

Instruction Manual

COOL ALASTAR

《Refrigerator-Freezer Switch Type》

DCA-B120RF

Japanese Medical Device Certification Number:21900BZX00014000

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1. Precautions for Safe Operation

It is imperative that the user complies with this manual as it contains important safety advice.

Items and procedures are described herein for the correct and safe operation of this unit. Following the precautions as advised will prevent possible injury to the user and other persons.

Precautions are illustrated in the following way:



WARNING

Failure to observe WARNING signs could result in a hazard to personnel possibly resulting in serious injury or death.



CAUTION

Failure to observe CAUTION signs could result in injury to personnel and possibly damage to the unit and associated property.

Explanation of symbols:



Denotes caution.



Denotes a prohibited action.



Denotes an instruction that must be followed.

Be sure to keep this manual in a place accessible to users of this unit.













Labels on the unit















This mark is labeled on covers where high voltage electrical components are enclosed to prevent the electric shock. Covers should be removed by qualified engineers or service personnel only.



Warning

-  **Only qualified engineers or service personnel should install the unit.** Installation by unqualified personnel may result in electric shock or fire.
-  **Install the unit on a sturdy floor.** If the floor is not strong enough, or if the installation site is inadequate, the unit may fall or tip over and cause injury.
-  **Use a grounded (earthed) power supply outlet** to prevent electric shock. If the power supply outlet is not grounded, a qualified engineer will need to install a ground.
-  **Never ground the unit through a gas pipe, water main, telephone line, or lightning rod.** Such grounding may cause electric shock in the case of an incomplete circuit.
-  **Use a dedicated power source** as indicated on the rating label attached to the unit. **A branched circuit may cause a fire due to abnormal heating.**
-  **Connect the unit to a power source as indicated on the rating label attached to the unit.** Use of any voltage or frequency other than that on the rating label may result in fire or electric shock.
-  **Do not use the unit outdoors.** Current leakage or electric shock may result if the unit is exposed to rainwater.
-  **Never install the unit in a humid place or where there is likely to be contact with water.** It may deteriorate the insulation, resulting in current leakage or electric shock.
-  **When removing the plug from the power supply outlet, grip the power supply plug,** not the cord. Pulling the cord may result in electric shock or fire from short circuit.
-  **Never damage or break the power supply plug or cord. Do not use the supply plug if its cord is loose.**
-  **Do not touch any electrical parts such as the power supply plug or any switches with a wet hand.** This may result in electric shock.
-  **Remove debris from the power supply plug** before inserting into a power source. A dirty plug or improper insertion may pose a hazard.

 **Warning**

-  **Never install the unit in a flammable or volatile location.** This may result in an explosion or fire.
-  **Never put volatile or flammable substances in this unit.** This may result in an explosion or fire.
-  **Never install the unit where acid or corrosive gases are present,** as current leakage or electric shock may result due to corrosion.
-  **Never put corrosive substances on this unit.** This may result in damage to the components or electric parts.
-  **Do not insert metal objects such as pins or wires into any vent, gap, or outlet for inner air circulation.** This may cause electric shock or injury from accidental contact with moving parts.
-  **Do not climb onto the unit.** This may cause damage to the unit.
-  **Do not touch the condenser directly** when the filter is removed for cleaning. This may result in injury from the hot surface.
-  **Do not touch condenser and evaporator directly.** This may cause injury due to sharp fin.
-  **Disconnect the power supply plug** before Opening moving the unit. Take care not to damage the power cord. A damaged cord may cause electric shock or fire.
-  **Dispose of any water in the evaporation tray completely before moving the unit.** Spilled or splashed water may cause current leakage or electric shock.
-  **Disconnect the power supply plug** when the unit is not in use for long periods.
-  **Do not put the packing plastic bag used in the packaging within reach of children** as it may result in suffocation.

2. Installation

To operate this unit properly and to obtain maximum performance, install the unit in a location with the following conditions

■ A location away from air conditioning

- ⊘ Avoid installing the unit near air conditioners. Direct wind from air conditioners onto the unit will disrupt the cold atmosphere of the cold bench



■ Usable ambient temperature

- ⚠ Use in Ambient temperature 15°C to 30°C. Out of this ambient temperature may cause the inadequate cooling or not to keep low temperature. Especially at the place over 35°C, heat dissipation may cause not only inadequate cooling but also short the life of the unit.

■ A location with a sturdy and level floor

- ⚠ Install the unit on a sturdy floor. If the floor is not strong enough or the installation site is not adequate, this may result in injury from the unit falling or tipping over.
Adjust the leveling feet by rotating them until they make contact with the floor. Ensure the unit level.

■ A location with adequate ventilation

- ⚠ Leave at least 15 cm around the unit for ventilation. Poor ventilation will result in a reduction of the refrigeration capacity.

■ A location not subjected to direct sunlight

- ⊘ Installation in a location subjected to direct sunlight may lead to inadequate cooling.

■ A location without flammable or corrosive gas

- ⊘ Never put volatile or flammable substances in this unit. This may cause explosion or fire.

- Use a power supply plug with ground (earth) to prevent electric shock



Use a power supply plug with ground (earth) to prevent electric shock. If the power supply outlet is not grounded, it will be necessary to install a ground by qualified engineers.

- Connect the unit to a power source as indicated on the rating label



Connect the unit to a power source as indicated on the rating label attached to the unit. Use of any other voltage or frequency other than that on the rating label may cause fire or electric shock.

- Install the unit to operate leakage circuit breaker



Install the unit to operate the leakage circuit breaker. The breaker is attached in the operation panel. Don't put something in front of the operation panel. Obstruction to operate the breaker may cause fire or electric shock

- A location away from heater generating sources



Avoid installing the unit near heat-emitting appliance such as gas ranges or stoves. Heat can cause inefficient refrigeration.

3. Caution for usage

- Before use



The table has been thoroughly cleaned before delivery, but we recommend cleaning it once more to be on the safe side.

- During use



Never put corrosive materials such as acid or alkali where the container is not completely sealed. This could possibly lead to corrosion of evaporator resulting in refrigerant leakage and subsequent loss of cooling ability.

















Do not allow chemicals and other liquids to spill directly onto shelves or inside the freezer. Immediately turn off the power and wipe up any spilled liquid.





Keep everything on the table neat and tidy and ensure air can pass through with sufficient ease. Putting too much on the table or blocking the air ports wildly by plastic tent may cause temperature destabilization.

■ **Always remember the following**

-  **Do not use flammable spray like as lacquer paint, volatile or flammable substances on this unit.** This may cause explosion or fire.
-  Do not allow water to directly contact the unit, and do not use water to wash the unit. This may cause shorts or electric shock.
-  **Do not touch any electrical parts such as the power supply plug or any switches with a wet hand.** This may cause electric shock.
-  **Never damage, break or bundle the power supply plug or cord. Do not use the supply plug if its cord is loose.** Putting heavy object on the cord cause fire or electric shock.
-  **When removing the plug from the power supply outlet, grip the power supply plug,** not the cord. Pulling the cord may result in electric shock or fire by short circuit.
-  Remove dust from the power supply plug periodically. A dusty plug or improper insertion may pose a hazard.
-  If the unit is unplugged or the power to the unit is interrupted, do not restart the unit for at least 5 minutes. This protects the compressor.
-  Periodically confirming a normal operation of the breaker. Disabled breaker cause electric shock
-  **Contact local distributor or manufacturer when the breaker works.** Forcibly turning on may cause electric shock or fire.
-  **Do not insert metal objects such as a pin or a wire into any vent, gap or any outlet for inner air circulation.** This may cause electric shock or injury by accidental contact with moving parts.
-  Do not keep flammable items near the drain evaporating tray on the rear of the unit. This may generate heat and cause fires.
-  **Do not climb onto the unit.** This may cause damage to the unit.
-  **Do not touch condenser and evaporator directly.** This may cause injury due to sharp fin.

-  **Dispose of any water in the evaporation tray completely before moving the unit.** Spilled or splashed water may cause current leakage or electric shock.

-  **Do not put the packing plastic bag used in the packaging within reach of children** as suffocation may result.

-  **Disconnect the power supply plug** when the unit is not used for long periods.

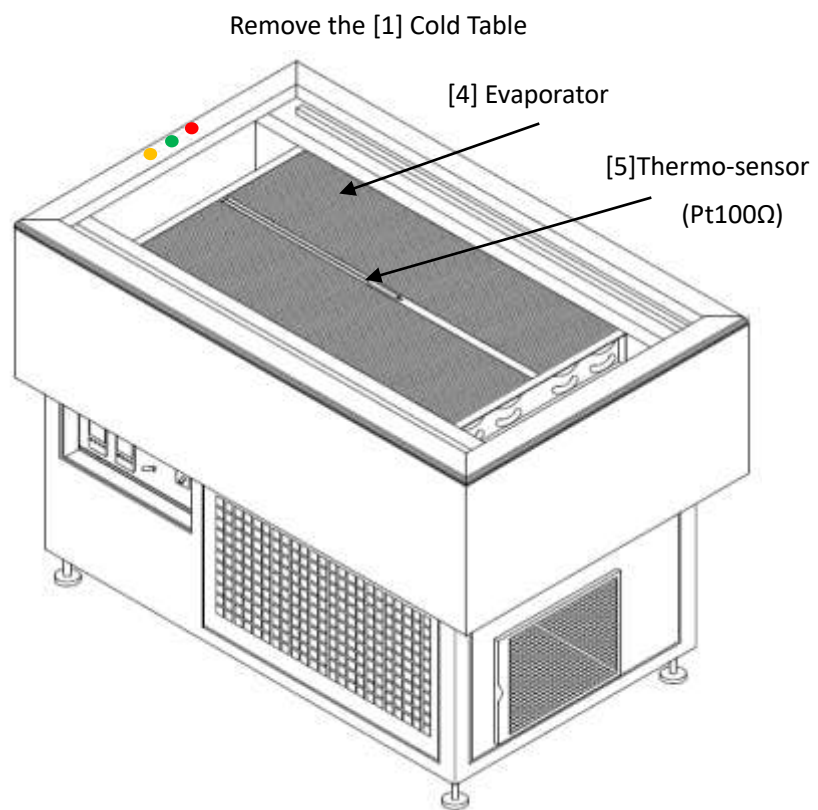
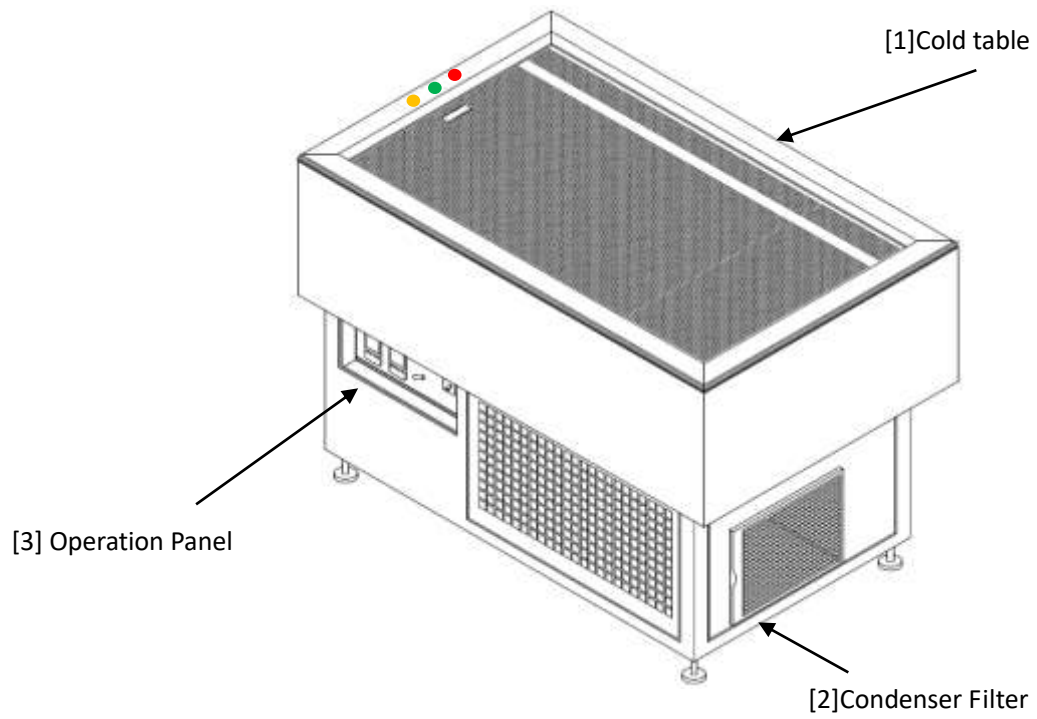
4. Introduction

- [1] Read this manual and its instructions carefully before using the equipment for safe operation.
- [2] Daido does not guarantee safety if the equipment is used for any purpose other than its intended use or if used by any procedures other than those mentioned in this manual.
- [3] Keep this manual in a suitable place to refer to as necessary.
- [4] The contents of the manual are subject to change without notice due to improvements to performance or functions.

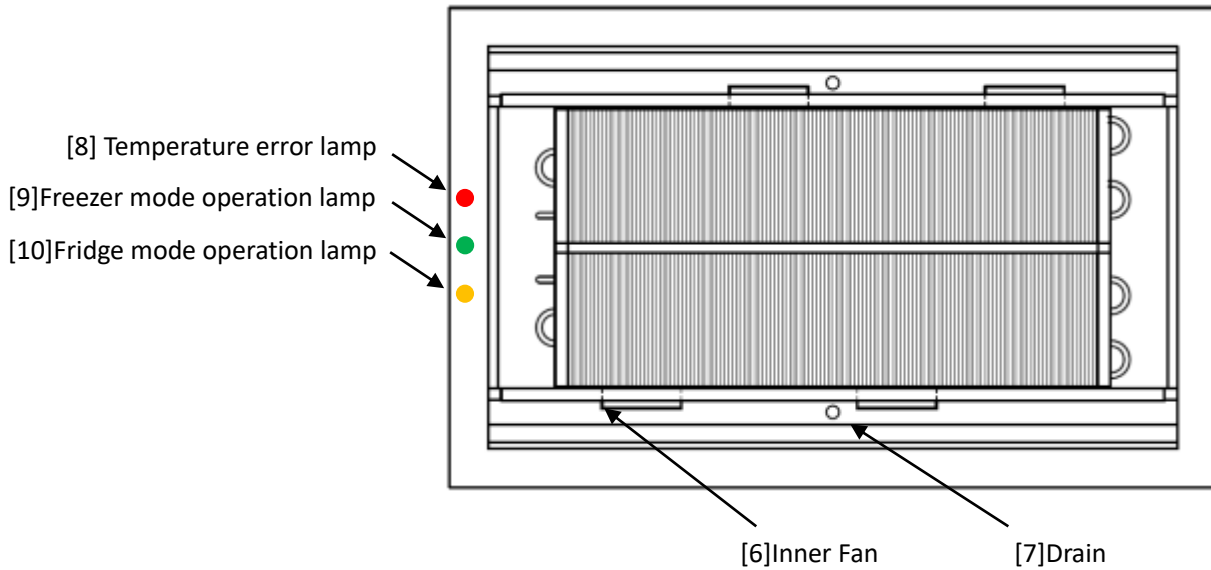
5. Equipment Overview

This equipment was produced in accordance with the Japanese Pharmaceutical Affairs Law and developed for work with or as a temporary stand for pharmaceuticals requiring low temperatures. This refrigerant system enables work at around +4°C or below -20°C by blowing wind up from the table. The temperature is controlled by a refrigerant gas temperature control system.

6. Cold Bench Components

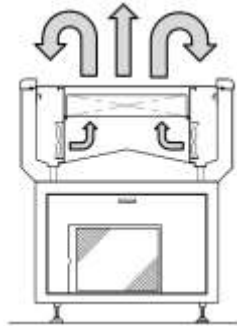


Upper Section View



[1] Cold Table

There are two parts to the table. Cold air is blown from the center main area. There are suction areas on both sides. Do not block the suction with plastic sheets or other materials.



[2] Condenser Filter

Clean this filter once a month. Trouble may occur if the filter clogs with debris.

[3] Operation Panel

The temperature and running status are displayed in this panel. Refer to chapter 6 for details.

[4] Evaporator

Frost may form if the evaporator runs without being defrosted and can cause poor refrigeration and over-cooling.

[5] Thermo-sensor

The sensor controls the temperature of table.

[6] Drain

If the drain hole is blocked, the drain will flood. Remove any debris from the drain hole.

[7] Inner Fan

Inner fans are used to blow up cold air. Cooling efficiency will worsen if a problem results in fan stoppage.

[8] Temperature error lamp (Red)

Lights when a temperature error is detected by the Fridge thermostat or Freezer thermostat

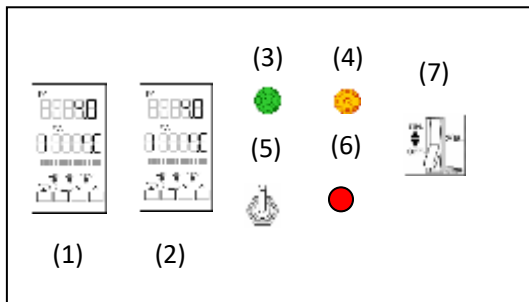
[9] Freezer mode operation lamp (green)

Lights or flashing when Operation switch is up position "Freezer"

[10] Fridge mode operation lamp (Yellow)

Lights or flashing when Operation switch is down position "Fridge"

7. Front Panel Nomenclature



(1) Fridge mode Thermostat with alarm

Controls temperature when Fridge mode is selected with (5) Operation switch. The thermostat controls the blowing up of cold air from the cold table at +4°C. It can detect temperature alarm conditions.

(2) Freezer mode Thermostat with alarm

Controls temperature when Freezer mode is selected with (5) Operation switch. The thermostat controls the blowing up of cold air from the cold table at -20°C. It can detect temperature alarm conditions.

(3) Operation lamp (Green)

This lamp lights when the operation switch is Freezer mode or Fridge mode.

(4) Temperature alarm lamp (Orange)

This lamp lights during a temperature alarm condition.

(5) Operation switch

This switch has three positions: up is “Freezer Mode operation,” the middle is “Stop,” and down is “Fridge Mode operation.”

(6) Buzzer stop button

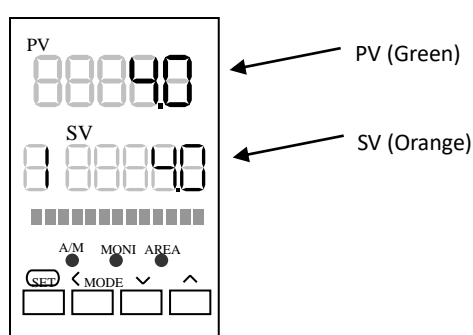
Stops the buzzer. The buzzer sounds again after 60 minutes pushing this button when the temperature is still alarm condition.

(7) Power switch (circuit breaker)

This switch is the main unit switch. Circuit breaker operates and stops the supply of power when the equipment overloads or suffers a short circuit.

8. Before Operating

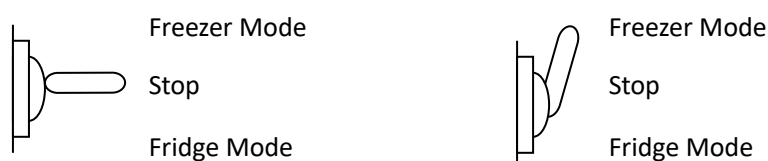
- 1) Insert the plug into an outlet with a circuit of single phase 220V 10A separate single circuit ground.
- 2) Turn (7) Power switch to ON.
- 3) Check the preset temperature about Fridge mode Thermostat (1) and Freezer mode Thermostat (2). The temperature setting (SV) of Fridge mode when shipped from the factory is +4.0°C. And Freezer mode is -30°C for which the compressor continue to work.
- 4) Operation switch (5) is at the middle position "Stop" first time. Select operation switch (5) is upside "Freezer Mode operation," or downside "Fridge Mode operation."



9. Operating Instructions

- Switching Operations from "Stop" (or "Fridge Mode") to "Freezer Mode"

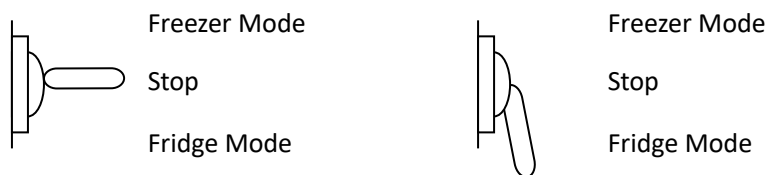
- 1) Move operation switch (5) up to choose "Freezer Mode."



- 2) When a high alarm (alarm setting temperature: -10°C) activates the freezer thermostat, then Temperature alarm lamp (4) and Temperature error lamp [8] on the frame will light for temperature errors, and Freezer mode operation lamp[9] is flashing.
- 3) When Freezer mode operation lamp [9] change from "flashing" to "lighting on" and Temperature error lamp [8] lights off, then operating preparation has completed. Freezer mode operation lamp [9] lights on when a high alarm does not activate or 60 minutes past after choosing "Freezer Mode."

➤ Switching Operations from “Stop” to “Fridge Mode”

1) Move operation switch (5) down to choose “Fridge Mode.”

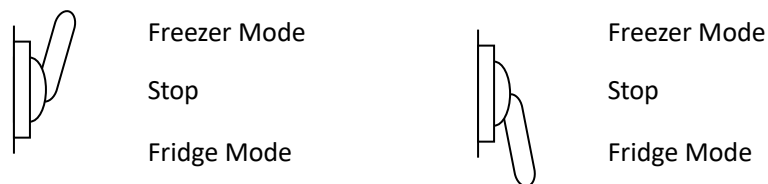


2) When a high alarm (alarm setting temperature: 8°C) activates the freezer thermostat, then Temperature alarm lamp (4) and Temperature error lamp [8] on the frame will light for temperature errors, and Fridge mode operation lamp [10] is flashing.

3) When Fridge mode operation lamp [10] change from “flashing” to “lighting on” and Temperature error lamp [8] lights off, then operating preparation has completed. Fridge mode operation lamp [10] lights on when a high alarm does not activate or 60 minutes past after choosing “Fridge Mode.”

➤ Switching Operations from “Freezer Mode” to “Fridge Mode”

1) Move operation switch (5) down to choose “Fridge Mode.”

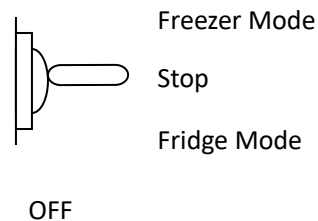


2) When a Low alarm (alarm setting temperature: 2°C) activates the freezer thermostat, then Temperature alarm lamp (4) and Temperature error lamp [8] on the frame will light for temperature errors, and Fridge mode operation lamp [10] is flashing.

3) When Fridge mode operation lamp [10] change from “flashing” to “lighting on” and Temperature error lamp [8] lights off, then operating preparation has completed. Fridge mode operation lamp [10] lights on when a high alarm does not activate or 60 minutes past after choosing “Fridge Mode.”

10. Shut Down

1) Move Operation switch (5) to the middle to select “Stop.”



2) Turn Power switch (7) to OFF.

11. Defrost

We suggest defrosting once a day because frost and ice stuck on the evaporator fin will reduce cooling efficiency.

1) Move operation switch (5) to the middle to select “Stop.”

2) Turn power switch (7) ON to defrost. The heater will vaporize the drain.

- If you turn power switch (7) OFF, the drain will flood from the evaporating dish.
- Turn power switch (7) ON overnight because heavy frost will develop under high humidity conditions, such as during the rainy season.

12. Alarms

1) Temperature alarm

Temperature alarm lamp (4) will light and a buzzer will sound with high or low temperatures.

Initial settings when shipped from the factory

Fridge Mode High temperature alarm: +8.0°

 Low temperature alarm: +2.0°C

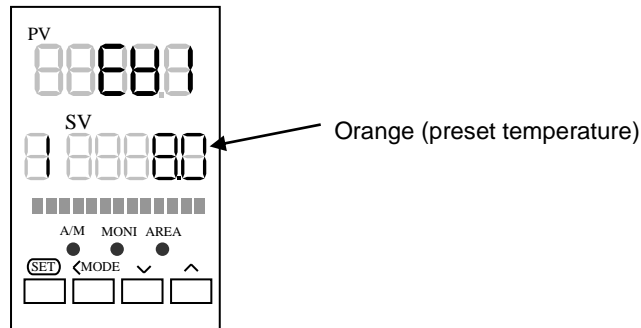
Freezer Mode Only High temperature alarm: -10.0°

* The temperature alarm will not operate during power outages, with the operation switch set to OFF, or if the alarm is cleared.

When a high or low temperature alarm activates in the thermostat, then Temperature error lamp [8] and Temperature alarm lamp (4) will light for high temperature errors or low temperature error.

Confirming Alarm Values

➤ Confirming thermograph alarm value



Pressing the SET button for two seconds or more to display EV1 in the PV value will allow you to confirm the high temperature alarm (8.0°C) in the SV value. Pressing the SET again to display EV2 in the PV value will allow you to confirm the high temperature alarm (2.0°C) in the SV value. Pressing the SET again to display EV3 in the PV value will allow you to confirm the high temperature alarm (-10.0°C) in the SV value. Press the SET button for two seconds or more after you have confirmed the value to return to the original display.

2) Forced Compressor stop (Fridge Mode)

A safety device that forcibly stops the compressor will activate if the compressor reaches the low temperature cut temperature setting 0.5°C to prevent blood bags from frosting. When the temperature rise to 5.0°C, the compressor will restart to cool down.

13. Circuit breaker

Should the unit overload or short circuit, Power switch (circuit breaker) (7) will operate (breaker switch will be in the off position) and power supply will stop. Investigate the cause, resolve the issue, and then reset the circuit breaker.

14. Temperature precision

Temperature precision (temperature error)

Maximum error (allowable value) includes the precision of the sensors, electronic digital indicator controller (thermostat). Calculated values are shown as the maximum possibility of error.

Thermostat

Sensor: Resistance temperature detector, Pt100Ω Class A (1)

Electronic digital indication controller: RKC Instrument, Inc. FB Series

Operating temperature: 4°C

Sensor: $\pm (0.15 + 0.002 \times |4|) \hat{=} \pm 0.158$

Thermostat: ± 0.2

$$\therefore \pm (0.158 + 0.2) = \pm 0.358^{\circ}\text{C} \hat{=} \pm 0.4^{\circ}\text{C}$$

Operating temperature: -20°C

Sensor: $\pm (0.15 + 0.002 \times |-20|) \hat{=} \pm 0.19$

Thermostat: ± 0.2

$$\therefore \pm (0.19 + 0.2) = \pm 0.39^{\circ}\text{C} \hat{=} \pm 0.4^{\circ}\text{C}$$

15. Care

Caution

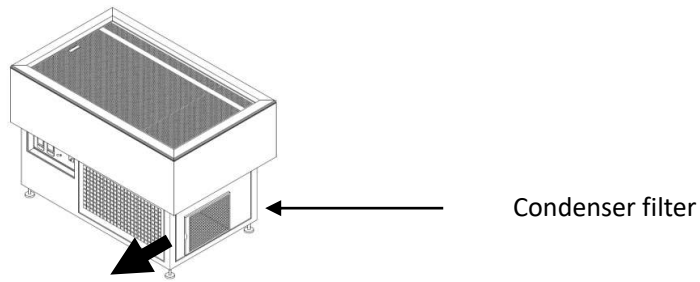
- 1) Always unplug the unit before care and maintenance.
- 2) Do not allow water to directly contact the unit, as this may short circuit or harm the equipment.

Exterior/Interior care

- 1) Use a neutral detergent on a soft cloth to wipe away grime.
- 2) Next, wipe with a cloth soaked in cold or warm water and thoroughly wipe away any remaining detergent.
- 3) Finally, wipe with a dry cloth to remove any remaining water and let the unit dry.

Cleaning the condenser filter

This unit is provided with a condenser filter on the side of the main unit body. Clean the filter once a month, as a clogged filter may shorten compressor life and cause poor cooling. Clean the filter using the steps shown next page.



- 1) Turn OFF the power switch
- 2) Remove the condenser filter as shown in the picture
- 3) Wash the filter with water and dry it naturally.
- 4) Replace the filter.

16. When Not Using

When not using for extended periods:

- 1) Unplug the unit.
- 2) Remove all items stored in the freezer and ensure that it is empty.
- 3) Clean the unit thoroughly as described in 15. Care.

17. Troubleshooting

Before requesting maintenance,

(1) Read the following regarding common issues. (See (10) Alarms should an alarm occur.)

Situation	Solution
The switch is on, but the digital display does not turn on.	<ol style="list-style-type: none"> 1) Is the power system on? 2) Is the unit plugged in? 3) Has the circuit breaker been tripped? 4) Noise may be affecting the thermostat. Turn the switch off and on again.
The digital display works, but unit is not getting cold	<ol style="list-style-type: none"> 1) The air conditioner is blowing cold air onto the table. 2) The temperature on the table does not match the set value. 3) Check the condenser filter where blown air originates. Unplug and clean the filter if there is debris. 4) Check for some obstruction that is preventing the ventilation from drawing air into the condenser. 5) Check for some obstruction that is preventing exhaust heat from being released. 6) Remove frost or ice on the evaporator fin under the table.
The digital display is on but the unit is too cool	The Power Relay is exhausted or broken. You will need to contact your dealer for a replacement SSR.
The unit is loud	Is the floor sturdy and level?
	Are there screws or other parts loose?

(2) If you still cannot resolve the problem, unplug the unit and contact your dealer with the following information. Do not use broken.

- Product model, serial number, and date purchased
- Nature of the problem (be as specific as possible)

*The warranty period for this product is one year after delivery.

18. Specifications

External dimensions	W1200 x D750 x H850 (mm)
Operating Table	W1070 x D620 (mm)
Input power source	1 ϕ 220V 50Hz
Voltage tolerance	\pm 10%
Overvoltage category	Category II
Pollution level	2
exterior	Colored bonderized zinc steel
Interior	SUS304 stainless steel plates
Compressor	1 ϕ 220V 450W, air cooled
Refrigerant gas	R-404(HFC)
Internal fan	4 fans
Thermostat (with alarm)	Electronic digital indication controller: 2 Sensor: Resistance temperature detector, Pt100 Ω Class A (2)
Alarms	Temperature alarm Fridge mode thermostat and Freezer mode thermostat are separate. Initial settings when shipped from the factory Fridge Mode High temperature alarm: +8.0° Low temperature alarm: +2.0°C Freezer Mode Only High temperature alarm: -10.0°
Protectors	The Compressor forced stop function (forces the compressor to stop when there is a low temperature cut). (low temp. cut) Setting when shipped from the factory Low temp. cut setting: +0.5°C
Operating conditions	<ul style="list-style-type: none"> • Operating environment: Indoor use, 2000m or below • Ambient temperature range: 5 – 30°C • Maximum ambient humidity range: 80% RH