

Thermocouple and RTD (Pt100) Transmitters

TX250 Series



- ✓ Thermocouple and RTD Models Available
- ✓ Adjustable Span
- ✓ Non-Isolated
4 to 20 mA_{dc} Output
- ✓ Miniature Size
- ✓ Fits in NB1
Protection Head
- ✓ High Accuracy
- ✓ High RFI Immunity
- ✓ Dip-Switch Multi-range
- ✓ Low Cost

TX250 Series Thermocouple Input

The TX250 Series are non-isolated 2-wire transmitters which convert the thermocouple thermoelectric voltage into a standardized load-independent, 4 to 20 mA, process current.

The TX250 Series are housed in metal enclosures and fit into NB1 connection heads. The transmitter's enclosure provides excellent RFI immunity.

The transmitter calibration is set by 6 dip-switches located behind the top cover. There are 3 basic models which cover the various thermocouple Types. TX251 is for Types K, T and J; TX252 is for Type E and TX253 is for Type R and S.

Dip-switch arrays select the thermocouple Type, and set the "Zero" course level and the "Span" course range.

Zero and Span trimmers provide the fine tuning calibration. To scale the units in the field, calibration equipment is required.

TX254 RTD Input

The TX254 is a non-isolated 2-wire transmitter which converts the measuring signal of a 3-wire 100 Ω Pt RTD into a standardized load-independent, 4 to 20 mA, current which is linearly proportional to the measured temperature.



TX254 shown
actual size.

TX251 shown
actual size.

The TX254 transmitter is provided with excellent lead resistance compensation and Pt-100 linearization conforming to BS1904 and DIN 43760 characteristics ($\alpha = 0.00385$). The transmitter calibration is set by 6 dip-switches located behind the top cover.

3 dip-switches set the lower measured course temperature and the other 3 dip-switches set the measured course temperature span.

Zero and Span trimmers provide the fine tuning calibration. To scale the units in the field, calibration equipment is required.

General Specifications

Output Current:

4 to 20 mA, 28 mA limited

Supply Voltage: 10 to 36 V_{dc}
(24 V_{dc} recommended)

Supply Variation Effect:

<0.001%/1V change

Accuracy: Better than 0.1% of span

Load Resistance:

$R_{max} (\Omega) = (V_{supply} - 10)/0.02$

Temperature Stability:

<0.01% of span/1°C

Operating Temperature:

-20 to 70°C (-4 to 158°F)

Humidity: 5 to 95% RH, non-condensed

Housing: Diecast zinc alloy

Mounting Holes: 5 mm ID

suitable for 8-32 screw

Dimensions: 33 H x 44 mm diameter
(1.3 x 1.7") including the terminal block

Weight: 50 g (1.5 oz)

TX250 Thermocouple Input Specifications

Input:

TX251: Type K, T, J

TX252: Type E

TX253: Type R, S

Calibration: 2 "Zero" DIP switches,
3 "Span" DIP switches and 2 fine-tuning trimmers

Cold Junction Error:

$\pm 0.9^\circ\text{C}$ ($\pm 1.6^\circ\text{F}$) typical
(3°C [5.4°F] for R and S)
for 0 to 60°C (32 to 140°F)

Linearity (refer to mV input):

<0.08% of span

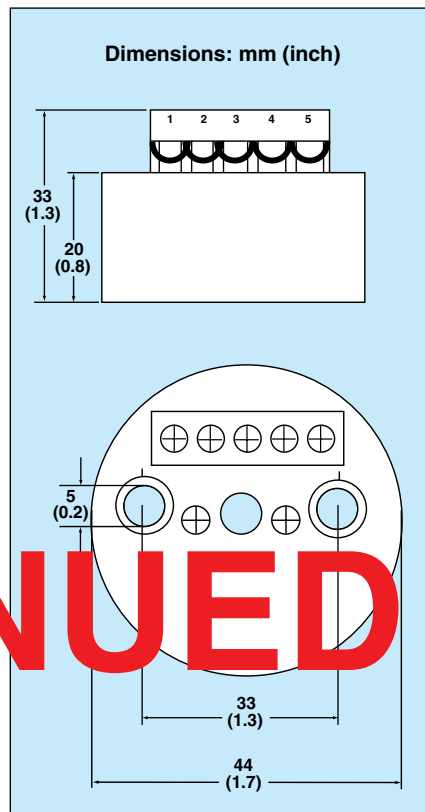
Note: Transmitters are linear to the mV input from the thermocouple, not to temperature.

TX250 RTD Input Specifications

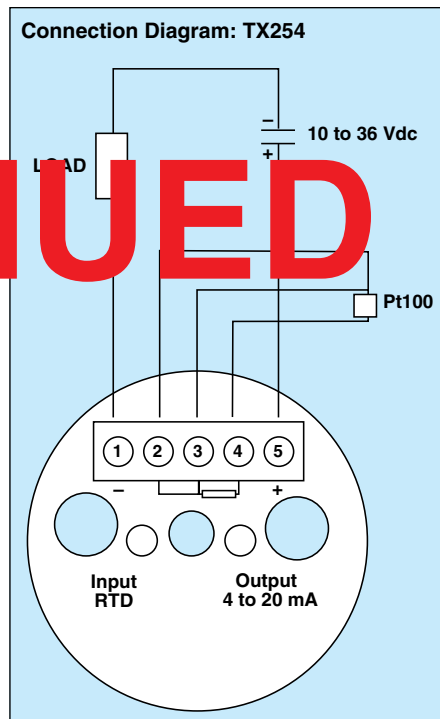
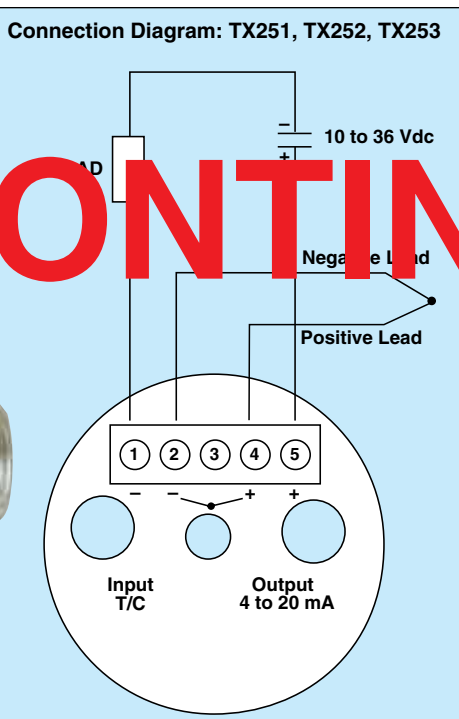
Input: 3-wire Pt-100 according to BS 1904 and DIN 43760 characteristics

Input Span Range: 30 to 800°C

Input Zero Range: -50 to 200°C



Calibration: 3 "Zero" DIP switches, 3 "Span" DIP switches and 2 fine-tuning trimmers
Sensor Lead Resistance: 50 Ω maximum (2 ways)
Lead Compensation Error: <0.05°C/10 Ω lead resistance
Sensor Excitation: <1 mA
Linearity: Better than 0.08% of span



Range and Span Table

Model No.	Input Type	Span Range*	Minimum Span	Zero Offset Range
TX251	J	-100 to 750°C -148 to 1380°F	85°C 155°F	-100 to 50°C
	K	-100 to 1350°C -148 to 2440°F	105°C 190°F	-100 to 100°C
	T	-100 to 400°C -148 to 750°F	100°C 180°F	-100 to 100°C
TX252	E	-100 to 1000°C -148 to 1832°F	75°C 135°F	-100 to 30°C
TX253	R	0 to 1750°C 32 to 3180°F	600°C 1080°F	0 to 750°C
	S	0 to 1750°C 32 to 3180°F	600°C 1080°F	0 to 750°C
TX254	RTD 100 Ω Pt	-50 to 750°C -58 to 1380°F	30°C 54°F	-50 to 200°C

Notes: (1) Thermocouple models output proportional to mV output of thermocouple. Not linearized to temperature. (2) Non-isolated unit for use with ungrounded probes.
*** Note:** Factory setting; TX251 Type K 0 to 1000°C, TX252 Type E 0 to 1000°C, TX253 Type R 0 to 1700°C, TX254 0 to 100°C.

To Order	
Non-Isolated Transmitter Unscaled	
Model No.	Description
TX251	Transmitter for J, K, T Type thermocouples
TX252	Transmitter for E Type thermocouples
TX253	Transmitter for R, S Type thermocouples
TX254	Transmitter for 3-wire 100 Ω Platinum RTDs
TX-SCALED	Scaling charge (specify input type and range)
PSR-24S	Regulated power supply, 24 Vdc, 400 mA, screw terminal
PSR-24L	Regulated power supply, 24 Vdc, 400 mA, UL, stripped leads
PSR-24L-230	Regulated power supply, 24 Vdc, 400 mA, stripped leads, 230 Vac input, CE
PSU-93	Unregulated power supply, 16 to 23 Vdc, 300 mA max, screw terminal