



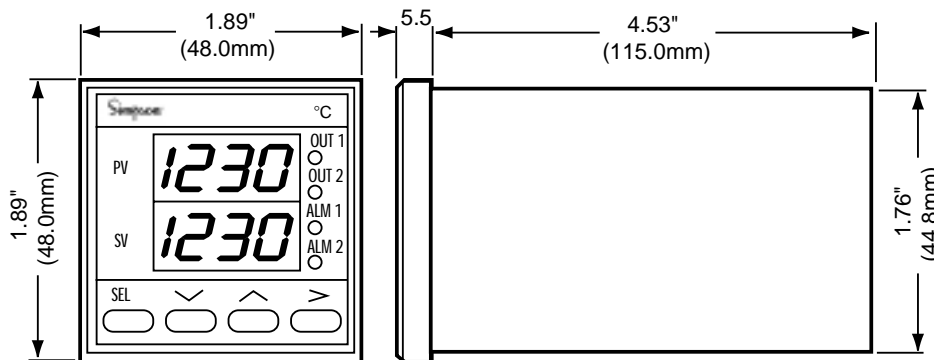
- **Fuzzy Logic With Auto-Tune to Optimize Control and Eliminate Overshoot**
- **Optional Features Include:**
 - 2nd Control Output Process Alarm
 - Heater Break Detection 8-Segment Ramp/Soak
 - RS-485 Digital Communications
 - Retransmitted 4-20mA Output
 - Remote Set Point Excitation Output
 - Auto/Manual Transfer
- **Heater Break Detection Protects Your Process if the Input Sensor Fails**
- **Screw Terminal Connectors for Easy Installation**
- **Rugged, High-Impact Plastic Case Fits Standard 1/16 DIN Cutout**
- **Universal Inputs: Choose from 15 Thermocouple, RTD, and Process Inputs**



The P22 uses a type of artificial intelligence called "fuzzy logic" to ensure that your process remains at set point. During auto tune and normal operation, the P22 studies the system's responses to changing conditions. It remembers how the system responded at start-up and to disturbances. Then, the P22 can anticipate the extent of fluctuations and take corrective action before a minor deviation becomes a major problem. That means an end to overshoot, and a virtual lock on target set points.

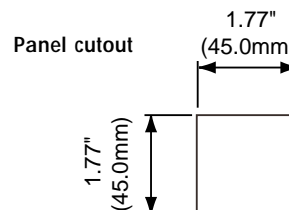
The P22 is powered from 85-264 VAC and offers so many options, there is sure to be a unit to meet every temperature-controlling need -- programmable 8-segment ramp/soak function, multiple-input capability, relay and SSR drive outputs, and many levels of security to prevent unauthorized use. Together with the RS-485 communication system, retransmission, and excitation options, these features combine to form a versatile PID controller capable of performing a variety of temperature control functions.

Installation and Panel Cutout



Mounting Instructions

To install the PID into a panel cutout, remove the mounting bracket. Slide the PID through the panel cutout, then slide the mounting bracket back on. Press evenly and screw down to ensure a proper fit.



Specifications

DISPLAY

Type: 4 digit, dual display & Segment red and green LED

Height: .PV/SV .3" (7.62mm)

Decimal point: 3 position user-programmable

Overrange indication: Most significant digit = "1"

Polarity: Auto with "-" indication, "+" implied

POWER REQUIREMENTS

AC Volt: 100 (-15%)-240 (+10%) AC 50/60Hz

Power Consumption: 100 VAC: 10 VA or less
220VAC: 15VA or less

Dielectric Strength: 1500VAC for 1 min between power source terminal and input and output terminals. 500VAC for 1 min at other locations

Isolation Resistance: 20M Ω min. at 500 VDC

Rated Circuit to Ground Voltage: 750 VRMS

ACCURACY @ 25°C: 0.5% FS \pm 1 digit

ENVIRONMENTAL

Operating Temperature: -10 to 50°C

Storage Temperature: -20 to 60°C

Relative Humidity: 0 to 90% non-condensing @ 40°C

Temperature Coefficient: (\pm 0.02% of input \pm 0.2 digits) / °C

Warmup time: 30 minutes

NOISE REJECTION

NMRR: 50 dB, 50/60 Hz

CMRR: (w/1 K Ω unbalanced @ 60 Hz): 140 dB min

CONTROL FUNCTIONS

Fuzzy Control: Basic actions in PID control have been realized according to fuzzy control rules.

PID Control W/Auto-Tuning:

Proportional band (P) 0-999.9% FS (ON/OFF action when P=0)

Reset Time (I) 0-3200 sec (No integral action when I=0)

Rate time (D) 0-999.9 sec (No derivative action when D=0)

Proportional cycle time: 1-120 sec

Input sampling cycle time: 0.5 sec

Output Cycle: 1-150 sec

Hysteresis Width: 0-50% (ON/OFF control)

Ramping SV: 8-segment ramp/soak (SV: 0-100% FS/Time: 0-99 hr. 59 min)
Power on start of ramping SV is possible

MECHANICAL

Bezel: 48mm x 48mm x 5.5mm

Weight: 175g

OUTPUT

Relay Contact Output: 220VAC/30VDC 3A (resistive load)

SSR Driver Output: On: 9V - 24VDC, 20mA max.
Off: 0.5V or less

Alarm Output/2nd Control Output: 220VAC/30VDC 1A (resistive load)

Alarm: Configurable from the front panel keys as Absolute, Deviation, Zone, or Combination alarms with or without the hold feature.

INPUT RATINGS

	Kind of input	Description
Thermocouple	J	<ul style="list-style-type: none"> • Cold junction compensation comprised • Burn-out circuit built in
	K	
	R	
	B	
	T	
	E	
	T	
	S	
	N (Nichrosil-Nisil)	
	U	
RTD	WRe5-26 (tungsten rhenium)	<ul style="list-style-type: none"> • Burn-out circuit built in • Allowable wiring resistance 10Ω max (per wire)
	PL-II (Platine)	
	Pt100	
Voltage input	DC 1-5V	Input resistance 1M Ω Min
	DC 0-5V	
Current input	DC 4-20 mA	Input resistance 250 Ω

Programming

Programming for the P22 is accomplished using the SEL, UP, DOWN, and ">" keys. Pressing SEL for 3 seconds will return the unit to the operating mode. The unit will also return to the operating mode if a key is not pressed within 60 seconds, and any data being set at that time is invalidated. When setting the parameters, turn off the power to the load (operating equipment) to ensure safety. Since it takes 30 minutes for the unit to stabilize in terms of temperature, all measurements should be carried out at least 30 minutes after the power is turned on. Option-related features are displayed only when the options are used.

Viewing and Setting Parameters

To access the parameter setting mode, press the SEL key for 3 seconds while in the operating mode.

How to set Set Point Value (SV)

Operation

1. Power on.
2. Press UP or DOWN key

Display

Operational mode
-SV value changes accordingly

CHANGING PARAMETERS

Operation

1. Operational mode
2. Press SEL key for 3 seconds
3. Press UP or DOWN key
4. Press > key
5. Set the data with the > key
6. Press SEL key for 3 sec.

Display

-PV, SV
- 'H' LED blinks; AH data (for units with alarm option)
- Display target parameter
- Select digit to be changed
- Changes selected digit
- Operational mode

SETTING INPUT/OUTPUT

Operation

1. Turn the power on to unit
2. Press SEL for 3 sec.
3. Press > four times
4. With UP and DOWN keys, change lower display to "003"
5. Press SEL key once
6. Repeat steps, press DOWN until "PvT" is displayed

Display

-LEDs go on after 3 sec.
- "LoCk" is displayed
- Right-most digit flickers
- Digits will stop flickering
- Sets value
- Sets PvT parameter

After setting these primary options, the unit will continue to the functions "LOCK," AT (Auto Tune), and the Control Function menus. Use the UP and DOWN arrow keys to select the parameter to be changed, then use the ">" key to change the values. The SEL key, pressed for 3 seconds, will set the selection.

The optional functions are the next parameters in the unit's Parameter Change menu. Use the charts on the following pages to determine which parameter choices to make, using the arrow keys and the SEL button to select the changes. Options not included with the ordered unit will not appear on the Parameter Change menus.

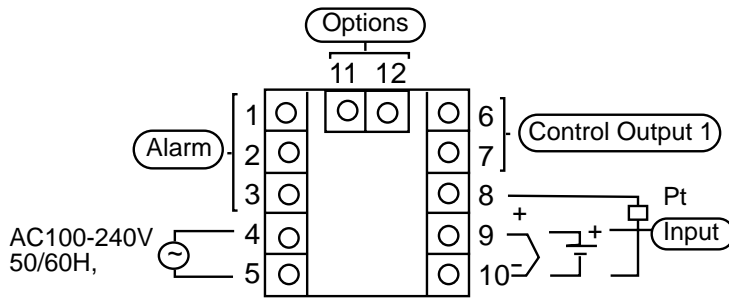
Wiring Diagram



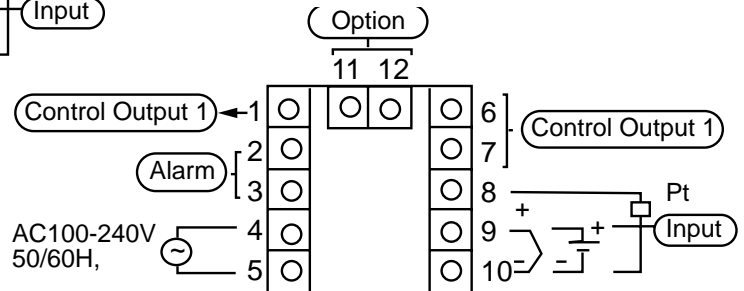
Terminal connection

Warning

Be sure to use the rated power supply voltage and polarity.



(When the output 1 is relay (SPAT) output)

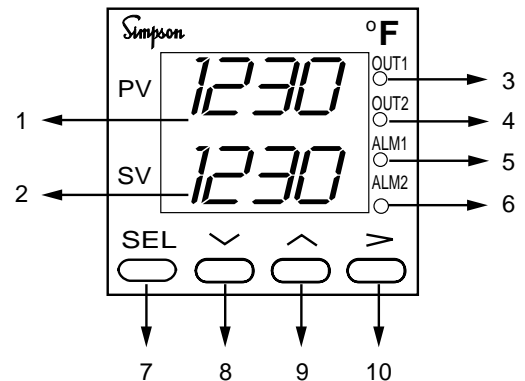


(When the output 1 is relay (SPST) output, SSR drive output or current output)

*For current input, install the 250Ω precision resistor (accessory) before using the unit.

P22 Display

NAME	FUNCTION
1 PV value display	Process value (PV) symbols and codes are displayed.
2 Set point value display	Set point value (SV) is displayed.
3 Control output 1 monitor lamp	Lights when Output 1 is ON. (Does not light for the current output type)
4 Control output 2 or remote operation monitor lamp	Lights when Output2 is on. or during remote operation. (Does not light for the single output type.)
5 Alarm 1 lamp	Lights when alarm-1 relay operates.
6 Alarm 2 lamp	Lights when alarm-2 relay operates.
7 SELECT/Registration	Used to switch from operation to parameter setting mode, select parameters, and to registration set values. Pressing key for 3 seconds switches between operation and parameter setting mode.
8 DOWN key	Selects parameters and decreases set values. Continuing to press this key results in auto-repeat.
9 UP key	Selects parameters and increases set values. Continuing to press this key results in auto-repeat.
10 CARRIAGE/Registration	Used for preset value digit carrying or for preset value registration.



Parameter List

Display	Name	Description
L o C t	Lock level	Parameter locking. (setting range: 0~3)
C R S	Remote set value	Displays the set value (SV) by remote input. (display range: 0~100% FS E.U.)
o U F 1	Control output 1 output value	Displays the output value of Control Output 1. (display range: -3.0~103.0%)
o U F 2	Control output 2 output value	Displays the output value of Control Output 2. (display range: -3.0~103.0%)
Mode	Control mode	Auto, Manual, and Remote Mode setting.
A T	Auto tuning command	Stop, Normal Auto Tuning, and Low-PV Type Autotuning mode.
d-SU	Sub-set point	2-setting function sub-set point (setting range: 0~100% FS E.U.)
S R A T	Ramp/soak present point	Ramp/soak status is displayed with a symbol. (display: OFF/1-RP/1-SK/2-RP/2-SK/3-RP/3-SK/4-RP/4-SK/END)
r c n E	Ramp/soak remaining operation time	The ramp/soak status is displayed with the time for remaining operation. When time exceeds 100 hours, hours display shows "xxxh". When time is under 100 hours, hour/min display shows "xx.xx." No setting.
P r o G	Ramp/soak command	OFF function, Run, and Temporary Stop commands.
S U 1	First target value	First-ramp target value. (setting range: 0~100%FS E.U.)
r n 1r	First ramp time	First-ramp segment time (hour/min). (setting range: 00.00~99.59)
r n 1S	First soak time	First soak segment time (hour/min). (setting range: 00.00~99.59)
S U 2	Second target value	Second-ramp target value. (setting range: 0~100%FS E.U.)
r n 2r	Second ramp time	Second-ramp segment time (hour/min). (setting range: 00.00~99.59)
r n 2S	Second soak time	Second soak segment time (hour/min). (setting range: 00.00~99.59)
S U 3	Third target value	Third-ramp target value. (setting range: 0~100%FS E.U.)
r n 3r	Third ramp time	Third-ramp segment time (hour/min). (setting range: 00.00~99.59)
r n 3S	Third soak time	Third soak segment time (hour/min). (setting range: 00.00~99.59)
S U 4	Fourth target value	Fourth-ramp target value. (setting range: 0~100%FS E.U.)
r n 4r	Fourth ramp time	Fourth-ramp segment time (hour/min). (setting range: 00.00~99.59)
r n 4S	Fourth soak time	Fourth soak segment time (hour/min). (setting range: 00.00~99.59)
P-on	Power-on start	Ramp/soak power-on start command. (setting range: NO/YES)
P	Proportional band	(setting range: 0.0~999.9%)
hYS	2-point operation hysteresis	(setting range: 0~100%FS E.U.)
∫	Integration time	(setting range: 0~320 seconds)

Display	Name	Description
d	Derivative time	(setting range 0.0~999.9 seconds)
C o o L	Control output2 porportional band coefficient	Control output 2 proportional band coefficiency. '0' for 2-point operation. (setting range: 0.0~10.0)
db	Dead band	Control output 2 shift value. (setting range: -50~50%)
R r	Anti-resetting wind up	The integration range is set. (setting range: 0.0~100.0% D.E.U.)
r R n	Manual resetting value	MV shift. (setting range: -100.0~100.0%)
R L i f	Types of alarm-1	Dedicated to loop/heater disconnection, 1-3 type, 1-2 type, 1-1 type, not displayed unless alarm 1 is provided.
R L 1 i	Alarm 1-1 set point	Set point of Alarm 1-1. (setting range: 0~100%FS E.U.)
R 1 i h	Alarm 1-1 hysteresis	Hysteresis for alarm 1-1. (setting range: 0~100% FS D.E.U.)
R L 1 2	Alarm 1-2 set point	Alarm 1-2 set point. (setting range: 0~100%FS E.U.)
R 1 2 h	Alarm 1-2 hysteresis	Alarm 1-2 hysteresis. (setting range: 0~100%FS D.E.U.)
R L 1 3	Alarm 1-3 set point	Alarm 1-3 set point. (setting range: 0~100%FS E.U.)
R 1 3 h	Alarm 1-3 hysteresis	Alarm 1-3 hysteresis. (setting range 0~100%FS D.E.U.)
R L 2 f	Type of alarm-2	Dedicated to loop/heater disconnection, 2-3 type, 2-2 type, 3-1 type, not displayed unless alarm 2 is provided and setting is not made for alarm 2-1 and alarm 2.
R L 2 1	Alarm 2-1 set point	Set point of alarm 2-1. (setting range: 0~100% FS E.U.)
R 2 1 h	Alarm 2-1 hysteresis	Hysteresis for alarm 2-1. (setting range: 0~100%FS D.E.U.)
R L 2 2	Alarm 2-2 set point	Alarm 2-2 set point. (setting range 0~100%FS E.U.)
R 2 2 h	Alarm 2-2 hysteresis	Hysteresis for alarm 2-2. (setting range: 0~100%FS D.E.U.)
R L 2 3	Alarm 2-3 set point	Alarm 2-3 set point. (setting range: 0~100%FS E.U.)
R 2 3 h	Alarm 2-3 hysteresis	Alarm 2-3 hysteresis. (setting range: 0~100%FS D.E.U.)
L o o P	Loop break alarm set point	Loop break alarm detection time (min/sec). (setting range: 00.00~99.59)
h b - A	Heater break alarm set point	Heater break alarm detection current. (setting range: 1~50A)
C r	Heater current	Heater current monitor. No setting. (display range: 0~50A)
P U F	PV type	Input type, presence or absence of decimal point, and °C/°F specified.
P U F	Full scale	Scaling full scale. (setting range: -1999~9999)
P U b	Base scale	Scaling base scale. (setting range -1999~9999)
P U d	Scaling decimal point location	Scaling decimal point location (range: "0" (none), "1", "2")

Parameter List (Cont'd)

Display	Name	Description																		
FF	Input filter	Input filter time constant. Setting 0.0 turns filter off. (setting range: 0.0-900.0 seconds)																		
SFF	PV shift	PV shift value. (setting range: -50-50%FS D.E.U.)																		
S \bar{u} -h	Set point high limit	Set point high limit. (setting range: 0-100%FS E.U.)																		
S \bar{u} -L	Set point low limit	Set point low limit. (setting range: 0-100%FS E.U.)																		
r \bar{E} n F	Remote scaling full scale	The full scale for remote input scaling. (setting range: 0-100%FS E.U.)																		
r \bar{E} n b	Remote scaling base scale	The base scale for remote input scaling. (setting range: 0-100%FS E.U.)																		
CFrL	Control operation system Remote scaling base scale	Control operation algorithm selected. (setting range: PID/FUZY).																		
df	Control operation cycle time																			
r \bar{E} \bar{u} 1	Control output 1 direct/reverse operation selection	(setting range: REV/NORM)																		
r \bar{E} \bar{u} 2	Control output 2 direct/reverse operation selection	(setting range: REV/NORM)																		
f[-1	Control output 1 output proportion cycle time	(setting range: 1-120 seconds)																		
f[-2	Control output 2 output proportion cycle time	(setting range: 1-120 seconds)																		
n \bar{u} -h	MV high limit	(setting range: -3.0-103.0%)																		
n \bar{u} -L	MV low limit	(setting range: -3.0-103.0%)																		
b \bar{u} r n	Output setting in input abnormal	<table border="1"> <thead> <tr> <th>Setting</th> <th>Output 1</th> <th>Output 2</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Going on control</td> <td>Going on control</td> </tr> <tr> <td>1</td> <td>-3.0%</td> <td>-3.0%</td> </tr> <tr> <td>2</td> <td>103.0%</td> <td>103.0%</td> </tr> <tr> <td>3</td> <td>-3.0%</td> <td>103.0%</td> </tr> <tr> <td>4</td> <td>103.0%</td> <td>-3.0%</td> </tr> </tbody> </table>	Setting	Output 1	Output 2	0	Going on control	Going on control	1	-3.0%	-3.0%	2	103.0%	103.0%	3	-3.0%	103.0%	4	103.0%	-3.0%
Setting	Output 1	Output 2																		
0	Going on control	Going on control																		
1	-3.0%	-3.0%																		
2	103.0%	103.0%																		
3	-3.0%	103.0%																		
4	103.0%	-3.0%																		
Rof	AO output type	PV, SV, or MV setting.																		
R \bar{o} -h	AO scaling full scale	AO output scaling full scale. (setting range: 0.0-100.0%)																		
R \bar{o} -L	AO scaling base scale	AO output scaling base scale. (setting range: 0.0-100.0%)																		
Sf no	Station no.	Transmission originating station number. (setting range: 1-31)																		

Auto Tuning

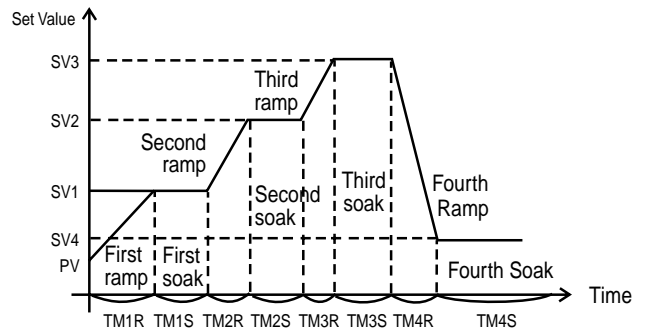
By Auto Tuning, the controller selects what it calculates to be the optimum PID and balance parameters for a particular process and stores them in memory for future use. The controller will not need to be re-auto tuned upon each power up, as long as the system requirements and characteristics remain the same. The auto-tune parameters selected are good only for the process for which it has been auto tuned. If the set point, input device, output device (load), or any portion of your system changes, auto tune must be initiated again.

These factors can upset the auto tuning function:

1. The system is affected by process disturbances external to the control loop. Adjacent heater zones, changing material levels, and exothermic reactions are examples of process disturbances which are external to the control loop.
2. The system is dynamic. The process variable changes quickly. Certain pressure and flow applications would be characterized as very dynamic. Because of how the auto tune function is performed, a dynamic system, when auto tuning, would create considerable overshoot that could jeopardize the process.
3. The system is insulated and cannot cool down in a timely manner. The system retains heat. With such heating systems, the auto tuning function would take a long time to complete and with questionable results.

Ramp / Soak

The Ramp / Soak program automatically changes the set point value in accordance with a preset pattern, as shown in the figure. This device allows a maximum of four ramp and four soak segments. Ramp is the region in which SV changes toward the target value. Soak is the region in which the target value is maintained.



Ramp: Region in which the set point changes toward the target value.
Soak: Region in which the set point stays unchanged at the target value.

Note 1: Do not use the auto-tuning function while the ramp soak function is ON. ("ProG" is not "oFF.")

Note 2: The ramp soak command "ProG" will be set off, once the power supply is switched "oFF."

Heater Break Detection

The Heater Break option is used to detect heater break conditions and to energize an alarm relay when such conditions exist. In most cases, the options is used to detect the failure of one or more zones in a multi-zoned heater where all individual resistive heater zones are wired in parallel. Failed heater zones would create cold spots in a system which could hamper the process and even ruin the product. If cold spots in a system are a problem, the Heater Break option is an effective way of alerting the operator of a heater break condition, a cause of cold spots.

If during normal operation, the output (MV value) to switch to less 0% or more 100% and the input (PV value) nor moved more than 63%FS elapsed the time defined in "LoopP" parameter, then the "LPbr" message will appear and loop break alarm turns ON.

This device provides the heater current monitor function (for only the heater break option-fitted type). The current value is displayed in parameter "CT". This can be used as reference when determining the heater break detection current value.

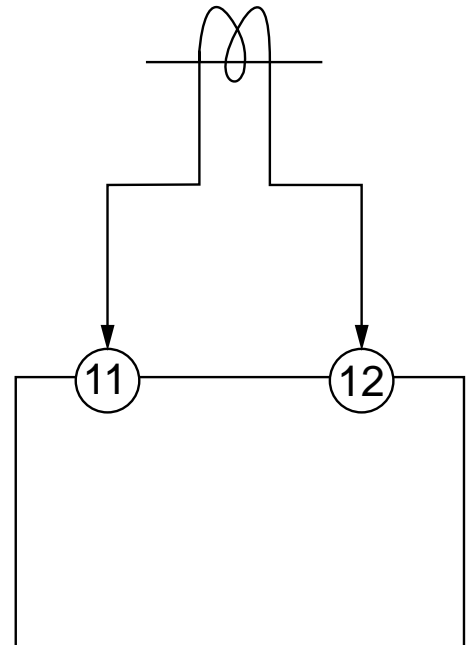
The heater current measured value is read only when the control output-1 relay is on. When that relay is off, the value at the point immediately before the relay is set off is retained.

Detection of the heater current requires the following current transformer,

Heater break alarm is not available in the following cases: Control output 1 is SSR drive output or current output, control output 1 is relay (1c contact) output and the heater is ON on the contact N.C. side, or the output proportion cycle time of control output 1 is lower than 20 seconds.

Wiring and Setting:

1. Thread the hot lead going to the heater through the donut of the current sensing transformer. Connect the wires of the current transformer to the current transformer input terminals in the back of the controller.
2. Set Heater Break alarm set point parameter, "Hb." With the current transformer connected and the heater in operation (output energized), change the Heater Break Alarm setting from the maximum current setting for the particular current transformer being used to a lower value. Allow 3 seconds or more between setting changes. Continue lowering the setting until the relay is energized and the "Hb" status indicator is lit. This is the maximum current usage of the heater. Using the same procedure, find the maximum current usage of the heater minus one zone. Set the set point in between the two current readings. In this way, the operator knows if one or more zones fail because the current sensed will only be below the Heater Break Alarm setting if one or more zones fail.



RS-485 - Digital Output

Digital transmission function: Using the RS-485 communication, this function allows remote control for parameter settings and process monitoring. This employs the multi-drop system, and allows connection of a maximum of 31 units. Contact Simpson Electric for Transmission Protocol Specifications.

Operation procedure

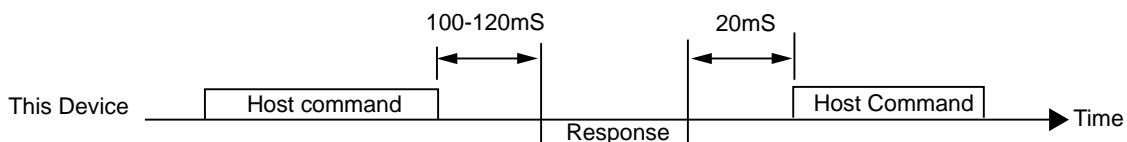
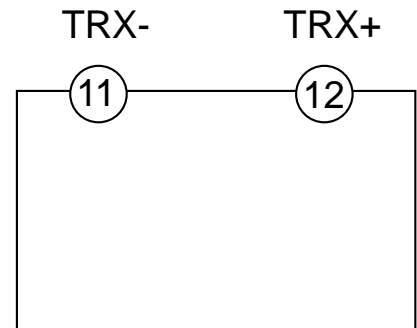
Perform transmission in accordance with the Transmission Protocol Specifications. The available commands are for polling (parameter read), selecting (parameter write), and control (parameter save). Communication settings are fixed as described below. Make sure that the host side has the same settings.

Transmission signal RS-485
 Transmission rate 9600 baud
 Parity Odd
 Stop bit 1 bit

Notes:

1 For the control (parameter save) operation, a maximum of 5 seconds is required for the interval from receiving a command to completing the operations. Before ending of that interval, never turn the power for this device off. (otherwise, the memory contents are destroyed and disabled).

2. This unit requires a time length of 100 to 120 mS as the interval from completing reception of a command from the host before returning the response. It also requires 20mS before it is able to receive the next command after completing a reply.



Analog Output

Analog output allows you to output data in a real-time transfer of measured value (PV), setting value (SV), or manipulated value (MV) values with DC1-5V signals. AO output can be scaled.

Set the parameter to the desired output signal type, measured value, setting value, or manipulated value. Set the scale high limit and scale low limit to the signal type values (%) corresponding to the 5V and 1V output respectively of AO. (Percentage against the input range is set when the signal type is PV or SV, the % value with respect to the input range is set.)

Example:

Input...K thermocouple, 0-800°C range

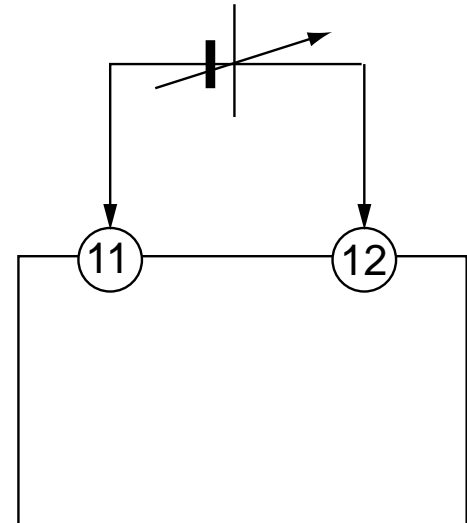
1-5V signals are to be output when PV values are at 200-600°C.

Kind of input	Description	
Thermocouple	J	<ul style="list-style-type: none"> • Cold junction compensation comprised • Burn-out circuit built in
	K	
	R	
	B	
	T	
	E	
	T	
	S	
	N (Nichrosi-Nisil)	
	U	
	WRe5-26 (ungsten rhenium)	
	PL-II (Platinel)	

Remote Set Point

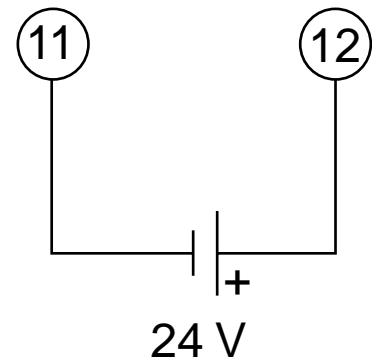
This function is used to input a signal of 1 to 5 VDC externally, and changes and controls the set value (SV) according to the input voltage. This is useful for cascade control, etc.

Set value	The set value by remote input is displayed during remote control. (The keys on the front panel are disabled during remote control.)
Remove control set value	The set value (SV) by remote input, regardless of the current mode. This parameter cannot be changed.
Scale limits	The remote set values corresponding to the remote input 5V and 1V as the parameter scale high limit and scale low limit respectively. (0 to 100% FS E.U.)



Excitation

Optional 24VDC Excitation power supply is available on the P22. This excitation power can be used to energize many common types of transducer and transmitters by using the excitation power from the Phoenix II, you do not have to set up an external power source for your accessories.



Ordering Information

Your Phoenix II PID Controller can be configured by making an entry for each box.

Model P22

P22 — — — — — — —

Unit Size 1/16 DIN 1	Power Supply 100-240 VAC 0	Input Signal Universal Input (Thermocouple/RTD/ Current/Voltage) 0	Control Output 1 Relay 1 SSR 2 4-20mA 3	Control Output 2 None 0 Relay 1 SSR 2	Alarm Options None 0 1 Relay 1 2 Relays 2 HBD/1 Relay 3 HBD/2 Relays 4	Options None 0 Dual Set Point* 1 Ramp/Soak* 2 RS-485* 3 RS-485Ramp/Soak* 4 Re-Transmission* 5 Re-Transmission & Ramp/Soak* 6 Remote Setpoint* 7 Excitation* 8
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* Not available with heater break detection or control output 2

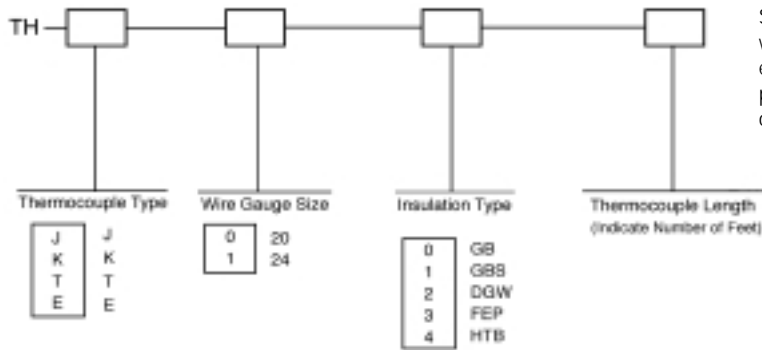
Accessories

Insulated Thermocouples

Simpson thermocouples are available in custom lengths per your application. Calibration type, wire gauge, insulation type, and length are determined by your specs, and entered into the following ordering diagram.

Thermocouple Ordering Information

(Termination End: HJ-Beaded, CJ-Solid Bare Wire)



Thermocouple Probes (Quick Disconnect)

Simpson offers "Quick Disconnect" style thermocouples which include a probe and an ANSI color coded jack and plug. Each 12 inch thermocouple probe is compacted with MgO insulation, with 316 stainless steel and 0.188 inch diameter outer sheath. Extra plugs and jacks are sold separately. See the table below for ordering information.

Thermocouple Probes (48" Lead Wire)

Simpson's transition joint thermocouple probes are constructed with MgO insulation. The probe includes 48" of Teflon® coated thermocouple wire and stripped leads. An adjustable compression fitting is available separately. See the table below for ordering information.

Thermocouple Insulation Types Available

Type	T/C Type	Gauge Size
GB (Glass Braid)	J, K, T	20, 24
GBS (Glass Braid with Stainless steel wrap)	J, K	20
DGW (Double Glass Wrap)	J, K	24
FEP (High temperature plastic equal to Teflon® -registered trademark of Dow Chemical)	J, K	20
HTB (High Temperature Glass Braid)	E	20

Catalog Numbers / Identification

Type	ANSI Color Code	Quick Disconnect Assembly	48 inch Lead Wire Assembly	Plug Only	Jack Only
J	Black	21238	21242	21245	21249
K	Yellow	21239	21243	21246	21250
T	Blue	21240	-----	21247	21251
E	Purple	21241	-----	21248	21252
RTD	-----	-----	21244	-----	-----

Note: 3/16" compression fitting is available separately for assemblies. Catalog Number 21253.