

(G2) MICROPROCESSOR BASED SINGLE ZONE RAMP / SOAK SINGLE PROGRAM CONTROLLERS



MODEL WISE DESCRIPTIONS :

SR.NO.	MODEL	DESCRIPTION
8.3	PRC-300	Single input Single program of 16 steps Ramp / Soak Programmable Profile PID Temperature Controller (Basic Model)
8.4	PRC-301	Single input Single program of 16 steps Ramp / Soak Programmable Profile PID mV Controller for oxygen probe (for heat treatment application)

DESCRIPTION :

Libratherm offers Microprocessor based multiple Ramp / Soak programmable PID temperature controller Models **PRC-300 & PRC-301** which are designed to improve reliability, accuracy and control for all processing applications. These controllers features Ramp and Soak functions (the capability to control the temperature and its rate of change over a predetermined time span). One such time v/s temperature cycle of sixteen ramp/soak steps can be programmed into the memory with the user-friendly membrane keyboard. It controls the temperature exactly as per the programmed pattern. PRC-300 accepts temperature sensors to control the temperature cycle of heating system, whereas PRC-301 accepts mV signal from the oxygen probe to control the carburizing and nitriding heat treatment cycle.

Individual 4 digit displays are provided to monitor simultaneously the Process value and Set value. The user can also view the program status. These instruments can also be used as single set point control when the profile control is not desired. The

programmed profile and other parameters are retained in the nonvolatile memory in the event of power failure.

These controllers offers both switching outputs in the form of SSR/Triac 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. These models finds its applications in furnace / oven control, food and metal processing, jewelry casting, heat treatment plants etc. They are rugged, reliable and functioning on the field for more than a decade and also economically priced.

FEATURES :

- ▶ Compact ¼ DIN size metal enclosure.
- ▶ Accuracy better than $\pm 0.1\%$ of the full scale.
- ▶ Accepts standard type of thermocouple or RTD(Pt-100)/2 or 3-wire input.
- ▶ Control output of Relay or TRAIc or DC pulse or (4-20)mA or (0-5)Volt or any other.
- ▶ Servo start from the process temperature.
- ▶ Facility to use as PID and / or ON / Off controller.
- ▶ Hardware security lock for unauthorized tempering of the set values.

APPLICATION :

- Heat Treatment
- Investment casting furnace of Jewellery
- Environmental Chambers
- Furnace / oven control
- Food processing

TECHNICAL SPECIFICATIONS:

Input	Thermocouple type J, K, R, S, B, C, D or RTD(Pt-100)/2 or 3-wire, (4-20)mA, (1000 to 1200)mV, (0-5)V etc. (any one to be specified).
Range	Subject to the full range of the specified input.
Resolution	0.1 / 1°C or 1mV Subject to the specified input and range.
Accuracy	Better than $\pm 0.1\%$ of the specified range.
Display	4 digit 0.5" Red 7-segment LED display for process value 4 digit 0.3" Red 7-segment LED display for set value
Tuning	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	One (Format1 : SP0 t1 SP1 t2 SP3 t3 SP4 till SP16)
Ramp/Soak Steps	1 to 16 Steps. (no restriction in programming that ramp should be followed by soak or vice versa)
Set Temperature	Programmable for each steps in the full range of the specified input
Time per Step	1 to 540 mins. (9 Hr. per step). 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 or Event Alarm Relay (5A @ 230VAC).
Control Output	DC pulses to drive external SSR, Built in Triac (5A @ 230VAC) 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. +/- 0.5 mm.
Enclosure	Metal Powder coated.

MODEL	INPUT (A)	RANGE (°C) (B)	OUTPUT TYPE (C)	EVENT RELAY 1 (D)
PRC-300	J (A1)	0 to 760 °C (B1)	SSR (C1)	High Alarm (D1)
PRC-301	K (A2)	0 to 1372 °C (B2)	Triac (C2)	Low Alarm (D2)
	E (A3)	0 to 1000 °C (B3)	SSR + Triac (C3)	Event Output (D3)
	T (A4)	0 to 400 °C (B4)	(0-5)V (C4)	None (D4)
	S (A5)	0 to 1768 °C (B5)	(4-20)mA (C5)	
	R (A6)	0 to 1768 °C (B6)		Required event
	B (A7)	200 to 1820 °C (B7)		Output can be
	Pt-100 (A8)	0.0 to 400.0 °C (B8)		Programmed as
	mV (A9) For PRC-301	1000to1200mV(B9) for PRC-301		Per the requirement User may specify
	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-300	A2	B8	C1	D2	E3	F1

This is 16 Steps Ramp/Soak Profile Controller Model PRC-300 with K type thermocouple input having Range (0-1372)°C with SSR DC pulse output, Low Alarm and Event output as End of Profile Relay Operating on 230VAC supply.