PHCbi

Operating Instructions

Pharmaceutical Refrigerator

MPR-715F Series

Please read the operating instructions carefully before using this product, and keep the operating instructions for future use.

See page 46 for all model numbers.

Table of contents

INTRODUCTION

Read the operating instructions carefully before using the appliance and follow the instructions for safe operation.

Handling of Operating Instructions

- ■ PHC Corporation never guarantees any safety if the appliance is used for any objects other than intended use or used by any procedures other than those mentioned in the operating instructions.
- ■ Keep the operating instructions in an adequate place to refer to it as necessary.
- ■ Contact our sales representative or agent if any page of the operating instructions is lost or page order is incorrect.
- ■ Contact our sales representative or agent if any point in the operating instructions is unclear or if there are any inaccuracies.

✧The operating instructions is only for the pharmaceutical refrigerator MPR-715F made by PHC Corporation.

✧The contents are subject to change without notice.

Proposal for safe storage of freezer contents

This pharmaceutical refrigerator can store the medical or biological material in the low temperature environment. We can offer some precautions below to protect the valuable material against accidental temperature rise. Contact our sales representative or agent for the details or installation.

- ▪ Temperature recorder (Option)
- ▪ Battery mounting box (Option)
- ▪ Remote alarm system (Marketed product)

<Intended Use>

This equipment is designed for storage of pharmaceuticals, samples and reagents.

PRECAUTIONS FOR SAFE OPERATION

It is imperative that the user complies with the operating instructions as it contains important safety advice.

Items and procedures are described so that you can use this unit correctly and safely. If the precautions advised are followed, this will prevent possible injury to the user and any other person.

Symbols for warning and caution

The warning and caution regarding to the safety is indicated with the following indications and symbols in this manual and on the product. Always check and follow the indications.

Degree and indication of risk/damage

Precautions are illustrated in the following way. Never fail to follow the instructions since both precautions are important item regarding to the safety.

⚠**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 damage to the unit and associated property.

Symbol shows;

△ This symbol means caution.

⃠ This symbol means an action is prohibited.

● This symbol means an instruction must be followed.

Warning for electric shock (label on the product)

This mark is labeled on the cover in which the electrical components of high voltage are enclosed to prevent the electric shock. Never remove the cover.

Caution for hot surface (label on the product)

This mark is labeled on the surface of which around surface becomes hot. Take care of the burn injury.

Warning and caution for handling the unit

⚠WARNING - Installation ▪ Use ▪ Stop -

	Do not use the unit outdoors. ➢ Current leakage or electric shock may result if the unit is exposed to rain water.
	Only qualified engineers or service personnel should install the unit. ➢ The installation by unqualified personnel may cause electric shock or fire.
	Install the unit on a sturdy floor and take an adequate precaution to prevent the unit from turning over. ➢ 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.
	Never install the unit in a humid place or a place where it is likely to be splashed by water. ➢ Deterioration of the insulation may result which could cause current leakage or electric shock.
	Never install the unit in a flammable or volatile location. ➢ This may cause explosion or fire.
	Never install the unit where acid or corrosive gases are present. ➢ The current leakage or electric shock may result due to corrosion.
	Always ground (earth) the unit to prevent electric shock. If the power supply outlet is not grounded, it will be necessary to install a ground by qualified engineers. ➢ No earth may cause electric shock.
	Never ground the unit through a gas pipe, water main, telephone line or lightning rod. ➢ Inadequate grounding may cause electric shock in the case of an incomplete circuit.
	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.
	Never store volatile or flammable substances in this unit if the container cannot be sealed. ➢ These may cause explosion or fire.
	Do not insert metal objects such as a pin or a wire into any vent, gap or any outlet on the unit. ➢ This may cause electric shock or injury by accidental contact with moving parts.
	Use this unit in safe area when treating the poison, harmful or radiate articles. ➢ Improper use may cause bad effect on your health or environment.
	Turn off the power switch and disconnect the power supply to the unit prior to any maintenance of the unit. ➢ Failure to follow this may cause electric shock or injury.
	Do not touch any electrical parts (such as power supply plug) or operate switches with a wet hand. ➢ This may cause electric shock.

PRECAUTIONS FOR SAFE OPERATION

	Ensure you do not inhale or consume medication or aerosols from around the unit at the time of maintenance. ➢ These may be harmful to your health.
	Never splash water directly onto the unit. Never put containers with liquid on the unit. ➢ Water or liquid may cause electric shock or short circuit.
	Never bind, process, or step on the power supply cord, or never damage or break the power supply plug. Do not use the power supply cord if there is something wrong with it. ➢ A broken power supply cord or plug may cause fire or electric shock.
	Never disassemble, repair, or modify the unit or optional components yourself. ➢ Any such work carried out by an unauthorized person may result in fire, or electric shock or injury due to a malfunction.
	Disconnect the power supply plug if there is something wrong with the unit. ➢ Continued abnormal operation may cause electric shock or fire.
	When removing the power supply 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.
	Disconnect the power supply plug when the unit is not used for long periods. ➢ Keeping the connection may cause electric shock, current leakage, or fire due to the deterioration of insulation.
	If the unit is to be stored unused in an unsupervised area for an extended period, ensure that children do not have access and that doors cannot be closed completely. ➢ Removing doors prevents accidents such as suffocation.
	The disposal of the unit should be accomplished by appropriate personnel. ➢ Leaving the unit in an unsupervised area may cause accidents.
	Do not put the packing plastic bag within reach of children. ➢ Leaving the packing plastic bag may cause accidents such as suffocation.
	Do not position this unit and the other unit so that it is difficult to operate the disconnection of the power supply plug. Failure to disconnect the power supply plug may cause fire if there is something wrong with the unit.

⚠CAUTION - Power supply, re-start, moving, service call -

	This unit must be plugged into a dedicated circuit protected by branch circuit breaker.
	Use a dedicated power source as indicated on the rating label attached to the unit. ➢ A multiple-tap may cause fire resulting from abnormal heating.
	Connect the power supply plug to the power source firmly after removing the dust on the plug. ➢ A dusty plug or improper insertion may cause a heat or ignition.
	Never store corrosive substances such as acid or alkali in this unit if the container cannot be sealed. ➢ These may cause corrosion of inner components or electric parts.
	Check the setting when starting up of operation after power failure or turning off of power switch. ➢ The stored items may be damaged due to the change of setting.
	When moving the unit, contact our sales representative or agent. ➢ The moving by a user may cause damage or injury resulting from tipping over of the unit.
	Prepare a safety check sheet when you request any repair or maintenance for the safety of service personnel. ➢ Copy the “Safety check sheet” and hand it to service personnel after filling the sheet.

ENVIRONMENTAL CONDITIONS

This equipment is designed to be safe at least under the following conditions (based on the IEC 61010-1):

- Indoor use;
- Altitude up to 2000 m;
- Temperature 5 °C to 40 °C
- Maximum relative humidity 80 % for temperature up to 31 °C decreasing linearly to 50 % relative humidity at 40 °C;
- Mains supply voltage fluctuations up to ±10 % of the nominal voltage;
- Transient overvoltages up to the levels of overvoltage category II;
- Temporary overvoltages occurring on the mains supply;
- Applicable pollution degree of the intended environment (pollution degree 2 in most cases).

PRECAUTIONS AND ACTION FOR TEMP. RISE

Precautions for temperature rise

As a preventive measure, take the following steps to protect the valuable storage items in the chamber in case the unit should stop operating as a result of unforeseen events (such as a power failure) and its chamber temperature should rise.

<Important> PHC Corporation guarantees this product under certain warranty conditions. However, please note that PHC Corporation shall not be responsible for any loss or damage to the contents of the product.

Dividing the storage items up between a multiple number of freezers

✧As a preventive measure, divide up valuable storage items and store them in a multiple number of freezers in case an unforeseen event should occur.

Conducting periodic maintenance and inspection in accordance with a maintenance system (contract required)

✧For details on the maintenance system, contact our sales representative or agent.

Installing a battery mounting box (optional component) and preparing to take action to deal with emergencies

✧Install a battery mounting box, and also make preparations to deal with emergencies should the product stop operating as a result of an unforeseen event.

Replacing the battery for power failure alarm (Replacement frequency: Every three years [the F1 and the chamber temperature display will appear alternately on the temperature display]) [page 38]

✧The alarm functions will not work when the battery charge is depleted. Contact our sales representative or agent to replace the battery.

✧The replacement of the battery for power failure alarm is a paid service.

Installing a remote alarm system (When the product is installed in an unmanned location)

✧Connect a remote alarm device (sold on the market) to the remote alarm terminals of the product, and install a remote alarm system to alert the administrator in charge. Contact our sales representative or agent to install the system.

Replacing the fan motor for cooling circuit (Replacement frequency: Every six years [the F2 and the chamber temperature display will appear alternately on the temperature display]) [page 38]

✧When the fan motor for cooling circuit deteriorates, the cooling capability is reduced and the chamber temperature may rise. Contact our sales representative or agent to replace the fan motor for cooling circuit.

✧The replacement of the fan motor for cooling circuit is a paid service.

PRECAUTIONS AND ACTION FOR TEMP. RISE

Action for chamber temperature rise

When the high-temperature alarm or power failure alarm (when the battery mounting box battery is installed) has been activated (in which case, the alarm indicator blinks and the buzzer sounds) as a result of an unforeseen event, take the action described below without delay to protect the storage item.

Checking the causes and taking the necessary action

<Important> Check the cause of the temperature rise and take action without delay to deal with the cause. (“Action for alarm” [page 33])

- If the alarm fails to stop or the chamber temperature fails to drop even after one hour, a machine malfunction may have occurred. Contact our sales representative or agent without delay.
- Transfer the storage items to another refrigerator and freezer.

Action when the product has stopped due to a power failure

If a power failure is responsible for the rise in temperature, check the recovery time from the power failure, and take the appropriate action in accordance with the expected recovery time.

<Action to take when the power failure is of short duration (several minutes to up to one hour)>

- Do not open the doors as this will cause the chamber temperature to rise.
- Reduce the ambient temperature to 25 °C or below.

<Action to take when the power outage is of long duration (one hour or more)>

- Transfer the storage items to another refrigerator and freezer.
- Provide a back-up power source if no other refrigerator and freezer are available.

CHECK OF ENCLOSURES

Before commencing the operation, check the accessories and printed matters enclosed with the refrigerator.

✧Contact our sales representative or agent if anything is missed.

Enclosures	Quantity	Remarks
Key	1 set	2 keys
Clip (large)	2	For temperature recorder
Clip (small)	4	For temperature recorder
Freezer shelf spacer	2	Used 2 spacers
Operating instructions	1	(this one)

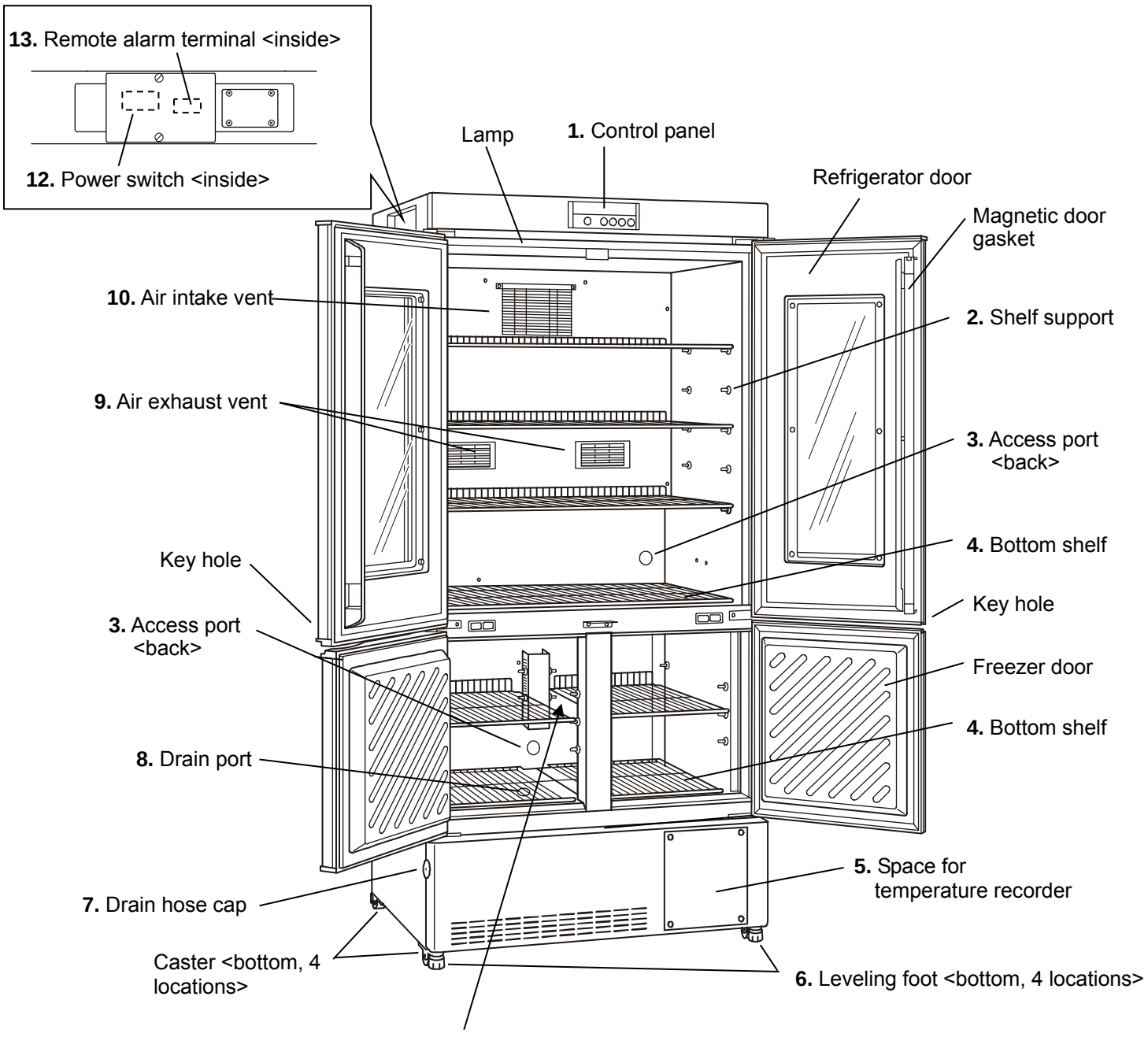
✧The clip (large) are used for attachment of temperature recorder MTR-0621LH (option) or MTR-4015LH (option). Keep them for future use.

✧The clip (small) are used for attachment of temperature recorder MTR-G3504 (option). Keep them for future use.

REFRIGERATOR COMPONENTS

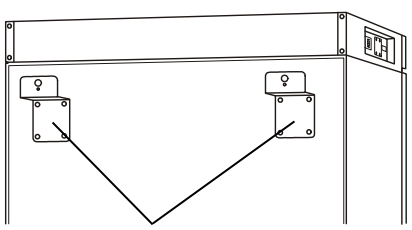
Main body

The function of components with number is described on the next page.



Location for freezer shelf spacer
✧Set the enclosed freezer shelf spacer here to prevent the storage items from falling down.

Back



11. Spacer
(serves as a fixture)

Outer and chamber

1. Control panel <door front, upper>
The chamber temperature and other alarms/functions can be set through the keys on the control panel. The running status can be checked by the temperature display and indicators [page 14 and page 15].

2. Shelf support
These are used to support the shelves. Always set the shelves on the shelf supports firmly.
✧The shelves should be set with the stand edge backside.

3. Access port <refrigerator and freezer chamber>
These ports are used to pass the sensor or cable of measuring equipment, or sensor of automatic temperature recorder (option) to the chamber.
✧Always replace the rubber caps and the insulation to the access port when no use or the rise of chamber temperature or condensation outside the access port may be resulted.

4. Bottom shelf <1 for refrigerator, 2 for freezer>
To protect the storage items, always set the bottom shelf on the chamber bottom.

5. Space for temperature recorder
A temperature recorder (option) is mounted here and the chamber temperature can be recorded automatically [page 44].
✧Contact our sales representative or agent for the installation.

6. Leveling foot <bottom, 4 locations>
This is the bolt for setting the product and adjusting the level on the right and the left. At the installation, extend the bolt until the front casters are away from the floor to set the product.

7. Drain hose cap
This is used to drain the defrost water in the freezer chamber at the time of defrosting. The drain hose is accessible by removing the drain hose cap [page 25].
✧Always replace the drain hose cap after draining.

8. Drain port
This port is used to drain the defrost water in the freezer chamber.
✧Always replace the port cap after draining.

9. Air exhaust vent
This is an air exhaust vent to circulating the air in the refrigerator chamber. Do not block this vent.
✧Blocking this vent may cause unstable chamber temperature.
✧Arrange the storage items not to be subjected to the cold air from this vent to avoid freezing.

10. Air intake vent
This is an air intake vent to circulating the air in the refrigerator chamber. Do not block this vent.
✧Blocking this vent may cause unstable chamber temperature.
✧Do not insert fingers or similar articles into this vent.

11. Back spacer (also used as a fixture)
This spacer keeps the space between the back and the back wall to keep the cooling performance. Also, this spacer is used as a fixture. Fix the product firmly by using a rope or chain.

Switch area (upper left side) Remove the cover when using the power switch or remote alarm terminal
✧After using, always replace the cover.

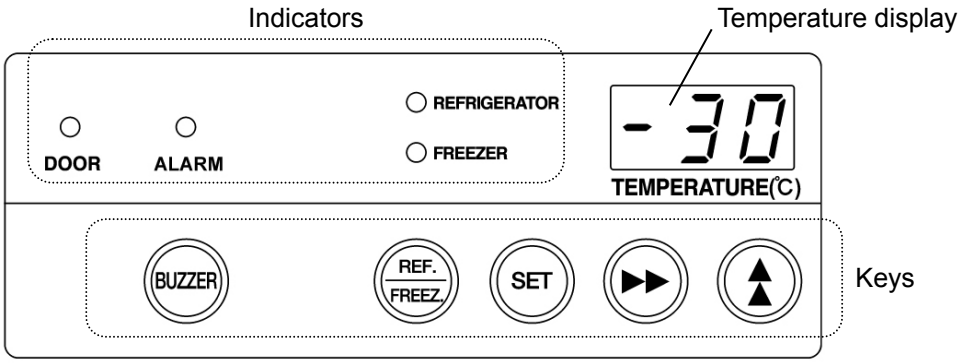
12. Power switch (also functions as a circuit breaker)
This is a power switch of the product. (ON; ”I” , OFF; ”O”)

13. Remote alarm terminal
A remote alarm device (marketed product) can be connected to this terminal. The alarm is noticed to an operator in the remote area by the remote alarm when the product is installed in an unmanned location.
✧Contact our sales representative or agent for the installation.

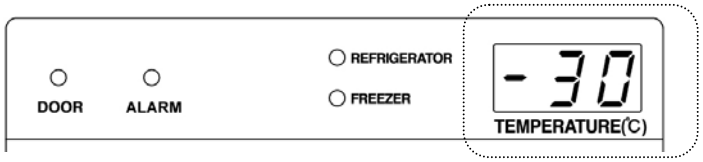
REFRIGERATOR COMPONENTS

Control panel

Details of control panel
The control panel is comprised of temperature display, indicators, and keys.



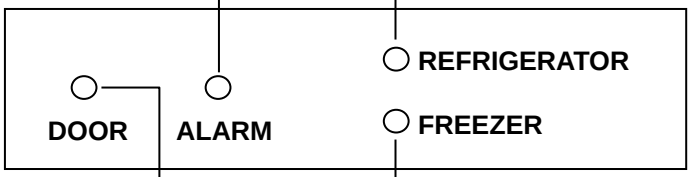
Indication on the temperature display
At normal:
display of current chamber temperature
At temperature alarm:
blink of chamber temperature
At alarm by self-diagnostic:
display of code [page 34].



Indicators

Alarm indicator (ALARM)
Blinking of red LED lamp:
High temp. alarm, low temp. alarm, or 0 °C alarm (refrigerator only) [page 33].

Indicator for refrigerator temperature (REFRIGERATOR)
Lighting of green LED lamp:
This means the refrigerator temperature is displayed on the temperature display.



Indicator for freezer temperature (FREEZER)
Lighting of green LED lamp:
This means the freezer temperature is played on the temperature display.

Door alarm indicator (DOOR)
Lighting of red LED lamp:
The refrigerator or freezer door is open.
✧The buzzer sounds 2 minutes (initial setting) after lighting of door alarm indicator to inform the door open [page 33].

Function of each key

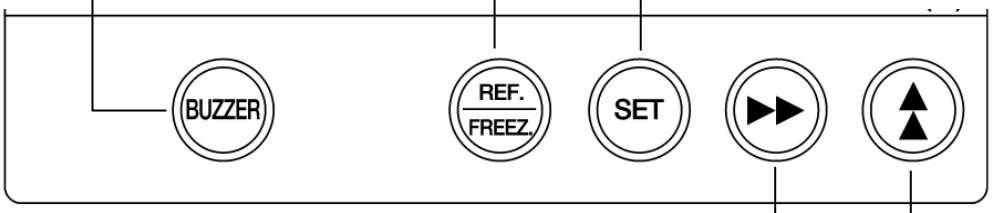
✧The buzzer sounds again after 30 minutes (initial setting) even if the buzzer is stopped by depressing the buzzer stop key (BUZZER) when the same alarm status continues.

✧The alarm indicator blinks and the buzzer sounds when other alarm is occurred in spite of buzzer stop period.

Buzzer stop key (BUZZER)
The buzzer is silenced by depressing this key when the alarm indicator blinks and the buzzer sounds. (The remote alarm cannot be canceled.)

Temperature display changeover key (REF./FREEZ.)
By pressing this key, the displayed temperature is changed alternately; current refrigerator temperature and current freezer temperature.
✧With the changeover of the temperature display, the indicator for refrigerator temperature and indicator for freezer temperature lights alternately.

Set key (SET)
Depress this key to enter the set value during the setting procedure [page 21 to page 30].



Scroll key (▶▶)
At “temperature display mode”:
Depressing this key for more than 5 seconds leads the setting of “lock of chamber temperature setting” [page 22].
At “setting mode”:
Depressing this key leads the movement between the digits to be inputted (blinked digit) on the temperature display [page 21 to page 30].

Up arrow key (▲)
At “temperature display mode”:
Depressing this key for more than 5 seconds leads the setting mode.
At “setting mode”:
By depressing this key, the figure to be inputted (blinked digit) on the temperature display can be changed [page 21 to page 30].
At the setting of “lock of chamber temperature setting”:
By depressing this key, ON/OFF of the lock can be selected [page 22].

✧Temp. display mode: the status that the current chamber temp. is displayed on the temp. display

✧Setting mode: the status that the input on the temp. display is effective by depressing the up arrow key for more than 5 seconds.

INSTALLATION LOCATION

This unit must be installed in a location which meets all the conditions described below.

✧If the unit is installed in a location which does not meet the conditions, its specified performance may not be achieved or malfunctioning and accidents may occur.

A location not exposed to direct sunlight

Avoid any location which is exposed to direct sunlight. Installing the unit in a location exposed to direct sunlight may cause its cooling performance to be reduced.

A well-ventilated (airy) location

In order to ensure ventilation, leave clearances of at least 10 cm around the unit (at the left, right and back). Blocking the ventilation may reduce the unit's cooling performance or cause malfunctioning.

A location away from sources of heat

Avoid any location which is close to a large source of heat (such as a heater or boiler). Installing the unit near a large source of heat may reduce the unit's cooling performance.

A location with minimal changes in temperature

Avoid any location where the ambient temperature is subject to sudden changes. If the unit is installed in a location where the ambient temperature is subject to sudden changes, it will not be possible to achieve a stable cooling performance.

A level location where the floor is capable of bearing the total combined weight (product + optional accessories + storage items)

Install the unit in a location which is not uneven and which is capable of bearing the total combined weight (product + optional accessories + storage items). If the unit is installed where the surface is uneven or where the unit will be inclined at an angle, the unit will be unstable, and accidents or injuries may result and/or vibration or noise may be generated.

A location free of ignitable or corrosive gases

Avoid any location exposed to ignitable or corrosive gases. Ignitable or corrosive gases can cause explosions and/or a fire. Furthermore, corrosion of the electrical parts may cause the insulation to be reduced and result in ground faults and/or electric shock.

⚠CAUTION	Do not install the unit in any location (such as near a waste-water facility) where sulfur compounds and other corrosion-causing substances may be generated. ➢Corrosion of the copper pipes will cause the cooling unit to deteriorate, possibly causing the product to malfunction.

A location with minimal humidity

Install the unit in a location where the relative humidity is less than 80 %R.H. Installing the unit in a very humid location may cause ground faults and/or electric shock.

INSTALLATION

When installing the unit, follow the steps below to secure the unit properly, and also be absolutely sure to connect the unit to ground.

✧In addition, install a ground fault circuit breaker (on the unit's power supply side) which is mandatory under the applicable laws and regulations.

1. Preparations after unpacking

Remove all the tapes used to secure the doors and interior parts, and leave the doors open for a short while for ventilation.

If any surfaces of the outer cabinet are dirty, wipe off the dirt using a cloth moistened with a diluted neutral dish-washing detergent.

✧Using an undiluted solution of a neutral dish-washing detergent may cause the unit's plastic areas to crack. Follow the directions of the neutral dish-washing detergent for the dilution details.

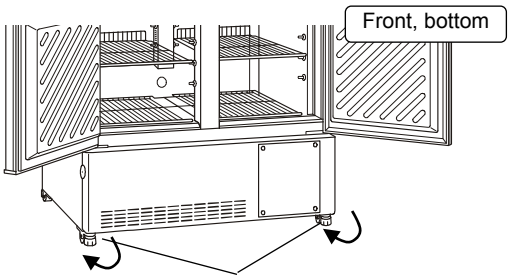
✧After removing the dirt using the diluted neutral dish-washing detergent, be absolutely sure to wipe the surfaces with a cloth dipped in clean water to remove the traces of the neutral dish-washing detergent. After this, be absolutely sure to wipe the surfaces with a dry cloth, allow the surfaces of the outer cabinet to dry out, and then proceed with the installation.

2. Securing and leveling the unit using the leveling feet

Rotate the front leveling feet clockwise until the casters are raised 5 mm to 10 mm from the surface of the floor. (Fig. 1)

✧When the casters are raised from the surface of the floor, the unit is secured. If they are left touching the floor, the unit may inadvertently move out of position when its doors are opened or closed.

In addition, rotate the leveling feet slightly clockwise or counterclockwise, and adjust them so that the unit is level between the left and right.

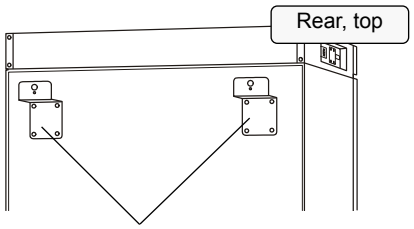


Leveling foot Fig. 1

3. Securing the unit using the wall-fastening brackets

Use the spacers (which are also used to prevent the product from toppling over) on the rear panel of the unit, and secure the unit to a wall with a strong rope or chain available on the market. (Fig. 2)

✧The spacers (which are also used to prevent the product from toppling over) have a dual purpose: To provide a clearance between the product and the wall behind it, and to prevent the product from toppling over.



Spacers Fig. 2

4. Preventing electric shock by connecting the unit to ground

When installing the unit, be absolutely sure to connect it to ground. Grounding is necessary to prevent the electric shock which will arise when the electrical insulation has deteriorated.

✧This unit comes with a 3-pole plug with ground pin. Grounding work is not required in the case of a 3-pole power outlet equipped with a ground contact.

✧If the power outlet is not a 3-pole power outlet equipped with a ground contact, ask a qualified contractor to do the grounding work.

⚠WARNING	Be absolutely sure to connect the unit to ground in order to prevent electric shock. If the unit cannot be connected to ground, ask a qualified contractor to do the grounding work. ➢Failure to connect the unit to ground may give rise to electric shock.
	Do not connect the grounding wire to a gas pipe, water pipe, lightning rod or telephone grounding wire in carrying out the grounding work. ➢Connecting the unit to ground improperly may give rise to electric shock.

START-UP PROCEDURE

To commence the operation (initially or after temporary power off due to the cleaning, maintenance, etc.), follow the procedure below:

✧The operation is resumed automatically at the recovery from power failure with the setting before power failure [page 20].

1. Check the power switch is OFF.

2. Check that the power switch of battery kit for power failure alarm (option) is OFF if the battery kit for power failure alarm is installed.

3. Connect the power supply cord to the dedicated power source with the chamber empty.

4. Turn on the power switch.

►At the power on, the high temperature alarm is activated. The alarm indicator blinks and the blinking refrigerator temperature is displayed.

✧At the start-up with the factory setting, the high temperature alarm is activated when the refrigerator temperature is higher than 10ºC, therefore the high temp. alarm works (High temp. alarm; chamber temp. blinks, alarm indicator blinks, buzzer sounds after 15 minutes)

5. Set the desired chamber (refrigerator and freezer) temperature [page 21].

✧The factory setting of refrigerator temperature is 5 ºC and the freezer temperature is -30 ºC.

<Important> Allow 5 minutes before turn on the power switch when the power switch is off. That is a time for compressor to start-up again.

<It takes about 2.5 hours to reach the set temperature (ambient temp.; 30 ºC, no load, without containers)>

6. On the temp. display, check the chamber temp. reaches the set temperature.

7. Turn on the power switch of battery mounnting box (option) if the battery mounting box is installed.

8. By opening the refrigerator door, check the chamber lamp is on.

9. Put the material in the chamber gradually. [page 19]

✧Putting a large amount of material in the chamber at a time causes the temperature rise.

✧Never block the air intake vent or air exhaust vent in the refrigerator.

10. As needed, set the alarm temp. [page 26 to 29], buzzer suspended period [page 30], and the lock of chamber temperature setting [page 22].

<Attention> The condensation may be found on the glass of refrigerator door under high temperature and humidity condition. Wipe off the condensation with a soft dry cloth.

⚠CAUTION	It is recommended to install a temperature recorder (option) to check the highest/lowest chamber temperature when the item which needs severe temperature control is stored.

HANDLING OF STORAGE ITEMS

Always follow the indication below when taking out/putting in the material.

- ■ Put on the gloves when taking out/putting in the storage items in the freezer chamber. No gloves may cause injury.
- ■ Do not put the excessive storage items in the chamber. Over putting disturbs the cold air circulation and degrades the cooling performance.
- ■ Open/close the doors quickly or the chamber temperature rises.
- ■ Do not put a large amount of storage items of high temperature at a time.
- ■ Put the storage items close to the shelf center to avoid the contact with the chamber wall. Keep an adequate space between materials. Contacting with chamber wall or other materials causes uneven cooling in the chamber.

INITIAL SETTING, SETTING RANGE, FUNCTION CODE

Following shows the initial setting (factory setting) and setting range of each item. Change the setting as needed.

✧ Refer to the each related page for the details and procedure of the setting.

Setting item	Initial setting	Setting range (figure)	Function code	Reference page
Refrigerator temp.	5 ºC	2 ºC to 14 ºC	(none)	21
Freezer temp.	-30 ºC	-35 ºC to -15 ºC	(none)	21
High temp. alarm				
Refrigerator	5 ºC higher than the chamber set temp.	between 2 ºC and 14 ºC higher than the chamber set temperature	F01	26
Freezer	10 ºC higher than the chamber set temp.	between 5 ºC and 15 ºC higher than the chamber set temperature	F03	28
Low temp. alarm				
Refrigerator	5 ºC lower than the chamber set temp.	between 2 ºC and 14 ºC lower than the chamber set temperature	F02	27
Freezer	10 ºC lower than the chamber set temp.	between 5 ºC and 15 ºC lower than the chamber set temperature	F04	29
Buzzer suspended period	30 minutes	10, 20, 30, 40, 50, 60 min., or no recovery	F25	30
Lock of chamber temperature setting	OFF	ON or OFF	(none)	22

The enter of function code through the up arrow key and scroll key is needed to set the alarm temperature, recovery time, delay time. For the procedure, see the reference page.

<Important> Never enter the function code other than specified one at the time of setting. The other function code is for service personnel only.

DURING/AFTER POWER FAILURE

<Important> It is recommended the battery mounting box (option) is installed to notice the alarm (blink of alarm indicator, buzzer) in the event of power failure.

Display of chamber temperature during power failure

By depressing the buzzer stop key (BUZZER) during “power failure alarm”, the buzzer stops and the chamber temperature is displayed on the temperature display for 5 seconds.

✧The buzzer stops however, the alarm indicator (ALARM) keeps to blink.

✧The chamber temperature is displayed on the temperature display for 5 seconds by depressing the buzzer stop key (BUZZER) in spite of power failure.

<Important> The battery for power failure alarm is a consumable part. Replace the battery every 3 years. The alarm would not be activated at power failure if the battery is not replaced regularly. Contact our sales representative or agent for the replacement of battery.

Operation check after recovery from the power failure

After recovery from the power failure, the operation will be resumed automatically with the setting before power failure. There is no need to re-setting, however always check the running status after recovery.

✧The setting before power failure is memorized during power failure by nonvolatile memory.

⚠CAUTION	At the recovery from the power failure, check the unit starts the operation properly. Also check there is no change on the setting.

SETTING OF CHAMBER TEMPERATURE

Set the chamber temperature as needed to keep the material at appropriate temperature for long period of time.

■ Setting range of chamber temperature: Refrigerator; between 2 °C and 14 °C
Freezer; between -35 °C and -15 °C
✧ For the temperature control range, refer to “Performance specifications”.
■ Initial setting (factory setting): Refrigerator; 5 °C, Freezer; -30 °C

Example: Change the setting of chamber temperature to 4 °C (refrigerator) and -25 °C (freezer)

• Following is an example. Operate the key according to the desired chamber temperature.

1. Depress the temperature display changeover key to light the indicator for refrigerator temperature.
►The current refrigerator temperature is displayed on the temperature display.

2. Depress the set key once.
►The current setting (005) is displayed on the temperature display and the second figure 0 blinks.

3. Depress the scroll key once.
►The first figure starts to blink.
✧The first figure or second figure blinks alternately by depressing the scroll key.

First figure is changeable

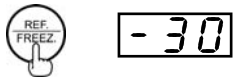
4. Depress the up arrow key 9 times (needed times for change).
►The display changes to 004 from 005.
✧The figure changes between 0 and 9 by depressing the up arrow key.

Change of first figure

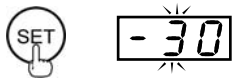
5. Depress the set key once.
►The refrigerator temperature is memorized and the current refrigerator temperature is displayed on the temperature display.

Enter of the setting

6. Depress the temperature display changeover key once.
►The indicator for freezer temperature lights and the current freezer temperature is displayed on the temperature display.

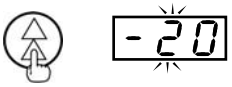


7. Depress the set key.
►The current setting (-30) is displayed on the temperature display and the second figure 3 blinks.



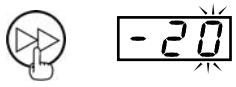
Second figure is changeable

8. Depress the up arrow key 3 times (needed times for change).
►The display changes to -20 from -30.
✧The figure changes between 0 and 3 by depressing the up arrow key.



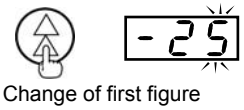
Change of second figure

9. Depress the scroll key once.
►The first figure starts to blink.
✧The first figure or second figure blinks alternately by depressing the scroll key.



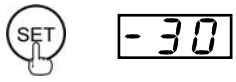
First figure is changeable

10. Depress the up arrow key 5 times (needed times for change).
►The display changes to -25 from -20.
✧The figure changes between 0 and 9 by depressing the up arrow key.



Change of first figure

11. Depress the set key once.
►The freezer temperature is memorized and the current freezer temperature is displayed on the temperature display.



Enter of the setting

✧The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation (auto-return function). In this case, the setting is not accepted.

LOCK OF CHAMBER TEMPERATURE SETTING

The chamber temperature setting can be locked to avoid an accidental change. The change of chamber temperature setting is not accepted even if the key on the control panel is operated when the lock is ON.

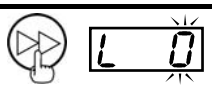
Display	Lock status	Setting of chamber temperature
L 0	Lock OFF	Enable to change
L 1	Lock ON	Disable to change

Example: Change the lock of chamber temperature setting to ON from OFF (factory setting)

• Following is an example. Operate the key according to the desired lock status.

1. Depress the scroll key for 5 seconds.

►The current chamber temperature on the temperature display changes to L0 and the first figure (0) blinks.

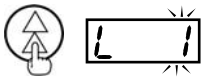


Display of lock status

2. Depress the up arrow key once.

►The display changes to L1 from L0.

✧ The figure changes between 0 and 1 by depressing the up arrow key.



Change of lock status

3. Depress the set key.

►The setting of lock is ON and the current chamber temperature is displayed on the temperature display.

Enter of the setting

✧The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation (auto-return function). In this case, the setting is not accepted.

STOP OF FREEZER OPERATION

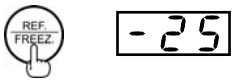
Procedure to stop the freezer operation

The freezer operation can be stopped when removing the frost in the freezer chamber or when no use of freezer.
The current freezer temperature and OFF is displayed alternately on the temperature display when the indicator for freezer temperature lights. (The current refrigerator temperature is displayed and OFF is not displayed when the indicator for refrigerator temperature lights.)

Example: Stop of freezer operation

• Following is an example. The set temperature of freezer is -25 ºC.

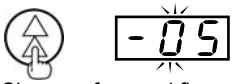
1. Depress the temperature display changeover key to light the indicator for freezer temperature.
►The current freezer temperature is displayed on the temperature display.



2. Depress the set key once.
►The current setting (-25) is displayed on the temperature display and the second figure 2 blinks.

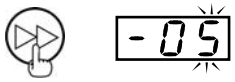
Second figure is changeable

3. Depress the up arrow key twice.
►The display changes to -05 from -25.
✧ The figure changes between 0 and 3 by depressing the up arrow key.



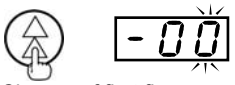
Change of second figure

4. Depress the scroll key once.
►The first figure starts to blink.
✧ The first figure or second figure blinks alternately by depressing the scroll key.



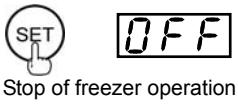
First figure is changeable

5. Depress the up arrow key 5 times.
►The display changes to -00 from -05.
✧ The figure changes between 0 and 9 by depressing the up arrow key.



Change of first figure

6. Depress the set key once.
►The freezer operation stops and the current freezer temperature and OFF is alternately displayed on the temperature display.



Stop of freezer operation

✧The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation (auto-return function). In this case, the setting is not accepted.

STOP OF FREEZER OPERATION

Procedure to resume the freezer operation

The following shows the procedure to resume the freezer operation. The freezer operation can be resumed by setting the freezer temperature.

Example: Resume the freezer operation with -25 °C setting

• Following is an example. Change the set temperature as needed.

1. Depress the temperature display changeover key to light the indicator for freezer temperature.

►The current freezer temperature and OFF is displayed alternately on the temperature display.

2. Depress the set key once.

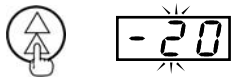
►The previous setting (-00) is displayed on the temperature display and the second figure 0 blinks.

Second figure is changeable

3. Depress the up arrow key twice.

►The display changes to -20 from -00.

✧The figure changes between 0 and 3 by depressing the up arrow key.

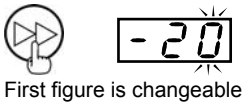


Change of second figure

4. Depress the scroll key once.

►The first figure starts to blink.

✧The first figure or second figure blinks alternately by depressing the scroll key.

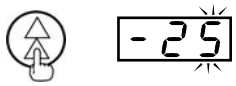


First figure is changeable

5. Depress the up arrow key 5 times.

►The display changes to -25 from -20.

✧The figure changes between 0 and 9 by depressing the up arrow key.



Change of first figure

6. Depress the set key once.

►The freezer temperature is memorized and the freezer operation starts.

The current freezer temperature is displayed with blink.

Start of freezer operation

✧The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation (auto-return function). In this case, the setting is not accepted.

DEFROST

Defrost in refrigerator

The following 2 types of defrosting methods are provided for the refrigerator. Both of them are controlled automatically.

■ Cycle defrosting
The refrigerator temperature is kept stable by ON/OFF operation of the compressor. When the compressor is OFF (stopped), the frost on the evaporator is melted by the heater. This defrosting never influences to the refrigerator temperature.

■ Defrosting by defrost sensor
The cycle defrosting may not be sufficient to remove the frost on the evaporator when the ambient temperature is high, the door is opened frequently, or heavy moist items are stored in the refrigerator. In this case, the defrosting operation is started automatically when the defrost sensor detects the frost.
During the defrosting, the current refrigerator temperature and dF is displayed alternately when the indicator for refrigerator temperature is lit.
After completion of defrosting, dF display is disappeared and the refrigerator returns to the normal operation.

<Important> During the defrosting, the refrigerator temperature reaches around 10 °C temporary.

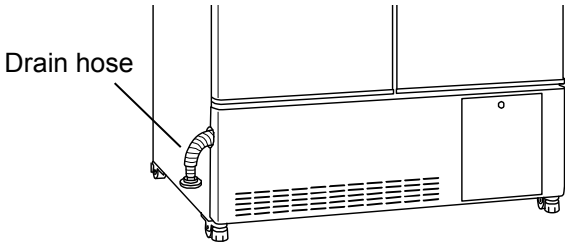
Defrost in freezer

The freezer has no automatic defrosting system. Stop the freezer operation and remove the frost when the frost is accumulated in the freezer.
Following shows the procedure for defrosting.

1. Move all storage items in the freezer to other freezer.

2. Stop the freezer operation according to the procedure on page 23.
✧The current freezer temperature and OFF is displayed alternately when the indicator for freezer temperature is lit. (Only the current refrigerator temperature is displayed when the indicator for refrigerator temperature is lit. OFF is not displayed.)

3. After the frost in the freezer is melted, remove the drain hose cap to take out the drain hose. Set a pan under the drain hose. Remove the drain hose cap and drain port cap in the freezer to drain the water.



4. Wipe off the freezer with a dry cloth. Replace the caps to the drain hose and store the drain hose. Then replace the cap to the drain port in the freezer.

5. Start the freezer operation according to the procedure on page 24.

6. Check that the freezer temperature reaches the set temperature and replace the storage items.

SETTING OF ALARM TEMPERATURE

Setting of high temperature alarm (refrigerator)

The abnormality (chamber temperature rise) is noticed by blinking of alarm indicator and chamber temperature display and sounding of the buzzer (15 minutes after blinking) if the chamber temperature exceeds the set value of high temperature alarm. Always set the high temperature alarm to protect the storage items from damage resulting from temperature rise.

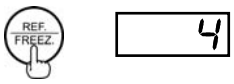
■ Setting range of work temperature for high temperature alarm:
Between 2 ºC and 14 ºC higher than the chamber set temperature
■ Initial setting (factory setting): 5 ºC higher than the chamber set temperature

Example: Change the alarm temperature to chamber set temperature plus 3 ºC from chamber set temperature plus 5 ºC

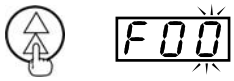
Details: Change from "the setting that the high temperature alarm works at 5 ºC higher than the chamber set temperature" to "the setting that the high temperature alarm works at 3 ºC higher than the chamber set temperature."

• Following is an example. Operate the key according to the desired alarm temperature.

1. Depress the temperature display changeover key to light the indicator for refrigerator temperature.
►The current refrigerator temperature is displayed on the temperature display.



2. Depress the up arrow key for 5 seconds.
►The current chamber temperature on the temperature display changes to function code F00 and the first figure (0) blinks.



First figure is changeable

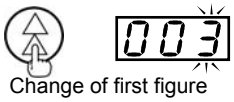
3. Depress the up arrow key once.
►The display changes to F01 from F00.
✧The figure changes between 0 and 9 by depressing the up arrow key.

Change of first figure

4. Depress the set key once.
►The current setting (015) is displayed and the first figure (5) blinks.
✧The initial setting 005 (high temperature alarm works when the chamber temperature is 5 ºC higher than the chamber set temperature) is displayed at the first setting after installation.

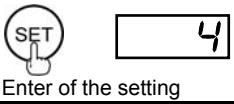
First figure is changeable

5. Depress the up arrow key 8 times (as needed for change).
►The display changes to 003 from 005.
✧The figure changes between 0 and 9 by depressing the up arrow key.



Change of first figure

6. Depress the set key once.
►The work temperature of high temperature alarm is memorized and the current chamber temperature is displayed on the temperature display.



Enter of the setting

✧The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation (auto-return function). In this case, the setting is not accepted.

<Important> Never input any function code other than the specified one.

<Important> The alarm may be activated after defrosting or when too much items are stored in the refrigerator, depending on the setting of high temperature alarm. This is not a malfunction. The alarm is cancelled automatically when the refrigerator temperature reaches the set temperature.

Setting of low temperature alarm (refrigerator)

The abnormality (chamber temperature drop) is noticed by blinking of alarm indicator and chamber temperature display and sounding of the buzzer (15 minutes after blinking) if the chamber temperature falls below the set value of low temperature alarm. Always set the low temperature alarm to protect the storage items from damage resulting from temperature drop.

<Important> The abnormal temperature descent is notified by the blink of alarm indicator and display of refrigerator temperature, and the buzzer when the refrigerator temperature is 0 ºC or lower with regardless the setting of low temperature alarm. In this case, the remote alarm terminal is changed to alarm status. This is a precaution against the freezing of storage items.

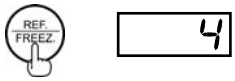
■ Setting range of work temperature for low temperature alarm:
Between 2 ºC and 14 ºC lower than the chamber set temperature
■ Initial setting (factory setting): 5 ºC lower than the chamber set temperature

Example: Change the alarm temperature to chamber set temperature minus 3 ºC from chamber set temperature minus 5 ºC

Details: Change from " the setting that the low temperature alarm works at 5 ºC lower than the chamber set temperature to "the setting that the low temperature alarm works at 3 ºC lower than the chamber set temperature.

• Following is an example. Operate the key according to the desired alarm temperature.

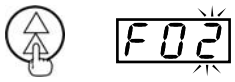
1. Depress the temperature display changeover key to light the indicator for refrigerator temperature.
►The current refrigerator temperature is displayed on the temperature display.



2. Depress the up arrow key for 5 seconds.
►The current chamber temperature on the temperature display changes to function code F00 and the first figure (0) blinks.

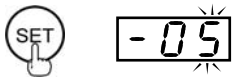
First figure is changeable

3. Depress the up arrow key twice.
►The display changes to F02 from F00.
✧ The figure changes between 0 and 9 by depressing the up arrow key.



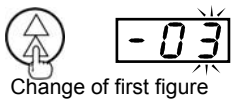
Change of first figure

4. Depress the set key once.
►The current setting (-05) is displayed and the first figure (5) blinks.
✧The initial setting -05 (low temperature alarm works when the chamber temperature is 5 ºC lower than the chamber set temperature) is displayed at the first setting after installation.



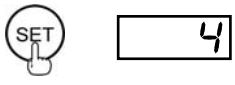
First figure is changeable

5. Depress the up arrow key 8 times (as needed for change).
►The display changes to -03 from -05.
✧ The figure changes between 0 and 9 by depressing the up arrow key.



Change of first figure

6. Depress the set key once.
►The work temperature of low temperature alarm is memorized and the current chamber temperature is displayed on the temperature display.



Enter of the setting

✧The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation (auto-return function). In this case, the setting is not accepted.

<Important> Never input any function code other than the specified one.

SETTING OF ALARM TEMPERATURE

Setting of high temperature alarm (freezer)

The abnormality (chamber temperature rise) is noticed by blinking of alarm indicator and chamber temperature display and sounding of the buzzer (15 minutes after blinking) if the chamber temperature exceeds the set value of high temperature alarm. Always set the high temperature alarm to protect the storage items from damage resulting from temperature rise.

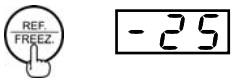
■ Setting range of work temperature for high temperature alarm:
Between 5 ºC and 15 ºC higher than the chamber set temperature
■ Initial setting (factory setting): 10 ºC higher than the chamber set temperature

Example: Change the alarm temperature to chamber set temperature plus 5 ºC from chamber set temperature plus 10 ºC

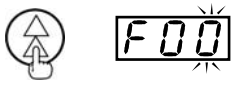
Details: Change from "the setting that the high temperature alarm works at 10 ºC higher than the chamber set temperature" to "the setting that the high temperature alarm works at 5 ºC higher than the chamber set temperature."

• Following is an example. Operate the key according to the desired alarm temperature.

1. Depress the temperature display changeover key to light the indicator for freezer temperature.
►The current freezer temperature is displayed on the temperature display.

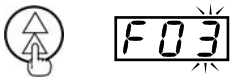


2. Depress the up arrow key for 5 seconds.
►The current chamber temperature on the temperature display changes to function code F00 and the first figure (0) blinks.



First figure is changeable

3. Depress the up arrow key 3 times.
►The display changes to F03 from F00.
✧The figure changes between 0 and 9 by depressing the up arrow key.



Change of first figure

4. Depress the set key once.
►The current setting (010) is displayed and the first figure (0) blinks.
✧The initial setting 010 (low temperature alarm works when the chamber temperature is 10 ºC higher than the chamber set temperature) is displayed at the first setting after installation.

First figure is changeable

5. Depress the up arrow key 5 times (as needed for change).
►The display changes to 015 from 010.
✧The figure changes between 0 and 9 by depressing the up arrow key.

Change of first figure

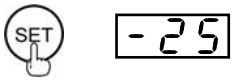
6. Depress the scroll key once.
►The second figure starts to blink.
✧The first figure or second figure blinks alternately by depressing the scroll key.

Second figure is changeable

7. Depress the up arrow key once.
►The display changes to 005 from 015.
✧The figure changes between 0 and 1 by depressing the up arrow key.

Change of second figure

8. Depress the set key once.
►The work temperature of high temperature alarm is memorized and the current chamber temperature is displayed on the temperature display.



Enter of the setting

✧The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation (auto-return function). In this case, the setting is not accepted.

<Important> Never input any function code other than the specified one.

Setting of low temperature alarm (freezer)

The abnormality (chamber temperature drop) is noticed by blinking of alarm indicator and chamber temperature display and sounding of the buzzer (15 minutes after blinking) if the chamber temperature falls below the set value of low temperature alarm. Always set the low temperature alarm to protect the storage items from damage resulting from temperature drop.

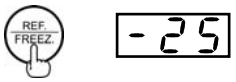
■ Setting range of work temperature for low temperature alarm:
Between 5 ºC and 15 ºC lower than the chamber set temperature
■ Initial setting (factory setting): 10 ºC lower than the chamber set temperature

Example: Change the alarm temperature to chamber set temperature minus 5 ºC from chamber set temperature minus 10 ºC

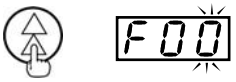
Details: Change from "the setting that the low temperature alarm works at 10 ºC lower than the chamber set temperature" to "the setting that the low temperature alarm works at 5 ºC lower than the chamber set temperature."

• Following is an example. Operate the key according to the desired alarm temperature.

1. Depress the temperature display changeover key to light the indicator for freezer temperature.
►The current freezer temperature is displayed on the temperature display.

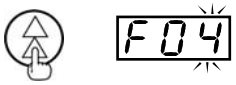


2. Depress the up arrow key for 5 seconds.
►The current chamber temperature on the temperature display changes to function code F00 and the first figure (0) blinks.



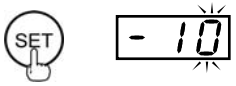
First figure is changeable

3. Depress the up arrow key 4 times.
►The display changes to F04 from F00.
✧The figure changes between 0 and 9 by depressing the up arrow key.



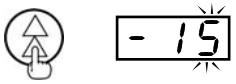
Change of first figure

4. Depress the set key once.
►The current setting (-10) is displayed and the first figure (0) blinks.
✧The initial setting -10 (low temperature alarm works when the chamber temperature is 10ºC lower than the chamber set temperature) is displayed at the first setting after installation.



First figure is changeable

5. Depress the up arrow key 5 times (as needed for change).
►The display changes to -15 from -10.
✧The figure changes between 0 and 9 by depressing the up arrow key.

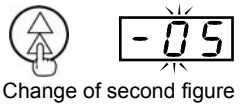


Change of first digit

6. Depress the scroll key once.
►The second figure starts to blink.
✧The first figure or second figure blinks alternately by depressing the scroll key.

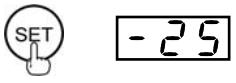
Second figure is changeable

7. Depress the up arrow key once.
►The display changes to -05 from -15.
✧The figure changes between 0 and 1 by depressing the up arrow key.



Change of second figure

8. Depress the set key once.
►The work temperature of low temperature alarm is memorized and the current chamber temperature is displayed on the temperature display.



Enter of the setting

✧The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation (auto-return function). In this case, the setting is not accepted.

<Important> Never input any function code other than the specified one.

SETTING OF BUZZER SUSPENDED PERIOD

The abnormality is noticed again by sounding of the buzzer after certain suspended period (buzzer recovery timing) if the alarm status continues even after the buzzer is silenced by depressing the buzzer stop key (BUZZER). Always set the buzzer suspended period to avoid the wrong recognition of alarm status.

■ Setting range of buzzer suspended period:
Between 10 and 60 minutes with 10 minutes interval (display of setting; between 010 and 060) or no recovery (display of setting; 000)
■ Initial setting (factory setting): 30 minutes (display of setting; 030)

✧The buzzer does not recover when the setting is 000. The setting should be between 010 and 060 to ensure the safety of storage items.

Example: Change the setting of buzzer suspended period to 20 minutes from 30 minutes (initial setting)

• Following is an example. Operate the key according to the desired buzzer suspended period.

1. Depress the up arrow key for 5 seconds.
►The current chamber temperature on the temperature display changes to function code F00 and the first figure (0) blinks.

First figure is changeable

2. Depress the up arrow key 5 times.
►The display changes to F05 from F00.
✧The figure changes between 0 and 9 by depressing the up arrow key.

Change of first figure

3. Depress the scroll key once.
►The second figure starts to blink.
✧The first figure or second figure blinks alternately by depressing the scroll key.

Second figure is changeable

4. Depress the up arrow key twice.
►The display changes to F25 from F05.
✧The figure changes between 0 and 5 by depressing the up arrow key.

Change of second figure

5. Depress the set key once.
►The current setting (030) is displayed and the second figure (3) blinks.
✧The initial setting 030 (buzzer suspended period: 30 minutes) is displayed at the first setting after installation.

Second figure is changeable

6. Depress the up arrow key 6 times (as needed for change).
►The display changes to 020 from 030.
✧ The figure changes between 0 and 6 by depressing the up arrow key.

Change of second figure

7. Depress the set key once.
►The buzzer suspended period is memorized and the current chamber temperature is displayed on the temperature display.

Enter of the setting

✧The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation (auto-return function). In this case, the setting is not accepted.

<Important> Never input any function code other than the specified one.

TROUBLESHOOTING

Check out the following before calling for service if the malfunction of the unit is suspected.

<Attention>	Contact our sales representative or agent if the malfunction is not eliminated after checking the following items, or the malfunction is not included in the following.

The unit does not operate at all.

- ☐ The power supply cord is not connected to the outlet properly.
- ☐ The capacity or voltage of the power source is not sufficient.
  → Use a dedicated power source of more than 15 A and rated voltage.
- ☐ It is under power failure.
- ☐ The circuit breaker of power source side is active.
- ☐ The fuse on the power supply side is blown.
- ☐ The power switch is OFF.

The alarm is operative (alarm indicator blinks, buzzer sounds) at start-up.

✧The alarm (blinking of alarm indicator, sound of buzzer) is continued until the chamber temperature reaches the chamber set temperature.

The alarm is operative (alarm indicator blinks, buzzer sounds) during operation.

- ☐ The power supply cord is not connected to the outlet properly.
- ☐ The capacity or voltage of the power source is not sufficient.
  → Use a dedicated power source of more than 15 A and rated voltage.
- ☐ It is under power failure.
- ☐ The circuit breaker of power source side is active.
- ☐ The fuse on the power supply side is blown.
- ☐ The chamber set temperature was changed.
- ☐ The door was kept open for long period.
- ☐ The items of high temperature were stored.
- ☐ The door is open.
- ☐ The unit is installed near an electric appliance emitting the radio wave.

The operation is noisy.

- ☐ The floor is not sturdy.
- ☐ The floor is not level.
- ☐ The unit is tilted.
- ☐ The side or back of the unit contacts with the nearby wall.

TROUBLESHOOTING

The cooling is poor.

- ☐ The large amount of high temperature item was stored.
- ☐ A lot of frost is built on the chamber wall.
- ☐ The door was opened frequently.
- ☐ The chamber set temperature is high.
- ☐ The unit is in the direct sunlight.
- ☐ The installation is not appropriate.
- ☐ The ventilation around the unit is interfered.
- ☐ Any heat source is located nearby.
- ☐ The ambient temperature is high.
  → The usable ambient temperature is between -5 ºC and 30 ºC.
- ☐ Too much items are stored.
- ☐ The access port is not covered.
  → Cover the access port with thermal insulation and rubber caps when no use.
- ☐ The magnetic door gasket is damaged.
  → Contact our sales representative or agent for the replacement of the magnetic door gasket if it is damaged.
- ☐ Something is caught in the magnetic door gasket.
- ☐ The unit is installed near an electric appliance emitting the radio wave.

The setting of chamber temperature (key input) is ineffective.

- ☐ The lock of chamber temperature setting is ON.
  → Change the lock to OFF [page 22].

The setting mode returns to the temperature display mode.

✧The setting mode returns to the temperature display mode automatically when 90 seconds has passed without any key operation (auto-return function).

Note

Never install an electric appliance emitting the radio wave near the unit. The unit may malfunction by the noise resulting from the radio wave.

ACTION FOR ALARM

When an alarm has been generated, check the cause on the basis of the type of alarm generated, and take the necessary action to deal with it without delay.

> Refer to the next page for the alarm with error code indication (E01 to E12 or F1, F2) on the temperature display.

✧Contact our sales representative or agent if the alarm is not released by eliminating the following cause.
✧Before calling for service, take some precautions for the storage items (placing of dry ice wrapped in newspaper in the chamber or transferring the storage items to another freezer).

Blink of “chamber temperature display” and “alarm indicator” / Intermittent tone of buzzer after 15 minutes (remote alarm-linked)

	Cause	Action
High temp. alarm	The chamber temperature is higher than the setting of high temperature alarm.	⇨ If the alarm fails to stop even after one hour or if the chamber temperature fails to drop, contact our sales representative or agent. ⇨ At the same time, transfer the storage items to another refrigerator or freezer. ⇨ If no other refrigerator or freezer is available, use dry ice etc. to protect the storage items.
Low temp. alarm	The chamber temperature is lower than the setting of low temperature alarm.	⇨ If the alarm fails to stop even after one hour or if the chamber temperature fails to rise, contact our sales representative or agent. ⇨ At the same time, transfer the storage items to another refrigerator or freezer.

Blink of “refrigerator temperature display” and “alarm indicator” / Intermittent tone of buzzer (remote alarm-linked)

	Cause	Action
0 ºC alarm (Refrigerator only)	The refrigerator temperature is 0 °C or below.	⇨ If the alarm fails to stop even after one hour or if the chamber temperature fails to rise, contact our sales representative or agent. ⇨ At the same time, transfer the storage items to another refrigerator.

Blink of “alarm indicator” / Intermittent tone of buzzer (remote alarm-linked) [when the MPR-48B1 (optional component) is installed]

	Cause	Action
Power failure alarm	A power failure has occurred.	⇨ If the power outage is likely to last for a long time, use dry ice etc. to protect the storage items.
	The power supply cord is disconnected or the power switch is OFF.	⇨ Check the power supply cord and the power switch.

✧ The alarm for power failure (blink of alarm indicator, intermittent tone of buzzer) does not activate without MPR-48B1 (optional component).

Light of door alarm indicator / Intermittent tone of buzzer (two minutes after the door alarm indicator has lighted; default setting)

	Cause	Action
Door alarm	The refrigerator door or freezer door is open.	⇨ Check whether the refrigerator door and freezer door are closed. ⇨ Check whether foreign matter is sandwiched in the magnetic door gaskets.

ACTION FOR ALARM WITH ERROR CODE

Alarms involving an error code indicated on the temperature display are generated by the self-diagnosis function. Contact our sales representative or agent without delay, report the error code and request repairs.

Alternate display of error code (E01 to E12) and chamber temperature indication / blink of alarm indicator / Intermittent tone of buzzer (remote alarm-linked)

Error code “E01”.....Disconnection of refrigerator temperature display sensor
✧Alternate display of “E01” and “-50” when the indicator for refrigerator temperature lights

Error code “E02”.....Short of refrigerator temperature display sensor
✧Alternate display of “E02 and “50” when the indicator for refrigerator temperature lights

Error code “E03”.....Disconnection of freezer temperature display sensor
✧Alternate display of “E03” and “-50” when the indicator for freezer temperature lights

Error code “E04”.....Short of freezer temperature display sensor
✧Alternate display of “E04” and “50” when the indicator for freezer temperature lights

Error code “E05”.....Disconnection of frost sensor

Error code “E06”.....Short of frost sensor

Error code “E07”.....Disconnection of protective sensor for freezer compressor

Error code “E08”.....Short of protective sensor for freezer compressor

Error code “E10”.....Failure of fan motor for cooling circuit

Error code “E11”.....Disconnection of protective sensor for refrigerator compressor

Error code “E12”.....Short of protective sensor for refrigerator compressor

⇩ Action
Contact a sales representative or agent.

ACTION FOR MAINTENANCE CODE

Alternate display of maintenance code (F1) and chamber temperature indication [when the MPR-48B1 (optional component) is installed]

Cause	Action
It is time to replace the battery for power failure alarm (about three years have passed with the power switch at ON)	⇨ Contact our sales representative or agent to replace the battery for power failure alarm. ✧The replacement of the battery for power failure alarm is a paid service.

Alternate display of maintenance code (F2) and chamber temperature indication

Cause	Action
It is time to replace the fan motor for cooling circuit (about six years have passed with the power switch at ON)	⇨ Contact our sales representative or agent to replace the fan motor for cooling circuit. ✧The replacement of the fan motor for cooling circuit is a paid service.

SAFETY FUNCTIONS

This unit has the safety functions shown below. Even if under the safety operation, there is no blink of display or indicator and no alarm buzzer operation.

Safety	Situation	Safety operation
Over-heat protection (refrigerator only)	The refrigerator temperature is higher than about 28 °C.	The defrost heater is off to avoid the temperature rise.
Over-cool protection (refrigerator only)	The refrigerator temperature is lower than about 0 °C.	The compressor for refrigerator is off to avoid the temperature descent.
Auto-return	There is no key pressing for 90 seconds in the setting mode.	The setting mode is returned to the temperature display mode.
Key lock	The key lock is ON (L1).	The change of temperature setting is disable.

ROUTINE MAINTENANCE

Clean or maintain the unit once a month to keep the appropriate performance and safety of the unit.

⚠**WARNING**	Turn off the power switch (if provided) and disconnect the power supply to the unit prior to any maintenance of the unit. ➢ Failure to follow this may cause electric shock or injury.
	Ensure you do not inhale or consume medication or aerosols from around the unit at the time of maintenance. ➢ These may be harmful to your health.
⚠**CAUTION**	Put on the gloves at the time of maintenance. ➢ The edge or corner of the component may cause injury.
	Use a dry cloth to wipe off small amounts of dirt on the outside and inside of the unit and all accessories. If the outside panels are dirty, clean them with a diluted neutral dishwashing detergent. ➢ Undiluted detergent can damage the plastic components. For the dilution, refer to the instruction of the detergent.
	Do not clean the unit with scrubbing brushes, acid, thinner, solvents powdered soap, cleanser or hot water. ➢ These agents can scratch the paint or cause it to peel. Plastic and rubber parts can be easily damaged by these materials. Especially never use any volatile solvent to clean the plastic or rubber parts.

Guideline for maintenance

The guideline for the maintenance is as follows:

✧ The continued cleaning and check is recommended to keep the performance for long period.

Item	Frequency	Reference	Unit status
Cleaning of exterior, interior and accessories	Once a month	page 37	(operation can be continued)
Defrosting freezer	(as necessary)	page 25	Stop of freezer operation
Checking power supply cord	Once a 6 months	page 37	Stop of operation
Checking temperature recorder (option)	Once a month	page 37	(operation can be continued)

Stop of operation at maintenance

Stop the operation by the procedure below before maintenance at the time of maintenance with no operation.

1. Put on the gloves.

2. Turn off the power switch.

3. Turn off the battery switch if the battery for power failure is installed.

4. Disconnect the power supply plug from the power supply outlet.

5. Start the maintenance.

Cleaning exterior, interior and accessories

Use a dry cloth to wipe off small amounts of dirt on the outside and inside of the unit and all accessories. If the outside panels are dirty, clean them with a diluted neutral dishwashing detergent.

✧Undiluted detergent can damage the plastic components. For the dilution, refer to the instruction of the detergent.

✧After the cleaning with the diluted detergent, always wipe it off with a wet cloth. Then wipe off the cabinet or accessories with a dry cloth.

<Important> Never splash water directly onto the unit as this may cause electric shock or short circuit when the liquid is spilled.

Checking power supply cord

Check the power supply cord once a 6 months by the following procedure with the power supply cord disconnected from the power supply outlet.

✧A dusty power supply plug or incomplete insertion of the power supply plug may cause fire. Also, a damaged power supply cord may cause fire or electric shock.

1. Stop the operation by the procedure in “Stop of operation at maintenance” on page 36.

2. Disconnect the power supply plug and remove the dust on the power supply plug with a brush.

3. Wipe the power supply cord with a soft dry cloth. At the time, check the damage on the power supply cord visually.

4. Start the operation by the “start-up procedure” on page 18.

Checking temperature recorder (option)

Check the following item once a month when the temperature recorder (option) is installed.

In case of MTR-G3504

☐ The temperature recorder is fixed to the front panel of the refrigerator firmly (there is no backlash).

☐ The recorder chart is fed (turned) properly.

☐ The green indicator can be recognized through the recorder chart.

☐ There is no lack of ink.

In case of MTR-0621LH or MTR-4015LH

☐ The temperature recorder is fixed to the front panel of the refrigerator firmly (there is no backlash).

☐ The recorder chart is fed properly and the used recorder chart is folded properly.

☐ There is no lack of ink.

✧Replace the dry cell in the temperature recorder (MTR-0621LH, MGR-4015LH) every year. For the replacement, refer to the instruction manual enclosed with the temperature recorder.

REPLACEMENT OF WEAR-OUT PARTS

Replacing the battery for power failure alarm

Replace the battery for power failure alarm every 3 years (when F1 and chamber temperature is displayed alternately) to ensure the alarm is operated in the event of power failure. Contact our sales representative or agent for the replacement of battery when F-1 and chamber temperature is displayed alternately.

✧The replacement of the battery for power failure alarm is a paid service.

✧The alarm function (blink of alarm indicator, sound of buzzer) will not operate when the battery for power failure alarm is flat.

✧The alarm indicator blinks and the buzzer sounds by the battery for power failure alarm. The regular replacement of the battery for power failure alarm is important to prevent the rise of chamber temperature in the case of unexpected situation.

⚠WARNING	The replacement of the battery for power failure alarm should be executed by a qualified engineer or service personnel only. ➢ The replacement of the battery for power failure alarm involves the risk of electric shock.

<Important> The used battery is a recyclable precious resource. Do not dispose of the battery. Always follow the procedure for recycling.

Replacing the fan motor for cooling circuit

Replace the fan motor for cooling circuit every 6 years (when F2 and chamber temperature is displayed alternately) to ensure the alarm is operated in the event of power failure. Contact our sales representative or agent for the replacement of fan motor for cooling circuit when F2 and chamber temperature is displayed alternately.

✧The replacement of the fan motor for cooling circuit is a paid service.

✧The appropriate operation of the unit is maintained by cooling the compressor with a fan. The motor to operate the fan (fan motor for cooling circuit) is a wear-out part. A degraded fan motor for cooling circuit may result in the poor cooling performance.

<Important> The alternate display of E10 and chamber temperature with buzzer sound means the failure of fan motor for cooling circuit. In this case, contact our sales representative or agent for the replacement of fan motor for cooling circuit immediately.

IMPORTANT ASPECTS WHEN DISPOSING OF UNIT

Contact our sales representative or agent to dispose of the unit.

⚠WARNING	The disposal of the unit should be accomplished by appropriate personnel. ➢ Leaving the unit in an unsupervised area may cause accidents.

<Request> Prior to disposing of the unit, please decontaminate the product yourself as far as possible.

This pharmaceutical refrigerator with freezer (MPR-715F) uses refrigerant and battery that the applicable laws and regulations require the user to recover and dispose of. The guidelines below for handling and disposing of this unit must be followed without fail.

It is prohibited to release hydro fluorocarbons (also known as “Freon”) to the atmosphere
This unit uses hydro fluorocarbons as refrigerant. When it is to be disposed of, these hydro fluorocarbons must be recovered. It is prohibited to release hydro fluorocarbons to the atmosphere without due cause. Refer to the rating label for details of the kind of hydro fluorocarbons used and the quantity sealed inside the unit.

Have a registered contractor recover the hydro fluorocarbons
In recovering the hydro fluorocarbons, please cooperate with the policies established by the national and regional authorities.

Recycle and recover the resources of the nickel-hydride battery (battery for power failure alarm)
A battery mounting box (optional component) can be installed in this unit to trigger the power failure alarm. The battery should be recycled and recovered in accordance with the applicable regulations.

Refrigerant

REGULATION (EU) No 517/2014 on Certain Fluorinated Greenhouse Gases

This product contains fluorinated greenhouse gases as refrigerant.

Refrigerant	GWP	Weight of CO2 equivalent (ton)
HFC-134a	1430	0.31

IMPORTANT ASPECTS WHEN DISPOSING OF UNIT

(English)

Information on Disposal for Users of Waste Electrical & Electronic Equipment (private households)

This symbol on the products and/or accompanying documents means that used electrical and electronic products should not be mixed with general household waste.
For proper treatment, recovery and recycling, please take these products to designated collection points, where they will be accepted on a free of charge basis. Alternatively, in some countries you may be able to return your products to your local retailer upon the purchase of an equivalent new product.
Disposing of this product correctly will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling. Please contact your local authority for further details of your nearest designated collection point.
Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on Disposal in other Countries outside the European Union

This symbol is only valid in the European Union.
If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

(German)

Benutzerinformationen zur Entsorgung von elektrischen und elektronischen Geräten (private Haushalte)

Dieses Symbol auf Produkten und/oder begleitenden Dokumenten bedeutet, dass verbrauchte elektrische und elektronische Produkte nicht mit gewöhnlichem Haushaltsabfall vermischt werden sollen.
Bringen Sie zur ordnungsgemäßen Behandlung, Rückgewinnung und Recycling diese Produkte zu den entsprechenden Sammelstellen, wo sie ohne Gebühren entgegengenommen werden. In einigen Ländern kann es auch möglich sein, diese Produkte beim Kauf eines entsprechenden neuen Produkts bei Ihrem örtlichen Einzelhändler abzugeben.
Die ordnungsgemäße Entsorgung dieses Produkts dient dem Umweltschutz und verhindert mögliche schädliche Auswirkungen auf Mensch und Umgebung, die aus einer unsachgemäßen Handhabung von Abfall entstehen können. Genauere Informationen zur nächstgelegenen Sammelstelle erhalten Sie bei Ihrer Gemeindeverwaltung.
In Übereinstimmung mit der Landesgesetzgebung können für die unsachgemäße Entsorgung dieser Art von Abfall Strafgebühren erhoben werden.

Für Geschäftskunden in der Europäischen Union

Bitte treten Sie mit Ihrem Händler oder Lieferanten in Kontakt, wenn Sie elektrische und elektronische Geräte entsorgen möchten. Er hält weitere Informationen für sie bereit.

Informationen zur Entsorgung in anderen Ländern außerhalb der Europäischen Union

Dieses Symbol ist nur in der Europäischen Union gültig.
Bitte treten Sie mit Ihrer Gemeindeverwaltung oder Ihrem Händler in Kontakt, wenn Sie dieses Produkt entsorgen möchten, und fragen Sie nach einer Entsorgungsmöglichkeit.

(French)

Informations relatives à l'évacuation des déchets, destinées aux utilisateurs d'appareils électriques et électroniques (appareils ménagers domestiques)

Lorsque ce symbole figure sur les produits et/ou les documents qui les accompagnent, cela signifie que les appareils électriques et électroniques ne doivent pas être jetés avec les ordures ménagères.
Pour que ces produits subissent un traitement, une récupération et un recyclage appropriés, envoyez-les dans les points de collecte désignés, où ils peuvent être déposés gratuitement. Dans certains pays, il est possible de renvoyer les produits au revendeur local en cas d'achat d'un produit équivalent.
En éliminant correctement ce produit, vous contribuerez à la conservation des ressources vitales et à la prévention des éventuels effets négatifs sur l'environnement et la santé humaine qui pourraient survenir dans le cas contraire.
Afin de connaître le point de collecte le plus proche, veuillez contacter vos autorités locales.
Des sanctions peuvent être appliquées en cas d'élimination incorrecte de ces déchets, conformément à la législation nationale.

Utilisateurs professionnels de l'Union européenne

Pour en savoir plus sur l'élimination des appareils électriques et électroniques, contactez votre revendeur ou fournisseur.

Informations sur l'évacuation des déchets dans les pays ne faisant pas partie de l'Union européenne

Ce symbole n'est reconnu que dans l'Union européenne.
Pour vous débarrasser de ce produit, veuillez contacter les autorités locales ou votre revendeur afin de connaître la procédure d'élimination à suivre.

(Spanish)

Información sobre la eliminación para los usuarios de equipos eléctricos y electrónicos usados (particulares)

La aparición de este símbolo en un producto y/o en la documentación adjunta indica que los productos eléctricos y electrónicos usados no deben mezclarse con la basura doméstica general.
Para que estos productos se sometan a un proceso adecuado de tratamiento, recuperación y reciclaje, llévelos a los puntos de recogida designados, donde los admitirán sin coste alguno. En algunos países existe también la posibilidad de devolver los productos a su minorista local al comprar un producto nuevo equivalente.
Si desecha el producto correctamente, estará contribuyendo a preservar valiosos recursos y a evitar cualquier posible efecto negativo en la salud de las personas y en el medio ambiente que pudiera producirse debido al tratamiento inadecuado de desechos. Póngase en contacto con su autoridad local para que le informen detalladamente sobre el punto de recogida designado más cercano.
De acuerdo con la legislación nacional, podrían aplicarse multas por la eliminación incorrecta de estos desechos.

Para empresas de la Unión Europea

Si desea desechar equipos eléctricos y electrónicos, póngase en contacto con su distribuidor o proveedor para que le informe detalladamente.

Información sobre la eliminación en otros países no pertenecientes a la Unión Europea

Este símbolo sólo es válido en la Unión Europea.
Si desea desechar este producto, póngase en contacto con las autoridades locales o con su distribuidor para que le informen sobre el método correcto de eliminación.

IMPORTANT ASPECTS WHEN DISPOSING OF UNIT

(Portuguese)

Informações sobre a eliminação de resíduos para utilizadores de equipamentos eléctricos e electrónicos (utilizadores particulares)

Este símbolo nos produtos e/ou documentos anexos significa que os produtos eléctricos e electrónicos usados não devem ser misturados com os resíduos urbanos indiferenciados.
Para efectuar um tratamento, recuperação e reciclagem correctos, leve estes produtos para pontos de recolha próprios para o efeito, onde serão aceites gratuitamente. Em alternativa, em alguns países, poderá devolver os produtos ao seu revendedor local, aquando da compra de um produto novo equivalente.
A eliminação correcta deste produto ajudará a poupar recursos valiosos e evitar quaisquer potenciais efeitos negativos na saúde humana e no ambiente, que poderiam resultar de um tratamento incorrecto de resíduos. Contacte as autoridades locais para obter mais informações sobre o ponto de recolha mais perto de si.
Poderão ser aplicadas multas pela eliminação incorrecta deste resíduo, de acordo com as leis locais.

Para utilizadores não particulares na União Europeia

Se pretender eliminar equipamento eléctrico e electrónico, contacte o seu revendedor ou fornecedor para obter mais informações.

Informações sobre a eliminação noutros países fora da União Europeia

Este símbolo apenas é válido na União Europeia.
Se pretender eliminar este produto, contacte as suas autoridades locais ou revendedor e peça informações sobre o método de eliminação correcto.

(Italian)

Informazioni per gli utenti sullo smaltimento di apparecchiature elettriche ed elettroniche obsolete (per i nuclei familiari privati)

Questo simbolo sui prodotti e/o sulla documentazione di accompagnamento significa che i prodotti elettrici ed elettronici usati non devono essere mescolati con i rifiuti domestici generici.
Per un corretto trattamento, recupero e riciclaggio, portare questi prodotti ai punti di raccolta designati, dove verranno accettati gratuitamente. In alternativa, in alcune nazioni potrebbe essere possibile restituire i prodotti al rivenditore locale, al momento dell'acquisto di un nuovo prodotto equivalente.
Uno smaltimento corretto di questo prodotto contribuirà a far risparmiare preziose risorse ed evitare potenziali effetti negativi sulla salute umana e sull'ambiente, che potrebbero derivare, altrimenti, da uno smaltimento inappropriato. Per ulteriori dettagli, contattare la propria autorità locale o il punto di raccolta designato più vicino.
In caso di smaltimento errato di questo materiale di scarto, potrebbero venire applicate delle penali, in base alle leggi nazionali.

Per gli utenti aziendali nell'Unione Europea

Qualora si desideri smaltire apparecchiature elettriche ed elettroniche, contattare il rivenditore o il fornitore per ulteriori informazioni.

Informazioni sullo smaltimento in nazioni al di fuori dell'Unione Europea

Questo simbolo è valido solo nell'Unione Europea.
Qualora si desideri smaltire questo prodotto, contattare le autorità locali o il rivenditore e chiedere informazioni sul metodo corretto di smaltimento.

(Dutch)

Informatie over het weggooien van elektrische en elektronische apparatuur (particulieren)

Dit symbool betekent in Europa dat gebruikte elektrische en elektronische producten niet bij het normale huishoudelijke afval mogen.
Lever deze producten in bij de aangewezen inzamelingspunten, waar ze gratis worden geaccepteerd en op de juiste manier worden verwerkt, teruggewonnen en hergebruikt. In Nederland kunt u uw producten bij uw winkelier inleveren bij de aanschaf van een vergelijkbaar nieuw product.
Wanneer u dit product op de juiste manier als afval inlevert, spaart u waardevolle hulpbronnen en voorkomt u potentiële negatieve gevolgen voor de volksgezondheid en het milieu, die anders kunnen ontstaan door een onjuiste verwerking van afval. Neem contact op met uw gemeente voor meer informatie over het dichtstbijzijnde inzamelingspunt of raadpleeg www.nvmp.nl, www.ictoffice.nl of www.stibat.nl.

Voor zakelijke gebruikers in de Europese Unie

Neem voor het weggooien van elektrische en elektronische apparatuur contact op met uw leverancier voor verdere informatie.

Informatie over verwijdering van afval in landen buiten de Europese Unie

Dit symbool is alleen geldig in de Europese Unie.
Neem wanneer u dit product wilt weggooien, contact op met de lokale overheid of uw leverancier en vraag wat de juiste verwijderingsmethode is.

(Swedish)

Information om kassering för användare av elektrisk & elektronisk utrustning (privata konsumenter)

Om denna symbol finns på produkterna och/eller medföljande dokumentation, betyder det att förbrukade elektriska och elektroniska produkter inte ska blandas med vanliga hushållssopor.
För korrekt hantering, inhämtning och återvinning, ska dessa produkter lämnas på återvinningscentraler, där de tas emot utan kostnad. I vissa länder kan du som ett alternativ lämna in dina produkter hos återförsäljaren, när du köper en motsvarande, ny produkt.
Om denna produkt avyttras korrekt sparas värdefulla resurser och eventuellt negativa effekter på den mänskliga hälsan och miljön förhindras, vilket kan bli fallet vid felaktig avyttring. Kontakta din lokala myndighet för mer information om var din närmsta återvinningsstation finns.
Böter kan tillämpas vid felaktig avyttring av dessa sopor, i enlighet med lagstiftningen i landet.

För företagsanvändare inom den Europeiska gemenskapen

Om ni vill kassera elektrisk eller elektronisk utrustning, vänligen kontakta er återförsäljare eller leverantör för mer information.

Information om kassering i övriga länder utanför den Europeiska gemenskapen

Denna symbol gäller bara inom den Europeiska gemenskapen.
Om du vill kassera denna produkt ska du kontakta de lokala myndigheterna eller din återförsäljare, och fråga om korrekt avyttringsmetod.

TEMPERATURE RECORDER (OPTION)

The chamber temperature can be recorded and checked by installing an optional temperature recorder (MTR-G3504, MTR-0621LH, or MTR-4015LH).

✧Contact our sales representative or agent for the purchase of temperature recorder.

Main specifications of temperature recorder

	MTR-G3504	MTR-0621LH	MTR-4015LH
Application	Refrigerator & Freezer	Refrigerator	Freezer
Recording range	-60 ºC to +40 ºC, -10 ºC to +40 ºC	-6 ºC to +20 ºC	-40 ºC to +14 ºC
Feed speed of recorder chart	1-day/1 turn, 7-day/1 turn, 32-day/1 turn	31-day/batch	31-day/batch
Recorder chart	Circular type	Strip type	Strip type
Power source	Supplied from the refrigerator	Dry cell	Dry cell

✧For the installation of temperature recorder MTR-G3504, optional recorder mounting bracket MPR-S7 is necessary.

✧For the installation of temperature recorder MTR-0621LH or MTR-4015LH, optional recorder mounting bracket MPR-S30 is necessary.

BATTERY MOUNTING BOX (OPTION)

It is recommended to install an optional battery mounting box (MPR-48B1) to prevent the rise of chamber temperature in the case of power failure. At the power failure, the alarm activates (blink of alarm indicator, sound of buzzer) to prompt an action for preventing the storage items.

✧Contact our sales representative or agent for the purchase of battery mounting box.

SPECIFICATIONS

Structural specifications

Product name		Pharmaceutical refrigerator MPR-715F
External dimensions		W900 mm x D715 mm x H1910 mm
Internal dimensions		W810 mm x D615 mm x H894 mm (refrigerator) W770 mm x D552 mm x H422 mm (freezer)
Effective capacity		415 L (refrigerator), 176 L (freezer)
Exterior		Painted steel
Interior		Painted steel
Refrigerator door		Painted steel, 2 doors Provided with glass window
Freezer door		Painted steel, 2 doors
Shelf	Refrigerator	Hard steel wire on polyethylene coating x 3, Allowable load; 25 kg/shelf Inner dimensions; W798 mm x D471 mm
	Freezer	Hard steel wire on polyethylene coating x 2, Allowable load; 15 kg/shelf Inner dimensions; W338 mm x D527 mm
Bottom shelf		Hard steel wire on polyethylene coating, 1 for refrigerator and 2 for freezer
Access port		Inner diameter; 30 mm, 2 locations (back of refrigerator and freezer)
Insulation		Rigid polyurethane foamed-in place
Compressor		Hermetic reciprocating type, Output; 150 W (refrigerator) Hermetic reciprocating type, Output; 200 W (freezer)
Evaporator		Fin and tube type (refrigerator), Tube on sheet type (Freezer)
Condenser		Rear skin condenser+ frame pipe (refrigerator) Side skin condenser+frame pipe (freezer)
Refrigerant		R-134a
Weight		170 kg
Enclosures (including accessories)		1 set of key, 2 large clips and 4 small clips (for temperature. recorder), 2 freezer shelf spacers, Operating Instructions
Optional components		Temperature recorder for refrigerator & freezer (MTR-G3504) Temperature recorder for refrigerator (MTR-0621LH) Temperature recorder for freezer (MTR-4015LH) Recorder mounting bracket (MPR-S7) [for MTR-G3504] Recorder mounting bracket (MPR-S30) [for MTR-0621LH, MTR-4015] Battery mounting box (MPR-48B1) Container for freezer (2 pcs.) (MPR-715SC) Interface board (MTR-480)*, LAN interface board (MTR-L03)**

✧Specifications will be subject to change without notice.

* For the data acquisition system MTR-5000 user only. Contact our sales representative or agent for purchase.

** For MPR-715F-PA. For the data acquisition system MTR-5000 user only. Contact our sales representative or agent for purchase.

SPECIFICATIONS

Functional specifications

Product name	Pharmaceutical refrigerator MPR-715F
Temperature controller	Electronic control system
Temperature display	Digital display
Thermal sensor	Thermistor sensor
Alarm temperature	Chamber set temperature ±2 ºC to ±14 ºC (refrigerator) Chamber set temperature ±5 ºC to ±15 ºC (freezer)
Buzzer suspended period	10, 20, 30, 40, 50, 60 minutes, no recovery
Door alarm	2 minutes after door opening
Lock of chamber set temperature	ON or OFF
Alarms	High temperature alarm, Low temperature alarm, Door alarm 0 ºC alarm (refrigerator only) Power failure alarm (with MPR-48B1 installed)
Self diagnostic	Sensor abnormality, Abnormal temp. of cooling circuit Fan motor life, Battery life (with MPR-48B1 installed)
Remote alarm terminal	Allowable contact capacity: DC 30 V, 2 A
Back-up of setting	Nonvolatile memory

✧Specifications will be subject to change without notice.

Performance specifications

Product name	Pharmaceutical refrigerator MPR-715F	
Model number	MPR-715F-PA	MPR-715F-PE
Maximum cooling performance		
Refrigerator	Chamber center temperature: 2 ºC (ambient temp.; 35 ºC, no load)	
Freezer	Chamber center temperature: -30 ºC (ambient temp.; 30 ºC, no load)	
Temperature control range		
Refrigerator	Between 2 ºC and 14 ºC (ambient temp.; -5 ºC to 30 ºC, no load)	
Freezer	Between -30 ºC and -20 ºC (ambient temp.; -5 ºC to 30 ºC, no load)	
Rated voltage	AC 115 V	AC 220 V / 230 V / 240 V
Rated frequency	60 Hz	50 Hz
Power consumption	460 W	275 W / 280 W / 285 W
Total maximum current	5.0 A	2.1 A / 2.2 A /2.3 A
Maximum heat radiation	1800 kJ/h	1584 kJ/h /1620 kJ/h /1656 kJ/h
Noise level	43 dB	
Maximum pressure	1900 kPa	
Usable condition	-5 ºC to 30 ºC, 80 %R.H. or less	

✧Specifications will be subject to change without notice.

✧The above data is measured based on our internal basis.

✧The unit with CE mark complies with EU directives.

Safety Check Sheet (for copy)

1. Used sample: _____
_____
_____

Risk of infection: No possibility Some possibility Possible
Risk of toxicity: No possibility Some possibility Possible
Radioactive material: Not used Used (Nuclide:_____)
Other special instruction:_____
_____

2. Contamination of the unit
Interior: No contamination Decontaminated Some possibility of contamination Contaminated
(if decontaminated, method:_____)
Other contamination:_____

3. Instructions for safe service/maintenance/disposal of the unit
a) The unit is safe to work on
b) There is some danger. The precaution or decontamination method is as follows:
_____
_____
_____

Date:_____
Name & Signature: _____
Division or department _____
Telephone:_____

Product name Pharmaceutical refrigerator MPR-715F	Model number MPR-	Serial number	Date of installation

<Request> Please fill in this form before servicing. Hand over this form to the service engineer to keep for his and your safety.

Please decontaminate the unit yourself before calling the service engineer.

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