ZHICHENG®

User Manual

Rooster series

Drying ovens and sterilizers

This Manual applies to:

Rooster Series

Models : Rooster 30, 55, 80, 110, 140, 210 and 230.

Order numbers : ZRD-A5030/A5055/A7080/A5110/A7140/A5210/A7230.

C E

Shanghai ZHICHENG Manufacturing Co.Ltd.

Citoe Quality

Thanks !

Thank you very much for purchasing one of our Rooster Series forced air drying ovens, specially designed for you - the lab. professional. Your choice indicates that you have very high require-ments on style and performance of this type of incubators.

ZHICHENG Rooster drying ovens and sterilizers have achieved a good reputation and trust among various clients for its advanced temperature controlling technology, sound framework design, excellent molded exterior and outstanding professional workmanship. These products have been exported to the leading companies in Europe, America and East Asia.

Rooster drying ovens have some unique features like programmable control-9 steps and solid operating safety items, etc. It also has characteristics like its fast recovery after a door opening and a unique design of forced air circulation.

This equipment is specially designed for the research needs for aging, bonding, curing, heattreating, annealing, stress relieving, burn-in, hardening as well as for routine drying and sterilization applications up to 300℃.

From the date of your purchase of this product, after-sale service will always be with you through your dealer and/or the importing company for Europe.

No matter what questions you meet in using your drying oven, please do not hesitate to contact us whenever you want.

ZHICHENG thanks you for your trust in its product !

Reminder

Prior to operation, this manual should be read thoroughly and under-stood completely - as it might be helpful to master the operation method of this high-tech product.

13. After Sales Service.

1. Since the date of your purchase of this product, after-sale service of ZHICHENG will always be with you. This product has a one year warranty that starts at the moment of delivery. If any malfunction caused by defective in material or workmanship occurred during the warranty period, ZHICHENG will provide the parts free of charge. Your distributor will provide professional workmanship and will repair the unit without any charge. When this one year warranty is expired, we will continue to provide you with high quality -life time services (contract).

2. Please completely fill in the Return Card and send it back to the service department of CITOE in the Netherlands. In this way we can keep you informed about technical improve-ments and updates that might benefit the future performance of your equipment.

3.For repair service, please contact your local dealer or log onto our website where you can enter your required service and company info.

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Shanghai ZHICHENG Instrument Manufacturing

12. Trouble Shooting.

If there is a need to access the (top) control panel, use an allen wrench of 6mm. Push the allen screw inside and turn at the same time. The lid will rise a little –enough to lift the cover.


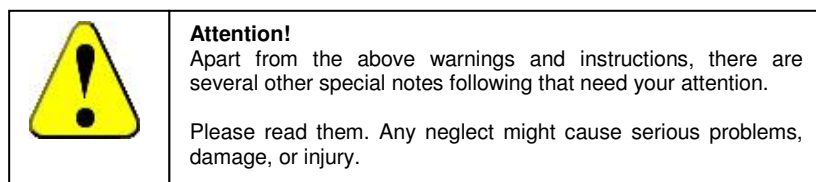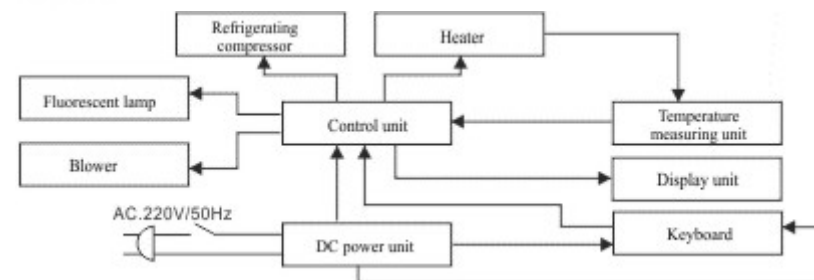|	Possible cause	Corrections
Observed symptoms	1.Power supply is not connected	Check supply system to see if there is power on the outlet.
	2. The power switch has not been switched on.	Turn on the power switch on the right side of the oven
	3. The (inside) fuse is broken	Replace fuse with new one of same specification
	4. Mal function of power box circuit occurs	Notify distributor to repair the unit.
Oven temperature alarm	1. Unit has not yet reached the required (constant) temperature	Wait a couple of minutes and observe for a while
	2. Setting of the alarm parameter is wrong.	Refer to the operating procedure and change or re-set alarm parameter
	3. Malfunction of heating system.	Notify distributor for repair
Real temperature (PV)is lower than the set (SV) temperature. This activates low temperature alarm	1. Equipment has not yet entered into the state of constant temperature	Wait a minute and observe for a while
	2. Temperature deviation alarm value is too small	Reset the alarm value
	3. Abnormal conditions occurs with the heater.	Notify distributor for repair service
Screen display shows nothing or just strokes and or distortions	1. Equipment is disturbed by high frequency.	Eliminate the source of disturbance and restart the operation.
	2. Microprocessor failure	Notify distributor for repair service

Danger!

Warning against damage and injury.

1.The electrical supply circuit to the drying oven must confirm to all national and local electric codes. Check the serial-data plate for voltage, cycle, phase and amperage requirements before you connect the unit.

2.Only use grounded power source (outlet) to avoid an electric shock or fire.

3.In case of a problem, do not attempt to repair the product yourself. Do not open the power box to avoid electric shocks.

4.Do not pull out the plug when the unit is in use. Never drag on the wire to unplug the unit.

5.A separate branch circuit is recommended to prevent loss of samples due to overloading or failure of other equipment on the same circuit.

6.A surge protector is recommended to avoid power-related faults.

7.In case of malfunction or burning smell, the unit must be unplugged immediately .Use a circuit breaker to cut off the power supply . Continuance of abnormal state will result in fire caused by overheating.

8.The electric power supply must be cut off in following situations:

8.1.When opening the door of electrical power box. Opening the top cover without cutting off power supply might result in electric shock.

8.2.When replacing the fuse. Replacing the fuse without cutting off the power supply will probably result in electric shock.

8.3.When a malfunction occurs. Mishandling will result in the further damage of the equipment or accidental injury.

8.4.If you do not use the unit for a long period of time.

9.Never touch the glass door and/or inner chamber when the oven is hot.

<table>
<tr>
<td>⚠️</td>
<td>Attention!

Instructions for optimal performance</td>
</tr>
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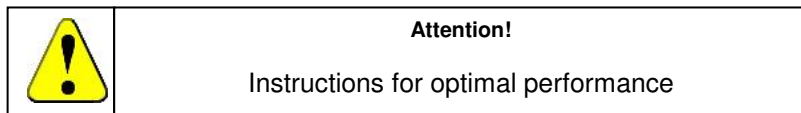
1. The unit must be placed horizontally on a solid, flat floor or table.

2. The oven needs even heat lost on all surfaces in order to maintain small internal temperature variations .As a result, a minimum of 20 cm must be allowed between the rear and sides of the incubator to any obstructions.

3. Do not locate the unit exposed to direct sunlight or near heating /cooling ducts.

4. The unit must be kept away from electromagnetic interference sources.

5. Culture placed inside the incubator should be placed to the extent of which the air flow inside the oven is not affected to maintain the temperature uniformity in the working chamber.

6. Make sure the shelves inside the chamber are placed horizontally.

7. Slam the door(s) will probably leads to damage of the equipment.

8. When in operation, do not open the door (too much or too long) as this might affect

   the temperature inside.

9.The oven must be kept away from volatile, flammable, explosive liquids or gases.

10.Please keep the chamber clean. Regular cleaning is required.

11. If the oven is used continuously at low temperatures, condensate can occur inside of the oven. You might need to wipe this out.

There is however on the right side (low) a drain that might be emptied.

<table>
<tr>
<td>⚠️</td>
<td>Attention!
Apart from the above warnings and instructions, there are several other special notes following that need your attention.

Please read them. Any neglect might cause serious problems, damage, or injury.</td>
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</table>

10. Electric Inputs & Outputs

# 11.Temperature Calibration.

** Note:
- This may only be performed by an authorized engineer with certified equipment.
- To get a linear temperature in the chamber, a 2 point calibration must be executed.

1. Take a certified calibrated thermometer in a small bottle with glycerin and place that in the middle of the incubator.

2. Change the set point to 8.0℃ and let the incubator – including the bottle, stabilize.

3. Press the SET button and go with the up arrow to code "47 ".
Press again SET, the display shows the correction relative to the actual temperature.
If necessary- change this correction temperature (with up and/or down keys) until you reach the value, you know is the difference on the calibrated thermometer(in the middle of the incubator) and the temperature on the display.
This completes step 1. Low temperature compensation.

4. Press SET to store and go to the next step for High Temperature Compensation.
Repeat the above (3) on a high(er) temperature- somewhere around 60℃- to perform the (100.0℃) step 2. – High temperature compensation.

5. Press Set to store the calibrated values and return to normal display.

8-5. Print timer. (option)

Press the SET key to enter the password "9", Press the Set key again to enter print-time function. Press the Increase or Decrease key to modify the print-timer. Press the Set key to confirm/store new setting.

Simplified instruction for the Graphic Chart Recording time

Table of contents
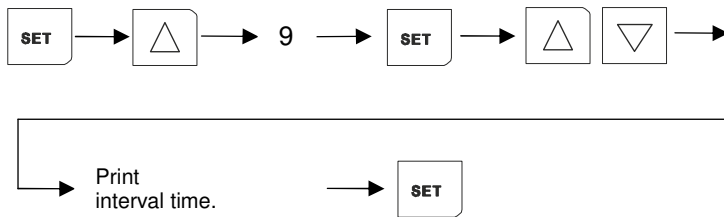
9. Operation and Switch Off

1.When all the above settings are done, press the Operating button and the equipment will run according to the program settings.

2.While in operation the Operating button is pressed the timer stops until the unit is started again.

3.While in operation the Operating button is held for 3 seconds, the remaining run time will be cleared to zero. Press the Operating button once more, and the unit starts again to count down from the preset operation time.

4.While the unit is in use, the current remaining operating time cannot be changed. If however changed at this time, it is invalid with the current operation. Only when the current operation time is elapsed- or stopped and activated again according to the above instructions the new changed value will be effective.

5.The incubator can be turned off by button down the main switch on the right side of the unit to end operation completely .

1. Performance Parameters

Both the interior and exterior are constructed of a robust material, made for lifetime.

The interior is a high polished type of stainless steel, using an almost crevice-free construction. All exposed edges are de-burred to insure no sharp edges. The exterior is cold rolled steel finished in a powder coated polyurethane finish, which is resistant to most chemicals and easily cleaned using a mild household detergents.

The Rooster series are controlled by a multi-talented PID microprocessor and all use a fast responding PT 100 sensor which commands and executes a special control algorithm that energizes a solid-state switch to supply power to the heaters.

The control electronics are protected through a circuit breaker that may trip at 110% of loading rate, but will trip within 1 second at 150% of load rating.
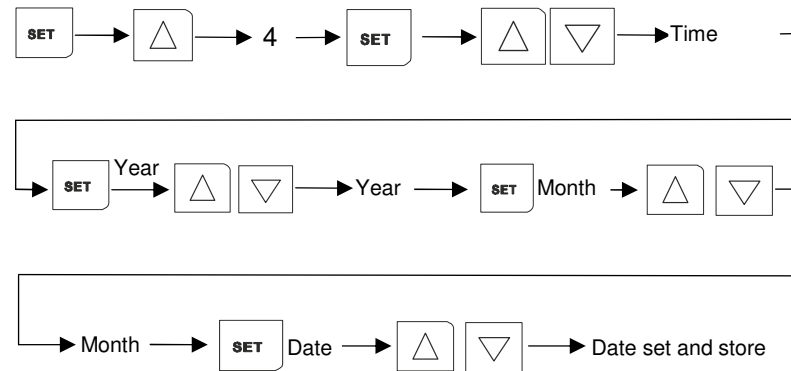
Space-age high density material is used to insulate the inner chamber walls.

A magnetic gasket on the outer door helps to insure a tight seal against the cabinet.

 An observation window is a standard feature on every Rooster.

Up to 4 grids can be placed inside the chamber.

Simplified instruction for clock settings.

8-3.Power-off recovery

This unit has power-off recovery function. When after a power failure, the deviation of temperature inside is within 2℃, the equipment will automatically recover to run according to the originally designed program.

No setting is required

8-4. Graphic chart display interval time.

This is the parameter to set the interval time that the screen graph will use to store and show the temperature values from the last days.

Press the SET key to enter the password "8", Press the Set key again to enter record-time function. Press the Increase or Decrease key to modify the print-timer. Press the Set key to confirm/store new setting.

**Simplified instruction for the Graphic Chart Recording time**
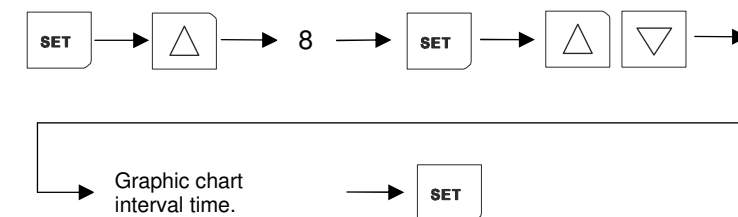
8. Setting of the other functions

8-1.Setting of over temperature alarm value. (Alarm Deviation Temperature)

Press the Set key and enter password "5". Press the Set key again to enter into the over temperature alarm value. Press the Increase or Decrease key to change the required value of temperature deviation. Press the Set key again to confirm and store the new settings.

Simplified instructions for over temperature alarm settings (ADT)
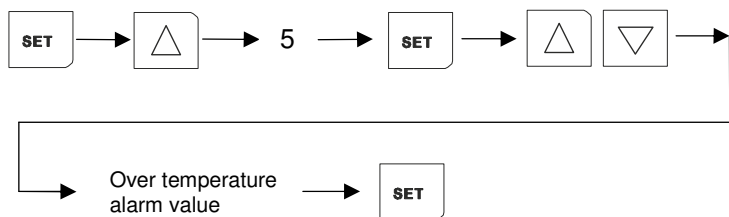
When the temperature exceeds this over temperature alarm set point, the alarm sounds continuously and the LED alarm indicator on the control panel lights, while the heater is automatically cut off.

Alarm can be silenced by pressing the Temperature button.

Attention:

1. When this ADT value is set on "0", equipment will give no alarms.
2. Changing the required (PV) temperature value, can immediately activate the temperature alarm if this over set point alarm value is not also adapted.
3. When the actual temperature is back within limit(s), the unit automatically stops the temperature alarms.

8-**2.Real time clock setting**

Press the SET key and enter the password "4".Press the SET key again to enter into time set function. Press Increase or Decrease key to set the right time of day.

Press the SET key again, the display shows the year, press the Increase or Decrease button to change it to the actual year. Press the SET key once more, the display shows the month, press the Increase or Decrease button to change it to the actual month, press the SET key one more time to the day of the month, press the Increase or Decrease button to the right day .
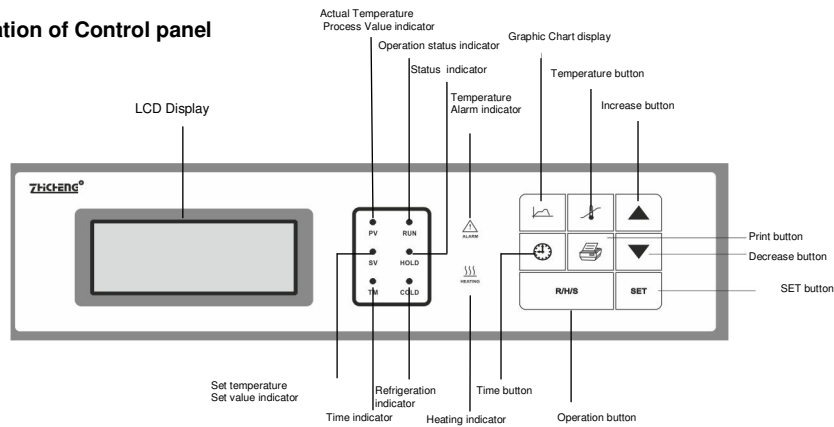
Press set to store and return to normal display.
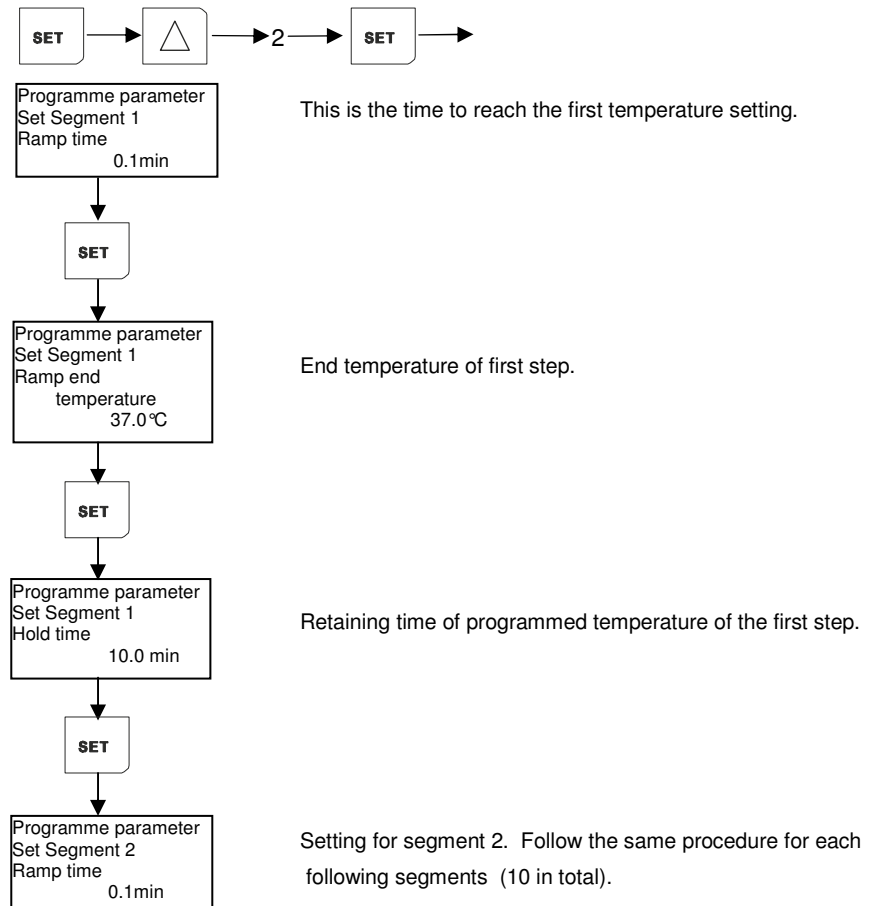
2. Technical Specifications

Model	Rooster 30	Rooster 55	Rooster 80	Rooster 110	Rooster 140	Rooster 210	Rooster 230
Volume (L)	30	55	80	110	140	210	230
Temperature range (℃)	A+5 to 200	A+5 to 200	A+5 to 300	A+5 to 200	A+5 to 300	A+5 to 200	A+5 to 300
Temperature accuracy (℃)	0.1						
Temperature Uniformity (℃)	< ± 1℃ (1,25%)						
Alarm	enabled						
Timer (min)	1-999						
Settings	digital						
Grid size (mm) (WxD)	235x255	285x295	319x330	335x375	385x405	455x485	475x485
Max. grids	2	2	3	3	3	4	4
Chamber dimensions (mm) (WxDxH)	300x300x340	330x360x450	375x375x550	420x400x650	450x450x685	500x550x750	520x550x800
Exterior dimensions (mm) (WxDxH)	490x430x720	520x490x830	565x505x930	610x530x1030	640x580x1065	690x680x1220	710x680x1270
Packing dimensions (mm) (WxDxH)	610x550x890	640x610x1000	685x625x1100	730x650x1200	760x700x1235	810x800x1390	830x800x1440
Net Weight (kg)	40	50	58	61	80	98	104
Gross Weight (kg)	64	79	98	104	125	143	150
Power (W)	600	800	1500	1300	2100	1700	2700
Electricity	220/230 Volt 50/60 Hz	220/230 Volt 50/60 Hz	220/230 Volt 50/60 Hz	220/230 Volt 50/60 Hz	220/230 Volt 50/60 Hz	220/230 Volt 50/60 Hz	220/230 Volt 50/60 Hz
Approval	CE, ISO	CE, ISO	CE, ISO	CE, ISO	CE, ISO	CE, ISO	CE, ISO
Article number	ZRD-A5030	ZRD-A5055	ZRD-A7080	ZRD-A5110	ZRD-A7140	ZRD-A5210	ZRD-A7230

3. Control Panel

Illustration of Control panel

LCD Display

Actual Temperature
Process Value indicator
Operation status indicator
Status indicator
Temperature
Alarm indicator
Graphic Chart display
Temperature button
Increase button

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PV RUN
ALARM
SV HOLD
TIM COLD
HEATING
R/H/S SET

Print button
Decrease button
SET button

Set temperature
Set value indicator
Time indicator
Refrigeration indicator
Heating indicator
Time button
Operation button

1.Illustration of program control operation

SET → △ → 2 → SET →

Programme parameter
Set Segment 1
Ramp time
0.1min

This is the time to reach the first temperature setting.

SET

Programme parameter
Set Segment 1
Ramp end
temperature
37.0℃

End temperature of first step.

SET

Programme parameter
Set Segment 1
Hold time
10.0 min

Retaining time of programmed temperature of the first step.

SET

Programme parameter
Set Segment 2
Ramp time
0.1min

Setting for segment 2. Follow the same procedure for each following segments (10 in total).

4. After the last segment, the display asks for the "Hold Segment Deviation".

This is the temperature deviation that the incubator may have at the end of each" Ramp" before starting the Hold Time.

5. The last parameter is called "Cycle" meaning the number of programmed cycles the incubator must repeat.(max. 99 times).

Cycle one (1) means a total of 2 !!
Cycle two (2) means a total of 3 !! and so on.

> **Special attention:**
>
> To abort the program any time press the "R/H/S" key for 3 seconds.
> To continue press the again "R/H/S" key to run it again from the start.

> **Special attention:**
> The unit has a timer range of 1-999 minutes. When the time parameter is set as "0" ,the unit will run continuously until manual stopped.

7. Setting parameters for programmable control mode

1. Press R/S/H to stop the current operation.

2. Press SET key and enter the password "2" followed by SET and enter into the setting of program parameters.

The screen displays : Programme and asks for a "Ramp Time" in Segment 1. Press the "Increase" and / or "Decrease" button to set the desired time.

3. Every time the "Set" button is pressed ,the programmed value of the previous parameter is stored and the next item is asked for, so the next is parameter is the(Ramp End)Temperature that the incubator has to reach for in the first segment (S 1).

Press the "Decrease" or "Increase" button to set this temperature parameter for segment 1.

4.Press SET to store and to program the "Temperature Hold" time.(The temperature the incubator has to maintain in this Segment 1) Use the decrease and or increase buttons.

5.Press SET to store and enter the next segment (S 2).

6.Press increase or decrease button to enter the second Ramp Time (S 2)

7. And so on…….

8.In each "Hold Time" it is possible to "End" the program by setting the down arrow key lower than (below) 0.00..

First the screen asks : End (to stop the program after this segment).-or if you go another step down (key), it asks for : "Cycle" -meaning at this point the incubator starts to execute the just finished program again. If "Cycle" is set to 1,the run is repeated 1 time !! so total of 2. (and so on).

It is possible to program 10 different segments ,each with their own Ramp Time , desired Temperature and Hold Time.

By entering "End" or "Cycle" in each of the 10 steps, the program will "Cycle" or "End" (stops) from there.

The number of cycles can be programmed in (after) segment 10 (Hold Time) from 0 to 99.

One (1) cycle means ,the program is repeated once (1 x),so a total of 2 !!

"Hold Segment Deviation" means the temperature that the incubator may difference from the desired "Ramp End Temperature", before it start counting the Hold Time.

SET — **Change/Confirm button**:
 Press this button to change the parameter(s)

△ — **Increase button:**
Press this button and the parameter will increase by one digit, the parameter will keep increasing while this button is held.

▽ — **Decrease button:**
Press this button and the parameter will decrease by one digit, the parameter will keep decreasing while this button is held .

Graphic Chart Display button:
Press this button to display a graph.

Temperature button:
Press the button to display the actual temperature and set temperature in succession.

Time button:
Press the button to display timer SET and Process value.

R/H/S — **Operating button:**
 Under Normal mode, press the button to start the unit. Press the button again to stop.
In the Programmable mode, press the button to start the unit. Press it again to enter the hold status. Press this button for more than 3 seconds to abort the programming.

Print indicator:
 Press the button to print the time and temperature (Printer is an optional accessory)

⚠ ALARM — **Temperature alarm indicator:**
 When the temperature inside the chamber deviates too much from the set point,this indicator will flash and an audible alarm is activated as well.

HEATING — **Heating indicator:**
 When the heater is connected with power supply, this indicator will light. This indicator will twinkle when the real temperature close to the preset value.

○ PV — **Actual Temperature Indicator:**
Display the value of actual temperature

○ SV — **Graphic Temperature Indicator:**
Display the graphic chart of the set temperature and actual temperature

○ TM — **Time indicator:**
When screen displays the operating time, this indicator will light, twinkles when the screen displays preset time.

○ RUN — **Operating status indicator:**
When the unit operates normal, this indicator will light up.

○ HOLD — **Status keeping indicator:**
Segment in program control mode, when the unit has reached the preset temperature keeping, this indicator will light.

○ COLD — **Refrigeration indicator: (only available on Snake-series)**
 Lights "ON" when solenoid valve is "Open" to cool down the incubator

4. Preparation and Start-up

> **Clean the oven before you put it in to use and on a regular base.**
> **The interior should be wiped down with an appropriate disinfectant, such**
> **as 70 % ISOPROPYL ALCOHOL or equivalent.**
>
> **DO NOT USE ANY CHLORINATED OR HALOGEN MATERIAL-**
> **AS THIS IS HARMFUL TO THE POLISHED STAINLESS STEEL !!!**

4.1 Connect the plug of power supply of the equipment with an independent jack socket.

4.2 Turn on the master switch on the right side of the equipment, power is applied to the unit, the LCD displays the following in turn:

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Time Function

Preset Temperature/Measured Temperature

5. Setting of the control mode

The unit can be used either in the normal mode as a one temperature oven (Fixed value on the display), or in a programmable run mode, program mode, with 10 levels in 16 steps

(Programme on the display). Each program can be repeated max. 99 times.

> **Special attention :**
> Change the run mode:
> **Only if the incubator is in a non working** situation.

To set the desired run mode :

Switch OFF the "Run" mode (through the Operation button:R/H/S) Press the SET key and enter the password "1". Press the SET key again until the LCD display shows the run mode options, press the Increase or Decrease key to select the desired run mode. Fixed or Programme

To Confirm the new settings press the SET key again.

Simplified instructions for choosing the control mode

Hold for 3 seconds

SET → △ → 1 → SET → △ ▽ →

→ Control Mode program → SET
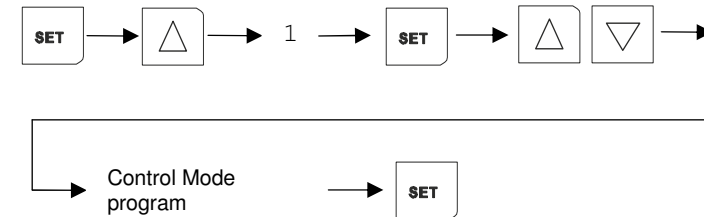
6. Setting parameters for constant temperature control mode (Fixed Mode)

1.Set temperature & run time

1.Press SET and enter the password "3". Press the SET key again to enter the temperature set function. Press the Increase or Decrease key to set the desired temperature.

Only if you want to run the incubator on the Timer.

 Press the Set key to enter the timer set function. Press the Increase or Decrease key to set the desired run time.

Press the Set key to confirm/store the new settings.

Simplified instruction on the setting of control mode

SET → △ → 3 → SET → △ ▽ → Set temperature

→ SET → △ ▽ → Set run time → SET