

(G3) MICROPROCESSOR BASED SINGLE ZONE 10 PATTERN RAMP / SOAK PROGRAMMABLE PID TEMPERATURE CONTROLLERS



MODEL WISE DESCRIPTIONS :

SR.NO.	MODEL	DESCRIPTION
8.5	PRC-309	Single input 10 program each of 16 steps Ramp / Soak Programmable PID Controller.
8.6	PRC-309/2	Two input selectable K or S/R T/C (or any other to specified) with 10 program of 16 steps each Ramp / Soak Programmable PID Controller.
8.7	PRC-315	Single input 10 program of 16 steps each Ramp / Soak Programmable PID Controller Multi display (3 digit).
8.8	PRC-310	Single input 10 program of 16 steps each Ramp / Soak Programmable PID Controller with 16 digit multiple Display.
8.9	PRC-311	Single input 10 program of 16 steps each Ramp / Soak Programmable PID Controller with 16 digit multiple Display.

DESCRIPTION :

Libratherm offers Microprocessor based multiple Ramp / Soak programmable PID temperature controller Models PRC-300, PRC-301, PRC-309, PRC-309/2 and PRC-315, which are designed to improve reliability, accuracy and control for all processing applications. It features Ramp and Soak functions (the capability to control the temperature and its rate of change over a predetermined time span). One to ten different patterns each of sixteen ramp/soak steps can be programmed into the memory with the user-friendly membrane keyboard. Separate displays are provided to monitor simultaneously the Process temperature, Set temperature and the Program number. It can also be used as single set point control when the profile control is not desired. Inputs can be Thermocouple, IR Thermocouple, RTD Temperature Sensors, Voltage, Current Signals and etc.

It offers both switching outputs in the form of SSR or relay to drive external load contactor and continuous control outputs in the form of (4-20)mA or (0-5)volt etc., which can be used to control heater power through Thyristor power pack (for electrical heating system) or to control the position of a modulating motor valve (for oil or gas fired heating systems). The analog outputs can be directly connected to Libratherm make single phase / three phase SCR phase angle fired power controller which is ideally suitable for both resistive and inductive heating load. Additional 2 relays are also provided for time or temperature dependent event outputs as per the system requirement. The programmed profile and other parameters are retained in the nonvolatile memory in the event of power failure. These instruments finds its applications in furnace / oven control, food and metal processing, jewelry casting, heat treatment plants etc. It is rugged, reliable and field proven

FEATURES :

- ▶ User programmable 10 different ramp/soak patterns.
- ▶ Servo start from the process temperature.
- ▶ Retention of program in case of power failure.
- ▶ Automatic program resumption.
- ▶ Facility of delayed start of heating cycle
- ▶ Facility to use as PID and / or ON / OFF controller.
- ▶ Hardware security lock for unauthorized tampering of the set values.

APPLICATION :

- Heat Treatment
- Investment casting
- Environmental Chambers
- Furnace / oven control
- Food processing
- Constant temperature bath etc.

TECHNICAL SPECIFICATIONS:

Input	Thermocouple type J, K, R, S, B, C, D or RTD (Pt - 100) / 2 or 3 - wire, (4 -20)mA, (0-5)V etc. (any one to be specified).
Range	Subject to the full range of the specified input.
Resolution	0.1/1°C Subject to the specified range.
Accuracy	Better than $\pm 0.1\%$ of the specified range.
Tuning	Auto or Manual tuning of PID values.
Control Action	PID or On/Off (for both direct and reverse action).
CJC	Built-in automatic from 0 - 50 °C for thermocouple input.
Open Sensor Indication	Display shows Flt-1 or Flt-2 and all outputs will be turned OFF.
Settings	Using front panel membrane keyboard to set the various values.
No. Of Profile / Patterns (Format2 :	1 to 10. (Format1 : SP0 t1 SP1 t2 SP3 t3 SP4... till SP16) PL0 Pr1 Pd1 PL1 Pr2 Pd2 PL2 ... till PL16)
Ramp Soak Steps	1 to 16 Steps per program. (nS = 1 to 16)
Set Temperature	Programmable for each steps in the full range of the specified input.
Time per Step	1 to 540 mins. (9 Hrs. per step). Or 1 minute to 100 hours (Two or more steps can be combined for longer time duration).
Program Hold Facility	Manual Hold or Auto Hold (Hold back feature for guaranteed Ramp/Soak facility).
Memory Backup	Retention of PID and set values in the non-volatile memory in the event of power failure.
Alarm Output	High or Low Alarm Relay changeover contacts (5A @ 230VAC).
Control Output	DC pulses to drive external SSR, Built in Triac output or (4-20)mA or (0-5) VDC output with soft start and power limit facility for analog output.
Supply	230VAC / 110 VAC $\pm 10\%$ (10VA), 50/60Hz or 24VDC @ 500mA.
Size	96 x 96 x 160 mm.
Panel cut out	92 x 92 mm.

MODEL	INPUT (A)	RANGE (°C) (B)	OUTPUT TYPE (C)	EVENT RELAY 1 (D)
PRC-309	J (A1)	0 to 760 °C (B1)	SSR (C1)	High Alarm (D1)
PRC-309/2	K (A2)	0 to 1372 °C (B2)	Triac (C2)	Low Alarm (D2)
PRC-315	E (A3)	0 to 1000 °C (B3)	SSR+Triac (C3)	Event relay (D3)
PRC-310	T (A4)	0 to 400 °C (B4)	(0-5)V (C4)	None (D4)
PRC-311	S (A5)	0 to 1768 °C (B5)	(4-20)mA (C5)	
	R (A6)	0 to 1768 °C (B6)	None (C6)	
	B (A7)	200 to 1820 °C (B7)		
	Pt-100 (A8)	0.0 to 400.0 °C (B8)		
	mV (A9)			
		1000 to 1200mV (B9)		
	Other (A9)	Other (B10)		

EVENT RELAY 2 (E)	SUPPLY (F)
High Alarm (E1)	230VAC (F1)
Low Alarm (E2)	110VAC (F2)
End of Profile (E3)	
None (E4)	

EXAMPLE:

MODEL	A	B	C	D	E	F
PRC-309	A 2	B 2	C 1	D 3	E 1	F 1

This is 10 Program each of 16 Steps Ramp/Soak Profile Controller Model PRC-309 with K type thermocouple input having Range (0-1372)°C with SSR DC pulse output and Event output as End of Profile Relay & High Alarm Relay and Operating on 230VAC supply.