FieldPak™

Thermocouple Input, Isolating, Field-Mount Two-Wire Transmitter

Model F723

Provides an Isolated Current Loop in Proportion to a Thermocouple Input in an Explosion Proof Housing

- **Eliminates Ground Loops with 600VDC Input-to-Output Isolation**
- **Field Configurable, Switch Selectable Input Ranges (J, K, T or E, R, S)**
- **Field-Mount/Washdown Protected (NEMA 4)**
- **Integral Cold Junction Compensation**
- **RFI Filters Minimize Transmission Faults**
- **FM Safety Approval for Hazardous Installations**
- **Three Year Warranty**

APPLICATION

Model F723 is useful in any application requiring an isolated two wire loop current from a thermocouple input. Typical applications include energy management and remote data acquisition such as monitoring boiler or custody transfer/pipeline temperatures. The output of the F723 can drive a digital meter for direct display or interface with a computer for monitoring and control applications. The F723 can be installed in environments where protection from sleet, heat, moisture, severe condensation, washdowns or hazardous atmospheres is required.

DESCRIPTION

The F723 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 F723 provides 600 VDC of isolation between input, output and case-ground.

Current outputs (4-20mA or 10-50mA) are linear to the equivalent mV thermocouple signal and non-linear to temperature. This is useful in data acquisition systems that utilize linearizing software. Upscale burnout is standard which provides a maximum output with an open thermocouple.

A major advantage of the F700 Series is their truly wide ranging capability. The F723 enables 80% zero and span adjustability within any user selected input range. 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 factor allows the user to field-calibrate the unit for the maximum (0 to 500°) down to any minimum (100°C) span (e.g. 14° to 114°)--as long as that adjusted span remains within the selected 0 to 500°C range.

The explosion proof enclosure is FM and CSA approved for use in Class I, Groups B,C & D and Class II, groups E, F & G hazardous locations as well as Ex d IIC, IP66. The enclosed transmitter model 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 with safety barriers per manufacturer's drawing 790-0024-00. All models include a watertight NEMA 4 gasket for washdown protection. The gasket does not void the explosion proof ratings.

OPTIONS

B Downscale Burnout (minimum output with open TC)

P Polyester powder coating, sky white

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

ACTION INSTRUMENTS
...the Industrial I/O Company

CALIBRATION

Note: Factory settings are: Input Range J1, 4-20 output.

1. Remove the EP cover and open the access lid on the top of the internal 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 input range from Table 1 and configure switches S1 through S5.
4. Connect the input to a calibrated thermocouple source. Connect the ouput loop to a voltage supply and monitor output current (refer to terminal wiring).
5. Set the calibrator to the desired minimum input.
6. Adjust the coarse zero rotary switch to obtain an output close to either 4mA or 10mA. Adjust the fine zero for exact calibration. Note that it may become necessary to switch coarse zero up or down one position.
7. Set the calibrator to the desired maximum input and perform similar adjustments using the coarse span switch and fine span potentiometer.

It may be necessary to repeat steps 5, 6, and 7 for best accuracy.

FACTORY ASSISTANCE:

For additional information on calibration, operation and installation please contact Action's Technical Services Group. Call toll-free.

800-767-5726

Table 1: F723-0000 Input Ranges (J/K/T)

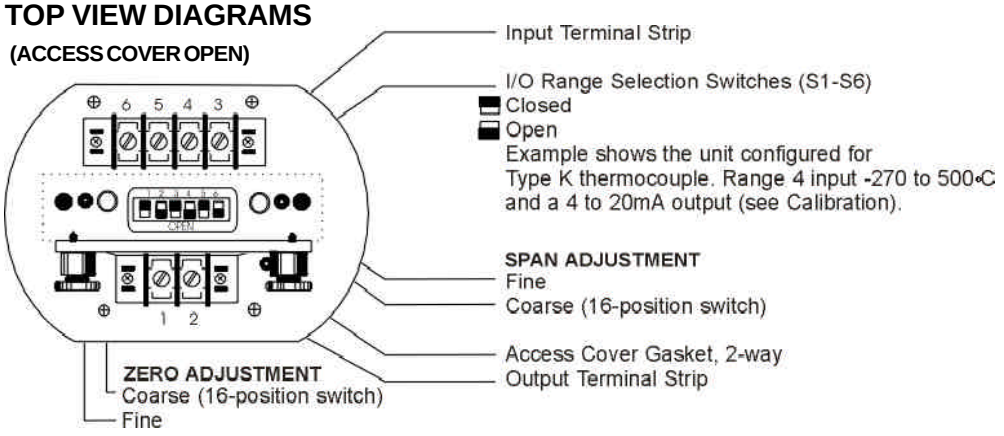
TC Type/ Range	°F		°C		To select range position switch:				
	Input Limits	Minimum Span	Input Limits	Minimum Span	S1	S2	S3	S4	S5
J1	0 to 900	200	0 to 500	100	Closed	Open	Closed	Closed	Open
J2	0 to 1400	300	0 to 760	150	Open	Closed	Open	Closed	Open
J3	-350 to 1100	350	200 to 600	200	Open	Closed	Open	Open	Open
K1	0 to 900	200	0 to 500	100	Closed	Closed	Open	Closed	Closed
K2	0 to 1900	400	0 to 1000	200	Open	Closed	Open	Closed	Closed
K3	0 to 2500	500	0 to 1370	300	Open	Closed	Closed	Closed	Closed
K4	-450 to 900	400	270 to 500	200	Closed	Open	Closed	Open	Closed
T1	0 to 750	150	0 to 400	100	Closed	Closed	Open	Closed	Closed
T2	-450 to 750	350	270 to 400	200	Closed	Open	Closed	Open	Closed

Table 2: F723-0001 Input Ranges (E/R/S)

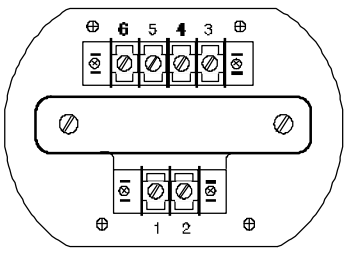
Type/ Range	°C		°F		Position switch				
	Input Limits	Min Span	Input Limits	Min Span	S1	S2	S3	S4	S5
E1	0 to 150	30	0 to 300	60	Closed	Closed	Open	Closed	Open
E2	0 to 300	60	0 to 600	120	Closed	Open	Closed	Closed	Open
E3	0 to 500	100	0 to 950	200	Open	Closed	Open	Closed	Open
E4	0 to 1000	200	0 to 1800	400	Open	Closed	Closed	Closed	Open
E5	-270 to 0	100	-450 to 0	160	Closed	Closed	Open	Open	Open
E6	-270 to 150	150	-450 to 300	200	Closed	Open	Closed	Open	Open
E7	-270 to 350	200	-450 to 650	350	Open	Closed	Open	Open	Open
E8	-270 to 850	300	-450 to 1550	550	Open	Closed	Closed	Open	Open
R/S1	0 to 950	220	0 to 1700	400	Closed	Closed	Open	Closed	Closed
R/S2	0 to 1760	450	0 to 3200	750	Closed	Open	Closed	Closed	Closed

TOP VIEW DIAGRAMS

(ACCESS COVER OPEN)



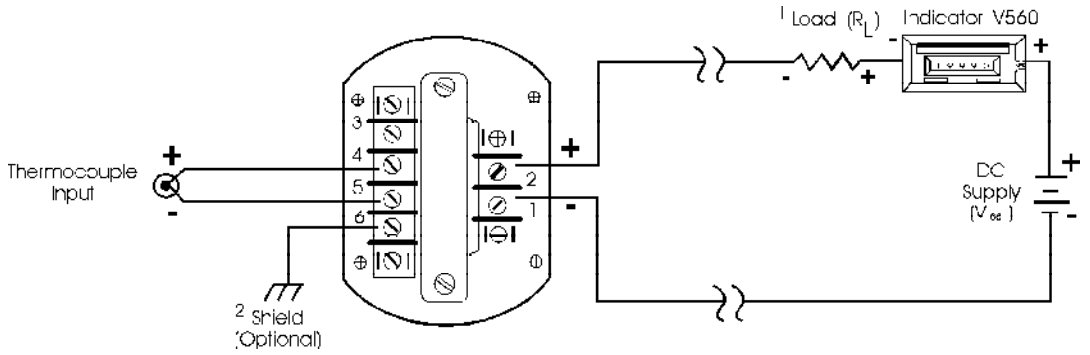
(ACCESS COVER CLOSED)



TERMINAL WIRING

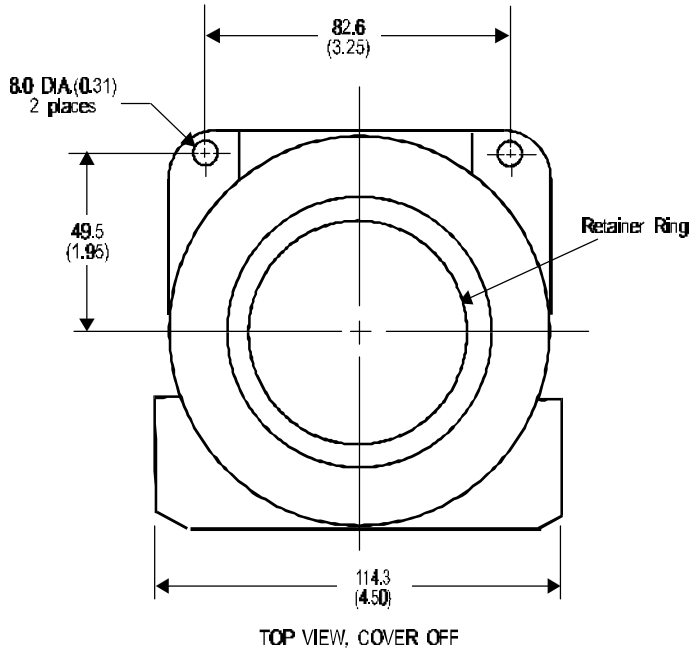
F723

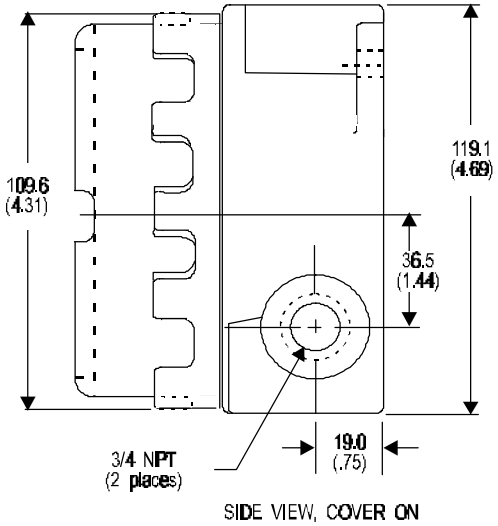
1 Loop Output (-)
2 Loop Output (+)
3 No Connection
4 TC Input (+)
5 TC Input (-)
6 Shield (Gnd)



1 NOTE: R_L represents any other loads in the current loop.
2 NOTE: For best RF and common mode rejection, ground case (terminal, #6)

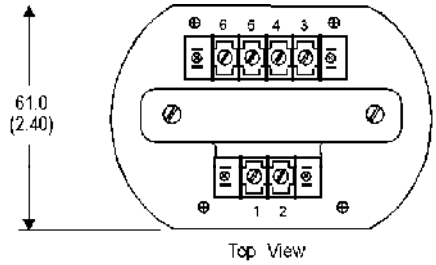
EXPLOSION PROOF HOUSING

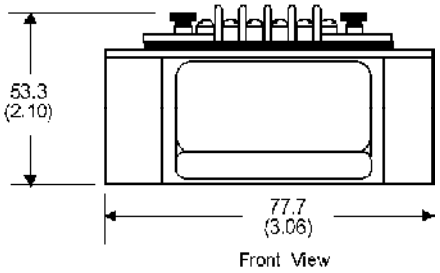


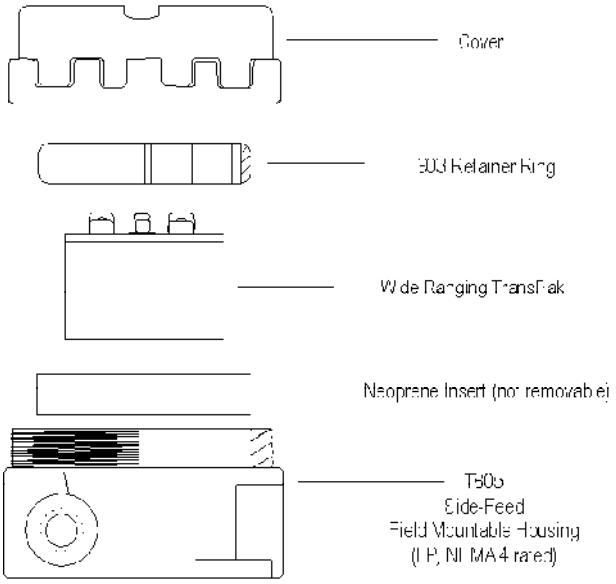


DIMENSIONS/ASSEMBLY DIAGRAM

Dimensions are in Millimeters (Inches)







RFI Effect (5W, 470MHz at 3 Ft.)
< 1% of span error, typical
Isolation
600V DC or peak AC maximum, input to output to case
Temperature Range
Operating: -40 to 80°C (-40 to 176°F)
Weight
0.56lbs
Agency Approval (T723)
FM approved intrinsically safe for hazardous locations, certificate No. 2M2A5.AX.

ACCESSORIES

Model	Description
T806	Thermocouple Calibrator
9046	Action Pak 24/40VDC, 65mA power supply
T609	24V, 600mA Loop Power Supply
V565	3-1/2 Digit Loop-Powered Indicator; NEMA 4X enclosure, wide-ranging display. CSA & FM approval standard
T903	Replacement Retainer Ring

ORDERING INFORMATION

Specify:
1. Model **F723-0000**: J/K/T Inputs
   Model **F723-0001**: E/R/S Inputs
2. Options: B, P (see text)
3. Optional Custom Factory Calibration: Specify **C620** with desired input and output range (e.g., C620/0-400ºF/4-20mA)

INTRINSIC SAFETY RATING - ENCLOSED INSTRUMENT

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.

HOUSING/ENCLOSURE SPECIFICATIONS

Explosion-Proof Rating (FM/CSA)
Class I, Groups B,C,D; Class II, Groups E,F,G
NEMA Rating
NEMA 4
Electrical Ports
Side-feed 3/4" NPT hubs with 3/4" to 1/2" NPT reducers

All prices and specifications subject to change without notice

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