

# TMT 190B eHART head transmitter



Universal head transmitter for resistance thermometers (RTD), thermocouples (TC), resistance, voltage transmitters, for installation in a sensor head (Form B)

## Application areas

- Temperature head transmitter for converting various input signals into a scalable 4 to 20 mA analogue output signal
- Input
  - Resistance thermometer (RTD)
  - Thermocouple (TC)
  - Resistance transmitter ( $\Omega$ )
  - Voltage transmitter (mV)

## Performance

- 2 wire technology, 4 to 20 mA analogue output
- High accuracy in total ambient temperature range
- An internal temperature sensor for active temperature compensation (For T/C)
- Wide voltage supply range
- Expanded resistance input (max 2K $\Omega$ )
- Expanded voltage input (max 2K mV)

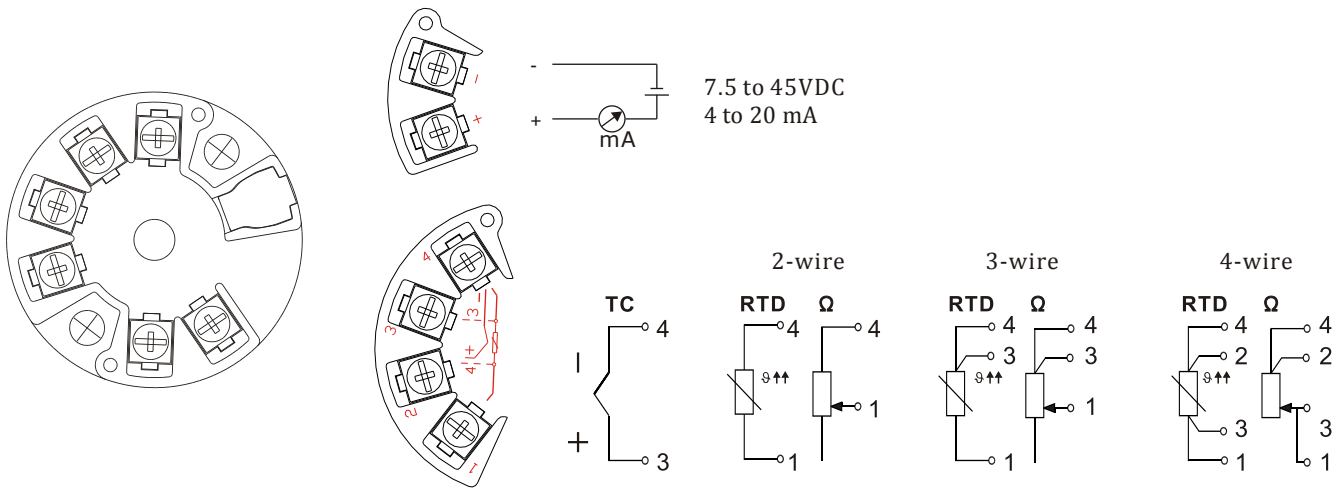
## Technical data

Power supply	
Supply voltage	7.5 to 45 VDC (without display), polarity protected
Output	
Output signal	4 to 20 mA
Signal on alarm	Underranging Linear drop to 3.8 mA
	Overranging linear rise to 20.5 mA
	Sensor break; sensor open-circuit 3.6 mA
Load	max. $(V_{\text{power supply}} - 7.5 \text{ V}) / 0.022 \text{ A}$
Linearisation/transmission behaviour	Temperature linear, resistance linear, voltage linear
Installation conditions	
Installation instructions	Installation angle: no limit
	Installation area: Connection head accord. To DIN 43729 Form B; TAF 10 field housing

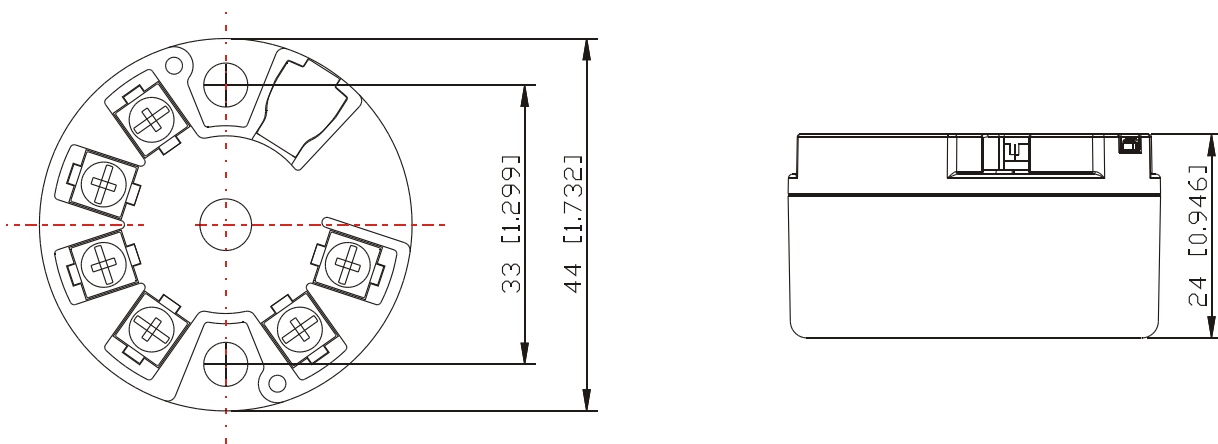
Input			
Input	Type	Measurement ranges	Min.meas.Ranges
Resistance thermometer(RTD)	Pt100	-200°C to 850°C (-328°F to 1562°F)	10K
	Pt500	▲ -200°C to 250°C (-328°F to 482°F)	10K
	Pt1000	▲ -200°C to 250°C (-328°F to 482°F)	10K
	Cu50	-50°C to 150°C (-58°F to 302°F)	10K
	Cu100	-50°C to 150°C (-58°F to 302°F)	10K
	*Ni100	-60°C to 180°C (-76°F to 356°F)	10K
	*Ni500	▲ -60°C to 180°C (-76°F to 356°F)	10K
	*Ni1000	▲ -60°C to 150°C (-76°F to 302°F)	10K
Resistance transmitter	Resistance(Ω)	0 to 400 Ω	10 Ω
		▲ 0 to 2000Ω	20 Ω
Connection type:2-,3- or 4-wiere connection			
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	5mV
		▲ -100 to 100mV	5mV
		▲ -100 to 500mV	6mV
		▲ -100 to 2000mV	20mV
▲ on request			
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 configurating	0 to 160 μ A		
Resolution	0.3 μ A		
Maximum measured error	Input	Type	Measurement accuracy
	RTD	Pt100, Ni100	0.2K or 0.08%
		Pt500, Ni500	0.5K or 0.20%
		Pt1000, Ni1000	0.3K or 0.12%
		Cu50	0.2K or 0.08%
Cu100		0.3K or 0.12%	
TC	K, J, T, E	typ.0.5K or 0.08%	
	N	typ.1.0K or 0.08%	
	S, B, R	typ.2.0K or 0.08%	
Ω	0 to 400 Ω	± 0.1 Ω or 0.08%	
	0 to 2000Ω	± 1.5 Ω or 0.12%	
mV	-10 to 75mV	± 20 μ V or 0.08%	
	-100 to 100mV	± 0 μ V or 0.08%	
	-100 to 500mV	± 0 μ V or 0.08%	
	-100 to 2000mV	± 0 μ V or 0.08%	

Environment conditions	
Ambient temperature limits	-40 to 85°C (-40°F to 185°F)
Storage temperature	-40 to 100°C (-40°F to 212°F)
Condensation	Allowable
Degree of protection	IP 00, IP66 (installed)
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.
Explosion	Intrinsically safe: Exia II CT4
Others	
Dimensions	Dia. 44 mm X 24 mm
Weight	Approx. 34g
Material	Housing: PC Potting: epoxy

### Electrical connections

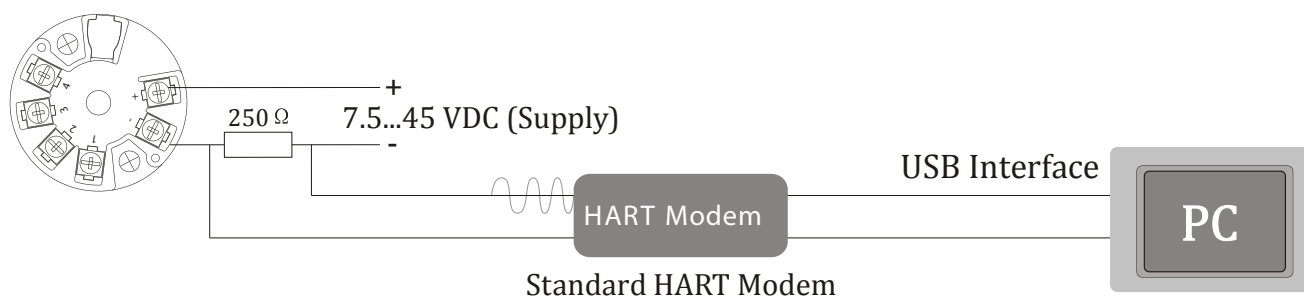


### Dimensions

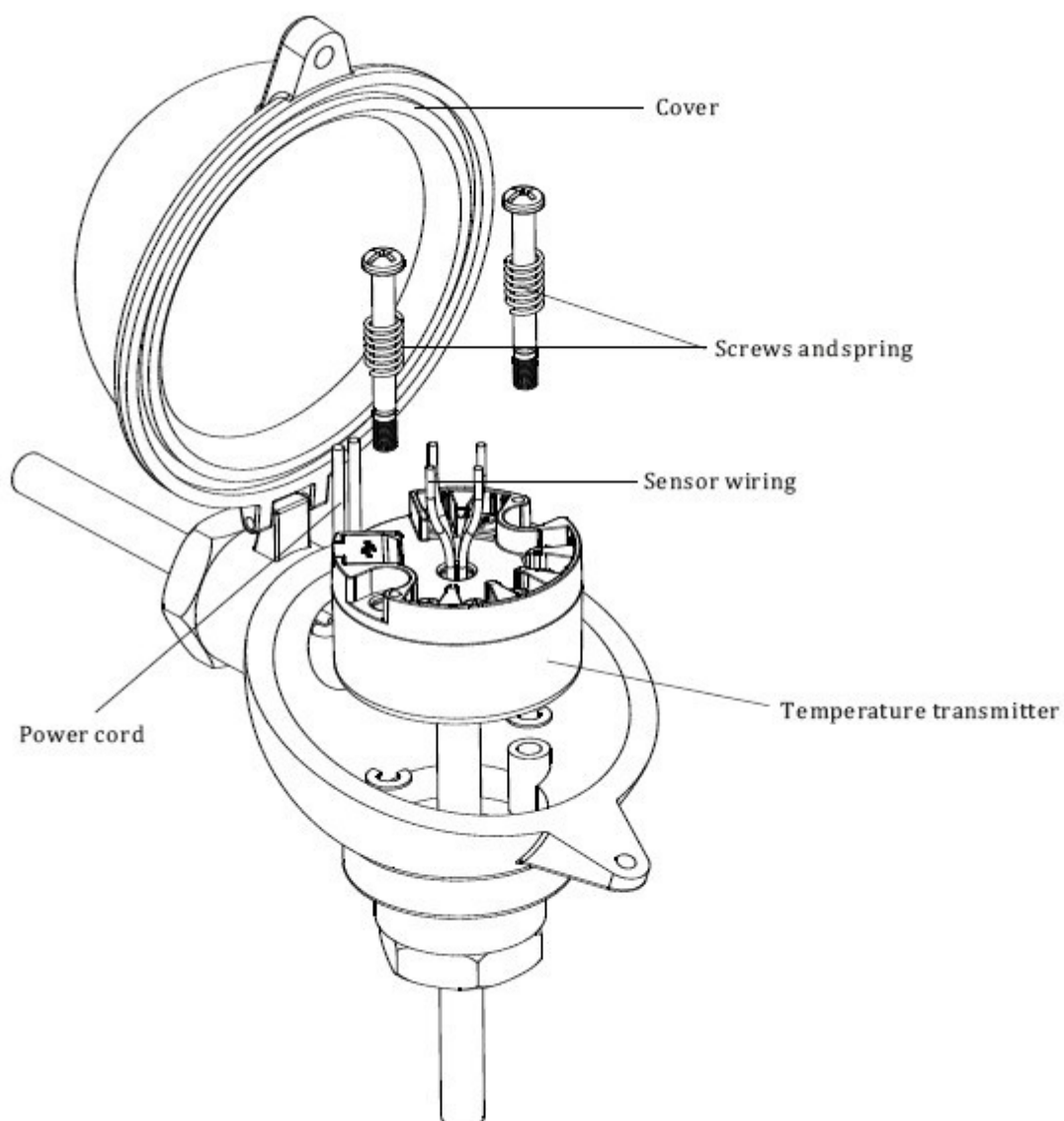


## How to programme

Transmitter with eHART -protocol



## Installation diagram



## Ordering code

				Certification	
		A		Version for non hazardous areas	
		B		NEPSI Ex iaCT4	
				Configuration transmitter connection	
		A		Standard factory configuration 3-wire	
		1		Configuration connection TC	
		2		Configuration connection RTD(2-wire)	
		3		Configuration connection RTD(3-wire)	
		4		Configuration connection RTD(4-wire)	
				Configuration temperature sensor	
		A		Standard factory configuration Pt100	
		1		Pt100 -200°C to 850°C (-328°F to 1562°F)	
		2		Pt500 -200°C to 250°C (-328°F to 482°F)	
		3		Pt500 -200°C to 250°C (-328°F to 482°F)	
		4		Pt1000 -200°C to 250°C (-328°F to 482°F)	
		5		Cu50 -50°C to 150°C (-58°F to 302°F)	
		6		Cu100 -50°C to 150°C (-58°F to 302°F)	
		7		Ni100 -60°C to 180°C (-76°F to 356°F)	
		8		Ni500 -60°C to 180°C (-76°F to 356°F)	
		B		Type B 0 to 1820°C (-32 to 3308°F)	
		E		Type E -270 to 1000°C (-454 to 1832°F)	
		J		Type J -210 to 1200°C (-346 to 2192°F)	
		K		Type K -270 to 1372°C (-454 to 2501°F)	
		N		Type N -270 to 1300°C (-454 to 2372°F)	
		R		Type R -50 to 1768°C (-58 to 3214.4°F)	
		S		Type S -50 to 1768°C (-58 to 3214.4°F)	
		T		Type T -270 to 400°C (-454 to 752°F)	
				Configuration	
		A		Standard factory configuration ( Pt100/3-wire/0 to 100°C )	
		B		Customised measurement range	
		C		Customised expanded configuration for TC ( see questionnaire )	
		D		Customised expanded configuration for RTD ( see questionnaire )	
TMT190B				Order code ( complete )	For example:TMT190B-AAAA