

# Blood Bank Controller

Model: BBC



## Congratulations

for selecting this state-of-the-art microcontroller based instrument.

### DUAL SENSOR ○ DUAL OUTPUT

Please read the following before use.

**Warning** Serious injury may result if instructions are not followed.

- > This unit is not designed as a safety device.
- > Failure of devices, such as the Thermocouple/ RTD sensor, heater, output Relay, SSR or temperature controller itself can result in severe damage to a product while in process, melting of the heater or a damaging fire.
- > An over-temperature protection device must be installed in your process that will remove all power from the heating circuit if the above failure occurs.
- > Failure to install temperature limiting control protection where a potential hazard exists could result in damage to equipment and property and fatal injury to personal.

**Caution** Product may be damaged, or injury may result if instructions are not followed.

- > This unit should be installed in a panel.
- > Do not use the instrument outdoors.
- > The protection device of this unit may be damaged if instructions are not followed.
- > Do not use the instrument in places where there is excessive of dust, corrosive gases, oil spilling, high humidity, condensation, direct sunshine, radiant heat, vibration, shock occur.
- > Unused terminals should not be used as jumper. As they may be connected internally.
- > Clean the unit with dry cloth only after turning the power off.
- > Do not modify or disassemble the unit.
- > Power switch or a circuit breaker should be installed near the unit in order to cut the power supply.

## Specifications

Model	<b>BBC</b>	
Power Supply	220 VAC±10%, 50Hz.	
Display	4 Digit (7 Segment), 0.56", red LED display	
Input Sensor	RTD: PT100 <sub>DIN</sub>	
Linearization	Using <i>Steinhart &amp; Hart</i> equation	
Control Method	Heat Output	ON - OFF
	Cool Output	ON - OFF
Control Output	SSR output: 12 VDC ±3V Max @20mA.	
Display accuracy	0.2% based on F.S or 3°CMax.	
Resolution	<b>0.1° C</b>	
Open Sensor detect	Flashes <b>OPEN</b> and Output is cut off.	
Setting type	By front push buttons. No jumpers.	
Hysteresis	Adj from 0.2 to 99.9°C, (ON-OFF Control)	
Auto Tuning	Initiated by user during instrument operation	
Proportional Gain	Adjustable: 0 - 99.9	These values can be set automatically
Integral Time	Adjustable: 0.1 - 99.9	These values can be set automatically
Derivative Time	Adjustable: 0.1 - 99.9	These values can be set automatically
Control	By duty cycle modulation.	
Cycle Time	Adjustable.	
ON Duty (Min)	5%.	
Sampling time	0.24 Seconds	
Display Update	3 Hz	
Ambient temp.	0°C – 45°C (at non freezing status).	
Humidity	35 – 85% RH.	

## Set Value Adjustment

The Set value can be adjusted when the controller is displaying the Process temperature.

1. When the controller is showing the temperature, keep the **ESC** button pressed for about 2 seconds. When the display shows **SETP** leave the button.
2. The display will show the set value. It will be flashing.
3. To change, use either **▲** or **▼** button to increase or decrease the set value respectively.
4. Keeping either **▲** or **▼** button pressed for more than 2 seconds will result in a rapid change of the set value.
5. To retain the new value press the **ESC** button while the display is still flashing.
6. If no button is pressed for about 12 seconds, the display will stop flashing and no change in Set value will happen.

### ATTENTION: Set value LOCK

If the Set value is locked in configuration (parameter 14 in Config list set to LOCKED), then after step 2 above, the user will have to enter the "Set point access Pass code". This pass code has to be same as in parameter 15 in the config list.

## Configuration

1. The controller can be configured through the front panel as follows:
2. When the controller is showing the temperature. Keep the **ESC** button pressed for about 8 seconds.
3. When the display shows **CONF** release the **ESC** button.
4. On releasing the **ESC** button the display shows **ESC**.
5. Press the **ESC** button briefly the display shows **CONF**.
6. Now press the **ESC** button. The display now shows the set hysteresis for COOL control.
7. Press **▲** or **▼** button to change the hysteresis (if required).
8. After that, press the **ESC** button again. The display now shows **CONF**.
9. Using **▲** or **▼** buttons navigate through the other configuration parameter list.
10. To change the value of any configuration parameter press **ESC** button and then using **▲** or **▼** change to the desired value.
11. After all the changes have been done use **ESC** or **ESC** button to comeback to **ESC**.
12. **To save the changes made, press the **ESC** button when the display is showing **ESC**.**

CONFIG PARAMETER LIST		
No	Parameter	Description
1	ESC	Save changes and exit configuration.
2	C-hy	COOL: Hysteresis.
3	C-on	COOL: ON persistence time.
4	C-oF	COOL: OFF persistence time.
5	Mode	HEAT: mode either 'on/off' or 'PID'
6	H-hy	HEAT: Hysteresis.
7	H-on	HEAT: ON persistence time.
8	H-oF	HEAT: OFF persistence time.
9	H-Ct	HEAT: Cycle time (in PID mode)
10	GAin	HEAT: PID gain.
11	in-t	HEAT: PID integral time.
12	dF-t	HEAT: PID differential time.
13	tune	HEAT: PID tune lock (lock, open, once)
14	SLoc	Set Value lock (locked, open)
15	SPAS	Pass code for setpoint access.
16	CLoc	Configuration lock (locked, open)
17	CPAS	Pass code for configuration access.
18	LoSP	Set value low limit.
19	HiSP	Set Value High limit.

### ATTENTION: Config LOCK

If the Configuration access is locked (parameter 16 in Config list set to LOCKED), then after step 2 above, the user will have to enter the "Config access Pass code". This pass code has to be same as in parameter 17 in the config list.