



COLD TRAP BATH

BBCT-2501 BBCT-2502

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1. Safety warning

! Dangerous (may result in serious loss of property or casualties)

1. The instrument must be grounded and away from sources of electromagnetic interference (must not be zero line or middle line for the ground).
2. Before use, please confirm the voltage and frequency of the power supply match the product requirements.
3. The product should use a separate power outlet, and confirm the plug, socket, good grounding.
4. Do not allow products in operation without turning off the power switch and unplug the power plug.
5. Do not allow free access or cut short product power line.
6. Do not repair without authorization, the company commissioned by the professionals must be repaired.

! Warning (may cause property damage or personal injury)

1. Must fully read and understand this product manual before operation.
2. When unplugging the power plug, do not drag the power cord directly.
3. One of the following conditions, you must unplug the product power plug:
 - 3.1 When replacing the fuse tube.
 - 3.2 Product failure to be checked repair.
 - 3.3 Long time to stop using the product.
 - 3.4 When moving the product.

! Note (may affect the service life of the product cause it could not work normally)

1. The product should be placed on a hard and firm surface to keep it level.
2. The product should be left some space around.
3. The product must be used under certain conditions of use. (See Chapter III 1.1 ~ 1.4)
4. The product must be used under the correct settings. (See Chapter III for details)

2. Product introduction

2.1 Outline drawing (This drawing is for reference only, subject to the actual product!)



Figure 1



Figure 2

①	Controller
②	Pressure gauge
③	Glass collector
④	Switch
⑤	BBCT-2501 Power plug/BBCT-2502 power cable
⑥	Draining interface
⑦	Communication interface (optional)

Table 1

Glass condenser schematic:

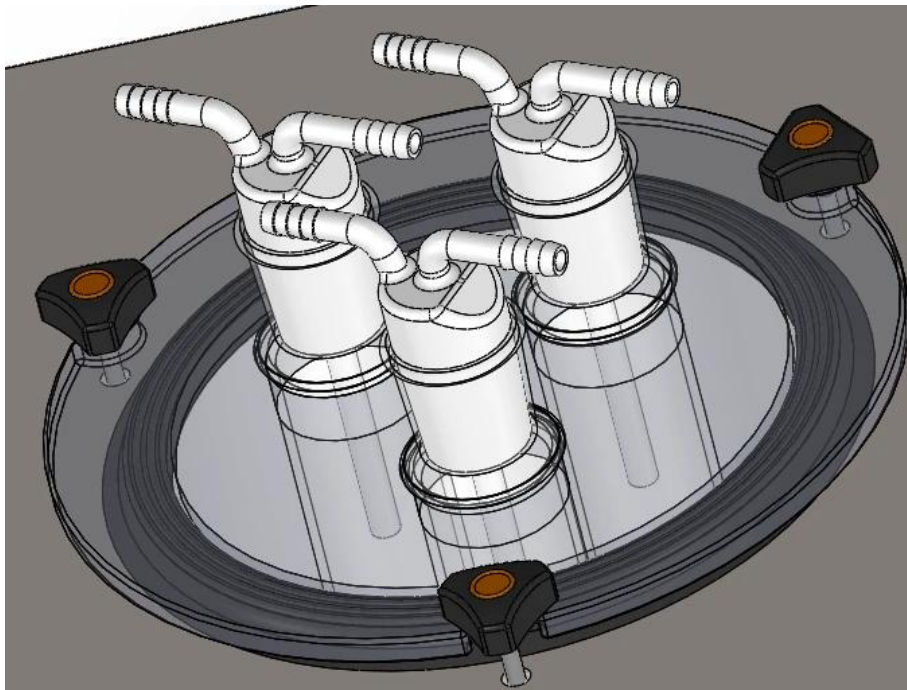


Figure 3

2.2 Overview of structural functions

The cold trap is composed of a controller, a box, a refrigeration system, a glass condenser, and a circulation pump. The controller consists of a temperature controller, a temperature sensor, and the like. The box is made of high-quality thin steel plate, the surface is spray-coated, and the inner tank is made of stainless steel. The refrigeration system consists of a compressor, a condenser, an evaporation coil, and the like.

The equipment relies on the rapid cooling of the refrigeration system to reach the required temperature. The glass condenser series collection device is installed in the liquid tank and used in the vacuum system to complete the reliable operation of the vacuum system.

There is an inlet and outlet interface behind the cold trap. When the liquid outlet interface is not in use, the liquid can be discharged to keep the whole machine clean. The temperature controller is a double-row four-digit display digital controller composed of a CPU processor and peripheral circuits. Pt100 platinum resistance is used as the temperature sensing element, which has the advantages of high control precision and good stability, and alarm functions such as timing and over-temperature alarm protection.

Extended function - optional RS485/232 communication interface, through the connection of the computer, display and monitor the experimental data.

3. Use of the product

3.1 Preparation before use

1.1 The product should work normally under the following conditions of use.

a. Ambient temperature: 5°C~35°C; air relative humidity: ≤85%.

b. Atmospheric pressure: (86~106)KPa.

c. Altitude is not higher than 2000 meters.

d. Power supply: 220V/60HZ.

e. Keep away from heat sources, no corrosive gases around, no strong vibration sources and strong electromagnetic fields.

1.2 The base of the equipment to be placed needs to be flat and composed of non-combustible materials.

1.3 Keep at least 300mm of space around the equipment (front and back ventilation grille), well ventilated.

1.4 This equipment is equipped with a compressor. After the equipment is transported, do not operate immediately. After standing in the correct position, wait for (1~2) days to start working again to ensure that the compressor works normally.

1.5 When filling the bath, please be careful not to pour the liquid into the inside of the meter. It is recommended to open the heat cover to add water or other medium from the sink. The liquid must cover the evaporator.

1.6 Different baths should be added according to different temperature control ranges (super temperature is strictly prohibited).

3.2 Power on



Figure 4

3.2.1.1 Indicator light description

- 1)TEMP: Display the measured temperature.
- 2)SET: Display the setting temperature.
- 3)Cooling light: Light when the cooling output.
- 4)TIME area: Display the running time or parameter value.
- 5)Silencer light: There is an alarm, light when the buzzer has silenced.
- 6)Alarm light: Light when alarm.

3.2.1.2 Key Description

- ①  Function key: Used for setting value modification; parameter recall and parameter modification confirmation.
- ②  Shift key: used to set value, shift of internal parameters and view of ambient temperature.
- ③  Decrease key: In the setting state, click once to decrease 1 digit unit, long press the button, will jump to decrease more digits.
- ④  Add key: In the setting state, click once to increase 1 digit unit, long press the button, will jump to add more digits.
- ⑤  Start/stop key: Press and hold this button for more than 4 seconds to control cooling operation / stop.

3.3 Operating steps

1)Timing function: Press  key once, When the time is set as 0, there is no timing function; when the time setting is not 0, the controller has the timing function. Press  key once, the TIME value flashes, indicating that the time can be set as needed, by add, decrease and shift key, set the desired time value. Timing time to, Time window shows "END", buzzer sound, press any key to silence.

2)Temperature setting: Press  key again, "TEMP SET" window flashes, indicating that the temperature can be set as desired. Set the desired temperature by add, decrease and shift key. Then press  key again, return to standard display mode.

Note:①Every time modify a parameter,,need to press"  " key to confirm the modification is valid.

②After all the parameters are set, long press "  " key for about 4 seconds to start running.

3.4 Upper deviation alarm setting

The setting of the upper deviation is reasonable, can play the role of system temperature control or out of control protection, the product must be used when working.

Example: If the product is shipped with AL = 3.0, the alarm temperature is: (set temperature + AL value) °C.

3.5 Check the temperature control accuracy

3.5.1 With 0.1 °C index mercury thermometer (or resolution 0.1 °C digital thermometer) into the bath, the mercury end should be immersed in the bath and placed in the geometric center of the bath.

3.5.2 Choose a point within the range of product control, when the temperature measurement value is equal to the set value, then keep the temperature for about 1 hour. Observe that the difference between the actual measured value of the mercury thermometer and the measured value of the thermometer should be $\leq \pm 0.5$ °C.

3.6. Methods to improve temperature control accuracy

3.6.1 When the product is used for a period of time, check the temperature control accuracy according to 5.2 method. If it exceeds ± 0.5 °C, it can be amended as follows:

3.6.2 Enter the parameter setting, find "PE" symbol,

$$PK = 4000 \times \frac{(\text{Meter Measurement} - \text{Mercury Table Value})}{\text{Mercury Table Value}}$$

After the formula is calculated, the value of PK is changed on the basis of the original factory (Note: a correction is not allowed, can be repeatedly modified until it meets).

4. Maintenance and precautions

1. The device must be connected to a well-grounded electrical outlet! To ensure personal safety.
2. When the bath is water, please pay attention to the use of temperature to prevent icing, resulting in inaccurate temperature control.
3. When replenishing the bath, the type of bath in the bath must be the same; (please note that the liquid medium in the working chamber must be filled with different bath according to different operating temperatures).
4. Use a flammable bath! Responsible for damage caused by improper use of the bath!
5. Connect the rubber hose, and press the clamp at the joint to prevent it from falling off.
6. Under continuous operation, the connection between the part of the bath cover and the circulation pump will become very cold. Therefore, when touching these places, be careful and prevent frostbite.
7. After filling the tank, carefully transport or tilt it at will, so as to avoid danger or equipment damage caused by immersion of cold liquid into the machine.
8. Must use clean water or medium to strictly prevent foreign matter such as sediment from entering the cooling system and damaging the circulating pump.
9. After use, turn off the power switch, unplug the power cord, insert the drain plug to drain (please pay

attention to the bath temperature, be careful! To avoid frostbite) and dry the cabinet.

5. Appendix

5.1 Main Specifications

Cold trap technical parameter table			
Product name		Small cold trap device	
Type		BBCT-2501	BBCT-2502
Collection method		Glass condenser immersion	
Performance	Collection amount	Max.0.5Kg	Max.0.15Kg
	Lowest temperature	- 40°C	- 80°C
Features	Security function	Compressor delay start, machine leakage, overcurrent, overvoltage protection	
Composition	Cooling capacity and refrigerant	Air cooling 400W R404A	Air cooling 150W R404A,R23
Specification	Cover interface material	Import PC	
	In-tank size(mm)capacity(L)	φ220mm*180mm 6.8L	
	PC slot cover connection diameter	φ50.0mm 3 hole	
	Glass condenser connection caliber	φ10mm (Match with diaphragm pump)	
Ambient temperature range		5-35°C	
External size(mm)		315*500*570	500*600*710
Power supply, machine power		220V/60Hz/850W	220V/60Hz/1300W
Way of use		Add ethanol or other antifreeze to the cold trap tank, then immerse the glass condenser in the ethanol liquid, The acid or solvent vapor is condensed and trapped in the glass condenser by cooling and decompression in the glass condenser	

Table 2

5.2 Failure handling methods

Fault phenomenon	Reason for failure	Troubleshooting
1. No supply (Light does not shine)	The plug is not inserted well or the wire is disconnected.	Reinsert or repair
	Power line break or power switch is broken	Replace and repair
2. Meter no display	The temperature controller power supply is bad or the incoming terminal is off.	Replace the temperature controller or reconnect the incoming line
3. Instrument PV screen display ----	Pt100 sensor is faulty or instrument input circuit is faulty	Replace the Pt100 or replace the temperature controller
	The temperature controller's full scale setting error makes the measured value out of range	Reset
4. Not cooling	Refrigeration power switch is not open	Open
	The compressor is broken, the protector is broken, and the boot does not start.	Replace the compressor
	Overheat causes compressor protector to start	Shut down for several hours, naturally recover
	Refrigerant leakage, insufficient cooling capacity, blocked pipes	Discharge, add refrigerant
	Evaporator frosting is serious	Warming
5. Large temperature control error	Pt100 sensor has poor contact and large error	Replace Pt100
	Correct SC, HL parameters (large error)	Refer to this manual
	Adjust parameters such as PID (static difference)	Refer to this manual
6. Poor uniformity	The circulating pump has insufficient flow or the magnetic stirrer is broken, and the bath does not circulate.	Adjust or replace

Table 3

Packing list

Product name: Cold trap

Serial number	Category	Name	Unit	Quantity	Remark
1	Document	Operation instruction		1	
2	Document	Packing list		1	
3	Spare part	Power line		1	BBCT-2502 type no
4	Spare part	Pipe		2	



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