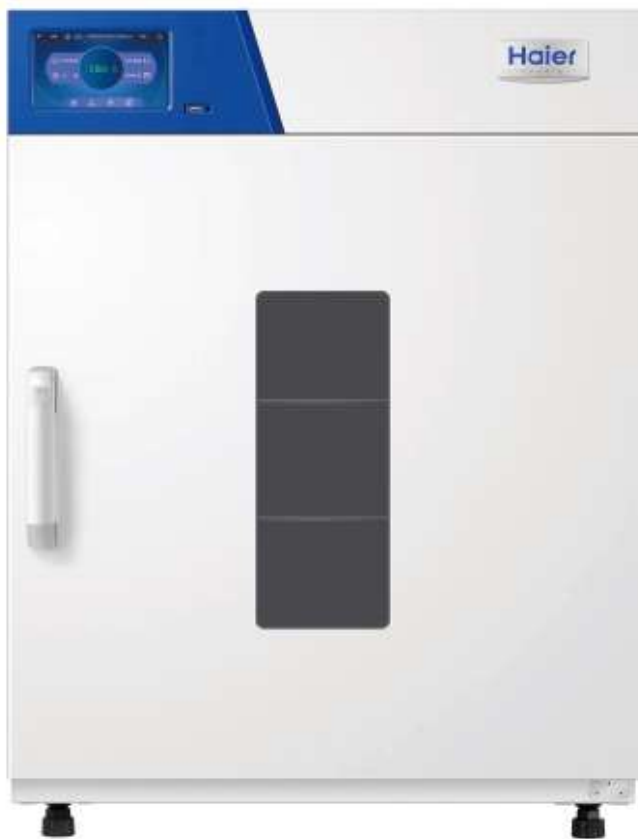


# Haier

## Electro-thermal thermostatic drying oven Operation Manual



Internet of Things  
Biotechnology Makes Life  
Better



Model:  
HFS-60  
HFS-160  
HFS-260  
HZS-60  
HZS-160

- Please read this manual carefully before use
- The company reserves the right to interpret the instruction manual
- Please refer to the appearance of actual product
- Please keep it together with the invoice after reading
- In case of any update of product technology or software, no prior notice will be provided.
- This product is only suitable for sale and use in mainland China

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# Safety precautions

Dear Haier Users:

Greetings! Thank you for using the electro-thermal thermostatic drying oven from Haier. In order to ensure that you can better read this manual and use this product, and to prevent the occurrence of personal injury and damage to articles, please be sure to carefully read and abide by the contents marked with the following symbols in this manual. For ease of reading, the electro-thermal thermostatic drying oven is referred to as the drying oven hereunder.

## Safety label



Alert and attention



Surface thermal insulation




Risk of electric shock



Grounding

## Safety warning



In all cases marked , documents need to be consulted in order to clarify the nature of the potential hazard and any countermeasures that must be taken.



warning

Failure to observe the warning symbol may lead to serious casualties.



Attention










Failure to comply with the instructions under the symbol of Caution may result in casualties or damage to the drying box and related property losses.



Act or operation that must be prohibited



Act or operation that must be observed

-  It is very important to read the product manual when using the machine for the first time, because the protection provided by the equipment may be damaged if the equipment is not used in the way specified in the manual.
-  The installation and maintenance of the drying oven can only be done by the professional technicians or authorized after-sales maintenance personnel of Haier, otherwise it may lead to an electric shock or fire;
-  The drying oven must be firmly secured on a solid flat surface. If it is not secured firmly or placed improperly, the drying oven will tip over or cause injury to any personnel;
-  The drying oven can only be operated by the trained and authorized personnel;
-  The special power supply indicated on nameplate of the drying oven shall be used, or it may cause a fire or electric shock.
-  If the voltage is lower than 198V or higher than 242V, an automatic voltage regulator shall be added. The voltage shall meet the service requirements.
-  If the power cord needs to be extended, cross-sectional area of the extended cord shall not be less than 2mm<sup>2</sup> and the length shall not be longer than 3m, otherwise it may cause a fire or electric shock.
-  Power cord of the drying oven is equipped with a three-pin (grounding) plug that matches the standard 10A or 16A three-pin (grounding) socket. Under no circumstances should you cut or remove the grounding pin of the power cable. Make sure that the power plug and socket are tightly, firmly and reliably plugged, otherwise it may cause a fire.
-  Use the power socket with a grounding wire to prevent electric shock. If the power socket is not grounded, the ground wire must be installed by a professional technician.

- ❗ If the gas or any other flammable gas leaks, it is necessary to close the valve where the gas leaks from, and open the doors and windows to vent the gas. Do not plug or unplug power plug of the drying oven, otherwise it may cause an explosion or fire;
- ❗ When unplugging the drying oven from the power socket, the power plug shall be tightly held without pulling wire of the power plug. Pulling conductor hand may lead to electric shock or fire due to short circuit.
- ❗ If the drying oven does not work properly, please pull out the power plug. Continued operation under abnormal conditions may cause electric shock or fire.
- ❗ Before any repair or maintenance of the drying oven, power supply of the drying oven shall be disconnected to prevent an electric shock or any personal injury;
- ❗ Drugs or suspended particles in and around the drying oven shall not be inhaled during maintenance. Otherwise, it may be harmful to health.
- ❗ If the drying oven will not be used for a long period of time, the power plug shall be pulled out to prevent electric shock, electric leakage or fire due to aging of the power cord;
- ❗ If the drying oven is left unused in an unsupervised area for a long period of time, please make sure that the drying oven is not accessible to children and that the door is not completely closed.
- ❗ Scrapping and disposal of the drying oven shall be carried out by relevant personnel. The freezer door shall be removed to prevent accidents such as suffocation.
- ❗ When the drying oven is restarted in case of any power failure or after the power is turned off, settings of the drying oven shall be checked; A change in the settings will likely result in a change in results of the culture.
- ❗ Gloves should be worn during maintenance so as not to touch sharp edges or corners and cause injuries.
- ❗ When handling the drying oven, care shall be taken not to be tripped by the drying oven to prevent the drying oven from being damaged or any personnel from being injured;
- ⊘ There shall be no obstacles around the drying oven to keep the ventilation unobstructed;
- ⊘ The tissues, materials, or liquid substances that are likely to burn or have the potential to explode shall not be used because the vapors or explosion fragments they give off may release toxic substances.
- ⊘ The drying oven shall not be placed in a humid location or the location which is vulnerable to water splashing, or the electric leakage or electric shock may be caused due to degraded insulation.  
Water shall not be poured directly on the drying oven, or it will cause electric shock or short circuit;
- ⊘ Any container filled with water or any heavy object shall not be placed on the drying oven. If the item falls off, it may cause personal injuries, and outflow of water will degrade the insulation, causing electric leakage or electric shock;
- ⊘ The drying oven shall not be grounded via the gas pipe, power supply pipe, telephone wire or lightning rod. The above grounding may cause electric shock or other dangers.
- ⊘ Do not touch any electrical parts (e.g. power plug) or any switch of the drying oven with wet hands, otherwise it may cause an electric shock;
- ⊘ The user is not allowed to disassemble, repair or modify the drying oven at its own discretion. Otherwise, fire or personal injury may be caused due to improper operation.
- ⊘ Flammable and explosive hazardous articles or volatile substances shall not be placed in the drying oven, nor shall flammable sprays be used near the drying oven, otherwise it may cause an explosion or fire;
- ⊘ The metal objects, such as nails or iron wires, shall not be inserted into any orifice or gap of the drying oven or any air outlet for internal air circulation, otherwise the electric shock or injuries will be resulted from contacting of the such objects with the moving parts;
- ⊘ Please do not pull or carry the drying oven from the door handle, in order to prevent the drying oven from being damaged or any personnel from being injured;
- ❗ Do not use any electrical appliances in working chamber of the drying oven, except for the types recommended by the manufacturer;

# Precautions for use

- Structure and composition: This product is composed of the incubator body, heating system, control system (including the alarm system) and the shelves whose spacing can be adjusted at will.
- Displayed temperature of the drying oven is temperature value of the temperature sensor inside the oven. Although sometimes the temperature displayed may differ from the actual value in center of the drying oven, it will gradually approach the true temperature.
- The drying oven shall be cleaned with a diluted neutral detergent. The brushes, acids, gasoline, soap powder, polishing powder, or hot water shall not be used to clean the drying oven. Such materials may damage the painted surface and the plastic and rubber parts. Be careful not to wipe plastic and rubber parts with volatile solvents such as gasoline.
- The stainless steel parts inside the drying oven are not acid-resistant, so please take precautions against corrosion. Never put any acid medium in the oven!
- When the drying oven will not be used for a long period of time, the power shall be cut off.
- Each time when accessing samples, please try to minimize the time of opening the door, so as not to cause great fluctuations in the temperature and humidity of the incubator.
- A gap of not less than 300mm must be kept around the product to facilitate heat dissipation and cut off the power supply in case of any emergency.
- EMC requirements:
  - The equipment meets the emission and immunity requirements as specified in GB/T18268.1.

# Product features

Intended use: This product is a precision laboratory instrument which is applicable for drying of electronic parts and components, and for drying, baking, wax dissolving, sterilization and curing in relevant industries such as industrial and agricultural, medical and health care and plastic machinery, and in production workshops or laboratories of colleges & universities and scientific research departments. The fuzzy PID control algorithm is used to control various parameters of the drying oven precisely. There are no absolute contraindications to the product.



The drying oven shall not be used beyond intended performance of the product.

## 1. Parameter control

- The product is used to provide a drying environment in which the temperature ranges from RT (room temperature) +10°C to 200°C . Computer control, digital display of temperature parameters. The temperature is displayed with an accuracy of 0.1°C .

## 2. Safety system

- Multiple fault alarms: high/low temperature alarm, sensor fault alarm.
- Multiple alarm modes: buzzer sound alarm, touch screen display alarm;
- All independent components are safely grounded.

## 3. Humanized design

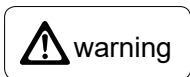
- Friendly touch interface that responds sensitively to finger movements when wearing rubber gloves;
- Bulletin design, paperless office message notepad function, safe running mode.
- Large capacity data storage with up to 15 years of data traceability.

# Product installation

## Installation Environment

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- Indoor use.
- The temperature is 5°C ~35°C .
- The maximum relative humidity is 80% when the ambient temperature is below 31°C; and, the maximum relative humidity drops linearly to 67% when the ambient temperature is 35°C.
- The atmospheric pressure is 80kPa~106kPa.
- There is no direct sunlight or direct radiation of other heat sources.
- The contamination level is 2, and there is no explosive gas, high concentration dust or corrosive gas around.
- There is no strong vibration and airflow around.
- Rated voltage: AC 220V, with an allowable deviation of -15%~+10%.
- Rated frequency: 50Hz or rated frequency of gas, with an allowable deviation of  $\pm 2\%$ .
- Typical transient overvoltage of the grid supply is allowed. The nominal rating of transient overvoltage is class II of the impulse withstand voltage (overvoltage) specified in GB 16895.12-2001.



- The drying oven shall not be placed and operated in a place without ventilation. If there are several drying ovens in the same room, auxiliary ventilation may be required.



- When the drying oven is used beyond working environment of the product, its expected performance cannot be guaranteed.

## Product unpacking and handling

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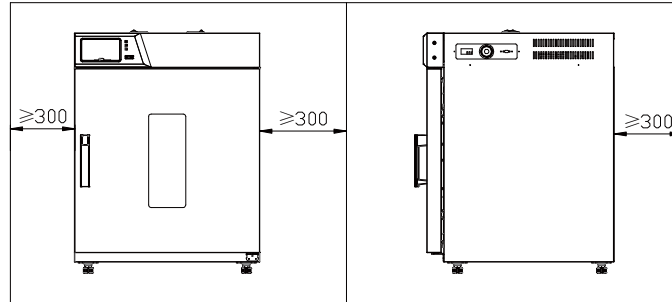
The packing straps shall be cut off with an appropriate unpacking tool, such as scissors or wallpaper knife, and then a cross screwdriver shall be used to remove screws from the outer packing case to remove the packaging; the accessories shall then be checked for completeness.



- Appearance of the device shall not be bruised or scratched, so at least two adults shall be responsible for unpacking for safety.
- Due to the heavy mass of the device itself, appropriate mechanical handling tools shall be used.
- If manual handling is used, it should be noted that four adults (at least two) shall work together to lift bottom of the device vertically and then synchronously move it horizontally to the location where the device is stored. During handling, it is strictly prohibited to apply any pressure on outer door of the device, or the door body will fall off.

## Spacing

The drying oven shall have a certain safe distance from the adjacent wall/object.



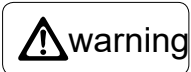
## Connection of main power supply

•Before connecting the main power supply, it is necessary to ensure that the power matches the power consumption indicated on the nameplate. The power supply specifications of the device are specified as follows:

Power supply voltage: AC 220V±22V;

Voltage frequency: 50Hz±1Hz;

•There is a grounded power cable on accessories of the drying oven. It is necessary to insert quick connector of the power cable into the interface (opposite to the drying oven) at upper left corner of back of the drying oven.



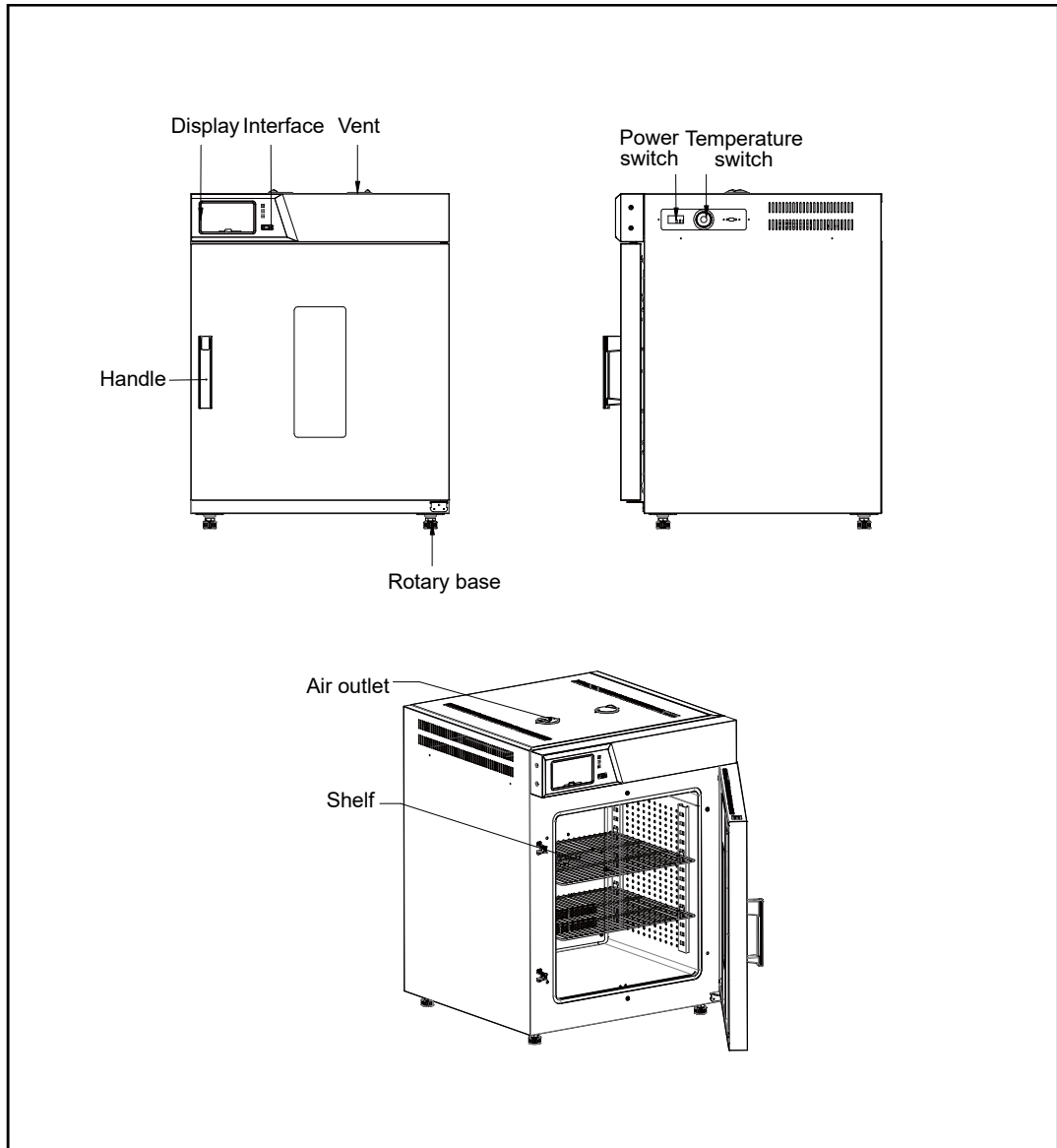
•The power cable shall be inserted in place. The power cable connector of the drying oven has a self-locking structure. The main power supply device shall be well grounded, so as to ensure that the power cable of the drying oven is well grounded after connection.



# Name of each part

■ Name of each part

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# Debugging and use

## Preparation before use

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- The operating temperature is 5°C ~35°C ;



The maximum relative humidity is 80% when the ambient temperature is below 31°C ; and, the maximum relative humidity drops linearly to 67% when the ambient temperature is 35°C .

## Power on

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- Connect with the main power supply;
- Turn on the main power switch;



It is necessary to pay attention to pressing direction of the main power switch and to press it to the end to ensure that the power is connected.

## Initial settings for first power on

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- Language: select the required display language according to needs;
- Network: search the networks and connect to the wireless network;
- Time: you can set the time manually, or synchronize with the network time (such as by connecting to the network);
- Temperature scale: Select the temperature scale °C or °F according to needs;
- Modes: Select management modes according to needs. Anyone is accessible to settings and viewing of parameters in the ordinary mode, while only the administrator can set the parameters in authorization mode;
- Password: Set the administrator password for rights management; (please remember your password. If you forget your password, please contact Haier's technical support.)



Language selection interface



Network setting interface



Time and temperature scale setting interface








Mode setting interface



Password setting interface

## Main interface

After the initial settings, enter the home page interface

- Running records: time records and alarm records generated during running of the incubator;
- Running data: the running curve of working space parameters during running of the incubator;
- Set: basic settings of the incubator;
- Program setting: Users can edit the program to be run according to their needs;
- Start: click  to enable heating of electric heating wires after setting of parameters or the program;
- Mute: click  to cancel the buzzer alarm (the buzzer alarm will continue after the set time is exceeded);
- Heating: after the heating wire starts to heat, the icon  will be in red;
- Fan: click the  to enter the speed setting interface;
- Message notepad bulletin: click the  to enter the message notepad bulletin interface;



Home page interface

## Set

Users can set the parameters in two ways

- Click the parameters displayed on the home page interface directly to enter settings of corresponding parameters;
- Click the “Set” icon to enter the setting interface, and then select “Parameter Settings” to enter setting of corresponding parameters;



Setting interface

## Parameter settings



- Set temperature scale: Select the temperature scale (°C or °F );
- Set temperature value: HFS: 15°C ~105°C , HZS: 15°C ~230°C , the default is 37°C ;
- High temperature alarm value: set temperature value +0.5°C~ set temperature value +10°C and°C overtemperature alarm value, the default is +1°C ;
- Low temperature alarm value: set temperature value -0.5°C ~ set temperature value -10°C, the default is -1°C ;
- Overtemperature protection value: HFS: set temperature value +5°C~280°C and > high temperature alarm value; HZS: set temperature value +5°C ~260°C and > high temperature alarm value;, the default is 10°C ;
- When the +- is pressed, the value will change by 0.1 when it is pressed simply, and will change by 1 when it is pressed and held. The value can also be clicked to enter manually;
- Click the circle in the center of the main interface to enter the interface directly;
- The changes will take effect after clicking "Save Changes";



- Manual mode: The fan runs at the set speed below after it is enabled, and at 100% speed after it is disabled;
- Click the fan icon at bottom of the main interface to enter the setting interface directly;
- The changes will take effect after clicking "Save Changes";



- Actual temperature = set temperature + calibration temperature;
- The calibration value can only be changed by +/- and cannot be entered manually; the value will change by 0.1 when it is pressed simply, and +/- cannot be pressed and held;
- Temperature calibration range: -20°C~20°C;
- The changes will take effect after clicking "Save Changes";



- The device will start self-tuning after selecting “Start” and clicking “Save Changes”;
- During self-tuning, the main interface will display: self-tuning;
- Self-tuning can only be used for preliminary parameter determination. Changes shall be made on the basis of tuning parameters according to requirements of the oven, so as to achieve the optimal control effect.

## Device running

Users should first select the running mode before running according to the requirements. The default running mode of the system is fixed mode. There are 4 running modes in total, and one of them must be selected before running;

Set path: Main interface - Set - Device Running

- Fixed mode: the device runs for a fixed period of time or indefinitely according to the set constant temperature;
- Appointed fixed mode: to enable appointment countdown before activation of the fixed mode;
- Program mode: users edit the program to be run by themselves according to their needs;
- Appointed program mode: to enable appointment countdown before activation of the program mode;

### •Fixed mode



- You can select in a range of (0-999) hours (0-59) minutes. When 0 hour and 0 minute is selected, the fixed mode will continue to run endlessly. At the end of the running, the fixed time duration will be cleared to zero. When the running is stopped manually, the fixed time duration will not be cleared to zero;
- If the temperature is changed during endless running of the device, it will continue to run at the changed temperature by default;
- When the device is running for a fixed duration, change of the temperature/time duration is not allowed. If any change is necessary, change shall be made after clicking "Stop Running", the device will run for the changed time duration at the changed temperature;
- If "Stop" is clicked without making any change when the device runs for a fixed period of time, it will continue to run for a fixed period of time after startup;
- If change of the running mode is prohibited during running of the device, it is necessary to click "Stop" first if you want to change the mode; after the mode is changed, the fixed duration will be cleared to zero;
- If the power supply fails when the device runs for fixed time and the interrupted device is still in running state, the current temperature will be kept endlessly after power restoration;
- After the running in fixed mode ends, a window will be popped out to hint and the buzzer will sound;
- The settings will take effect after clicking "Save";
- Appointment fixed mode



- An appointment can be made for the fixed mode, and time of appointment ranges within (0-999) hours (0-59) minutes. At the end of running, the appointment time/fixed time are cleared to zero;
- After clicking "Start", it is forbidden to change the running mode. If you want to change the running mode, you need to click "Stop Running"; after the mode is changed, the fixed time/appointment time that is originally set will be cleared to zero;
- After the running starts, it is forbidden to change the temperature/appointment time/fixed time, whereas it is allowed to change the high and low temperature alarm/overtemperature protection, etc.;
- If you click "Stop" during running of the appointment time to change any parameter, the device will continue to execute the remaining appointment time and the set temperature/fixed time;
- If you click "Stop" to change any parameter after running of the appointment time ends, the appointment time will be cleared to zero, and the temperature/fixed time after the change will be executed directly after clicking "Start";
- If you click "Stop" during running without changing any parameter, the running will be continued after startup;
- If the power supply fails when the device runs for fixed time and the interrupted device is still in running state, the current temperature will be kept endlessly after power restoration;
- After the running in appointment fixed mode ends, a window will be popped out to hint and the buzzer will sound;
- The settings will take effect after clicking "Save";



## •Program mode



- During running of program mode, any editing, deletion and other operations on program segments/subprogram segments in any form are prohibited;
- If you click "Pause" during running of program mode without making any changes, current subprogram segment will be run continuously after startup; if any change is made, this program segment will be run again;
- If change of running mode is prohibited during running of the device and it is necessary to change the running mode, click Stop Running;
- If the power supply fails when the device is in running program mode and the interrupted device is still in running state, current subprogram segment will be run again after power restoration;
- After the running in program mode ends, a window will be popped out to hint and the buzzer will sound;
- The settings will take effect after clicking "Save";
- Appointment program mode



- Program appointment mode; An appointment can be made for the program mode, and time of appointment ranges within (0-999) hours (0-59) minutes; At the end of appointment time or the mode is changed, the appointment time will be cleared to zero;
- Change of the mode is prohibited during running of the device. If any change is necessary, click to stop running. The appointment time will be cleared to zero after any change is made;
- During running of the device, any editing, deletion and other operations on program segments/subprogram segments in any form are prohibited;
- During running of the appointment time, you can click "Pause" to change any parameters; if no change is made to the appointment time, the remaining appointment time will be run continuously; whereas, if any change is made to the appointment time, the changed appointment time will be rerun;

- During running of the program segments, you can click “Pause” to change any parameters; after startup, the device will rerun the program segments that are set;
- If the power supply fails during running of the appointment duration and the interrupted device is still in running state, the device will run until the appointment duration ends by default and the program segment will be started after power restoration;
- After the running in appointment program mode ends, a window will be popped out to hint and the buzzer will sound;
- The settings will take effect after clicking "Save";
- Program settings

Click “Program Settings” on the main interface to enter the setting interface



Program setting running mode:

- (1) Ensure that the device is in standby state;
- (2) Mode selection: Set-Device Running-Program Mode/Appointment Program Mode;
- (3) Edit or select the required program segments;
- (4) Return to the main interface and click the “Run” button. Then, the device starts to run.

程序段	时间(时:分)	温度
1	01:00	37
2	01:00	50
3	00:50	37
4	01:00	70
5	01:00	105

## Basic settings

Users can click the main interface to enter the “Settings” interface and then click the “Basic Settings” to set language, time, alarm volume and so on of the vacuum drying oven:

- Change language: select the appropriate language from the drop-down menu.
- Time setting: set the time from the drop-down menu.
- Alarm volume: in case of an alarm, the buzzer will prompt, and the alarm volume can be adjusted.
- Running mode: select the common mode or authorization mode according to specific needs.
- Buzzer alarm delay time: in case of a buzzer alarm, click the mute button on main interface. If cause of the alarm still exists after delay time of the buzzer alarm, the buzzer alarm will continue.
- Key volume: to adjust volume of the key.
- Screen brightness: to adjust the display brightness of the screen.
- Screen sleep: it is recommended to set the screen sleep time according to the operating time, which can prolong service life of the touch screen.
- Lock screen time: if nothing is done during the lock screen time, the screen will go to sleep.



Attention

All changes will take effect after clicking “Save”.



## Message, notepad, bulletin

Click the home page to enter the message, notepad, bulletin page:

- New message: different authorized users can send messages between each other by creating new messages.
- Message mailbox: if there are any unread messages after the user logs in, the number of unread messages will be highlighted both on the homepage icon and at the upper right corner of the message mailbox.
- Notepad: It is used for recording. Notepad is open in normal mode and is accessible to anyone. In authorization mode, the users who log in can only view their own records.
- Bulletin: It is available for multiple users to post things that rest of the users shall be reminded of to the home page. After the screen sleeps and then is clicked, the bulletin interface will appear first, and then the home page interface will be entered into.




# Alarm

## Alarm type

Alarm type	Phenomenon	Alarm indication	Buzzer alarm
High temperature alarm	Displayed temperature > high temperature alarm value	Parameters are shown in red	Pulsed sound alarm
Low temperature alarm	Displayed temperature < low temperature alarm value	Parameters are shown in red	Pulsed sound alarm
Overtemperature alarm	Displayed temperature > overtemperature alarm value	Parameters are shown in red	Pulsed sound alarm
Door opening alarm	It takes more than 30S to open the door	The alarm flashes during the set alarm time	A pulsed sound alarm is given within the set alarm time
The sensor works abnormally	The temperature sensor fails	The alarm flashes	Pulsed sound alarm
Mode running end alarm	Running of 4 modes ends	Parameters are shown in red	Pulsed sound alarm

## Alarm restoration

This series of drying oven has automatic alarm recovery function:

- In the case of an alarm, press the mute button  on the main interface to stop the buzzer alarm;
- If cause of the alarm still exists, the buzzer alarm will restore automatically after the buzzer alarm delay time is exceeded;

# Cleaning

## Cleaning

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- Some parts of the drying oven are made of plastic. Plastics can be dissolved by solvents. Strong acids or corrosive solutions can brittle plastics.
- Do not use the solvents containing hydrocarbons, solvents containing more than 10% alcohol, strong acids, corrosive solutions to clean plastic parts and surfaces.
- Do not spray any detergent or other liquids on the touch screen and the electric control box on back of the drying oven. During cleaning, be sure that no water will enter into the electrical parts.
- If you have any doubt about the compatibility of disinfectants or cleaning agents with equipment parts or materials contained in the equipment, please consult Haier or an agent designated by Haier.
- Cleaning of external surfaces
  - a)Thoroughly remove the dirt, residues and sediments with warm water and detergent solution;
  - b)Wipe the surfaces with a piece of clean cloth and clear water;
  - c)Thoroughly dry the surfaces with a piece of clean cloth;
- Cleaning of display screen

Clean the display with a piece of 100% microfiber dry cloth!



Attention

Do not spray or wipe the display with detergent.

## Disinfection and sterilization

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### •Pollution control processes

When the drying oven is used, users shall develop corresponding pollution control processes compatible with the drying oven according to following requirements.

Wiping/spraying disinfection: Standard manual disinfection control processes for the drying oven and its accessories.

### •Wiping/spraying disinfection

Manual wiping/spray disinfection is divided into three stages:

#### a) Advance disinfection

Wipe/spray disinfectant on interior surfaces of the working chamber;

Disinfect interior of the working chamber and shelf surfaces fully with disinfectant as specified by disinfectant manufacturer;

#### b) Cleaning

Thoroughly remove the dirt, residues and sediments with warm water and detergent solution;

Wipe the surfaces with a piece of clean cloth and clear water;

Drain the water from the sink;

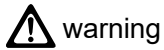
Thoroughly dry the working chamber and shelf surfaces with a piece of clean cloth;

#### c) Final disinfection

Wipe/spray disinfectant on removed shelves and duct panels, and thoroughly disinfect them in accordance with instructions of the disinfectant manufacturer;

Dry surfaces of the shelves and duct plates with a piece of clean cloth;

Reinstall the shelves and duct panel;



warning

#### Disinfection with alcohol!

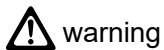
- a) The disinfectants with an alcohol content of more than 10% will form a flammable and explosive gas mixture when being combined with the air;
- b) When any of the such disinfectants is used, open flame or high temperature environment shall be avoided during disinfection;
- c) Such disinfectants shall be used in well-ventilated rooms;
- d) After the disinfectant reaction is completed, the disinfected parts shall be wiped clean;
- e) The safety regulations shall be followed, in order to avoid the fire and explosion hazards caused by alcohol-based disinfectants.



Attention

#### Chlorine-containing disinfectants!

The chlorine-containing disinfectants can corrode the stainless steel.



warning

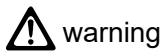
Only the disinfectants that do not corrode the stainless steel shall be used.

#### Electric shock!

Contacting with a current-carrying component may result in a life-threatening electric shock.

Before cleaning and disinfecting, disconnect the incubator from the power supply!

- a) Turn off the incubator by the power switch;
- b) Pull out the power plug to prevent accidental connection;
- c) Make sure that the incubator is powered off;



warning

#### Health hazards!

Surfaces of the working chamber may be contaminated. Contacting with the contaminated cleaning fluid may cause infection. The disinfectants may contain harmful substances.

During cleaning and disinfecting, be sure to follow the safety instructions and health regulations!

- a) Wear safety gloves;
- b) Wear safety goggles;
- c) Wear a mask and other cavity and respiratory system protection devices to protect your mucous membranes against irritation;
- d) Follow the safety instructions of disinfectant manufacturers and health authorities.

# Scheduled maintenance

The expected service life of this series of drying ovens is 10 years. During the expected service life, please follow the following scheduled maintenance advices:

- It is recommended that the drying oven shall be subjected to a routine inspection once a year to ensure operating accuracy and working safety of the drying oven. Each drying oven has undergone strict ex-factory debugging and inspection, in order to ensure high accuracy of the culture environment parameters. If you also want the drying oven to work at the highest accuracy, please contact the engineer of Haier;
- During daily repair and maintenance, only Haier or the organization designated by Haier can inspect or provide the parts necessary for maintenance of the vacuum drying oven;
- The user shall clean and disinfect the drying oven before notifying the maintenance engineer;
- Haier reserves the right to update and improve the drying oven;



# Q&A



Any question during use? If you suspect that something is wrong with the drying oven? Please read here first. The content of this chapter is to answer various possible fault phenomena and provide solutions.

If the problem still cannot be solved after such operation, please call the after-sales service department of Haier.

Do not repair or disassemble the drying oven by yourself.

## Common software problems

A. Inconsistency between the display temperature and actually measured temperature of the freezer; Temperature sensor PT100 of the drying oven is located on back plate of the liner. The temperature at different locations of the liner is different.

B. The deviation between the displayed temperature and actual temperature is large:

Click "Settings" - "Parameter Settings" - "Calibration" to observe if a large deviation value is artificially set;

C. The drying oven always fails to reach the set temperature:

Check if setting value of the temperature switch located behind the switching power supply is less than the temperature setting value;

D. Do the heating wires not work after clicking "Run"?

Click "Set" - "Device Running" to check the setting mode and appointment time of the device;

E. Does the device stop working in the early morning?

Click "Set" - "Device Running" to view "Running Status of Device After Power Off" and select "Continue";

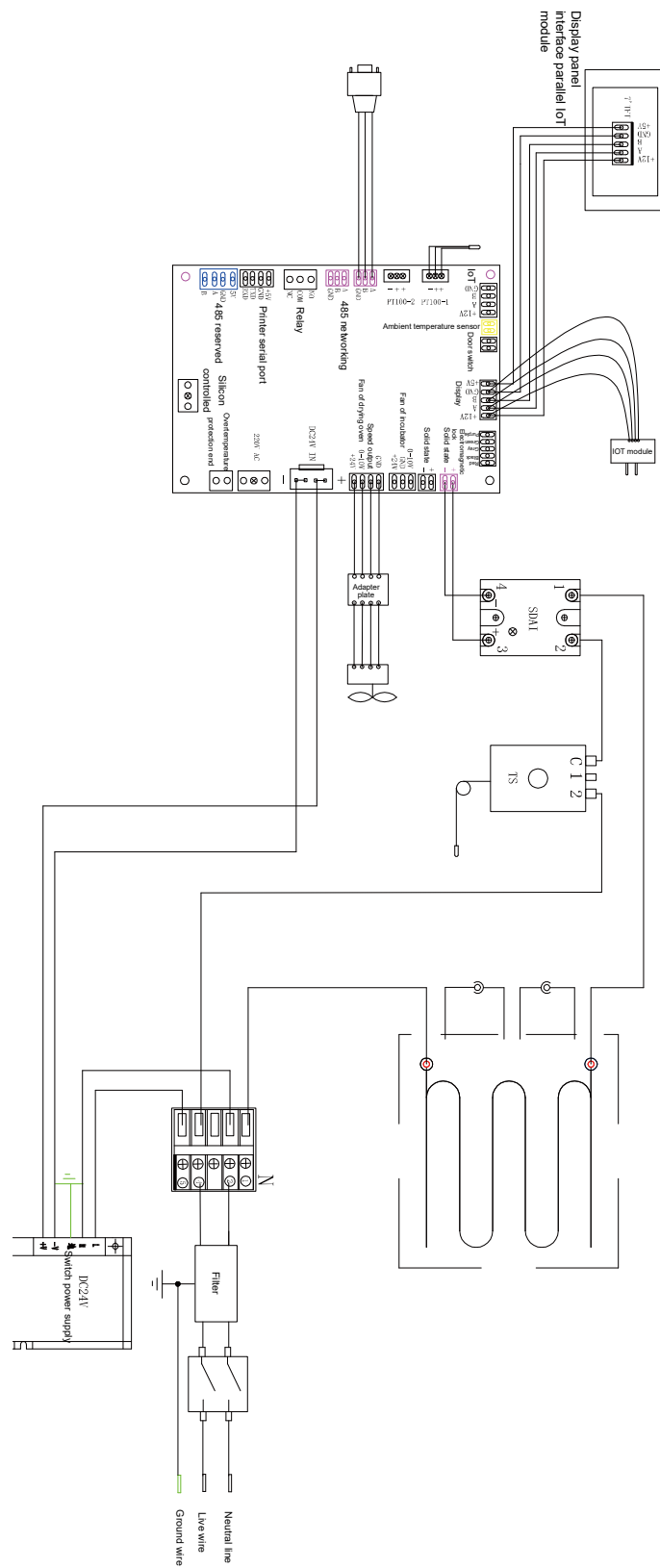
F. Does the fan not work?

Click icon of the fan on main interface to check if "Speed Adjustment" is 0%;

## Common hardware problems

Problem	Cause analysis	Maintenance measures
Protection mechanism of temperature control switch is triggered frequently	Setting temperature of the temperature control switch is low	Deviation value of the temperature control switch is $\pm 10\%$ . If it is close to the overtemperature alarm setting, protection mechanism of the temperature control switch will be triggered easily. It is recommended to keep the temperature control switch at $220^{\circ}\text{C}$ ;
The fan does not work	The speed setting is incorrect or the plug comes off	Check if the fan speed is 0 or if the fan plug is off
The temperature is abnormal	The device does not work after being started	The relay or communication fails, please contact after-sales department of Haier
	The temperature is always higher than the set temperature	Check the ambient temperature to ensure that the set temperature is not more than $10^{\circ}\text{C}$ below the ambient temperature.
	The temperature fluctuates wildly in an instant	The sensor fails. Please contact after-sales department of Haier

# Circuit diagram



The drying oven of HFS series is provided with fan module, while the one of HZS series is not provided with.

# Specifications • packing list

## Specification

Model	HFS-60	HFS-160	HFS-260	HZS-60	HZS-160
Volume (L)	60	160	260	60	160
Interior material	SUS304 stainless steel				
External material	Cold-plate lime-sand grain				
External interface	35 mm diameter				
Product dimensions	572*719*792 (Width * depth * height)	752*809*973 (Width * depth * height)	752*809*1352 (Width * depth * height)	572*719*792 (Width * depth * height)	752*809*973 (Width * depth * height)
Working chamber dimensions	370*385*420 (Width * depth * height)	550*492*600 (Width * depth * height)	550*492*980 (Width * depth * height)	370*385*420 (Width * depth * height)	550*492*600 (Width * depth * height)
Quantity: standard	2	2	3	2	2
Temperature control range	RT+10~200°C				
Temperature fluctuation	±0.3°C at 100°C / ±0.4°C at 150°C			±0.2°C at 100°C / ±0.3°C at 150°C	
Temperature uniformity	±2°C at 100°C / ±3°C at 150°C /			±1.5°C at 100°C / ±2.5°C at 150°C	
Temperature sensor Type	PT100				
Power supply	220V~/50Hz				
Maximum power	800W	2100W	3100W	800W	2100W
Date of manufacture	See the product bar code				

Note: The company focuses on technological innovation, so the product parameters are subject to change without prior notice.

## Packing list

Name	HFS-60	HFS-160	HFS-260	HZS-60	HZS-160
Shelf	2	2	3	2	2
Power cord	1	1	1	1	1
Power cord bracket	1	1	1	1	1
Instruction manual	1	1	1	1	1
Warranty certificate	1	1	1	1	1
Plastic bag	1	1	1	1	1
Installation and debugging confirmation letter	1	1	1	1	1

# Warranty description

Dear honored users:

Thank you for using the electro-thermal thermostatic drying oven from Haier. According to the Law of the People's Republic of China on the Protection of Consumers Rights and Interests and the relevant provisions of the Provisions on Liability for Repair and Replacement of Partial Commodities issued by the State Bureau of Technical Supervision and the Bureau of Finance, our company will provide you with the following services based on this warranty certificate and invoice:

1. Free repair for the whole machine for three years (except for the vulnerable parts and consumables such as LED lights).

2. The following circumstances are not included in the free service scope, but paid repair and life service can be provided:

[A]. Fail to present warranty certificate and invoice;

[B]. Alteration of invoices;

[C]. Damage caused by unexpected factors or improper use;

[D]. Damage caused by self repair without consent from this company;

[E]. After the validity period of three guarantees (for repair, replacement, and compensation of faulty products), it can still be used after repair.

3. The validity period of the three guarantees shall be calculated from the date of invoicing by deducting the time due to repair and waiting time since there is no spare part available.

Within the validity period of the Three Guarantees, the consumer can handle the repair, replacement or return of goods based on the invoice and voucher of Three Guarantees.

For products with expired warranty period, Haier (Group) service personnel can provide paid door-to-door services, and the paid costs (charges for expired warranty) include labor costs and parts costs. All fees charged from user shall be according to the unified charging standard of Haier as presented by the maintenance staff, and the service staff shall issue the invoice, otherwise the user can refuse to pay the charges. Please pay attention to the barcode on the machine. The maintenance staff shall scan the barcode as a maintenance credential every time when they provide the door-to-door service to ensure that an accurate maintenance file can be established.

You are welcome to supervise our services. If any of our service commitments is not fully implemented, please call our national unified customer service number 4006 99 2017 to complain.

For more products, please visit Haier biomedical official website ([www.haierbiomedical.com](http://www.haierbiomedical.com))



Scan the QR code and follow  
the WeChat official account

Internet of Things  
Biotechnology Makes Life  
Better







Certificate of Quality

Inspector :

Haier Biomedical  
Makes Life Better  
Make life better

Registered person, name of production enterprise and after-sales service unit:

**Qingdao 海尔 Biomedical Co., Ltd.**

Domiciles of registered person and production enterprise:

Haier Industrial Park, Qingdao Economic and Technological Development District

Production address:

No.280 Fengyuan Road, High-tech District, Qingdao City

Online repair service address: <http://service.haier.com>

After-sales service hotline: 4006 99 2017

Website: [www.haierbiomedical.com](http://www.haierbiomedical.com)

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