

TCI-2

DIN Rail 2-Wire Temperature Transmitter for Thermocouple Input

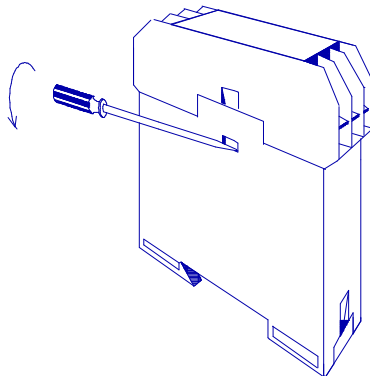
Operator's Manual

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1. PROCEDURE TO OPEN THE HOUSING

Carefully insert a proper screwdriver tip into the side slots. By pressing inward and rotating, the plastic locker will release. Gently pull out the unit's front panel.

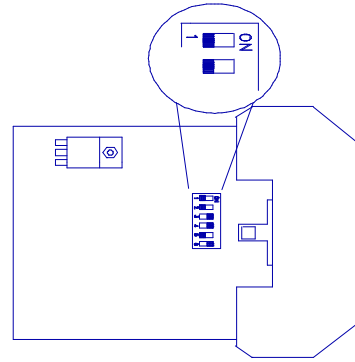


To close the unit, insert the printed circuit board in the proper side guiding slots and push it all the way until the front panel clicks with the body housing.

2. CALIBRATION INSTRUCTIONS

2.1 Switch Setting

Inside the enclosure are located six DIP switches for coarse range, and two multistep trimmers are located on the transmitter panel for fine tuning.



Notes:

- The TCI-2 is ordered for a specific T/C, and can not be altered.
- The following tables indicate coarse ranges. At the outer limits of range it might occur that the desired range can be obtained with the adjacent switch combinations.

* Define the desired range limits:

Tmin - the temperature at which the output current is 4mA.

Tmax - the temperature at which the output current is 20mA.

Tspan - the difference between Tmax and Tmin.

According to the following tables, set switches no. 4 to 6 for the Zero (Tmin), and set switches 1 to 3 for the Span (Tspan).

Note: "1" represent the switch "ON" state.

CALIBRATION TABLES

"Span" Table

SW.	T/C Type			
	K (°C)	J (°C)	T (°C)	E (°C)
0 0 0		50...95		50...95
0 0 1	90...180			
0 1 1			90...175	
1 0 0	175...360	93...200	50...95	
1 0 1	250...440	140...248	60...115	169...280
1 1 0	440...850	230...480	112...215	270...575
1 1 1	850...1350	450...760	200...400	530...1100

SW.	T/C Type
3-2-1	B, R, S (°C)
1 1 0	500...1100
1 1 1	1000...1700

"Zero" Table

SW.	T/C Type			
	K	J	T	E
0 0 0	0...25	0...42	-50...-30	-100...-52
0 0 1	25...60	30...85	-45...-15	
0 1 0	45...90	70...125	-15...5	-52...56
0 1 1	80...120	110...175	5...40	
1 0 0	115...160	165...215	30...58	56...162
1 0 1	150...190	200...265	50...74	
1 1 0	190...230	250...300	65...88	162...269
1 1 1	225...265	280...350	82...108	215...320

"Zero" Table

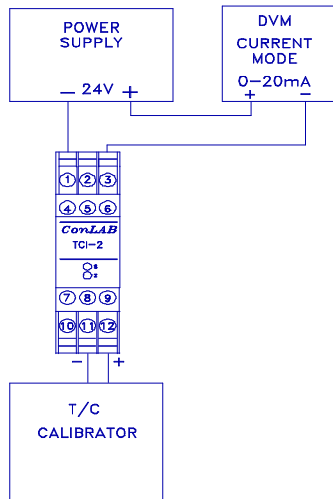
SW.	T/C Type	
4-5-6	B (°C)	R & S (°C)
0 0 1	100...465	0...180
0 1 0		120...280
0 1 1	460...870	240...380
1 0 0		340...480
1 0 1	865...1270	440...580
1 1 0		540...680
1 1 1	1270...1670	640...800

CALIBRATION INSTRUMENTATION:

1. 24Vdc Power Supply
2. T/C calibrator
3. High accuracy DVM
4. Small screwdriver

Connect the transmitter to be calibrated according to Fig #3.

- a. Set the T/C calibrator to Tmin.
- b. Adjust the Zero trimmer to 4mA.
- c. Set the T/C calibrator to Tmax.
- d. Adjust the Span trimmer to 20mA.



Repeat steps a. to d. until satisfactory results are achieved.

CALIBRATION EXAMPLE:

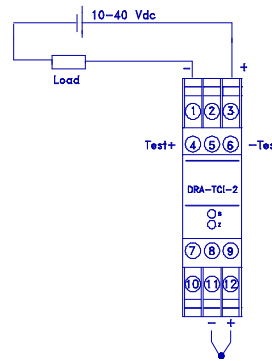
Needed: T/C Type K - 200...+500°C

Tmin: 200°C

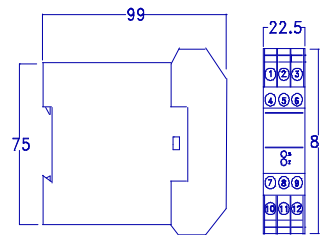
Tspan: 500-200 = 300°C

1. Set the DIP switch to: 0,1,1,1,0,0 (sw1..sw6)
2. Set the calibrator for 200°C calibrate "Z" to 4.000mA.
3. Set for +500°C and calibrate "S" to 20.000mA.
4. Repeat steps 2,3 until satisfactory results are obtained.

3. CONNECTION



4. MECHANICAL DIMENSIONS, mm (in)



5. SPECIFICATIONS

INPUT: Thermocouple type K, T, J, E, B, R, S

BURNOUT PROTECTION: Upscale

MINIMUM INPUT SPAN: 4mV

OUTPUT: 4 - 20 mA, (25 mA limited)

LOOP RESISTANCE: $R_{max}(\Omega) = (V_{supply}-10)/.02$

ISOLATION: 1500 Vdc or peak ac

RESPONSE TIME: 160 msec (0-98%)

CALIBRATION:

Span Calibration: Three DIP switches and "Span" potentiometer

Zero Calibration: Three DIP switches and "Zero" potentiometer

COLD JUNCTION COMPENSATION ERROR: Typical $\pm 0.9^\circ\text{C}$

for 0-60°C change ($\pm 3^\circ\text{C}$ for B, R and S)

ACCURACY (linearity, hysteresis and repeatability):

$\pm 0.1\%$ to $\pm 0.3\%$

TEST TERMINALS: 40 to 200 mV represent 4-20 mA

SUPPLY VOLTAGE: 10 - 40 Vdc reverse polarity protected

SUPPLY AND LOAD VARIATION EFFECT: $< \pm 0.03\%$ of span

CMR: 127db typical dc to 60 Hz

TEMPERATURE STABILITY: $\pm 0.01\%$ of span /1°C

OPERATING TEMPERATURE: -20 to +70°C

STORAGE TEMPERATURE: -30 to +85°C

HUMIDITY: 5 - 95% relative humidity, non-condensing

HOUSING: Plastic polycarbonate

PROTECTION LEVEL:

Housing: According to IP-40

Terminals: According to IP-20

MOUNTING: Standard 35 mm DIN rail

WEIGHT: 130 grams