Laboratory Equipment Manufacturer
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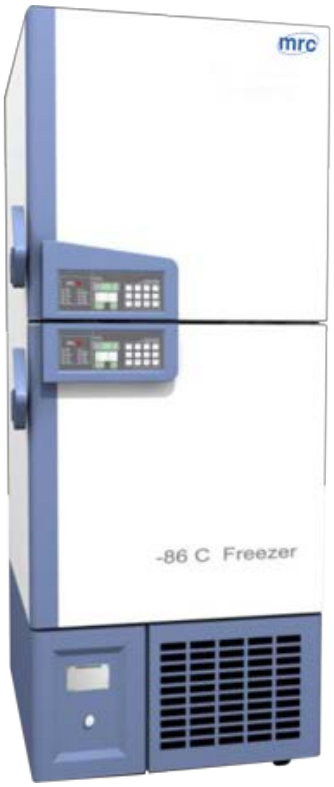
DW-86DD498

-86°C Itra-Low Temperature Freezer

Operation Manual



PLEASE READ THIS MANUAL CAREFULLY BEFORE OPERATION

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MRC.VER.01-07.14

Thank you for buying a MRC's ULT freezer!

For your personal safety and better performance of this unit, please read this Operation Manual thoroughly and save it properly for future reference.

Failure to read, understand and follow the instructions in this manual may result in damage to the unit, injury to operating personnel and poor equipment performance.

The material in this manual is for information purposes only. The contents and the product it describes are subject to change without notice. MRC Company makes no representations or warranties with respect to this manual.

⚠ Safety Notice

- Power supply：This ULT freezer is designed operating under 220V/50HZ AC power supply. The unit can normally start under the voltage varying from 198V to 242V.
- Must provide one single exclusive plug receptacle with credible grounding to unit. Don't lengthen the line randomly. If you need, To use 2.5mm2 copper line,you should keep 4mm2 line to connect the electrical outlet.
- Inflammable and explosive materials, as well as high corrosive acid and alkali must be strictly prohibited in cabinet.
- Keep the key properly avoiding the children take it to open the back door which may result in unexpected injury.
- Don't make the power line pack and pressed by furnish or heavy goods.Also please don't close to the compressor and heat source.
- Should wear safe glove to deposit goods, Prevent frostbite.
- If the power shut off，Please wait 5minutes.Can to connect again, to prevent the compressor damage.
- Ultra Low temperature Freezer through condenser to reach refrigeration. To ensure the freezer run regularly, The body back and both sides away from the wall at least 30cm.,and not be blocked by barrier.

Always use the proper protective equipment (clothing, gloves, goggles etc.)，Avoid hurt from low temperature.

Always follow good hygiene practices.

Each individual is responsible for his or her own safety.

If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

WARNING – Keep ventilation openings, in the appliance enclosure or in the built-in structure, clear of obstruction

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

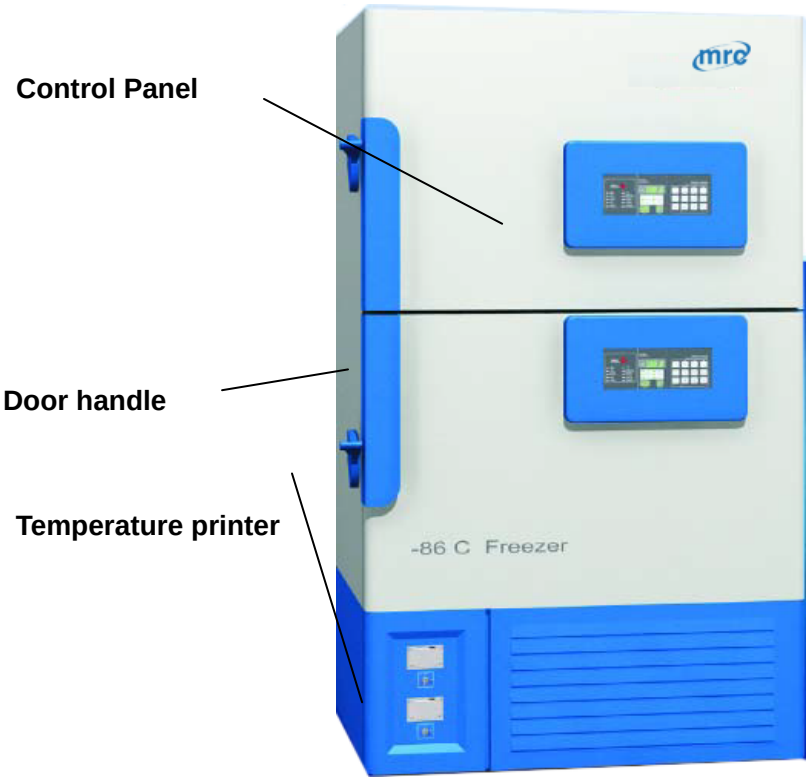
WARNING – Do not damage the refrigerant circuit

WARNING – Do not use electrical appliances inside the food storage compartments of the appliance, unless they are of the type recommended by the manufacturer

Young children should be supervised to ensure that they do not play with the appliance.
The appliance must be positioned so that the plug is accessible.

Please accord to local regulations regarding disposal of the appliance for its flammable refrigerant and blowing gas. Before you scrap the appliance, please take off the doors to prevent children trapped.

1.Schematic Picture and Description



Series of Ultra-low temperature freezer is designed to store materials under very low temperature condition for hospital, epidemic station, blood bank, research institute, university, biological pharmaceutical industry and gene engineering, etc. The internal temperature in cabinet can be easily adjusted through the keys in control panel. All operations are convenient and reliable.

2. Pre-Installation

- How to transport：Pick up the unit from the bottom of tank and a slant plane with 45° is acceptable. All transportation should be carefully.
- Remove all wrappers.
- Check accessories and documents according to package list.
- Clean the unit thoroughly before any operation.
- Installing location：Do not position the unit in direct sunlight or near heating diffusers, radiators, or other sources of heat. The ambient temperature should not exceed 32℃. A minimum 30cm space on the sides, rear and top should be provided

for better air circulation and heat discharge. Location where is too cold and place with high humidity or can be easily splashed by water are forbidden.

The freezer working condition:

A. The environment temperature：10℃～30℃

B. The relative humidity：≤80%

C. No strong shake and causticity gas around.

D. No sunshine and other cold/hot power effect.

☞ Ultra Low temperature Freezer working rule：**Running intermission**

3 Operation Direction

3.1 Function Introduction for Display Panel:

1.

-86. 0

Digital display. The window displays the real-time internal temperature of freezer with unit □ under normal running condition, and displays different hint string under set condition: （Refer follows for details

220
24

Show power voltage(220) under normal running condition, Unit is V；
Show Surroundings temperature (24) under normal running condition, Unit is □

2 “▼”、“▲”：Function adjustment pads. Press these pads to realize different functions combining with different function keys；

3 “Enter” ： Press this key to activate all parameter adjustments

4. “PA” ：Keyboard locking function is developed in this unit. When unlock the keyboard and modify

the password, must input the right password. The default password is “000”. The upper indicator is on under unlocking status；；

※5. “Clock”：For easily record and print the saved temperature data, a built-in clock with YMDHM is developed；

6. “Temp. Setting”： Press this key to set the storage tempers. The microcomputer control system will run automatically to maintain a stable temperature as setting；

7. “LTL”： When the temperature in chamber decreases below the low temperature limit (LTL) setting, system alarms to attract user’s notice；

8. “HTL”：When the temperature in chamber is higher than the high temperature limit (HTL) setting, system alarms to attract user’s notice；(During the initial start-up, a “HTL” alarm is normal phenomenon. After the temperature stabilized, the “HTL” alarm stops and. Now you can put goods in your freezer.)

9. “Mute”：Press this key to stop alarm buzzing. The upper indicator is on.

※10. “Print”：This unit develops a function of automatically print the real-time temperature data and manually print the latest seven days’ data；

※11.“Battery test”：To test the battery voltage when equip the battery.

12.“Consult”：Consult the 10times alarm lately；

13. “Power” indicator: This indicator lights when the power is on；

14：“H T compressor” “L T compressor” indicator：This indicator blinks and alarms when the temperature in the chamber is higher/lower than the HTL setting

15：“High Alarm” indicator：This indicator blinks and alarms when the temperature in chamber is higher than the HTL setting；；

16：“High Alarm” indicator：This indicator blinks and alarms when the temperature in chamber is higher than the HTL setting；

※17:“Low battery” indicator：This indicator lights when the voltage of accumulator decrease below 80% of rated value. During the initial start-up, “Accumulator” alarm is normal phenomenon. After the accumulator is charged, the “Accumulator”, alarm stops automatically.；

※18：“Ajar” indicator：This indicator blinks and alarms if the door opens for more than 1 miniature. After the door is closed, the alarm stops；

19：“Condenser over heat” indicator：When the condenser bottom temperature is higher than 60℃, The Indicator blinks and alarms, remind you to fall down the surrounding temperature.(May around the

machine is not good to dispel the heat, Now you should open the door and window, Necessary turn on the air-condition. Or the filter accumulates more dust, affect to dispel heat, now please cut off the power, and clean the filter mesh；

※20："Remote port" indicator：This indicator lights when the remote port is connected successfully；

※21："Print port" indicator：This indicator lights when the matched micro-printer is connected properly；

22："Fault" indicator：The Digital-Code window displays corresponding error code when this indicator lights. The code "E4" denotes that the ambient temperature is too high, so user should assure that the ambient temperature be lower than 32℃. When the window shows other error codes, please contact our service center and remove all products in chamber to avoid jeopardizing the user's product.

23："Sensor Failure"： This indicator blinks and alarms if sensor failure

24："No Power"：If equip the accumulator, This indicator blinks and alarms when power failure

25："Power Abnormal"： This indicator blinks and alarms when voltage beyond 198～242V，Shows the

power is abnormal.

26：**"**Surrounding superheated"： Will alarm if surrounding temperaure≥32℃

27：Power Lock: Turn the matched key to control power supply: "ON" for start and "OFF" for stop.；

28:"Alarm Direction"：Will light when alarm(It is normal light when first use "high alarm", When the temperature is regular, alarm relieve.

29："Voltage Expiation"：When the voltage is abnormal, Optional parts equipped, the voltage compensation will work, and "Voltage Expiation" light(work normally at 176v～262v)

☞ ● **Special Notice：Functions marked with "*" are available only for some special customers or when the unit is equipped with the optional parts.**

3.2 Initial Start-up：

a. Connect the power supply and turn the power switch to "ON"；

b. The initial password for keyboard locking is set as "0000" in factory. Before release the password, the "Temp.", "LTL" and "HTL" keys are all disabled while "PA" displaying in display window.

c. Unlock password: Press the "PA" to active the input window. The display window blinks and shows "PA". Press "▲", the "PA" disappears. Press "▲" to change the input single bit which circularly blinks from the Thousands bit to One bit in turn. Press the key once

for one bit. Then press "▼" to input the expected number for the blinking bit, press the key to add 1 per touch to this bit which will return to 0 after 9. After input all four bits password, press "Enter". If the password inputted is right, the display window will stop blinking and display the input right password. Only when the password is released all functions and parameter changes and setting are activated. Under unlocking status, if no keys are pressed within 5 miniatures the system switches to locking status.

d. Set password：Under unlocking status press the "PA" , the display window blinks and shows "P0000". Press "▲" to change the setting bit which circularly blinks from Thousands bit to One bit in turn. Press the key once for one bit. Then press "▼" to set the expected number for the blinking bit, press the key to add 1 per touch to this bit which will return to 0 after 9. After input all four bits new password, press "Enter" key. Then display window shows the new password and the system turns to new password locking status. 15 seconds later, the display window returns to its normal displaying status.

e. "Mute"：Press the "Mute"，the mute indicator lights and the alarm buzzer switches to alarm-off status. Now, the alarm buzzer will be closed under any error condition.

f. Disable "Mute"：Press the "Mute" again，the mute indicator closes and the alarm buzzer switches to alarm-on status. The buzzer may work and it will stop when the system recovers to its normal running condition. Put the "Mute" key again to close the alarm buzzer. Then the mute indicator lights and the buzzer switch to alarm-off status.

g. Set temperature:

Press the "Temp. Setting" key, the system switches to temperature setting status. And the displaying number changes to the latest setting value and begins to blink. Press the "▲" to increase the value of temperature with 1℃ per touch. Similarly, Press the "▼" to decrease the value of temperature with 1℃ per touch. Press these two keys to increase or decrease 1 per touch. Press and hold the keys for 3 seconds, the system switches to quick-setting status. After expected temperature is set, press "Enter" to activate this setting and the display window stops blinking. If no "Enter" is not pressed, the display window will keep blinking and the system will run according to the former setting. 15 seconds later, the display window stops blinking and automatically returns to its normal display.

⚠ **First use please set the temperature at -80℃,Waiting for 3-4hours,You can set the temperature under -80℃.**

3.3 Functions Setting

a. Set low temperature limit (LTL)

Press the “LTL” key, the system switches to low temperature limit setting status. And the display window begins to blink and shows L-000 (000 represents the value of latest setting). Press the “▲” to increase the value of temperature with 1℃ per touch. Similarly, Press the “▼” to decrease the value of temperature with 1℃ per touch. Press these two keys to increase or decrease 1 per touch. Press and hold the keys for 3 seconds, the system switches to quick-setting status. After expected temperature is set, press “Enter” to activate this setting and the display window stops blinking. If no “Enter” is not pressed, the display window will keep blinking and the system will run according to the former setting. 15 seconds later, the display window stops blinking and automatically returns to its normal display.

LTL range is lower than original set 5～20℃。

b. Set high temperature limit (HTL):

Press the “HTL” key, the system switches to high temperature limit setting status. And the display window begins to blink and shows H-000 (000 represents the value of latest setting). Press the “▲” to increase the value of temperature with 1℃ per touch. Similarly, Press the “▼” to decrease the value of temperature with 1℃ per touch. Press these two keys to increase or decrease 1 per touch. Press and hold the keys for 3 seconds, the system switches to quick-setting status. After expected temperature is set, press “Enter” to activate this setting and the display window stops blinking. If no “Enter” is not pressed, the display window will keep blinking and the system will run according to the former setting. 15 seconds later, the display window stops blinking and automatically returns to its normal display.

HTL range is higher than original set 5～20℃。

※c. Time Display：

Press the “Time” key, the display window switches to time displaying status. Under “Time” status, press “Enter” to display “Year”, “Month-Day”, “Hour-Min.” respectively. At these statuses, the display window shows with the format as “y2003”, “d07.28”, and “t19.39” according different modes. 15seconds no any operation, Will drop put. (Note: Under locked condition, only time displaying is available.)

※d. Hour-Min. setting：

Press the “Time” key, the system switches to time setting status. The display window begins to blink and shows “t19.39”. Then press “▲” to change the bit you want to correct. Responding to per touch, the display window circularly stops blinking according to Thousand-Hundred (for 24 type hour) and Ten-One (for min.). When one bit stops blinking, press “▼” to change it to the wanted value. Press “Enter” to activate the setting and the display window shows the correct time. 5 seconds later, the system automatically switches to Month-Day setting status. (Note: All these operation can be done only under unlocked condition)

※e. Month-Day setting：

Under “d07.28” displaying status, press the “Enter” key, the display window begins to blink. Then press “▲” to change the bit you want to correct. Responding to per touch, the display window circularly stops blinking according to Thousand-Hundred (for month) and Ten-One (for day). When one bit stops blinking, press “▼” to change it to the wanted value. Press “Enter” to activate the setting and the display window shows the correct date. 5 seconds later, the system automatically switches to Year setting status. (Note: All these operation can be done only under unlocked condition)

※f. Year setting：

Under “y2003” displaying status, press the “Enter” key, the display window begins to blink. Then press “▲” to change the bit you want to correct. Responding to per touch, the display window circularly stops blinking from Thousands to One. When one bit stops blinking, press “▼” to change it to the wanted value. Press “Enter” to activate the setting and the display window shows the correct year. 5 seconds later, the system automatically returns to its normal displaying status. (Note: All these operation can be done only under unlocked condition)

※g. Auto print：

Press the “Print” key, the system switches to auto print mode. Now AUTO displays in the LCD window and the print indictor lamp changes into normally bright. Under this mode press the print key of printer to automatically print recorded data. All data are printed per 5 miniatures with a format as “Year, Month, Day, Time, temperature. When the print finishes, the buzzer buzzes for 5 seconds, then the system exits the print mode. To cancel print midway, press “Print” again.

※h. Manual print

Press “Print” twice within 3 seconds, the system switches to manual print mode. Now the display window shows “----1” and the print indicator lights. Then press the print key of printer to

print the current recorded data. Press "▲" once to print the data of previous day and the display window shows "----2". Similarly, the recorded data of others days can be printed manually. All data are printed at an interval of 5 miniatures in a format as "Year, Moth, Day, Time, Temperature". When the print completes, the buzzer buzzes for 5 seconds, then the system exits the print mode. To cancel print midway, press "Print" again.

※ I. Battery Test：Press this key，LCD will show BAT. Voltage panel will display accumulator voltage

J. Consult：To consult 10times alarm lately. The systems just save the 10times alarm lately. Press any key will back up. The voltage LCD show 01,it means 1time alarm.02,03..The surroundings temp LCD show 0,it means the alarm start time, show 1 means the finish time.

Press "Consult"，If "high alarm"、"low alarm" blinks, means the information of "high alarm"、"low alarm"， The surrounding temp LCD shows the alarm start time. Then press "Consult" show the alarm max temperature, Press again will show the alarm finish time.

※If "Low battery" blinks ,means alarm information. The surrounding temp LCD shows the alarm start time, then press "Consult", the voltage LCD show voltage, Press again will show the alarm finish time.

If "Power abnormal" blinks, means alarm information. The surrounding temp LCD shows the alarm start time, then press "Consult", the voltage LCD show the max voltage, Press again will show the alarm finish time.

If "Ajar" blinks, means alarm information, The surrounding temp LCD shows the alarm start time, press "Consult" will show the alarm finish time.

If "condenser over heat" blinks, means alarm information，The surrounding temp LCD shows the alarm start time, press "Consult" will show the alarm finish time.

If "Sensor Failure" blinks, means alarm information. The surrounding temp LCD shows the failure code.

If "Surrounding superheated" blinks, means alarm information. The surrounding temp LCD shows the alarm start time, press "Consult" will show alarm max temperature, Press again show the alarm finish time.

☞ **Special Notice：**

- **Functions marked with "*" are available only for some customers or when the unit is equipped with the optional parts**.
- **DO NOT place anything immediately after the power supply is connected. About a 6~8 hours' no-load running before storing materials is recommended.**
- **Each time to put goods not more than 1/3 freezer capacity.24hours after come to the setting temperature, Then put other 1/3 goods.**
- **Don't open the freezer when temperature is falling, Or else will make the temperature up.**

4 Defrost .Unused . Maintenance

① There will be some frost on the surfaces of chamber for a long time running which may decrease

the performance of freezer. If the thickness of frost is more than 10mm, some defrost operations are recommended.

② Disconnect the power supply before defrosting. Wear special protective gloves for any interior operation! Open the door and remove all materials from freezer. There are two ways to defrost: (I) softly spud the frost on the surfaces with defrost shovel; (II) let the internal temperature rise naturally to thaw all frost accretion. Then clean up the water thoroughly with dry rag.

③ Connect the power supply after defrost is completed to run your freezer.

④ Note：Any electric heater, metal tool or edge tool CAN NOT be used during defrost operation.

⑤ Leave Unused：If the unit is not used for long time, please disconnect power supply and maintain as the following procedures. For next time operation, ensure there is no any water around the liners to avoid the seal of door is frozen.

⑥ Clean: Regularly clean the filter for better performance of freezer. (Procedure: Loose the two bolts in the ventilating panel and lay the panel flatly. Then loose the sit bolts in the filter and remove the dust with soft brush or wash it. Dry the filter before installing again.

⑦ Maintenance：The freezer should be cleaned regularly. For personal safety, please cut the power supply for any maintenance! Wear special protective gloves and wipe the inward and outward walls with wet and soft rag.

⑧ Note：DO NOT sprinkle water on the faces of cabinets, which may decrease insulating property of electric parts and rust metal parts.

DO NOT use hot water, corrosive cleanser and organic solvent!

⚠ Note：Prohibit the children to playing games around the freezer.

5 Service after sale

Some unexpected failures may arise during running. Please pay attention to the running status of your ULT freezer. If any exceptional case arises, please check and solve it according to the following introductions. If the problem is not solved well, please contact our service center for details.

Problem	Possible Cause
ULT freezer does not operate	● Power outage has occurred. ● The plug is bad or not securely plugged-in. ● Fuse is blown.

	Voltage is too low or too high.
Compressor does not work	● The controller power lock if turn on. ● Temperature setting is wrong.
Temperature is higher than setting	● Frost in inner wall is too thick ● The door is not closed properly or is opened too frequently. ● Overfull materials are put into chamber. ● Ambient temperature is too high.
Too great noise	● Freezer is not leveled well. ● Freezer leans upon the wall.
E4 system failure alarm	➢ Reason：Surrounding temperature higher than 32℃ or freezer around near wall, not good ventilation Solution：Please let the wall away from freezer around 30cm.and clean the filter mesh often. Or turn on the Air-condition.

◈ Below are normal operation：

- There are some light clashes when the compressor starts up and stops.
- During rainy and watery season some frost may accumulate on the surfaces of cabinets. Please clean it with dry rag.
- DO NOT open the door twice within 5 miniatures. This may lead the hot air into the interior of freezer and the door may be difficult to open because of a negative pressure due to a sharp decrease of temperature of this part air.
- If the freezer has liquid flowing sound, the reason is the refrigerant flowing in the pipeline.

Notice: Before call the service engineer, Please clean and disinfect the freezer.
Condition: Can not shake heavily, strike, preventing drench.
Environment Temperature: -40℃～+55℃, Relative humidity: 10%～90%.

6 The mainly technical parameter

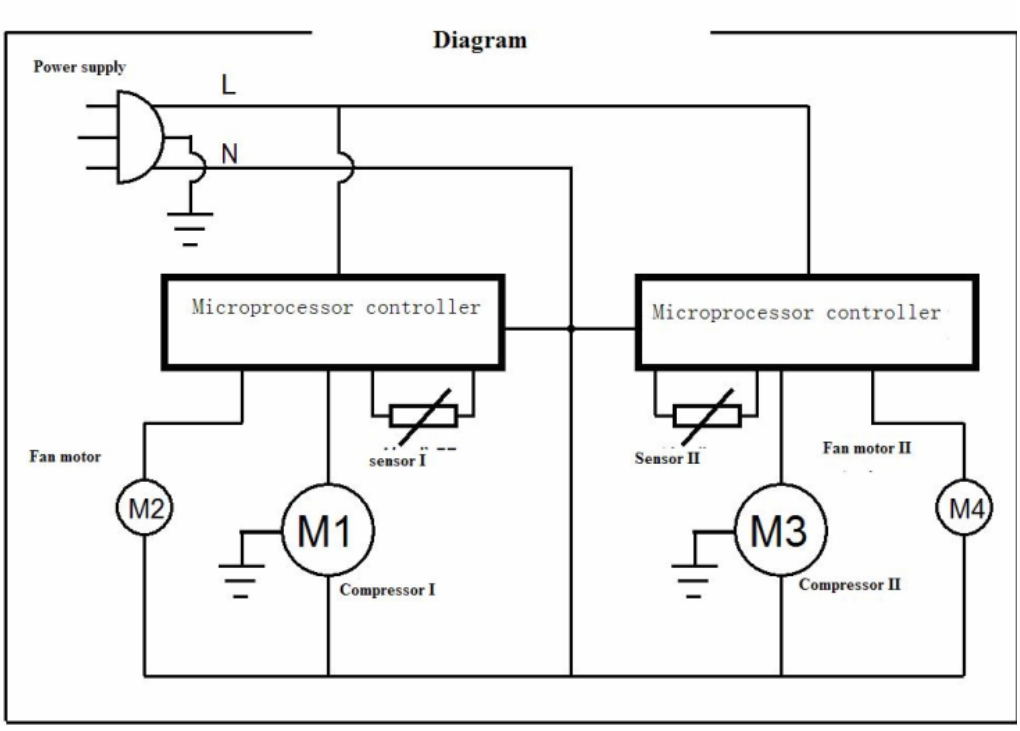
Model	DW-86DD498	The facility safe types	I Kind B Type
Climatic type	N	Input power（W）	1000Wx2
Storing temperature	-10～-86℃	Refrigerant	Mixture

Valid capacity（L）	254x2	Size（depth × width ×height）（mm）	897x1200x1999
Rating voltage（V～）	220	Rating frequency（HZ）	50

Package List：

Item	Operation Manual	Key	Defrost shovel
Qty	1	2x2	1

6.3 Circuit



All technical parameters and circuit diagram in nameplate are final ones for your units.