Kalstein

Vacuum Oven
Model Series YR05260
Instruction Manual

Thank you very much for purchasing our Kalstein´s Vacuum Oven Model Series YR05260

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.

Kalstein®

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1.Application

YR series vacuum oven is temperature control equipment with heating and vacuum control. Usually used for drying heat sensitive and easily oxidized material, particularly suitable for powdered or granulated samples, widely used in biochemistry, universities, research and other fields, for items vacuum drying, preservation, disinfection and sterilization purposes

2. Structure

YR series vacuum oven is a horizontal chamber structure. the oven body is made of high-quality galvanized steel or stainless steel, filled with glass wool as thermal insulation material. double glass window---the inner glass is tempered. the outer glass is made of explosion proof material. the door can adjust by itself through air suspension spring. Silicone rubber seal is between door and chamber to make sure good sealability. the shelf is made of aluminum alloy plate with good thermal conductivity.

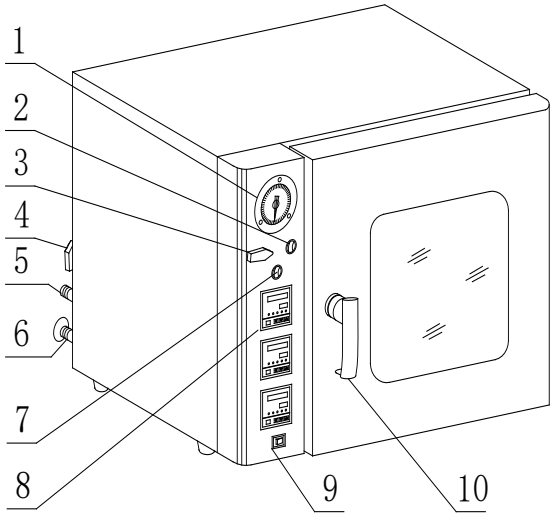
3. Principle

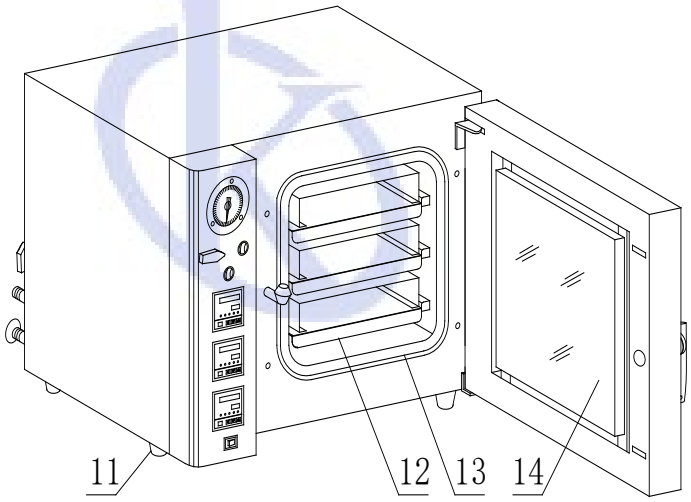
Vacuum ovens transfer actual temperature detected from temperature sensor into signal, though microcomputer controls heater to reach needed temperature, manually controls the vacuum pump and observe vacuum meter to reach needed vacuum degree

4. Technology Parameter

1) Temperature range：RT+10~200；
2) Vacuum range:0～-0.1MPa；
3) Temperature resolution: 0.1℃；
4) Temperature fluctuation: ±1℃（+10℃～240℃）；
5) Power supply: AC 220V/50Hz；
6) Timing range: 0～99H,0~9999M(adjustable)；
7) Working ambient: Temperature 10℃～30℃ humidity ≤70%RH

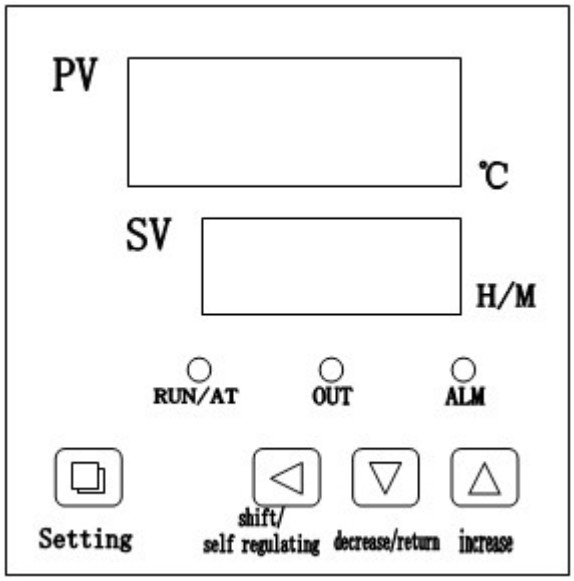
5. Structure diagram





1、Vacuum guage　2、Vacuum valve　3、Vent Inlet
4、Spare vent valve　5、vacuum port　6、Vent port
7、Light　8、Controller　9、Power
10、Handle　11、Rubber feet　12、Shelves
13、Sealing strip　14、Tempered glass

6. Control Panel



Indicator Definition

1. "RUN/AT" indicator: turns on when running, turns off if running stops, flashing when self-tuning
2. "OUT" indicator: turns on if there is heating output, or turns off
3. "ALM" indicator: turns on if there is something wrong with temperature sensor or over-temperature alarm sets off

7. Installation

In order to make the equipment run normally, the equipment should be placed as following.

⚠ **Notice: ambient temperature is 10-40°C, relative humidity is less than 70%.**

- The place is away from direct sunlight
  Do not place the equipment in direct sunlight, or it won't work normally.
- An efficient ventilated place
  If you operate this equipment in a narrow and concealed room, it may lead to over-heating and malfunction. Minimum safe distance between equipment and wall is 10CM

- Keep away from heat source
  Do not install the equipment near heating source. Excess heat will affect equipment performance.
- Flat and firm ground
  Make sure to install it in flat and firm ground, or it will damage the equipment or harm people. proper installation can avoid shaking and noise
- Avoid humid place
  The equipment should be installed in a place where humidity is less than 70%,or it will cause leakage or electric shock.
- The place where is far away from inflammable materials or corrosive gas.

Do not place the equipment near the inflammable and volatile materials. or it will cause explosion or fire. Do not put the equipment in the area where surrounded by acidic and corrosive gas, or it will cause explosion or fire .

1. Unpacking
   remove packing materials, open the door for ventilation. Please use neutral detergent to clean if the shell and panel is dirty. Then wipe with wet cloth and at last with dry clean cloth
2. Earthing
3.

> ⚠ Warning
> Please use power supply socket with protective conductor terminal, in case electric shock, if it is not connected, has to install it by licensed technician.
> Do not connect protective conductor thermal through gas pipes, water pipes, telephone lines or lightning rod. Or it will cause electric shock

4. Idle equipment
   Before setting equipment aside, make sure inner chamber is completely dry and cool before closing the door.
5. Move equipment
   Before moving equipment, empty inner chamber to prevent objects falling off

8.Preparation

When equipment is running the first time, please operate according to following
1.take out the shelf and other accessories inside
2.clean the inner chamber with gauze
3.insert the shelf into inner chamber according to your experiment and requirement
4.if you place samples on the same shelf, should keep space between samples for air circulation

9. Operation instruction

turn on the power switch

（1）open the door .
（2）turn on release valve, close the vacuum valve.
（3）turn on the vacuum pump. when vacuum value reaches to -0.1Mpa,close vacuum valve and pump.

10. Operation and use method

timer, controller run continuously, the lower screen displays setting temperature ;when setting value is not "0", the lower screen displays running time or setting temperature, the last decimal point is on, after measured temperature reach to setting tem1. When power is connected, the upper screen displays "InP", the lower screen displays "scale value", it will enter normal status after 3 seconds
2. The reference and setting of temperature and soaking time
A: No timer
press "set" button, to access temperature setting mode, the lower screen displays "SP", the upper screen displays setting temperature (the units digit flashing first), then modify the needed setting value via shift, increase and decrease button ; press "set" button again to log out setting mode, the modified setting value will be saved automatically. It will return to normal display model without pressing any button in one

minute.

B:With timer

Press "set" button, to access temperature setting mode, the lower screen displays "SP", the upper screen displays setting temperature (the units digit flashing first), then modify the needed setting value via shift, increase and decrease button ;press "set" button again, enter setting mode of soaking time, the lower screen displays "St", the upper displays soaking time setting value (the units digit flashing first), press "set" button again to log out setting mode, the modified setting value will be saved automatically

When the soaking time is set to "0", it means without perature, timer start timing, the decimal point is flashing, time is up, running stops, the lower screen display "End", with continuous beeper .after running is over, hold "decrease /restart" button to reboot

3. There is something wrong with sensor

If the upper screen displays "------" it means there is something wrong with sensor, temperature is outside of measured range or controller fails , controller will disconnect heating output automatically, and beeper keeps beeping and alarm indicator is on, please check the temperature sensor and connection.

When over-temperature alarm sets off, beeper beeps, "ALM" alarm light is on; when lower-temperature alarm sets off, beeper beeps, "ALM" alarm light is flashing, if change setting temperature result in over-temperature alarm sets off , "ALM" alarm light is on, without beeper

4. Press any button to mute

5."Shift " button :press this button to modify setting value .

6. "Decrease" button: press this button to decrease setting value, hold this button to continuously decrease setting value

7. "Increase" button: press this button to increase setting value, hold this button to continuously increase setting value

8. In setting mode, without pressing any button within 1 min, it will return to home interfaceautomatically

A).PID self-tuning

Please proceed with self-tuning if the control effect of temperature is not ideal .if temperature soaring seriously when self-tuning, take this factor into consideration fully before user proceed with system self-tuning

Under non-setting status, hold "shift/At" for 6 seconds to enter self-tuning , "RUN/AT" light flashing, this light stops flashing after self-tuning is over, controller will obtain a better PID parameters .and the parameters will be saved automatically. during self-tuning, hold "shift/At" for 6 seconds to stop self-tuning .

When self-tuning, if there is over-temperature, "ALM" alarm light is out, no beeper, but the heating alarm relay will be disconnected automatically. "set" button is unavailable during self-tuning. when self-tuning, no matter whether there is soaking-time setting, the lower screen always displays setting temperature.

B).Internal parameters

Hold "set" button for 3 seconds, the lower screen displays password prompt "Lc ", the upper screen displays password value, to modify the needed password value via increase, decrease and shift .press "set" button again, if the password value is incorrect, it will return to home interface automatically .if the password value is correct, then enter setting status of interior parameter, press "set" button again to modify parameter

in turn .press "set" button for 3 seconds to log out and the parameters will be saved.

11.Internal parameter-1

Parameter	Parameter name	Parameter function	(range） Factory default
Lc-	Password	When "Lc=3", check and modify parameter	0
ALH-	Over-temp. alarm	When test temperature > setting temperature, the alarm indicator is on, beeper beeps, disconnect heating output	(0.0～100.0℃) 20.0
ALL-	Lower-temp. alarm	When test temperature ＜ setting temperature, the alarm is on, beeper beeps, disconnect heating output	(0.0～100.0℃) 20.0
T-	Control cycle	Heating control cycle	(1～60seconds) note: 1
P-	Proportion	Time proportion adjustment	(1.0～scale) 35.0
I-	Integral time	Integral action adjustment	(1-1000seconds) 200
d-	Differential time	Differential action adjustment	(0～1000seconds) 200
Pb-	Zero adjustment	Modify error margins of sensor (low temperature) Pb=actual temp.–test temp.)	(-12.0～12.0℃) 0.0
PK-	Full scale adjustment	Modify error margins of sensor (high temperature) PK=1000*(actual temp.-test temp.) /test temp.	(-999～999) 0

12.Internal parameter-2

parameter code	parameter name	parameter function	(range) factory default
Lc-	password	“Lc=9”,check and modify parameters	0
ndA	Temp. alarm way	0: only over temp. alarm 1:over temp. and lower temperature alarm	(0～1)0
ndt	Timing way	0: no timer 1:with timer, when reach to set time(start timing), the lower screen displays running time 2with timer, the lower screen displays running time	(0～2) 1
Hn	Timing unit	0: with min. 1: with hour	(0～1) 0
EH	After timing	0:after timing , stop heating 1:after timing, continue to control temp. keep it constant	(0～1) 0
Co-	turn off heat output	when “test temp. ≥setting temp.+Co”, turn off heat output.	(0～100.0) 50.0
SPL-	min setting temp.	min setting temp.	(-50.0～0) 0
SPH-	max setting temp.	max setting temp.	(0～400.0) 300.0
Addr	address	Communication address of this equipment	(1～32) 1

attention

Please start self-tuning if this equipment is running the first time or it is running in a big change of ambient temperature(more than 20℃)

1. During self-tuning, please keep power connected, or you need to reboot self-tuning
2. If start self-tuning in the beginning, but temperature fluctuation is far away from your requirement after reaching constant temperature, then you can try to start self-tuning when temperature is closer to your needed temperature.
3. If there is a big interference surrounded, you can do self-tuning several times
4. When your needed temperature is low, you can do two times temperature setting, for instance, your needed temperature is 100℃, the first time, you can set at 80℃, after temperature soaring then bounce back , then set at 100℃, do like this can avoid temperature soaring.
5. drying time depends on different samples and different humidity level, if the drying time is longer, the vacuum degree will come down.
6. .After drying is over, turn off power switch, rotate release valve, several minutes later, then open the door to take out samples from inner chamber
7. Please connect this equipment with protective conductor thermal
8. If not need to vacuumize , should close vacuum valve then disconnect power supply of vacuum pump , or the oil from vacuum pump is easy to pour into inner chamber
9. After taking out sample from inner chamber, if it is inflammable substance, Do not expose it in the air until sample temperature lower than ignition point.
10. This vacuum oven is not equipped with explosion-proof device , Do not use it to dry inflammable substance.

14.Maintenance

1.When in vacuum pump, observe the vacuum meter, once it reaches the needed value, please close vacuum valve then disconnect the power of vacuum pump, or the oil that from vacuum pump will pour into inner chamber

2. This equipment is equipped with power switch, if it fails when running, please disconnect power supply, check the circuit whether is intact (check the wiring layout for more details)

3. Please close the door completely, or it won't run normally.

4. Do not clean the shell by etchant. clean the inner cavity by dry fabric or alcohol.

5. If set equipment aside, please disconnect power supply and keep inner chamber dry

6. Please should not be placed too crowded, or it will affect heating transfer

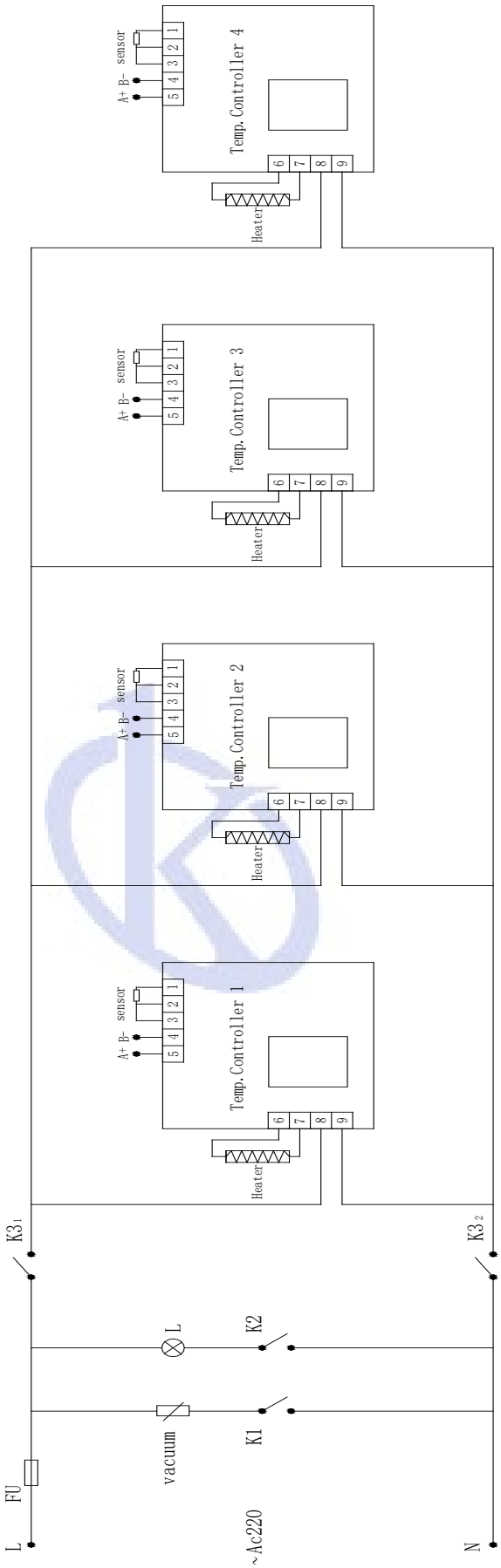
7. Do not touch heating tube , or it will do harm to you, do not lean against the glass or press glass, it might cause injury

8. Please insert the shelves into inner chamber properly, or it will affect heating transfer

15.Trouble shooting

trouble	cause	solution
Power is disconnected	Disconnection	Connect the power
	Fuse is open circuit	Change fuse
Temperature stops rising	Setting temperature is low	Adjust setting temp.
	Heater is broken	Replace
	Temp. controller fails to work	Replace
	Temp. Sensor is loose	screw sensor tightly
Big error between setting temp. and inside temp.	Temp. Sensor fails to work	Replace sensor
	There is error between setting temp. and test value detected from sensor	Adjust
Over-temperature alarm faults	Setting temp. is low	Adjust setting temp.
	Temp. controller fails to work	Replace
Fail to vacuum pump	Release valve is unclosed	Open valve
	Vacuum valve is closed	Open it
	Vacuum pump is disconnected	Connect it
	Vacuum pump fails to work	Replace
	Door is open	Close the door
	Silicone door seal is damaged	Replace
	Vacuum meter is broken	Replace

Wiring layout



16. Specification

Note: Kalstein may change products design and specification without notice.

Name	YR series vacuum oven			
Model	YR05260/ YR05062	YR05261/ YR05263	YR05264/ YR05265	YR05265-1 (SS)
External dimension(H*W*D)mm	480×635×465	600×750×515	695×850×590	1580x700x720
Internal dimension(H*W*D)mm	280×300×300	400×415×350	485×440×425	485x440x500
Effective volume	25L	50L	90L	106L
Input power	850W	1250W	2050W	2050W
Housing	Cold-rolled steel sheets with spraying treatment			
Inner chamber	SUS304 stainless steel			
Door	spring glass door			
Shelf	Adjustable aluminum shelf			
Temp. Control system	PID programmable control system			
Heating system	SUS304 S.S pipe electric heating element			
Temp. sensor	PT100			
Display	LED			
Protection	Front window is made of organic glass			
Warning system	Temperature limit warning; Temperature sensor failure warning with audible and visual warning			

YR vacuum oven

Packing list

No.	Name	Quantity	Note
1	Finish product	1	
2	Instructional manual	1	