Kalstein

PROGRAMMABLE TEMPERATURE CONTROLLER
OPERATING INSTRUCTIONS

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Drying Oven

Programmable Temperature Controller Operating Instructions

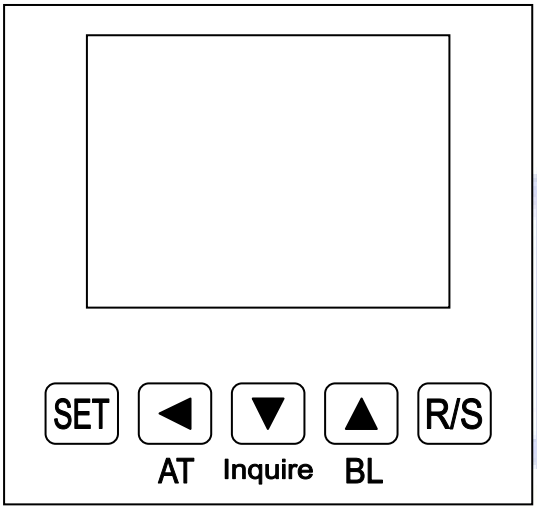
1. Brief introductions

1) RS485 communication.
2) Using LCD display.
3) Logic PID temperature control.

2. Main technical parameters

1) Power: 220V±10%. AC.
2) Environmental temperature: 0～50℃.
3) Relative Humidity： < 85%RH.
4) Sensor: Pt100.
5) Range of temperature: 0～400.0℃.
6) Range of time: 0 ～ 9999Minute.

3. Panel Instructions



4. Operation and using

1) When the controller is switched on, display windows show “Pt” and the value of temperature range for 3 seconds, then it starts running.

2) “◀” button: In the setting state, click the button to shift the set value.

3) “▼” button: In the setting state, click the button to reduce the set value. If press and hold the button, the set value will reduce continuously.

4)” ▲” button: In the setting status, click the button to increase the set value. If press and hold the button, the set value will increase continuously. In the Normal status, it can make the backlight turn-off or light.

5) In the setting mode, if one minute without any key is pressed, the controller will automatically return to normal display.

6) Temperature and time setting

Press the “set” button in the non-set state, the controller displays in turn “SP0; ST1, SP1; ST2, SP2 ... STn, SPn; ST(n+1)”.

Explain:

(1) SP0 is the measured value when the controller starts to run, only to take notes and query, can not be

modified.

(2) If “STn>0”, indicates the warming and cooling time of the current segment.

(3) If “STn=0”, indicates that controller reach the set point value of the current segment with the fastest speed, under the conditions of ensuring the best control effect.

(4) If “STn=-1”, indicates that the controller runs continuously in accordance with the previous set point value.

(5) If “STn=-2”, indicates that controller will end when running to the segment.

(6) In the setup process may long press “SET” button for 3 seconds to exit, the setting values will be saved automatically.

(7) In the setup process first press the “◄”, then click the “SET” button to view on a set value.

For example, to achieve function:

If the temperature is heated to 80 degrees from room temperature after 20 minutes, for 30 minutes at the 80 degrees, then heated to 120 degrees after 40 minutes, for 30 minutes at the 120 degrees, then end.

Setting method:

SP0 (the current measured temperature value, cannot be modified).

ST1=20, SP1=80.0.

ST2=30, SP2=80.0.

ST3=40, SP3=120.0.

ST4=30, SP4=120.0.

ST5=-2.

7) Run and stop

In stop mode press the “R/S” button for 2 seconds to start running, in running mode press the “R/S” button for 2 seconds to stop.

8) Query function

In the running state, click the “Inquire” button to view the current running segment, click the button again to view the setting time and running time of the current segment.

9) Over-temperature alarm, the buzzer beeps continuously, "ALM" warning lamp lights.

10) When the buzzer sounds, press any key to mute.

11) If the controller upper display window displays “----”, said temperature sensor or the controller itself fails, please carefully check the temperature sensor and wiring.

5. Auto-tuning of PID

Use auto-tuning function when the temperature control is not good.

When auto-tuning, “AT” indicator flashes, after auto-tuning end, the indicator stops flashing, parameter value is saved automatically.

In stop mode, press the “AT” button for 5 seconds, controller displays the prompt “AT”, after adjust the “AT” value, then click the “SET” button, if “AT=0”, that to give up the auto-tuning, the controller return to normal display, if “AT=1”, that to select the auto-tuning, controller displays the prompt “ATSP”, after adjust the “ATSP” value, then click the “SET” button, the controller return to normal display and start the auto-tuning.

In auto-tuning process, press the press the “AT” button for 5 seconds to give up the auto-tuning.

Usually the value of auto-tuning (ATSP) should be used in common settings or the value of half the maximum settings.

6. 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:

Parameter prompt	Name	Instruction of the function	(Setting range) factory set value
Lc-	Password key	When Lc=3, to enter the next parameters.	0
AL-	Alarm value	When temperature is beyond “SP+AL”, the ALM indicator turns on. The buzzer sounds and the heater output turns off.	（0.0～100.0℃） 20.0
T-	Control cycle	The control cycle of temperature control.	（1～60s） 5
P-	Proportional band	Adjustment of proportional function.	（1.0～SPH） 35.0
I-	Integration time	Adjustment of integration function.	（1～1000s） 200
d-	Differential time	Adjustment of differential function.	（0～1000s） 100
Pb-	Zero point adjust	When the zero error larger, to update this value should be needed. Pb= actual value – measure value	(-12.0～12.0℃) 0．0
PK-	Full point adjusts	When the full point error also larger, to update this value should be needed. PK=1000×（actual value – measure value）/ measure value.	（-999～999） 0

7. Wiring

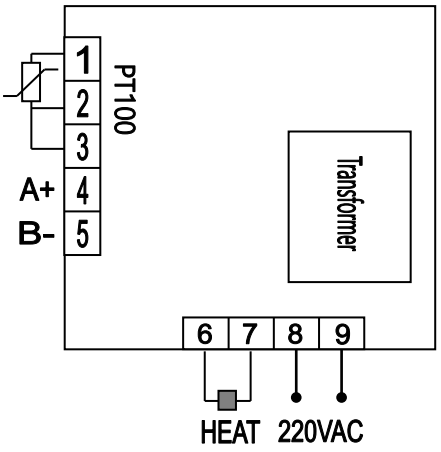


Fig.1 (PRD-C3000)

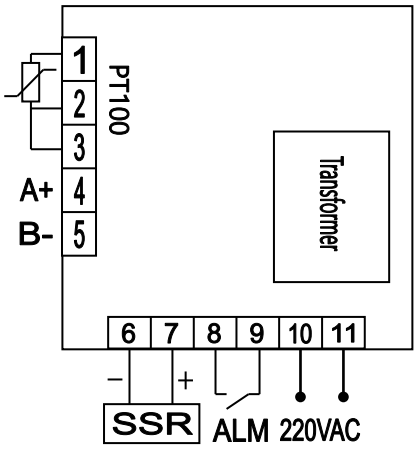


Fig.2 (PRD-C3001)

Communication links(up to 32 nodes at the same time)