



Ultra Low Temperature Freezer

Operation Manual

The following product models are applicable:

DW-HW50

DW-HL50



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	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.



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 an 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.

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 current borne by the power outlet shall be $\geq 10A$, and 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. The power of the voltage stabilizer must be greater than 4KW 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.

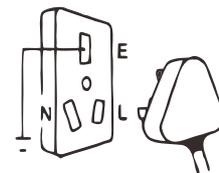


Figure: N and E ends cannot be connected

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, 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 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 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, 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.



DW-HL50

* Due to the improvement of products and model differences, 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 units, factories and other units.

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.  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 button 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 adjust 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  display the ambient temperature for 5s and then return to normal display; in the unlocked state, press  for more than 3s, can enter the user menu.

When buzzer is triggered (including cabinet including high temperature alarm, door opening alarm, sensor fault alarm, etc.) and in the button unlock state, press  for the first time, and the buzzer stops 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 trouble removal, but the buzzer will be triggered next time for any abnormality). Then press  again, trigger the buzzer, display the ambient temperature for 5s, and then resume the display of cabinet 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.

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

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

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

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

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

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

⑥Press **▲** for more than 3s, save the modified parameters and return to the display parameter category.

Press **▲** 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	-40~-86	-86	Temperature setting
4	H	0.0~10.0	5. 0	High temperature alarm setting 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	40	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:

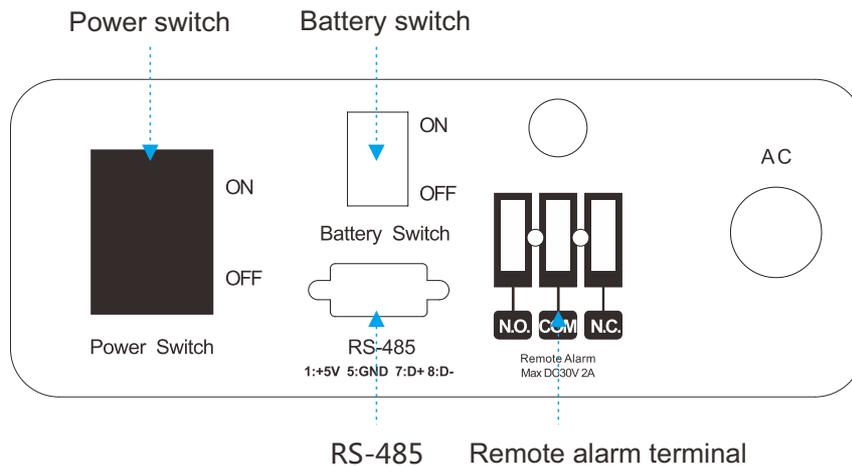
- ◆ It is normal that a "High temperature alarm" is given when the machine is turned on for the first time. Put items into the freezer only after the temperature in the freezer stabilizes and the "high temperature alarm" is automatically released.
- ◆ The items stored each time cannot exceed 1/3 of the 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 Remote Alarm Terminal and RS485 Interface

The remote alarm terminal is installed on the back of the freezer body (as shown in the figure below), 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.

Note: this function is not optional for DW-WH50.



6.5.2 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.
- ◆ 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.

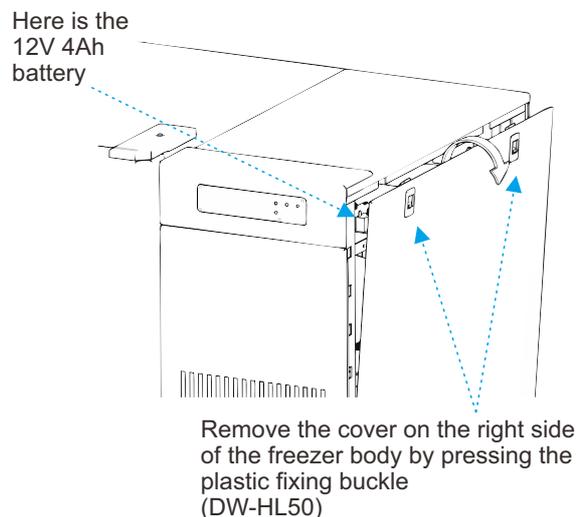
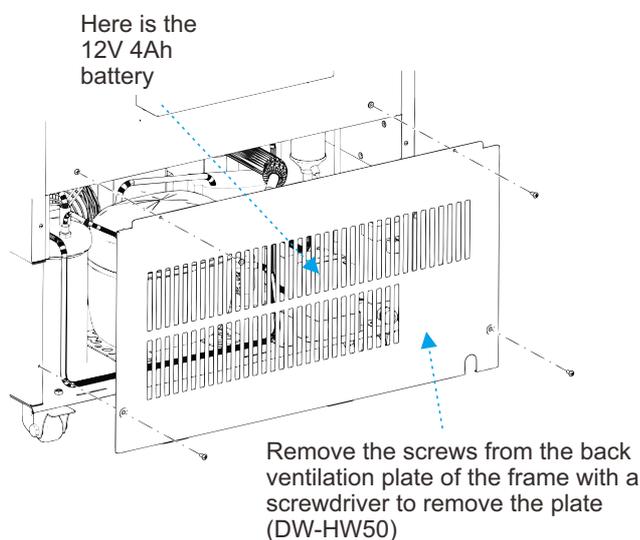
7.3 Maintenance, Replacement, and Recovery of Rechargeable Batteries (optional)

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;
- 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).

7.3.2 Replacement and Recovery of Batteries

- ① Turn off the power switch and pull out the power plug from the outlet;
 - ② For the DW-HW50 products, remove the screws on the back plate of the frame with a screwdriver (see the lower-left figure); for the DW-HL50 products, press the plastic fixing buckle to remove the screws on the right side plate at the bottom of the freezer body with a screwdriver (see the lower-right figure); (Note: for the DW-HW50 products, 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).
 - ③ Pull out the battery connecting cable. For the DW-HW50 products, the battery is located on the right side of the compressor base plate; for the DW-HL50 and DW-HL100 products, the battery is located on the electrical mounting plate (note: 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 (12V 4. 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.





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