skcbiotech™

USER MANUAL

ULT Freezer User Manual

U Series · −40 ~ −86℃

U-50 · U-70 · U-80

Cascade dual compressor · LCD touch controller

Read this manual completely before use and keep it for future reference.

SKCBIOTECH Co., Ltd. · Images may differ from the actual product.

ULTRA-LOW TEMPERATURE FREEZER



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From safety instructions to installation, controller operation, maintenance and specifications, in order.

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00 Product Overview

Ultra-Low Temperature Freezer U Series

An ultra-low temperature freezer for long-term storage of samples such as specimens, vaccines and cells at −40 to −86℃.

Digital temperature control

Microcomputer control, −40 to −86℃

Multiple protections

Delayed start, overheat protection

Dual compressor

Cascade two-stage refrigeration system

Dual insulation · Doors

PU foam + VIP vacuum insulation, inner doors

Intended use

For sample storage only. Safety is not guaranteed for other uses.

Do not store

Living organisms or plants, flammable or explosive substances (not explosion-proof)

Safety Labels and Equipment Labels

These prevent injury to users and others, in three levels of risk.

WARNING Risk of death or serious injury if not followed

CAUTION Risk of injury or property damage if not followed

PROHIBITED Actions that damage the unit or threaten safety

Labels on the unit



High-voltage cover
Shock hazard. Only qualified technicians may open it.



Cold burn hazard
Wear insulated gloves when removing samples.



Pinch hazard
Around door hinges. Take care when opening/closing.



Rotating parts
Around fans and gears. Keep hands away.



Flammable gas
Refrigerant location. Service by professionals only.



Door opening direction
Shows the direction to open with the handle.

Warnings

WARNING Failure to follow may result in death or serious injury

Have a qualified technician install the unit
Install on a firm floor so it cannot tip over.

Use a grounded power outlet
Install a dedicated overload/earth-leakage breaker.

Cut power before repair or service
Always unplug during service.

Unplug immediately if anything is abnormal
Continued use risks shock or fire.

Wait at least 5 min before turning back on
Protects the compressor and refrigeration system.

Check settings after a power failure
Verify the set temperature when restarting.

Pull the plug by its body, not the cord
Pulling the cord may cause a short or fire.

Unplug before moving
Move slowly so it does not tip over.

Unplug when not used for a long time
Wipe off dust and plug it fully back in.

Open and close doors by the handle
Take care not to pinch your hands.

Prohibited ①

Install · Power

Do not place in damp or splash areas
Weakened insulation risks leakage or shock.

Do not install outdoors
Rain may cause leakage or electric shock.

Keep away from flammable/volatile materials
May cause explosion or fire.

Avoid acidic or corrosive gases
Corrosion may cause leakage or shock.

Do not spray water on the unit
May cause shock or short circuit.

Do not use a loose cord or plug
May cause fire or electric shock.

Do not disassemble, repair or modify
May cause fire or injury.

Do not touch electrical parts with wet hands
Risk of electric shock.

Do not insert metal into gaps or outlets
May cause shock or injury.

Do not bend or step on the power cord
Do not leave the cord directly on the floor.

Prohibited ②

Use · Storage

Do not touch samples with bare hands
Frostbite (cold burn) risk. Wear insulated gloves.

Do not store glass bottles
They may freeze and break.

Do not climb on or place items on the unit
It may tip over or spilled liquid may cause leakage.

Do not drill holes in the cabinet
Cooling performance drops sharply.

Do not store very moist items
Heavy frost forms on the evaporator.

Do not store hot items
Cool them close to the inside temperature first.

Keep people, especially children, out
Suffocation risk. Keep doors ajar when left empty.

Do not use with other devices for treatment
This product has no medical treatment function.

Transport and Installation Environment

10 ~ 32℃

Room temperature. 18–25℃ is best. Use air conditioning if needed.

80% RH or less

Room humidity. At 32℃, 60% RH or less is recommended.

220V ±10%

Use a 3 kW+ voltage stabilizer if voltage fluctuates widely.

When transporting

- Use a forklift, not a cart.
- Forks go under the freezer base.
- After unpacking, use the casters.
- Do not tilt more than 45°.

Places to avoid

- Dusty places
- Vibration or shaking
- Narrow, enclosed spaces
- Sunlight, heat, outdoors

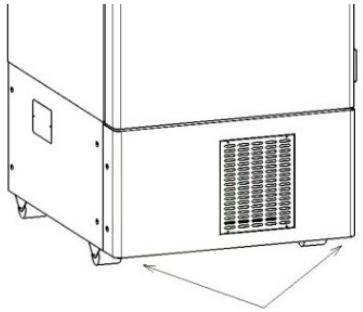
NOTICE ULT units are very sensitive to room temperature. Outside these conditions normal operation is difficult, so improve the environment first.

Installation

1 Remove packaging

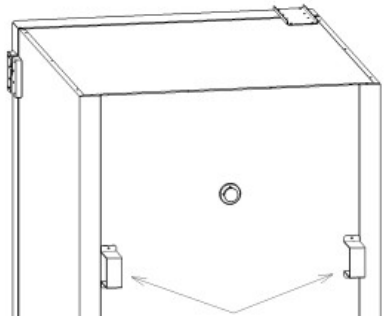
Open the doors to air out the interior. If the exterior is dirty, clean with diluted mild detergent, then a damp cloth → dry cloth.

2 Adjust leveling feet



Turn the leveling feet clockwise until they touch the floor and level the unit.

3 Fix to the wall



Secure the unit to the wall with the two rear fixing handles.

WARNING Use a grounded outlet (not gas/water pipes, phone lines or lightning rods). Keep the plug reachable and do not block vents.

First Start-up

1 Let it stand
After installing or moving, let it stand upright at least 24 h before connecting power.

2 Turn on
Plug into a dedicated outlet and turn on the power switch. Press MUTE if the alarm sounds.

3 Set temperature
Set the required storage temperature (factory setting −80℃).

4 Check it is reached
Confirm the set temperature is reached. If not cooled within 2–3 h, unplug and contact A/S.

5 Observe for 24 h
Check that it cycles on/off normally for at least 24 h.

6 Load in stages
Load items pre-cooled to about −40℃, up to 1/3 of capacity at a time, at least 2 h apart.

NOTICE After a power failure it resumes the previous set temperature (flash memory). Set and displayed values may differ slightly.

Tips for Daily Use

Keep doors open briefly

Open at most once per 30 min, for under 1 min. Wipe the gasket dry before closing.

A warm frame is normal

An anti-condensation heating tube runs around the frame.

Defrost at 5 mm of frost

Thick frost lowers cooling performance and increases power use.

First battery use

When new or after a long stop, run continuously for about 7 days to recharge the battery.

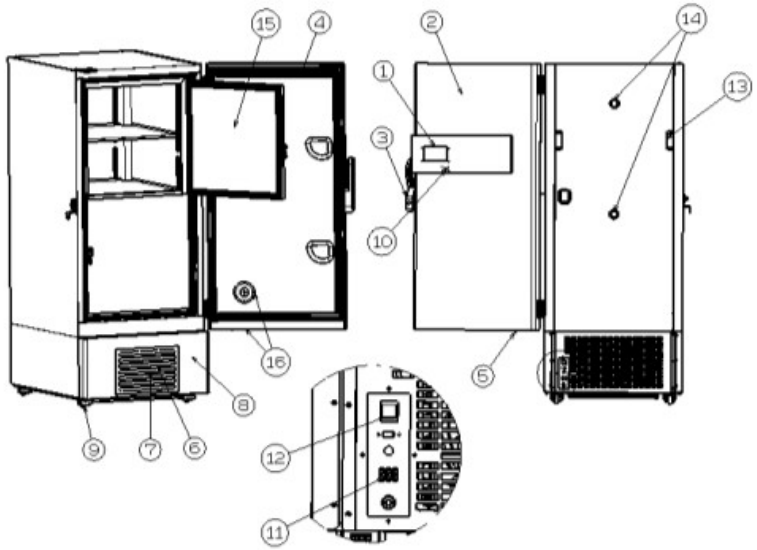
Recommended setting range

For service life and efficiency, set between −40 and −86°C.

Filter · Condenser cleaning

Clean the filter monthly and condenser dust every 3 months.

Parts and Names



1 **Control panel** · Inside outer door; settings/status

2 **Outer door** · Lock the handle fully when closing

3 **Handle** · Used to open and close the outer door

4 **Magnetic door gasket** · Seals cold air; keep clean

5 **Door switch** · Detects outer door open/closed

6 **Intake grille** · Keeps cooling; do not block

7 **Condenser filter** · Behind grille; clean monthly

8 **Recorder space** · For a temperature recorder

9 **Casters** · Level with screw-type feet

10 **USB port** · Download last 10,000 records

11 **Remote alarm terminal** · Sends alarm signal out

12 **Power switch** · I = ON, O = OFF

13 **Fixing handles (rear)** · Wall gap and fixing

14 **Access port** · Rear bottom; sensor/cable pass

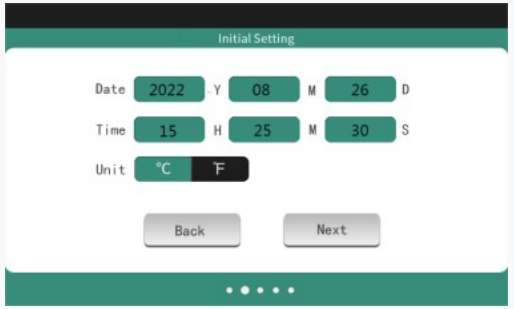
15 **Inner doors** · Open/close quickly, latch

16 **Pressure relief valve** · Eases reopening

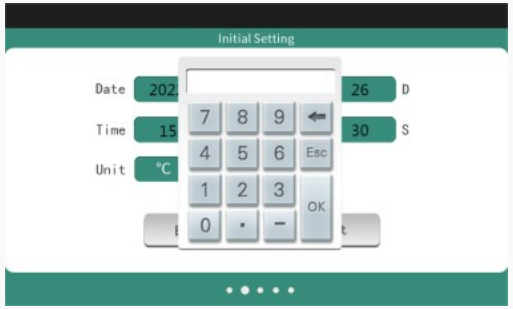
Initial Setup at First Power-on



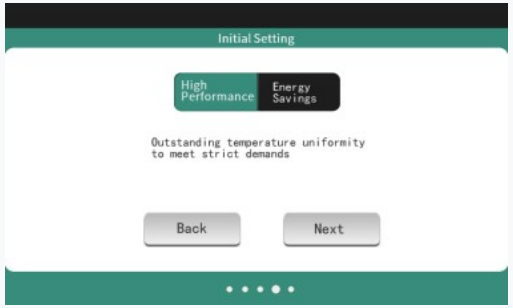
1 Language · Choose and tap Next



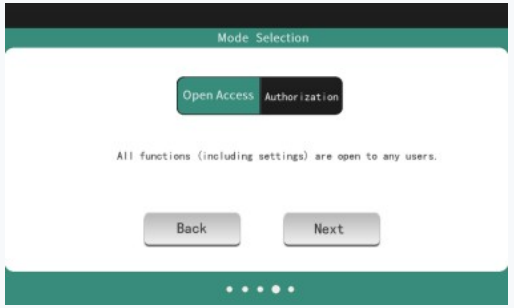
2 Time · Unit · Current time and °C/°F



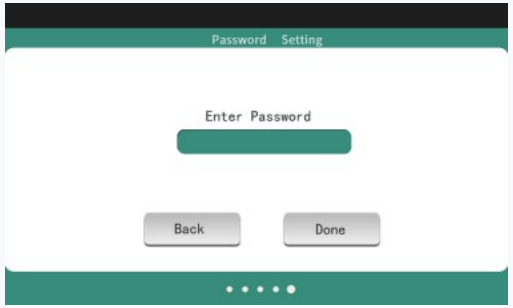
3 Time input · Enter digits and tap OK



4 Run mode · High performance or Eco



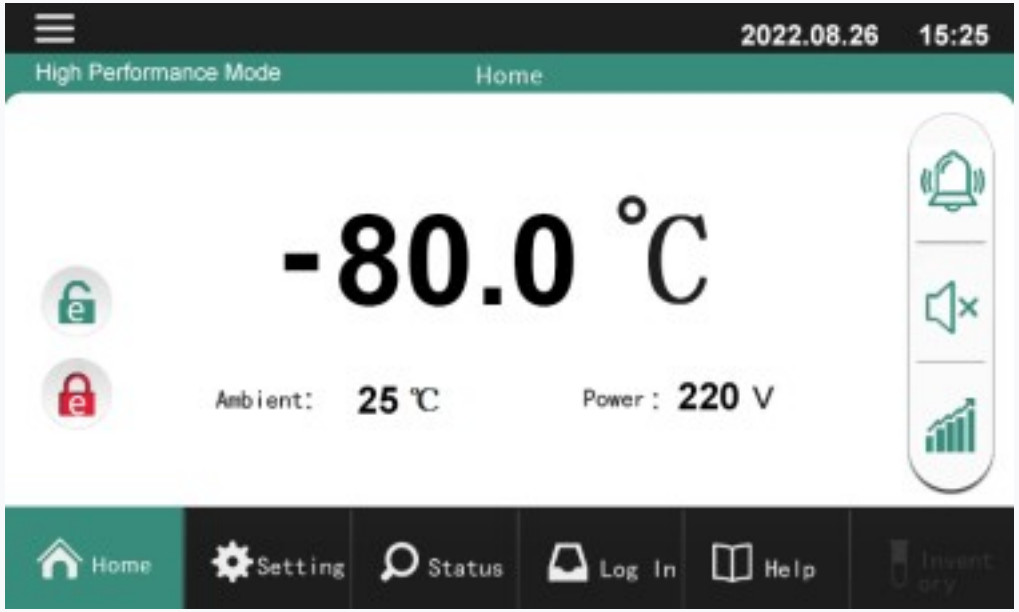
5 Access mode · Open Access or Authorization



6 Password · In Authorization mode, then Done

NOTICE Selected items are shown in green, unselected in black. The initial Authorization-mode password is 123456 and can be changed on the login screen.

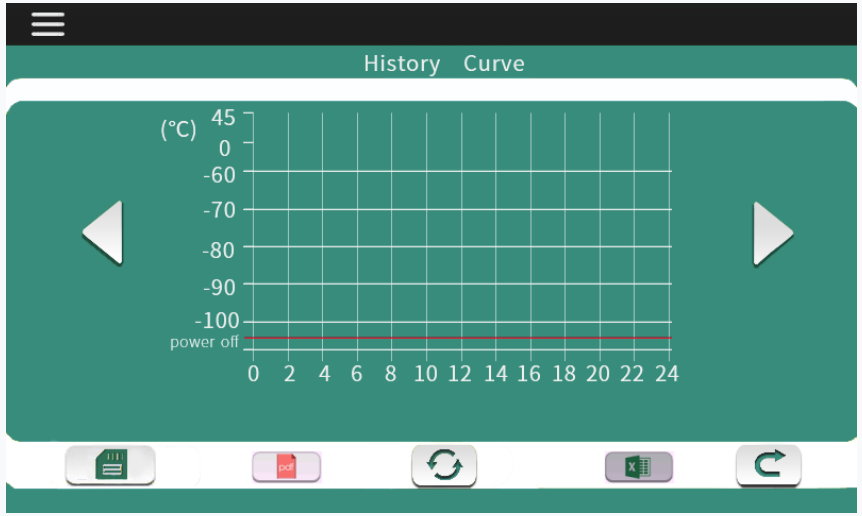
Reading the Home Screen



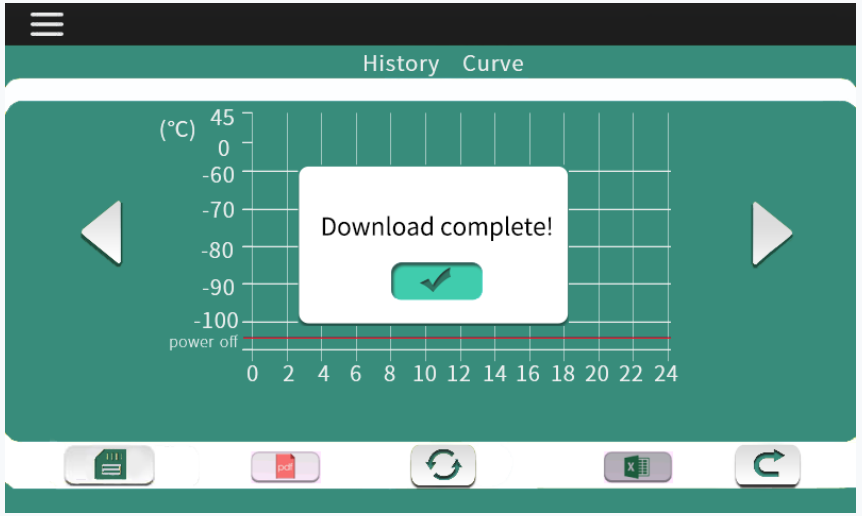
The large number in the center is the **inside temperature**. Bottom left: room temperature; bottom right: supply voltage; top left: run mode; top right: system time.

- **Unlock** · Tap before operating. Locks again after 3 min idle and the icon turns red
- **E-lock (option)** · Tap and enter the password to unlock; shown green
- **Normal** · Green. Tap to view all alarm information
- **Warning** · Flashes yellow with a beep
- **Fault** · Flashes red with a beep
- **Mute** · Silences the alarm beep
- **History curve** · Opens the temperature graph

History Curve and USB Download



History curve · Use the arrows to move the period



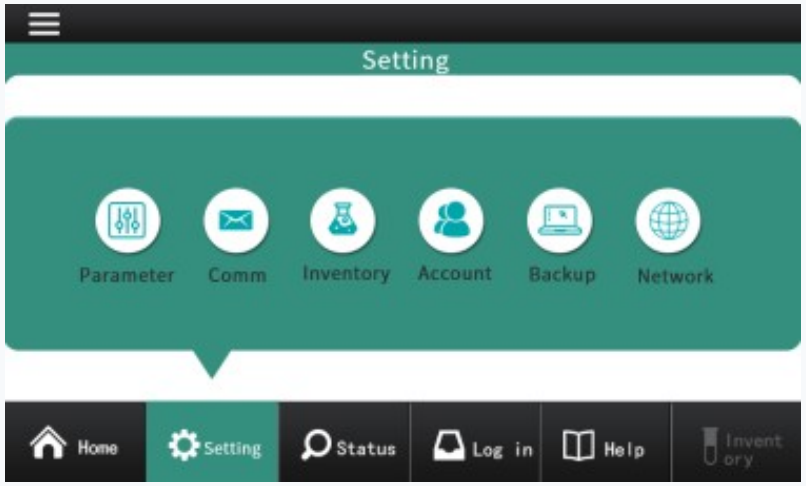
Download complete · Done when "Download complete" appears

Download to USB

- **Excel** · Saves as Excel when the icon lights
- **PDF** · Saves as PDF when the icon lights
- **Download** · Tap and wait until it finishes

The last 10,000 temperature records can be downloaded from the USB port.

Settings and Parameters



Setting page · Parameters, communication (SMS alarm, option)

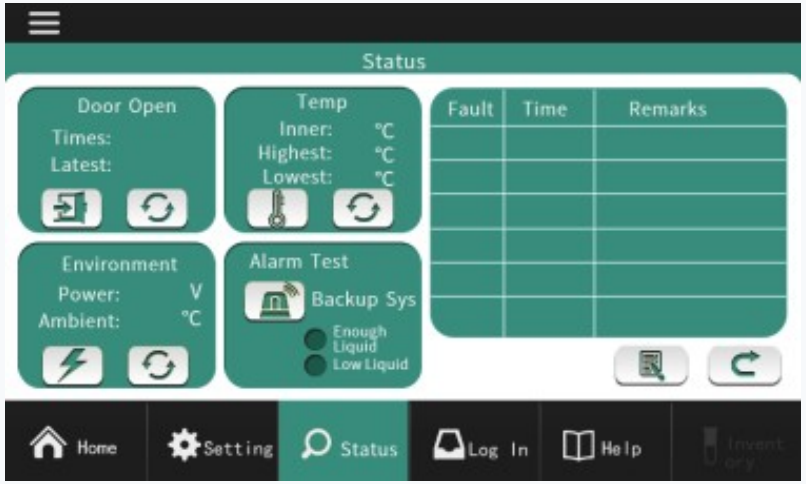
Factory set temperature

−80°C

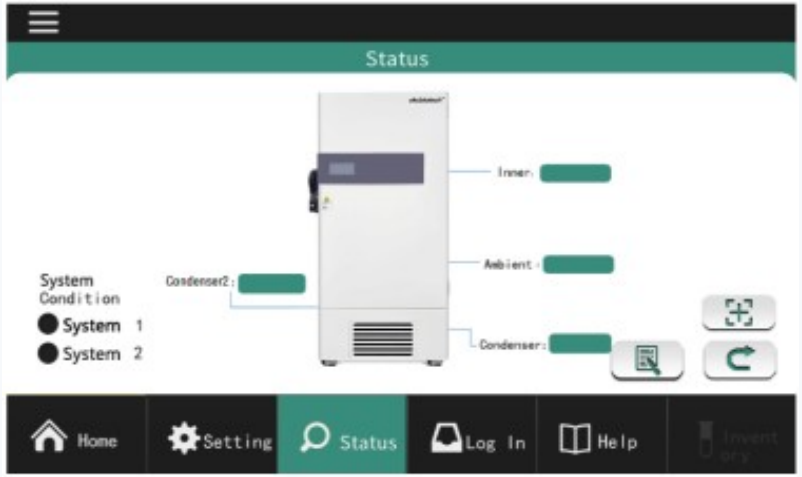
Item	Description
Set Temp	Inside storage temperature
Modification	Sensor calibration · Certified technicians only
High / Low Alarm	Alarm when inside temp is above/below the limits
Data interval	Data logging interval · Default 5 min
Mode	Switch High performance / Eco mode
Brightness	Screen brightness
E-Lock Password	Change e-lock password (option)

In Authorization mode, parameter settings need a password. Do not change other basic parameters.

Status Screen and Operating Status



Status screen · Door openings, 24 h max/min temp., last 6 alarms



Operating status · Compressors (green = on, grey = off), inside/room temp. , System 1/2

Refresh · Update information

Operating status · Go to status screen

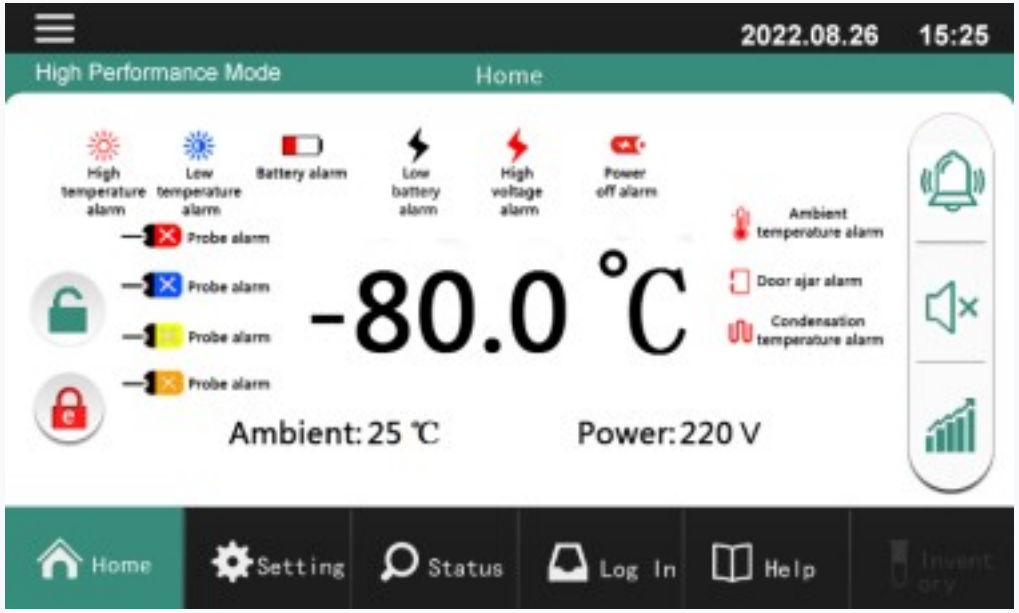
Events · View all alarm records

Alarm test · Check alarm functions

Back · Previous screen

Screen calibration · Done at factory · Do not tap

Alarm Test



Alarm test screen · Open it from the alarm-test icon on the status screen

1 **Switch to main screen**
The screen changes to the main screen for 10 s.

2 **Check warning alarms**
High temp → Low temp → Door open → Battery fault. Flashes yellow with a beep.

3 **Check fault alarms**
Sensor fault → Room temp fault → Input voltage fault. Flashes red.

4 **Test complete**
"Alarm test completed" appears and it returns to the home screen.

NOTICE Run the alarm test regularly to confirm the beep and remote alarm work.

Login · Remote Alarm · Delayed Start



Login screen

- Full access · Enter normal mode
- Authorization mode · Enter authorized mode
- Change Password · Change the password

Remote alarm terminal

- Located at the lower left of the unit.
- Normally open; closes on alarm.

- Rating 220V, 10A
- Also activates if the cord is pulled or power fails.

Compressor delayed start

- Sets compressor I start delay to reduce inrush when power returns.
- Delay between compressors I and II is fixed.
- No change needed if power capacity is sufficient.

Alarm Types ① Sensors · Equipment

Icon	Alarm	When it occurs	What to do
	**Main sensor**	Inside main sensor short/open	Contact the A/S center
	**Room temp sensor**	Room temp sensor short/open	Contact the A/S center
	**Condenser sensor**	Condenser sensor short/open	Contact the A/S center
	**Heat-exch. sensor**	Heat exchanger sensor short/open	Contact the A/S center
	**Clean filter**	Condensing temp rises (clogged filter/fan fault)	Clean filter; A/S if it persists
	**Door open**	Door open longer than set time	Close the door fully
	**High temp**	Inside temperature too high	Check load and door openings

On alarm, the beep sounds and the remote alarm (option) activates. Self-diagnosis is built in.

Alarm Types ② Temperature · Power · Environment

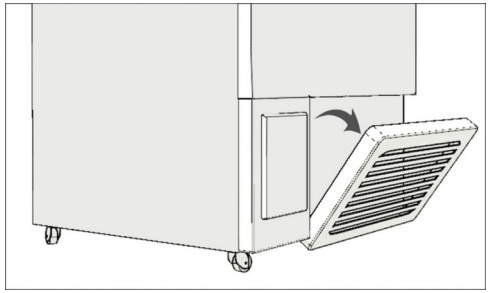
Icon	Alarm	When it occurs	What to do
	**Low temp**	Inside temperature too low	Check set temperature
	**High voltage**	Supply voltage too high	Check the power supply
	**Low voltage**	Supply voltage too low	Check the power supply
	**Power failure**	Power failure or poor contact ("Power off alarm")	Check power and plug
	**Low battery**	Persists after 24 h of operation	Replace battery
	**Room temp**	Room temperature above 32°C	Check ventilation/AC

NOTICE When power returns after an outage, it resumes at the previous set temperature. Set temperature and alarm settings are saved in flash memory.

Cleaning and Condenser Filter

Exterior · Interior (at least monthly)

- Wipe light dust with a dry cloth.
- Heavy dirt: diluted mild detergent, then damp → dry cloth.
- Do not pour water on or into the unit.
- Compressors and mechanical parts are sealed and need no lubrication.
- Take care when reaching near the fan behind the compressor.

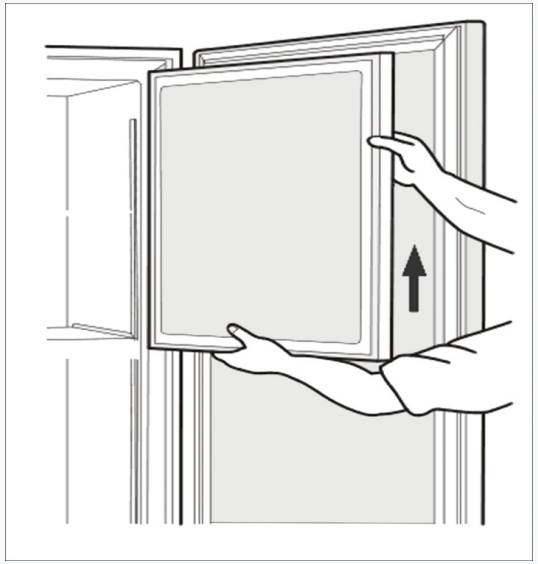


Condenser filter cleaning

1. **Pull the front cover open**
2. **Remove the filter mesh**
3. **Wash and dry completely**
4. **Refit and close the cover**
5. **Check condenser alarm clears**

WARNING Always cut power before repair or maintenance. The condenser surface may be hot; do not touch it.

Defrosting



Remove frost on the inner doors with the supplied scraper. Heavy frost opens gaps in the doors and lowers cooling performance.

1. Turn off any backup cooling system
2. Move samples to another freezer or dry ice
3. Turn off the power switch
4. Open both doors; lift off the inner door
5. Defrost with the outer door open
6. Wipe water off the floor with a dry cloth
7. Refit inner door; start as in First Start-up
8. When cold, return samples and backup

CAUTION Do not scrape frost with sharp tools such as knives or screwdrivers. This damages the unit.

Troubleshooting

Not cold enough

- Is the plug inserted?
- Is supply voltage too low? (Ask an electrician)
- Is the power switch on?
- Is a fuse blown?
- Is it overloaded?

Cooling performance dropped

- Is the room too hot?
- Are inner and outer doors fully closed?
- Is frost or ice on the door gasket?
- Is the intake grille/filter clogged?
- Is the set temperature correct?
- Is it near sunlight or a heat source?
- Are cable-port cover and insulation in place?

Still not solved?

Do not disassemble. Call the A/S center (+82-42-931-0228) with the model, serial number and alarm details.

Disposal and Options

Disposal

- Qualified personnel handle it per the required procedure.
- Always remove the cabinet doors to prevent suffocation.
- If left outdoors, keep children away and doors ajar.

Long periods of non-use

- Remove all samples.
- Turn off the power and battery (option) switches.
- Unplug the power cord.

Options

- Freezer racks · Organize small items (adjustable shelf height)
- Temperature recorder (data logger)
- E-lock · SMS alarm (communication)

Specifications

Based on 2026 catalogue

Item	U-50	U-70	U-80
Size (W×D×H, mm)	880 × 1,090 × 1,995	1,229 × 1,012 × 1,995	1,175 × 1,075 × 1,990
Capacity	588 ℓ	728 ℓ	838 ℓ
Racks	16 (4×4)	16 (5×5)	20 (5×4)
Weight	250 kg	283 kg	288 kg
Temp. range	−40 ~ −86℃	−40 ~ −86℃	−40 ~ −86℃
Cooling	Direct cooling	Direct cooling	Direct cooling
Compressor	Secop SC21G × 2	Secop SC21G × 2	Secop SC21G × 2
Refrigerant	R4001 Mix Gas	R4001 Mix Gas	R4001 Mix Gas
Rated power · Consumption	220 VAC 60Hz · 1,500 W	220 VAC 60Hz · 1,500 W	220 VAC 60Hz · 1,500 W

Common: double insulation (rigid PU foam + VIP) · Pt100 sensor · LCD touch controller · Noise 55 dB[A] · Specifications may change without notice for product improvement.

U-50 Detailed Specifications · Contents

Item	Details
Inner size	606 × 738 × 1,310 mm
Exterior · Interior	Painted steel · Stainless steel
Inner doors	Stainless steel, 2 doors
Shelves	3 adjustable stainless · 586 × 689 mm · 40 kg each
Cable ports	Ø25 mm, 2 at rear
Evaporator · Condenser	Tube type · Tube-plate type
Refrigerant charge	R4001, 320g
Battery	Lead-acid DC 12V 7,000mAh, auto-charging

Performance	Value
Cooling performance	Center −86°C
Control range	−40 ~ −86°C
Noise	55 dB[A]

Room 32°C, no load · noise at 20 dB background

Package contents	Qty
User manual · Defrost scraper	1 · 1
Shelves · Buckles	3 · 12
Positioning plate · Key	2 · 2

Customer Support

A/S · Product inquiries

042-931-0228

When contacting us, tell us the model, serial number and the alarm shown on screen so we can help you faster.

Head office	55-12, Techno 11-ro, Yuseong-gu, Daejeon, Korea
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Website	www.skcbiotech.co.kr
IoT monitoring	monitor.skcbiotech.co.kr