

User's Manual P Series PID Temperature Controller

Precaution:

1. Please make sure if the terminals are wired correctly and if the input power conforms with the specifications before power supply is connected.
2. If power supply is connected, do not touch the power terminals to prevent electric shock.
3. Do not mount the controller in a place where is likely to be interfered by radio frequency or where is corrosive or humid.
4. Please select spade terminal cables to do the wiring.
5. If the cable of the thermocouple needs to be extended, please use extension wire of the same type.
6. The conducting wire of platinum resistance (Pt100) should be as shorter as possible, or of low impedance.
7. To avoid interference, signal cable and power line should be kept away from load power conducting wire.
8. In case hazard should occur if the controller breaks down, breakers or fuses should be fitted prior to the power of the controller.

Model No. EXplanation

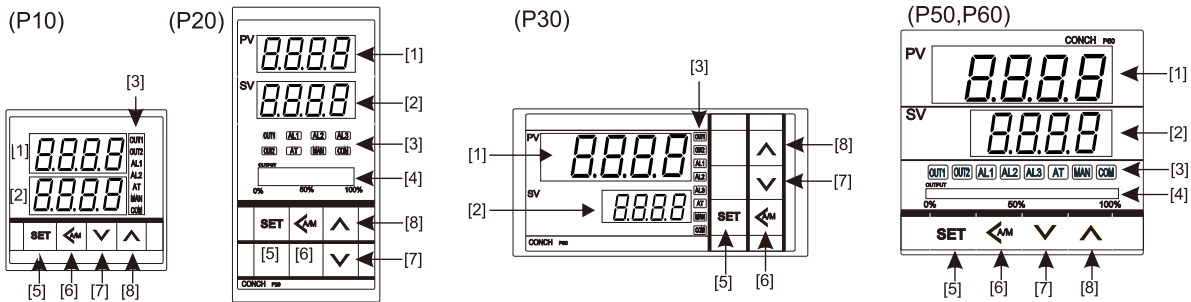
Model	Output 1	Output 2	Alarm	Input Type	Remote SV	Transmitting Output	Communication	Power Supply
P10	0	0	0	0	0	0	0	A
P20	1	1	1	1	1	-	1	D
P30	2	2	2	2	-	-	2	
P50	3	3	3	3	3	3	2	
P60	4	4	4	4	4	4		
Procedure Control	5	5	A	4	4	4		
P11	6	6	B	5	5	5		
P21	7	7	C	6	6	6		
P31	8	8	D	7	7	7		
P51			E	8				
P61			F					

Specifications

Model	P10	P20	P30	P50	P60
Dimension	48X48mm	48X96mm	96X48mm	72X72mm	96X96mm
Power Supply	AC90~240V(60/50Hz), DC24V(optional)				
Power Consumption (Approx.)	4 VA	4 VA	4 VA	5 VA	5 VA
Net Weight (Approx.)	130g	200g	200g	200g	280g
Storage / Operating Environment	0~65°C/0~50°C, 20~90%RH				
Data Backup Memory	EEPROM,10 years				
Accuracy	0.3%FS				
Display Height (mm)					
PV(red)	10	11	14	14	14
SV(green)	10	11	10	11	11
Alarm Output	Relay contact 8A, 250VAC				
Controlling Output	Relay contact: 8A, 250VAC Logic Voltage (to drive SSR):ON=24V,OFF=0V(20mA Max) Analog current: 4~20mA (Input Impedance: 600Ω Max.) Analog Voltage: 0~10V(Input impedance: 1KΩ Min.)				
Input Type	Thermocouple, RTD, analog voltage/current. Refer to Input Type List.				

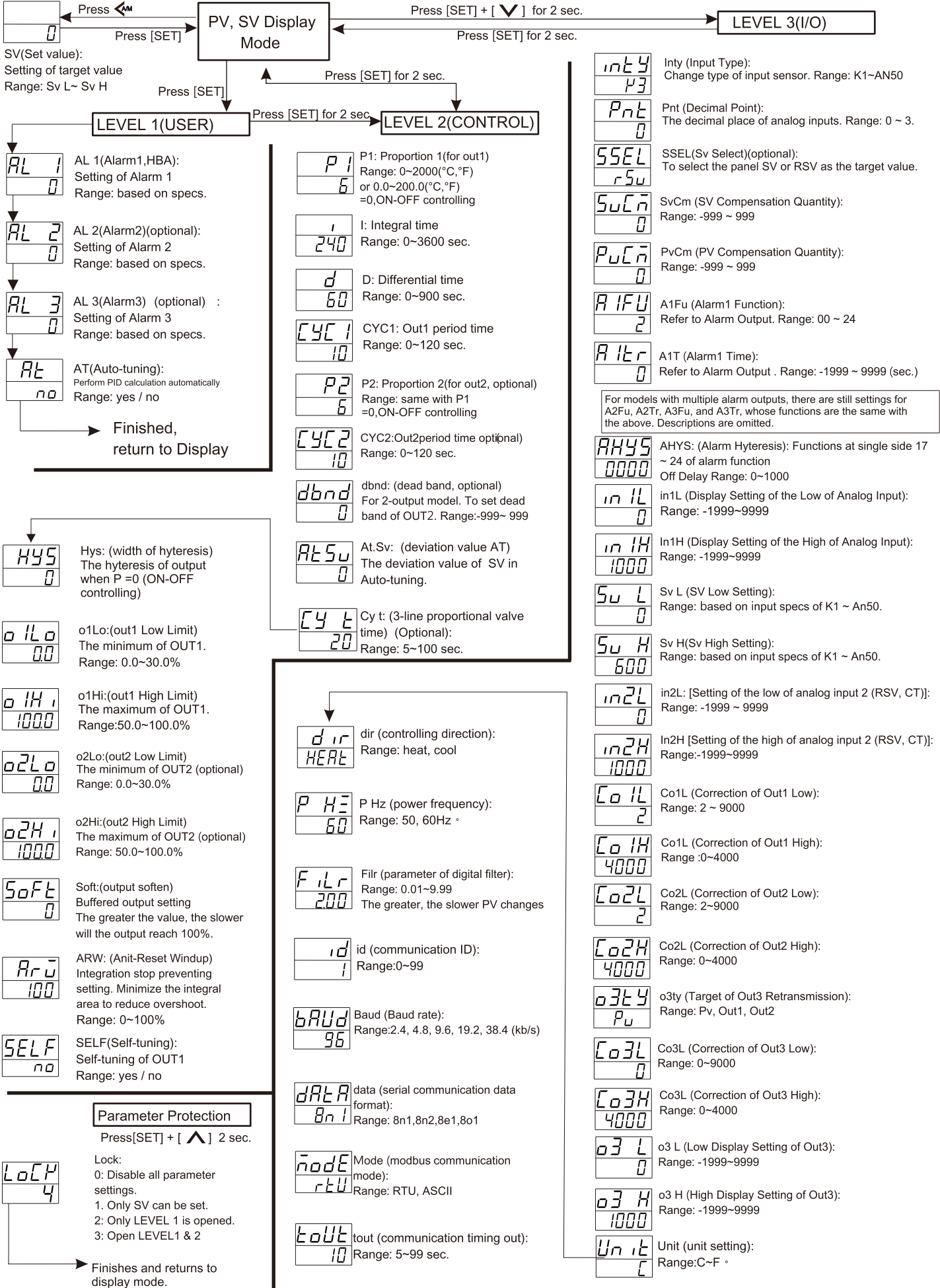
Panel Explanation

- [1]. PV(Process Variable): Displays detected value or menu in setting mode.
- [2]. SV(Set Value): Display target value or values of parameters in setting mode.
- [3]. Status Index Lamps:
 - OUT1(green)=OUT1, OUT2(green)=OUT2, AL1~AL3(red)=alarms,
 - AT(yellow)=Auto-Tuning,M AN(yellow)=Manual mode,
 - COM(yellow)=Communication
- [4]. Percentage light bar of OUT1
- [5]. [SET] key: starts or ends parameter setting.
- [6]. [Left] key (Auto/Manual switching key): In setting mode: Shifts the cursor to change the parameter value in setting mode. In display mode, switch Auto/Manual mode (2 sec.), or stops Auto-Tuning.
- [7]. [Down] key: decreases the parameter value in setting mode.
- [8]. [Up] key: increases parameter value in setting mode.



Parameter Settings

The interior parameters of the controller can be divided into 3 groups according to their properties (LEVEL1 ~ LEVEL3) so as to make settings more convenient. The setting authorities of groups are restricted with the parameter LOCK. LEVEL1 is User's Parameter Group, the group of parameters that are changed most often. LEVEL2 is Controlling Parameter Group. Parameters about auto controlling are gathered up here LEVEL3 is I/O Group (input/output), such parameters as the change of sensor, adjustment of analog output, and communication are gathered here.



■ Alarm Output

There are 26 types of alarm outputs, represented with codes 00~26. 00 represents alarm disabled; odd numbers represents that the first output after start up is disabled.

Code 01,02: Relative high alarm		Code 03, 04: Relative deviation high
Code 05,06: Deviation low alarm	Code 07, 08: Relative deviation low	
Code 09,10: Band alarm	Code 11, 12: Low alarm	Code 13, 14: High alarm
Code 15,16: Deviation high/low	Code 17,18: Deviation low alarm	Code 19, 20: Deviation high alarm
Code 21, 22: Process low alarm	Code 23, 24: Process high alarm	Code 25, 26: Process Control


Alarm output time setting
The parameter A1Tr~A3Tr setup the time length of alarm output separately. The range is from -19999 secs. to +9999 secs. Plus or minus time setting has a different meaning in output.

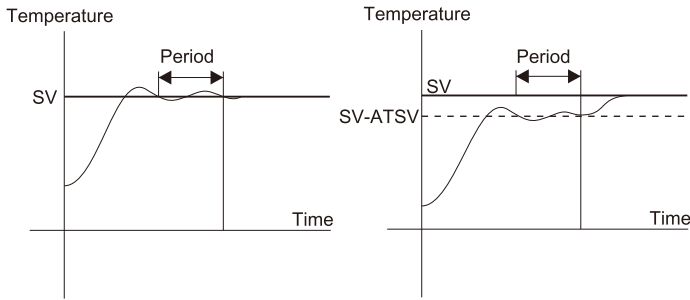
1. If set minus value to -9 which means the alarm will be delayed 9 secs. output.
2. If set to 0 sec., the alarm will immediate output.
3. If setup the plus value time to 10 which means the alarm will immediate output and shut down after 10 secs.

■PIDAuto-Tuning

Auto-Tuning employs the measure of Relay ON-OFF to detect the dynamic characteristics of the Process, and compute the best collocation of P.I.D. parameters based on the data. During Auto-Tuning, the operation must be under the situation where the Process is not interfered. When Auto-Tuning is completed, (AT lamp goes off), the three parameters, PID will renew themselves.

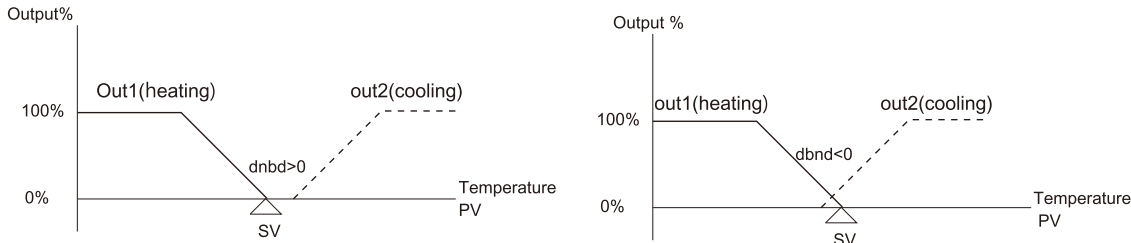
If any of the following situation occurs, Auto-Tuning will stop and enter Manual mode, but PID values will not be changed:

- Any exception occurs (including power failure).
- The half-period of the Process is over 2 hours.
- Hold  for 2 sec. (forcing to Manual mode).



■Heating/Cooling Control (applicable to models with 2 outputs)

Out1(heating) and Out2(cooling) can be set for the controlling of gap or overlap through the parameter “dbnd”.



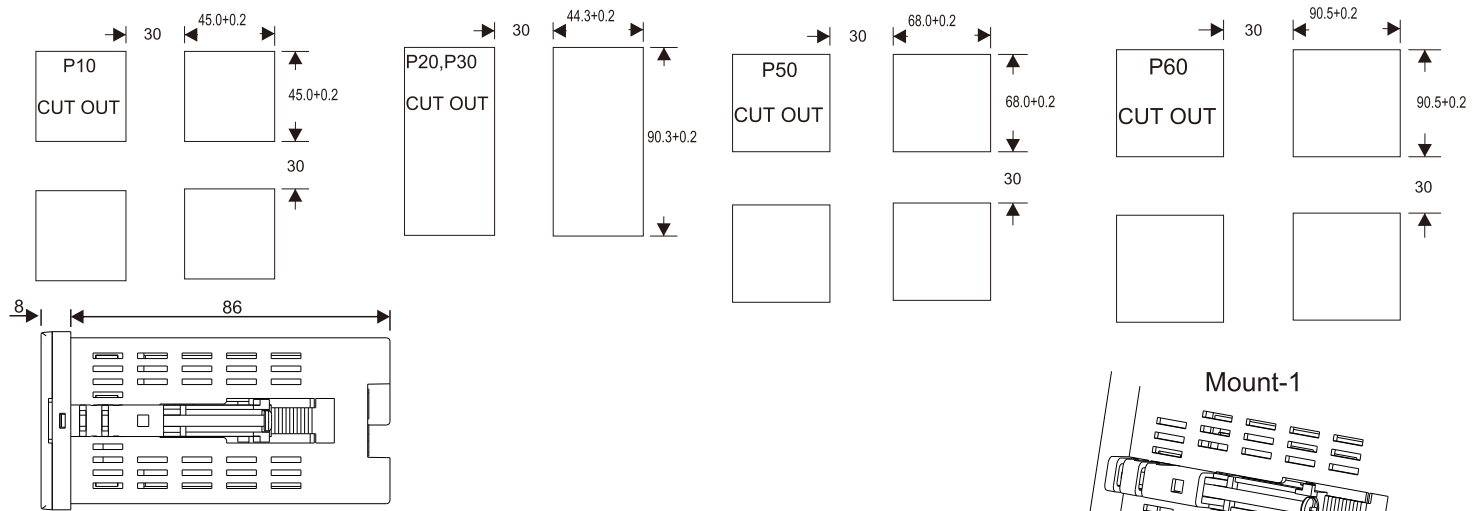
■Error Message

OPEn: Sensor input terminal disconnected
OL,-oL: Input overloaded
CJER: Cooling / heating compensation error
AdEr: Interior circuit error
M Er: Memory error

■List of Input Types

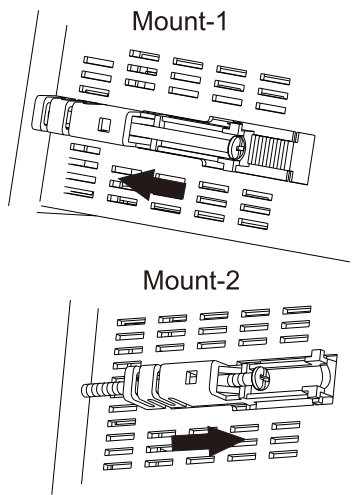
Input Type	Code	Detecting Range	Code	Detecting Range	Code	Detecting Range
Thermocouple	K	K1 0.0~200.0°C/0.0~392.0°F	K2 0.0~400.0°C/0.0~752.0°F	K3 0~600°C/0~1112°F		
		K4 0~800°C/0~1472°F	K5 0~1000°C/0~1832°F	K6 0~1200°C/0~2192°F		
	J	J1 0.0~200.0°C/0.0~392.0°F	J2 0.0~400.0°C/0.0~752.0°F	J3 0~600°C/0~1112°F		
		J4 0~800°C/0~1472°F	J5 0~1000°C/0~1832°F			
	R	R1 0~1700°C/0~3092°F				
	S	S1 0~1700°C/0~3092°F				
	B	B1 0~1820°C/0~3308°F				
	E	E1 0~800°C/0~1472°F				
	N	N1 0~1300°C/0~2372°F				
Platinum Resistance	T	T1 0.0~200.0°C/0.0~392.0°F	T2 0.0~400.0°C/0.0~752.0°F			
		W3 0~2300°C/0~4172°F	W5 0~2000°C/0~3632°F			
	PL-II	PL2 0~1390°C/0~2534°F				
	Pt100 DIN	PT1 -199.9~200.0°C/-199.9~392.0°F	PT2 -199.9~400.0°C/-199.9~752.0°F	PT3 -199.9~600.0°C/-199.9~1112.0°F		
		PT4 0~200°C/0~392°F	PT5 0~400°C/0~752°F	PT6 0~600°C/0~1112°F		
	Pt100 JIS	JP1 -199.9~200.0°C/-199.9~392.0°F	JP2 -199.9~400.0°C/-199.9~752.0°F	JP3 -199.9~600.0°C/-199.9~1112.0°F		
		JP4 0~200°C/0~392°F	JP5 0~400°C/0~752°F	JP6 0~600°C/0~1112°F		
Analog Signal	10mV	An10 -1999~9999/10mV				
	20mV	An20 -1999~9999/20mV				
	50mV	An50 -1999~9999/50mV				
	Other	USER -1999~9999/(4~20mA,1~5V,0~10V,...)				

■Cut-out and Mounting (Unit: mm)



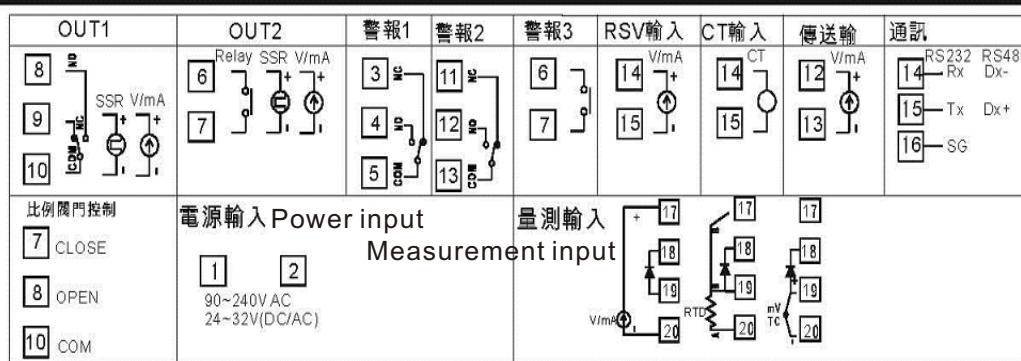
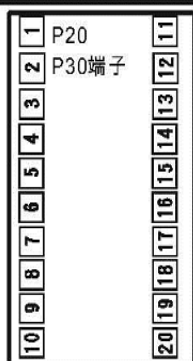
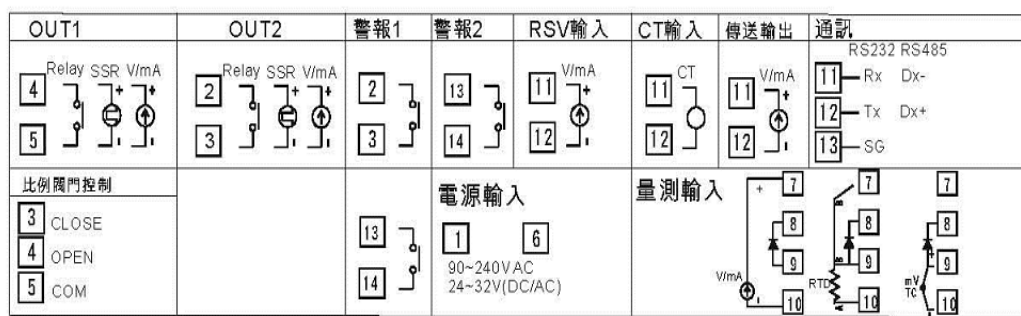
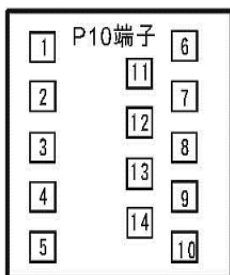
There are 2 methods to mount the controller:

1. (Figure Mount-1) First, mount the controller to the (ready cut) panel. then, insert the fixing racks to the side gaps of the controller. Last, push the rack forward till fixed. (Or, rotate the screw till it reach the panel, and then use the screwdriver to tighten it.)
2. (Figure Mount-2) Push the fixing rack backward, and then tighten it forward with the screwdriver.

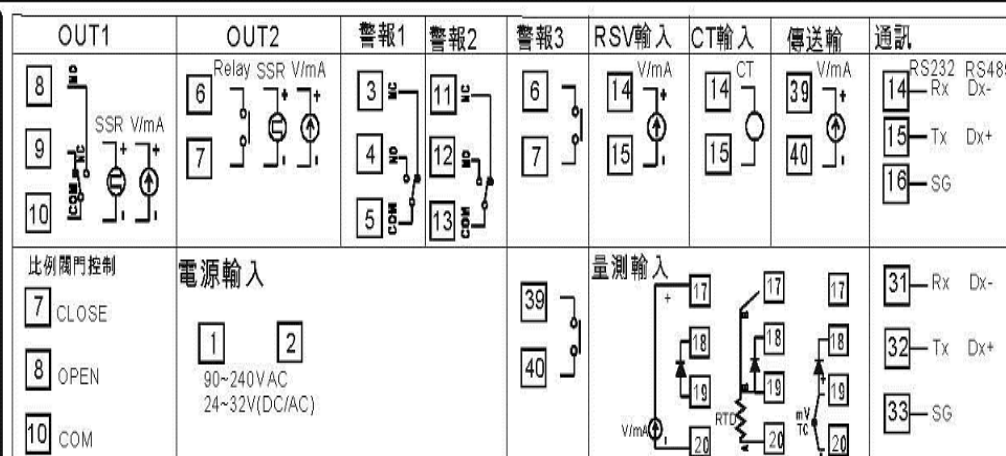
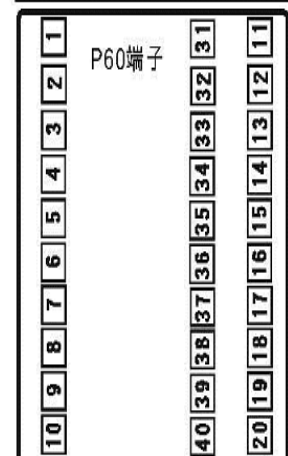
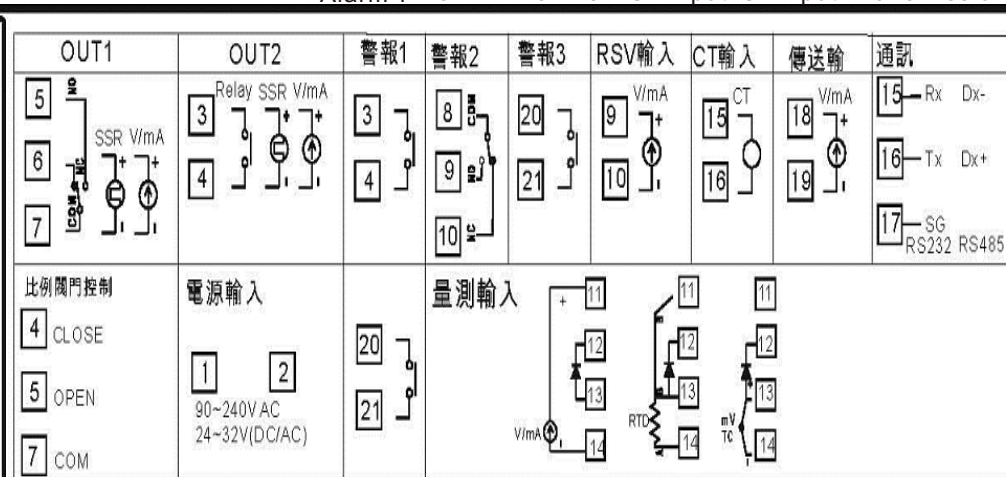
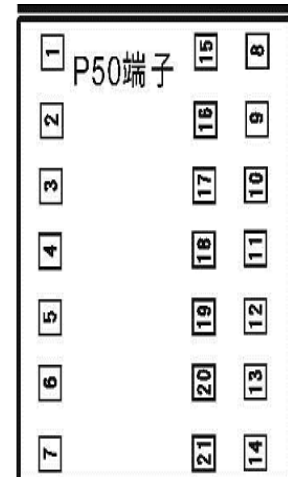


Conch Electronic Co., Ltd.
3 Keji 1st Road, Tainan 70955, Taiwan
TEL: +886-6-3842111
FAX: +886-6-3840855

■ 接線圖(若腳位重疊只能任選一種功能) Wiring Diagram (if pin is connected repeat, can only select one function)



Alarm 1 Alarm 2 Alarm 3 RSV input CT input Transmission Comm.



Conch Electronic Co., Ltd.
3 Keji 1st Road, Tainan 70955, Taiwan
TEL: +886-6-3842111
FAX: +886-6-3840855