User Manual

Refrigerator with Freezer

LMRF-A200

Index

1. Safety Measures

Symbol	Meaning
	This mark indicates that it is harmful to the human body, or the article is damaged.
	This mark indicates a strict prohibition on the way of use and operation.
	This mark indicates that there is a requirement for use and operation here.
	Unplug to avoid electric shock or injury when performing repairs, maintenance, or inspections.

The user must read through this manual carefully. Be sure to consult the documents when the above signs are marked and understand the potential danger before proceeding. Be sure to follow the instructions and regulations in this manual and take appropriate precautions to ensure that personnel and equipment are protected from the possibility of injury.

1.1 Environmental Conditions

This product is designed according to the following conditions, and it is safe to operate at least under the following conditions (based on IEC61010-1)

- Indoor use.
- The altitude is less than 2000 meters.
- Operating environment: 5 °Cto 32 °Ç humidity 20% RH to 80% RH.
- Storage environment: -10 °Cto 70 °Ç humidity 20% RH to 80% RH.
- The main power supply voltage fluctuation does not exceed ± 10% of the rated voltage. Transient overvoltage that meets the equipment installation level (overvoltage level II); for the main power supply, the minimum and ordinary levels are level II. Compliance with IE664 Pollution degree II.

1.2 Handling Conditions

- Naked transport is strictly forbidden.
- When loading or unloading or handling this product, professional handling tools should be used: such as forklifts and stackers to avoid accidents.
- The box should not be tilted more than 45 ° during handling to avoid compressor or system failure.

1.3 Precautions for storing items

- Never store flammable, explosive, volatile dangerous goods, and highly corrosive acids and alkalis in the box.
- Never allow too many items to be put in at one time, as this will overload the refrigerated freezer for a short time and affect the cooling efficiency.
- Stored items should be placed in batches intermittently.
- The items stored in the box must not be completely blocked, and proper air circulation space must be reserved to facilitate the uniform temperature in the box.
- Minimize the time and frequency of door opening and closing during use. Frequent or long door openings will affect cooling efficiency.
- Be sure to close the door promptly after opening it.
- If the refrigerator-freezer is to be stopped for a long time, it should be covered with a plastic cover after cleaning inside and outside.
- In the event of a power outage or shutdown, it must be restarted for more than five minutes to avoid damage to the compressor or system.

2. Introduction

Refrigerator with Freezer LMRF-A200 is composed of fluorine-free environment friendly refrigerant, with the capacity of 360L. The cabinet comes with a concealed lock, high efficiency compressor and fan motor to ensure reliable and effective operation. The inner partition board and drawers are convenient for storing articles. Large LCD liquid crystal temperature display and refrigerator LED lighting provides clearer vision and operation status.

3. Features

- Built-in deadbolt that locks both doors
- Inner partition board and drawer for conveniently storing articles
- Large LCD temperature display operation state at a glance
- 3 ABS drawers in the freezer compartment
- No CFC polyurethane foaming technology
- Thick insulation layer providing good insulation effect
- Stable, reliable, non-flammable and explosive refrigerant
- Equipped with protective functions such as start-up delay, shutdown interval and power-off protection
- The refrigerator door has a detachable door seal, which is easy to clean
- The back of the refrigerator adopts a flat design, so that the refrigerator can be displayed in all direction

4. Specifications

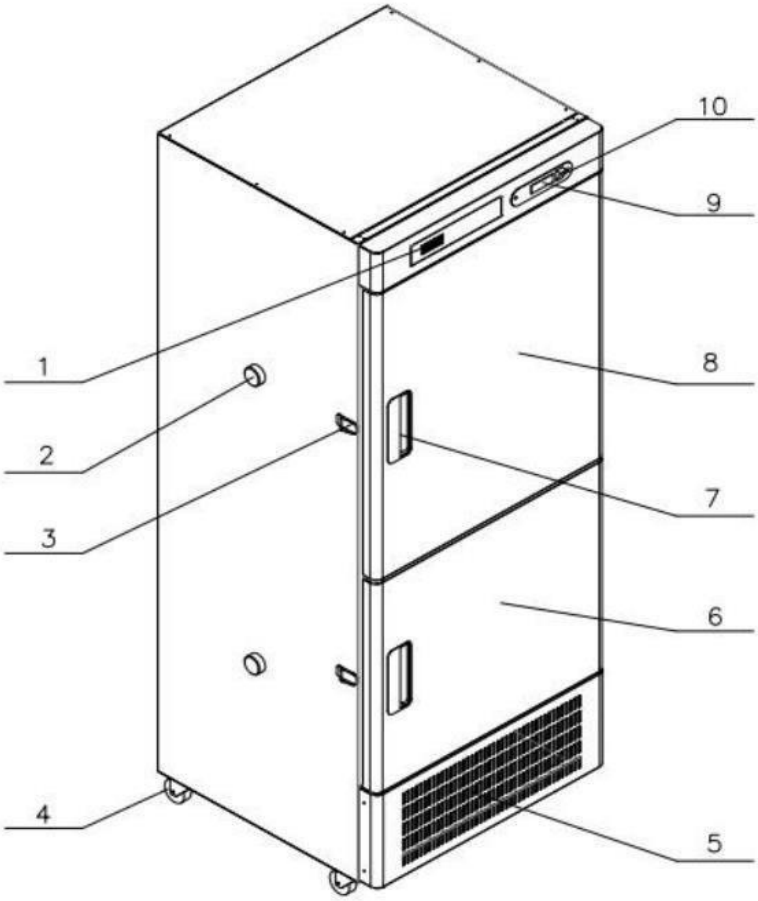
Model No.	LMRF-A200
Capacity	360L (Refrigerated-260L & frozen92L)
Temperature Range	Refrigerating Temp: (2~ 8°C Freezing Temp: (-10~26 °C
Shelf (Pcs)	5
Digital Display	Large-screen LCD liquid crystal temperature display
Dimensions (W × D × H)	590 × 660 × 1852 mm
Net Weight	72 Kg
Gross Weight	85 kg

5. Applications

The refrigerator is suitable for centres of disease control and prevention, health centres, hospitals, blood stations, scientific research institutes and other fields for storing vaccines and pharmaceutical products.

6. Instrument Introduction

Refrigerators and freezers are electrically driven equipment and consist of a refrigeration system, a temperature control/display system, and housing.



1. Refrigerator room temperature controller
2. Pneumatic balancing valve
3. Door lock
4. Caster
5. Refrigeration unit
6. Freezer Room
7. Door Handle
8. Refrigeration Room
9. Refrigerator room temperature controller
10. Power switch

6.1 Freezer Room Temp Controller

Control Panel layout:

6.2 Parameter Description:

SP—Set temperature, switch for adjusting the temperature (r1 to r2)
r0—Fluctuation range when the temperature reaches set temperature.
r1—SP lowest temperature
r2—Maximum temperature
C0—Compressor delay start time
C2—Output control when the temperature sensor fails
P1— Probe sensing temperature correction
P4—Probe shows temperature with a decimal point
A1—External alarm（ turn on）
H5—Parameter setting password (Factory original password is 00)
A0, A1, A2— Alarm parameters
High-temperature alarm: If TS ≥ SP+ A1 and time A2 is exceeded, alarm 1 is activated.
If TS≤SP+ A1-A0 Alarm 1 is not activated
A8—Alarm confirmation time

6.3 Parameter Setting:

- The set temperature (SP) is the only parameter that can be set without entering a password. Press the **SET** button. The word SP appears on the display.
- Press the **SET** button again. The SP temperature is displayed.
- SP temperature can be adjusted by ↑ and ↓
- Press the **SET** button to confirm the set temperature.
- Press the **SET** button and the DOWN button at the same time to exit the parameter setting or wait for one minute to automatically exit the setting interface.

6.4 Complete parameter setting:

- Press and hold the **SET** button for 8 seconds. The input password is displayed on the display (the initial password is 00).
- With the ↑ ↓ buttons, the user can change the password value.
- Press the **SET** button to enter the password. If the password is correct, enter the first parameter setting (SP).
- With the ↑ and ↓ buttons to set the desired value.
- Press the **SET** button to exit the parameter setting. Repeat the above operation until all parameters are set.
- Press the **SET** button and the DOWN button at the same time to exit the parameter setting or wait for one minute to automatically exit the setting interface.
- Turn off the temperature controller and hold down the SET button when the power is turned on to restore the password to 00 Led indication, buzzer, and display information "OUT" on the display indicates whether the output is closed. Normally, the temperature of the sensor will be shown on the display.

In the case of an alarm, the displayed information is as follows (alarm indicator is on, buzzer beeps): (Show code explanation)

- Er—Memory failure
- Oo—Temperature sensor failure (Short-circuit)
- A1H—High-temperature alarm 1
- A1L—Low-temperature alarm 1
- A2H—High-temperature alarm 2
- A2L—Low-temperature alarm 2
- ALE—External alarm

6.5 Parameters List

Parameter	Parameter Description	Min	Max	Unit	Defaults
/0	Sensor measurement stability	1	15	-	4
/1	Temperature display sensor offset	-5.0	5.0	oC	0.0
/2	Temperature control sensor offset	-5.0	5.0	oC	0.0
St	Set temperature	r1	r2	oC	5.0
r1	Set Min temperature	-45.0	r2	oC	2.0
r2	Set Max temperature	r1	90.0	oC	14.0
rd	The lower limit of temperature difference	0.1	10.0	oC	1.0
`ru	The upper limit of temperature difference	0.1	10.0	oC	0.5
c0	Compressor delay running after power on	0	100	Min	1
c1	Compressor downtime (shortest time)	0	100	Min	0
c2	When the cabinet temperature control sensor and the cabinet temperature display sensor are faulty, the compressor operation mode	0	1	-	0
c4	Compressor operating time when control sensor fails	0	99	Min	30
c5	Compressor downtime when control sensor fails	1	99	Min	15
d0	Defrost mode	0	1	-	0
d1	Defrost cycle	1	199	Hour	8
dp	Defrost time (Max)	0	199	Min	10
AL	Temperature display sensor low temperature alarm temperature	-45.0	90.0	oC	2.0
AH	Temperature display sensor high temperature alarm temperature	-45.0	90.0	oC	10.0
Ad	Temperature display sensor alarm delay	0	99	Min	1
AS	Alarm delay after power on	0	199	Min	30
AO	Door open alarm delay	0	250	S	60
F0	Fan control category	0	1	-	0
H3	Software version number	-	-	-	-
H4	Machine category selection	0	1	-	0

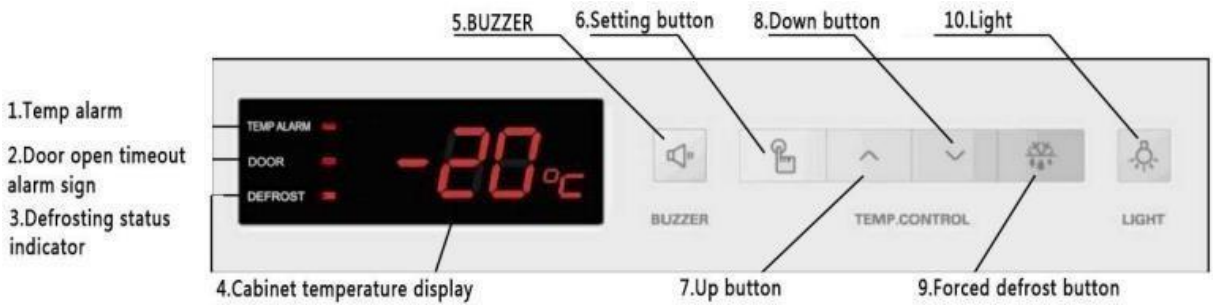
7. Installation

- After the refrigerated freezer is installed and fixed, plug the power cord into a special socket (the power supply is 220V / 50Hz, to ensure the normal operation of the refrigerated freezer, be sure to use a three-hole socket with more than 10A).
- Do not put anything on the inner shelf of the box, keep the box empty, and close the door tightly.
- Close the power switch, the microcomputer controller panel displays the current temperature value in the box.
- After the microcomputer controller is powered on, after a delay of 30 seconds to 180 seconds (the delay time can be set as required), the compressor and fan start to run, and the refrigeration system starts to work.
- After several hours, the temperature inside the box dropped significantly and reached the preset range.
- After the temperature in the refrigerated freezer has stabilized, start to put items into the box.
- It must be operated strictly under the methods specified in this manual, so as not to damage the equipment or damage the safety protection provided by the equipment.

8. Operations

This controller controls the refrigerator and freezer. It has 2 temperature sensors (one to control the cabinet temperature, one to display, and the other can replace its function when one fails), one door switch alarm, can control refrigeration, evaporative fan motor, as well as cabinet lights; buzzer sounds alarm, power failure alarm shows temperature

Thermostat panel layout
The control panel consists of a red LED display and a touch film button, as shown in the figure.



1. Temperature alarm
2. Door open timeout alarm sign
3. Defrosting status indicator
4. Cabinet temperature display
5. Buzzer
6. Setting button
7. Up button
8. Down button
9. Forced defrost button
10. Light

8.1 Over-temperature alarm sign

- If the cabinet temperature display sensor exceeds the set alarm temperature, the over-temperature alarm indicator is always on when an over-temperature alarm is performed.
- **Door open timeout alarm sign:** If the door switch is not turned off within the set time, the door open alarm indicator is always on.
- **Defrosting status indicator:** The defrost status indicator is on when the refrigerator is defrosting.
- **Cabinet temperature display:** According to the temperature sensor sampling, the internal temperature of the cabinet is displayed. It is a three-and-a-half digital display, and the full display is -88. 8℃

8.1.1 Mute button

When the refrigerator buzzer alarm (including cabinet temperature over-temperature alarm, door open alarm, sensor failure alarm, etc.), presses the mute button, the buzzer stops beeping. (Pressing the mute button is only to turn off the buzzer for this abnormal state alarm. If the fault is removed, the next time the abnormal buzzer needs to continue to alarm).

8.1.2 Setting button

In normal mode, press the setting button  for more than 3 seconds to display the set temperature value, and for more than 5 seconds, you can access the parameter menu. (A password is required to enter the settings menu.) When the instrument is powered on, press
them at the same time, the three buttons  take more than three seconds to restore the parameters to the default values, and the digital tube displays "CF". In parameter setting mode, press this button to display the parameter value and parameter name alternately. If pressed for more than 3 seconds, the setting is saved. When setting the set temperature, press this button to save the set value.

8.1.3 Up button

In parameter setting mode, you can move to the next parameter or increase the parameter value. When setting the set temperature, increase the set temperature value.

8.1.4 Forced defrost button:

In normal operation, press the forced defrost button  for more than 5 seconds to enter or exit the defrost state.

8.1.5 Light on the button:

In normal operation, you can turn on or off the lights  in the cabinet by pressing the light switch.

8.2 Control parameter

- The control parameters are divided into basic parameters and advanced parameters. The basic parameter "ST", the user sets the working temperature.
- Advanced parameters are password protected; you need to enter the correct password to access.

8.2.1 Access to basic (St) parameters

Setting Method:

- Under normal circumstances, press the set button for 3 seconds, and the digital tube displays the current set operating point.
- Use the up or down button to increase or decrease the value until it reaches the desired value.
- Press the setting button again to confirm the new value, save the new value, and return to the normal working mode.

8.2.2 Advanced type parameter access

- Press the setting button more than 5S, the digital tube displays the parameter
- code "**PS**" (password).
- Press the setting button to display "00" to enter the password setting.
- Use the up or down button to scroll the number to "-15".
- Press the set button to confirm the password, the digital tube will display "/ 0".
- Use the up or down button to scroll through the parameters.
- Press the set button to confirm the parameter category, the first parameter name of this type of parameter will be displayed.

1) Use the up or down button to scroll through the parameters.
2) Press the setting button to display the corresponding parameter value.
3) Use the up or down button to increase or decrease the value;
4) Press the set button temporarily to store the modified value and return to the display parameters.
5) If users modify other parameters, repeat steps 1 to 4.
6) Press the set button for more than 3 seconds to store the modified parameters and return to the display parameter category.

- If users modify other types of parameters, repeat steps e~ f.
- Press the setting button for more than 3 seconds, or no button is pressed within 60 seconds to exit the parameter setting program.

8.2.3 Warning

If there are no buttons in the 60S, all parameter changes (values temporarily stored in RAM) will be invalid, and the previous settings will be restored.

Note：

When parameters r1, r2, St, AL, and AH are adjusted, short press the button to adjust the parameter value in units of 0.1. Press and hold for a long time, then continuously adjust the parameter value every 0.5 seconds in units of 1.

9. Maintenance

- When performing repairs, maintenance, or inspections, be sure to unplug the power plug. To avoid electric shock or injury.
- Use a non-corrosive neutral detergent for cleaning the inside and outside surfaces of the refrigerator and freezer. After cleaning, wipe them with a dry cloth.
- It is strictly forbidden to rinse the inner and outer surfaces of the box with water, so as not to affect the electrical insulation performance.
- It is strictly prohibited to use boiling water, decontamination powder, acid, alkali, gasoline, alcohol, benzene, corrosive cleaners, hard brushes, etc. for cleaning.
- Frequent rubbing of talcum powder on the door seal can prolong the service life of the seal.

9.1 Cabinet cleaning

- Remove the fixing screws of the machine room sealing plate on the top of the box and remove the machine room sealing plate.
- Remove the dust and dirt adsorbed on the condenser with a soft brush or a vacuum cleaner at least once a month, or blow the dirt clean with high-pressure gas.
- Rinse the condenser filter with water.
- After cleaning up, the filters, Reinstall the engine room seals, etc.

9.2 Electrical inspection

- When performing an electrical safety inspection, be sure to unplug the power plug. Never operate with power on to avoid electric shock or injury.
- Be sure to have a qualified electrical engineer or an authorized maintenance technician approved by the factory to perform electrical inspection and maintenance.
- Please check the electrical safety regularly (the period is less than 60 days, and the period can be shortened as appropriate in summer).

9.3 Machine inventory environment

When the refrigerator-freezer needs to be stopped for a long time, unplug the power plug, clean the inside and outside of the box, cover it with plastic bags after natural drying, and place it in a ventilated and clean place.

10. Troubleshooting

Fault phenomenon	Cause of failure	Method of exclusion
The compressor does not work, there is a buzzing sound.	The power supply voltage is lower than the specified voltage limit of 187V.	• Stop the machine immediately and wait for the voltage to be normal before starting. • If the local voltage fluctuation exceeds 187 to 242V, a power stabilizer of more than 3000VA should be installed.
The compressor runs for a long time and the evaporator is frost-free.	Refrigerant leaks or blocked pipes.	• Send it to a professional maintenance department for repair.
	• The evaporator frost is too thick. • The door is opened too many times and takes too long. • Poor heat dissipation and ventilation of the condenser. • The temperature sensor is damaged. • Too many items stored.	• Defrost in time. • Open the door as little as possible. • Improve ventilation and heat dissipation. • Need to be sent to the maintenance department for inspection. • Properly remove some items.
The compressor does not work, refrigerator has no cooling output.	• Fuse failure. • Compressor failure. • The controller and control circuit are damaged.	• Replace the fuse. • Repair.
The refrigerator is too noisy.	• The refrigerator is not placed smoothly. • Loose fasteners. • Loose fitting contact.	• Place the refrigerator firmly. • Tighten the loose parts • Check and repair the loose joint.
E0	Temperature display sensor 1 malfunction.	Check sensor 1, or check that the controller's parameter settings are appropriate.
E1	Temperature display sensor 2 malfunction.	Check sensor 2, or check that the controller's parameter settings are appropriate.
E2	Temperature alarm sensor failure.	Check the alarm sensor or check whether the parameter settings of the controller are appropriate.

E3	Temperature control sensor failure.	Check the control sensor, or check whether the parameter setting of the controller is appropriate.
Pd	Power off state.	Check the power.
Lo	Temperature display sensor low-temperature alarm.	Check the sensor, or check if the parameter setting of the controller is proper.
Hi	Temperature display sensor high-temperature alarm.	Check the sensor, or check if the parameter setting of the controller is proper.

It's not a malfunction.

- When users hear the sound of water flowing in the refrigerator: This is the sound of the refrigerant flowing in the pipeline.
- Compressor heat: When the compressor is working, its surface temperature can reach 70 ℃to 90 ℃
- When the refrigerator-freezer works, there is a slight heat sensation on both sides of the cabinet (close to the door).
- That is the cabinet is equipped with an anti-condensation heating device.
- When there is condensation on the door seal: In rainy and humid seasons or a relatively humid environment, there may be condensation on the outer surface of the cabinet and the edge of the door seal, just dry it.

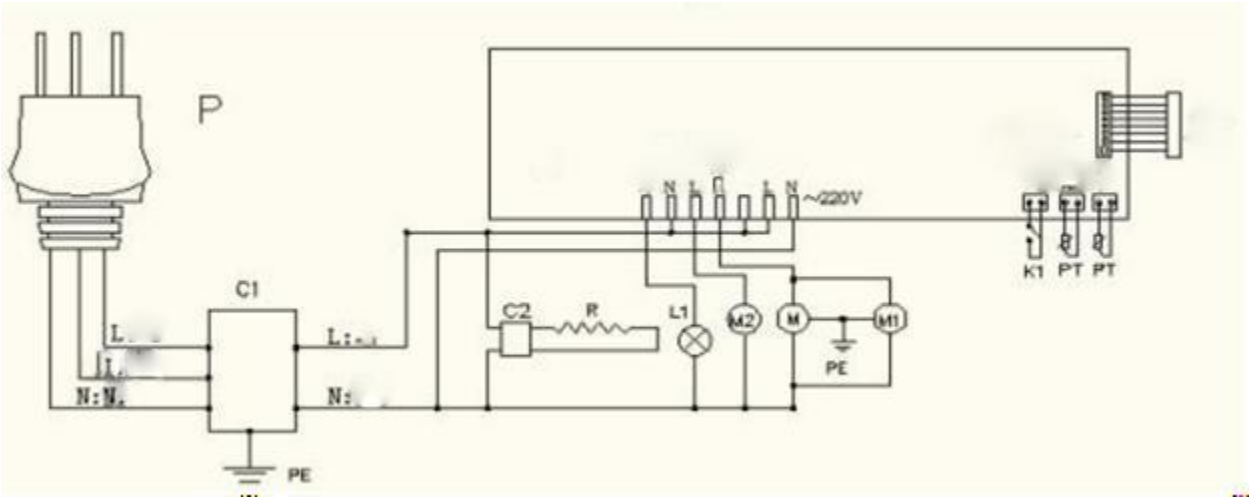
11. Replacement

Battery Replacement

The controller has the function of power failure display and alarm. After the refrigerated freezer is powered off, the backup power supply (rechargeable maintenance-free battery) provides power for the display and alarm. If the backup power supply is damaged or the working time is less than one hour after power failure, the battery should be replaced.

- Never install or insert non-rechargeable batteries!
- If a non-rechargeable battery is connected incorrectly, there is a danger of explosion or fire.
- Under no circumstances should the battery's positive pole (+) and negative pole (-) be short-circuited directly, this will cause the danger of explosion or fire.
- The battery must be replaced with the same type and the same capacity by professional and technical personnel authorized by our factory or our authorized special maintenance point
- When replacing the battery, please pay attention to the correct polarity of the battery! The red wire is connected to the battery positive (+), and the black wire is connected to the battery negative (-).
- The battery model is: MT12-7 (DC 12V, 7Ah).

12. Circuit Diagram



Controller Wiring Diagram