

High-Precision Refrigerated Thermostat Bath GDH Series User Manual



Please read operating manual before installation and operation.

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1. General

Energy Saving Intelligent Water Bath (Low temperature thermostatic bath) is common and necessary instrument for laboratories, extensively used in Petrochemical industry, National Defense, Metallurgy, Chemical Industry, Physics, Biology Engineering, Chemistry, Pharmaceutical, life science, electronic instrument, quality inspection and measurement, plant laboratory, colleges, Research and Development Institutes and so on.

2. Characteristics

- 1) With complete enclosed air- cooling compressor for refrigeration, low temperature thermostatic bath has outstanding advantages such as quick refrigeration and low noise.
- 2) Refrigeration system is equipped with multi-purpose protection devices such as over heating, over current and so on.
- 3) Temperature can be controlled by microcomputer, which can be operated simply, has alarming device for temperature under low temperature limit and over high temperature limit, and is equipped with PID automatic control.
- 4) Use double windows in red and green, upper window displays measurement value in red, and lower window displays measurement value in green, both in LED.
- 5) Intelligent microcomputer can adjust temperature setting allowance so that digital display distinguish-ability reaches 0.1°C .
- 6) Special user PID can be adjusted.
- 7) It has internal and external cycles, external cycle will discharge thermostatic liquid inside the bath, and establish No. 2 thermostatic bath, also it can discharge liquid outside as cooling or heating source, to lower (raise)temperature of external experimental vessels, and enlarge use scope.

3. Technical parameters

Model	Temperature range (°C)	Temperature Stability (°C)	Display Resolution (°C)	Volume(mm)	Depth (mm)	Pump Flow(L/min)	Top Opening Dimen(mm)	Drain	NW(kg)	Packing Size(mm)
GDH-0506	-5~100	±0.005~±0.02	0.01/0.001	260×200×150	140	6	180×140	√	35	515*450*600
GDH-1006	-10~100	±0.005~±0.02	0.01/0.001	260×200×150	140	6	180×140	√	35	515*450*600
GDH-2006	-20~100	±0.005~±0.02	0.01/0.001	260×200×150	140	6	180×140	√	33	450*430*810
GDH-3006	-30~100	±0.005~±0.05	0.01/0.001	260×200×150	140	6	180×140	√	33	450*430*810
GDH-4006	-40~100	±0.005~±0.05	0.01/0.001	260×200×150	140	6	180×140	√	36	505*480*1015
GDH-0510	-5~100	±0.005~±0.02	0.01/0.001	260×200×200	200	6	180×140	√	35	460*430*810
GDH-2010	-20~100	±0.005~±0.02	0.01/0.001	260×200×200	200	6	180×140	√	35	460*430*810
GDH-3010	-30~100	±0.005~±0.05	0.01/0.001	260×200×200	200	6	180×140	√	35	460*430*810
GDH-1015	-10~100	±0.005~±0.02	0.01/0.001	280×260×220	220	6	235×160	√	35	460*430*940
GDH-2015	-20~100	±0.005~±0.02	0.01/0.001	300×260×200	200	6	235×160	√	35	460*430*940
GDH-3015	-30~100	±0.005~±0.05	0.01/0.001	300×260×200	200	6	235×160	√	35	460*430*940
GDH-1020	-10~100	±0.005~±0.02	0.01/0.001	280×260×280	280	6	235×160	√	36	460*430*940
GDH-0530	-5~100	±0.005~±0.02	0.01/0.001	400×325×230	200	6	310×280	√	80	618*540*1090
GDH-1030	-10~100	±0.005~±0.02	0.01/0.001	400×325×230	200	13	310×280	√	80	618*540*1090
GDH-2030	-20~100	±0.005~±0.02	0.01/0.001	400×325×230	200	13	310×280	√	85	618*540*1090
GDH-3030	-30~100	±0.005~±0.05	0.01/0.001	400×325×230	200	13	310×280	√	90	618*540*1090
GDH-2008W	-20~100	±0.005~±0.02	0.01/0.001	280×260×140	140	6	235×160	√	36	700*540*560
GDH-1015W	-10~100	±0.005~±0.02	0.01/0.001	280×260×220	220	6	235×160	√	36	700*540*560
GDH-3506W	-35~100	±0.005~±0.05	0.01/0.001	260×200×150	140	6	180×140	√	36	700*540*560
GDH-3510W	-35~100	±0.005~±0.05	0.01/0.001	260×200×200	200	6	180×140	√	36	700*540*560
GDH-0506W	-6~100	±0.005~±0.02	0.01/0.001	260×200×150	150	6	180×140	√	36	700*540*560
GDH-4006W	-40~100	±0.005~±0.05	0.01/0.001	260×200×150	150	6	180×140	√	36	700*540*560

4. Operational steps:

1) Add liquid media in bath, with liquid level no less than 30mm lower than work bench.

2) Selection of liquid media

A. When work temperature is below 5 °C, liquid media shall be alcohol.

B. When work temperature is between 5 °C-80°C, normally liquid media shall be pure water.

C. When work temperature is between 80°C-90°C, normally liquid media shall be 1 5 % glycerin water solvent.

D. When work temperature is between, normally liquid media shall be oil.

3) Connection of cycling pump :

A. For connection of internal and external cycling pumps, the user only need to connect liquid outlet tube to liquid inlet tube with hose which will be provided with the machine).

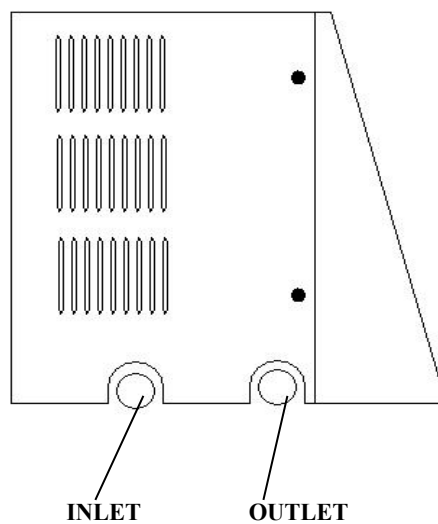
B. Connect external cycle of external cycling pump, connect liquid outlet tube to inlet of vessel outside the bath, and connect liquid inlet tube to outlet vessel outside the bath. (Note : tube on the left side of front panel of instrument is liquid inlet tube, and the one on the rack panel of the instrument is liquid outlet tube) .

1. Circulating pump connection:

A. Connect the inner circulation pump and connect the outlet tube to the inlet tube with a hose (a hose is supplied).

B. The external circulation pump is connected to the outer circulation, and the outlet pipe is connected to the inlet of the outer container by the hose, and the inlet pipe is connected to the outlet of the outer container of the tank.

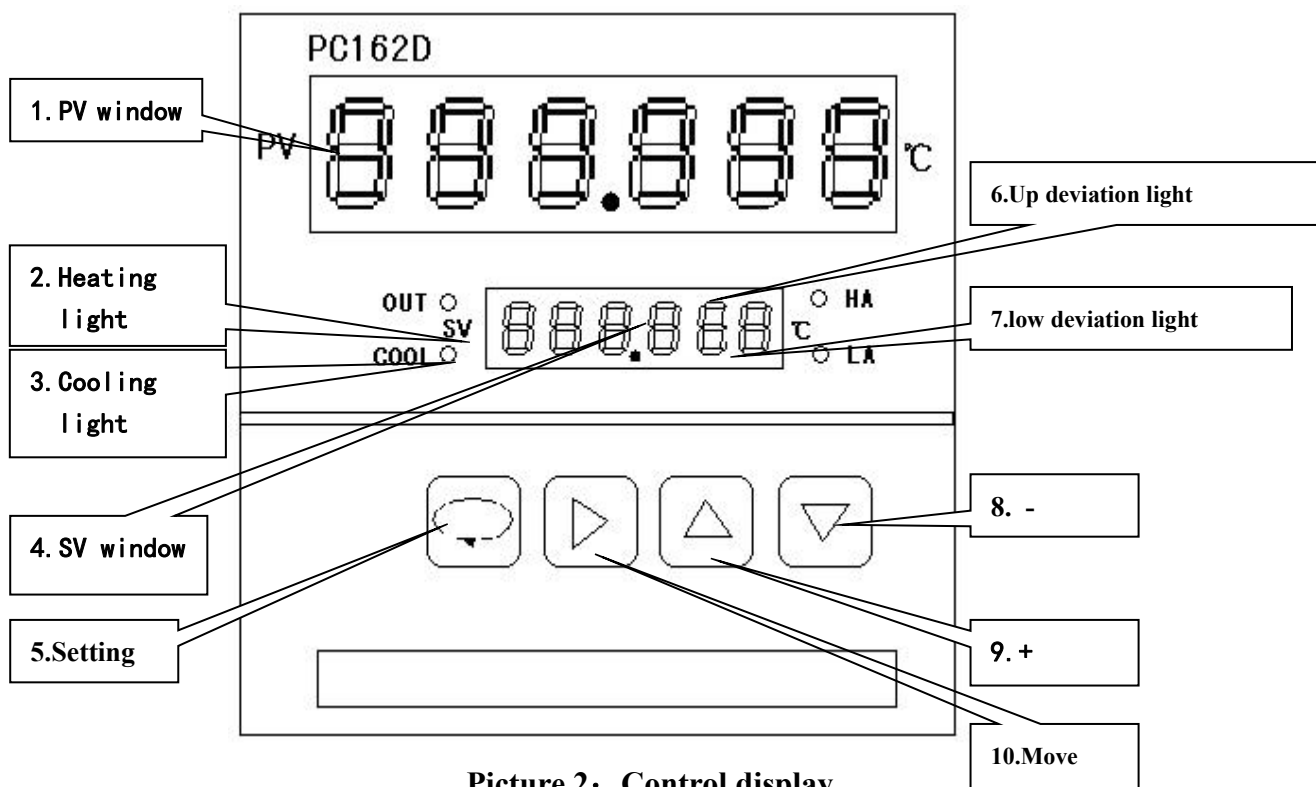
The outlet pipe and the inlet pipe are on the left side of the control panel, as shown in Figure 1: (Note: depending on the model, there may be a change in the position of the outlet pipe and the inlet pipe. Please confirm the mark on the pipe.)



Picture 1:

1. When use the device , if working temperature $> 90^{\circ}\text{C}$, circulation pump must use metal hose 。






2. Operation process:





A. Control button :





()Setting ()Move ()+ ()_




四、Operation:


1、Time setting: press  button, inner the SV window first digit on the left side of the window is flashing. After that, press the () key to move the digits to 000.00X digits, 000.0X digits, 000.X digits, one digits, ten digits, and hundreds digits. For example, when the 000.00X digit is pressed, the 000.00X digit flashes. At this time, you can press the () add key and the () subtract key to set the number. After setting, set the values of 000.0X digits, 000.X digits, ones digits, ten digits, and hundred digits in sequence. Get the temperature settings you need. After setting, press the  button again and the set data will be saved automatically.

2. Correction of measured value: Press and hold the button for more than 5 seconds, let go of the LOC after the PV window is displayed, then press the () button to adjust the number in the SV window to

100000, and then press  it again. At this time, the PV window displays the typeface: SC. The SV window is displayed as: 000.000, and the first digit on the left flashes.

3. The measured value correction operation is performed by comparing the liquid temperature data measured by the thermometer (mercury column thermometer or high-precision digital thermometer) with the displayed temperature data. For example, the display temperature is 30.540°C , and the measured temperature data is 30.600°C . Then, press the () button to move to the 0.0X position to flash, and press the () or () button to set to 000.060. Namely: measured value correction value = measured temperature value - display temperature value. That is: if the measurement correction value is -0.60, the correction value should be set to -00.060. Then press the button  for more than 5 seconds to exit, the data will be saved automatically.

Set the upper deviation value: press  and hold the button for more than 5 seconds, let the PV window display the word LOC and let go, then press the () button to adjust the number in the SV window to 100000, then press  twice, then PV The window displays the typeface: HA. The SV window is displayed as: 000.000, and the first digit on the left flashes.

After setting the deviation value, press the button  again, the PV window displays LA. The same deviation method can be used to set the deviation value. After setting, press and hold the button for more than 5 seconds to exit the saved data. If the upper deviation value and the lower deviation value are both set to 001.00 and the set temperature is 60°C , the temperature deviation range is $60^{\circ}\text{C} \pm 1^{\circ}\text{C}$. When the temperature is lower than 59°C , the LA alarm light is on. Above 61°C , the HA alarm light is on.

4. PID parameter correction: The thermostat manufacturer adjusts the LOC to ***** (the password is provided by the company), and then adjusts the P, I, and D to the desired value.

5. Determine the voltage compensation rate F: When the other factors of the constant temperature bath are constant, if the grid power supply fluctuates, the temperature of the constant temperature bath will fluctuate. To this end, voltage compensation is introduced in the meter to reduce the influence of the grid voltage, thus introducing a voltage compensation rate F. When not cooling, the value is fixed and has been adjusted at the factory. What the user wants to adjust is the F when it is cooled. It depends on the inherent characteristics of the thermostat. It needs to be determined under the guidance of the manufacturer. It is generally 13, and the

debugging password is corrected with the PID.

6. Cooling or not switching temperature difference E: It is determined by the idling temperature rise of the constant temperature bath (ie, the temperature rise after 1 hour of non-refrigeration without heating), $E \geq t+2^{\circ}\text{C}$, and the debugging password is corrected with PID.

7. Run: After setting the data, the device will run according to the set data. The OUT light is on to indicate that heating is in progress, and the COOL light is on to indicate that the cooling system is in operation. If the set temperature is lower than the liquid temperature in the tank, the refrigeration system will be in the normally open state, at which point the heating system will compensate for the temperature. When the set temperature is higher than the liquid temperature or room temperature, please turn off the refrigeration system and use the heating system alone.

Note: Temperature setting shall not be adjusted during automatic setting process of the machine.

五. Precautions :

1) Add liquid media into bath before using

2) Use 50Hz 220V power supply, power shall be no less than total power of instrument, and power supply receptacle shall be earthed properly.

3) Instrument shall be put on a place that is dry and has good ventilation, rack panel and two sides shall be 300mm away from obstruction.

4) After using, all switches shall be turned off, and power plug shall be pulled out.

Packing list :

1. main machine	1set
2. power supply wire	1pc
3. Rubber tube	1pc
4. Cover	1pc
5. Operational Manual	1copy

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