Kalstein®

Drying Oven

Model Series YR05244

Instruction Manual

Thank you very much for purchasing our Drying Oven Model Series YR05244.

Please read the “Operating Instructions” and “Warranty” before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the “Warranty” at a hand place for future reference.

Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.

Description

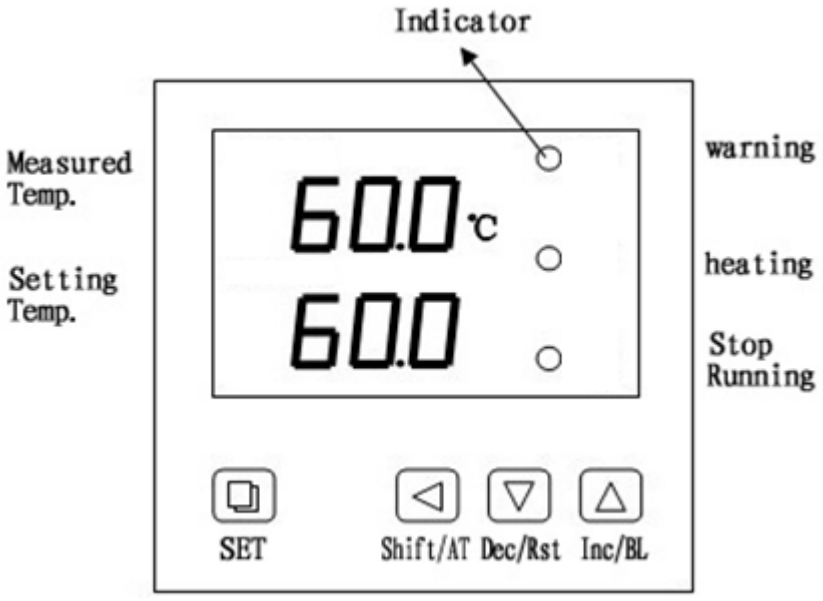
This drying oven is used in biology, chemical pharmaceutical, medical treatment unit, industry and mining enterprise, universities and colleges and scientific research for drying, melting wax, sterilizing, and disinfecting
2. Principle and structure
Heating tube is the back of inner chamber, fan in the back of chamber, temp. controller controls the constant and change of temperature, the air flow inflows inner chamber via heating tube, and the function of fan is to make inside temperature more uniform. arc-design, shelf space can be adjusted, built-in temp. probe.

Wool rock as thermal insulation material between working chamber and shell, shell is made of steel plate, the shell is deal with spray paint, inner chamber is made of zinc-plating or stainless steel. The observation window is made of double tempered glass. Likewise, the silicone door seal helps to make sure better sealibility, enhance the stillstand performance of inner chamber. this drying oven is equipped with intelligent temp. control system. (LCD display, with timer and precise temp. control) equipped with computer interface.

Use method

Make sure the switch is in the "off" position before power on, check whether it is broke circuit or leakage, connect power, turn on power switch

Panel display



Button function

1. . “set” button: set or view temperature, time and other settings.
2. “◄” shift/ auto-setting” button: in non-setting mode, hold this button for 6 sec. to enter or exit auto-setting;

in setting mode, press this button to modify set value.

3. "▼" decrease/rerun" button: in non-setting mode, when the operation has finished, hold this button for 3 sec. to rerun; in setting mode, press this button to decrease set value, hold this button to decrease continuously

4. "▲" increase/backlight" button: in non-setting mode, press this button to turn on or off the screen backlight; in setting mode, press this button to increase set value, hold this button to increase continuously.

Parameters

1、 Temp control range ： +5～250℃.
2、 Temp. resolution: 0.1℃
3、 Power voltage ： AC 220V/50Hz.
4、 Timing range: 0~99hour, 0~9999min
5、 Equipment class：class I
Working ambient ： ambient temp 10~40℃ relative humidity70% below

Installation

In order to optimize the performance of equipment, please install the equipment in the following condition:

⚠ Attention: ambient temperature 10~30℃; relative humidity less than 70%

1) Avoid exposure to the sunlight.
Do not place it in direct sunlight, or it won't reach predicted performance

2) An efficient ventilated place
If you operate this equipment in a narrow and concealed room, it may lead to over-heating and malfunctioning. Minimum safe distance between equipment and wall is 10CM

1. Keep away from heat source
Do not install the equipment near heating source. External excess heat will affect performance of the equipment and may cause malfunctioning

2. Flat and firm ground
Make sure to install it in flat and firm ground. Uneven surface or leaning installation may damage equipment or injure people. Proper installation can avoid tumbling

3. Avoid humid place
Install the equipment in a place where humidity is less than 70%. Otherwise, it may cause creepage or electric shock.

⚠ Warning

Do not place this equipment outdoors. If it exposed in the rain, it may cause creepage and electric shock.
Do not place equipment in humid environment or a place with dripping water. Otherwise, it may cause creepage or electric shock

Preparation

When equipment is running the first time, please operate according to following:

- Take out the shelf boards and other accessories inside.
- Clean the inner chamber with gauze
- Insert the shelf boards into inner chamber according to your experiment and requirement
- If you place samples on the same shelf, should keep space between samples for air circulation.

⚠ **Attention ： Do not use NaCl or other Halide solution to clean this equipment, or it will cause rust**

1. Start the equipment, screen display will light up. Wait for 3 seconds to enter the starter mode.

2. view and set temperature and timing time

1）If no timer

Press “set” button, enter temperature setting mode, the upper screen displays “SP”, the lower screen displays setting temperature, modify setting value through shift, increase, decrease button, re-press “set” button to log out setting mode, the modified value will be saved automatically.

2） If with timer

Press “set” button, enter temperature setting mode, the upper screen displays “Sp” and the lower displays setting temperature, modify setting value through shift, increase, decrease button , re-press “set” button to enter timing mode, the upper screen displays “ST”, the lower screen displays timing time; re-press “set” button to log out setting mode, the modified value will be saved automatically .

When timing time is “0”, means no timer, ,controller will run continuously, the lower screen displays setting temperature; then timing time is not “0” , the lower screen displays running time or setting temperature, when displays “running time” , after test temperature reaches setting temperature, timer starts timing, “running time” flashing, when time is up, running stops, the lower screen displays “End” beeper beeps, it will stop beeping one minute later. After running is over, hold “decrease “button for 3 minutes to reboot it

Notice: if increase setting temperature during timing, it will re-time from “0”, if decrease setting temperature during timing, it will keep timing

3. Temperature sensor, if the upper screen displays” ---“, it means that there is something wrong with temperature sensor or temperature is outside of measure range or controller fails, controller will cut off heating output automatically, and with continuous beep, alarm indicator is on, please check temperature and connection.

4. When over-temperature alarm sets off, beeper beeps, alarm indicator is on; when lower-temperature alarm sets off, beeper beeps, alarm indicator flashing; if the over-temperature alarm because of the change of setting temperature, alarm indicator is on, but no beep

5. Beeper keep beeping, press any button to mute

6. Controller will return back to home interface without pressing any button within one minute

Auto-tuning

If the temperature control is not ideal enough to meet your requirement, please proceed with auto-setting.

temperature will soar during auto-tuning, please take this factor into consideration before proceeding with it
In non-setting mode, hold “shift/auto-setting” for 6 seconds to access auto-tuning system, auto-setting flashing, it will stop flashing if auto-setting is over, controller will gain a new PID parameters, and parameters will be saved automatically. You can stop auto-setting during auto-setting via hold “shift/auto-setting” button

If it occurs over-temperature alarm during auto-setting, alarm indicator is out, no beep, but the relay of heating alarm will cut off itself. “set” button is unavailable during auto-tuning. No matter there is setting for timing, then lower screen always displays setting temperature.

view and set Internal Parameter

Hold “set” button for 3 seconds, the upper screen displays “Lc” and the lower screen displays password, please modify required password through decrease, increase and shift button. Re-press “set” button, if the password is incorrect, controller will return back to home interface automatically; if the password is correct, it will access setting mode of Internal Parameter. Re-press “set” button to modify other parameters. Hold “set” button to log out.

Internal Parameter -1

Parameter code	Parameter name	Function instruction	（range）factory default
Lc-	Password	“Lc=3” view and modify parameter	0
ALH-	Over-temp. alarm	when “test temp. > set temp. +AL”, alarm light is on, alarm beeps, stop heating.	(0～100.0℃) 20.0
ALL-	Lower-temp. Alarm	When “test temp.<set temp.+ALL” ， alarm light is flashing, beeper beeps	(0～100.0℃) 0
T-	Control cycle	heating control cycle	(1～60sec.) 5
P-	Proportion	timing proportion adjustment.	(1 ～ mileage value)
I-	Integral time	integral acting in regulation	(1～1000sec.) 380
d-	Differential time	differential acting in regulation	(0～1000sec.) 280
Pb-	Zero adjustment	Modify error margins of sensor (low temp.) during test. Pb=actual temp.- test temp.	(-12.0～12.0℃) 0.0
PK-	Full-scale adjustment	Modify error margins of sensor (high temp.) test. PK=1000*(actual temp.- test temp.)/test temp	(-999～999) 0

Notice: PCD-D3000C（relay output）controller, the factory default is 20 seconds, other models is 5 seconds

Internal Parameter-2

Parameter code	Parameter name	Function instruction	（range）factory default
Lc-	Password	“Lc=9” View and modify parameters	0
ndA-	Temperature alarm way	0： only alarm when over-temperature 1： alarm when over-temperature and lower temperature as well	(0～1) 0
Hn-	Timing way	0： minute; 1: hour	(0～1) 0
EH-	Whether need constant temp. control after timing is over	0： Cut off heating output after timing is over 1： Need constant temp. control after timing is over	(0～1) 0
oPn-	Door control function	0： Turn off the function of door-open judgment 1: Turn on the function of door-open judgment	(0～1) 0
nP-	Max power output	The max power percentage of heating output	(0～100%) 100
Co-	turn off heating output	When “test temp. ≥setting temp.+ Co”, cut off heating output	(0～100.0) 0.3
SPL-	Min setting temp.	Min setting temp.	(-50.0～0) 0
SPH-	Max setting temp.	Max setting temp.	(0～400.0) 60.0
Addr	Communication Address	Communication Address of this equipment	(1～32) 1

● Temperature sensor failure alarm: Screen displays: “- - -”, that is temp. sensor or controller failure.

● Temperature limit alarm： when test temp. is beyond 20 degrees, heating stops, “ALM” alarm indicator light is on. Alarm keeps beeping. Press any button to mute.

Notice

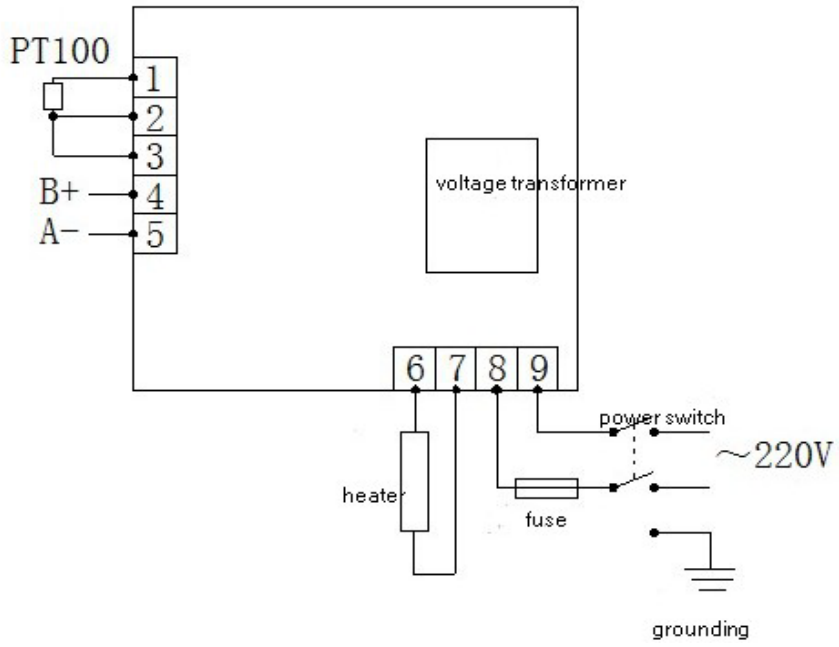
1. The samples should not be placed too overloaded, so as not to affect convection inside the chamber. Please connect the oven with protective conductor terminal according to relevant regulations. in order to be safe, do not touch electrical circuit which is in the left oven with hand and wet cloth

2. Do not splash water to observation door, or it may crack
3. Do not use this kind of oven to dry inflammable, volatile and explosive substance, or it may cause explosion

Maintenance

1. Drying oven should be kept clean, please use cotton cloth to clean glass door, in order to avoid chemical reaction, do not use corrosive chemical solution to sweep
2. If drying oven is not used for long period, in order to avoid corrosion, should be applied with neutral grease or Vaseline in the electroplating pieces. and placed in a dry indoors
3. Please operate this oven according to our manual, if there is something wrong with this oven, please refer to below solution

Wiring layout



Trouble shooting and Failure analysis and solutions

Trouble	Failure analysis and solutions
.The equipment fails to work after ower is connected	* If there is something wrong with the power, ask an electrician for help * If the heating wire is burned out, test the two-end resistance value of heat ware, if resistance value is 0, It means that the heating wire is short-circuit, it occurs switch trip; if the resistance value is hundred Kohm or infinity, it means that heat ware is open circuit power switch blade is off The power switch is on, check the control circuit board and cable
2.temperature stops rising	* Check timing whether it is timing settings. ***** Most users do not understand the function, when reaches timing value, the heating wire stops working, the fan fails to work, temperature stops increasing. * Check whether the fan is working, if fails (use multi-meter to test the voltage of fan pin whether it is 220V), then call us to send accessories to solve * Checking control panel with a multi-meter to see whether there is output, according to the drawing; (Drawings attached).
3.motor fails to run	Result: it is running, but the airflow is unable to circulate, lead to temperature rises slowly, then contact us
4.handle is broken	Replace and contact supplier
5.there are differences between the temperature which panel displays and mercury temp.	premise: Thermometers need to be tested whether it is qualified then to measure The installation position of mercury: hang the thermometer in the center of chamber, avoid putting on the shelf to measure Refer to the parameter adjustment table
6.temperature appears bounce or keep stationary, or abnormal "----"	* There is something wrong with temperature sensor, should be replaced. Note: sensor adopts Pt100 platinum resistance