1 YEAR
WARRANTY

User's Guide

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TX31
Thermocouple Input 2-Wire Head-Mounted Transmitter

OMEGA ENGINEERING, INC.

Thermocouple Input 2-Wire Head-Mounted Transmitter Model TX31

Cold- junction compensation

Multi-range selectable

Galvanic isolation

Long term stability

Competitive pricing

Descriptions

The Model TX31 is an analog, isolated 2-wire head-mounted temperature transmitter that converter the thermocouple input into a proportional to the voltage generated by the thermocouple sensor, linear, and highly accurate 4- 20 mA output current in a variety applications such as process control, automation system, and energy source management. The TX31 is performed by means of a 3 DIP-switch array for coarse range setting, and two multi-turn potentiometers (ZERO & SPAN) which are used for the final fine-tuning. The unit is housed in a metal enclosure with a plastic top cover, fitting into DIN B connection heads providing excellent RFI immunity.The TX31 accepts low level signal from thermocouple, filtered, amplified, and converter to process current to reduce susceptibility transients and noise operations and allow the same two wires to carry the transmitter power and output current signal simultaneously.

Specifications

(Vloop = 24 VDC, Tamb = 23 ± 2 deg C , Rload = 250 ohms)

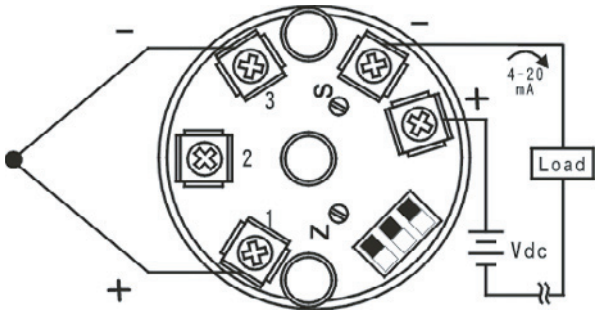
Output:	4 - 20 mA; Upscale < 26 mA when T/C wire broken
Loop power:	12 - 32 Vdc. Reverse polarity protected,LED on indication
Input thermocouple:	J; E; K; T; R; S; B; N
Supply voltage effect:	± 0.01%/V
Temperature coefficient:	± 0.02% /¢J(T amb = 5 to 50 deg C)
Repeatability:	± 0.01% of voltage input span
Linearity error:	± 0.1 % of voltage input span (not temperature input)
Galvanic isolation:	input/output 1000 Vrms, continuous
Cold-junction compensation:	± 2 ¢Jmax. (T amb = 5 to 50 deg C)
Load capability:	50 x (loop power - 12) ohms
Fine adjustment:	5 % of ZERO & SPAN
RFI effect (5W, 470 MHz):	< ± 10% of span
Response time (0 to 90%):	200 ms
Housing material:	Cast Aluminum with epoxy coating and Polycarbonate, UL94-V0 grade
Connection:	M3 Screw, nickel coated brass; AWG 12- 22
Operation environment:	- 20 to 70 ¢J, 5 to 85 %, non-condensing
Dimensions:	45mm DIA. x 27mm H
Weight:	65 g

DIP-Switch Setting			T/C-Type & SPAN (℃)							
S1	S2	S3	J	E	K	T	R	S	B	N
ON	ON	ON	75	75	125	50	200	200	200	125
OFF	ON	ON	150	150	250	100	400	400	400	250
ON	OFF	ON	225	225	375	150	600	600	600	375
OFF	OFF	ON	300	300	500	200	800	800	800	500
ON	ON	OFF	375	375	625	250	1000	1000	1000	625
OFF	ON	OFF	450	450	750	300	1200	1200	1200	750
ON	OFF	OFF	525	525	875	350	1400	1400	1400	875
OFF	OFF	OFF	600	600	1000	400	1600	1600	1600	1000

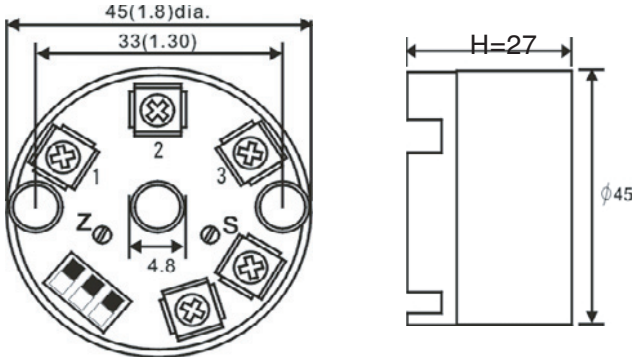
Note:
The DIP-switch is protected by a small tip which has to be moved before setting

Table 1 Switch settings for Span

Wiring Connections



Dimensions mm(inch)



NOTE:
When change span by dip switch, the transmitter will be calibrated again for best accuracy

Adjustments

Connect signal source (calibrator) to the unit, power on warm up 10 minutes.

A .Set the calibrator to the desired low temperature (4 mA point) and adjust the potentiometer ZERO to get Iout = 4.00 mA.

B. Set the calibrator to the desired high temperature (20 mA point) and adjust the potentiometer SPAN to get Iout = 20.00 mA .

C. Repeats steps A & B once, if necessary for best accuracy

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If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:
1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

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1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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