Datasheet
Temperature meter ST300

Introduction

The ST300 features a PT1000 sensor and a transmitter. The PT1000 detects medium temperature fluctuations, which the transmitter then converts into a standard industrial output signal.

Characteristics

All metal housing

330° rotatable display

4-bit display

4…20mA / 0…5V + alarms output

Applications

Hydraulic and lubrication system

Cooling / Heating system

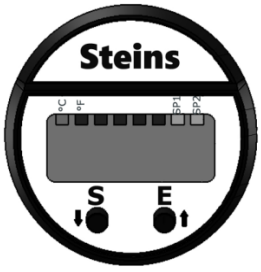
Oil and Gas

Water / Water treatment

Specifications

Measuring range	-58…392°F / -50…200°C (higher temperature available on request)
Power	12…30 VDC
Non-load current consumption	<30mA @ 24VDC
Current output	3-wire 4…20mA
	Load resistance: ≤ 0.5 KΩ
	Linearity ≤ 0.5% F.S.
Voltage output	3-wire 0…5V
	Load resistance: ≥ 10 KΩ
	Linearity ≤ 0.5% F.S.
Alarm output	Push-Pull (PNP / NPN), NC, NO programmable
	Output current < 500mA
	Response time: ≤ 10 ms
	Voltage drop: < 1V
	Accuracy: 0.5% F.S.
Wiring protection	Reverse polarity, Over-voltage, Short-circuit
Display	4-bit digital LED
Accuracy	0.5% of reading
Temperature	Medium temperature: -60…390°F / -50…200°C
	Ambient temperature: -40…185°F / -40…85°C
	Storage temperature: -40…210°F / -40…100°C
Probe pressure rating	200 bar (higher avaliable for customization)
Probe diameter	6 mm
	8 mm
Material	Display housing: zinc alloy
	Body: SS 304
	Wetted parts: SS 316
Protection class	IP65
Electrical connection	5-pin M12 x 1
Process connection	NPT1/4"
	NPT1/2"
	G1/4"
	G1/2"

Panel



Keys

keys	Function
S + E	Press and hold for 3 seconds to enter setting mode / Confirm
S	Shift menu down / change a setting value
E	Shift menu up / move cursor

Menus

Menus	Description	Options
unit	Display unit	°F / °C
SP1	Switch 1 set point	2%...100% of measuring range
rP1	Switch 1 reset point	0…98% of measuring range
out1	Switch 1 output mode	Hno / Hnc / Fno / Fnc*
SP2	Switch 2 set point	2%...100% of measuring range
rP2	Switch 2 reset point	0…98% of measuring range
out2	Switch 2 output mode	Hno / Hnc / Fno / Fnc*
Sfun	Switch output type	PnP / nPn
Afr	Analog output lower limit	0…75% of measuring range
Ato	Analog output upper limit	25%...100% of measuring range
Aout	Analog output range	0…20mA / 4…20mA
dAp	Damping of switching output	0…8s
Sto	Save	YES / NO

*****

Hno - Hysteresis normally open

Hnc - Hysteresis normally close

Fno - Window normally open

Fnc - Window normally close

Others	Description
OL	Higher than upper limit alerting
UL	Lower than low limit alerting

Note:

1) The difference between set point and reset point must be at least 2% of measuring range, or one of them will be adjusted automatically.

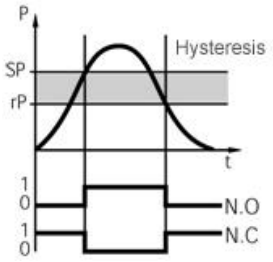
2) The difference between analog output upper limit and lower limit must be at least 25% of measuring range, or it will be adjusted automatically.

Output mode - Window / Hysteresis

Hysteresis

Hysteresis is used to have a stable output if the temperature fluctuates around set point.

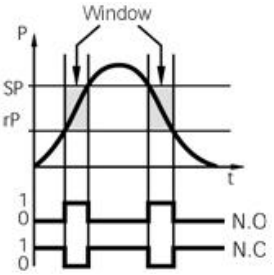
Use NC (normally closed) as example:
The Hysteresis(SP-rP) is shown as gray area in right diagram.
For rising temperature, switch opens when temperature is higher than set point (SP).
For falling temperature, switch closed only when temperature is lower than reset point (rP).



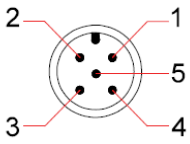
Window

Window is used to monitor whether the temperature is in a certain range. Alerting will be activated if the temperature is out of the range.

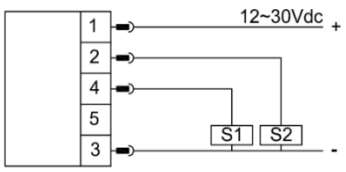
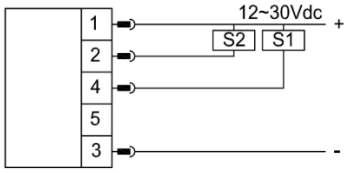
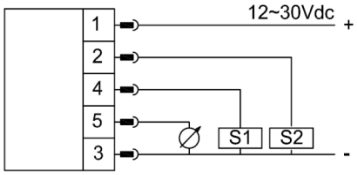
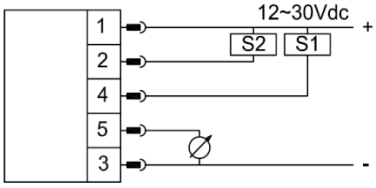
Use NC (normally closed) as example:
The window range is shown as gray area in right diagram.
If temperature is inside the range of set point (SP) and reset point (rP), switch is closed.
If temperature is high than SP or lower than rP, switch opens.



Wiring

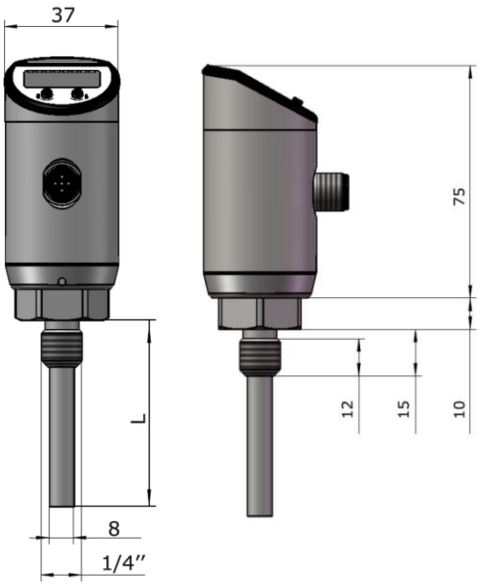


Signal	Pin	Color
Power +	1	Brown
Power -	3	Blue
Alarm S1	4	Black
Alarm S2	2	Wite
Analog Output (4…20mA / 0…5V)	5	Gray

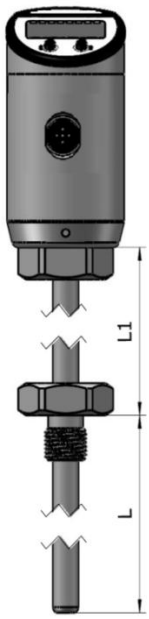
PNP	NPN
 2 x PNP	 2 x NPN
 2 x PNP + Analog	 2 x NPN + Analog

Dimensions in mm

Integrated transmitter



Medium temperature ≤ 250°F (125°C)



High temperature model
Medium temperature > 250°F (125°C)

Temperature upper limit	L1	L
250°F (125°C)	0 mm	see order code for details
390°F (200°C)	50 mm	

Order Code

Example: ST300-T33A8L25N14

1. Model

ST300	Temperature sensor ST300

2. Measuring range

T1	-60…30°F (-50…0°C)
T2	-60…120°F (-50…50°C)
T3	30…120°F (0…50°C)
T4	30…175°F (0…80°C)
T5	30…210°F (0…100°C)
T6	30…250°F (0…120°C)
T7	30…300°F (0…150°C)
T8	30…390°F (0…200°C)
	Other range on request

3. Output signal

2S	2 switching output
3A	4…20mA + 2 alarms
3V	0…5V + 2 alarms

4. Probe diameter

6	Ø6
8	Ø8 (standard)

5. Probe length

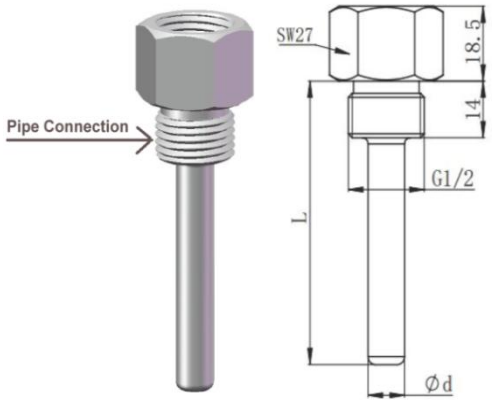
L25	25 mm
L50	50 mm
L100	100 mm
L150	150 mm
L250	250 mm
L350	350 mm
	Thread length is included, see dimensions.

6. Process connection

N14	NPT1/4" male thread
N12	NPT1/2" male thread
G14	G1/4" male thread
G12	G1/2" male thread

7. Thermalwell (optional)

PG12	G1/2" male thread
PN12	NPT 1/2" male thread
	Select the thread for pipe connection



Thermalwell

Accessory 1 - power/signal cable with socket

1. Connecting cable with socket

ET05-	5-pin M12 x 1 connecting cable

2. Material

PU	Material: PUR

3. Length

02	6.5ft / 2m (default)
05	16.5ft / 5m

4. Type

R	Regular cable
S	Shielded cable

5. Connector

G	Straight socket
W	Angled socket

Accessory 2 - Welding socket

1. Model	
TT01-	Welding socket

2. Thread	
N14	Fitting thread: 1/4" NPT thread
G14	Fitting thread: 1/4" G thread
N12	Fitting thread: 1/2" NPT thread
G12	Fitting thread: 1/2" G thread