to open the door during cooling, otherwise the temperature will rise.
9. Turn on the auxiliary cooling system if it is installed.

4.5 Operation after Power Failure

1. The equipment has a memory function for the set value. When the power is restored after power failure, the equipment will continue to operate as before power failure.
2. Once the equipment is powered off, it requires 5 minutes before it can be switched on again, so as to avoid damaging the compressor.
3. We guarantee the normal operation of this equipment under certain conditions, but we are not responsible for any loss or damage of stored items after power failure.



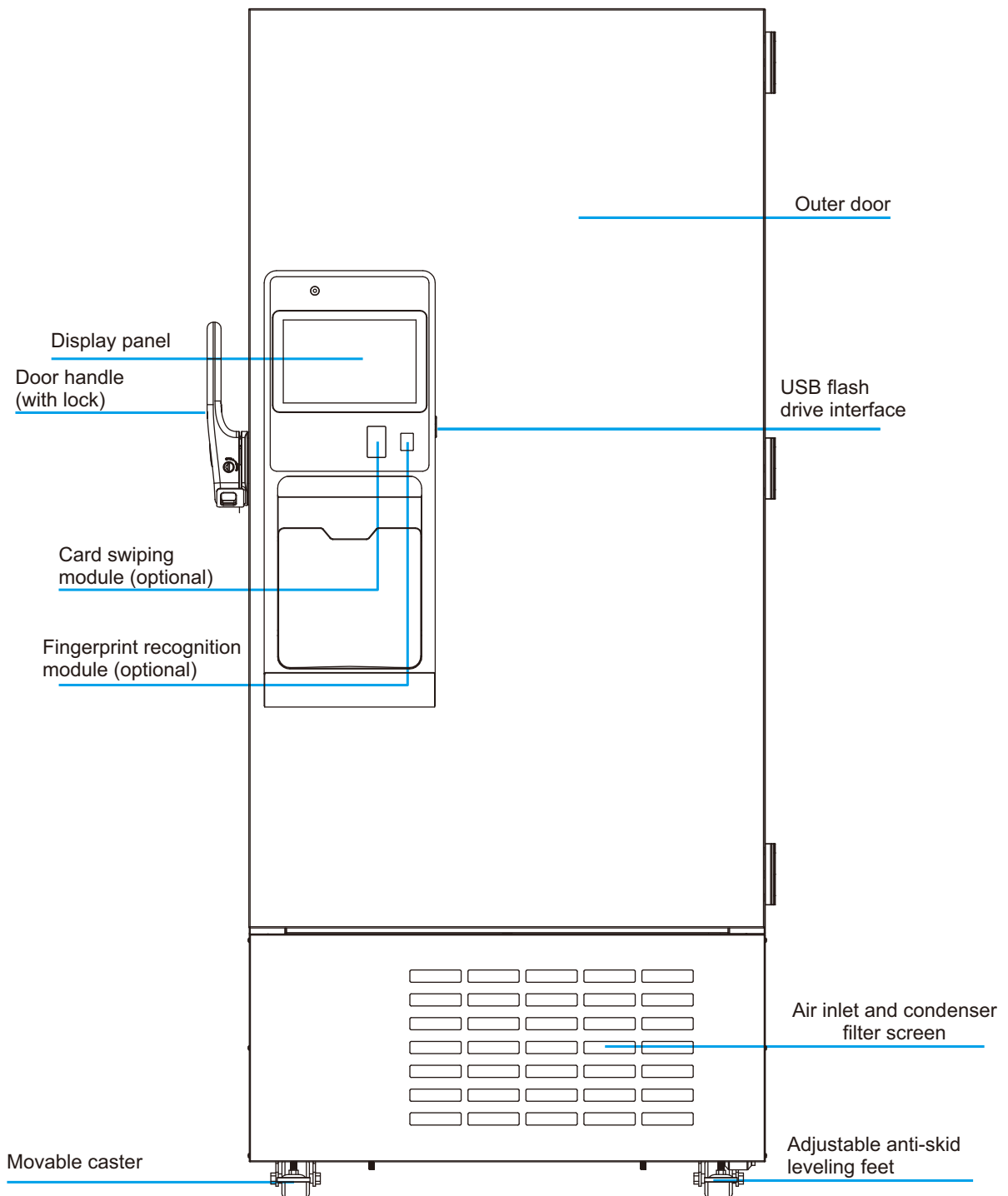
Notes:

- ◆ The transportation and movement of equipment is realized by casters.
- ◆ A special person should be responsible for checking and recording the running status of the equipment every day (record and check once every 2-4 hours). In case of failure or shutdown, the temperature in the freezer will rise. In such cases, please take out the stored items and transfer them to a place that meets the temperature requirements for storage to avoid damage to the items.
- ◆ Before putting items into the equipment, it shall be confirmed in advance whether the temperature range of the equipment meets the temperature requirement of the items, so as to avoid damage to stored items due to the difference between the settable temperature of the equipment and the required temperature of the items. Please pay attention not to block the air outlet and air inlet when putting items into the equipment.
- ◆ Due to the refrigeration inertia, there is a certain difference between the actual display temperature and the set temperature of the equipment, which is a normal phenomenon.
- ◆ The equipment is an item storage equipment, which cannot be used for routine production operations. It is strictly forbidden to put too many items which are relatively hot into the equipment at one time, otherwise the compressor will run for a long time, and be burned due to high temperature. Items must be put in batches, so as to ensure that the freezer is cooled step by step until the temperature required for storing items is reached.
- ◆ Electrical appliances without production license shall not be used inside the equipment.
- ◆ During use, when the power supply voltage fluctuates or an short-time alarm is triggered, if the voltage error within $\pm 10\%$, it will not affect the normal use of the freezer.
- ◆ Do not change the set temperature frequently in a short time, otherwise the expected setting effect may not be achieved due to the large temperature inertia; Ensure that there is a certain air circulation space around the cabinet when putting in items, especially do not block the temperature sensor in the cabinet (for collecting the temperature of the cabinet), otherwise it will affect the stability and accurate control of the temperature in the freezer body!
- ◆ When putting in items, if the moisture content of the items is too much or too little, it will affect the humidity change in the cabinet, so it is best to keep the items sealed; The humidity of the working environment will affect the change of humidity in the cabinet, especially if the door is opened too frequently and the door is not closed properly.



Warning: Children are not allowed to play with this equipment as a game prop; the injury or loss caused therefrom will be at their own risk.

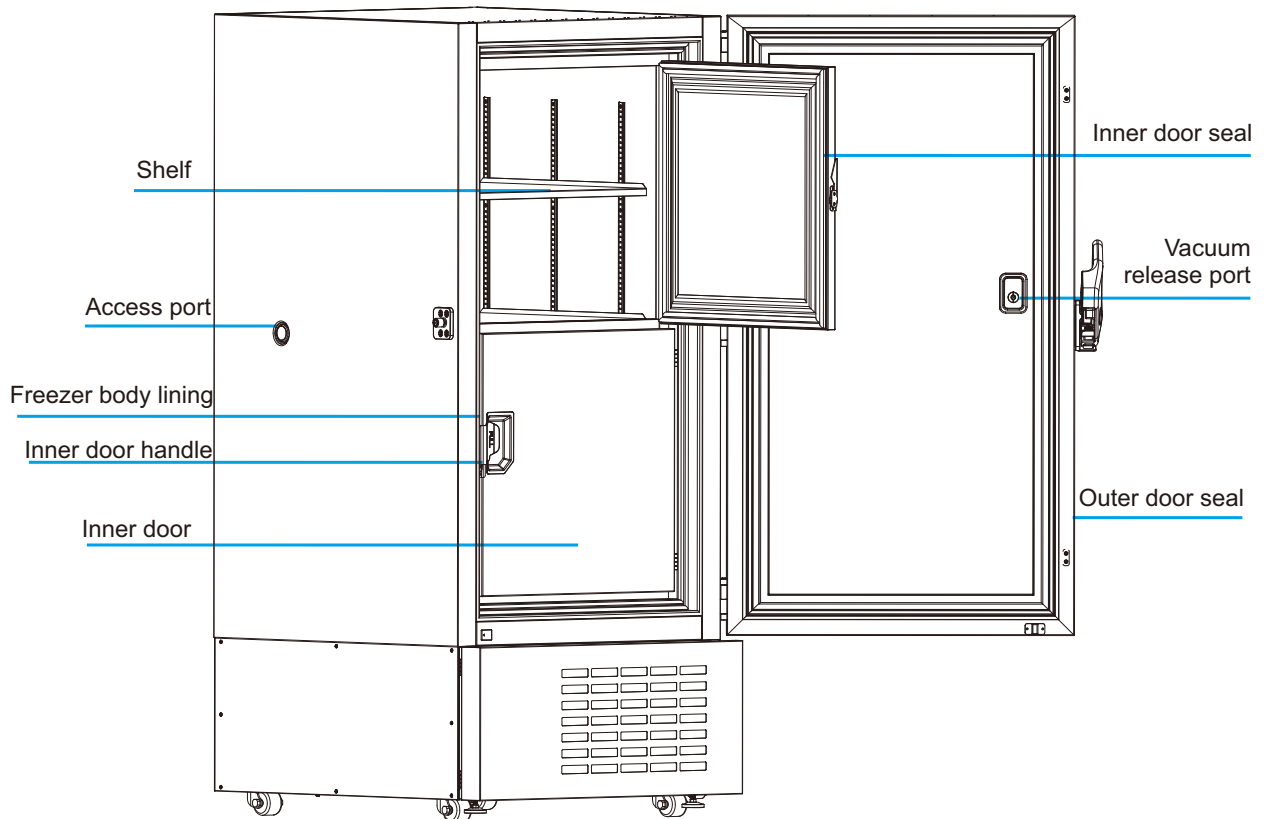
5. Component Composition



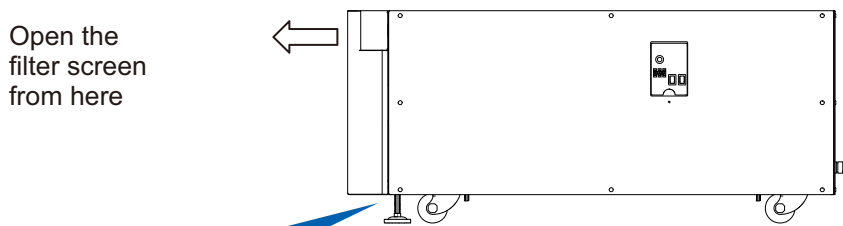
* Due to the improvement of products and model differences, the actual products may be different from the diagram. Please refer to the actual product received. The diagram is only used for functional parts description.

* Structure and composition: The product consists of freezer body, door (glass door structure or foam door structure), refrigeration system and control system.


* Scope of application: It is suitable for storing items in hospitals, pharmacies, epidemic prevention stations, research institutions, biopharmaceuticals and other units.



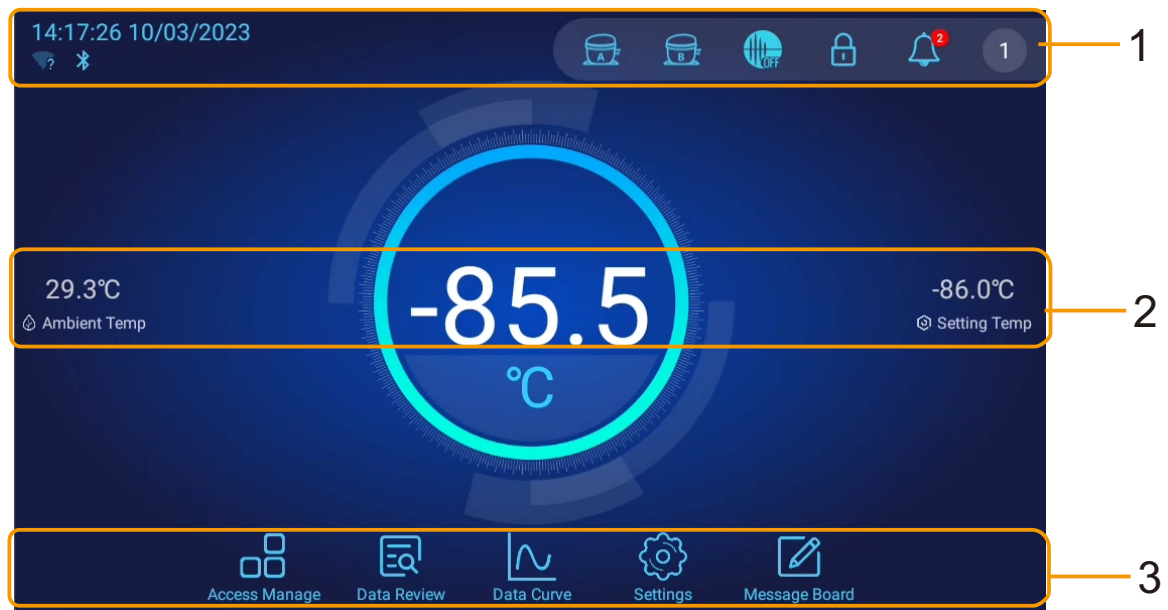
! **Note:** For products equipped with the safety function of the electric control lock, please log in and release the electric control lock before opening the door.



Adjustable anti-skid leveling feet

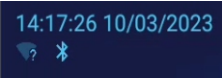





- There are adjustable anti-skid leveling feet in front of the two front casters at the bottom of the equipment. Please use accompanying tools  to turn the leveling feet downwards after the equipment is placed securely, so as to stabilize the machine.
- When you need to move the equipment, please turn the leveling feet upwards. Do not move it forcibly so as to avoid damage!

6. Operating Instructions

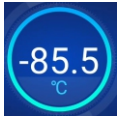


6.1 Introduction to Homepage

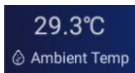
6.1.1 Status bar

-  14:17:26 10/03/2023
- a.  The upper part shows the current time of the system, and the lower part shows the Wi-Fi and Bluetooth status;
- b.  Electric control lock icon. Click the icon to open the electric control lock. Before opening the Freezer door, you need to open the electric control lock (note: please log in before unlocking, users who do not log in do not have the authority to open the electromagnetic lock; the electromagnetic lock will automatically close a certain period after opening, without manual locking; if the door remains open for a long time after it is opened and the handle is locked so that the door cannot be closed due to the locked handled, please select the electromagnetic lock icon to unlock it and then close the door);
- c.  Alarm status icon. If there is any alarm information, an alarm sound will be sent out and the red status indicator will flash (the alarm flashing cannot be canceled until the fault is eliminated). Click the icon to turn on/off the alarm sound, and long-press the icon to enter the alarm management interface (you do not need to log in before entering the alarm management interface). If there are unread alarm messages, the number of unread messages will be displayed in the upper-right corner of the icon;
- d.  Compressor state indicators, blue means that the compressor is operating normally, while yellow means that the compressor has been forbidden, red means that the compressor(s) has(have) certain issues;
- e.  Mute icon: "ON" means muted, "OFF" means not muted. (Caution: the freezer will automatically get rid of "Mute" state when necessary to maintain the freezer's performance or stability).

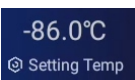
6.1.2 Information display area



- a. Displays the real-time temperature inside the ultra low-temperature freezer and the temperature unit. When the temperature in the freezer is between the high-temperature alarm value and the low-temperature alarm value, the outer ring is a blue-green gradient, otherwise, the outer ring is a red-orange gradient. Click the temperature value to enter the running status interface (you do not need to log in before entering the running status interface);



- b. Displays the ambient temperature;

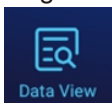


- c. Displays the setting temperature;

6.1.3 Function entry area



- a. Access management entry. Click to enter the access management interface where you can conduct access management for the items in the ultra low-temperature freezer. You need to log in before entering this function interface;



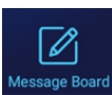
- b. Data view entry. Click to enter the data view page where you can view historical equipment running data and operation data. You do not need to log in before entering this function interface;



- c. Data curve entry. Click to enter the data curve viewing interface where you can view the historical temperature graphs of the freezer. You do not need to log in before entering this function interface;

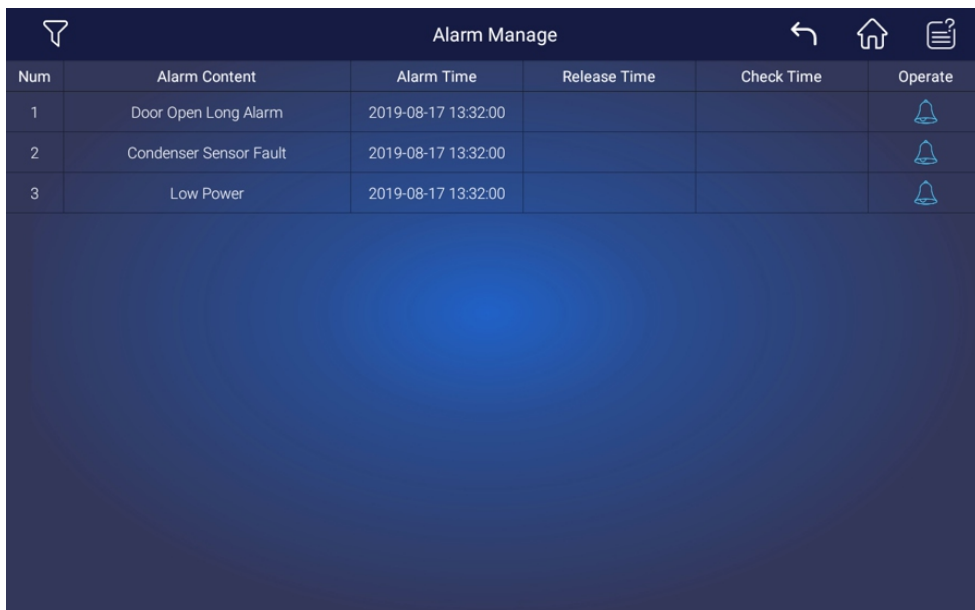


- d. Setting management entry. Click to enter the setting management interface where you can set various parameters or functions of the equipment. You need to log in before entering this function interface;






- e. Message board entry. Click to enter the message board interface where you can post messages and view messages. If there are unread messages, the corner mark in the upper-right corner will show a number. You need to log in before entering this function interface.

6.2 Alarm Management







The screenshot shows the 'Alarm Manage' interface. At the top, there is a title bar with a filter icon on the left, the text 'Alarm Manage' in the center, and three navigation icons (back, home, help) on the right. Below the title bar is a table with the following data:

Num	Alarm Content	Alarm Time	Release Time	Check Time	Operate
1	Door Open Long Alarm	2019-08-17 13:32:00			
2	Condenser Sensor Fault	2019-08-17 13:32:00			
3	Low Power	2019-08-17 13:32:00			

Below the table is a large, dark blue rectangular area, likely a placeholder for a chart or additional data.

a. Alarm management. You can view the alarm contents, the alarm occurrence time, the release time, and the alarm time. Click the screen button in the upper-left corner to filter the alarm time by date;

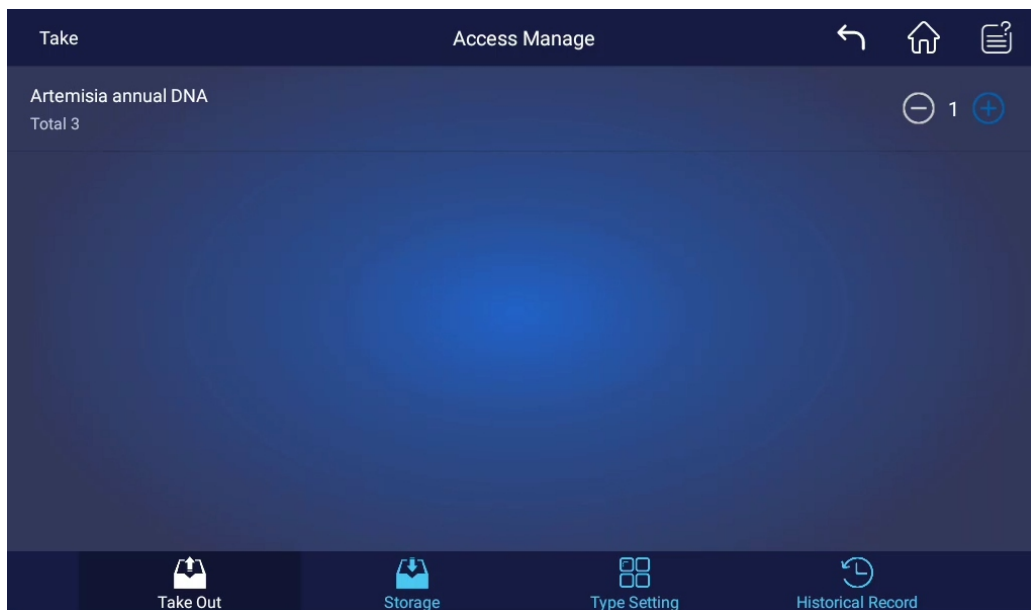
b. Click the  button to identify that the alarm entry has been viewed;

c. Click the  button to return to the previous interface, click the  button to return to the main interface, and click the  button to pop up the help information;

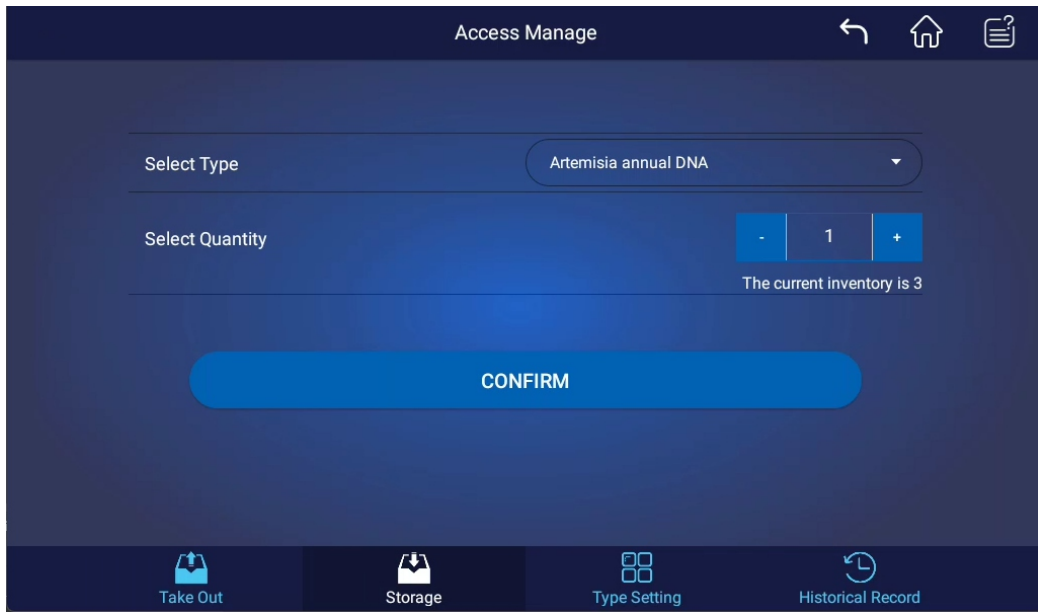
d. The alarm functions of this equipment are as follows:

Alarm items	Alarm description
Communication failure with the mainboard	When the transmission signal between the display screen and the main control board is interrupted, a communication failure alarm will be triggered.
Alarm for the door being open for a long time	When the door has been open for more than 1 minute
Ambient temperature sensor failure	When the ambient temperature sensor fails
Condenser sensor failure	When the condenser sensor fails
Temperature sensor failure	When the temperature sensor fails
Pt1000 high-temperature alarm	When the temperature in the cabinet is higher than the set temperature of high temperature alarm
Pt1000 low temperature alarm	When the temperature in the cabinet is lower than the set temperature of low temperature alarm
Alarm for high condenser temperature	When the condenser temperature is too high due to the condenser filter screen blockage or high ambient temperature
Alarm for high ambient temperature	When the ambient temperature is too high
Low battery	When the battery is too low
Battery power detection failure	Battery power detection failure
Power failure	When the main power supply fails

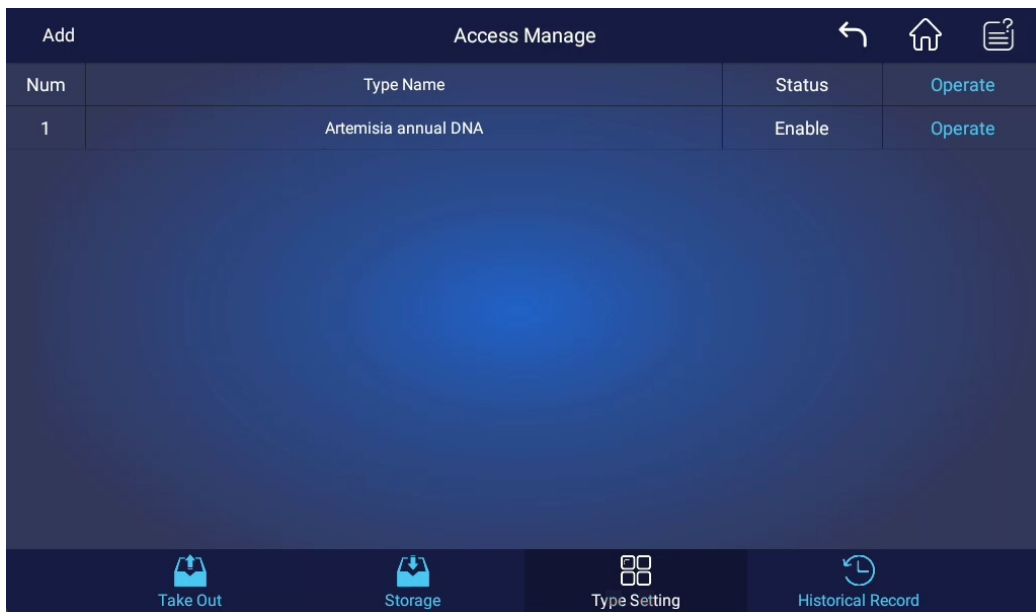
6.3 Access Management



a. Takeout management page. Click the add/remove button on the right side of the sample to set the quantity, and then click the takeout button in the upper-left corner;




b. Storage management page. First, select the type, then set the storage quantity, and then click the OK button;



c. Type setting page. Click the add button in the upper-left corner to add a new type, and click the operation button to the right of the type entry to edit the type;

Num	Type	Num	Operator	Time	Operate
1	Artemisia annual DNA	1	user001	2023-03-07 18:02:21	Take
2	Artemisia annual DNA	3	user001	2023-03-07 18:01:02	Store


d. History page, for viewing historical access records. Click the  filter button in the upper-left corner to filter records by date.

6.4 Data View

Num	Time	Internal Temp	Condenser Temp	Condenser2 Temp	Ambient Temp	Door
1	2023-03-10 17:24:00	-85.5°C	29.0°C	28.3°C	28.4°C	Off
2	2023-03-10 17:19:00	-85.5°C	29.0°C	28.3°C	28.5°C	Off
3	2023-03-10 17:14:00	-85.5°C	29.0°C	28.3°C	28.5°C	Off
4	2023-03-10 17:09:00	-85.5°C	29.0°C	28.3°C	28.4°C	Off
5	2023-03-10 17:04:00	-85.5°C	29.0°C	28.3°C	28.4°C	Off
6	2023-03-10 16:59:00	-85.5°C	29.0°C	28.3°C	28.4°C	Off
7	2023-03-10 16:54:00	-85.5°C	29.0°C	28.5°C	28.5°C	Off
8	2023-03-10 16:49:00	-85.5°C	29.0°C	28.5°C	28.6°C	Off
9	2023-03-10 16:44:00	-85.5°C	29.0°C	28.5°C	28.5°C	Off
10	2023-03-10 16:39:00	-85.5°C	28.9°C	28.6°C	28.7°C	Off
11	2023-03-10 16:34:00	-85.5°C	28.9°C	28.7°C	28.7°C	Off
12	2023-03-10 16:29:00	-85.5°C	28.9°C	28.7°C	28.7°C	Off
13	2023-03-10 16:24:00	-85.5°C	28.9°C	28.7°C	28.6°C	Off
14	2023-03-10 16:19:00	-85.5°C	28.9°C	28.8°C	28.5°C	Off

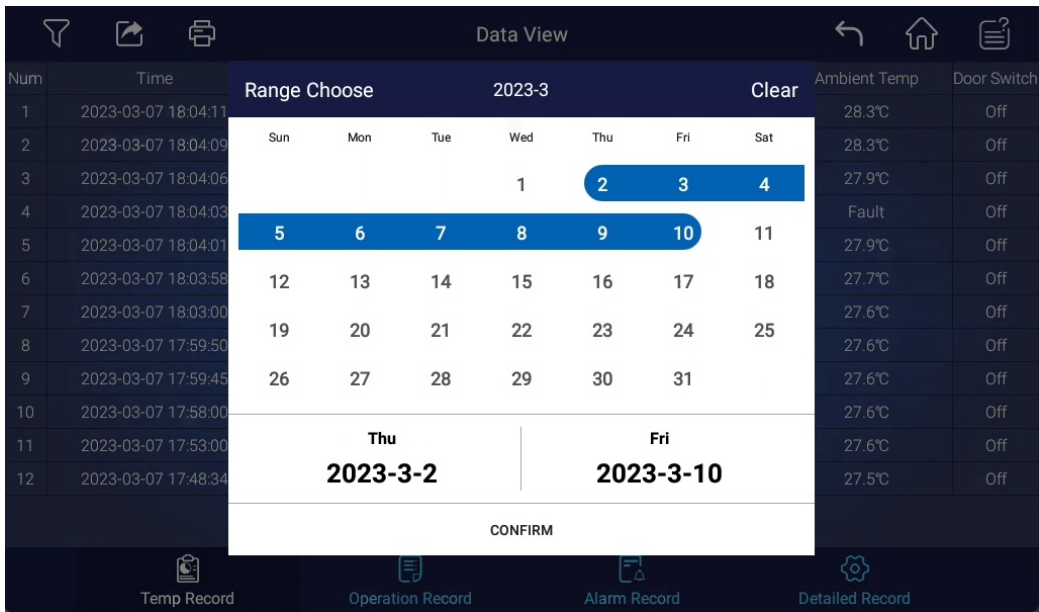
a. Data records page, for viewing historical running data. Click the filter button in the upper-left corner to filter records by date;


Num	Time	Operator	Operation Item(Par)	Operation Item(Sub)
1	2023-03-10 17:24:57	user001	Authority	Unlock
2	2023-03-10 17:24:47	user001	Authority	Login
3	2023-03-10 14:28:02	user001	Authority	Logout
4	2023-03-10 14:06:16	user001	Authority	Login

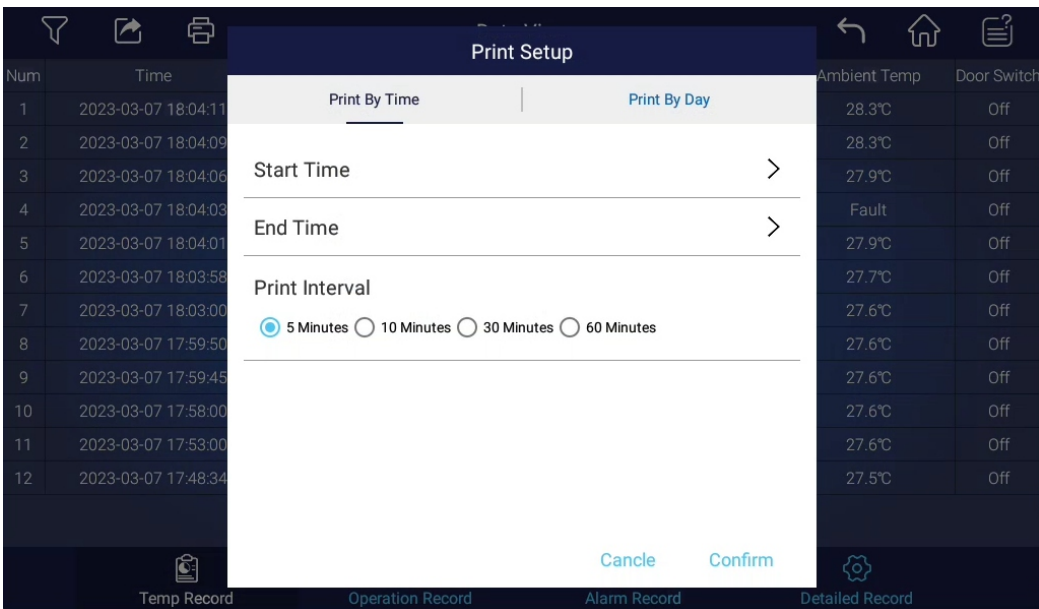
b. Operation records interface. You can view historical operation records, and click the  filter button to filter records by date. The types of operation records are: login, logout, the addition of users, modification of users, export, temperature setting, alarm setting, unlock, printing, opening the door, closing the door;


Num	Alarm Content	Alarm Time	Release Time
1	High Temp Alarm	2023-03-10 14:09:00	
2	Battery Powered Alarm	2023-03-10 14:09:00	

c. Alarm records interface, for viewing historical alarm records;

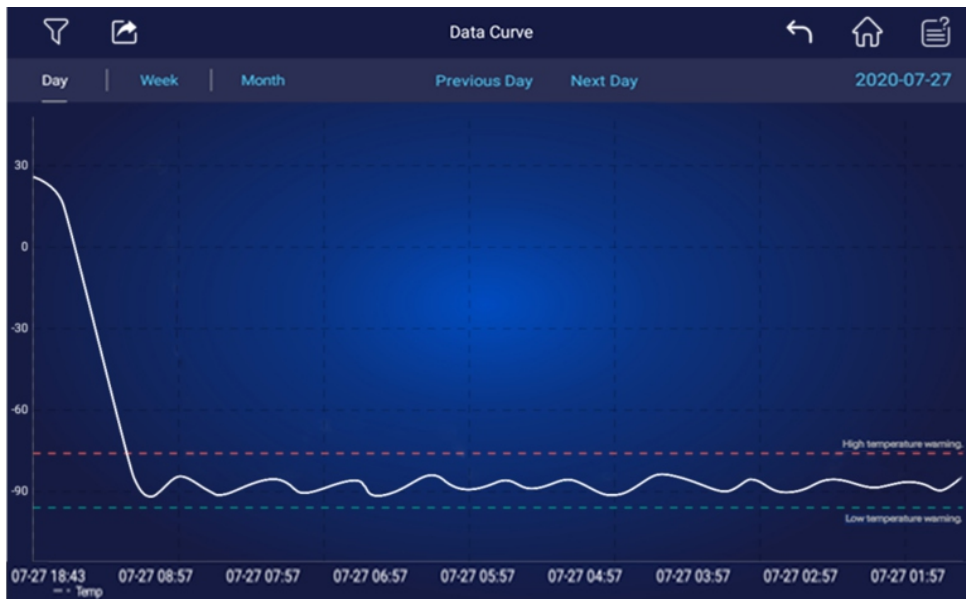


d. Click the  export button to pop up the export range selection dialog box. Select the export start date and the export end date by date, and click the OK button to export a data file in Excel format (*.xls) to the USB flash drive;



e. Click the  print button to pop up the print setting dialog box where you can choose to Print by time or Print by day. You need to set the start and end time and the printing interval for Print by time, and set the start and end time and the printing time point for Print by day (a printer needs to be connected for use of the function. The equipment can be connected to a Bluetooth printer via Bluetooth).

6.5 Data Curve

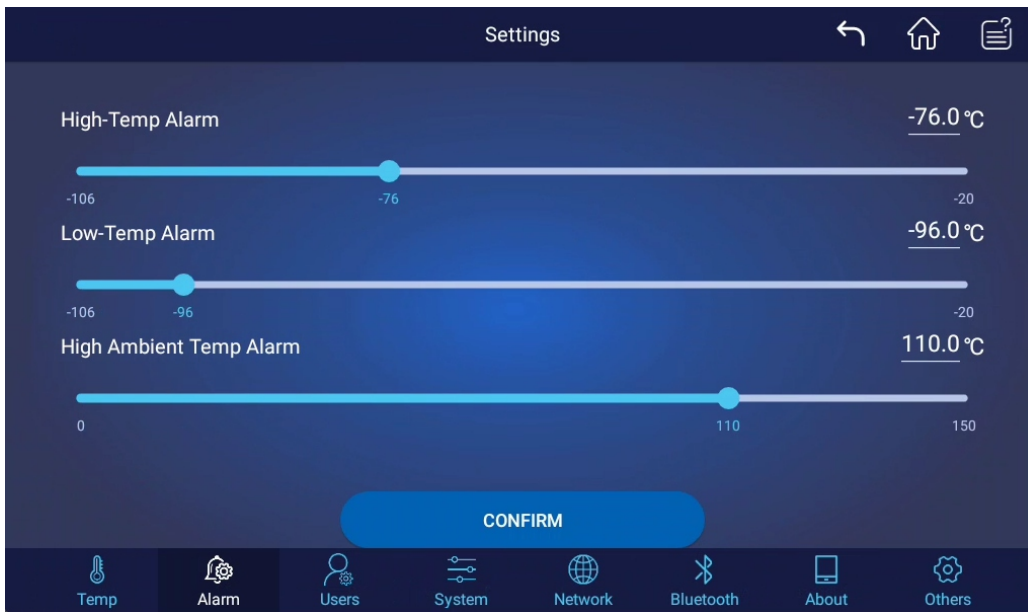


- Click on the day/week/month tab to view the curve graph of the corresponding tab;
- Click the previous day/next day tab to switch to the curve graph corresponding to the date;
- Click the filter button in the upper-left corner to jump to the curve graph of the corresponding date;
- Click the export button in the upper-left corner to export the curve figure to the USB flash drive;
- Pinch-to-zoom to zoom in/out the curve graph, and slide with a single finger to view detailed temperature value.

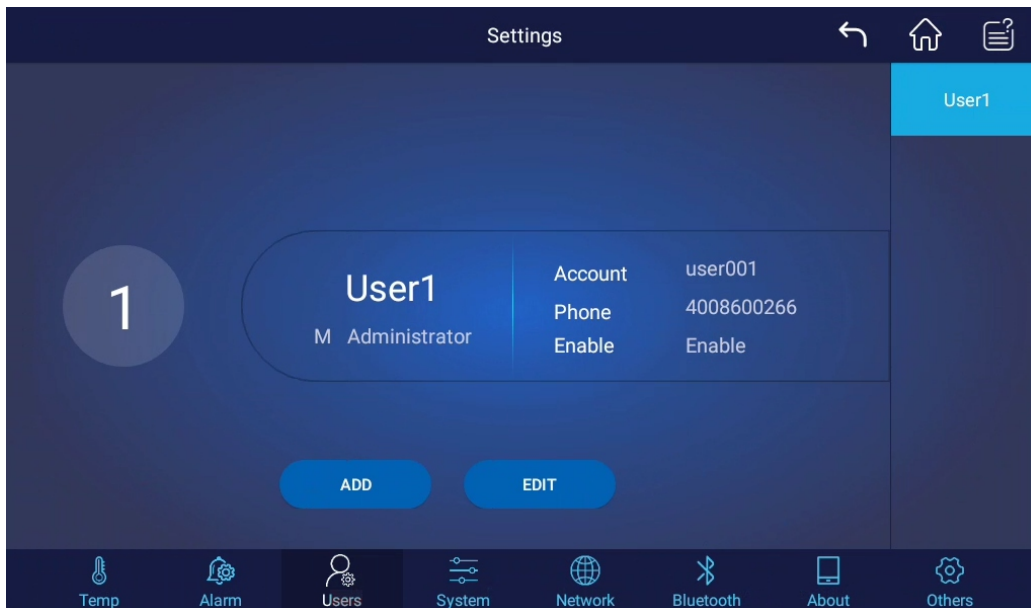
6.6 Settings



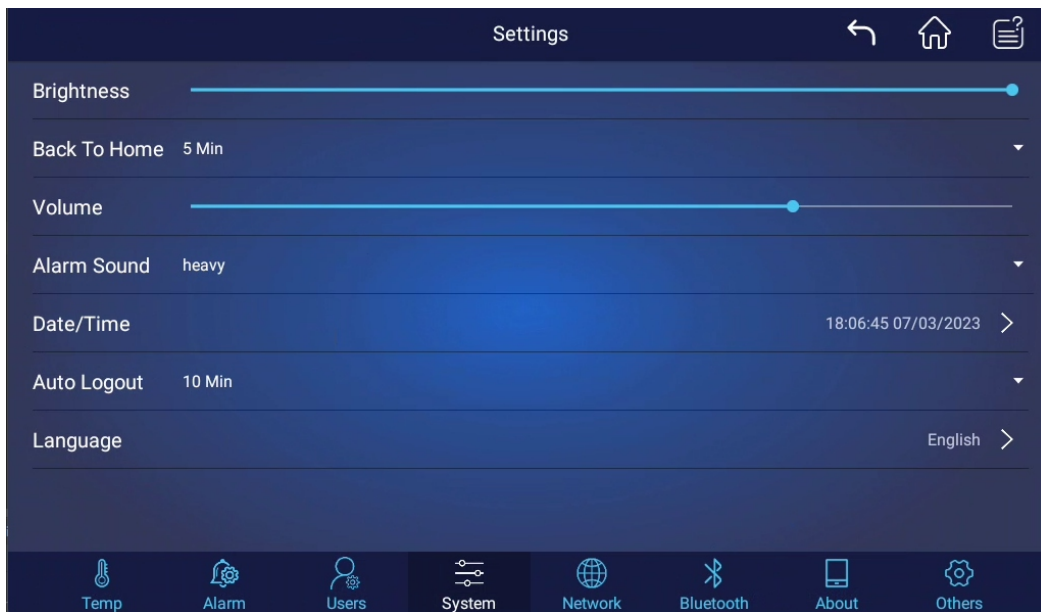
- Temperature setting. You can slide on the slider or click the temperature value to modify the set temperature, and click the °C (Celsius temperature scale) or °F (Fahrenheit temperature scale) to switch the temperature scale;



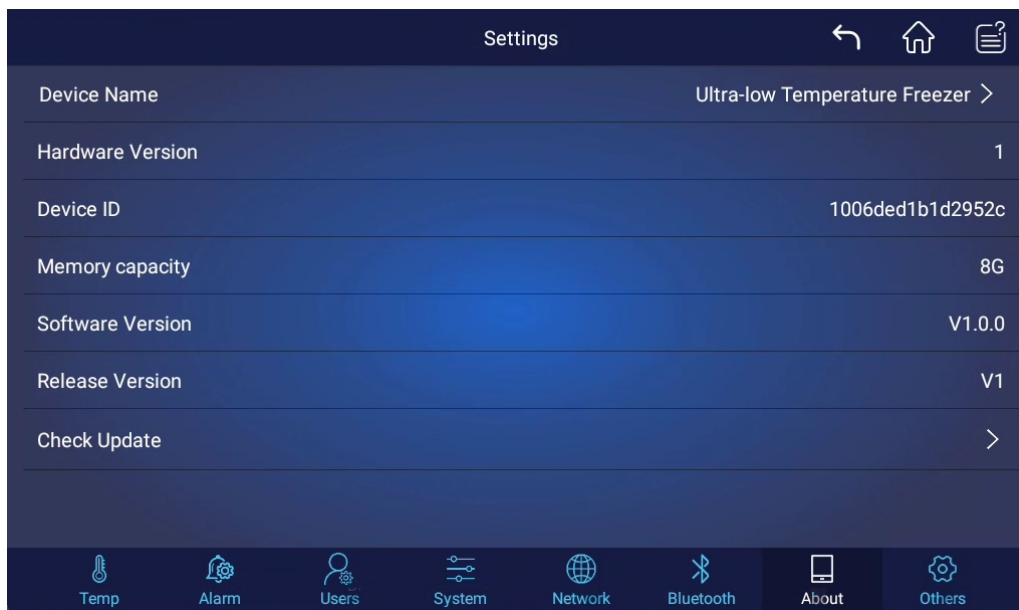
b. Alarm setting. You can slide on the slider or click the value to set the high-temperature alarm value, the low-temperature alarm value, the high ambient temperature alarm value;



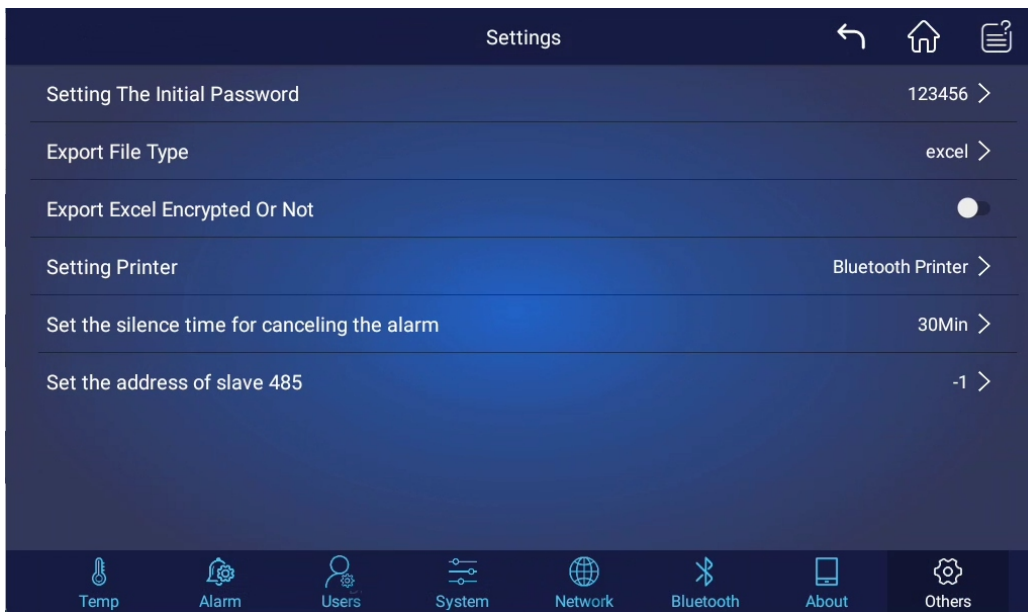
c. User management. The administrator can add or modify users. The user created by the administrator is an ordinary user (ordinary users do not have the authority to add/modify contents). Click Reset password to reset the user's login password. The initial password is 123456.



d. System settings. You can adjust the equipment brightness, the time for the display screen to automatically go off when there is no operation, the time for the display screen to automatically return to the main interface when there is no operation, the volume, the alarm sound (the changed alarm sound will take effect after the display screen returns to the main interface), the date and time, the automatic user logout time, and the language;

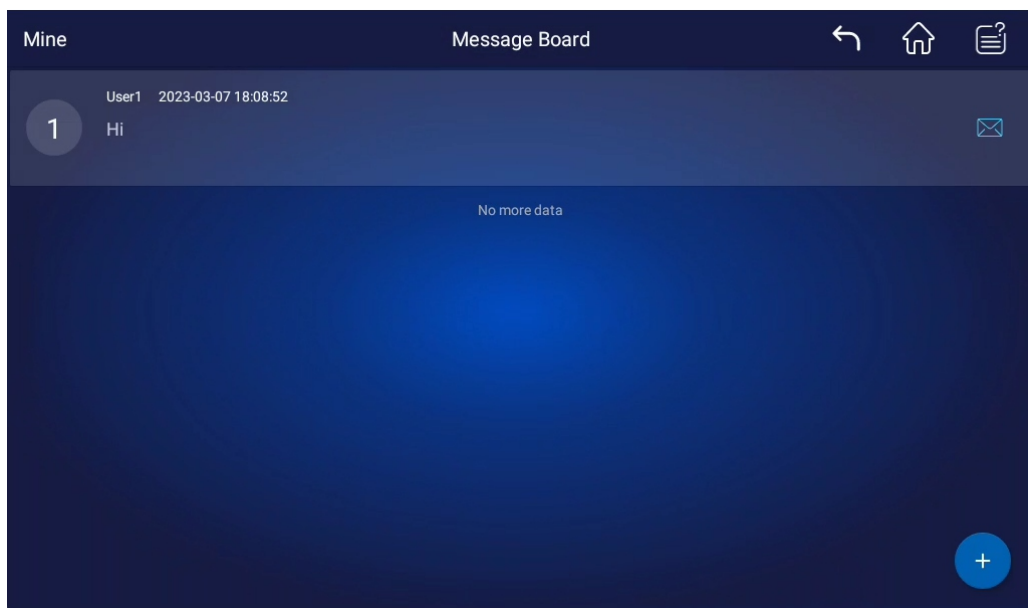


e. Machine information. This page displays the current machine model, the software version, and the hardware version. If the machine has been connected to the Internet, you can click the Check update button on this page to check the software update. If a newer version exists, you can choose to download and install the newer version;




f. Other settings. Only the administrator has the authority to view the page. In this page, the administrator can set to hide/show virtual buttons, and set the initial password for new user login, whether the exported Excel file is encrypted, the encryption password, the settable temperature interval, the printer selection, and the equipment name setting.

6.7 Message Board



a. Click the add button in the lower-right corner to pop up a message posting dialog box. You can choose to be open to all or specified users. Open to all means that all users can view the message, and Open to specific users means that the message can only be viewed by the specified users;

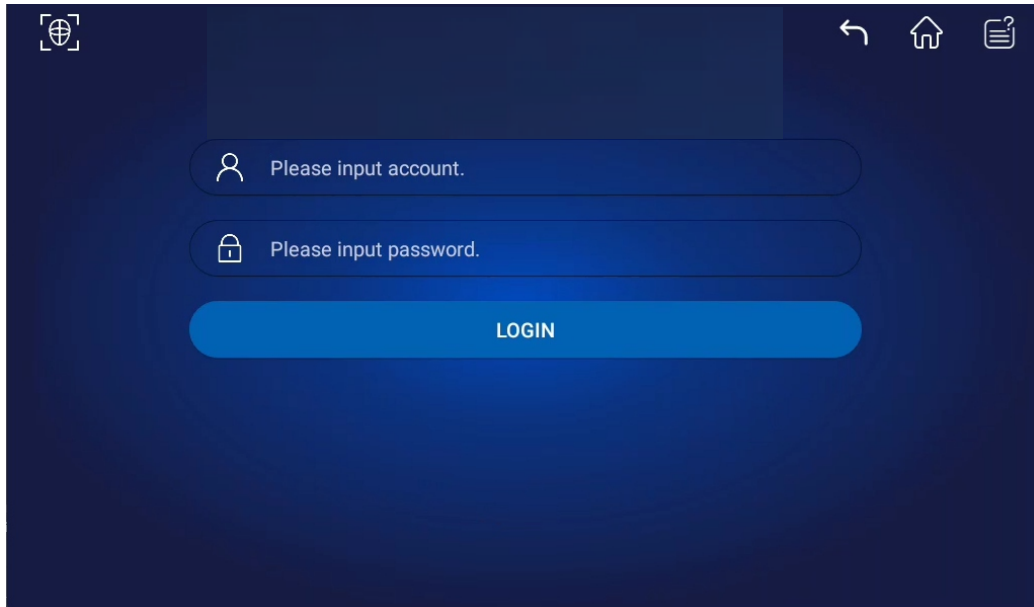
b. Click the  button to identify that the message entry has been viewed;

c. Click Mine/All in the upper-left corner to switch between my and all messages;

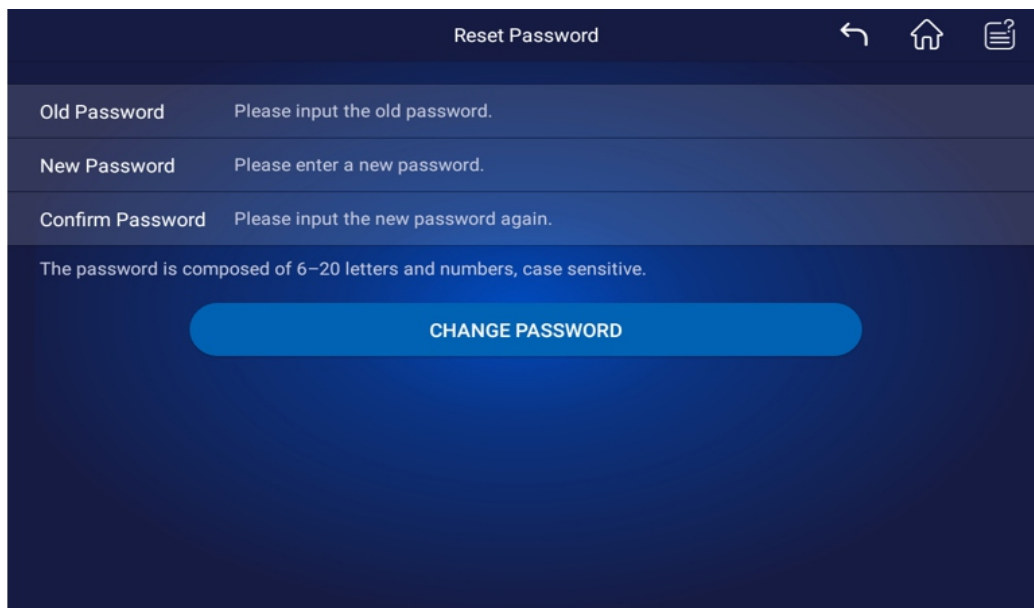
d. Press and hold the message entry and slide to the left. The delete button will appear on the right side of the message. You can choose to delete the message.

6.8 Login

a. Login with account number and password



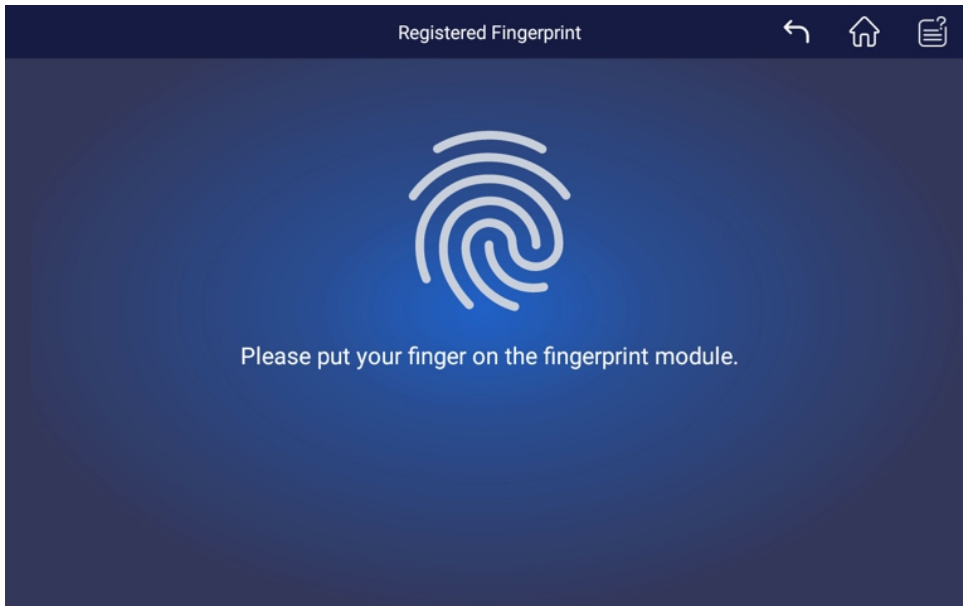
The login screen features a dark blue background. At the top left is a globe icon, and at the top right are icons for back, home, and help. Below these are two input fields: the first with a person icon and the text "Please input account.", and the second with a lock icon and the text "Please input password.". A large blue button labeled "LOGIN" is positioned below the input fields.



The "Reset Password" screen has a dark blue background. At the top right are icons for back, home, and help. The screen contains three input fields: "Old Password" with the prompt "Please input the old password.", "New Password" with "Please enter a new password.", and "Confirm Password" with "Please input the new password again.". Below these fields is a text instruction: "The password is composed of 6-20 letters and numbers, case sensitive.". A large blue button labeled "CHANGE PASSWORD" is at the bottom.

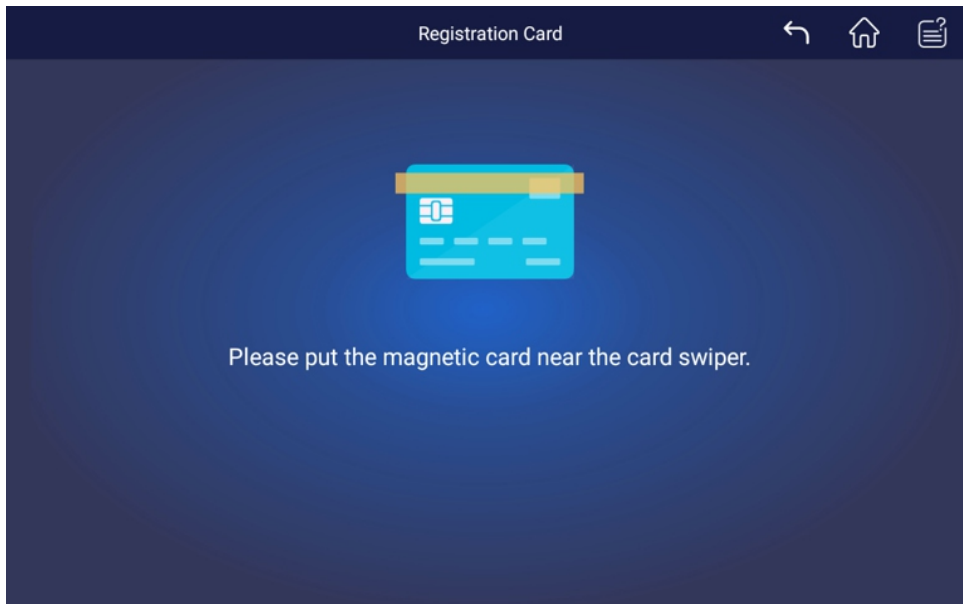
Enter the correct account number and password to log in. The default password for new users is 123456. You will be asked to change the password when logging in for the first time. The administrator can change the default password for new users in Settings -> Other settings -> Set the initial password.

b.Login with fingerprint (optional)



After the user logs in, enter the fingerprint registration interface from the menu on the right side of the homepage. Once a fingerprint is successfully registered, you can log in with the fingerprint (To log in with the fingerprint, you need to jump to the login page);

c. Login with card (optional)



After the user logs in, enter the card registration interface from the menu on the right side of the homepage. Once a IC or ID card is successfully registered, you can log in with the IC or ID card (To log in with the card, you need to jump to the login page);

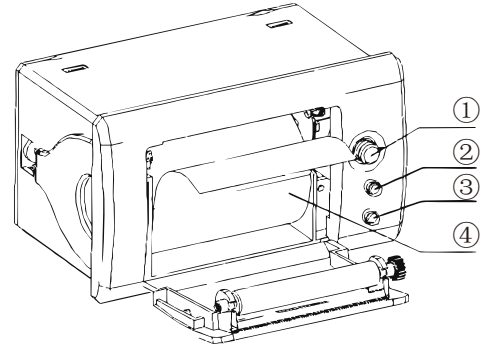
6.9 Optional Accessories

6.9.1 Printer

The printer has been installed with a paper roll at the factory. If the paper roll is used up after a long period of use, you can buy the same paper roll (size: thermal paper, paper width: 57.5 ± 0.5 mm, the outer diameter of the reel: not greater than 40mm, i.e. RM57*40 back-roll paper)

Description of printer panel:

- Open button. Press to open the cover;
- ② SEL button, indicator light, for factory setting. Do not press it;
- ③ Lf button. The green indicator is the power indicator and it is normally on when the power is turned on;
- ④ Paper roll



Install the paper roll:

Press the open button 1, open the cover, install the paper roll, close the cover plate, and allow the head of the roll paper to slightly extend out of the cover plate. Note: If a Bluetooth printer is selected, please refer to the "Operation Manual for Bluetooth Printer" in the accessory bag.

6.9.2 Chart recorder

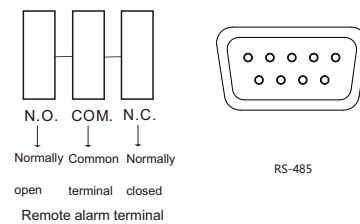
It is an optional function. If the function is selected, please refer to the "Operation Manual for Chart recorder" in the accessory bag.

6.9.3 Code scanning window

In any operation interface, you can scan a QR code or a bar code in the built-in code scanning window of the product to fill the information encoded in the QR code or the bar code in the current cursor position.

6.9.4 Remote alarm terminal and RS485 interface

The remote alarm terminal is installed on the back or the lower part of the right side of the freezer body, and the alarm signal is output by the terminal. The load-bearing capacity of the terminal is 30V, 2A DC. Users can choose normally open (N.O.), normally closed (N.C.) and common terminals (COM) according to their own needs.



6.9.5 Freezer Rack and Freezer Box

Model	Internal dimensions of the freezer body (mm) W x D x H	Shelf/inner door	Number of freeze racks	Dimensions of the freeze rack (mm) W x D x H	Number of freeze boxes that can be placed (2 in.)
Q5128	585X696X1266	3/2	4×4 pcs	140X685X293	400 pcs (5X5X16)

6.9.6 CO₂ backup system

The CO₂ backup system is an auxiliary refrigeration system that uses liquid CO₂ for refrigeration. It provides refrigeration assistance for the equipment in case of power failure or refrigeration failure, to ensure that the temperature in the equipment is maintained within the required temperature range for a certain period of time.

When the equipment works normally, the CO₂ backup system is in standby state; When the equipment is powered off, the system uses its own rechargeable battery to work and spray liquid CO₂ into the refrigeration equipment at intervals to achieve the refrigeration effect; In case of refrigeration failure of the equipment, the forced operation switch can control the backup system to work forcibly to provide refrigeration.

For installation and use, please refer to the operation steps in the Operation Manual attached to the device.

Notes:

- ◆ Make sure that the cylinder is filled with liquid carbon dioxide.
- ◆ 2. Since the temperature of liquid carbon dioxide is relatively low, pay attention to safety during installation and use to prevent frostbite.
- ◆ The CO₂ backup system is a backup system, which should be tested once a month to prevent system failure from affecting its use.
- ◆ The use environment requires good ventilation to avoid physical discomfort caused by excessive carbon dioxide and insufficient oxygen.

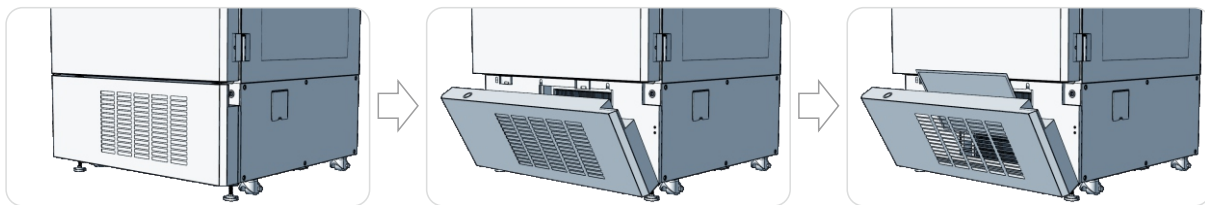
7. Defrost, Discontinuation and Maintenance

7.1 Equipment Maintenance

Defrosting: When the frost layer on the inner surface of the equipment is too thick and it will affect the refrigeration effect and increase the power consumption, the attached defrosting shovel should be used for defrosting. Do not use sharp metal utensils for defrosting to avoid damage to the equipment. Before defrosting, cut off the power and transfer the contents of the freezer. After defrosting, turn on the power first, and then put the items back into the fully refrigerated equipment (Always wear special protective gloves to take out and put in the items to avoid frostbite);

Cleaning and maintenance: The equipment should be cleaned and maintained regularly (for safety, please unplug the power plug), and the inner and outer surfaces of the freezer should be wiped with a warm, damp soft cloth.

Cleaning the filter screen: regularly remove the dust on the filter screen to ensure the desirable heat dissipation effect (Cleaning method: 1. Move the upper-right corner of the front ventilation plate outward and open the ventilation plate; 2. Lift the filter screen to remove it; 3. Gently remove the surface dust with a brush or rinse with tap water, dry, and reinstall it).



Warning:

- ◆ In order to prevent people from getting electric shock or injury, please cut off the power supply of the equipment before any repairs and maintenance
- ◆ Make sure you don't inhale drugs or suspended particles around it when maintaining the equipment, otherwise it will harm your health



Notes:

- ◆ Do not sprinkle water directly on the cabinet, lest the insulation performance of electrical components decrease and metal parts rust.
- ◆ Do not use hot water, corrosive detergent or organic solvent to clean the freezer body.
- ◆ Do not place heavy objects on top of the equipment, as the equipment may deform under pressure.
- ◆ The air switch equipped with our products provides both manual operation and automatic management options for the users. In the event of electric short circuit or overload, the air switching device can cut off the electric supplies automatically for the safety and protection of the entire system and machine in the same time.

7.2 Equipment Discontinuation

Deactivation: If the equipment is stored in an unsupervised area for a long time and not used, the power supply should be cut off and the inner and outer surfaces of the freezer should be cleaned with a warm, damp soft cloth, aired and sealed. The equipment must be locked to ensure that children cannot open the freezer door.

Scrapping: When the equipment reaches the end of its service life, it should be scrapped and must be handed over to a qualified professional recycling agency for disposal per local regulations. Non-professionals are not allowed to disassemble and break down the equipment without authorization. The scrapped equipment should be placed in a designated area inaccessible to children to avoid danger.

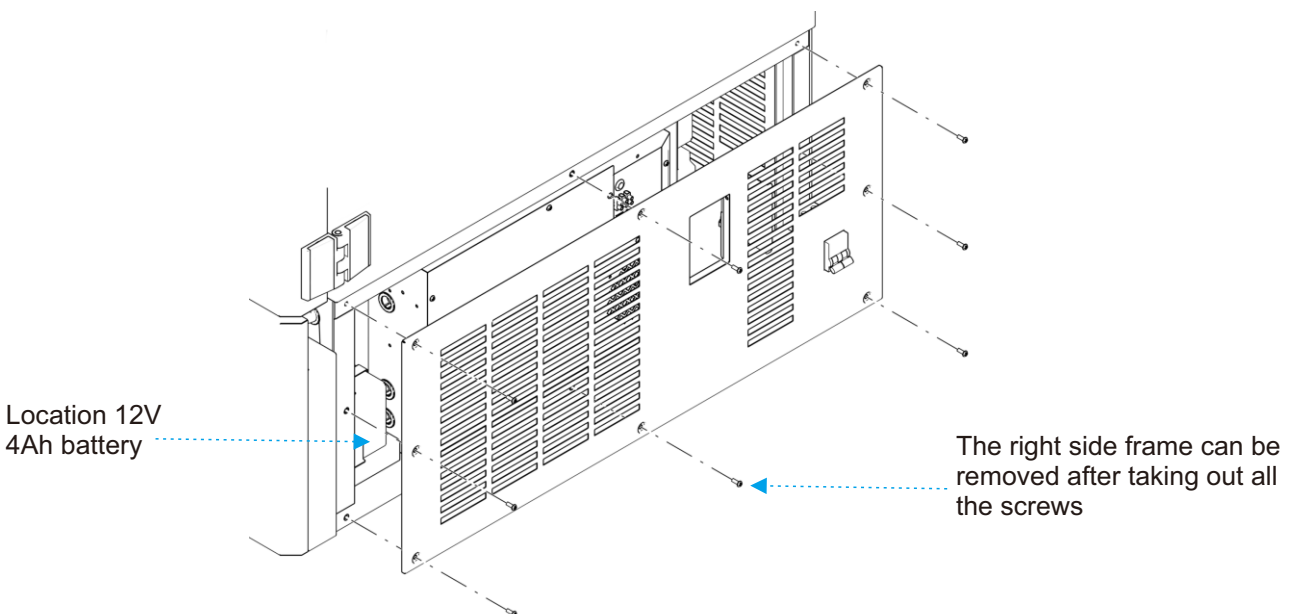
7.3 Maintenance, Replacement, and Recovery of Rechargeable Batteries (optional)

7.3.1 Battery maintenance

- ① In order to prolong the service life of the battery and avoid the product being left unused for a long time, the product must be operated for more than 24 hours every month to facilitate charging.
- ② When the equipment is not used for a long time, it should be connected to the working power regularly (generally once a month), and the power lock switch should be turned on so that the equipment can run for a period to complete charging, and each charging time should be no less than 24 hours.
- ③ When the working power supply is interrupted, the power lock switch of the equipment shall be turned off in time, otherwise it will cause power loss in battery and even permanent damage to the battery in severe cases; The main power switch must be turned off during a long-term power outage or during transportation, otherwise long-term discharge causes power loss in battery and even permanent damage to the battery, and the display is abnormal after re-energizing.
- ⑤ The battery is a consumable, with a service life of about 2-3 years. If the battery is used improperly, such as power loss or reaching the end of battery life, it will cause a low battery alarm (refrigeration is not affected, but there is an alarm failure and the power failure alarm function does not work, please contact our after-sales staff for replacement).

7.3.2 Replacement and recovery of batteries

- ① Turn off the power switch and pull out the power plug from the outlet.
- ② Remove the screws on the right side plate of the freezer body frame with a screwdriver. (Note: The battery can be replaced without opening the electrical box. There are high-voltage electrical components in the electrical box, therefore before opening, turn off the power supply, unplug the power plug and turn off the power switch of the freezer, and the electrical box can only be opened by qualified engineers or maintenance personnel). Pull out the battery connecting cable. The battery is located on the left side outside the electrical box. (Before unplugging the battery fixing cable, pay attention to the cathode/anode of the battery and the sequence of the connecting cables, to prevent burning down the control system due to installation of the new battery with cathode/anode reversed. Generally, the red wire is connected to the cathode, and the black wire is connected to the anode.)
- ④ Use a screwdriver to remove the fastening screws on the battery fixing plate and take out the battery.
- ⑤ The newly replaced batteries should be BT-12M4.0AC (12V4.0Ah).
- ⑥ For a replaced battery that can be recycled, please contact the local battery recycling agency. In order to effectively ensure that the battery replacement meets the requirements of the control system and avoid the influence of improper operation on the system, please contact our after-sales personnel for replacement or guidance.



8. Troubleshooting and Maintenance Services

Any product may fail. Please observe the operation of equipment in time during use. If there is any abnormality, please check and handle it according to the following table first. If the abnormality can't be fixed, please inform our service center.

Problems	Causes and solutions
Ultra low temperature freezer fails to work	Please make sure that the outlet is energized. Please make sure power plug is plugged in, not loose. Please make sure the power fuse is not disconnected. Please make sure the supply voltage is appropriate, not too low or too high.
Compressor is not running	Please make sure the switch on the right side bottom of the freezer is turned on. Please make sure that the temperature is set correctly.
The temperature does not reach the set value	Please make sure that the inner wall does not have thick frost. Please make sure that the door is closed tightly and don't open it too many times during a short time. Please don't put too many items in at one time. Please make sure that the ambient temperature is not too high. Please make sure the filter screen is not blocked.
High noise	Please make sure that the freezer body is placed on a flat ground. Please make sure that the freezer body does not contact the wall.
High ambient temperature alarm	Cause: The ambient temperature is higher than 32°C or the surrounding of the freezer body is too close to the wall, causing poor ventilation effect. Solution: Please ensure the distance between the freezer body and the wall is at least 30 cm, and the vent is not blocked. Clean the filter screen frequently. Pay attention to room ventilation or turn on the air conditioner in the hot summer.

The following conditions are not faults

- ① When the compressor starts and stops, the equipment parts will make a slight impact sound;
- ② Slight sound of running water caused by refrigerant flowing in the pipeline;
- ③ In rainy and humid seasons, the surface of the freezer body may be frosted, which can be wiped off with a dry cloth;
- ④ The interval between two door openings shall be more than 5 minutes, otherwise, the hot air will enter the freezer body, and the negative pressure caused by the sharp drop in temperature will cause difficulty in door opening;
- ⑤ The inner side of the liner opening of the equipment is a stress relief area at ultra low temperature, and there will be slight cracks under the condition of high and low temperature alteration, which is a normal phenomenon and the freezer can be used normally. When the LCD screen flashes during printing or use for a period of time, it is the normal flashing for data reading or the display screen refresh during printing.
- ⑥ If the display screen shows abnormality or alarm during start-up, it means that the control panel has not completely read the data, and the display will return to be normal after a few seconds. If the data reading fails, please turn off the power and restart the freezer.



Warning:

- ◆ This product adopts flammable working medium, and it is forbidden to disassemble and repair it without authorization (especially the compressor, refrigeration pipeline and other related parts). If there is any fault, it must be repaired by our Service Center.



Notes:

- ◆ Please clean and disinfect the equipment before notifying the maintenance engineer; During the warranty period of the equipment, the Company will not undertake the warranty obligation if the fault or damage is caused by improper use of the user.
- ◆ Ambient temperature for storage: -40°C ~ +55°C, relative humidity: 10% ~ 90%.

9. Main Technical Parameters

Model	Ambient temperature	Climate type	Refrigerant	Rated voltage (V~)	Rated frequency (Hz)	Temp Range (°C)	Volume (L)	Rated current (A)	Net Weight (kg)	Exterior dimensions (DxWxH) (mm)
Q5128	16~32°C	N	Mixture Gas	110-230	50/60	-40~-86°C	530	13.42	262	1041X930X1947

* The foaming material of this product is cyclopentane.

10. Accessories

Name	Operation Manual	Certificate of Conformity	USB flash drive	Key	Defrosting shovel
Number	1	1	1	2	1

* The specific accessories shall be subject to the physical objects received.



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