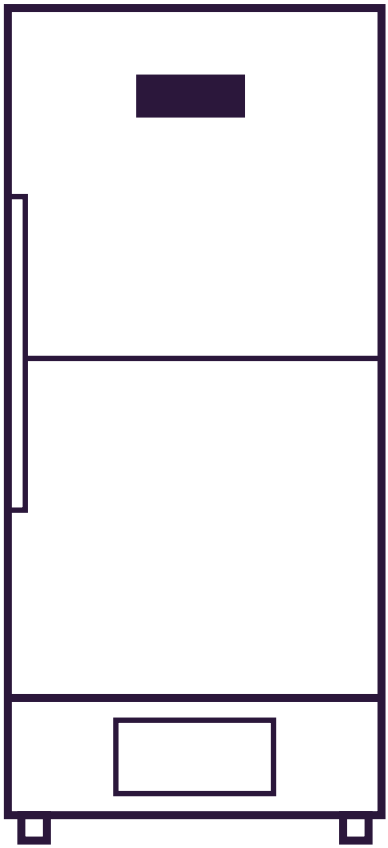
swisslog healthcare

EN

Combined Refrigerator and Freezer

USER MANUAL



Warning:
Before using this product, please read this manual carefully and keep it for future reference. The design and specifications are subject to change without prior notice for product improvement. Consult with your dealer or manufacturer for details.

Product model 1: SLHC-MCD-25L506
model 2: SLHC-MCD-40L506



Product implementation standards:

UL 61010-1, 3rd Edition May 11, 2012, Revised July 19, 2019,
CAN/CSA-C22.2 No. 61010-1(2012-05), 3rd Edition with revisions through 2018-11
UL 61010-2-011 Ed.2 Published May 13, 2021
CAN/CSA C22.2 No. 61010-2-011:19

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Warning; flammable material

This unit is intended for use in commercial, industrial, or institutional occupancies as defined in the Safety Standard for Refrigeration Systems, ANSI/ASHRAE 15”

Replacement components and servicing

This installation and operating instructions indicate that component parts shall be replaced with like components and that servicing shall be done by the manufacturer’s authorized personnel, so as to minimize the risk of possible ignition due to incorrect parts or improper service.

WARNING: Ensure all ventilation openings are not obstructed.

WARNING: Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer.

WARNING: Do not damage the refrigerant circuit.

WARNING: In order to reduce flammability HAZARDS the installation of this equipment shall only be carried out by a suitably qualified person.

DANGER – Risk of Fire or Explosion. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Puncture Refrigerant Tubing.

CAUTION – Risk of Fire or Explosion. Flammable Refrigerant Used. Consult Repair Manual / Owner’s Guide before attempting to install or Service This Equipment. All Safety Precautions Must be Followed.

CAUTION – Risk of Fire or Explosion. Dispose of Properly in Accordance With Federal or Local Regulations.

Flammable Refrigerant Used.

The safety of any system incorporating the equipment is the responsibility of the assembler of the system.

“Cet appareil est destiné à une utilisation commerciale, industrielle ou institutionnelle, comme défini dans la norme de sécurité des systèmes frigorifiques, ANSI/ASHRAE 15.”

AVERTISSEMENT: S’assurer que toutes les ouvertures de ventilation ne soient pas obstruées.

AVERTISSEMENT: Ne pas utiliser de dispositifs mécaniques ou d’autres moyens pour accélérer le processus de dégivrage, autres que ceux recommandés par le fabricant.

AVERTISSEMENT: Ne pas endommager le circuit FRIGORIFIQUE.

AVERTISSEMENT: Afin de réduire les DANGERS d’incendie, l’installation de cet appareil doitêtre effectuée uniquement par une personne dûment qualifiée.

RISQUE d'incendie ou d'explosion. Utilisation de FLUIDE FRIGORIGENE INFLAMMABLE. Ne pas utiliser de dispositifs mécaniques pour dégivrer les APPAREILS DE REFRIGERATION. Ne pas percer les tubes FRIGORIFIQUES".

"ATTENTION – RISQUE d'incendie ou d'explosion. Utilisation de FLUIDE FRIGORIGENE INFLAMMABLE. Consulter le manuel de réparation/guide d'entretien avant de tenter d'installer ou d'entretenir cet appareil. Toutes les précautions de sécurité doivent être suivies."

"ATTENTION – RISQUE d'incendie ou d'explosion. Éliminer de façon adaptée selon les règlements fédéraux ou locaux. Utilisation de FLUIDE FRIGORIGENE INFLAMMABLE".



Warning; flammable material



Warning: A manual defrosting procedure must be carried out once the frost covers the defrosting indicator, or the temperature of the freezing chamber might be.



Warning: crushing of hands



The product with the symbol reads "warning terms"

CYCLOPENTANE

The product with this symbol reads "cyclopentane blowing"



Protection of the environment

This symbol attached to the product means that it is an appliance whose disposal is subject to the directive on waste from electrical and electronic equipment (WEEE). This appliance may not in any way be treated as household waste and must be subject to a specific type of removal for this type of waste. Recycling and recovery systems are available in your area (waste removal) and by distributors. By taking your appliance at its end of life to a recycling facility, you will contribute to environmental conservation and prevent any harm to your health.

PRODUCT FEATURES

Scope of application

It is suitable for refrigerated and frozen storage items in hospitals, epidemic prevention stations, scientific research institutes, etc.

PRODUCT FUNCTION

Accurate Temperature Control Data can be traced

- High-precision temperature control with a display accuracy of 0.1 °C.
- The temperature range in the refrigerator is adjustable from 2°C to 8°C, and the temperature control is accurate.
- Temperature range of freezer chamber for -25°C model: -15°C~-25°C, adjustable. Temperature range of freezer chamber for -40°C model: -15°C~-40°C, adjustable.
- It is equipped with USB interface, so that the temperature data can be traced and the functions of data query and temperature data storage can be realized.

High-efficiency refrigeration system Good thermal insulation effect

- Unique air curtain cloud cooling technology function ensures uniform temperature in the refrigerator.
- Well-known internationally branded compressor and optimized refrigeration system provide strong refrigeration capacity, safety and reliability.
- High-performance thermal insulation layer has the good thermal insulation effect.
- Multi-layer 3D seal design effectively reduces refrigerating capacity loss and frosting.

With multiple alarms Safe and stable use

- Perfect acoustic and optical alarm function, allowing high and low-temperature alarms, power failure alarm, sensor fault alarm, etc. with alarm values adjustable on demand.
- Safety door lock design, safer.

Introduction to Other Functions

- Multi-layer shelf design with adjustable height, maximizing space utilization.
- Built-in LED lamp, highly bright and energy-saving, making the contents inside the refrigerator clearly visible.
- Wide voltage design to ensure stable operation of the equipment.
- The temperature in the freezer and the ambient temperature can be displayed, and users can set high-temperature and low-temperature alarm values and set temperature values as required.
- With remote alarm function ensures real-time controllability and safe and stable operation of the equipment.

Note :

The above features are not available for all models of products, and the detailed configuration shall be subject to the specific functions of each model.

Due to the continuous optimization of the product, the product you obtained may not be exactly consistent with the instructions. We sincerely apologize for this.

SAFETY PRECAUTIONS

Dear Customer :

Greetings! Thank you for using the Combined Refrigerator and Freezer. Please carefully read the following information to better understand the Operating Instructions and use this product, so as to prevent personal injury and damage to items.

Safety Precautions



Document review is required in all cases marked with ⚠ to clarify the nature of potential hazards and the countermeasures that must be taken.



WARNING

Ignoring WARNING items may result in serious casualties.



CAUTION

Ignoring NOTE items may result in casualties or damage to the refrigeratorfreezer and related properties.



Acts or operations that must be prohibited.



Actions or operations that must be followed.

⚠ WARNING

- Please use a power socket with a grounding wire to prevent electric shock. If the power socket is not grounded, the grounding wire must be installed by professional technicians.
- This refrigerator-freezer must be firmly placed on a solid and flat ground and proper care is taken to prevent overturning. If the floor is not level or the refrigerator-freezer is placed in an improper location, the refrigerator-freezer may tip over or cause injuries.
- If the power cord needs to be extended, the cross-sectional area of the extension cord shall not be less than 2.5mm^2 and the length shall not be longer than 3m. Otherwise, fire or electric shock may occur.
- In case of flammable gas leakage, close the valve with gas leakage, and open the doors and windows to ventilate and exhaust gas. Do not plug or unplug the power plug of the refrigerator-freezer, otherwise it may cause an explosion and fire.
- Only professional technicians or after-sales maintenance personnel can repair the refrigerator-freezer. Otherwise, it may cause electric shock and fire.
- Please use the special power supply indicated on the nameplate of the refrigerator-freezer, otherwise fire or electric shock may be caused.
- If the applied voltage is lower than 103 V or higher than 127 V, an automatic voltage regulator of over 4,000 W suitable for the motor load needs to be installed for assistance.

- The power cord of this refrigerator-freezer is equipped with a three-prong (grounded) plug to mate with a standard three-prong (grounded) socket of 10A. Under no circumstances should the ground pin of the power cord be cut or removed. Make sure that the power plug and the socket are connected firmly and securely; otherwise, a fire may occur.
- When unplugging the plug from the power socket, hold the plug tightly instead of pulling the wire of the plug. If the wire is pulled, an electric shock or a fire due to a short circuit may occur.
- If the refrigerator-freezer is not operating properly, disengage the power plug. Continued operation under abnormal conditions may cause an electric shock or fire.
- Disengage the power plug when the refrigerator-freezer is not in use for a long period, so as to prevent electric shock, electric leakage, or fire due to the deterioration of the power cord.
- If the refrigerator-freezer is to be stored unused in an unattended area for a long period, ensure that children do not have access to the refrigerator-freezer. The disposal of the refrigerator-freezer shall be accomplished by the appropriate personnel. The freezer door shall be removed to prevent accidents such as suffocation.

Warning: Please abandon the refrigerator according to local regulators for it use flammable blowing gas and refrigerant.

REFRIGERATING EQUIPMENT to avoid either damaging the REFRIGERANT tubing, or increasing the RISK of a leak.

- Ensure that all vents are not obstructed.



> Never store flammable, explosive, or volatile substances in the refrigerator-freezer or use flammable sprays near the refrigerator-freezer, otherwise, it may cause an explosion or fire.
> Never store corrosive substances such as acids or alkalis in the refrigerator-freezer. Otherwise, those substances may cause damage to internal components or electrical parts of the refrigerator-freezer.
> Do not leave the plastic packing bag in a place accessible to children as this may result in suffocation accidents.
> Do not climb on the refrigerator-freezer or put any objects on the refrigerator-freezer, otherwise the refrigerator-freezer may fall and cause injuries or damage to the refrigerator-freezer.
> Do not use the refrigerator-freezer outdoors. Exposing the refrigerator-freezer to rain may cause an electric leakage or electric shock.
> Do not place the refrigerator-freezer in a humid site or a place where the refrigerator-freezer is easy to be splashed with water. Otherwise, an electric leakage or electric shock may occur due to reduced insulation.
> Do not pour water directly onto the refrigerator-freezer, otherwise, it may cause an electric shock or a short circuit.
> The user must not disassemble, repair, or modify the refrigerator-freezer. Otherwise, fire or personal injuries may occur due to improper operation.
> Do not ground the refrigerator-freezer through the coal gas pipe, power supply pipe, telephone line or lightning rod. The above connection may cause an electric shock or other hazards.
> Do not touch any electrical parts such as the power plug or operate any switch with a wet hand; otherwise, an electric shock may occur.
> Do not put a container with water or heavy objects on the refrigerator-freezer. Falling objects may cause personal injuries, and spilled water may cause reduced insulation, resulting in an electric leakage or electric shock.
> Never insert metal objects such as iron nails and iron wires into any vent, gap, or air outlet of the refrigerator-freezer, as this may cause electric shocks or injuries by accidental contact of these objects with moving parts.
> It is not allowed to drag, pull, wind and bind the power cord, or damage the power cord plug.

Damaged power cords or plugs may cause fire or electric shock.

> The power cord with a loose plug is not allowed, because it may cause fire or electric shock.

> It is not allowed to put glass bottles or canned items in the biomedical freezer, which may be frozen and cracked, causing injury to personnel.

⚠ CAUTION



- Keep the ULT freezer clear of obstruction around it to ensure smooth ventilation.
- The refrigerator-freezer settings shall be checked when the refrigerator-freezer is restarted after a power failure or shutdown. Changes in settings may deteriorate the items being kept.
- Once the power is cut off, the refrigerator-freezer shall stay for more than five minutes before re-poweron, so as to avoid damage to the compressor or the system.
- Check the condenser in time and clean it regularly. A dusty condenser will cause temperature rise or malfunction of the refrigerator-freezer (applicable to models with bottom condenser)
- If the power plug has dust, it needs to be cleaned in time. Improper connection or plug filled with dust may cause heating or ignition.
- Gloves shall be worn during maintenance to avoid directly touching sharp edges or corners and causing injuries to personnel.
- The stored items shall not be contacted directly by hand. Direct contact with the frozen items or the inner wall of the refrigerator-freezer may cause frostbite.
- Hold the handle to close the freezer door so that the door does not pinch fingers.
- When handling or moving the refrigerator-freezer, the tilt angle shall not be more than 30°.



> Be careful not to trip over the refrigerator-freezer when handling it to prevent damage to the refrigeratorfreezer or injury to personnel.

> Do not use the door handle to lift or carry the equipment to prevent damage to the refrigerator-freezer or injury to personnel.

> Do not damage the refrigeration circuit.

> Do not use appliances inside the refrigerator-freezer except for those recommended by the manufacturer.

PRECAUTIONS FOR USE

* When the refrigerator-freezer is running, the left and right sides of it may be hot. This is not a fault but because the condenser pipe is installed to prevent condensation around the shell of the refrigerator-freezer body.
* Before putting items into the equipment, confirm that the temperature in the storage chamber has reached the set temperature, and then put in the items in batches. Do not put in items for more than 1/3 of the volume of the freezer at a time to prevent its temperature from rising too much.
* The displayed temperature of the equipment is the temperature at the temperature sensor in the cabinet. When the equipment just starts to run, the displayed temperature is somewhat different from the actual temperature at the center of the equipment. However, after the equipment enters a stable status, the displayed temperature will gradually approach the actual value.
* The freezer is designed with a testing hole so that the testing line inside the freezer can be led out for testing. After the testing line is pulled out, it is necessary to plug the testing hole again with thermal insulation material, otherwise the temperature in the refrigerator may not reach the set temperature and cause condensation around the outside of the hole (applicable to refrigerators with testing holes).
* Please use diluted neutral cleaner to clean the equipment. Do not use brushes, acid, gasoline, soap powder, polish or hot water to clean the equipment; otherwise, the painted surface and plastic/rubber parts may be damaged. Special care must be taken not to use volatile solvents such as gasoline to wipe plastic/rubber parts.
* When the refrigerator is not in use for a long period, cut off the power supply and turn off the battery switch (applicable to refrigerators with batteries).
* Try to reduce the opening time of the door each time when you take or put items to avoid large impact on the temperature inside the refrigerator.
* After the door is opened, the temperature in the biomedical freezer will rise sharply in a short time, which is normal, and it will return to set temperature of normal operation after the door is closed.
* After the refrigerator-freezer runs for a period of time, a layer of frost is formed on the inner wall and evaporator in the freezer. If the frost layer is too thick, it will affect the refrigeration effect of the refrigeratorfreezer and increase power consumption. Therefore, after a period of time, when the frost layer reaches 5 mm, the attached shovel shall be used for defrosting.
* Before defrosting, the frozen items in the biomedical freezer shall be taken out and placed in an environment suitable for storage, so as not to damage the items due to temperature rise.
* There are many refrigerating coils in the biomedical freezer. The frost from the inner wall shall not be removed by sharp tools such as knife, ice chisel or screwdriver. The inner wall shall not be scratched during defrosting, or the refrigerator-freezer will fail.

HANDLING

❶ Protect the product in moving it, please move it by forklift.

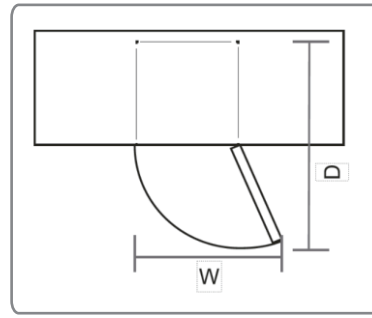
❷Remove all packing materials and bottom cushion, the move into house for placement.

❸ After moving it to appropriate location, wait for 24 hours before power on.

DOOR SPACE REQUIREMENTS

The unit's door must be able to open fully as shown.

W×D ≥1622 mm*1672 mm (Product model 1/ model 2)



PRODUCT INSTALLATION

Installation Environment

- For indoor use. It is forbidden to install the e refrigerator-freezer in the open air.
- Ambient temperature: 16–32°C. The optimal temperature range is 18–25°C. Use an air conditioning system if necessary.
- **Ambient humidity:** below 80%Rh. The humidity shall be less than 60% Rh if the maximum ambient temperature is 32 °C.
- **Pollution degree:** (2), environment with large amount of dust shall be avoided.
- Avoid mechanical swinging or vibration.
- **Altitude of working position of biomedical freezer:** lower than 2000 m.
- **Input voltage:** within 115V~±10%/60Hz.
- **Overvoltage grade of product:** 2
- **Product waterproof level:** IPX0
- The refrigerator-freezer is sensitive to ambient temperature. The refrigerator-freezer will not operate properly if installed in an environment other than those described above. Please use it after improving the environment.

Installation Site

- It shall not be installed in a narrow and closed space. The door body of the room where the freezer is placed shall not be smaller than or lower than the freezer, or at least the normal access of the equipment shall be ensured, so as to avoid maintenance difficulties in the event of equipment failure and causing damage to the stored items due to failure of repairing the equipment in time.
- The ground for installation must be solid and flat, non-combustible and able to withstand the weight of the equipment during operation.
- Good ventilation, no exposure to direct sunlight.
- Each freezer shall be provided with an independent power socket. Please ensure that the power socket carries a current of ≥ 10 A and that the plug is firmly connected to the socket.
- Check the working voltage before use. A voltage regulator suitable for the equipment load shall be considered for use in areas with unstable voltage. The voltage regulator power shall be more than 4000 W to ensure that the input voltage requirements in the installation environment are met.
- The equipment shall be grounded securely. If the power cord socket is equipped with a grounding wire, check that the grounding is good before use. If the socket is not equipped with a grounding wire, be sure to have a professional engineer install the grounding wire.

WARNING

Do not connect the grounding wire to a gas pipe, water pipe, telephone line, or lightning rod when grounding the biomedical freezer, otherwise it may cause an electric shock.

The power plug must be accessible after installation to facilitate timely unplugging of the power cord in case of an emergency. Do not block the vent of the biomedical freezer.

CAUTION

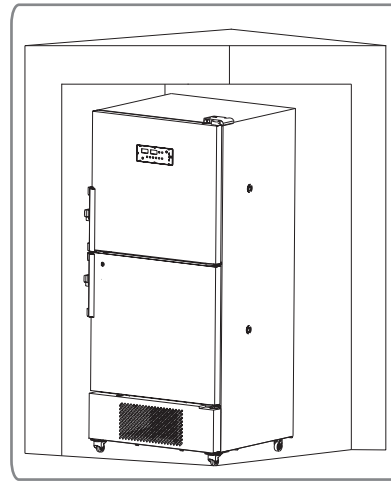
Since the ambient temperature has a large impact on the equipment, the equipment may not operate normally if the above environmental requirements cannot be met. Please improve the environment before using the equipment.

Preparations before Use

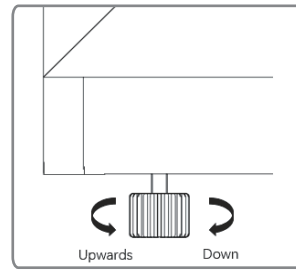
1. Remove all external packing materials of the product (including protective foam in the packing box).

2. Check the accompanying accessories. Please check the items in the box with reference to the packing list. If there is any discrepancy, please contact for after-sales service in time.

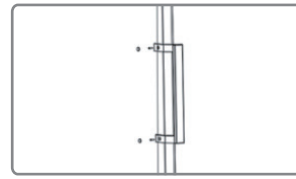
3. Placement conditions: A gap of at least 30 cm should be left around the refrigerator-freezer for ventilation and heat dissipation.



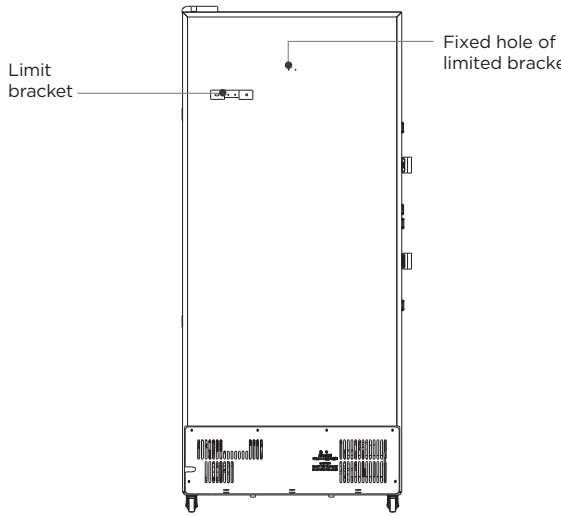
4. Use a wrench or manually rotate the horizontal support foot clockwise to extend the horizontal support foot downward to support it on the ground, ensuring that the storage box does not move while in use (applicable with the support foot item).



5. Remove the handle, align the handle with the hole on the right side of the door, secure the door handle to the door with a screwdriver, and fasten the handle trim cover to the upper and lower ends of the handle.



6. Take out the back bracket in the freezer, screw the back bracket to the back plate first, and then fix the back bracket to the wall (applicable to the back bracket item).



WARNING

Don't put the plastic bags in the place where child come into contact, so as to prevent suffocation accidents.

First Power-up

Follow the steps below when using the equipment for the first time:

After the equipment is placed, leveled and cleaned, it shall be left to stand for more than 24 hours before it is powered on to ensure normal operation.

↓

Connect the power cord to a dedicated socket of appropriate specifications under no-load conditions.

↓

After turning on the power supply, observe whether the display screen lights up and turn on the battery switch.
The current system time can be set. Refer to "Operation for Modifying System Time of Data Recorder" on page 18.

↓

Set the required temperature, do not put any article into the empty freezer, power on and start up, check whether the operating temperature of the equipment can reach the set temperature, and observe the normal operation of the equipment for more than 24 hours to ensure the normal performance of the freezer.

↓

Put items in batches, not exceeding 1/3 of the freezer volume at a time. Ensure that the equipment can be shut down normally for more than 8 hours before putting in the next batch of articles.

↓

Avoid opening the door during the cooling process whenever possible; otherwise, the temperature may rise.

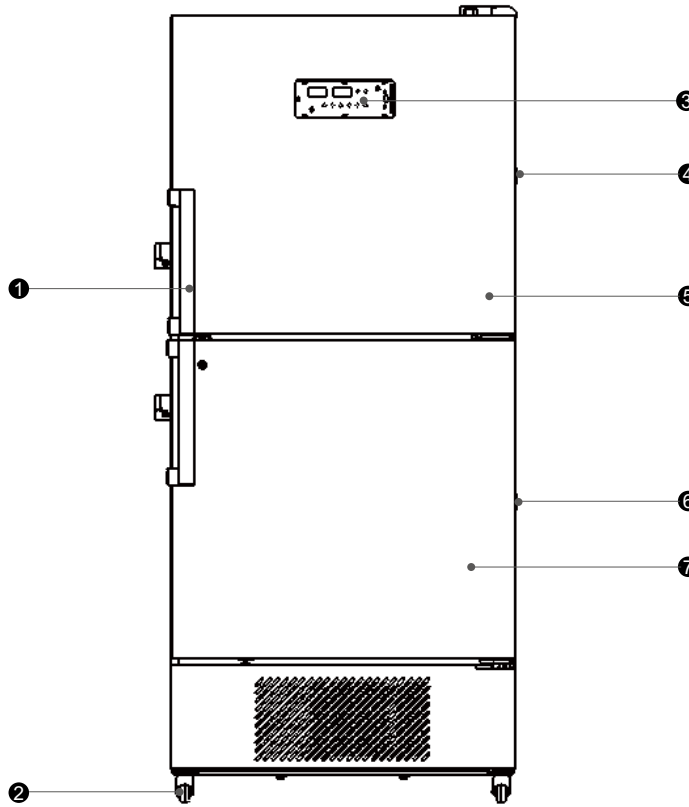
Operation after Power-off

The set value is memorized by the equipment. After recovery from a power failure, the equipment will resume operation with the setting parameters before the power failure.

⚠WARNING	• Once the power is cut off, the refrigerator-freezer shall stay for more than five minutes before re-power-on, so as to avoid damage to the compressor or the system. • When the refrigerator-freezer is going to be left unused for a long time, unplug the power plug and turn off the battery switch (applicable to refrigerators with batteries) to prevent electric shocks, electric leakages, or fire due to aging of the power cord. • If the refrigerator-freezer is going to be left unused in an unsupervised area for a long time, ensure that children do not have access to the refrigerator-freezer and its door is not closed completely.
	• The product shall be managed by a specially-assigned person to check the operation and make records every day. In case of failure or shutdown, the temperature in the refrigeratorfreezer will rise. If it cannot be repaired in a short time, the articles shall be transferred to other places that meet the temperature requirements for storage to avoid damage to the articles. • This product is a medical refrigerator-freezer. Please confirm that the temperature required for stored items is consistent with the temperature range in the freezer, so as to avoid damage to items and economic losses. • Due to the inertia of refrigeration, the temperature and humidity displayed on this product may differ from the actual temperature and humidity inside the freezer, which is normal.
	• All refrigerator-freezers are preservation equipment and it is strictly forbidden to put too many hot items at once. This will cause the compressor to remain running for a long time, and the temperature will drop slowly and affect the service life of the compressor. Items must be placed in batches so that the temperature is cooled down in steps until the desired temperature. • Do not damage the refrigeration circuit. • Do not use electrical appliances without production permission inside the refrigeratorfreezer. • No mechanical tools or other means without the manufacturer's permission shall be used to accelerate the defrosting process.

PRODUCT COMPONENTS AND OVER-VIEW

Appearance Diagram



Product model 1/ model 2 Schematic Diagram

1	Outer door handle	5	Refrigeration chamber door
2	Return pulley	6	Access port
3	Control Panel	7	Freezer chamber door
4	Access port		

Due to product improvement and differences among models, the actual product may be different from the diagram. Please refer to the actual product!

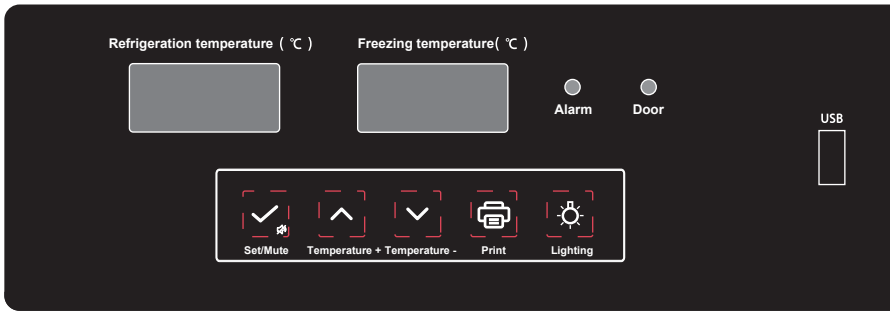
The schematic diagrams are only for brief description of functional parts.

It is recommended that the temperature probe be recalibrated every year.

This access prot is used for third party temperature testing equipment to achieve temperature monitoring inside the refrigerator without opening the door

OPERATING INSTRUCTIONS

Operation and Display Panel



Function introduction

Temperature display window: under normal operation, the upper chamber temperature and lower chamber temperature are displayed respectively in °C.

1. Door indicator

- When the upper chamber door is opened or the lower chamber door is opened, the indicator will be on. After 1 minute, the door opening alarm indicator is on and the buzzer gives an alarm. When the door of the upper chamber is not closed, "door1" is displayed and flashes in the display window of the upper chamber; when the door of the lower chamber is not closed, "door2" is displayed and flashes in the display window of the lower chamber.

2. Alarm indicator

- The indicator goes off when the product is running normally; the indicator lights up when it is running abnormally.

In the automatic lighting state, only the upper chamber has a lighting lamp. The illuminating lamp lights up automatically if the door is opened, and goes out if the door is closed. The user can also manually turn on the illuminating lamp, at this time the illuminating lamp is not controlled by the opening and closing of the door, and will always be lit. Only after pressing the on/off button of the lamp again to disable the manual lighting and switch to automatic lighting, the illuminating lamp can enter the automatic lighting state.

(Optional printer): The printing function is optional for this product. Automatic printing: When the

printing interval Pt (10 by default) is not 0, the printer will automatically print the current data every Pt minutes.

Manual printing: When the key is unlocked and the working voltage is normal, press the “Print” key and the right digital tube will display “P01”. Press the “Up” or “Down” key to adjust the setting range from “P01 to P07”. Press the “Setup/mute” multi-function key or “Print” key to print the data recorded from (1 ~ 7) days before the current date. P00 means canceling this manual printing.

Note : During manual printing, when the print interval Pt (10 minutes by default) is less than the record interval Scy (10 minutes by default), the printer will print according to the record interval; with other print intervals, the printer will print according to an integral multiple of the record interval Scy.

In the parameter setting mode, the parameter value can be decreased. For example, reduce the set temperature 16 when setting the set temperature. When setting the parameter value, pressing and holding the button can reduce the parameter value rapidly.

In the parameter setting mode, the parameter value can be increased. For example, increase the set temperature when setting the set temperature. When setting the parameter value, pressing and holding the button can increase the parameter value rapidly.

Set/Mute button: Press the button when there is no alarm and the button is not unlocked, the ambient temperature can be displayed, and the normal display will be restored after 5s; in the unlocked state, press the button for more than 3 seconds to enter the user menu.

Unlock

In the normal operation state, press and for 3 seconds at the same time. The upper chamber digital tube displays “PS1”, and the lower chamber digital tube displays the parameter code “0000”. Press the key, input the password “0005” (when inputting the user menu password, input “0099” to restore the key lock password to the default value of “0005), and then press to unlock.

Lock

After 30s of no operation after unlocking, or after pressing and for 3 seconds at the same time, the buzzer will sound once, and then the key is locked.

When the buzzer gives an alarm (including over-temperature alarm in the freezer, door open alarm, sensor fault alarm, etc.), when the button is not unlocked, press it for the first time , and the buzzer stops beeping. After displaying the ambient temperature for 5s, it returns to normal display (press the “Mute” key only to turn off the buzzer of this abnormal state alarm; if the fault is not eliminated after mute for 5 minutes, the buzzer will give an alarm again). Press it again , the buzzer will give an alarm, and after displaying the ambient temperature for 5s, restore the temperature and alarm status in the display box.

The button can be used as a setting button when the it is unlocked. In the unlocked state, press this button to display the parameter value and parameter name when in parameter setting mode. If it is pressed for more than 3 seconds, the setting is saved and the normal interface is returned.

3. USB port

- Automatic export of USB data: When the USB flash disk is connected to the USB interface, the buzzer beeps once at the beginning of data transmission. “USb” is displayed in the upper chamber and “on” is displayed in the lower chamber. PDF files of data of the current month and the previous month are generated in the USB flash disk. During data transmission, the buzzer beeps regularly. After data

transmission is completed, “End” is displayed in the lower chamber and it returns to normal display after a few seconds.

⚠ CAUTION

“USb”, “on”, and “end” will not be displayed when the data is small.

4. Automatic export of USB data

- In the unlock state of the keypad, the USB flash disk is connected and no file is in the process of generation. Press and hold ▲ for 3 seconds, the digital tube in the lower chamber will display “d01”. Press ▲ key or ▼ key to adjust: “d00~d12”, press ▼ to cancel this file generation (d00) inside the USB flash disk, or generate PDF files of recorded data from previous (1-12) months. During data transmission, the buzzer beeps regularly. After data transmission is completed, “End” is displayed in the lower chamber and it returns to normal display after a few seconds.

⚠ CAUTION

When the digital tube flashes showing “LoF” as an alarm, the recorder is not started; press and hold the ▲ and ▼ buttons for 3 seconds at the same time, “LoF” disappears and the recorder is started.

5. Close the upper chamber or lower chamber independently

- Used for chamber deactivation, or separate defrosting.
- In the normal operation mode, first unlock the panel, and then press and hold the combination keys of 🖷 and ▲ to close or enable the upper chamber. When the digital tube of the upper chamber flashes and displays “off”, the upper chamber is in the closed state; otherwise, it is in the enabled state.
- In the normal operation mode, first unlock the panel, and then press and hold the combination keys of 🖷 and ▲ to close or enable the lower chamber. When the digital tube of the lower chamber flashes and displays “off”, the lower chamber is in the closed state; otherwise, it is in the enabled state.

6. Recorder time setting instruction

- In the unlocked state, press and hold the combination key “Set/Mute” + “Down” key for 3 seconds to enter the time setting mode. The digital tube displays n, and pressing the “Up” key or “Down” key will sequentially display the corresponding parameters in the table below.

Menu	Menu description	Setting range	Remarks
n	Set the time of recorder module - year	10-50	--
y	Set the time of recorder module - month	1-12	--
r	Set the time of recorder module - day	01-31	--

Menu	Menu description	Setting range	Remarks
s	Set the time of recorder module - hour	00-23	--
F	Set the time of recorder module - minute	00-59	--
Pt	Printing interval	0-240	10min
SCY	Temperature data recording period	0-240 0: Shielded recorder	10min

Press ☑ button to switch parameters n-y-r-s-F-Pt-SCY

Press ⌃ button or ⌄ button to set the parameter value. After setting, press and hold ☑ button to save the parameter.

⚠ CAUTION

Modifying the time and logging interval will cause the recorder data to be cleared and the data recorder to be restarted with the digital tube displaying “LoF”. To eliminate it, see Operations to Start Recorder: When the digital tube gives an alarm and flashes “LoF”, the recorder is not started; press and hold ⌃ and ☑ for 3 seconds at the same time, “LoF” disappears and the recorder is started.

7. Max-Min Query

Operation in key lock state:

- Short press the “Up” key, the left digital tube flashes “MAX1” and “MAX2” three times each, and the right digital tube displays the corresponding MAX1/MAX2 values three times each;
- Short press the “Down” key, the left digital tube flashes “MIN2” and “MIN2” three times each, and the right digital tube displays the corresponding MIN1/MIN2 values three times each;
- Long press the combination key “Set/Mute + Up” for 3 seconds, the buzzer will beep twice, clearing the values corresponding to “MAX1, MAX2” and “MIN1, MIN2”, and the values will be re-recorded.

8. Battery switch

- During normal use of the equipment, it is necessary to turn the battery switch to “ON”, so that the equipment can send out an alarm signal in time after power failure.

9. Remote Alarm function

- The product can be equipped with remote alarm function. When the product gives an alarm, it can output an alarm signal through the remote alarm connector.
- The connector is located in the lower area on the left side of the product, and its carrying capacity is DC 30V/2A.
- The remote alarm connector has normally open NO, common COM and other contacts. It is recommended that the length of remote alarm connecting line shall not exceed 3m.

Note 1: The remote alarm function requires the user to install an alarm device, which is used in conjunction with the remote alarm interface;

Note 2: Pressing the "Mute" key on the display screen can only cancel the alarm sound, and the remote alarm status remains unchanged.

10. Remote Communication Function

- This product can be equipped with RS485 remote communication function, which can output the temperature data, alarm information and other signals in the cryostat to the user monitoring software end through the remote communication connector terminal. The RS485 connector terminal is located in the lower area on the left side of the product.
- The remote communication connector has contacts such as RS485_A, RS485_B and GND. Among them, RS485_A and RS485_B are a pair of differential signals, which can be connected by users using twisted pairs.

11. Battery voltage check

- Press ☑ + ☑, the digital tube of the freezer chamber shows the battery voltage.

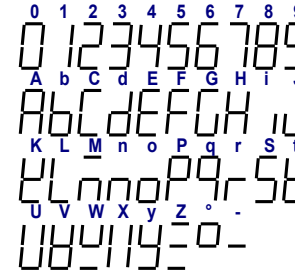
Function setting

User Parameter Settings

In the unlocking state, press and hold the ☑ key for 3 seconds, and the digital tube displays the parameter code "MAX1", thus entering the user menu to adjust the parameters.

1. Use ☑ key to scroll through parameters, and the display order is: MAX1 - MIN1-MAX2-MIN2-CLR-SEt1-H01-L01-SEt2-H02-L02-n-y-r-S-F-Pt-tH1-P1-PS1-b1-b2;
2. Increase or decrease the value using the ☑ and ☑ keys;
3. Press the ☑ key to temporarily store the modified value and return to the display parameters;
4. If you need to modify other parameters, repeat steps 1–3;
5. Press and hold the ☑ key for more than 3 seconds to store the modified parameter and return to the displayed parameter category.

Character set



No.	Menu	Parameter range	Recommended Set Value	Remarks
1	MAX1	----		Maximum value of upper chamber temperature in the current time period
2	MIN1	----		Minimum value of upper chamber temperature in the current time period

No.	Menu	Parameter range	Recommended Set Value	Remarks
3	MAX2	----		Maximum value of lower chamber temperature in the current time period
4	MIN2	----		Minimum value of lower chamber temperature in the current time period
5	CLR	0-1	1	0: Clear the recorded values of the first four parameters 1: Do not clear the recorded values of the first four parameters
6	Set1	2-8	5	Upper chamber temperature set value
7	H01	L01-60 =Set1: Cancel alarm	8.0	High temperature alarm in upper chamber
8	L01	-60-H01 =Set1: Cancel alarm	2.0	Low temperature alarm in upper chamber
9	Set2	Model 1: -15.0--25.0 Model 2: -15.0--40.0	Model 1: -25.0 Model 2: -40.0	Lower chamber temperature set value
10	H02	L02-60 =Set2: Cancel alarm	Model 1: -15.0 Model 2: -30.0	High temperature alarm in lower chamber
11	L02	-60-H02 =Set2: Cancel alarm	Model 1: -35.0 Model 2: -50.0	Low temperature alarm in lower chamber
12	n	----	----	View current date - year
13	y	----	----	View current date - month
14	r	----	----	View current date - day
15	S	----	----	View current date - hour
16	F	----	----	View current date - minute
17	Pt	0-240	10	Printing interval
18	tH1	20.0-50.0	36.0	High ambient temperature alarm value
19	P1	1-5	5	Selection of door heating modes
20	PS1	0-9999	0005	User menu password setting
21	b1	----	----	Hardware version
22	b2	----	----	Software version

Fault alarm description

Code	Fault description
H01	Upper chamber high temperature alarm
L01	Upper chamber low temperature alarm
H02	Lower chamber high temperature alarm
L02	Lower chamber low temperature alarm
H03	High ambient temperature alarm
door1	Upper chamber door opening alarm
door2	Lower chamber door opening alarm
PF	Power failure alarm
BL	Low battery alarm
EE	Display board communication fault alarm
E1	Upper chamber temperature sensor 1 fault alarm
E2	Upper chamber temperature sensor 2 fault alarm
E4	Lower chamber temperature sensor fault alarm
E5	Upper chamber temperature sensor 5 fault alarm
E6	Ambient temperature sensor fault alarm
Er	Recorder not connected
Pr	USB generation file error alarm
LoF	Recorder not started

MAINTENANCE

WARNING

In order to prevent electric shocks or injuries, the power supply must be cut off before any repair and maintenance of the equipment.

Make sure that drugs or suspended particles from the surrounding environment will not be inhaled during equipment maintenance. Otherwise, they may cause harm to human health.

CAUTION

Do not spill water directly on the biomedical freezer body to avoid reduced insulation performance of electrical components and rusting of metal parts.

Do not use hot water and corrosive cleaners or organic solvents to clean the biomedical freezer body.

Do not put heavy objects on top of the equipment to avoid deformation of the equipment due to pressure.

Equipment maintenance

Observe whether the equipment temperature is normal and whether there is an alarm.

Observe whether the door seal is completely fitted, open the box door and remove the frost.

Wipe off a small amount of dust on the Combined Refrigerator and Freezer shell and all accessories with a dry cloth. If the biomedical freezer is dirty, wipe it with a cleaning cloth soaked with a neutral detergent to remove the dirt and wipe off the residual detergent with a wet cloth. Then, wipe it with a dry cloth again.

Clean the frost or ice on the inner wall and the condenser once a month.

Defrosting Inside Combined Refrigerator and Freezer

Frosting may cause a gap between the interior of the chamber and the door sealing strip, resulting in poor refrigeration. The inner door shall be defrosted with an ice shovel attached to the refrigerator-freezer. The following steps are natural defrosting.

Turn off the power supply of the equipment or close one compartment separately.

↓

Take out items from the Combined Refrigerator and Freezer and transfer them to an environment suitable for storage.

↓

Pull out all drawers (if any) and leave the storage box open for a period of time to allow for.

↓

Dry the accumulated water at the bottom of the Combined Refrigerator and Freezer with a piece of dry cloth.

↓

After cleaning the Combined Refrigerator and Freezer, restart the Combined Refrigerator and Freezer.

↓

Put the items back into the fully cooled Combined Refrigerator and Freezer.

⚠ CAUTION

Do not use knife, screwdriver or any other tool with a sharp edge to defrost.

Replacement cycle of parts and components

Parts and components	Model	Suggested replacement cycle
Battery	SN12001.3	3 years
Refrigerator fan	ZBYP-3-8-51	5 years
Condenser fan	YZ-29-44-2-29	5 years

Equipment Out of Service

Shutdown:

Cut off the power supply if the equipment is not used for a long time and stored in an unsupervised area. Clean the inside and outside surfaces of the chamber with a wet soft cloth, let the chamber dry, and then seal it. Make sure to lock the equipment to prevent children from opening the door against accidents such as asphyxiation.

Scrapping:

When the equipment reaches its service life, it shall be scrapped for disposal. It must be handed over to qualified professional recycling organizations for disposal in accordance with local regulations and ordinances. Non-professional personnel shall not disassemble or dismantle the equipment without authorization. Scrapped equipment shall be placed in a designated area inaccessible to children to avoid danger.

TROUBLESHOOTING AND REPAIR SERVICE

Any product may fail. Please observe the operation of the equipment in time during use. If there is any abnormality, please check and handle it according to the table below. If the problem cannot be solved, inform our Service Center in time, and we will do our best to help you and avoid any loss.

Fault	Troubleshooting Method
Refrigerator-freezer not working	• Whether the input power supply meets the requirements
	• Whether the plug and socket are in poor contact
	• Whether the input and control lines are faulty
	• Whether the voltage is too low
The refrigeration effect is not obvious Temperature exceeds the standard value	• Whether too many items are stored or the items are too hot
	• Is the door closed tightly? (The frost between the biomedical freezer and the door sealing strip may damage the door sealing performance)
	• Whether there is direct sunlight or other heat source radiation
	• Whether the door is opened frequently
	• Whether the ambient temperature is too high
	• Are the condenser and filter screen dirty and blocked?
	• Is the temperature set correctly?
	• Are the rubber hole cover and insulation material of the test through hole properly placed?
	• Whether the air duct is blocked
Excessive noise	• Is the refrigerator placed stably
	• Whether a part of the refrigerator body contacts external objects or the wall
The alarm lamp flashes Buzzer alarm	• Whether the temperature in the freezer will rise when the item has just been put in, but it will automatically return to normal after a period of refrigeration
	• The door is not completely closed. This is a door-opening alarm
	• Whether the temperature exceeds the standard value

⚠ NOTE

If the fault cannot be eliminated after the above items are checked, or the fault is different from those listed above, please contact the after-sales personnel.

SPECIFICATION

Name	Combined Refrigerator and Freezer	
Model	Product model 1	Product model 2
Electrical shock protection class	Class I	
Power supply	115V~/60Hz	
Temperature inside the freezer	Refrigerated at 2°C-8°C Frozen at -15°C ~-25°C	Refrigerated at 2°C-8°C Frozen at -15°C~-40°C
Refrigerant	Refrigerating R600a 38g Freezing R290 70g	Refrigerating R600a 38g Freezing R290 70g
Volume	506L (0.506m^3)	
Rated current	4 A	4 A
Weight	140kg	140kg
Shelves/Drawers (Load bearing)	Refrigerator 3 shelves (18kg) Freezer 6 drawers (9kg)	Refrigerator 3 shelves (18kg) Freezer 6 drawers (9kg)
Noise	58dB(A)	58dB(A)
Product dimensions (W * D * H)	866*811*1920mm	

Description of technical parameters:

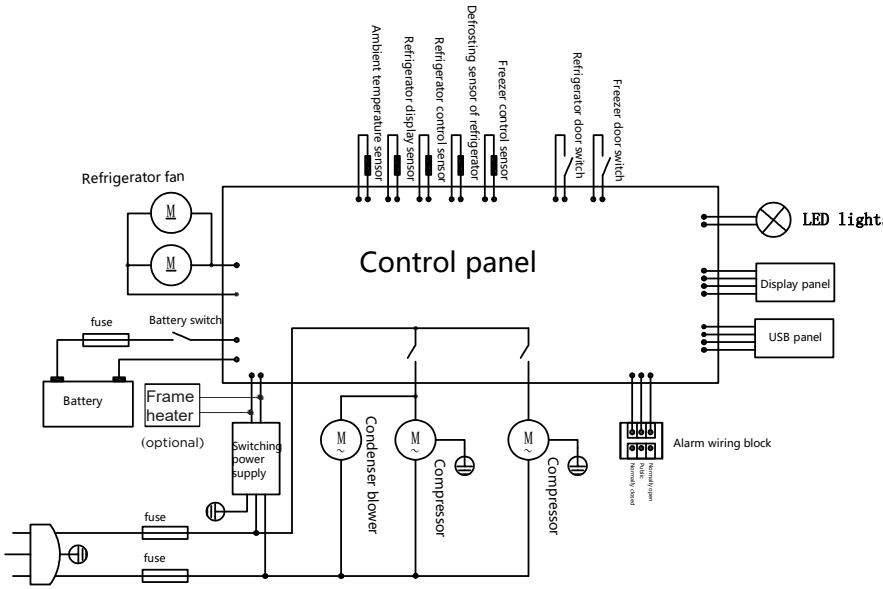
The technical parameters in this table are measured under standard conditions. After the parameters are changed due to product improvement and technical update, no further notice will be given, which shall be subject to the nameplate attached to the biomedical freezer.

PACKING LIST

Model	Product model 1	Product model 2
User manual	1	1
Keys	2	2
Handle	2	2
Shelf	3	3
Shelf support	12	12
Drawers	6	6
Padlock suit	2	2
Label holder	3	3
Back bracket	1	1

Note: External padlock and handle optional accessories shall be subject to physical configuration.

ELECTRICAL PRINCIPLES



Product model 1/ Product model 2

Note: Some models have no running capacitor and condenser fan, please refer to the actual product.


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