

Ultra Low Temperature Freezer

Operation Manual

The following product models are applicable:

DW-HL100

DW-HL218

DW-HL340

Zhongke Meiling Cryogenics Company Limited



Better science, Better life!

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Table of Contents

1. Application Notes	1
2. Safety Instructions	2
3. Precautions in Use	4
4. Product Installation	4
4.1 Installation Environment	4
4.2 Installation Site	4
4.3 Preparation before Use	4
4.4 First Power-on	5
4.5 Operation after Power Failure	5
5. Component Composition	7
6. Functions and Operating Instructions of Display Panel	8
6.1 Function Introduction	8
6.2 Function Settings	9
6.3 Parameter Display	10
6.4 Alarm Display	11
6.5 Optional Accessories	11
7. Defrost, Discontinuation and Maintenance	13
7.1 Equipment Maintenance	13
7.2 Equipment Discontinuation	13
7.3 Maintenance, Replacement and Recovery of Rechargeable Batteries	14
8. Troubleshooting and Maintenance Services	15
9. Main Technical Parameters	16
10. Accessories	16
11. Electrical Schematic Diagram	17

1. Application Notes

Thank you for choosing MELING BIOLOGY & MEDICAL products! For your safe and convenient use and reasonable maintenance of the equipment, please read the Operation Instructions 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.

MELING BIOLOGY & MEDICAL has 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 MELING BIOLOGY & MEDICAL 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 humidity no more than 80%, no corrosive gas and good ventilation.
- ◆ 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 MELING BIOLOGY & MEDICAL or an agent authorized by MELING BIOLOGY & MEDICAL.
- ◆ If the operator encounters any situations not mentioned in this manual, please contact MELING BIOLOGY and MEDICAL or the agent authorized by MELING BIOLOGY and MEDICAL 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 MELING BIOLOGY and MEDICAL. If users would like to use other accessories, MELING BIOLOGY and MEDICAL 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 obliged to be responsible for his or her own safety
- ◆ Keep clear of obstruction all ventilation openings in the appliance enclosure or in the structure for building-in.
- ◆ Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer.
- ◆ Do not damage the refrigerating circuit.
- ◆ Do not use electrical appliances inside the food/ice storage compartments unless they are of the type recommended by the manufacturer.

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, equipment failure or related property losses
	Must be grounded.		Risk of Exploration This sign indicates the risk of explosion when using volatile and explosive chemicals.
	Do not place it obliquely.		Avoid direct sunlight.
	Beware of electric shock.		Beware of low temperature.
	Beware of fire.		This equipment is a precision instrument.

	Warning: Failure to observe the precautions may result in serious personal injury or death.
	If a CO ₂ backup system is adopted, the equipment use site must be provided with a good ventilation environment, and the high concentration of CO ₂ in the air will endanger the life safety of personnel. In the case of poor ventilation, please consider other measures to ensure a safe working environment.
	Do not touch the equipment with wet hands to avoid electric shock; 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 the short circuit. Don't bundle the power cord, don't press it under furniture or heavy objects, and don't get close to heat sources such as compressors.
	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. This equipment adopts 220V/50HZ AC power supply. If the operating voltage is too low or too high, a suitable automatic voltage stabilizer must be installed for cooperative use.
	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 this case, MELING BIOLOGY & MEDICAL will not bear any responsibility for quality 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 the normal operation and 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 air outlet must not be blocked by obstacles!
	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 be 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 in time 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.

3. Precautions in Use ■■■■■

- ◆ When the equipment is running, the contact part between the front part of the equipment and the outer door may generate heat. This is not a fault: in order to prevent condensation around the casing, a heating anti-condensation pipe is installed in the equipment.
- ◆ Before putting the items into the equipment, please confirm that the temperature in the storage chamber has reached the set value first, and then put the articles in batches. Every time you put in items, they shall not exceed 1/3 of the inner volume of the freezer so as to prevent excessive temperature rise.
- ◆ The freezer body is provided with a test hole so as to lead out the test line from the cabinet during the test. After the test line is led out, it is necessary to plug the test hole with thermal insulation material again, otherwise the temperature inside the freezer may not reach the set value, and condensation will appear around the outside of the through hole.
- ◆ The equipment temperature display value is the temperature at the temperature sensor in the storage chamber. There is a certain gap between the displayed temperature and the actual temperature at the center of the equipment when the equipment just starts running, but as the equipment enters a stable state, the displayed temperature will gradually approach the actual temperature.
- ◆ Please use a diluted neutral cleaner to clean the equipment, and do not use brushes, acid, gasoline, soap powder, polishing agent or hot water to clean the equipment, otherwise the painted surface and plastic rubber parts may be damaged. Be careful not to wipe plastic rubber parts with volatile solvents such as gasoline.
- ◆ After a period of operation, a layer of frost will form on the inner wall and inner door of the freezer body. If the frost layer is too thick, it will affect the heat preservation effect of the equipment and increase the power consumption. Therefore, once in a while, when the frost layer reaches about 5mm, the attached defrosting shovel shall be used for defrosting.
- ◆ Before defrosting, please take out the frozen items in the freezer and put them in an environment suitable for their storage, so as to prevent the item damage due to the temperature rise in the freezer during defrosting.
- ◆ Since there are many cooling coils behind and on the side of the inner wall, do not use sharp objects such as knives, ice chisels or screwdrivers to remove frost from the inner wall. Be careful not to scratch the inner wall when defrosting, otherwise it may lead to the failure.
- ◆ When the equipment is not used for a long time, the power supply shall be cut off.

4. Product Installation ■■■■■

4.1 Installation Environment

- ◆ Ambient temperature: 16°C~32°C, the most ideal temperature is 18°C~25°C and the air conditioning system shall be used when necessary.
- ◆ Relative humidity: ≤80%RH.
- ◆ There is no strong vibration and corrosive gas around.
- ◆ Avoid the existence of a large amount of dust.
- ◆ Avoid rocking or shaking the equipment.
- ◆ Elevation of the working position of the equipment: less than 2000m.
- ◆ Indoor use, pollution degree 2, and overvoltage category II.
- ◆ Input voltage AC single-phase 220-230±10%.
- ◆ There is no direct sunlight, other cold and heat sources and strong electromagnetic interference, which will affect the normal operation of the control system and directly damage the system in severe cases.



Attention: Since the ambient temperature has great influence on the equipment, if the above environmental requirements cannot be met, the equipment may not run normally. Please improve the environment before using the equipment; The equipment is operated intermittently.

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 operations;⊕ 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 a grounding wire, check whether or not the grounding is good before use. If the outlet is not equipped with grounding wire, it must be installed by professional engineers and technicians.

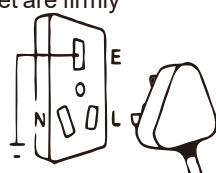


Figure: N and E ends cannot be connected

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 to prevent suffocation accidents.

2. Inventory of accessories: Please check the accessories and materials according to the packing list.

3. Cleaning: Clean the product once before use.

4. Adjust the 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, it shall stand for more than 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 give full play to the best performance of the freezer, if the user needs to use the -86°C 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 steadily 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, click 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 storage chamber after confirming the 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 after shutdown 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 Operations 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 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:

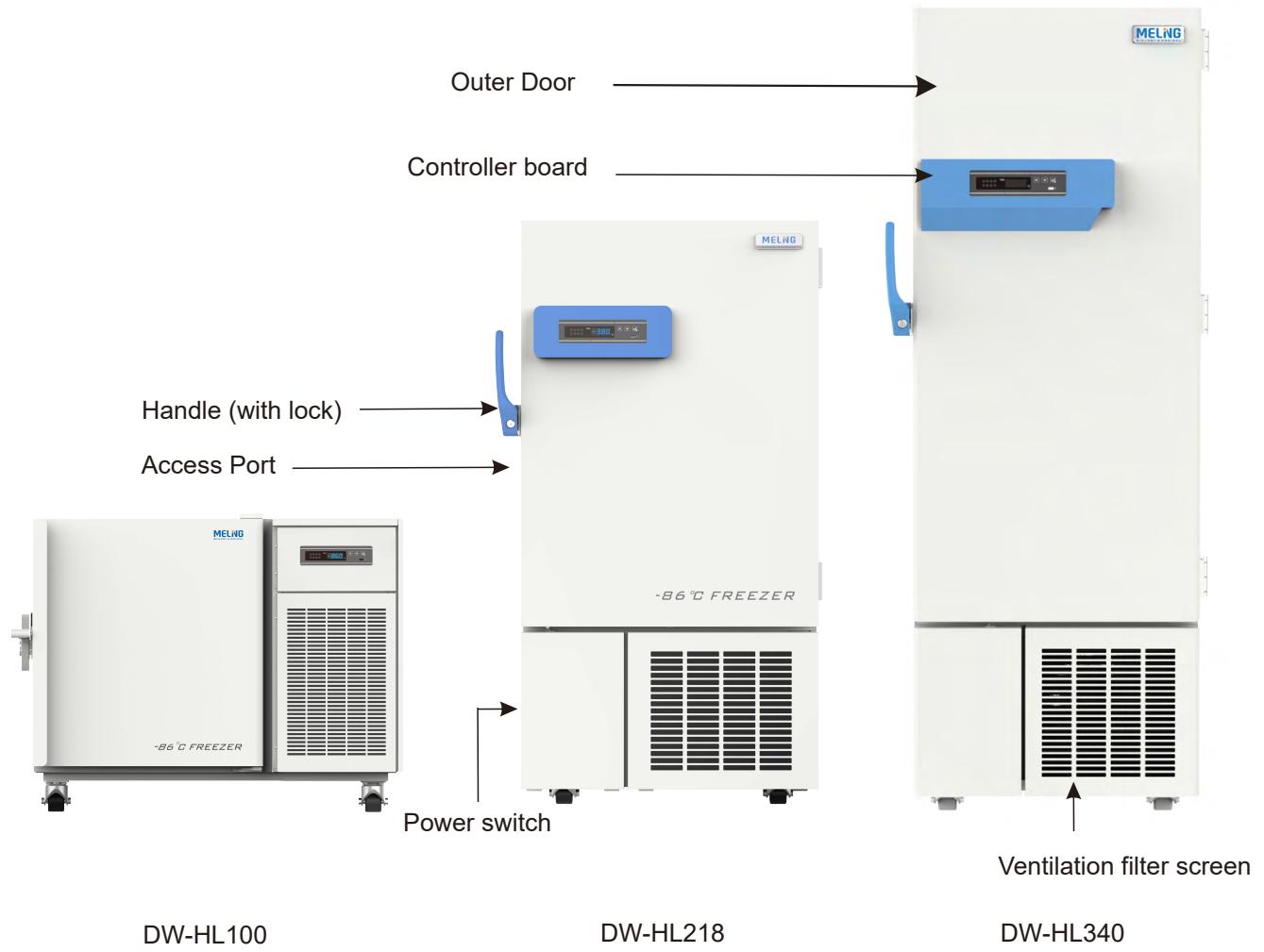
- ◆ The transportation and movement of equipment is realized by casters.
- ◆ A special person shall be responsible for checking and recording the running status of the equipment every day (record and check once every 2~4 hours). In case of failure or shutdown, the temperature in the storage chamber will rise. If it cannot be repaired in a short time, 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 storage chamber 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 a short-time alarm is triggered, if the voltage range is between 198V~242V, 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, otherwise the injury or loss caused therefrom will be at their own risk.
- ◆ The instructions concerning persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge and children playing with the appliance are not required.

5. Component Composition



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

* Structure and composition: the product consists of a freezer body, door body, refrigeration system, control system and accessories.

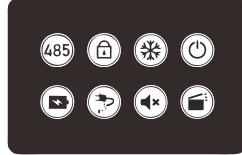
* Scope of application: it is suitable for storing items at low temperature in hospitals, epidemic prevention stations, research institutions, factories and other units.

6. Functions and Operating Instructions of Display Panel

6.1 Function Introduction



1. Function description of indicators (see the table on the right)



Remote port	Key lock	Refrigeration	Power supply
Battery level	Power failure	Mute	Door switch

a. Remote port indicator optional

When the reserved RS-485 remote port is not connected to the freezer, the remote port indicator will be off; when the freezer is successfully connected to the reserved RS-485 serial port, the remote port indicator will be on.

b. Key lock indicator

When the keys are in a locked state, none of the keys will respond and the key lock lights up. In this case, after pressing the up key + down key for 3s, you will be prompted to enter the password, which is defaulted as "0005." After entering it correctly, press the Set/Mute Multiplex key and the key lock will be released. At this time, the key lock indicator will be off. In the unlocked state, if no key is pressed in 60s, the key lock is activated, and the key lock indicator is on. Long press the up key + down key for 3s, and the keys are locked.

c. Refrigeration indicator

If the compressor is in working condition, the refrigeration indicator is normally on; If the compressor is in a shutdown state, the refrigeration indicator is off.

d. Power indicator

When the indicator is on, it means that the power switch of the product has been turned on.

e. Low battery level indicator

When the battery voltage is less than 10.8V, the buzzer will be triggered, the low battery indicator will be on and the digital tube will flash the low battery code "BL" alternately at intervals of 3s; when the battery voltage is greater than 12V, the buzzer will be turned off, the low battery indicator will be off and the digital tube will resume normal display.

f. Power failure

The freezer is normally powered by 220V. When there is blackout, the buzzer will be triggered, the digital tube flashes the power failure code "PF" alternately at 3s intervals and the power-off indicator is on. When the input power is turned on, it will return to normal and the power-off indicator is off.

g. Mute indicator

When the mute key is activated, the indicator is on; When the alarm mute function is canceled, the indicator is off.

h. Door switch indicator

When the door is opened, the door switch indicator is on; When the door is closed, the door switch indicator is off.

2. **-85.0** temperature display window, which displays the average temperature inside the freezer body in °C under normal operations;

View ambient temperature:

In the key locked state, press **■** key and the digital tube will display the ambient temperature and return to normal display after 5 s without key operations or pressing **▲** and **▼**. In the key unlock state, press **■** key, and digital tube displays ambient temperature, and returns to normal display after 5s without key operation. Humidity check: in the key locked state, press **■** and **▼** key and the digital tube will display the ambient temperature and return to normal display after 5 s without key operations or pressing **▲** and **▼**.

3. **▲** is an up key; in parameter setting mode, move to the next parameter or increase the parameter value. For example, when adjust the set temperature, press this key to increase the set temperature value. When adjust the parameter value, long press the up button, and the parameter will increase rapidly. Under normal conditions, long press the up key for 3 seconds to import the data of the USB flash drive in 12 months.

4. **▼** is a down key;

In parameter setting mode, move to the previous parameter or decrease the parameter value. For example, when adjust the set temperature, press this key reduce the set temperature.

When setting the parameter value, long press the down button, and the parameter will decrease rapidly.

5. **■** is the set/mute key; in case of no alarm state and key unlocked state, press **■** and display the ambient temperature for 5s and then return to normal display; in the unlocked state, press **■** for more than 3s and enter the user menu.

When the buzzer is triggered (including cabinet high-temperature alarm, door opening alarm, sensor failure alarm, etc.) and in the button unlocked state, press **■** for the first time and the buzzer will stop ringing and the ambient temperature is displayed for 5s, after that, normal display will be resumed (pressing the mute button is only to turn off the buzzer for alarming this abnormal state, for example troubleshooting but the buzzer will be triggered next time for any abnormality). Then press **■** again, trigger the buzzer, display the ambient temperature for 5s and resume the display of chamber temperature and alarm state. In the key unlock state, **■** can be used as a setting key.

In unlock state and parameter setting mode, press this key to display parameter values and parameter names. If the pressing time is longer than 3 seconds, save the settings and return to the normal interface.

6. USB data export;

Automatic export: When the USB interface is connected to the USB flash drive, the buzzer of the recorder beeps once, displaying "on," and PDF files of the data of the current month and the previous month are generated in the USB flash drive. After the data transmission is completed, the buzzer beeps once, displaying "End," and the normal display resumes after 6s.

Note: When there is less data, the digital tube will not display "on" and "End."

Manual export: in the key unlocked state and when the USB flash drive is connected and the file is not being generated, press the key up for 3 seconds and the digital tube will display "d01." Press the up key or down key to adjust "d00~d12" and press **■** key to obtain the file generation (d00) or generate the PDF file of the record data of the previous months (1-12).

Note: when the alarm of the digital tube flashes and displays "LoF," the recorder is not started; Meanwhile press **■** and **▲** key for 3s, and "LoF" disappears, the buzzer beeps once and the recorder is started.

6.2 Function Settings

1. Power on and turn on the power switch on of the freezer body and the equipment will enter the working state;

2. User parameter settings:

Unlock: in the normal operation state, simultaneously press **▲** and **▼** key for 3s and the digital tube will display the parameter code "0000" (when you enter the password "0005" and enter the user menu password, enter "0099" to restore the key lock password to the default value of "0005"). , and unlock it. Unlock and press **■** key for 3s, and the digital tube will display the parameter code "PS1," and enter the setting and adjustment parameters.

Use **▲** or **▼** key to scroll the parameters and the display order is as follows:

Ps1→b1→b2→Set→H→L→n→y→r→S→F→Pt→tH1→P1→P2.

Press **■** to confirm the parameter type, and the first parameter name of this type of parameter will be displayed;

① Use **▲** or **▼** key to scroll the parameters;

② Press **■** key to display the corresponding parameter value;

③ Use **▲** or **▼** to increase or decrease the value;

④ Use **■** temporarily store the modified values and return to the display parameters;

⑤If other parameters are modified, repeat steps①~④;

⑥Press **Esc** for more than 3s, save the modified parameters and return to the display parameter category. Press **Esc** for more than 3s, or press no key in 60S to exit the parameter setting program.

6.3 Parameter Display

The following table is a comparison table for parameter display.

Serial number	Menu item	Parameter range	Suggested settings	Remarks
1	b1	V1.0~9.9	/	Hardware version
2	b2	V1.0~9.9	/	Software version
3	Set	4.0	-40	Temperature setting
4	H	0.0~10.0	5.0	Set value of high temperature alarm set + H; When H =0, High temp alarm is disabled; When the alarm is over high temp alarm set, H1 will be displayed on the controller
5	L	0.0~10.0	5.0	Set value of low temperature alarm set-L; When L =0, Low temp alarm is disabled; When the alarm is below low temp alarm set, L1 will be displayed on the controller
6	Pt	0~240 min	20	Print interval
7	tH1	20.0~50.0°C	50	Upper limit of ambient temperature alarm
8	Ps1	0000~9999	0005	User menu password settings

6.4 Alarm Display

The following table is a comparison table of alarm codes and fault descriptions.

Alarm Code	Default Description
H1	High temperature alarm
L1	Low temperature alarm
H2	High ambient temperature alarm
H3	High condenser temperature alarm
do	Door opening alarm
PF	Power failure alarm
PL	Low battery alarm
ER	The recorder is not connected
LoF	The recorder is not started
EE	Communication failure

! Notes:

- It is normal that a "High temperature alarm" is given when the machine is turned on for the first time. Put items into the freezer only after the temperature in the freezer stabilizes and the "high temperature alarm" is automatically released.
- The items stored each time cannot exceed 1/3 of the freezer capacity. After the freezer reaches the set temperature and operates normally for 24 hours, put another 1/3 of the freezer capacity of items for storage.
- Try not to open the door during cooling, otherwise the temperature will rise.
- Do not change the set temperature frequently within a short time, otherwise your 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 hole in the cabinet (for collecting the temperature in the cabinet), otherwise it will affect the stability and accurate display control of the temperature in the freezer body!
- Items stored should not block the temperature sensor hole in the cabinet (for collecting the temperature in the cabinet), otherwise it will affect the stability and accurate display control of the temperature in the freezer body!

6.5 Optional Accessories

6.5.1 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)

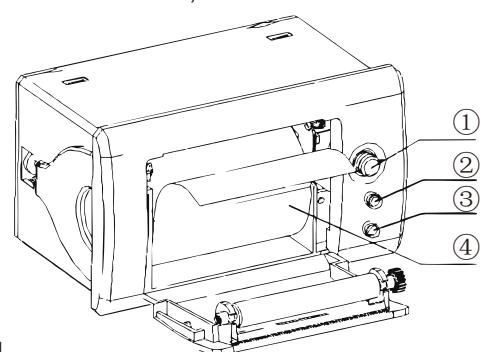
Description of printer panel:

- Open button. Press to open the cover;
- SEL button, indicator light, for factory setting. Do not press it;
- Lf button. The green indicator is the power indicator and it is normally on when the power is turned on;
- 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 "Operating Instructions for Bluetooth Printer" in the accessory bag.

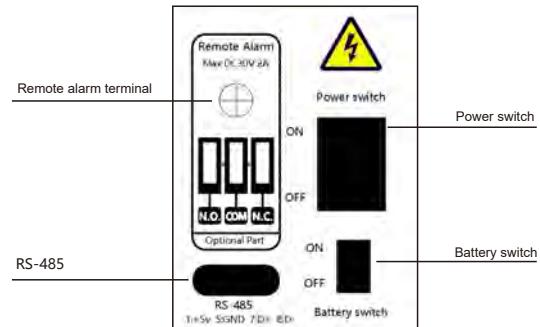


6.5.2 Chart Recorder

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

6.5.3 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.



6.5.4 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 Instructions attached to the device.

! Notes:

- ◆ Make sure that the cylinder is filled with liquid carbon dioxide.
- ◆ 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.

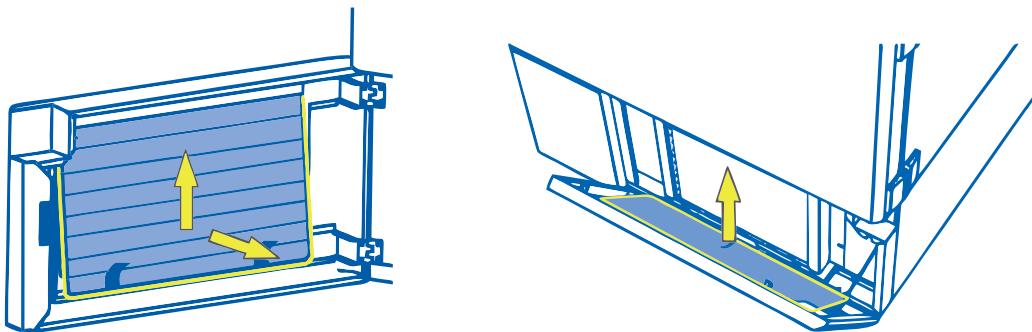
7. Defrost, Discontinuation and Maintenance

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 heat dissipation effect. For the filter screen of DW-HL100, DW-HL218 and DW-HL340, the 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 (see the figure below. There are two states: left and right, which is subject to the actual product); 3. Gently remove the surface dust with a brush or rinse with tap water, dry, and reinstall it.



For the filter screen of DW-HL340, the cleaning method: 1. lift the filter plate at the bottom of the product front; 2. pull the filter plate outward at the bottom to remove the filter plate; 3. take out the filter screen inside the filter plate; 4. gently remove the surface dust with a brush or rinse with tap water, dry, and re-install 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 freezer body, 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.

7.2 Equipment Discontinuation

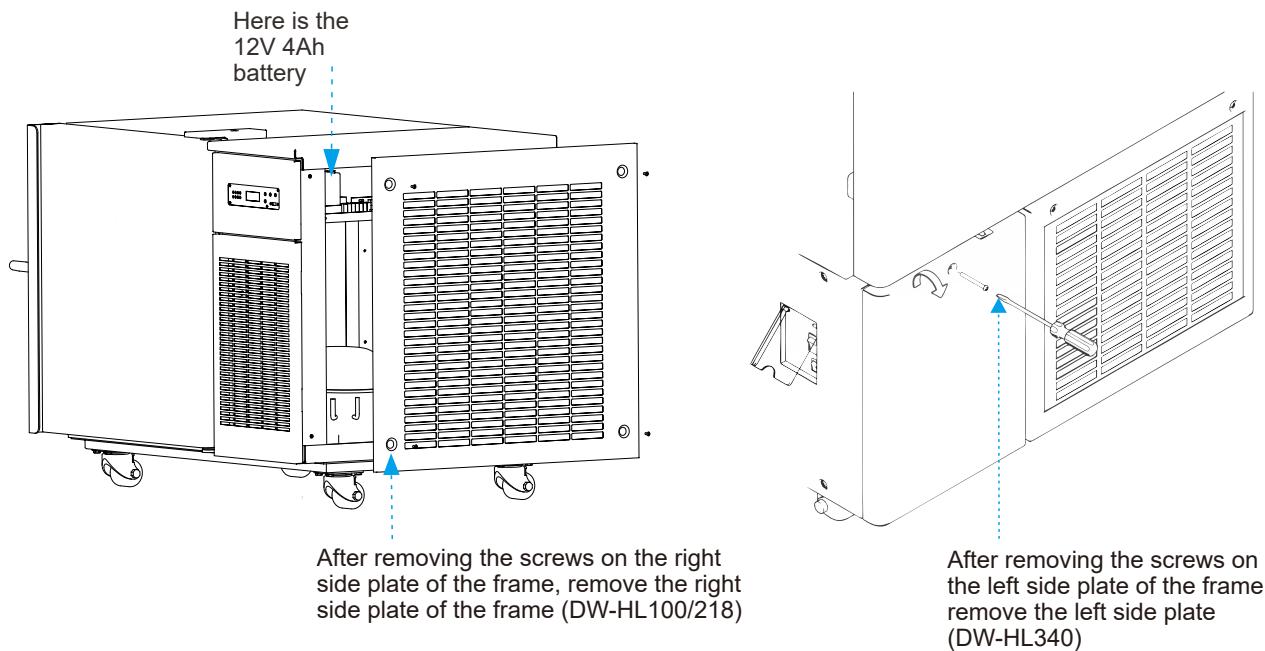
Deactivation: If the equipment is stored in an unsupervised area for a long time and not used, the power supply should be cut off and the inner and outer surfaces of the freezer should be cleaned with a warm, damp soft cloth, aired and sealed. The equipment must be locked to ensure that children cannot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

Scraping: 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

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.
- ④ 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 the 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).



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 changed, please inform our service center in time, and we will serve you wholeheartedly to avoid losses. The service life of this product: 10 years.

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 is not frosted too thick. 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 be at least 30 cm, and the vent shall not be 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 makes use of a 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 Zhongke Meiling Service Center.
- ◆ The system contains refrigerant under high pressure. Do not tamper with the system. It must be serviced by suitably qualified persons only.
- ◆ Connect to potable water supply only.
- ◆ Do not store explosive substances such as aerosol cans with a flammable propellant in this appliance.
- ◆ If symbol ISO 7000-1701 (2004-01) is used, its meaning shall be explained.
- ◆ In order to reduce flammability hazards the installation of this appliance must only be carried out by a suitably qualified person.
- ◆ The refrigeration system is under high pressure. Do not tamper with it. Contact qualified service personal before disposal.



Notes:

- ◆ The equipment can only be repaired, maintained or improved by the engineers certified by MELING BIOLOGY & MEDICAL, so as to ensure the normal operation of the equipment and the compliance with corresponding safety standards.
- ◆ 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	Rated voltage (V)	Rated frequency (Hz)	Storage temperature (°C)	Effective volume (L)
DW-HL100	16~32°C	220~240	50	-40~86	100
DW-HL218	16~32°C	220~240	50	-40~86	218
DW-HL340	16~32°C	220~240	50	-40~86	340

* The foaming material of this product is cyclopentane.

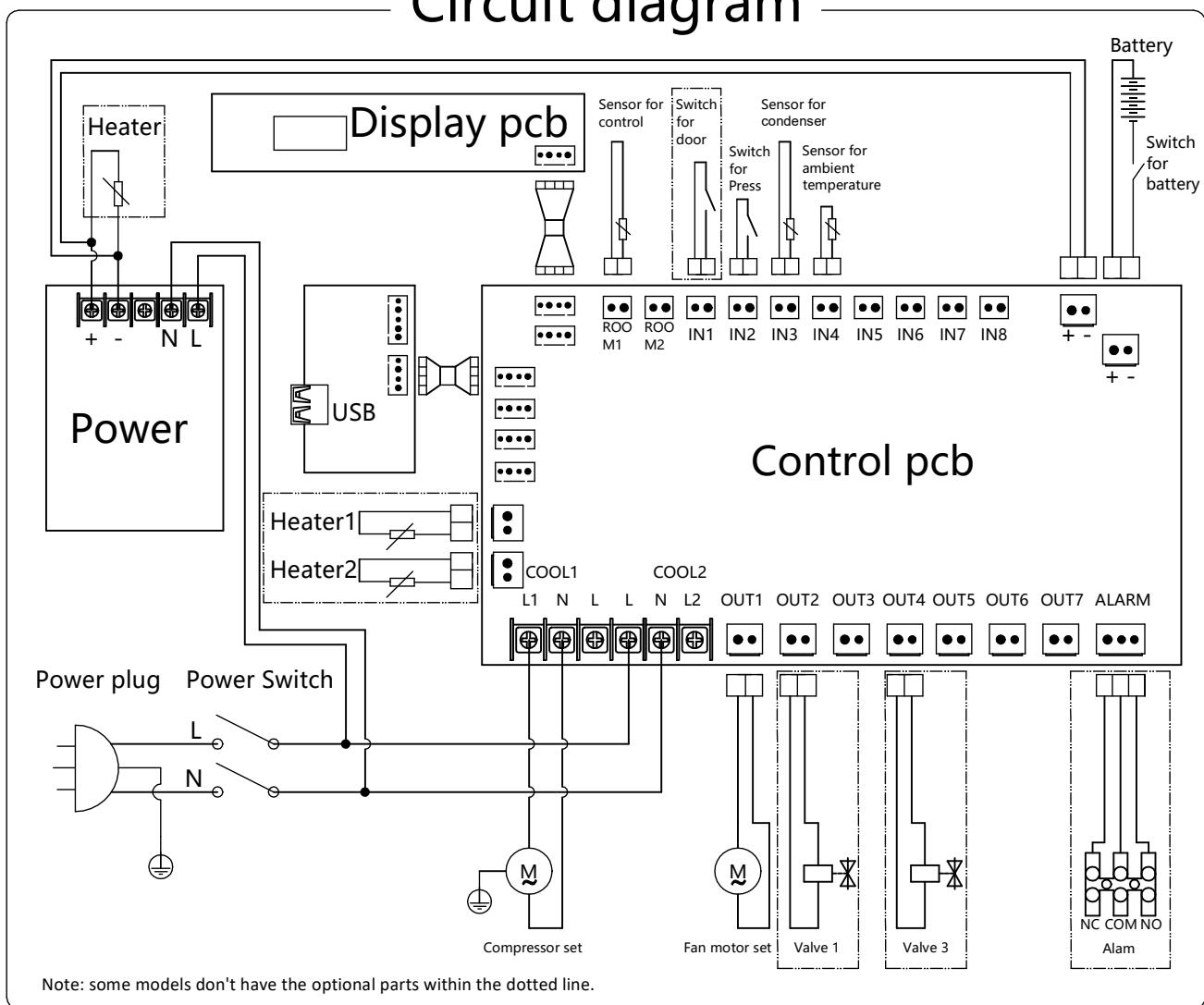
10. Accessories

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

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

11. Electrical Schematic Diagram

Circuit diagram



*In case of any improvements to the product design, the technical data and electrical schematic diagram are subject to the product nameplate. We make an apology hereby.



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Production Date: See nameplate on the freezer body

Prepared in: June 2020