

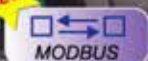


PID SERIES

Digital PID
Temperature Controllers / Process Controllers

New Release
New LED Module

PAT.NO. : M347604 (Taiwan)
ZL200820301949.5 (China)



บริษัท ทีพีเทค จำกัด

BEST CHOICE FOR PROCESS AND TEMPERATURE CONTROL

Application: Control temperature, humidity, pressure, flow and PH.

series controllers are microprocessor based controllers. Which have been designed with high accuracy input, various output selection, useful options and good reliability at a competitive price.

series use "PID+FUZZY" algorithm to implement excellent control. The output status is displayed on the built in "Bar-Graph" display.

series not only provide the basic control output selections but also plus advanced options such as "Motor Valve Control", "SCR/TRIAC Trigger", and "Programmable RAMP/SOAK".

series support MODBUS protocol. Communication with HMI is more convenient. New additional HBA function with competitive price, user can upgrade system safety easy.

Available in 7 sizes, the models and sizes are as below:

PID48 :48X48mm (DIN 1/16)
PID486 /H :48X96mm (DIN 1/8)
PID72 :72X72mm (DIN 1/16)
PID96 :96X96mm (DIN 1/4)
PID100:175X110mm
PID900:90X90mm



PID100

PID900

PID486H

PID48

PID72

PID486

PID96

CE Approval & free power

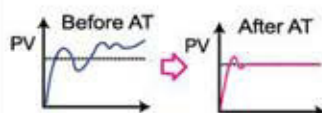
All models get CE approval.
Operate on any voltage from AC 85~265V at 50/60Hz.
DC 24V is also available(optional function).

Heater Break Alarm (HBA)



Heater current flowing through CT can be displayed on controller. If heater current is less than HBA set value, AL1 will be activated (optional function).

Autotuning (AT)



AT Function can calculate the optimize PID value for your control system, without trying and error manually.

Various Indication Lamps



Real time monitor the status of output(OUT1/OUT2), AT, alarm (AL1/AL2/AL3), manual output (MAN) and program(PRO).

High Accuracy

Input with 14bit A/D resolution, 0.2% accuracy of FS.
Built in "AutoZero-AutoSpan" function keep good accuracy.

IP65 Proof



IP65 dust & water proof is available for all models(optional function).

MODBUS Communication



PID series suport both MODBUS RTU and MODBUS ASCII protocol. Communication between controller and HMI or other equipment is more convenient(optional function).

Auto/Manual mode



Conveniently switched between auto/manual output mode by clicking "A/M" key(except "PID48").

Bar-Graph

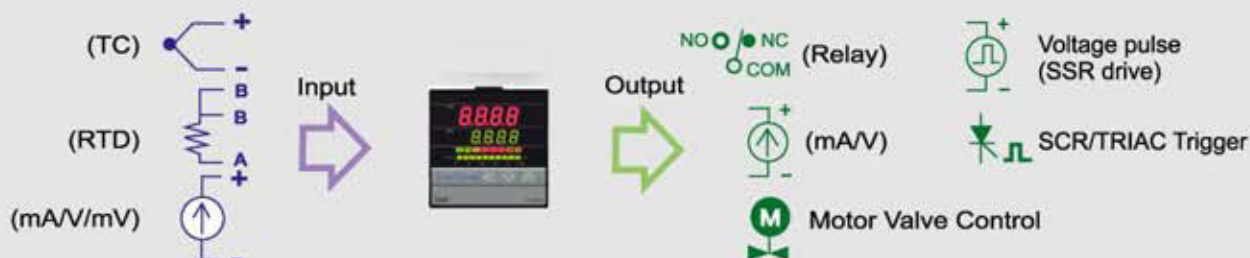


Output percent displayed on the bar-graph in 10 LEDs resolution(except "PID48").

Data Lock Function

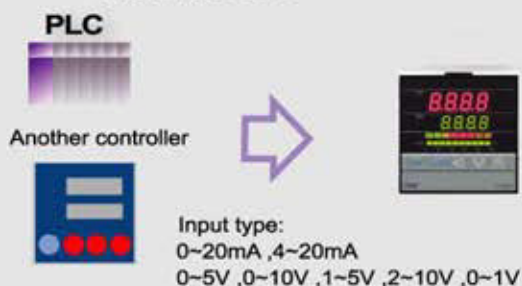
All parameters are seperated in 3 operation levels. Each parameter can be hidden or locked to prevent unauthorized changes.

Various I/O Types

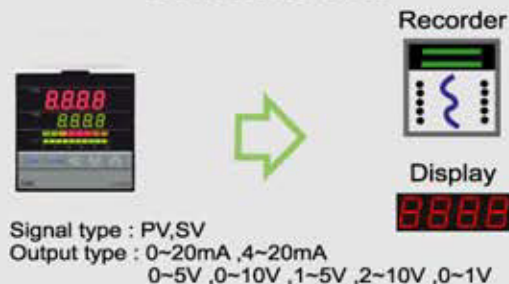


Peripheral Options

Remote SV

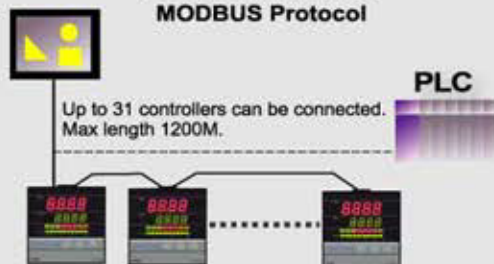


Transmission



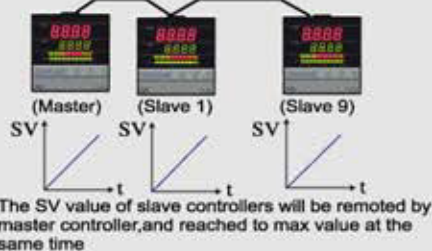
Communication

(RS485 Communication)
MODBUS Protocol



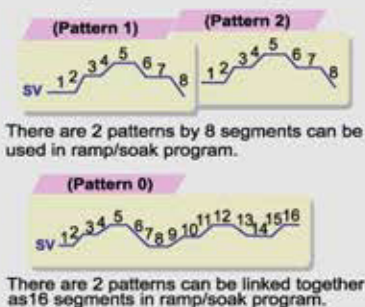
Communication

(TTL Communication)
Up to 10 controllers can be connected.
Max length 1M.

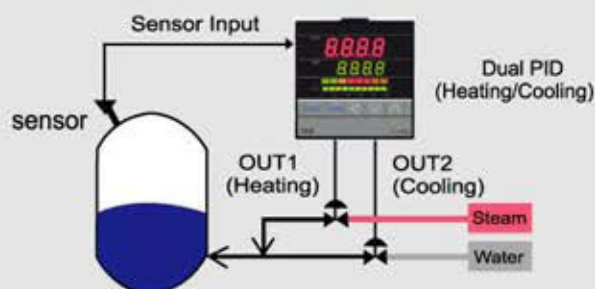


Special Application

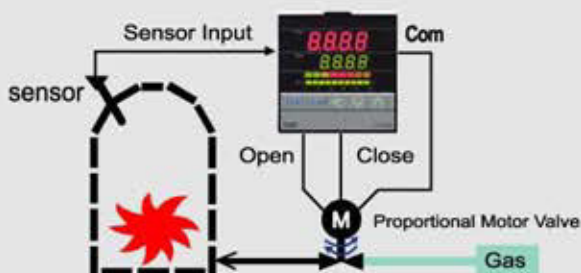
Ramp/Soak Program



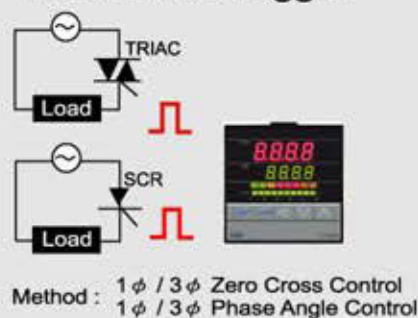
Heating and Cooling Control



Motor Valve Control

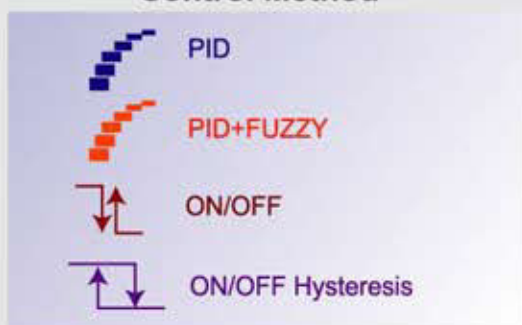


SCR/TRIAC Trigger

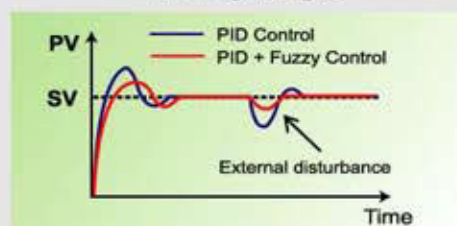


Excellent Control

Control Method

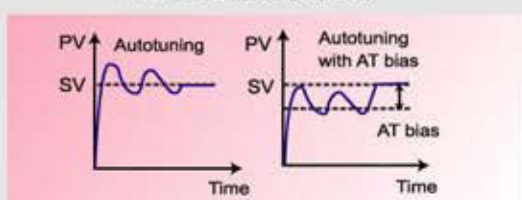


Fuzzy Logic



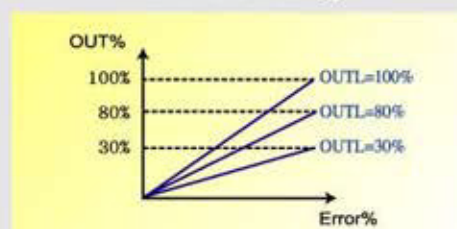
Built in fuzzy logic suppress the overshoot due to SV changes or external disturbance.

Autotuning (AT)



When autotuning acts, it will make PV hunting 1~2 cycle to calculate optimize PID value. To protect user's device, FY series controller can perform PV hunting below SV by setting AT bias value(ATVL).

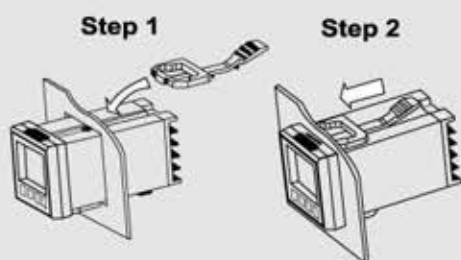
Limit Setting



Built in output limit function. Use this function to get different gradient output and set limit for output.

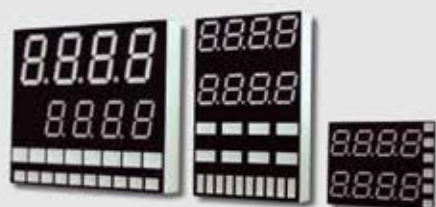
Convenient Installation

Easy Mounting



Just push the mounting bracket to panel. Without using any screws.

New Display Module



New display module design more clear display and easy to read

Alarm Function

Alarm Types

Maximum with 3 sets of alarm.

Alarm types list as below:

Deviation

Deviation High Alarm
Deviation Low Alarm
Deviation High/Low Alarm
Band Alarm

System

System Failed Alarm
System Normal Alarm

PV

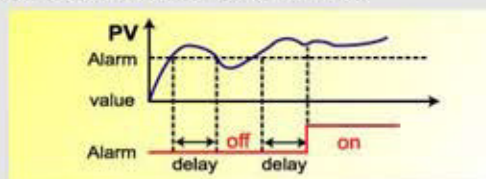
PV High Alarm
PV Low Alarm

Program

Program Run Alarm
Program End Alarm
Segment End Alarm

Delay Time

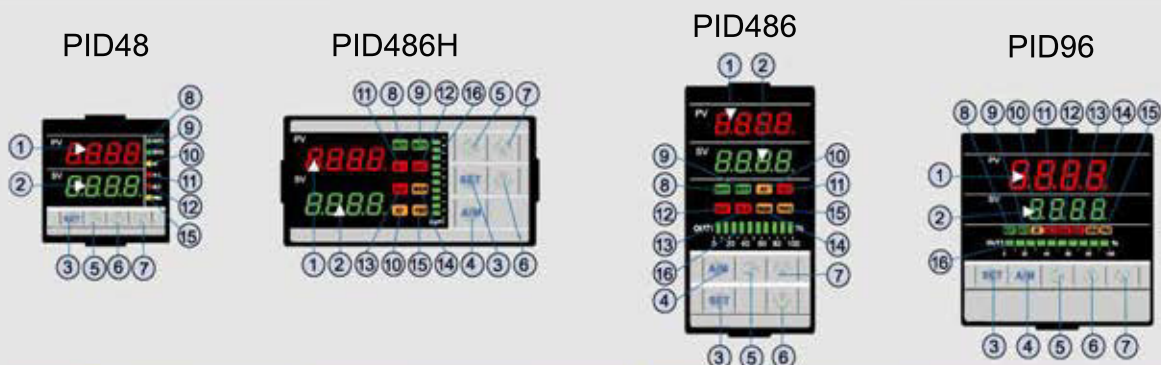
Use this function can avoid alarm acts frequently or acts due to external disturbance.



Hold Function

Use this function can avoid alarm acts at start-up. The alarm action is suppressed at start-up until PV enters the non-alarm range.

Parts Description



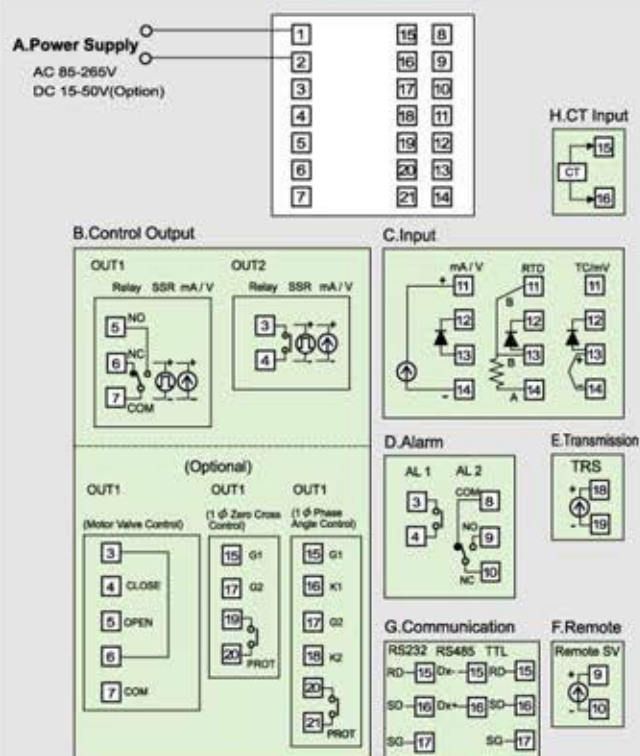
SYMBOL	NAME	FUNCTION	SYMBOL	NAME	FUNCTION
PV ①	Measured value (PV) display	Displays PV or various parameter symbols (Red)	OUT1 ⑧	OUT1 lamp	Lights when OUT 1 is on (Green)
SV ②	Setting value (SV) display	Displays SV or various parameter values (Green)	OUT2 ⑨	OUT2 lamp	Lights when OUT 2 is on (Green)
SET ③	Set Key	Used for parameter calling up and set value registration	AT ⑩	Autotuning lamp	Lights when Autotuning is activated (Orange)
A/M ④	Auto/Manual key	Switches between Auto (PID) output mode and Manual output	AL1 ⑪	Alarm 1 lamp	Lights when Alarm 1 is activated (Red)
< ⑤	Shift Key	Shift digits when settings are changed	AL2 ⑫	Alarm 2 lamp	Lights when Alarm 2 is activated (Red)
∨ ⑥	Down Key	Decrease numbers (*Only for programmable controller)	AL3 ⑬	Alarm 3 lamp	Lights when Alarm 3 is activated (Red)
∧ ⑦	Up Key (*Program Run)	Increase numbers (*Only for programmable controller)	MAN ⑭	Manual output lamp	Lights when manual output is activated (Orange)
			PRO ⑮	Program Running lamp	Flashes when program running (Only for programmable controller)
			OUT% ⑯	Output % Bar-Graph display	Output % is displayed on 10-dot LEDs

External Dimension

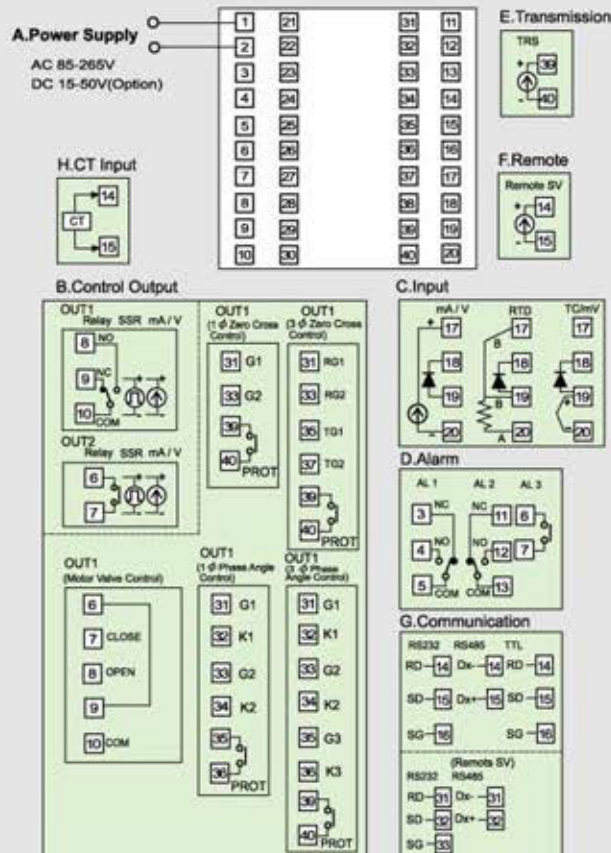
Unit : mm

PID48			
PID486H			
PID72			
PID486			
PID96			
PID100			

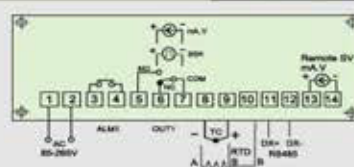
PID72



PID96



PID900



When AL3 Function enable, RS485 Function move to Alarm board.

Standard Spec.

Model	PID48	PID486H	PID72	PID486	PID96	PID900	PID100
Dimension	48X48mm	96X48mm	72X72mm	48X96mm	96X96mm	175X110mm	90X90mm
Supply voltage	AC 85~265V , DC24V (Optional)					AC 85~265V	
Frequency	50/60 HZ						
Power Consumption	approx 3VA	approx 4VA	approx 3VA	approx 4VA	approx 4VA	approx 4VA	approx 3VA
Memory	Non-volatile memory E ² PROM						
Input	Accuracy : 0.2%FS, Sample time : 250ms						
TC	K , J , R , S , B , E , N , T , W5Re/W26Re , PL2 , U , L						
RTD	DPT100 , JPT100 , JPT50						
mA dc	4~20mA , 0~20mA						
Voltage dc	0~1V , 0~5V , 0~10V , 1~5V , 2~10V -10~10mV , 0~10mV , 0~20mV , 0~50mV , 10~50mV						
DP Position	0000 , 000.0 , 00.00 , 0.000 (available for mA or Voltage dc input)						
Output 1	Main control output						
Relay	SPST type	SPDT type	SPDT type	SPDT type	SPDT type	SPDT type	SPDT type
	3A , 220V , electrical life : 100,000 times or more(under the rated load).						
Voltage Pulse	For SSR drive. ON:24V , OFF:0V , maximum load current:20mA.						
mA dc	4~20mA , 0~20mA .Maximum load resistance:560 Ω						
Voltage dc	0~5V , 0~10V , 1~5V , 2~10V. Maximum load current:20mA.						
Alarm 1	SPST type	SPDT type	SPST type	SPDT type	SPDT type	SPDT type	SPST type
	3A , 220V , electrical life : 100,000 times or more(under the rated load).						
Control algorithms	PID , P , PI , PD , ON/OFF(P=0) , FUZZY						
PID range	P:0~200% , I:0~3600 Secs , D:0~900 Secs						
Isolation	Output terminal (control output , alarm ,transmission) and Input terminal are isolated separately.						
Isolated resistance	10M Ω or more between input terminals and case(ground) at DC 500V 10M Ω or more between output terminals and case(ground) at DC 500V						
Dielectric strength	1000V AC for 1 minute between input terminals and case(ground) 1500V AC for 1 minute between output terminals and case(ground)						
Operating temperature	0~50° C						
Humidity range	20~90% RH						
Weight (approx)	approx 150g	approx 225g	approx 225g	approx 225g	approx 300g	approx 130g	approx 80g
Display Height	PV:7mm SV:7mm	PV:7mm SV:7mm	PV:14mm SV:10mm	PV:7mm SV:7mm	PV:14mm SV:10mm	External Interface Unit.	External Interface Unit.

Optional Spec.

Model	FY400	FY600	FY700	FY800	FY900	FY100	FY101
RAMP/SOAK Program	2 Patterns with 8 segments each . The 2 patterns can be linked together as 16 segments use						
Output 2	For heating and cooling control use						
Relay	SPST type	SPST type	SPST type	SPST type	SPST type	SPST type	SPST type
Voltage Pulse	For SSR drive. ON:24V , OFF:0V , maximum load current:20mA.						
mA dc	4~20mA , 0~20mA .Maximum load resistance:560 Ω						
Voltage dc	0~5V , 0~10V , 1~5V , 2~10V. Maximum load current:20mA.						
Alarm 2	SPST type	SPDT type	SPDT type	SPDT type	SPDT type	SPDT type	SPST type
Alarm 3	None	SPST type	SPST type	SPST type	SPST type	SPST type	SPST type
Heater Break Alarm (HBA)	Display Range of Heater Current:0.0~99.9A , Accuracy : 1%FS Included CT :SC_80_T (5.8mm dia , 0.0~80.0A) or SC_100_T(12mm dia , 0.0~99.9A) Alarm Relay : AL1						
Transmission	Available for PV or SV transmission						
mA dc	4~20mA , 0~20mA. Maximum load resistance : 560 Ω						
Voltage dc	0~5V,0~10V,1~5V,2~10V. Maximum load current : 20mA.						
Remote SV Input	4~20mA , 0~20mA , 0~5V , 0~10V , 1~5V , 2~10V are available						
Communication	Protocol : MODBUS RTU,MODBUS ASCII Interface : RS232 , RS485 , TTL Baudrate : 38400 , 19200 , 9600 , 4800 , 2400 bps. 8 bit , Start bit : 1 bit , Parity : Odd or Even , Stop bit : 1 or 2 bit						
WaterProof/DustProof	IP65					None	None

Model & Suffix codes

Model	Output1	Output2	Alarm	TRS	Remote SV	Commu- nication	Input Type	Power	Water/Dust Proof
PID48	1	0	1	0	0	0	02	A	N
PID48	48x48mm	0 None	0 None	0 None	0 None	0 None	See Input Codes	A AC 85~265V	N None
PID486H	96x48mm	1 Relay	1 Relay	1 1 Set	1 4~20mA	1 4~20mA		D DC 24V	W IP65
PID72	72x72mm	2 Voltage Pulse (SSR Drive)	2 Voltage Pulse (SSR Drive)	2 2 Sets	2 0~20mA	2 0~20mA			
PID486	48x96mm	3 4~20mA	3 4~20mA	3 3 Sets	A 0~5V	A 0~5V	3 TTL		
PID96	96x96mm	4 0~20mA	4 0~20mA		B 0~10V	B 0~10V	A RS232_MODBUS		
Board Type							B RS485_MODBUS		
PID100	175x110mm	A 0~5V	A 0~5V	A HBA*	C 1~5V	C 1~5V			
PID900	90x90mm	B 0~10V	B 0~10V	B HBA+AL2	D 2~10V	D 2~10V			
(STANDARD)		C 1~5V	C 1~5V	C HBA+AL2+AL3					
PPID48	48x48mm	D 2~10V	D 2~10V						
PPID486H	96x48mm	5 1φ SCR zero cross control	5 1φ SCR zero cross control						
PPID72	72x72mm	6 3φ SCR zero cross control	6 3φ SCR zero cross control						
PPID486	48x96mm	7 Motor valve control	7 Motor valve control						
PPID96	96x96mm	8 1φ SCR phase angle control	8 1φ SCR phase angle control						
Board Type		9 3φ SCR phase angle control	9 3φ SCR phase angle control						
PPID100	175x110mm								
PPID900	90x90mm								
(RAMP/ISOAK Programmable)									

* : Block means optional functions with additional charge

* HBA : Heater Break Alarm(HBA must use AL1 as alarm relay)

Combination of options and models

Options	RAMP/ISOAK PROGRAM	Output 1	Output2	Alarm2	Alarm3	HBA	Transmission	Remote SV	Communication	DC 24V Power
Model		1φ SCR_Z	3φ SCR_Z	Motor valve control	1φ SCR_P	3φ SCR_P				
PID48										
PID486										
PID72										
PID486H										
PID96										
PID100										
PID900										

○ Available — Not available

* Remote SV function is not available, if HBA Function has been specified.

Input type table

	Type	Code	Range	Type	Code	Range	Type	Code	Range		Type	Code	Range		
TC	K	K1	01	0.0~200.0°C(392.0°F)	K2	02	0.0~400.0°C(752.0°F)	K3	03	0~600°C(1112°F)	LINEAR	AN1	61	-10~10mV	
		K4	04	0~800°C(1472°F)	K5	05	0~1000°C(1832°F)	K6	06	0~1200°C(2192°F)		62	-2~2V		
	J	J1	07	0.0~200.0°C(392.0°F)	J2	08	0.0~400.0°C(752.0°F)	J3	09	0~600°C(1112°F)		63	-5~5V		
		J4	10	0~800°C(1472°F)	J5	11	0~1000°C(1832°F)	J6	12	0~1200°C(2192°F)		64	-10~10V		
	R	R1	13	0~1600°C(2912°F)	R2	14	0~1769°C(3216°F)					AN2	71	0~10mV	
	S	S1	15	0~1600°C(2912°F)	S2	16	0~1769°C(3216°F)					AN3	76	0~20mV	
	B	B1	17	0~1820°C(3308°F)						AN4		81	0~50mV		
	E	E1	18	0~800°C(1472°F)	E2	19	0~900°C(1652°F)					82	0~20mA	-1999~9999 or -199.9~999.9 or -19.99~99.99 or -1.999~9.999	
	N	N1	20	0~1200°C(2192°F)	N2	21	0~1300°C(2372°F)					83	0~1V		
	T	T1	22	-199.9~400.0°C(752.0°F)	T2	23	-199.9~200.0°C(392.0°F)	T3	24	0.0~350.0°C(662.0°F)		84	0~5V		
	W	W1	25	0~2000°C(3632°F)	W2	26	0~2320°C(4208°F)					85	0~10V		
	PL1	PL1	27	0~1300°C(2372°F)	PL2	28	0~1390°C(2534°F)					86	0~5K ohm		
U	U1	29	-199.9~600.0°C(999.9°F)	U2	30	-199.9~200.0°C(392.0°F)	U3	31	0.0~400.0°C(752.0°F)	87		0~2V			
RTD	L	L1	32	0~400°C(752°F)	L2	33	0~800°C(1472°F)					AN5	91	10~50mV	
	JPT	JP1	41	-199.9~600.0°C(999.9°F)	JP2	42	-199.9~400.0°C(752.0°F)	JP3	43	-199.9~200.0°C(392.0°F)			92	4~20mA	
	100	JP4	44	0~200°C(392°F)	JP5	45	0~400°C(752°F)	JP6	46	0~600°C(1112°F)			93	1~5V	
	PT	DP1	47	-199.9~600.0°C(999.9°F)	DP2	48	-199.9~400.0°C(752.0°F)	DP3	49	-199.9~200.0°C(392.0°F)			94	2~10V	
	100	DP4	50	0~200°C(392°F)	DP5	51	0~400°C(752°F)	DP6	52	0~600°C(1112°F)					
	JPT	JP1	53	-199.9~600.0°C(999.9°F)	JP2	54	-199.9~400.0°C(752.0°F)	JP3	55	-199.9~200.0°C(392.0°F)					
	50	JP4	56	0~200°C(392°F)	JP5	57	0~400°C(752°F)	JP6	58	0~600°C(1112°F)					

บริษัท ทีพีเทค จำกัด

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