



Orbital Shaking Incubators

Model D-1102 Cod.5312096

Model D-2102 Cod.5312097

INSTRUCTIONS MANUAL

The Company has made the thorough research and analysis on possible dangers in the use and operation of the product. In spite of this, it is still very hard to predict all dangers. Therefore, the Technical Instruction does not necessarily include all dangers and precautions. However, operations in accordance with the methods and requirements stated in the Instruction can enhance the safety to the maximum. In the process of using the product, please pay due attention to the precautions so as to avoid accidents or product failures.

It is not liable for any damage of the instrument caused by the fact that users do not comply with the “Environment for the Use of the Instrument” described in the Technical Instruction.

It is entitled to modify the Technical Instruction at any time, without making the proper notice.

This manual includes important safety regulations which users should obey.

You can use the equipment correctly and safely according to the items and regulations introduced here. Possible injury of the user or any one else can be avoided if the identifiers and tips terms here have been followed.

Introduction of warning labels:



Danger: Explosion danger



Warning: Be careful of fire



Caution: The injure will be easily occur



Ground sign for protection

Safety tips

- Read this operating manual carefully if it is the first time to use this machine.
- It's not allowed to use tissues, materials or liquids which are combustible or potentially explosive and the steam emitted or explosion fragments of which may release poisonous matters.
- Only qualified maintenance staff with appropriate tools can carry out maintenance operation on the system of the thermostatic shaker.
- Please note that when moving the heavy machine, please be gentle to avoid damage to the moving parts of the shaker by fierce vibration and collision.
- Four feet of the product should be landed smoothly and properly after it is placed on the floor or table, in which case fierce vibration can be avoided after the machine starts. The location of the machine should tolerate no serious dust nor direct sunlight nor the presence of fierce vibration source and strong electromagnetic fields.
- When glass bottles, flasks, test tubes and containers alike are in the shaker, once the speed is set and the work fixtures are not placed or clamped properly, it will lead to container crack or solution splash which can easily cause injury and equipment damage, please pay full attention.
- Operation of humidifiers, humidifier furnaces and devices alike inside the shaker always leads to parts failure or electric shock accidents etc.
- Containers placed inside should not block the inlets and outlets of the air passage. Holes above are inlets while holes below are outlets. No flow of the air inside the shaker will have impact on the test temperature inside it, which will easily cause abnormal fluctuations of the test temperature.
- vibration bodies in long term of high temperature operation will easily come into failure (appropriate device temperature ranges from $4^{\circ}\text{C} \sim +65^{\circ}\text{C}$). The rising of environment temperature will decrease the efficiency and life of fitting parts and influence temperature accuracy as well.

Environmental requirements

No flammable solid, liquid or gas around.

With a general temperature ranging from $5 \sim 35^{\circ}\text{C}$.

With a power supply voltage with fluctuations not exceeding nominal voltage by $\pm 10\%$.

No condensation of moisture

Low humidity or being water-droplet-free.

Less dust.

No direct sunlight.

Well-ventilated

Flat desktop, marble platform or flat ground which is smooth and firm. (marble

platform preferred)

The setting environment should be noticed.

Dangerous environment should be ruled out.

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Simple instruction

D-1102 / D-2102

Simple instruction for shaking incubator D-1102 / D2102

4°C——65°C

25r/m——300 r/m (A)

25r/m——400 r/m (B)

Factory settings of the instrument: °C——25°C

r/m——50 r/m

Please operate according to the following procedures

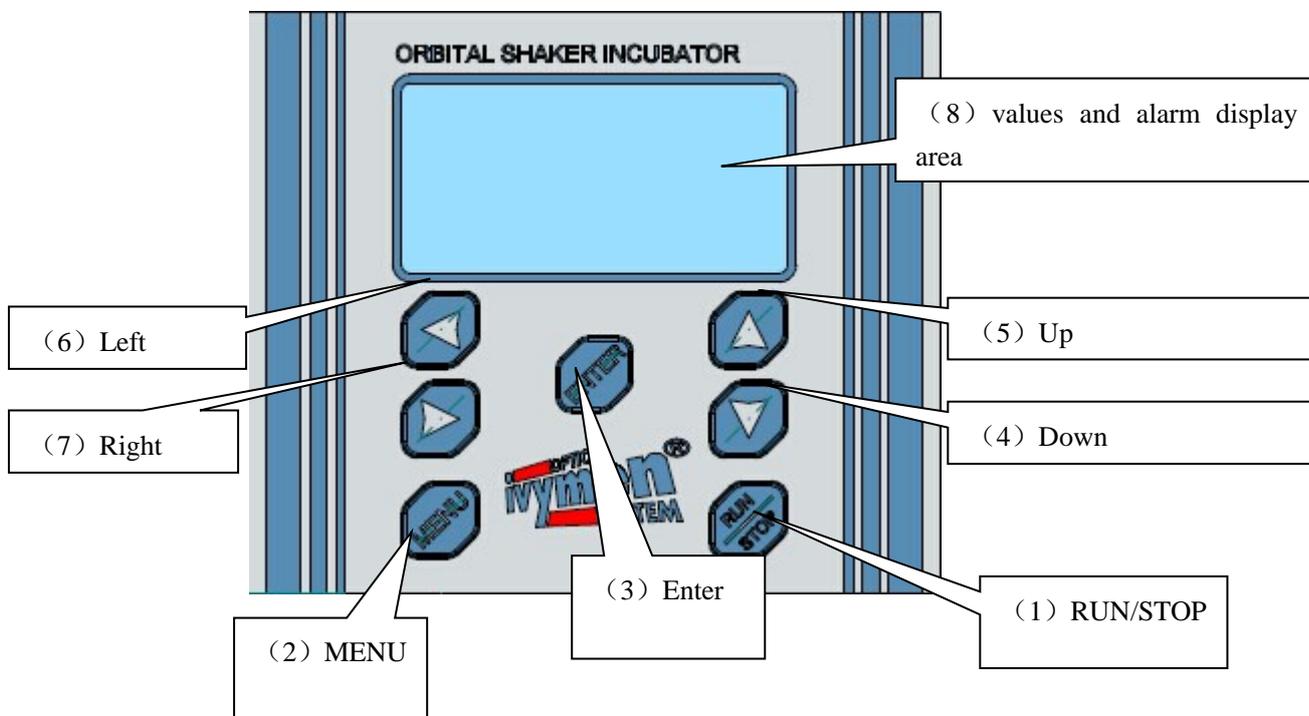
1. Open the instrument power switch to position [I]
2. Security thermostat is mounted in the shaker with a factory configuration of an adjusted over-temperature setting of approx 85°C.
3. This model comes with no LED lighting design.
4. Press “MENU” on the control panel → enter the interface of “*Set Parameters*”
5. Press buttons Up and Down→ select “Mode Selection” or “Fundamental Parameters” which requires a password to enter. Press MENU to return to the previous menu.
6. Press ENTER → confirm the mode or parameter to enter. Now it is “Mode Selection”. Press MENU to return to the previous menu.
7. In the interface of Mode Selection, press buttons Up and Down → select “Standard Mode” or “Program Mode”. Press MENU to return to the previous menu.
8. Press ENTER → confirm the selected mode. Now it is “Standard Mode”. Press MENU to return to the previous menu.
9. Press buttons Left, Right, Up and Down to set the required parameter values. Pay attention to the setting of “YES/NO” (“YES/NO” set to 1 indicates the execution of currently selected program while 0 indicates inexecution).
10. Press ENTER to confirm the setting. Press MENU(3times) to return to the main interface.
11. Press RUN/STOP once → the machine runs or stops.
12. Once the operation is finished, please press RUN/STOP once to close the program and then turn off the power.

Introduction

The shaking incubator is a constant temperature shaking device intended for cell culture, bacteria culture, fermentation technology and things alike, and is widely used in research institutions, universities and colleges, health epidemic prevention, doping test, agricultural research and the field of biological molecules.

- High brightness LCD is adopted in this product. The latest fuzzy PID logic controller is also employed to quickly reach the set value and make temperature control and speed control more accurate.
- Reasonable air duct structure. Special axial fan motor and unique duct structure make the temperature distribution more uniform.
- Three-eccentric balanced body drive is adopted with brushless motor. Minimal power consumption and lowest noise make it possible to gain maximum driving capacity while greatly improving the body's stability and service life.
- Multiple tray extensions with option of flask fixing trays which are of viscous silicon gel plate and are specially designed.
- With the functions of auto-stop, timing run, control of temperature and speed program, and clock display.
- The case of the product is made of highly qualified cold-rolled steel of 1.0mm which is of strong anti-rust. And the liner of the product is made of stainless steel SUS304 of 0.8mm.
- Production of the product's case has employed fully automatic CNC tools and laser processing technology, which ensures the elegant appearance of the case.
- Insulating layer of the case employs polyurethane foam technology to realize foam insulation, which greatly increases the insulation capacity so that more energy is saved and cost is reduced. Meanwhile, the case strength and its adaptation to the environment are greatly improved.
- Design of anti-water into the body of the inner case floor makes it possible to maintain the normal running and service life of the product in case of incidents.
- The outer surface of the case is treated with American DuPont high-intensity powder spray.
- Multi-angle transparent design of this hypothermia incubator shaker enables the users to observe the internal operating state without opening the door.
- RS232 access allows the connection to computers so that the changing status (option)of the temperature, speed and parameters alike can be recorded.
- The case is designed with auxiliary pneumatic brace which makes the opening and closing of the door more convenient.
- Separate temperature-limiting alarm system is set. When the temperature is beyond limitation, it will be automatically interrupted so that experiments can be carried out safely.

Control panel



1. RUN/STOP

Run or stop the program

2. MENU

Enter and quit setting menu

3. Enter

Set parameters and confirm running models

4. 5. Up , Down , Buttons to adjust the values up or down.

Adjust the values located by the cursor. Up indicates increase while Down indicates decrease.

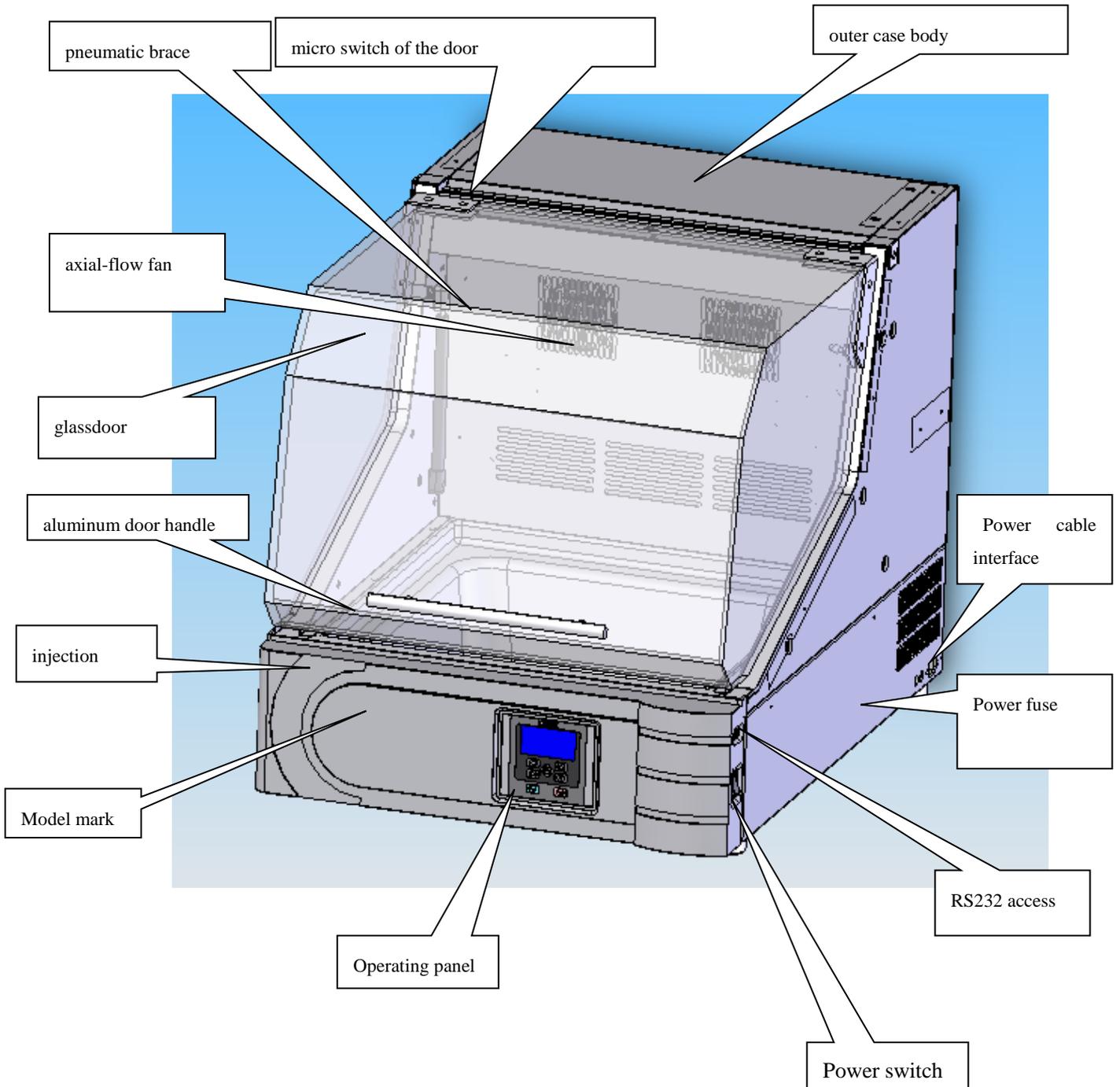
6.7. Left , Right , Move the cursor to the left or right.

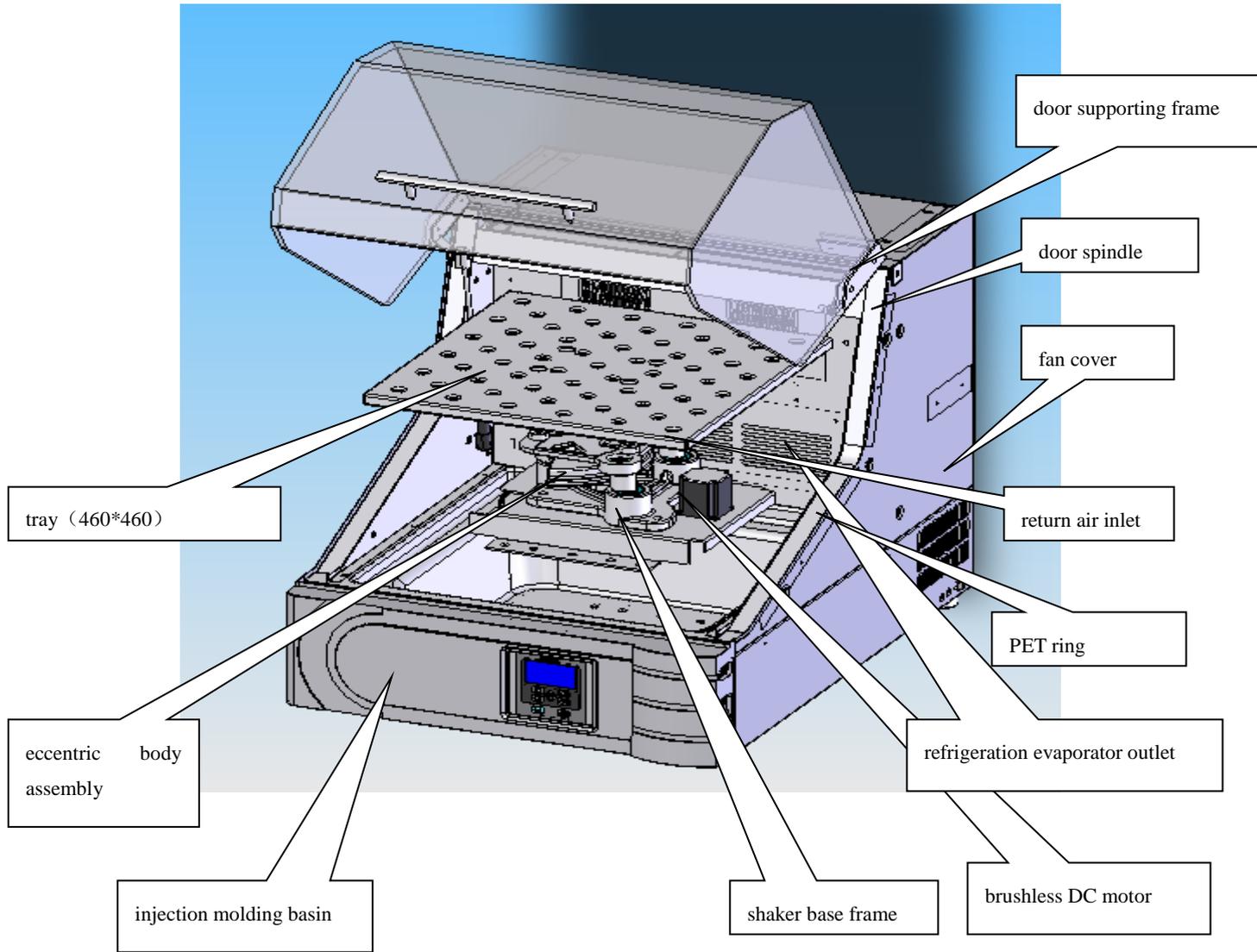
Used to move the cursor.

8. LCD display area

When the instrument is turned on, the LCD display starts to work and is designed for dialogue between users and computers. The bottom line is the alarm.

Structure





Appliance Connection



Warning

Do confirm the classes of the voltage, phase, capacity and outlet of the power supply.

Incorrect connection of the power supply can easily lead to fire and electric shocks.



Warning

Connect the ground wire correctly

To prevent electric shocks, never connect ground-wire to gas pipes or running water pipes.



Warning

Do not use drag strips or desktop sockets

It's easy to result in wire burning because of over loading of the current, which may cause fire hazard.



(1) Confirm the product model, the connecting voltage, phases, capacity and the power supply.

(2) Confirm the power outlet (Do not connect to the power outlet at the moment). If it is an outlet with ground wire, it can be used directly.

Where there is no socket for grounding power, grounding adapter is required to set on the power plug. Connect the ground connector of the adapter to the ground.

Where there is no ground wire, please contact the nearest electrical engineering team to set the ground wire in accordance with the third type of ground engineering requirements.

Do not use drag strips or desktop sockets when connecting to the power supply.

Product model	Power supply below should be connected	
	Voltage	Capacity
D-1102 / D-2102	AC 220V	5A

Operating Instructions for Setup Procedure

Setup, run and stop of standard mode

Insert the specified power supply and press the power switch

Boot display:



Display 5 seconds later:

```
Standard mode
Measured temperature: 025.0°C
Measured rotating speed: 050r/m
End of run.
```

When there is an alarm, alarm indicator lights are on and “alarm signal” is displayed on the interface. On case that more than one alarm appears, the signals will be displayed in cycle with 2 seconds interval.

Procedure of instrument set consists of three parts: standard mode, program mode and fundamental parameter set.

Note: The standard mode is of temperature control:

The program mode is of cycle control.

1. Setup of standard mode

Press **MODE** to select the mode type.

Mode selection

```
<Parameter Setup>
Mode selection
Fundamental parameter
```

Press buttons Up ▲ Down ▼

Select the standard mode or the program mode,

Press **ENTER** to get into the mode.

Press **MODE** to return to previous menu.

Get into the standard mod via mode selection. Set up the mode

1: Standard mode

```
<Standard Mode>
025.0°C    050r/m
00Days00Hrs00Min
Run: 1
```

Select the standard mode:

Press Left ◀ Right ▶ to move the cursor,

Press Up ▲ Down ▼ to modify and set up parameters of temperature and time,
(Run: 0 stands for inexecution while 1 for execution)

After setup procedure finished, press ENTER to confirm.

Press the button MODE to exit and return to previous menu.

*******Description of standard mode*******

The control of standard and program modes:

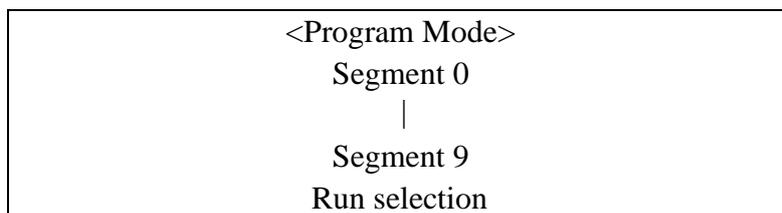
1. For temperature control mode, press RUN/STOP after the system starts and parameters are set. When the temperature rises, timing begins and later stops at set time.
2. For cycle control mode, after the system starts and parameters of each segment are set, press RUN/STOP to start the setup temperature and run time of each segment. When temperature rises, timing begins and later stops at set time.

2. Setup of program mode

Press the button MODE to select the mode type.

Program mode contains 10 segments

Mode selection



Press buttons Up ▲ and Down ▼

Select the standard mode or the program mode,

Press ENTER to get into the mode.

Press the button MODE to return to previous menu

Select the program mode, and press button ENTER to get into program mode setup.

Press Left ◀ Right ▶ to move the cursor,

Press Up ▲ Down ▼ to select each segment for temperature and time setup.

Press Up ▲ Down ▼ to setup parameters of temperature and time, with buttons of
Left and Right to set the number.

After setup procedure is finished, press button ENTER to confirm.

Press the button MODE to exit and return to previous menu.

Get into the program mode via mode selection. Set up the mode.

1: Program mode

<p><Segment 0> -00.1 °C1r/m -1Day-Hrs-1Min</p>

Press Up▲ Down▼

Select any segment from 0 to 9 for temperature and time set.

Press ENTER to get into the segment.

Select segment 0:

Press Left◀ Right▶ to move the cursor,

Press Up▲ Down▼ to modify and setup parameters of temperature and time.

After setup procedure is finished, press button ENTER to confirm.

Press the button MODE to exit and return to previous menu.

Note:

Run selection: ①for segment setup, ②for run

With segment setup, operators can select any segment,

With run setup, operators can decide whether to run the program mode or not. (Run: 0 stands for inexecution, while 1 for execution)

If operators do not press any button more than 1 minute at the setup interface, the system will exit automatically to non-setup interface.

Failures and Solutions

Failures	Possible Causes	Solutions
(Door) Alarms on: <ul style="list-style-type: none"> • Cabinets heating stops • Circulating fans stop 	<ol style="list-style-type: none"> 1. Doesn't close or not fully close the cabinet door. 2. Bad contact of door switch. 	<ol style="list-style-type: none"> 1. Check if the door is closed well 2. Check if the door switch is broken
security thermostat response: <ul style="list-style-type: none"> • Cabinets heating stops • Circulating fans stop 	<ol style="list-style-type: none"> 1. Whether the switch parameter of security thermostat is set too low? 2. Over-temperature protection controlled by microcomputer system doesn't work. 	<ol style="list-style-type: none"> 1. Check if the set temperature is too low, and modify parameter 10°C higher 2. Check if the temperature probe is broken
Poor at refrigeration <ul style="list-style-type: none"> · Longer experimental test below zero 	<ol style="list-style-type: none"> 1. Environmental temperature is too high 2. Condenser is too dirty 3. Be lack of Freon 4. Whether Freon is leaked 	<ol style="list-style-type: none"> 1. Reduce environmental temperature 2. Clean the condenser 3. Need help from technicians from manufacturer
The glass door frosts seriously during experiments below zero	<ol style="list-style-type: none"> 1. Door heating wire doesn't work 	<ol style="list-style-type: none"> 1. Check if there exists bad contact of heating wire connecting terminals 2. Check if the heating wire is broken
Large fluctuation appears at temperature difference during constant temperature test in high temperature constant temperature	<ol style="list-style-type: none"> 1. Bad contact of heating tubes inside the cabinet. 2. Microcomputer controlled parameters have been modified 	<ol style="list-style-type: none"> 1. Check if there exists bad contact of heating tubes 2. Restore to factory default
Loud noise for compressor on work	<ol style="list-style-type: none"> 1. Check if the set screws of compressor and evaporator loosened 2. Check if there exists friction for condenser fan 	<ol style="list-style-type: none"> 1. Fasten the set screws of compressor and evaporator 2. Correct the fan and fasten the fan blades
Compulsory or automatic defrosting doesn't work after experimental below zero	<ol style="list-style-type: none"> 1. Check if there exists bad contact for connecting terminals of defrosting magnetic valves. 2. Check if there is any damage of the defrosting magnetic valves. 	<ol style="list-style-type: none"> 1. Fasten the connecting terminals of defrosting magnetic valves 2. Change the defrosting magnetic valves
Temperature test doesn't work	<ol style="list-style-type: none"> 1. Check if there exists bad contact for connecting terminals of temperature probe 2. Check if the temperature probe is broken 	<ol style="list-style-type: none"> 1. Fasten the connecting terminals of temperature probe 2. Change the temperature probe

Warranty commitment

(I) Conditions of free maintenance

1. If failures come out on materials or design or manufacture of our company's products and components, within one year warranty period starting from the date of invoice, we promise for free maintenance.
2. Beyond the warranty period, if failures caused due to our design or manufacture, we can also provide maintenance service, with appropriate spare parts and on-site service fee charged.

(II) We will charge for maintenance to below failures within the warranty period:

1. That caused by error usage.
2. That caused by incorrect modification on parameters of the equipment or on the product.
3. That caused by natural disaster like flood, fire, earthquake, etc., and unstable voltage or other special external causes.
4. That due to operation not following our operating instruction manual, or caused during moving of the equipment by customer.
5. That caused as the customer ships the equipment abroad without contact with us.
6. That caused during transportation.
7. Regular check and maintenance requested by customer.
8. That caused by unauthorized reassembly of the equipment without notice to us.

(III) Regular check and maintenance

For failures beyond the warranty period, we will charge for the maintenance, with cost price in principle.

If customers request for regular check or maintenance, please identify the time and content on maintenance feedback sheet and send it to our Technical Service Center within the warranty period. We will then send you receipts and vouchers. After RM is received, we will arrange the specific time for regular check and maintenance.