



T723-0000 (Type J/K/T input)
T723-0001 (Type E/R/S input)

TRANSPAK™ T723

Thermocouple Input Isolating, Field Configurable Two-Wire Transmitter

Provides an Isolated Current Loop
in Proportion to a Thermocouple Input



- Field Configurable Switch Selectable Input Ranges
- Eliminates Ground Loops
- Integral Cold-Junction Compensation
- 600V Input to Output Isolation
- Wide Ranging Zero and Span Adjustability (80%)
- FM Safety Approval for Hazardous Installations

Description

The T723 offers a choice of J/K/T or E/R/S input ranges and 2 output ranges, which are field selectable via top-accessed DIP switches (see Tables 1-2). The T723 provides 600 VDC input to output isolation with outputs of either 4-20mA or 10-50mA. The current output is linear to the equivalent mV thermocouple signal and non-linear to temperature, which is useful in data acquisition systems that utilize linearizing software. Upscale burnout (maximum output with an open thermocouple) is standard.

The T723 has 80% zero and span adjustability within any user selected input ranges shown in Table 1 and 2. For example, Range K1 of Table 1 specifies 0° to 500°C with a minimum span of 100°C (500°-100° = 400°, or 80%). This 80% adjustability allows the user to field calibrate the unit from the maximum (0 to 500°) down to any minimum (100°C) span (e.g. 14°C to 114°C) as long as that adjusted span remains within the selected 0 to 500°C range. The same is true for any user selectable range: all spans are field adjustable from 20% (minimum span) to 100% of the specified range.

Application

The T723 is useful in any application requiring isolation of a 2-wire loop current from a thermocouple input. Typical applications include energy management and data acquisition such as monitoring remote boiler temperatures. The output of the T723 can interface with a digital meter for direct display or interface with a computer for monitoring and control applications.

The T723 is FM approved for intrinsically safe operation in Class I, Division 1, Groups A, B, C, and D; Nonincendive Class I Division 2, Groups A, B, C and D, and Classes II & III, Division 2, Group G hazardous locations when installed per manufacturer's drawing 790-0024-00. Refer to model T805 for NEMA 4, FM/CSA/CENELEC approved explosion proof, field mount housing.

Options

- B** Downscale Burnout (minimum output with an open TC)

Urethane coating of internal circuitry for protection from corrosive atmospheres is included as standard.

Calibration

Factory settings are:

Input Range: J1

Output Range: 4-20mA

1. Open the access lid on the top of the unit (see Top View Diagrams).

2. Select the output range using switch S6. The CLOSED position selects a 10-50mA output. The OPEN position selects a 4-20mA output.

3. Select the input range from Table 1 or 2 and configure switches S1 through S5.

4. Connect the input to a calibrated thermocouple source. Connect the output loop to a voltage supply and monitor the output current. Refer to Terminal Wiring.

5. Set the calibrator to the desired minimum.

6. Adjust the coarse zero rotary switch to obtain an output of approximately 4mA or 10mA. Adjust the fine zero for exact calibration.

Note: It may be necessary to switch coarse zero up or down one position.

7. Set the calibrator to the desired maximum and perform similar adjustments using the coarse span switch and fine span potentiometer.

8. Repeat fine zero and span adjustment for maximum accuracy

Field Mounting

The T723 is designed for installation in industrial field environments. A sealed, diecast aluminum housing protects against

Table 1: T723-0000 Input Ranges

TC Type/Range	i C		i F		Switch Position				
	Input Limits	Minimum Span	Input Limits	Minimum Span	1	2	3	4	5
J1	0 to 500	100	0 to 900	200	■	■	■	■	■
J2	0 to 760	150	0 to 1400	300	■	■	■	■	■
J3	-200 to 600	200	-350 to 1100	350	■	■	■	■	■
K1	0 to 500	100	0 to 900	200	■	■	■	■	■
K2	0 to 1000	200	0 to 1900	400	■	■	■	■	■
K3	0 to 1370	300	0 to 2500	500	■	■	■	■	■
K4	-270 to 500	200	-450 to 900	400	■	■	■	■	■
T1	0 to 400	100	0 to 750	150	■	■	■	■	■
T2	-270 to 400	200	-450 to 750	350	■	■	■	■	■

Key: ■ = 1 = ON or Closed

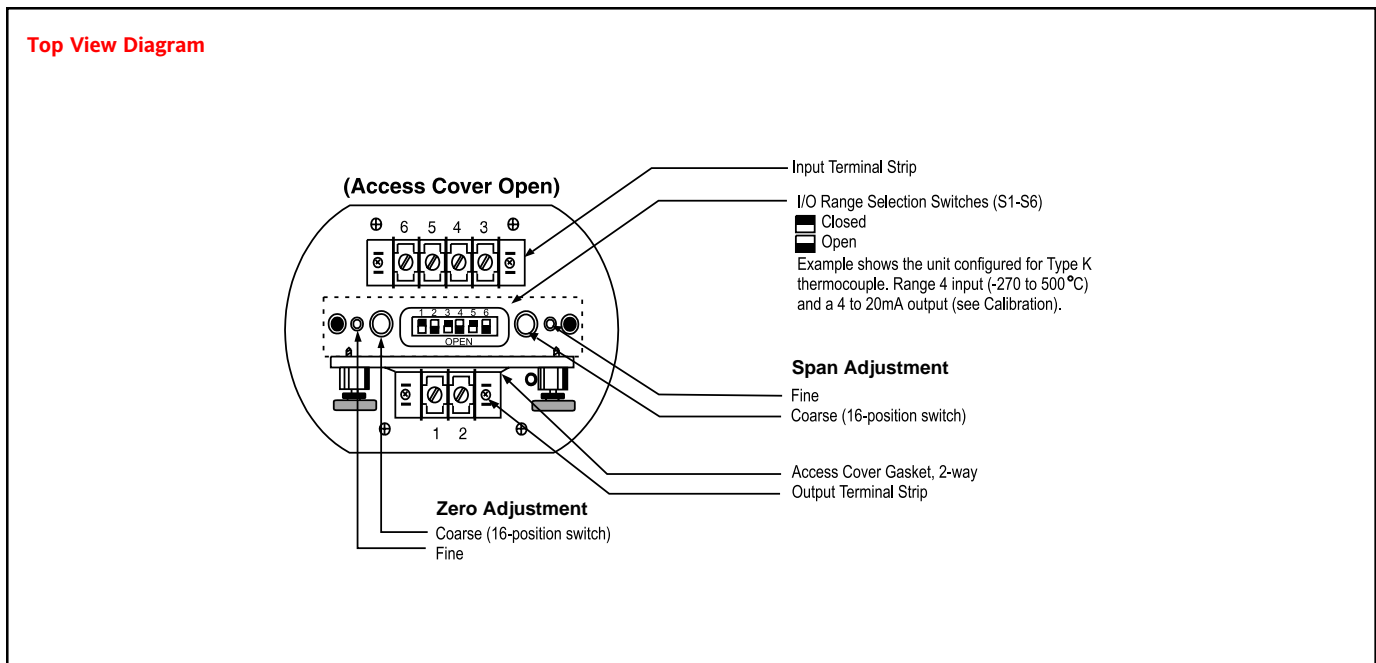
Table 2: T723-0001 Input Ranges

TC Type/Range	i C		i F		Switch Position				
	Input Limits	Minimum Span	Input Limits	Minimum Span	1	2	3	4	5
E1	0 to 150	30	0 to 300	60	■	■	■	■	■
E2	0 to 300	60	0 to 6000	120	■	■	■	■	■
E3	0 to 500	100	0 to 950	200	■	■	■	■	■
E4	0 to 1000	200	0 to 1800	400	■	■	■	■	■
E5	-270 to 0	100	-450 to 0	160	■	■	■	■	■
E6	-270 to 150	150	-450 to 300	200	■	■	■	■	■
E7	-270 to 350	200	-450 to 650	350	■	■	■	■	■
E8	-270 to 850	300	-450 to 1550	550	■	■	■	■	■
R/S1	0 to 950	220	0 to 1700	400	■	■	■	■	■
R/S2	0 to 1760	450	0 to 3200	750	■	■	■	■	■

Key: ■ = 1 = ON or Closed

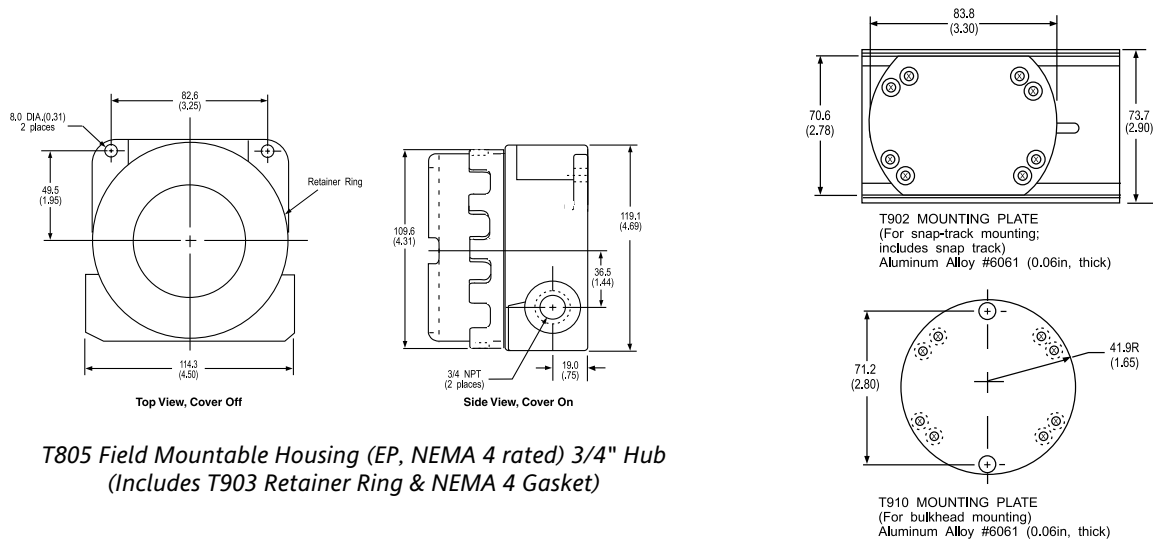
corrosion, moisture, dust and electrical noise such as radio frequency (RFI) and electromagnetic (EMI) interference. All circuit boards are urethane coated for environmental protection and FM approval.

For protection against extreme moisture, hose-directed water (NEMA 4) or hazardous environments, use the T805, a rugged Explosion Proof (EP) NEMA 4 enclosure with standard, 1/2" and 3/4" FPT ports for operation in harsh process environments.



Mounting Hardware

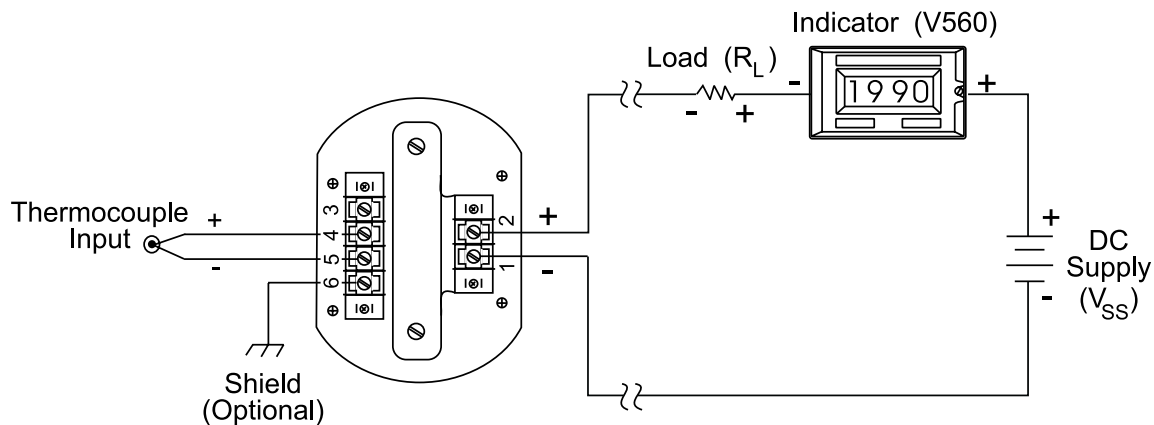
Dimensions in millimeters (inches)



T805 Field Mountable Housing (EP, NEMA 4 rated) 3/4" Hub
(Includes T903 Retainer Ring & NEMA 4 Gasket)

T723 Terminal Connections

1. Loop Output (-)
2. Loop Output (+)
3. No Connection
4. Input (+)
5. Input (-)
6. Shield (Gnd)



Note 1: For best RF & common mode rejection, ground the case (pin 6).

Note 2: R_L represents any other device loads in the current loop.

Specifications

Input Span Range (Max/Min):

See Tables 1 and 2

Leadwire Resistance Effect:

<0.25 uV/Ohm

Burnout Detection Current:

250nA, max.

Output Span:

4-20mA/10-50mA, switch selectable

Minimum Output Current:

3.3mA, typical

Maximum Output Current:

4-20mA: 24mA, typical
10-50mA: 58mA, typical

Supply Voltage Range:

4-20mA: 12 to 80VDC
10-50mA: 12 to 60VDC

Maximum Change in Supply:

0.05% of span

Maximum Change in Load Effect:

0.05% of span

Loop Voltage Drop:

12VDC @ 20mA

Stability:

Zero: $\pm 0.02\%$ of span/ $^{\circ}\text{C}$, max.
Span: $\pm 0.01\%$ of span/ $^{\circ}\text{C}$, max.

Overall Accuracy (Includes Linearity, Hysteresis, Stability):

$\pm 0.5\%$ of any adjusted span, max.

Zero and Span Adjustability:

80% of any selected range

Repeatability:

$\pm 0.05\%$ of span, typical

Cold-Junction Error (Ambient):

J/K/T/E Inputs
0 to 80 $^{\circ}\text{C}$: 1 $^{\circ}\text{C}$, typical
-40 to 0 $^{\circ}\text{C}$: 3 $^{\circ}\text{C}$, typical

R/S Inputs

0 to 80 $^{\circ}\text{C}$: 2 $^{\circ}\text{C}$, typical
-40 to 0 $^{\circ}\text{C}$: 5 $^{\circ}\text{C}$, typical

Response Time:

100ms, typical; 200ms, max.

Output Ripple:

0.1% of span, rms, typical

RFI Effect (5W, 470MHz at 3 Ft.):

<1% of span error, typical

Isolation:

600V DC or peak AC max., input to output to case

Temperature Range:

Operating: -40 to 80 $^{\circ}\text{C}$ (-40 to 176 $^{\circ}\text{F}$)

Weight:

0.56lbs

Agency Approvals:

FM approved intrinsically safe for hazardous locations, certificate No. 2M2A5.AX.

Ordering Information

Models & Accessories

Specify:

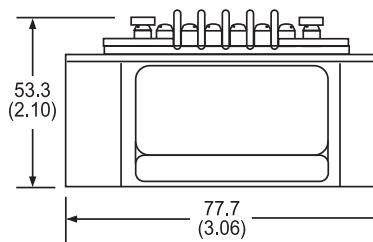
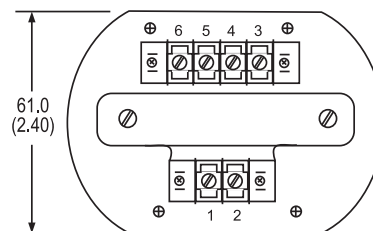
- Model: **T723-0000**: J/K/T Inputs
Model: **T723-0001**: E/R/S Inputs
- Option: B (Downscale Burnout)
- Optional Custom Factory Calibration: Specify **C620** with desired input and output range.

Accessories

- M004** Snap-in Channel Track, 4 feet.
- T902** Mounting plate for M004, includes 4" track.
- T910** Bulkhead (flat surface) Mounting plate.
- T805** Explosion Proof/NEMA4 enclosure
- AP9046** Action Pak 24/40VDC, 65mA Power Supply.
- V565** 3-1/2 digit remote loop powered indicator. Wide ranging display, NEMA 4X enclosure. CSA & FM approval standard. Specify Option C to house Transpak.

Dimensions

Dimensions in millimeters (inches)



Eurotherm.
by Schneider Electric



Printed on recycled paper

Factory Assistance

For additional information on calibration, operation and installation contact our Technical Services Group:

703-724-7314

actionsupport@eurotherm.com

721-0414-00-N 09/06 Copyright © Eurotherm, Inc 2006

Eurotherm, Inc

44621 Guilford Drive, Suite 100
Ashburn, VA 20147
703-724-7300

info@eurotherm.com or www.eurotherm.com/actionio

Action Instruments

Barber-Colman

Chessell

Continental

Eurotherm