



PPI DELTA Dual Self Tune PID Temperature Controller Instruction Manual

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PPI

PPI DELTA Dual Self Tune PID Temperature Controller



Product Information: DELTA Dual Self Tune PID Temperature Controller For RTD Pt100

The DELTA Dual Self Tune PID Temperature Controller is designed for use with RTD Pt100 sensors. It features four different parameter pages, each with a variety of settings and default values. The installation parameters page (Page 10) includes settings for temperature range, control action, hysteresis, and PID on-off for both PID1 and PID2. The operator parameters page (Page 0) includes settings for the tune command for PID1 and PID2. The PID control parameters page (Page 12) includes settings for cycle time, proportional band, integral time (reset), derivative time (rate), and view output power for both PID1 and PID2. The configuration parameters page (Page 11) includes settings for self-tune on setpoint change, sensor break strategy, setpoint locking, control setpoint, controller ID number, auxiliary setpoint, and baud rate. Lastly, the auxiliary function parameters page (Page 13/14) includes settings for auxiliary function, alarm type, alarm setpoint, deviation band, window band, alarm logic, alarm inhibit, control hysteresis, control logic, blower setpoint, and blower hysteresis.

Product Usage Instructions

1. Ensure that the DELTA Dual Self Tune PID Temperature Controller is wired correctly according to the wiring connections provided in the manual.
2. Access the installation parameters page (Page 10) to set the appropriate temperature range, control action, hysteresis, and PID on-off settings for both PID1 and PID2.
3. Access the operator parameters page (Page 0) to set the tune command for PID1 and PID2 as needed.
4. Access the PID control parameters page (Page 12) to set the appropriate cycle time, proportional band, integral time (reset), derivative time (rate), and view output power for both PID1 and PID2.
5. Access the configuration parameters page (Page 11) to set the appropriate self-tune on setpoint change, sensor break strategy, setpoint locking, control setpoint, controller ID number, auxiliary setpoint, and baud rate settings.
6. Access the auxiliary function parameters page (Page 13/14) to set the appropriate auxiliary function, alarm type, alarm setpoint, deviation band, window band, alarm logic, alarm inhibit, control hysteresis, control logic, blower setpoint, and blower hysteresis settings.
7. For more detailed information on operation and application of the DELTA Dual Self Tune PID Temperature Controller, visit www.ppiindia.net.

Operation Manual

This brief manual is primarily meant for quick reference to wiring connections and parameter searching. For more

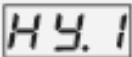
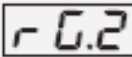
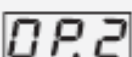
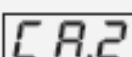
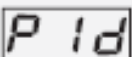
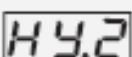
details on operation and application; please log on to www.ppiindia.net

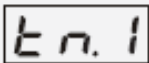
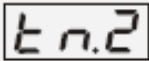
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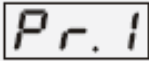
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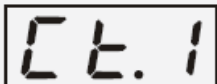
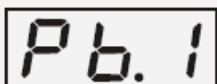
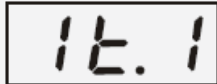
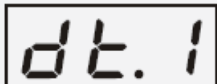
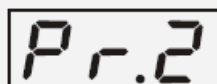
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E: sales@ppiindia.net, support@ppiindia.net

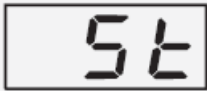
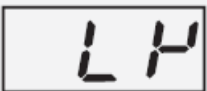
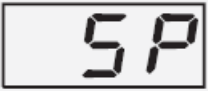
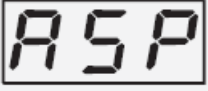
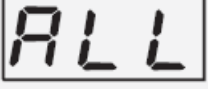
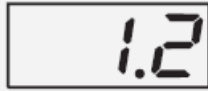
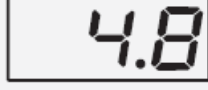
INSTALLATION PARAMETERS : PAGE-10	
Parameters	Settings (Default Value)
Temperature Range for PID1 	-199 to 600°C (Default : 300)
Zero Offset for PID1 	-99 to +99°C (Default : 0)
Control Action for PID1 	 PID  On-Off (Default : PID)
Hysteresis for PID1 	1 to 999°C (Default : 2)
Temperature Range for PID2 	-199 to 600°C (Default : 300)
Zero Offset for PID2 	-99 to +99°C (Default : 0)
Control Action for PID2 	 PID  On-Off (Default : PID)
Hysteresis for PID2 	1 to 999°C (Default : 2)

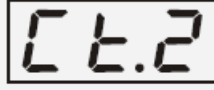
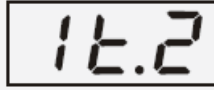
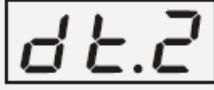
OPERATOR PARAMETERS : PAGE-0	
Parameters	Settings (Default Value)
Tune command for PID1 	 Yes  No (Default : No)
Tune command for PID2 	 Yes  No (Default : No)

PID CONTROL PARAMETERS : PAGE-12	
Parameters	Settings (Default Value)
View Output Power for PID1 	Not Applicable (for View Only) (Default : Not Applicable)

Parameters	Settings (Default Value)
Cycle Time For PID1 	0.5 to 99.5 Seconds (in steps of 0.5 Sec.)} (Default : 1.0)
Proportional Band for PID1 	1 to 999°C (Default : 10)
Integral Time (reset) for PID1 	0 to 999 Seconds (Default : 100)
Derivative Time (rate) for PID1 	0 to 250 Seconds (Default : 25)
View Output Power for PID2 	Not Applicable (for View Only) (Default : Not Applicable)

CONFIGURATION PARAMETERS :PAGE-11

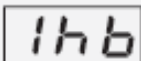
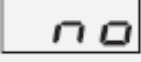
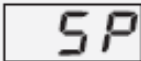
Parameters	Settings (Default Value)
Self-Tune on Setpoint Change 	Enable Disable (Default : Enable)  
Sensor Break Strategy 	Auto Manual (Default : Auto)  
Setpoint Locking 	None Control Setpoint Auxiliary Setpoint Both Control & Auxiliary Setpoint (Default : None)    
Controller ID Number 	1 to 127 (Default : 1)
Baud Rate 	1200bps 2400bps 4800bps 9600bps (Default : 9.6 bps)    

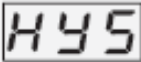
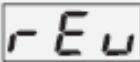
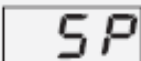
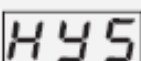
Parameters	Settings (Default Value)
Communication Write Enable 	Yes No (Default : Yes)  
Cycle Time for PID2 	0.5 to 99.5 Seconds (in steps of 0.5 Sec.) (Default : 20.0 Sec. for Relay 1.0 Sec. for SSR)
Proportional Band for PID2 	1 to 999°C (Default : 10)
Integral Time (reset) for PID2 	0 to 999 Seconds Default : 100)
Derivative Time (rate) for PID2 	0 to 250 Seconds (Default : 25)

Note: The Auxiliary function parameters for PID 1 & PID 2 are grouped on PAGE 13 & 14 and are mentioned together in the below table

AUXILIARY FUNCTION PARAMETERS : PAGE-13/14

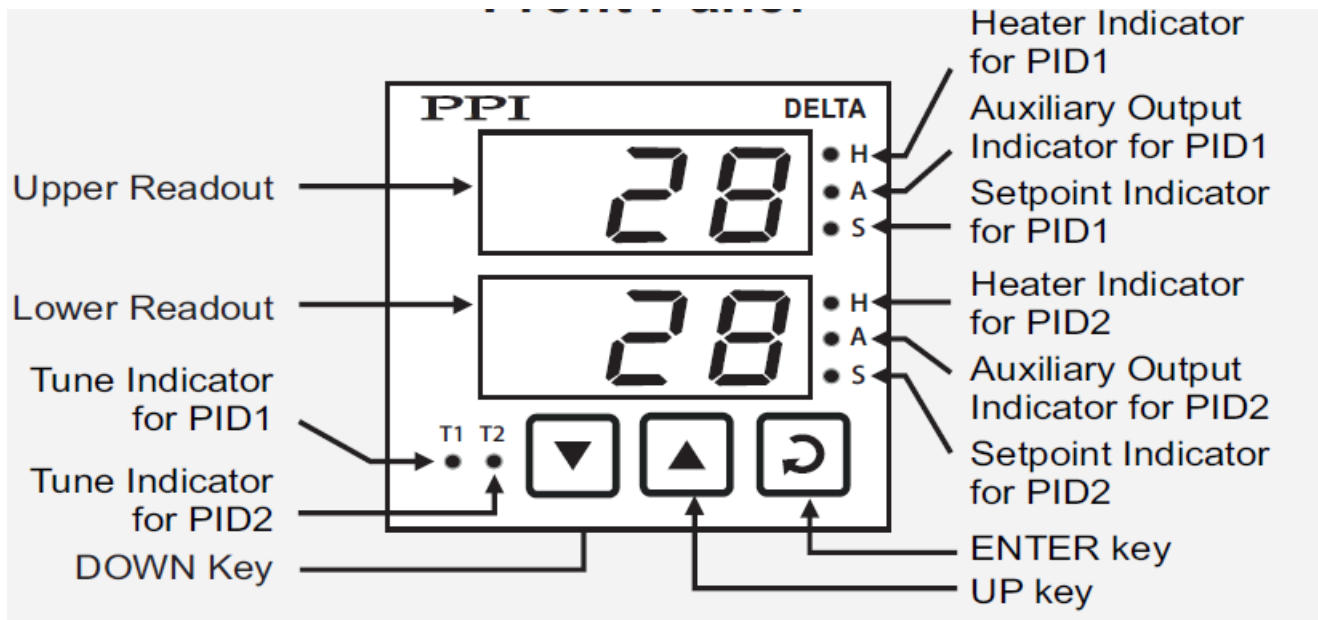
Parameters	Settings (Default Value)
Auxiliary Function for PID1 AF.1	non None ALn Alarm Con Control blr Blower (Default : None)
Alarm Type typ	P.Lo Process Low P.H. Process High dEu Deviation Band wnd Window Band (Default : Process Low)
Alarm Setpoint SP	-199 to 600 (Default : 0)

Parameters	Settings (Default Value)
Alarm Deviation Band 	-99 to 999 (Default : 0)
Alarm Window Band 	3 to 999 (Default : 3)
Alarm Logic 	 Normal  Reverse (Default : Normal)
Alarm Inhibit 	 Yes  No (Default : Yes)
Auxiliary Setpoint 	(Min. Range - SP) to (Max. Range - SP) for selected Input (Default : 0)

Control Hysteresis 	1 to 999 (Default : 2)
Control Logic 	 Normal  Reverse (Default : Normal)
Blower Setpoint 	0 to 250 (Default : 0)
Blower Hysteresis 	1 to 250 (Default : 2)

FRONT PANEL LAYOUT

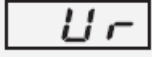
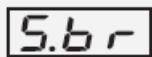
Front Panel



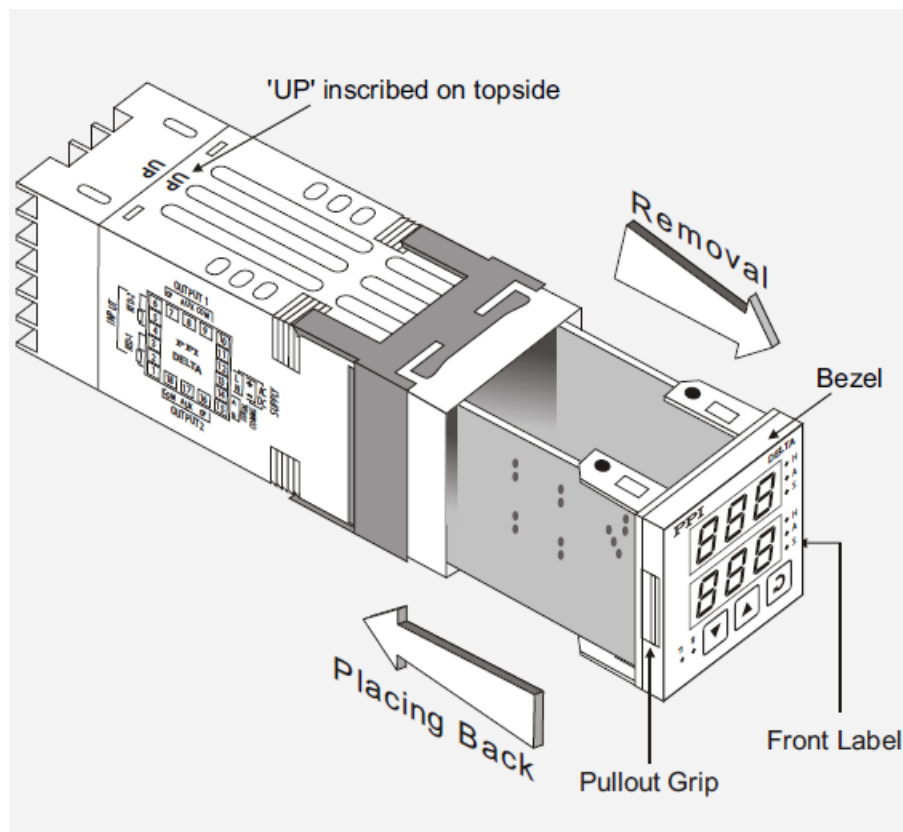
Keys Operation

Symbol	Name	Function When Setting Parameter
	DOWN Key	Press to decrease the parameter value
	UP Key	Press to increase the parameter value
	ENTER Key	Press to store the set parameter value and / or scroll to the next parameter

PV Error Indications

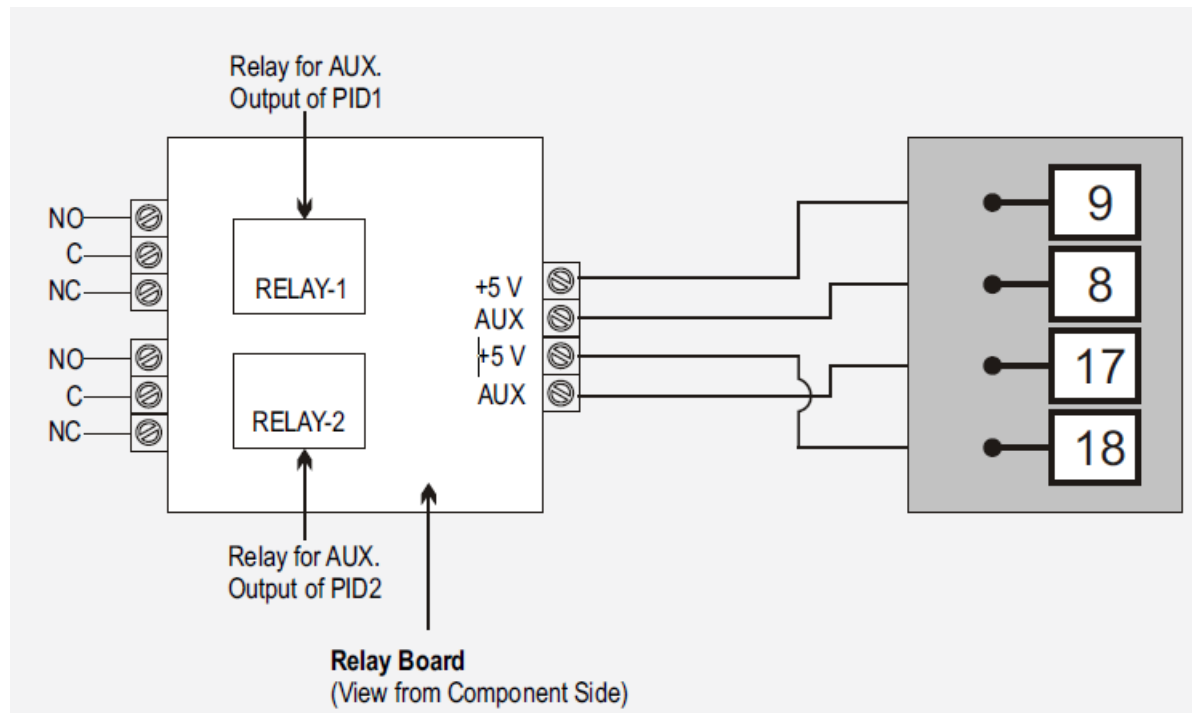
Message	Error Type
	Over-range (Temp. above Max. Range)
	Under-range (Temp. below Min. Range)
	Sensor Break (Thermocouple is open or broken)

ENCLOSURE ASSEMBLY

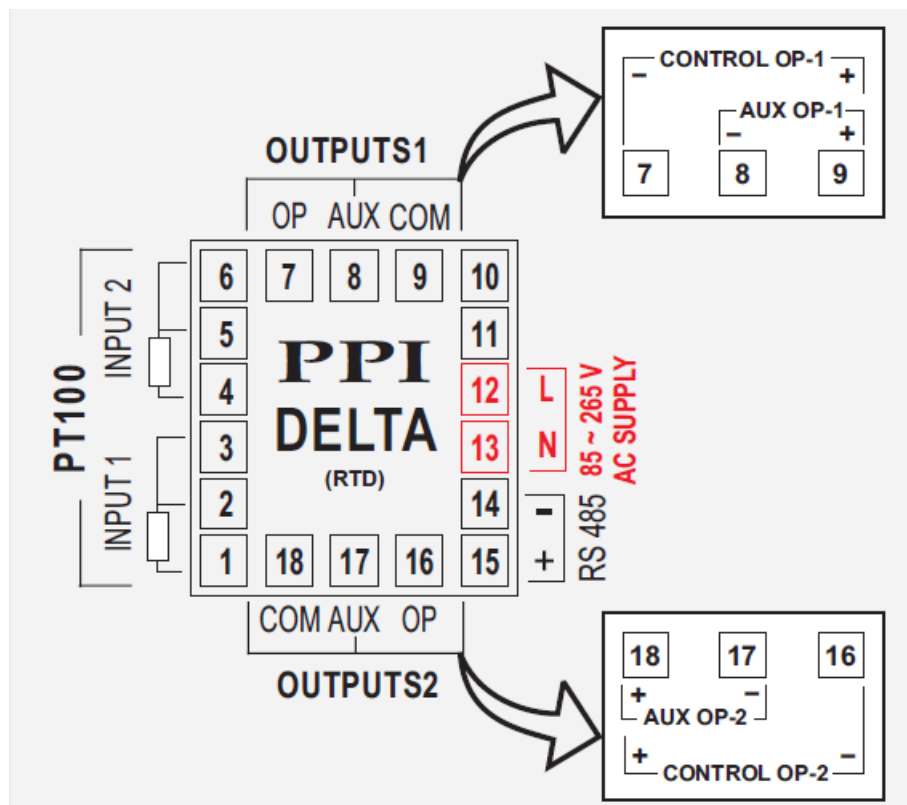


WIRING CONNECTION

AUXILIARY OUTPUT

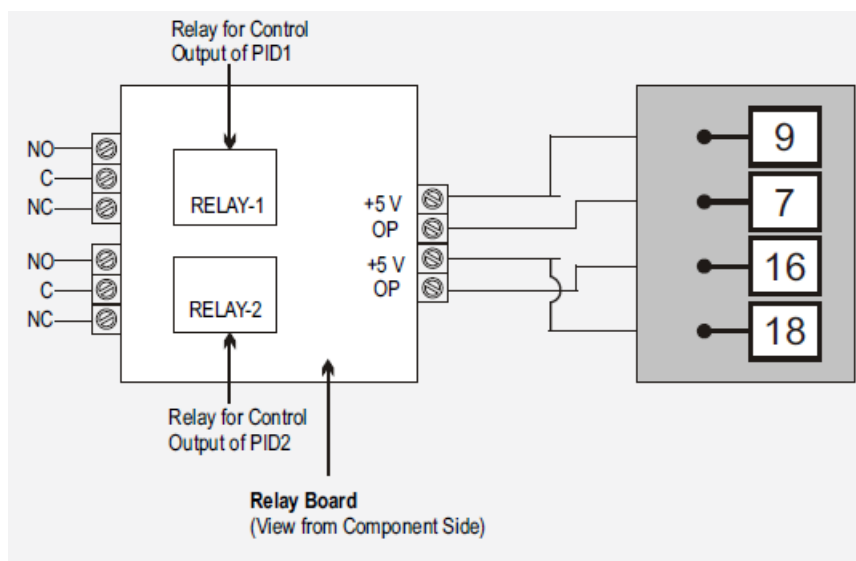


ELECTRICAL CONNECTIONS



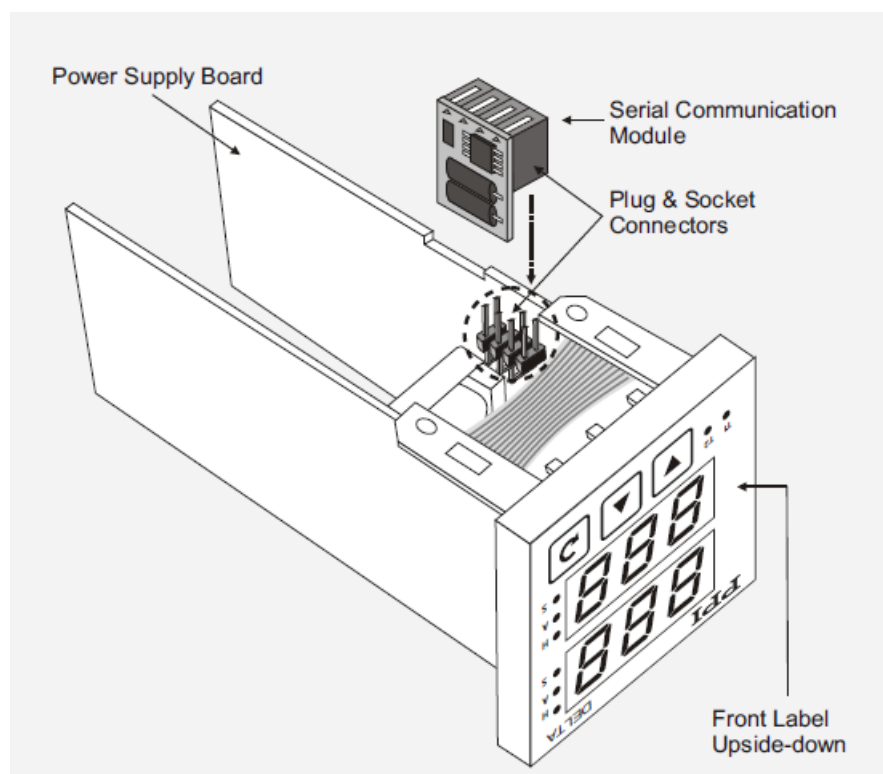
WIRING CONNECTION

CONTROL OUTPUT

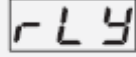
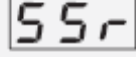
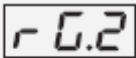
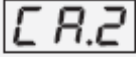


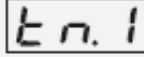
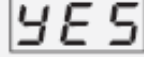
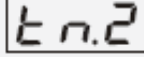
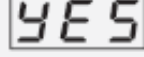
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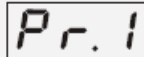
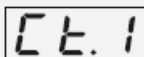
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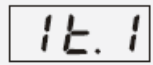
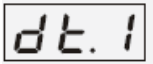
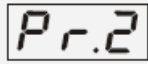
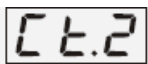
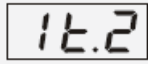
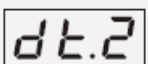


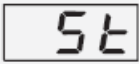
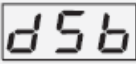
INSTALLATION PARAMETERS : PAGE-10	
Parameters	Settings (Default Value)
Input Type for PID1 EC.1	Refer Table 1 (Default : Type J)
Output Type for PID1 OP.1	RLY Relay SSR SSR (Default : SSR)
Temperature Range for PID1 RG.1	0 to Max. Range Specified for the selected Input type (Default : 300)
Offset for PID1 OF.1	-99 to 99 (Default : 0)
Control Action for PID1 CA.1	PID PID On-Off On-Off (Default : PID)
Input Type for PID2 EC.2	Refer Table 1 (Default : Type J)

Output Type for PID2 	 Relay  SSR (Default : SSR)
Temperature Range for PID2 	0 to Max. Range Specified for the selected Input type (Default : 300)
Offset for PID2 	-99 to 99 (Default : 0)
Control Action for PID2 	 PID  On-Off (Default : PID)

OPERATOR PARAMETERS : PAGE-0	
Parameters	Settings (Default Value)
Tune command for PID1 	 Yes  No (Default : No)
Tune command for PID2 	 Yes  No (Default : No)

PID CONTROL PARAMETERS : PAGE-12	
Parameters	Settings (Default Value)
View Output Power for PID1 	Not Applicable (for View Only) (Default : Not Applicable)
Cycle Time For PID1 	0.5 to 99.5 Seconds (in steps of 0.5 Sec.) (Default : 20.0 Sec.for Relay 1.0 Sec. for SSR)

Proportional Band for PID1 	1 to 999°C (Default : 10)
Integral Time (reset) for PID1 	0 to 999 Seconds (Default : 100)
Derivative Time (rate) for PID1 	0 to 250 Seconds (Default : 25)
View Output Power for PID2 	Not Applicable (for View Only) (Default : Not Applicable)
Cycle Time for PID2 	0.5 to 99.5 Seconds (in steps of 0.5 Sec.) (Default : 20.0 Sec.for Relay 1.0 Sec. for SSR)
Proportional Band for PID2 	1 to 999°C (Default : 10)
Integral Time (reset) for PID2 	0 to 999 Seconds (Default : 100)
Derivative Time (rate) for PID2 	0 to 250 Seconds (Default : 25)

CONFIGURATION PARAMETERS : PAGE-11	
Parameters	Settings (Default Value)
Self-Tune on Setpoint Change 	 Enable  Disable (Default : Enable)

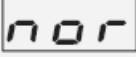
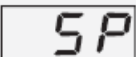
Parameters	Settings (Default Value)
Sensor Break Strategy 5b	AUT Auto MAN Manual (Default : Auto)
Setpoint Locking LP	non None SP Control Setpoint ASP Auxiliary Setpoint ALL Both Control & Auxiliary Setpoint (Default : None)
Controller ID Number 1d	1 to 127 (Default : 1)

Baud Rate br	1.2 1200bps 2.4 2400bps 4.8 4800bps 9.6 9600bps (Default : 9.6 bps)
Communication Write Enable CE	YES Yes no No (Default : Yes)

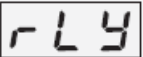
AUXILIARY FUNCTION PARAMETERS : PAGE-13/14

Parameters	Settings (Default Value)
Auxiliary Function for PID1 AF.1	non None ALā Alarm Con Control blr Blower (Default : None)
Alarm Type typ	P.Lo Process Low P.H. Process High dEu Deviation Band wnd Window Band (Default : Process Low)

Parameters	Settings (Default Value)
Alarm Setpoint SP	Min. to Max. Range specified for the selected Input Type (Default : 0)
Alarm Deviation Band wnd	-99 to 999 (Default : 0)
Alarm Window Band wnd	3 to 999 (Default : 3)
Alarm Logic LOG	nor Normal rEu Reverse (Default : Normal)

Auxiliary Setpoint 	(Min. Range - SP) to (Max. Range - SP) for selected Input (Default : 0)
Control Hysteresis 	1 to 999 (Default : 2)
Control Logic 	 Normal  Reverse (Default : Normal)
Blower Setpoint 	0 to 250 (Default : 0)
Blower Hysteresis 	1 to 250 (Default : 2)

Input Type for PID 1 TABLE – 1		
Option	Range (Min. to Max.)	Resolution
J Type T/C 	0 to 760°C	Fixed 1°C
K Type T/C 	0 to 999°C	

Output Type for PID1 TABLE – 2	
Option	What it means
	Electromechanical Relay contacts
	DC voltage pulses for driving external Solid State Relay (SSR)

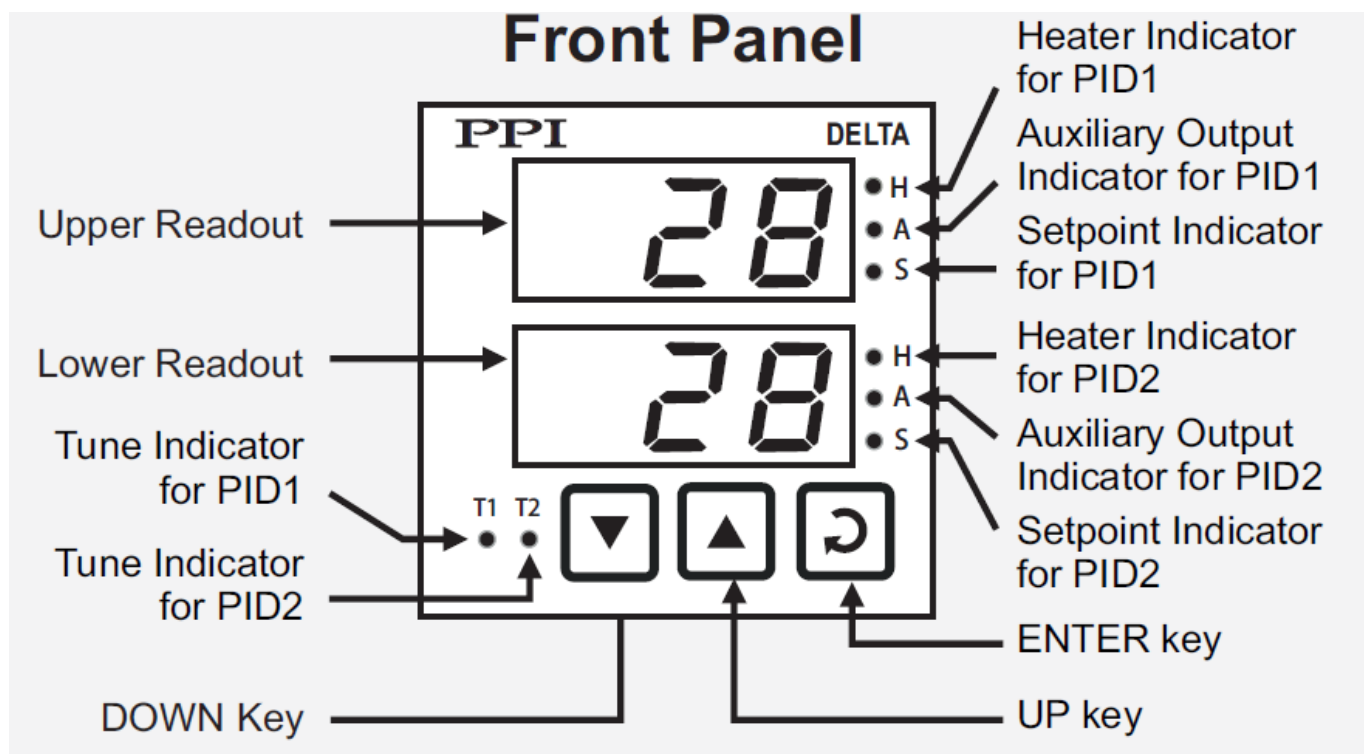
PID1 STATUS TABLE

PID1 Indicator	Functions
H	Indicates the On/Off status of Heater Output for PID1
A	Flashes while the Upper Readout shows the Auxiliary Setpoint value for PID1 in Operator Mode Indicates the On / Off status of Auxiliary Output for PID1
S	Flashes while the Upper Readout shows the Control Setpoint value for PID1 in Operator Mode
T1	Flashes while the PID1 Tuning is in progress

PID2 STATUS TABLE

PID2 Indicator	Functions
H	Indicates the On/Off status of Heater Output for PID2
A	Flashes while the Lower Readout shows the Auxiliary Setpoint value for PID2 in Operator Mode Indicates the On/Off status of Auxiliary Output for PID2
S	Flashes while the Lower Readout shows the Control Setpoint value for PID2 in Operator Mode
T2	Flashes while the PID2 Tuning is in progress

FRONT PANEL LAYOUT



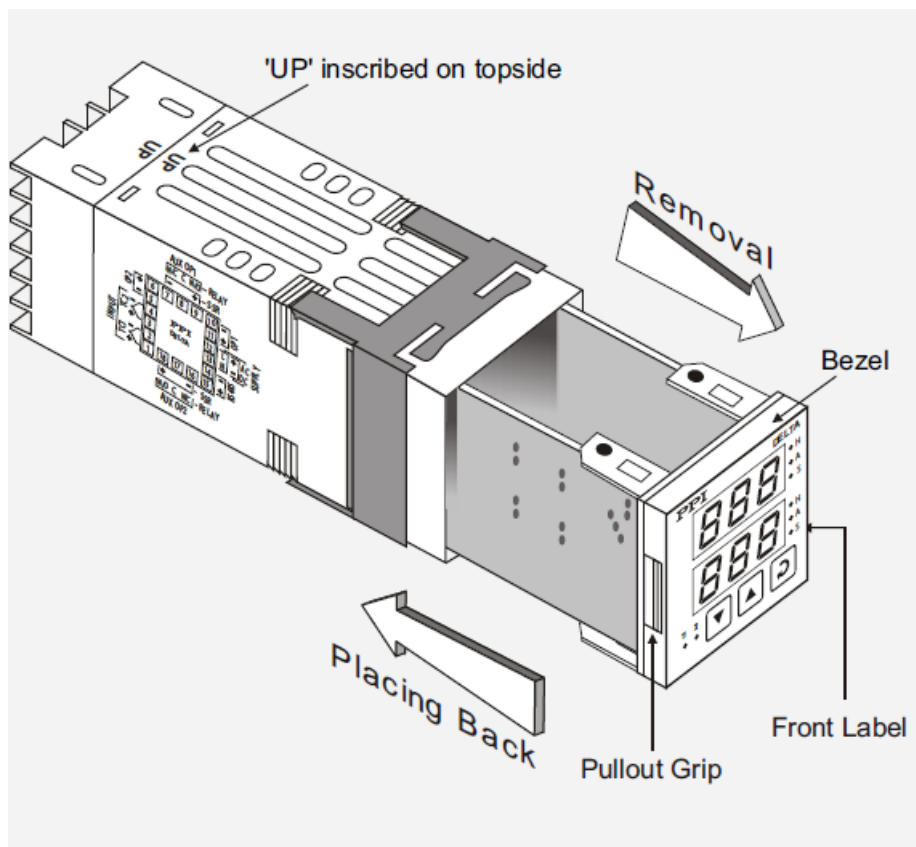
Keys Operation

Symbol	Name	Function When Setting Parameter
	DOWN Key	Press to decrease the parameter value
	UP Key	Press to increase the parameter value
	ENTER Key	Press to store the set parameter value and / or scroll to the next parameter

PV Error Indications

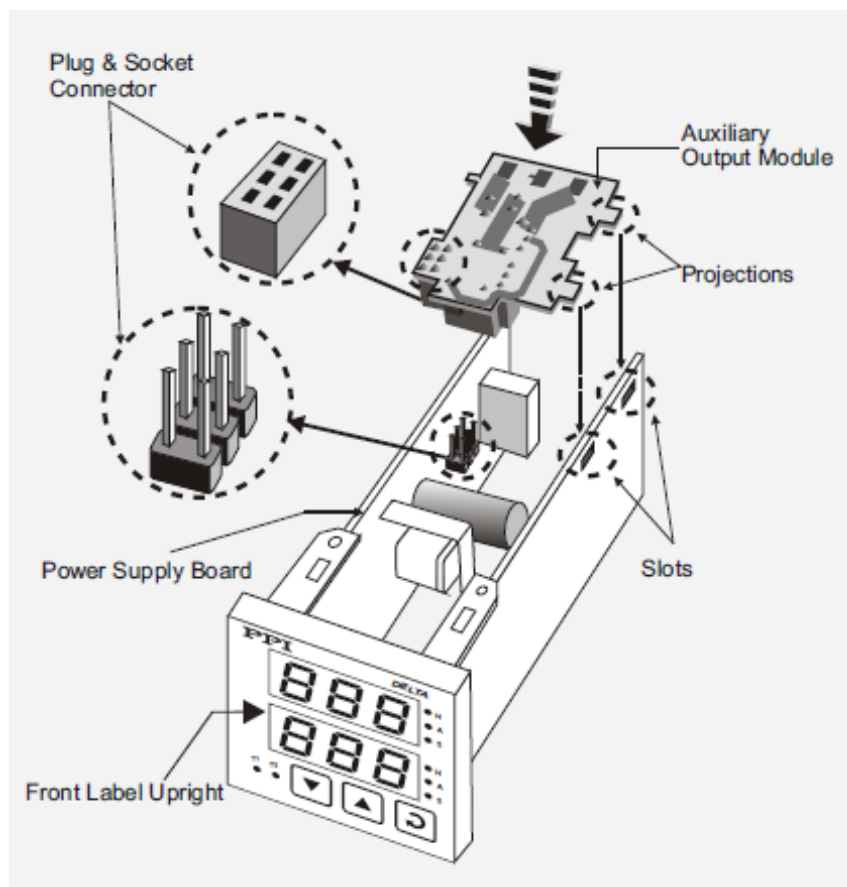
Message	Error Type
	Over-range (Temp. above Max. Range)
	Under-range (Temp. below Min. Range)
	Sensor Break (Thermocouple is open or broken)

ENCLOSURE ASSEMBLY



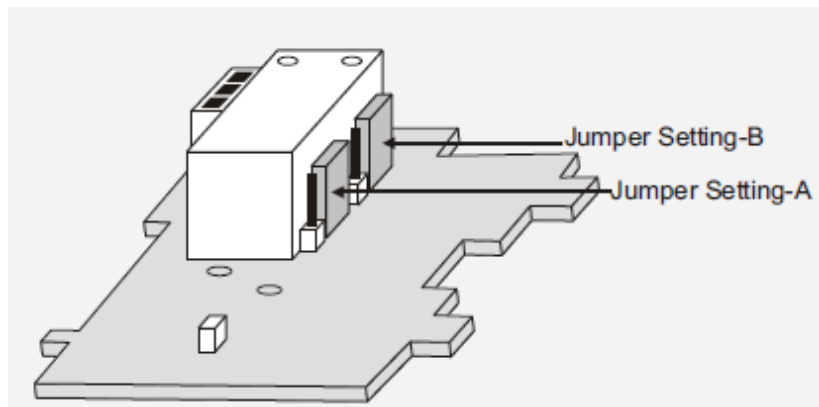
MOUNTING DETAILS

OUTPUT MODULE PID 1



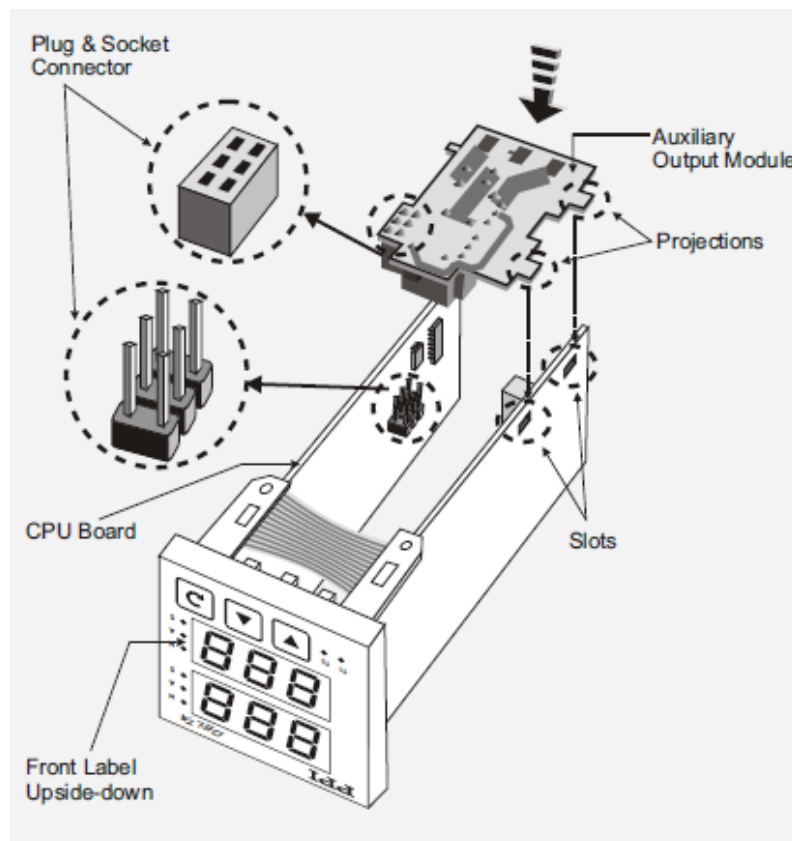
WIRING CONNECTION

RELAY BOARD



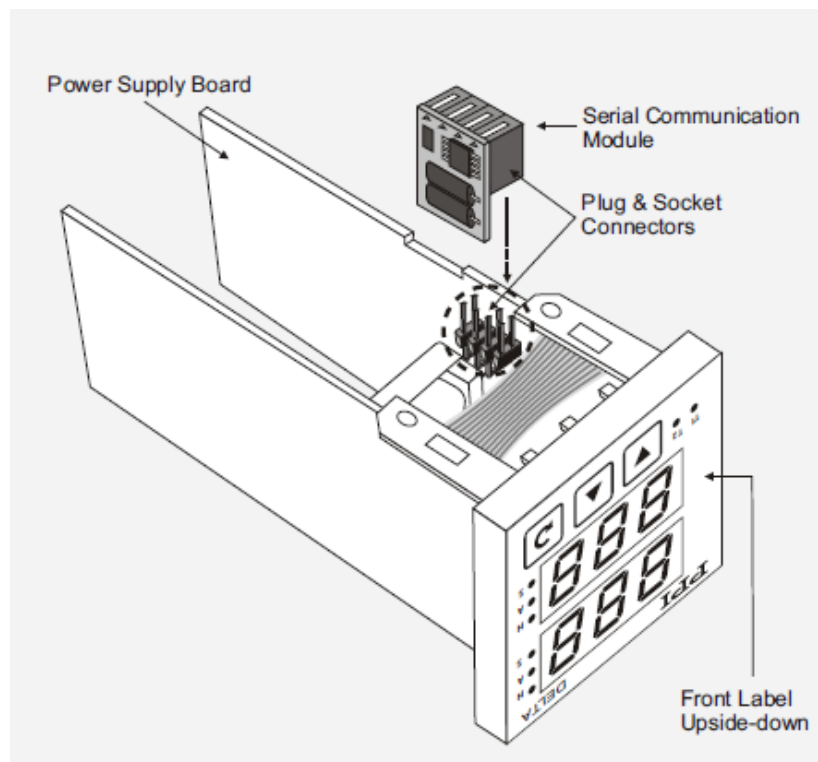
MOUNTING DETAILS

OUTPUT MODULE PID 2

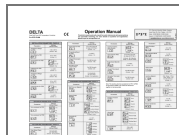


MOUNTING DETAILS

SERIAL COMM. MODULE



Documents / Resources



[PPI DELTA Dual Self Tune PID Temperature Controller](#) [pdf] Instruction Manual
 DELTA, DELTA Dual Self Tune PID Temperature Controller, Dual Self Tune PID Temperature Controller, Self Tune PID Temperature Controller, PID Temperature Controller, Temperature Controller

References

- [Factory Automation Products India | Automation Solutions in India](#)