

SMART- Series Temperature Transmitter

ISTT-SMART Universal Temperature Transmitter with HART-protocol for converting various input signals into a scalable 4 to 20mA analogue output signal.



Application areas

- Smart Temperature transmitter with HART- protocol for converting various input signals into a scalable 4 to 20 mA analogue output signal
- Input
 - Resistance thermometers (RTD)
 - Thermocouples (TC)
 - Resistance transmitters (Ω)
 - Voltage transmitters (mV)



Performance

- Universal settings with HART-protocol for various input signals
- 2 wire technology, 4 to 20mA analogue output
- High accuracy in total ambient temperature range
- Galvanic isolation
- An internal temperature sensor for active temperature compensation
- Wide voltage supply range
- Customer specific measurement range settings
- Simple and user friendly software
- Multiparametric backlight rotatable LCD Display

Technical data

Input

	Type	Measurement ranges	Min.meas. Ranges
Resistance thermometer(RTD)	Pt100 Pt500 Pt1000	-200°C to 850°C(-328°F to 1562°F) -200°C to 250°C(-328°F to 482°F) -200°C to 250°C(-328°F to 482°F)	10K 10K 10K
	Cu50 Cu100	-50°C to 150°C (-58°F to 302°F) -50°C to 150°C (-58°F to 302°F)	10K 10K
	*Ni100 *Ni500 *Ni1000	-60°C to 180°C (-76°F to 356°F) -60°C to 180°C (-76°F to 356°F) -60°C to 150°C (-76°F to 302°F)	10K 10K 10K
Resistance transmitter	Resistance(Ω)	0 to 400Ω 0 to 2000Ω 0 to 10000Ω	10Ω 20Ω 100Ω
*α=5000ppm/K or 6180ppm/K Connection type: 2-, 3- or 4-wire connection Sensor current: 0.5 mA			
Thermocouples(TC)	B(PtRh30-PtRh6)	0 to 1820°C(32 to 3308°F)	500K
	E(NiCr-CuNi)	-270 to 1000°C(-454 to 1832°F)	50K
	J(Fe-CuNi)	-210 to 1200°C(-346 to 2192°F)	50K
	K(NiCr-Ni)	-270 to 1372°C(-454 to 2501°F)	50K
	N(NiCrSi-NiSi)	-270 to 1300°C(-454 to 2372°F)	50K
	R(PtRh13-Pt)	-50 to 1768°C(-58 to 3214.4°F)	500K
	S(PtRh10-Pt)	-50 to 1768°C(-58 to 3214.4°F)	500K
T(Cu-CuNi)	-270 to 400°C(-454 to 752°F)	50K	
Voltage transmitters(mV)	Millivolt transmitter(mV)	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	5mV 5mV 6mV 20mV

Output

Output signal	4 to 20 mA
Signal on alarm	Underranging Linear drop to 3.8 mA
	Overranging linear rise to 20.8 mA
	Sensor break; sensor open-circuit 3.8 mA
Load	max.(V _{power supply} -7.5 V)/0.0208 A max.(V _{power supply} -10.5 V)/0.0208 A
Linearisation/transmission behaviour	Temperature linear, resistance linear, voltage linear
Galvanic isolation	U=2 KV AC (input/output)

Power supply

Supply voltage (polarity protected)	$U_s = 7.5$ to 45 VDC (without display) $U_s = 10.5$ to 45 VDC (with display)
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Performance characteristics

Response time	1 s		
Reference operating conditions	Calibration temperature: 23°C (73.4°F) ±5K		
Long term stability	≤0.05%/year		
Switch on delay	≤5s		
Influence of ambient	Negligible		
Load influence	Negligible		
Power supply influence	Negligible		
Self stability configuration	0 to 2%		
Filter configuring	0 to 160 μ A		
Resolution	0.3 μ A		
Maximum measured error		Type	Measurement accuracy
	Resistance thermometer RTD	Pt100, Ni100 Pt500, Ni500 Pt1000, Ni1000 Cu50 Cu100	0.2K or 0.08% 0.5K or 0.20% 0.3K or 0.12% 0.2K or 0.08% 0.3K or 0.12%
	Thermocouple TC	K, J, T, E N S, B, R	typ.0.5K or 0.08% typ.1.0K or 0.08% typ.2.0K or 0.08%
Maximum measured error		Type	Measurement accuracy
	Resistance transmitter(Ω)	0 to 400 Ω 0 to 2000 Ω 0 to 10000 Ω	±0.1 Ω or 0.08% ±1.5 Ω or 0.12% ±7.5 Ω or 0.20%
	Voltage transmitters(mV)	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	±20 μ V or 0.08% ±20 μ V or 0.08% ±30 μ V or 0.08% ±50 μ V or 0.08%

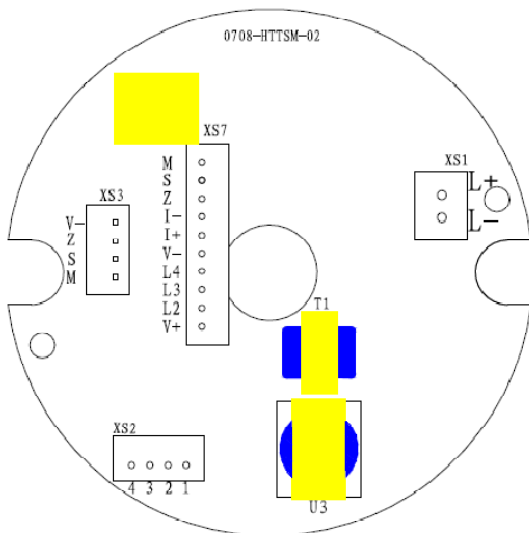
Environment conditions

Ambient temperature limits	-40 to 85°C (-40 to 185°F) Without display -20 to 70°C (-4 to 158°F) With display
Storage temperature	-40 to 100°C (-40°F to 212°F)
Condensation	Allowable
Degree of protection	IP 00
Shock and vibration resistance	4g/2 to 150 Hz as per IEC 60 068-26
Electromagnetic compatibility(EMC)	Interference immunity and interference emission according to GB/T17626.2-1998), compliance with IEC 61000-4-3:1995.

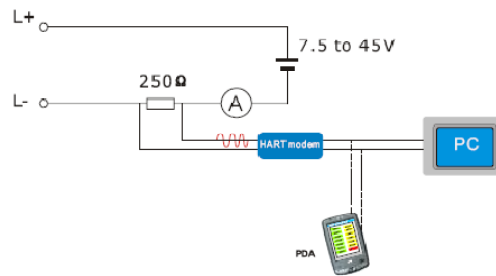
Others

Display Type	Visible range 32.5X22.5mm; 5-digit 7-segment main display, digit height 8mm, 8-digit 14 segment additional display, digit height 5mm; 52 bars meter with 2% resolution
Display Range	-19999-99999
Materials	Housing: ABS
Weight	Approx. 60 g(with display)

Electrical connections



A. Power supply: XS1



B. How to connect a sensor

