

# Delta Pro

2-in-1 Self Tune  
Universal PID Temperature Controller  
(RTD Pt100 & J / K / T / R / S / B / N Thermocouples)

# Operation Manual

This brief manual is primarily meant for quick reference to wiring connections and parameter searching. For more details on operation and application; please log on to [www.ppiindia.net](http://www.ppiindia.net)

PPI

101, Diamond Industrial Estate, Navghar,  
Vasai Road (E), Dist. Palghar - 401 210.  
Sales : 8208199048 / 8208141446  
Support : 07498799226 / 08767395333  
E: [sales@ppiindia.net](mailto:sales@ppiindia.net), [support@ppiindia.net](mailto:support@ppiindia.net)

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INSTALLATION PARAMETERS : PAGE-10	
Parameters	Settings (Default Value)
Input Type for Loop1 <b>InP.1</b>	Refer Table 4.2 (Default : Type K)
Temperature Range for Loop1 <b>rnG.1</b>	Min. to Max. specified for the selected Input Type (Refer Table 4.2) (Default : 1376)
Zero Offset for Loop1 <b>DF5.1</b>	-1999 to 9999 or -199.9 to 999.9 (Default : 0)
Control Action for Loop1 <b>Ctr.1</b>	<b>PID</b> PID <b>OnOff</b> On-Off (Default : PID)
Hysteresis for Loop1 <b>HYS.1</b>	1 to 999 or 0.1 to 999.9 (Default : 2)
Input Type for Loop2 <b>InP.2</b>	Description same as for Loop1.
Temperature Range for Loop2 <b>rnG.2</b>	
Zero Offset for Loop2 <b>DF5.2</b>	
Control Action for Loop2 <b>Ctr.2</b>	
Hysteresis for Loop2 <b>HYS.2</b>	

PID CONTROL PARAMETERS : PAGE-12	
Parameters	Settings (Default Value)
Output Power for Loop1 <b>POr.1</b>	Not Applicable (for View Only) (Default : Not Applicable)
Cycle Time for Loop1 <b>Ct.1</b>	0.5 to 120.0 Seconds (in steps of 0.5 Sec.) (Default : 1.0)
Proportional Band for Loop1 <b>Pb.1</b>	1 to 999 °C or 0.1 to 999.9 °C (Default : 100)
Integral Time (Reset) for Loop1 <b>It.1</b>	0 to 1000 Seconds (Default : 100)
Derivative Time (Rate) for Loop1 <b>dt.1</b>	0 to 250 Seconds (Default : 25)
Output Power for Loop2 <b>POr.2</b>	Description same as for Loop1.
Cycle Time for Loop2 <b>Ct.2</b>	
Proportional Band for Loop2 <b>Pb.2</b>	
Integral Time (Reset) for Loop2 <b>It.2</b>	
Derivative Time (Rate) for Loop2 <b>dt.2</b>	

CONFIGURATION PARAMETERS : PAGE-11	
Parameters	Settings (Default Value)
Tune on SP Change <b>EnSP</b>	<b>d5bL</b> Disable <b>EnbL</b> Enable (Default : Enable)
Overshoot Inhibit Enable for Loop1 <b>O.h.1</b>	<b>d5bL</b> Disable <b>EnbL</b> Enable (Default : Disable)
Overshoot Inhibit Factor for Loop1 <b>O.F.1</b>	1.0 to 2.0 (Default : 1.2)
Sensor Break Output Power for Loop1 <b>SbO.1</b>	0 to 100 (Default : 0)
Overshoot Inhibit Enable for Loop2 <b>O.h.2</b>	Description same as for Loop1.
Overshoot Inhibit Factor for Loop2 <b>O.F.2</b>	
Sensor Break Output Power for Loop2 <b>SbO.2</b>	
Setpoint Locking <b>SPLP</b>	
Slave ID <b>id</b>	1 to 127 (Default : 1)
Baud Rate <b>baud</b>	<b>48</b> 4800 <b>96</b> 9600 <b>192</b> 19200 (Default : 9600)
Parity <b>PAR.1</b>	<b>nonE</b> None <b>EuEn</b> Even <b>Odd</b> Odd (Default : Even)
Communication Write Enable <b>ConE</b>	<b>no</b> No <b>YES</b> Yes (Default : Yes)

OPERATOR PARAMETERS : PAGE-0	
Parameters	Settings (Default Value)
Tune command for Loop1 <b>TUn.1</b>	<b>no</b> No <b>YES</b> Yes (Default : Yes)
Tune command for Loop2 <b>TUn.2</b>	<b>no</b> No <b>YES</b> Yes (Default : Yes)

AUXILIARY OUTPUT-1 PARAMETERS : PAGE-13	
Auxiliary Output-1 is associated with Loop1.	
Parameters	Settings (Default Value)
Auxiliary Function for Loop1 <b>AUF.1</b>	<b>nonE</b> None <b>ALrā</b> Alarm <b>CtrL</b> Control <b>blOr</b> Blower (Default : None)
<b>Op1 Function : Alarm-1</b>	
Alarm Type <b>ATYPE</b>	<b>P.Lo</b> Process Low <b>P.Hi</b> Process High <b>dE</b> Deviation Band <b>bAnd</b> Window Band (Default : Process Low)
Alarm Setpoint <b>SP</b>	Min. to Max. Range for the selected Input type (Default : 0)
Alarm Deviation Band <b>bAnd</b>	-199 to 999 or -199.9 to 999.9 (Default : 0)
Alarm Window Band <b>bAnd</b>	3 to 999 or 0.3 to 999.9 (Default : 3)
Alarm Logic <b>LoGL</b>	<b>norā</b> Normal <b>rEu</b> Reverse (Default : Normal)
Alarm Inhibit <b>ihbt</b>	<b>no</b> No <b>YES</b> Yes (Default : Yes)
<b>OP2 Function : Auxiliary Control</b>	
Auxiliary Setpoint <b>SP</b>	(Min. Range - SP) to (Max. Range - SP) specified for the selected Input Type (Default : 0)
Control Hysteresis <b>HYSL</b>	1 to 999 or 0.1 to 99.9 (Default : 2 or 0.2)
Control Logic <b>LoGL</b>	<b>norā</b> Normal <b>rEu</b> Reverse (Default : Normal)
<b>OP2 Function : Blower / Compressor Control</b>	
Blower Setpoint <b>SP</b>	0 to 250 or 0.0 to 25.0 (Default : 0)
Blower Hysteresis <b>HYSL</b>	1 to 250 or 0.1 to 25.0 (Default : 2 or 0.2)

AUXILIARY OUTPUT-2 PARAMETERS : PAGE-14	
Auxiliary Output-2 is associated with Loop2.	
The Parameters for Auxiliary Output-2 are the same as that for Auxiliary Output-1 except for one additional parameter (listed below) for selecting the output type as Relay or SSR in accordance with the order output type.	
Parameters	Settings (Default Value)
Auxiliary Output-2 Type <b>AOP.2</b>	<b>rLY</b> Relay <b>SSr</b> SSR

TABLE- 1			
Option	Range (Min. to Max.)	Resolution	
<b>TC-U</b> J Type T/C	0 to +960°C	Fixed 1°C	
<b>TC-P</b> K Type T/C	-200 to +1376°C		
<b>TC-t</b> T Type T/C	-200 to +385°C		
<b>TC-r</b> R Type T/C	0 to +1770°C		
<b>TC-S</b> S Type T/C	0 to +1765°C		
<b>TC-b</b> B Type T/C	0 to +1825°C		
<b>TC-n</b> N Type T/C	0 to +1300°C		
<b>rtD</b> 3-wire, RTD Pt100	-199 to +600°C		
<b>rtD.1</b> 3-wire, RTD Pt100	-199.9 to 600.0°C		0.1°C

### FRONT PANEL LAYOUT

Upper Readout  
Loop1 Heater Indicator  
Loop1 Aux O/P Indicator / Upper Readout Showing Loop1 Aux Setpoint  
Upper Readout Showing Loop1 Setpoint  
Loop1 Self Tune Indicator  
Lower Readout  
PAGE Key  
DOWN Key

Loop2 Heater Indicator  
Loop2 Aux O/P Indicator / Lower Readout Showing Loop2 Aux Setpoint  
Lower Readout Showing Loop2 Setpoint  
Loop2 Self Tune Indicator  
ENTER / Alarm ACK Key  
UP Key

#### Keys Operation

Symbol	Key	Function
	PAGE	Press to enter or exit set-up mode.
	DOWN	Press to decrease the parameter value. Pressing once decreases the value by one count; keeping pressed speeds up the change.
	UP	Press to increase the parameter value. Pressing once increases the value by one count; keeping pressed speeds up the change.
	ENTER	Press to store the set parameter value and to scroll to the next parameter on the PAGE.

#### PV Error Indications

Message	PV Error Type
<b>Or</b>	Over-range (PV above Max. Range)
<b>Ur</b>	Under-range (PV below Min. Range)
<b>SbrP</b>	Sensor Break (RTD / Thermocouple is open or broken)
<b>SFLt</b>	Sensor Fault (Incorrect sensor type or connections)

