



Programmable Thermostat

WARNING

- Ensure that the electrical power circuit and control output circuit is suitably protected and fused for your application.
- Ensure all electrical connections are secure and checked before any power to the device is turned on. Failure to connect correctly may cause damage to your controller or system, electrical shock or fire.
- Use this instrument only within the scope of its specification otherwise it may cause damage to your controller or system, electrical shock or fire.
- Do not use this instrument in environments subject to flammable or explosive gas.
- Do not touch high voltage terminals, such as power supply terminals. Always isolate the power supply before attempting any adjustments to the wiring terminals.
- Never disassemble, repair or modify this instrument. This will invalidate any warranty and could lead to damage to your controller or system, electrical shock or fire.

Technical Data

Dimensions: 75mm x 33mm x 70mm

Sampling time: 2 times/sec.

Mounting: panel-mounted.

Panel cutout: 71mm x 29mm

Multi input: K/J/Pt100/4-20mA

Output:

TS322 one relay (16A/230V) output and one alarm output (3A/250V)

TS322S one SSR (14V DC) output and one alarm output (3A/250V)

Control method: ON/OFF control

Accuracy: 0.5% F.S.

Display: 3 digits 7 segments LED display

Power consumption: 3VA max. (Mod. 230V)

Power supply: 21-30VDC or 110-240VAC (Selected when ordering)

Working environment: 0-50°C

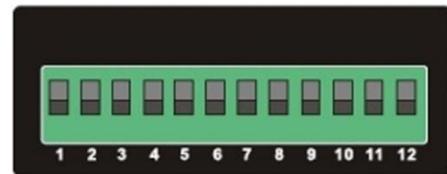
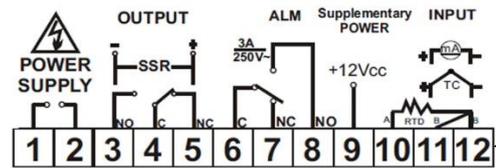
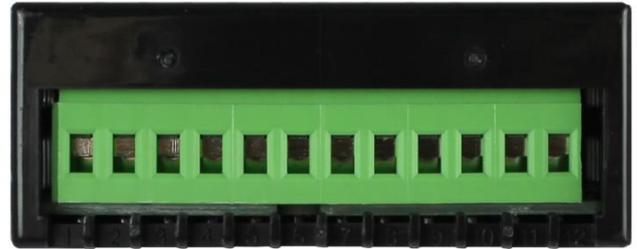
Operating & Storage humidity: less than 80%RH (non-condensing)

Order Codes

TS322	One relay output, one alarm, 230V AC supply
TS322S	One SSR output, one alarm, 230V AC supply
TS322A	One relay output, one alarm, 21-30V DC supply
TS322SA	One SSR output, one alarm, 21-30V DC supply

Wire Connections

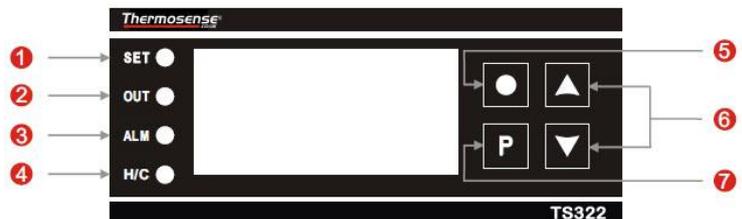
	Sensor Input Range		
	PT100 (°C)	Type K (°C)	Type J (°C)
Min	-199	-30	-30
Max	+654	+999	+999



When using 4-20mA Input, use a precision 250 Ω resistor across terminals 11 and 12 to generate 1-5V input

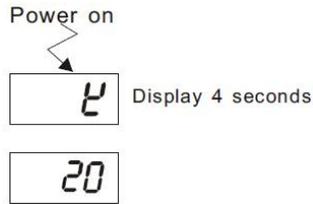
For 2 wire RTD, white lead 10, red lead 12 and link pin 11 and 12

Front Panel



- 1 SET - LED will be "ON" when the user is changing the set point.
- 2 OUT - LED will be "ON" when the Output Relay / SSR drive is active.
- 3 ALM - LED will be "ON" when the alarm relay is active.
- 4 H/C - LED will be lit **RED** when the control action is Heating and **GREEN** when the control action is Cooling.
- 5 Exit key Press this key to exit from parameter setting mode.
- 6 "UP" and "DOWN" Keys - Press the keys to choose the parameters and set the values. Press the "UP" key to show the software version.
- 7 Function key Press this key 3 seconds to enter set point setting mode.
Press this key 6 seconds to enter parameters setting mode.

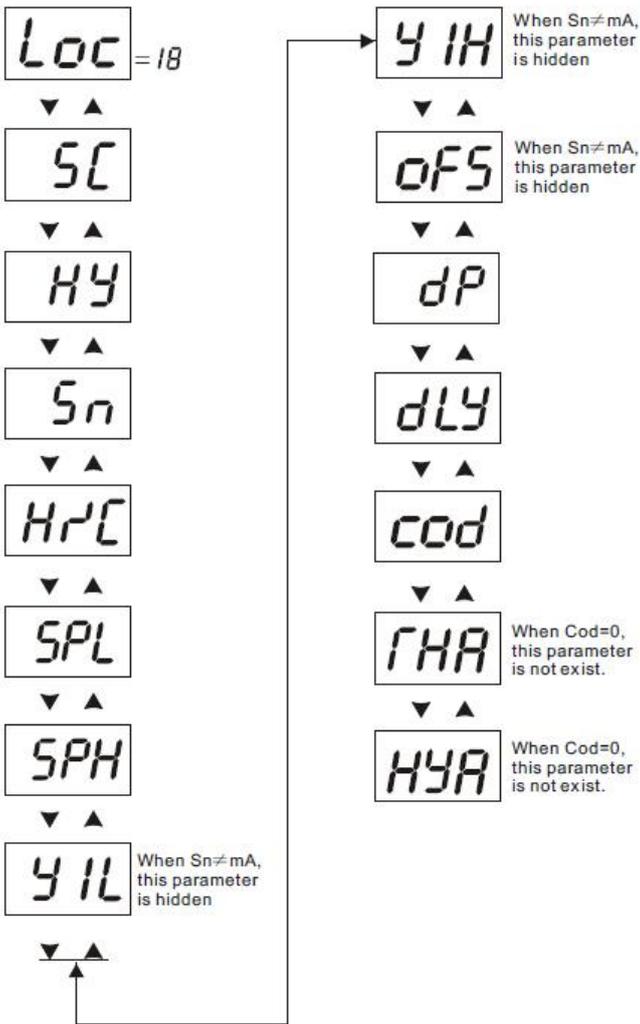
Operation



Press the function key **[P]** for 3 seconds to enter the set point setting mode. Then you can adjust the value with the up and down keys **▲ ▼**.

Press the function key **[P]** for 6 seconds, then the window will display the following parameters. Press the up and down keys **▲ ▼** to choose the parameters.

Note: Only when "Loc"=18 are all parameters programmable. When exiting the program mode or after 10 sec of no key changes, "Loc" will default to "00"



- Sn** Input signal selection. Press up or down key to choose the corresponding input sensor. Range: K; J; Pt; mA Default: K
- HPC** Heating and cooling control action selection. Press up or down key to choose the control action. Range: heating H and cooling C Default: H
- SPL** Measurement low range Range: -99 to 999°C Default: 0
- SPH** Measurement high range Range: -99 to 999°C Default: 900
- Y1L** Display value When the input signal is mA, Y1L is the value for 4mA or 0mA. **When Sn ≠ mA, this parameter is hidden**
- Y1H** When the input signal is mA, Y1H is the value for 20mA. **When Sn ≠ mA, this parameter is hidden**
- OFS** Selection of mA input range YES = 4-20mA, NO = 0-20mA **When Sn ≠ mA, this parameter is hidden** Default: YES
- dP** Decimal point dp=0, decimal point is inactive. dp=1, decimal point is active. Default: 0
- dLY** Delaytime of main control output Unit: Second OUT indicating lamp should be light when the device is in delay time. Default: 0
- cod** Alarm mode

0 No alarm	2 Deviation high and low alarm
1 Deviation high alarm	5 Deviation low alarm
3 Process high alarm	7 Process low alarm
6 Band alarm	
- rHA** Alarm value
- HYA** Dead band of Alarm Note: When alarm code is C (Deviation high and low alarm) and D (Band alarm), this parameter does not exist.

Parameter Descriptions

- Loc** Lock parameter. The first parameter in the list. The default value is 0. To set following parameters, please set "Loc"=18.
- SC** Compensation of the measuring value. User can set this parameter when there is a difference between measuring value and the real temperature. Range: -19.9 to 20 degrees. Default: 0
- HY** Dead band of the control output. For example: HY=5; SV=100; then the controller will start heating when the SV=95; and stop heating when SV=105. Range: 1-50 degrees. Default: 1

Error Occurrence

- HH** This code will be displayed when the temperature is higher than the high limit of input sensor.
- LL** This code will be displayed when the input sensor crashed or the temperature is lower than the low limit of input sensor.

Typical wiring layout for 4-20mA input signal with external loop power supply and mA transmitter as source

