

Pharmaceutical Refrigerator Manual Operation

I .Brief introduction:

YLX-890S Pharmaceutical Refrigerator has refrigeration and heating two-way thermostat systems, and the function of controllable temperature. It is a indispensable laboratory equipment for plants, biology, microbiology, genetics, virus, medical & environmental and other scientific researches and education departments.

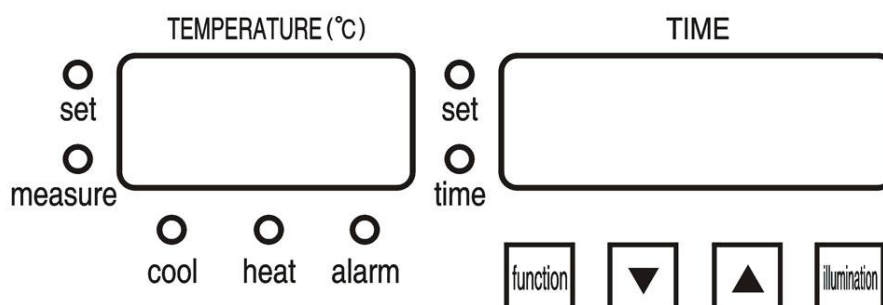
Its major features are:

1. Cabinet's insulation material adopts foam plastic from polyurethane foam scene, which has a strong anti-jamming capability to external heat (cold) resource.
2. Interior adopts plastics made by stainless, which has a strong corrosion resistance.
3. Full glass-door is convenient for observing working chamber.
4. Automatic temperature control, LED display shows a clear & visual digitals.

II .Technical data:

Model	YLX-300S
volume	300L
Temperature range	2-8℃
Temperature accuracy	1℃
power	260W
Time	0-9999min
Material of interior	Stainless steel interior
Power supply	AC 240V 50Hz

III. Instructions of panel functions:



1. After connect the power supply, the machine displays “888...” and enters into running state after 4 seconds, then press *Function* key (), controller enters into temperature setting state, at the same time the temperature setting indicator is light. The left window of controller can display temperature setting value. So user can modify parameter according to their needs(setting value ranger is 0~60.0℃).
2. Press *Function* key () again ,controller enters into time setting state, at the same time the time setting indicator is light. The right window of controller can display time setting value, So user can modify parameter according to their needs. Press *Function* key again, back to the standard show time, If there is no press in 60 second during above states, controller will return back from above state automatically.

3. Time function: When the ST set up to 0, the meter will cancel the time function; if ST set up not to 0, the meter will has the time function and choose uptime way to start timing. Time lamp light, the left of window show working time; time is up, the left window to show End. If buzzer ring, can press random key to get noise damping, or can reboot it through pressing the decrease key for 4 second. If time no setting up or no starting time, then the left window show setting temperature, two lamps for time counting and time enactment will turn off. (If the working time is setted 0000, which means timer doesn't work, while running on this state, right window display setted temperature, and left window displays the working temperature)
4. When the sensor in the controller open circuit, upper line of temperature display window shows "□□□", The buzzer sounds, you can press ▲ to silence; When the sensor short circuit, the second line temperature display window shows "□□□". Please carefully check the wiring and sensors, or directly replace sensor.
5. Inner function technical data (it's usually nonutility)
When there is appearing LK parameter code in list, ① set LK=18 and then press setting key, controller enter in customer parameter setting; ② set LK=28 and then press the setting key, the controller enter in PID parameter setting menu.

PID menu:

Prompt symbol	Name	Setting range	Explain	Initial value
P	Proportional band	2~Entire measuring range	The proportion function adjustment, the P is much greater, the proportion function is smaller, and the system gain is lower, only affects in the heating side.	10.0
I	The integration time (adjusts time again)	20~3600 seconds	Integral action time-constant, I bigger, the integral action is weaker, I=0, d=0 is half proportional control	500
d	Differential time (pre-set tuning time)	0~3600 seconds	The differential action time-constant, d is bigger, the differential action is stronger, and may overcome the over modulation. I=0, d=0 is half proportional control	500
Ar	flushed the suppression (the proportion to suppose again)	0~100%	When two PID is working, Ar identified as : 1.5 ~ 2 times the (steady-state output duty cycle). The proportion of working half time, Ar identified as : (need to be amended) / (P ratio range).	70
T	controlling cycle	1~100seconds	SCR output is generally two or three seconds. About the equipment of larger remaining power, T can be increased, which also reduces the static error of PID control	3

User parameter:

Prompt symbol	Name	Setting range	Explain	Initial value
AL	Alarm setting	0~Entire measuring range 0.0~Entire measuring range	When temperature exceed SP+AL , ALM light , the buzzer sounds , cut off heating power.	3.0
CL	The refrigeration control setting	0.0~Entire measuring range	(Invalid parameter, adjustment have no influence to control)	0.5
Ct	Refrigeration control time delay	0~3600 seconds	(The invalid parameter, adjusts to control no influence)	180
Pb	Zero setting (intercept)	-100~100	When the measuring appliance zero position error is big, fullness error when small, adjusts this value.	0
PK	Fullness adjustment (slope)	-1000~1000	When the instrument error is smaller, but fullness error is large, you can adjust this value. $PK = 1000 \times (\text{prescribed value} - \text{actual value})$, generally Pt100 first adjust the value.	0
LK	Coded lock	0-255	18: user parameter setting 28: PID parameter setting	0

As each function parameter was been setting out, it don't need change in normal. Changing each parameter may change the control result. If do not press whichever key to return to standard mode with automatically within one minute, some function parameter will not be change.

IV.How to use:

1. Incubator should be placed in the workplace of clean and tidy, dry ventilation.
2. Before use, all the control switches on the panel should be in a non-working state.
3. all bottles ,flasks or containers should keep a proper space to facilitate cold (hot) air convection cycle, when you place test samples on the cultivating shelves.
4. Connect the power supply, then the panel indicator will be light.
5. After finished the work, please make sure all switches are non-working state, cut off the power supply.
6. After finished work, it is better to make control switches in the non-working state, then turn off the supply.
7. Pay attentions
 - 1) In order to avoid contamination, you'd better avoid condensing into water on the working chamber as far as possible when low temperature using.
 - 2) It is not applicable to cultivate the volatile chemical solvents , low concentration detonatable gas and combustibile articles and toxic articles.

V.maintenances:

1. Use and maintenance of incubator accurately. For example: It works in a good state of the appropriate environmental temperature and working temperature; Effective thermolysis of refrigerative compressor& condenser to extend life-span.

2. Avoid frequent opening the door except experimental needs when the system is working, which is benefit for keeping temperature stably and getting in dust, dirt.

3. Stop using the refrigerated system for 1 year, if there is such as failure or other problems, our company will continue to provide quality service and help.

VI.Safe knowledge.

In order to make sure safety, please abide by the following items during using:

1. please have a check that your power supply is in the range of incubator voltage needed before incubator connecting the power supply. the voltage range is 187V~242V. if your voltage can not meet above range, it is necessary to adopt minimum output 1000VA voltage self-regulator.

2. Incubator must have reliable grounding. if your electrical circuit have no grounding, then you must ask qualified personnel to ground separately for incubator in accordance with electrical safety regulations.

Manufacturer will refuse to bear any responsibility if there are incidents because of not complying with the security measures.

3. It is forbidden to put gasoline, alcohol, adhesives and other flammable and detonable articles into incubators ,which in order to avoid the explosion.

4. Incubator can not be used in the environment of flammable gases, such as gas, petroleum gas leakage. It can not remove power plug or turn off temperature controller, which will have electric spark and cause explosion.

5. Do not spray water on incubator to avoid water damage the insulating electrical components, which can accelerate the corrosion of metal parts.

6. Do not touch by hands to prevent frostbite, because back cabinet is evaporation cooling and low temperature.

7. It is forbidden to scratch or prize with sharp weapon and impact with strong power to outside evaporation plate.

VII.How to place incubator:

1. Incubator is not suitable to be placed to the direct sunlight , near the heat source(for example: near stoves, heating unit) moist or easy to be splashed water places.

2. It is better for incubator in the ambient temperature 16℃~32℃.

3. Incubator should be placed on a solid ground. The rotation of the two bottom side of the former adjustable foot can adjust incubator level.

4. It is better for incubator not place any articles on its top, bottom and back, so as not to affect air circulation and cooling effect.

VIII.First time to use:

1. The spare parts in the box have been fixed at the factory, after open box, please place in place as shown by the picture.

2. The shelves in the box can be adjusted according to your needs. if you want to adjust shelf space, you just discharge shelf support with appropriate adjustments.

3. when you use incubator the first time to connect power supply, the temperature inside need to take some time to be lower. It needs putting articles after the temperature dropping.

4. Incubator has been cleaned out of factory. if you want to clean up, please use warm water and neutral detergent, and wipe spare parts and interior with dry cloth.

IX. Defrosting:

1. Incubator adopts inside evaporator-refrigerating, the evaporating-plate keep in back interior. when the compressor is working, the back interior will frosting, and after the compressor stopped, the frosting will be removed automatically without further defrosting. Because frosting water will automatically as water flow into evaporation ware visa slot, which is in the back of incubator compressor. please keep drainage slot clean, so as not to plug and frost water caused overflow.
2. If there is excessive and thick frost, you can turn off the incubator and do manual defrosting, but at the same time you should observe whether the frost water in the evaporation ware is too much and cause overflow. For example, there is too much water, you should do translation out evaporation ware and pour water away ,later place back original location, While be careful not to injure refrigeration system pipe.
3. Remark: do not scratch frost with sharp utensils (especially the evaporation plate), or they may damage the refrigeration system. if the case is like this ,repairmen will not in the range of free range even during the warranty period.

X. periodic cleaning:

1. After the incubator was used for a period of time, if there is dirty or smell, please keep it clean.
2. For your safety, when you are cleaning the incubator, please pull out the power plug.
3. Please wipe the spare parts and interior of incubator with soft cloth or sponge, which with warm water or neutral detergent.
4. Do not clean with a hard brush, corrosive detergent and any cleaning solvent.
5. It is not allowed to irrigate the electrical parts with water sprinkler, otherwise it will affect electrical insulating effect and cause corrosion.
6. Dirty door seals will shorten span-life of incubator, so please keep clean. During cleaning, the door seals can be turn up lightly and cleaned with soft cloth dipped in warm water gently.
7. The dust accumulated on the condenser, compressor will affect the heat output, So please clean dust with soft brush or cleaners periodically.
8. If you stop using the incubator, it should be removed power plug, cut off power supply, taken out the samples/food, defrosted ,cleaned ,and keep inside cabinet dry.
9. Please clean of water in the catchment box periodically to prevent overflow.

XI.How to use door lock:

1. The incubator has locks, you can use this function when you need.
2. Please protect your locks, they should not be too hard reached to avoid loosening and outside force collision caused damage.

XII. non-fail:

1. During rainy season or heavy humidity environment, incubator outer wall may be "sweating", which is same as moisture condensation on the cool cup. you can wipe with soft& dry cloth.
2. When the compressor stop running, refrigerant in the evaporator will happen within the flow of water like voices, but this is not trouble.

XIII. Self-inspection:

If incubator happened the following troubles, please check by yourself.

1. If incubator stop running(not refrigerate)
 - 1) check whether power cutted.
 - 2) Check the temperature setting whether in the range of working.
 - 3) Check the power plug and socket whether poor contact.
 - 4) Check the fuse whether fusing.
2. If the temperature in the box is not enough low.
 - 1) Whether the items stored inside is crowded, which can hinder air-conditioning circulation.
 - 2) The incubator is shined by direct sunlight or not. the back and the sides of the space is adequate or not.
 - 3) The number of closed the door are too frequent, or not close door well.
3. if there is noise.
 - 1) Incubator is Whether smooth placed or not.
 - 2) Incubator is whether contact with the outside world with a part of the walls or objects.
 - 3) The location of spare parts in the incubator is correct or not.
4. Shell with electric induction
Check Grounding is whether reliable or not(or have you grounded).

Packing list

NO.	Category	Name	Unit	Qty	remark
1	Document	Operation manual	Pc	1	
2	Document	Packing list	Pc	1	
3	Spare parts	Shelves	Pc	5	
4	Spare parts	Fuses	Pc	2	