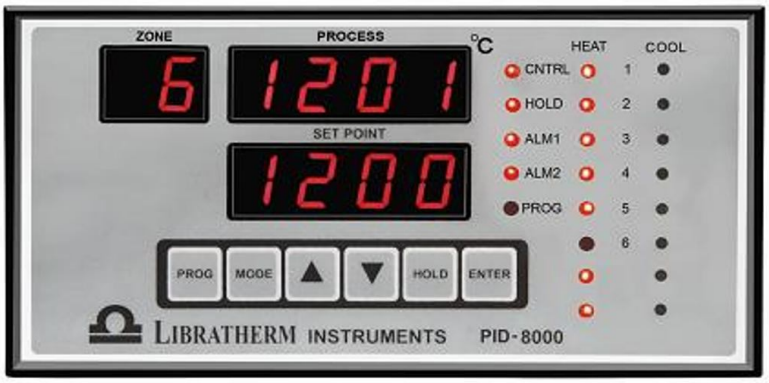
Microprocessor Based Multi-Loop PID Temperature Controller

(Product Code 11.1 to 11.6)



PID - 8000

Model Wise Description:

Sr. No	Model	Description (X = No. of loop)
11.1	PID-8000-H-4	4 loop PID Controller for heating control
11.2	PID-8000-H-6	6 loop PID Controller for heating control
11.3	PID-8000-H-8	8 loop PID Controller for heating control
11.4	PID-8000-HC-4	4 loop PID Controller for heating and cooling control
11.5	PID-8000-HC-6	6 loop PID Controller for heating and cooling control
11.6	PID-8000-HC-8	8 loop PID Controller for heating and cooling control

Description:

Libratherm offers Microprocessor based one to eight loop PID Temperature Controller (Model PID-8000) for processes requiring multiple zones heating or heating plus cooling control. It is most suitable for difficult process, which results in frequent system disturbances, and applications where simultaneous and accurate temperature control of number of heating/cooling zone is required. It also eliminates the need for number of individual PID or ON/OFF Temperature Controllers thereby saves on cost. PID-8000 can accept 8 similar type of Thermocouples or RTD (Pt-100) inputs and can provide switching PID or ON/OFF Control output in the form of DC Pulses or SSR Drivers for heating and cooling. It can also simultaneously provide 8 analog PID control Outputs in the form of (4-20mA) or (0-5) volt, which can be used to drive external SCR Heater Power Controller or other actuators. Open or Faulty sensor indications for each zone is also displayed with the respective Zone No. Each zone loop parameters like PID, SET, Hysterisis, Power Limit and Ramp Time values can be independently programmed from the user-friendly front panel membrane keyboard.

The display scan rate is programmable from 1 to 99 seconds, whereas the internal control scanning is at the rate of 100mS. It also provides common High and Low alarm relay outputs, which can be used for external temperature dependent, inter locking or audio-visual alarms. In brief, PID-8000 is as good as 8 independent PID controllers in a single enclosure, with facility of different input per channel, different set point per channel and different output per channel – a unique feature.

The serial interface of RS-485 in Modbus protocol is also optionally available for computer interface. The supporting window based software allows user to monitor behavior all the heating zones in both graphical and tabular form.

Libratherm also supplies complete ready to use Temperature Control Panel using PID-8000 and other switchgear items and power controllers, which finds its applications in large heating systems

Features:

- Microprocessor based design.
- Elegant looks and Very easy to operate.
- Accepts all types of maximum 8 inputs.
- PID or ON / Off heat and cool action per channel.
- All zones are individually configurable for Heat or Cool.
- Compact in size – ½ DIN (192 x 96 x 200 mm).
- Versatile application and sturdy in operation.
- Accuracy better than ± 0.1 % of the full scale.
- RS 485 / RS 232 Serial communication available.

Application:

- Plastic extruders for pipes, sheets etc…
- Plastic injection, for runner less moulding
- Heat treatment using tunnel furnace
- Large furnace and oven for homogeneous control
- Environmental chambers
- Multi zone furnace
- Laboratory equipments etc…

Technical Specifications:

No. of Inputs	4, 6 or 8
Input types	J, K, R, S, B, C, D, RTD(PT-100), RTD(PT-1000)/2 or 3 wire, (4-20)mA, (0-5)V etc. (each channel can be of similar or different input type – user must specify at the time of ordering)
Range	Subject to the full range of the specified input (Refer range selection table below)
Indicating Accuracy	Better than ± 0.1% of the specified range (Software Linearized)
Resolution	0.1/1 ^{o}C Subject to the specified range
Display	4 digit 0.5" Red 7-segment LED for actual temperature 4 digit 0.5" Red 7-segment LED for set temperature 2 digit 0.5" Red 7-segments LED for zone or channel number.
Open or Short Sensor Indication	Display shows FLt-1 or FLt-2 and outputs will be turned OFF.
Tuning	Auto/Manual tuning of PID values.
Settings	Using front panel membrane key board to set the various values.
Scan Rate	1 to 99 sec (programmable through front panel keyboard).
Skip/Hold	Available through key board in configuration mode.
Memory Backup	Retention of PID and set values in the non volatile memory in the event of power failure.
Alarm Outputs	2 Extra Relay outputs used for common High and Low Alarms (Relay changeover contacts rated for 5A @ 230VAC).
Control Action	PID or ON/OFF selectable (for both Heating and Cooling control action).
Control Output	DC Pulse, (4-20)mA, (0-5)VDC output per zone with soft ramp start (rt) and power limit (PL) facility for analog output.
Digital Interface	Parallel Centronics printer output port for Printer interface and Serial (RS232 or RS485 on Modbus ASCII) for PC interface with Window based software.
Supply	230VAC / 110 VAC ± 10% (10VA), 50/60Hz
Size	192 x 96 x 200 mm
Panel Cutout	188 x 92 mm ± 0.5 mm

Input and Range Selection Table:

Code	Input	Range
A2	J type : Fe/Con thermocouple	0 to 760 °C
A3	K type : Cr/Al thermocouple	0 to 1372 °C
A4	R type : Pt/PtRh13% thermocouple	0 to 1768 °C
A5	S type : Pt/PtRh10% - thermocouple	0 to 1768 °C
A6	B type : Pt30%Rh/Pt6%Rh thermocouple	200 to 1820 °C
A7	T type : Cu/Con thermocouple	0 to 350 °C
A8	E type : NiCr/CuNi thermocouple	0 to 900 °C
A9	C type : W5%Re/W26%Re thermocouple	0 to 2300 °C
A10	D type : W3%Re/W25%Re thermocouple	0 to 2300 °C
A11	G type : W/W26%Re thermocouple	0 to 2000 °C
A12	N type : Ni-Cr-Si/Ni-Si-Mg	0 to 1300 °C
A13	Pt-100 (Alpha = 0.00385) DIN 43760	0.0 to 400.0 °C
A14	Pt-100 (Alpha = 0.00385) DIN 43760	-150.0 to 200.0 °C
A15	Pt-100 (Alpha = 0.00385) DIN 43760	0 to 400 °C
A16	4-20mA	0 to 3500 unit

Ordering Information For Model PID – 8000:

Model	A- Input Type	B- Output 1 Type (Heat)	C- Output 2 type (Cool)	D-Alarm Relay 1	E-Alarm Relay 2	F- COM Port	G- Supply
PID -8000-H-4 **PID-8000-H-6** **PID-8000-H-8** **PID -8000-HC-4** **PID-8000-HC-6** **PID-8000-HC-8**	**Any one of A2 to A16**	**B1-** (DC Pulse) **B2-** (0-5 VDC) **B3-** (4-20 mA)	**C1-** (DC Pulse) **C2-** (0-5 VDC) **C3-** (4-20 mA) **00**- (None)	**D1-** (High) **D2**- (Low) **00**- (None)	**E1-** (High) **E2**- (Low) **00**- (None)	**F1-** (RS 232) **F2**- (RS 485) **F3-** (Printer) **F4-** (Both F1 and F3) **F5** – (Both F2 and F3) **00**- (None)	**G1-** (230 VAC) **G2-** (110 VAC)

Example:

Model	A- Input Type	B- Output 1 type (Heat)	C- Output 2 type (Cool)	D-Alarm Relay 1	E-Alarm Relay 2	F- COM Port	G- Supply
PID-8000-H-8	A2	B1	00	D1	E2	F2	G1
PID-8000-H-6	A15	B3	C1	D1	E2	00	G2

Example	Ordering Code	Description
1	PID-8000-H-8-A2-B1-00-D1-E2-F2-G1	Eight loop PID controller with J type thermocouple input and DC pulse output for heating control with high and low alarm relays and RS485 interface and operating on 230VAC supply.
2	PID-8000-H-6-A15-B3-C1-D1-E2-00-G2	Six loop PID controller with Pt-100 input, 4-20mA for heating control and DC pulse output for cooling control with high and low alarm relays and and operating on 110VAC supply.

REMARK :