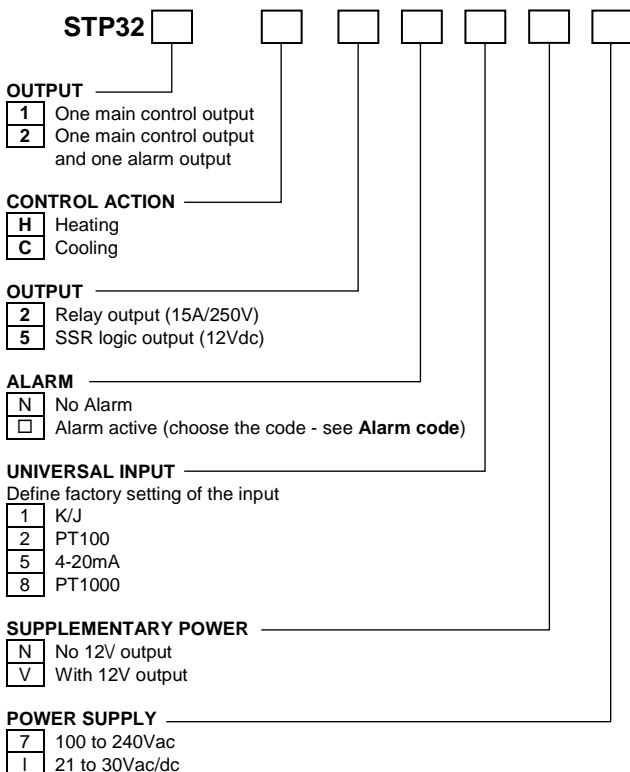# STP321
STP322

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: **STP321**, one main output (Relay or SSR drive – 12Vdc)
           STP322, one main output and one alarm output (3A/250V)
Control method: ON/OFF control
Accuracy: O.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 Code

Please check whether the delivered product is as specified by referring to the following model code list. Please specify the model code when you place the order.
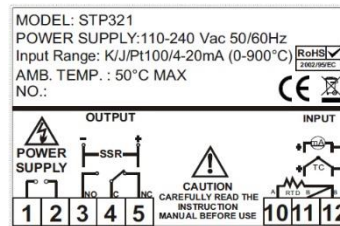
STP32☐   ☐ ☐ ☐ ☐ ☐ ☐

OUTPUT
1	One main control output
2	One main control output and one alarm output

CONTROL ACTION
H	Heating
C	Cooling

OUTPUT
2	Relay output (15A/250V)
5	SSR logic output (12Vdc)

ALARM
N	No Alarm
☐	Alarm active (choose the code - see **Alarm code**)

UNIVERSAL INPUT
Define factory setting of the input
1	K/J
2	PT100
5	4-20mA
8	PT1000

SUPPLEMENTARY POWER
N	No 12V output
V	With 12V output

POWER SUPPLY
7	100 to 240Vac
I	21 to 30Vac/dc

Alarm code

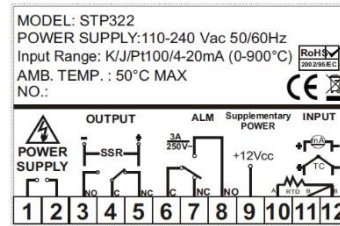|			
A	Deviation high alarm	B	Deviation low alarm
C	Deviation high and low alarm	D	Band alarm
H	Process high alarm	J	Process low alarm

Wire Connection

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

MODEL: STP321
POWER SUPPLY:110-240 Vac 50/60Hz
Input Range: K/J/Pt100/4-20mA (0-900°C)
AMB. TEMP. : 50°C MAX
NO.:

OUTPUT   INPUT
POWER SUPPLY
1 2 3 4 5   CAUTION CAREFULLY READ THE INSTRUCTION MANUAL BEFORE USE   10 11 12
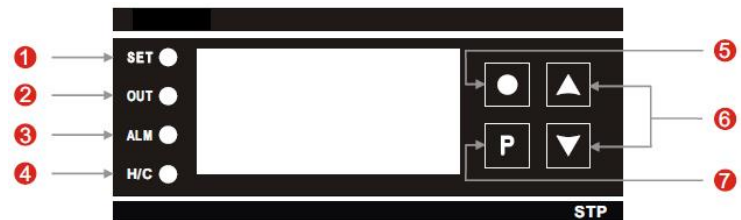
N.B. When using 4-20mA Input, use a precision 250 Ω resistor across terminals 11 and 12 to generate 1-5V input

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

MODEL: STP322
POWER SUPPLY:110-240 Vac 50/60Hz
Input Range: K/J/Pt100/4-20mA (0-900°C)
AMB. TEMP. : 50°C MAX
NO.:

OUTPUT   ALM   Supplementary POWER   INPUT
POWER SUPPLY   3A 250V   +12Vcc
1 2 3 4 5 6 7 8 9 10 11 12

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

Front Panel

① SET
② OUT
③ ALM
④ H/C
⑤ ⑥ ⑦

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** **P**

Press this key 3 seconds to enter set point setting mode.

Press this key 6 seconds to enter parameters setting mode.
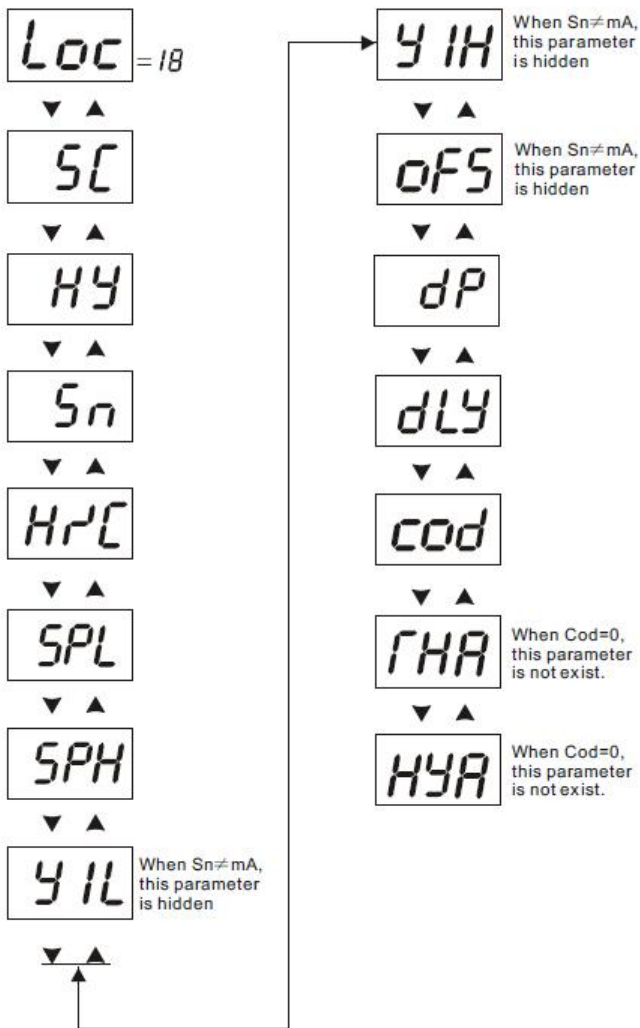
Operation

Power on

L Display 4 seconds

20

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"

Loc =18
▼ ▲
SC
▼ ▲
HY
▼ ▲
Sn
▼ ▲
HrC
▼ ▲
SPL
▼ ▲
SPH
▼ ▲
Y1L — When Sn≠mA, this parameter is hidden
▼ ▲

Y1H — When Sn≠mA, this parameter is hidden
▼ ▲
oFS — When Sn≠mA, this parameter is hidden
▼ ▲
dP
▼ ▲
dLY
▼ ▲
cod
▼ ▲
rHA — When Cod=0, this parameter is not exist.
▼ ▲
HYA — When Cod=0, this parameter is not exist.

Parameters Description

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

Sn — Input signal selection. Press up or down key to choose the corresponding input sensor. Range: K; J; Pt; mA. Default: K

HrC — 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.

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

External Power Supply 240Vac Input   STP321 4-20mA Input   4-20mA Transmitter Source

+   -

12-30Vdc Loop power   -   +

11(+)   12(-)

250 Ω

-   +