Operation Manual

Series 300

General Purpose Incubator

Thank you for Choosing Biolab products. Please read the “Operating Instructions” and “Warranty” before operating this unit to assure proper operation.

Index

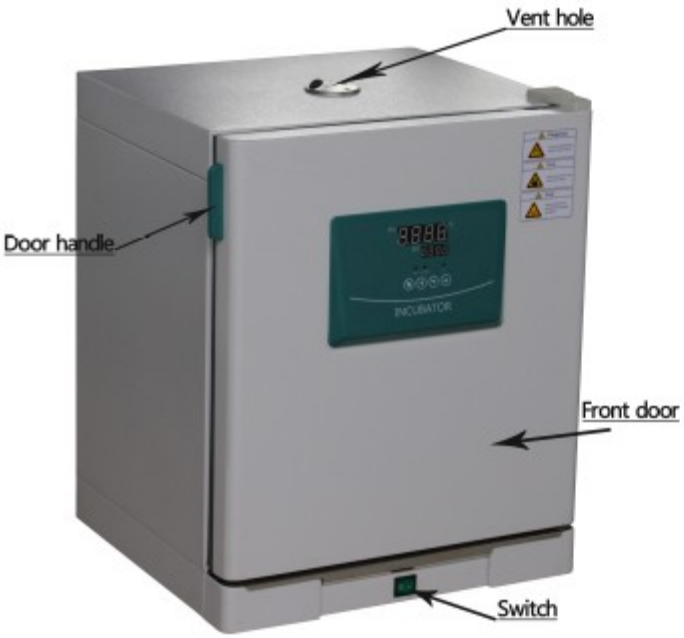
01 Summary

It is suitable for culture and scientific research of bacteria and microbe. It is the important test equipment in practice of industries of modern medicine, pharmaceutical, biology and biochemistry.

02 Structure Features

1. The casing of this instrument adopts high quality cold-roll steel sheet. The surface treated by coating technology. It has novel pattern and good endurance.
2. The workroom is made of stainless steel or high quality cold -roll steel sheet. The surface treated by coating technology.
3. It has double sealing door structure. The internal door is made of high quality tempering glass and sealed by silica gel strip, the external door adopts magnetic strip. It has good sealing performance and is convenient to start and stop.
4. It has microcomputer intellectual control system, PID control program, digital display screen and touching operating key. It has over-temperature, over-temperature circuit breaking and timing function.

03 Product Diagram

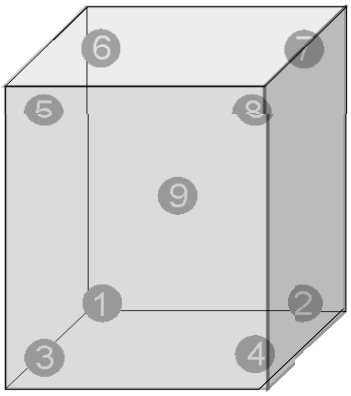


04 Technical Parameter Temperature

Model	BIGP-301	BIGP-302	BIGP-303	BIGP-304
Working voltage	220~240V 50Hz/60Hz			
Temperature Range	Room temperature +5~65℃			
Temperature Motion	±0.5℃			
Heating power	250W		500W	600W
Shelf load	15kg			
Inner Chamber Size (mm)	350×350×350	400×350×350	500×450×550	600×580×600

Note: B means stainless steel inner chamber.
Without B means: high quality steel inner chamber with digital controller

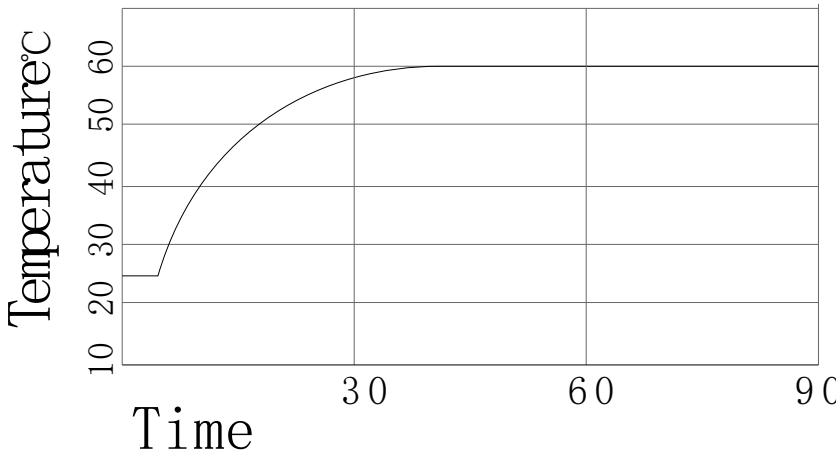
05 Inner Chamber Temperature Distribution Map



Temperature point	Temperature℃	Temperature point	Temperature℃
①	37.26	⑤	36.50
②	36.30	⑥	37.21
③	36.07	⑦	36.40
④	35.95	⑧	36.41
		⑨	36.63

Note: the measured value has a little difference because of different models

06 Curve Table Temperature Rising Special Curve



07 Working Conditions

1. Environment temperature: 5℃~65℃
2. Relative humidity: ≤50%RH
3. Pressure: 80-106Kpa
4. No violent shake and corrosive gas around the incubator.
5. Avoid direct sun or effect from other cooling and heating sources.
6. There is no high concentration dust around the instrument except keeping horizontal installation.
7. Reserve particular space between equipment and wall.
8. Install it in adequate ventilation place.

08 Safety Information

1. In order to ensure the safety of equipment and experiment, please install external grounding protection and supply power according to requirement of nameplate of equipment.
2. Don't test the inflammable and explosive materials, noxious goods and strong corrosive articles by this equipment.
3. Ensure the horizontal installation.
4. Laypeople must not demount and maintain.
5. Don't make compulsory startup, must eliminate the alarm reminder.
6. Read this instruction carefully before operate this equipment

09 Operation Cautions

1. The test hole is set on the top of this instrument. The other instruments need to put in the workroom via this hole.
2. For the initial startup, don't modify internal parameter of program controller except the permission in the instruction.
3. The workroom adopts vertical ventilation cycle. Each tray can not place too much, total area of test load can not large than 1/3 of tray.
4. The environment temperature must 5ºC lower than setting temperature, then it can work in normal.
5. Don't use acid, alkali and other corrosive articles to scrub the internal surface and external

surface. The neutral washing detergent could be used for regular cleaning, then wipe by dry cloth.

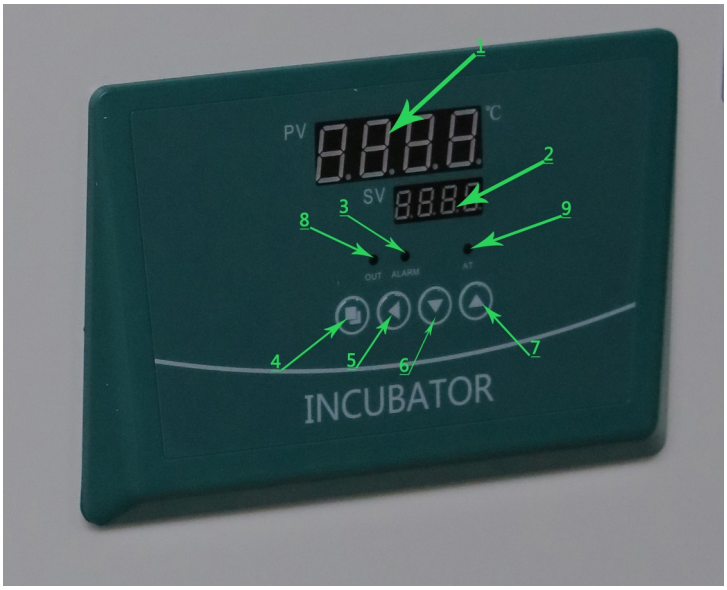
6. When the equipment stops, cutoff the power and keep interior and exterior dry and clean.

10 Controller Operation Instruction

TST series intellectual temperature controller is the new temperature controller which adopts microcomputer control and applied with resistance temperature and thermocouple. Various parameters can be key in on the panel. It adopts many control rules, such as step control, PID control, especially adopts expert self-tuning temperature control with high precision. It is suitable to different environment. Adaptable sensor: Indexing number CU50 stainless steel head, wire of sensor is 2000mm long.

Timing function: 0-9999 (Mins) (Be selected or be hidden)

ⅰ. Instruction of panel



1. Display window of measured value 2. Display window of set value
3. Alarm indicating light 4. Set key 5. Shift key 6. Minus key
7. Plus key 8. Main output indicating light
9. Self-tuning indicating light 10. Switch

ii. Temperature time operation

The normal display of instrument, the upper row digital tube displays measured temperature, the lower row digital tube displays the setting temperature.

Press the set key, enter temperature setting state.

Regulate the required temperature by ▲or▼, then press SET KEY for confirmation, enter the time setting page.

Time setting page

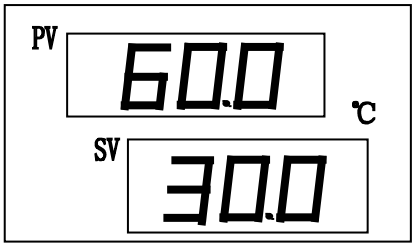
Regulate the required time by ▲ or ▼, then press for confirmation, back to normal display page. Note: If there is no setting number over 5 seconds in the picture, the instrument will back to normal display page automatically, operate again for setting. If set the time as 0, it has no timing function.

iii. At temperature self-tuning

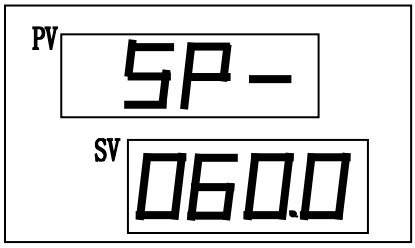
1. In the process of production, the temperature fluctuation after constant temperature is over 2 C, or it can't meet the requirement of temperature, you must self-tuning the temperature once again. For example, after set the required temperature at 40ºC, press ▲ for 5 seconds in normal state, AT self-tuning lamp is light, which means in self-tuning state. In the process of self-tuning, don't open the door or extract the air, don't set again and cutoff the power. After the temperature goes up, the cooling instrument will calculate the heating speed automatically, the AT lamp goes out after half an hour. The instrument will control temperature according to the new program, so it has high precision in temperature control.

2. Internal parameter table
If the time is set as "0", the controller will run continuously, the display window of "SV" will display the set point temperature. If the time set value is not equal "0", timers start time when the measuring temperature reaches the set point temperature, the display window of "SV" will display the runtime. When the runtime is over, the "sV" window will display "End", the buzzer will sound for 30s, and Press the button "▼" for 3s, the program will restart.

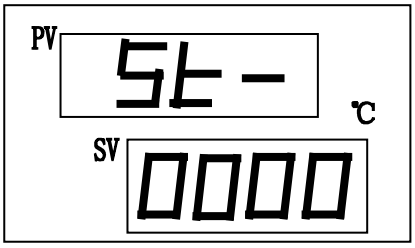
(1) The normal display



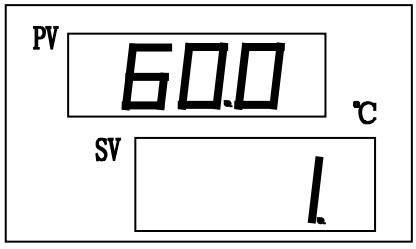
(2) the temperature setting state



(3) the time setting state



(4) Timing display



3. When temperature alarm, the buzzer will sound," ALM" lights. If a change in temperature setting and over-temperature alarm, "ALM" lights up, but no songs buzzer.
4. When the buzzer sounds, it can be muted by pressing any button.
5. "◄" button: In the setting state, it can shift the set value by pressing the button.
6. "▼" button: In the setting state, it can reduce the set value by pressing the button. If press and hold the button, the set value will reduce continuously. The timing state, long presses the button for 3 seconds and can make the program stop.
7. "▲" button: In the setting status, it can increase the set value by pressing the button. If press and hold the button, the set value will increase continuously.
8. In setting state, the controller will return to run status if without any key press in one minute.
9. If the display window shows "----", it indicates the fault of temperature.

ⅳ. AT function

When the temperature control effect is not ideal for system tuning. Self tuning process temperature can have bigger overshoot, the users in a system setting before please consider this factor.
In not running state, the controller will enter the auto-tuning of PID by pressing the "◄" button for 6s,"RUN/AT" indicator flashes, it will be not bright when the auto-tuning of PID is completed. In the state, compressor into normally open mode, when the auto-tuning of PID after the end of a group of PID parameter, parameter automatic save and return to the normal mode of operation. When running the auto-tuning of PID, it can be stopped by pressing the "◄" button for 6s again.
In the auto-tuning of PID state, if temperature alarm, no songs buzzer and" ALM" don't light, but heating alarm relay automatic disconnect. And "set" keys to effective. In the system self tuning process regardless of whether there is a constant temperature time setting, controller display window lower always display the temperature setting value.

ⅴ. Internal parameters settings

Press the "Set" button for 3 seconds, controller will display the password prompt "Lc". Adjust the password to the required value, then press the "Set" button again, it will run into the internal parameter setting state. if press the "Set" button for another 3 seconds, it will return to the running state.

Parameter list-1:

Parameter indicator	Name	Instruction of the Parameter's function	(Setting range)factory set value
Lc-	Password	when Lc=3 ,then we can see and modify parameters	0
AL-	Alarming setting	When temperature is beyond "SP+AL", the Alarm indicator turns on. The buzzer sounds and the heater output turns off.	(0 ~ 100℃) 5
T-	Control cycle	The heat control cycle of temperature	(1 ~ 60S) 5S
P-	Proportional band	Adjustment of proportional parameter.	(1.0 ~ rH) 26.5
I-	Integration time	Adjustment of integration parameter.	(1 ~ 1000S) 415
d-	Differential time	Adjustment of differential parameter.	(0 ~ 1000S) 415
Pb-	Zero point adjust	When the zero error comparatively larger, to update this value should be needed. Pb=measure value –actual value	(-12.0 ~ 12.0℃) 0.0
PK-	Full point adjust	When the full point error also comparatively larger, to update this value should be needed. PK=1000× （measure value –actual value） / actual value.	(-999 ~ 999) 0
Et-	Timing function	When ET = 0, no timing function; 1 electric start timing, 2 to the value set start timing.	(0 ~ 2) 2

Parameter list-2:

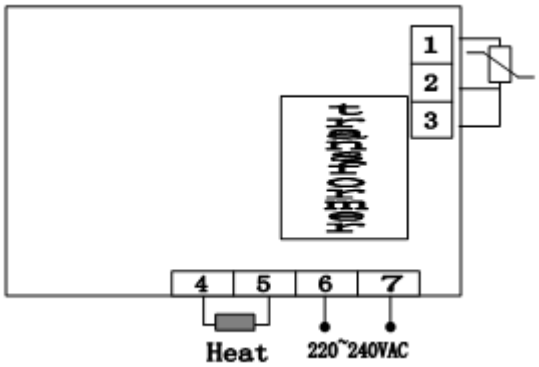
Parameter indicator	Name	Instruction of the Parameter's function	(Setting range)factory set value
Lc-	Password	when Lc=9,then we can see and modify parameters	0
Co-	Turn off the heat output deviation	when"PV≥SP+Co"， Turn off the heating output。	(0.0 ~ 50.0℃) 5.0
Hn-	Constant temperature time	0: minutes time; 1: hours time	(0 ~ 1) 0

	mode		
En-	End of operation temperature	En = 0 end of run off output; En = 1 end run to constant temperature;	(0 ~ 1) 1
rH-	Range of temp setting	The value of temperature setting.	(0 ~ 100.0℃) 70.0
SPL-	Lower limit	Temperature set value minimum value.	(0 to highest limit) 0
SPH-	Highest limit	Temperature setting value maximum value.	(lower limit to Highest limit) 70.0

vi. English name and parameter indicating the symbol table

	SP	St	Lc	AL	T	P	I	d
	SP	**St**	**Lc**	**AL**	**T**	**P**	**I**	**d**
	Pb	Pk	Co	Hn	oP	rH		
	Pb	**Pk**	**Co**	**Hn**	**oP**	**rH**		

11 Wiring



12 Fault Analysis

Fault site	Cause analysis	Treatment method
Power indicating lamp is not working.	No power	Check the outlet
The temp. controller displays “0000”	The fuse is fused	Replace the fuse
The temp. cannot go down	The sensor is not work	Replace the sensor
The evenness degree is not good	The controller is not work	Replace the controller
The control sometimes good and sometimes bad	The environment temp. is too high	Reduce the environme nt temp.
The temperature can not go up	The sample is heating	Reduce the supply quantity of sample
The temperature over shot is too large	The supply power doesn’t need the demand	Adjust the power
	The voltage is unstable	Steady the power input.
	The instrument setting is too low	Set the temperature correctly
	The heating light of instrument is light but no output	Replace the meter
	The heating has output but the heater has no heating	Replace the heater
	The sensor is not work	Replace the sensor with same specification
	The related parameter’s setting of instrument is not correct.	Consult the instruction and adjust again
	The heater output is not stop	Replace controller
	The internal PID is not correct.	Start self-tuning

BIOLAB SCIENTIFIC LTD.
3660 Midland Avenue, Suite 300, Toronto, Ontario M1V 0B8 Canada
Email: contact@biolabscientific.com Tel: +1 707 533 1445
Website: www.biolabscientific.com