



T713-0000  
T713-0013 (-200°C offset)

# TRANSPAK™ T713

## RTD Input Isolating, Field Configurable Two-Wire Transmitter

Provides an Isolated, Linearized Current Loop in  
Proportion to a 3-Wire Pt100 RTD Input



- Field Configurable, Switch Selectable Input Ranges
- Eliminates Ground Loops
- Wide Ranging Zero & Span
- Integral RTD Linearization/Output Linear to Temperature
- FM Safety Approval for Hazardous Installations

### Description

The T713 series has 6 widely adjustable input ranges and 2 output ranges, all of which are field selectable via top accessed DIP switches. The T713 provides 600VDC of isolation with outputs of either 4-20mA or 10-50mA. Current outputs are linear to temperature. Urethane coating of internal circuitry for protection from corrosive atmospheres is included as standard.

The T713 has an 80% zero and span adjustability within any user selected input range. For example, Range 1 of Table 1 specifies 0 to 1000° F with a minimum span of 200° F ( $1000^{\circ} - 200^{\circ} = 800^{\circ}$ , or 80%). This 80% adjustability allows the user to field calibrate the unit for the maximum (0 to 1000°) down to any minimum (200°) span (e.g. 740° to 940°) - as long as that adjusted span remains within the selected 0 to 1000°F 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 T713 is useful in any application requiring isolation of a 2-wire loop current from a 3-wire RTD. Typical applications include SCADA and remote data acquisition such as monitoring boiler or custody transfer/pipeline temperatures. The output of the T713 can be used to drive a digital meter for direct display or interface with a computer for monitoring and control applications.

The T713 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 housing.

## Calibration

**Note:** Factory settings are:

Input: Range 1  
Output: 4-20mA

1. Open the access lid on the top of the unit (see Top View Diagrams).
2. Select the output range using switch S4. 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 S4.
4. Connect the input to a calibrated 3-wire resistance source and monitor the output current (refer to terminal wiring).
5. Set the calibrator to the desired minimum temperature.
6. Adjust the coarse zero rotary switch to obtain an output of approximately 4mA or 10mA. Adjust the fine zero for exact calibration. Note that it may be necessary to switch coarse zero up or down one position.
7. Set the calibrator to the desired maximum temperature and perform similar adjustments using the coarse span switch and fine span potentiometer.

Table 1: T713-0000 Input Ranges

Input Range (100 Ohm Pt RTD) 0.00385 alpha	i C		i F		Switch Position		
	Input Limits	Minimum Span	Input Limits	Minimum Span	1	2	3
1	0 to 600	120	0 to 1000	200			■
2	0 to 300	60	0 to 500	100		■	
3	0 to 50	10	30 to 130	20	■		

Key: ■ = 1 = ON or Closed

Table 2: T713-0013 Input Ranges

Input Range (100 Ohm Pt RTD) 0.00385 alpha	i C		i F		Switch Position		
	Input Limits	Minimum Span	Input Limits	Minimum Span	1	2	3
1	-200 to 360	120	-300 to 700	200			■
2	-200 to 85	60	-300 to 200	100		■	
3	-200 to -155	20	-300 to -250	40	■		

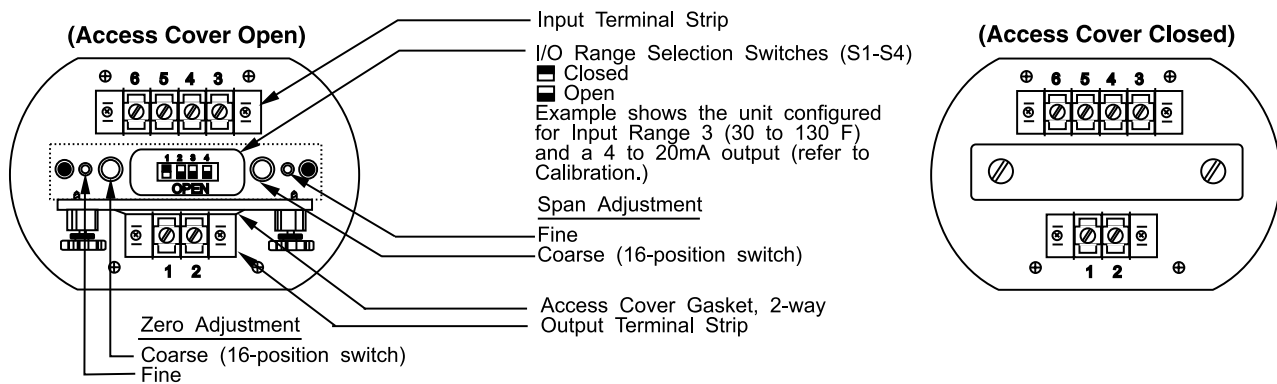
Key: ■ = 1 = ON or Closed

## Field Mounting

The T713 is designed for installation in industrial field environments. A sealed, diecast aluminum housing protects against 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.

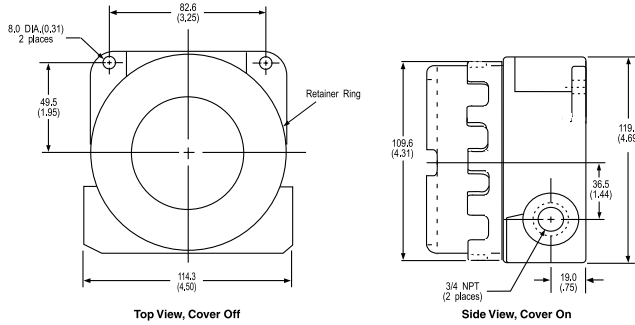
For protection against extreme moisture, hose directed water (NEMA 4) or hazardous environments, use the T805, a rugged EP/NEMA 4 enclosure with standard, 1/2" and 3/4" FPT ports for easy hookup and operation in harsh process environments.

## Top View Diagram

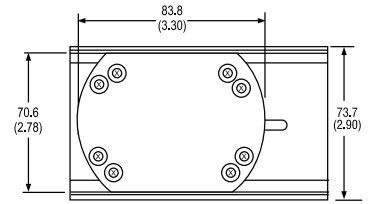


**Mounting Hardware**

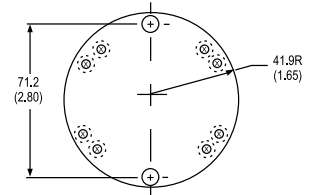
Dimensions in millimeters (inches)



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



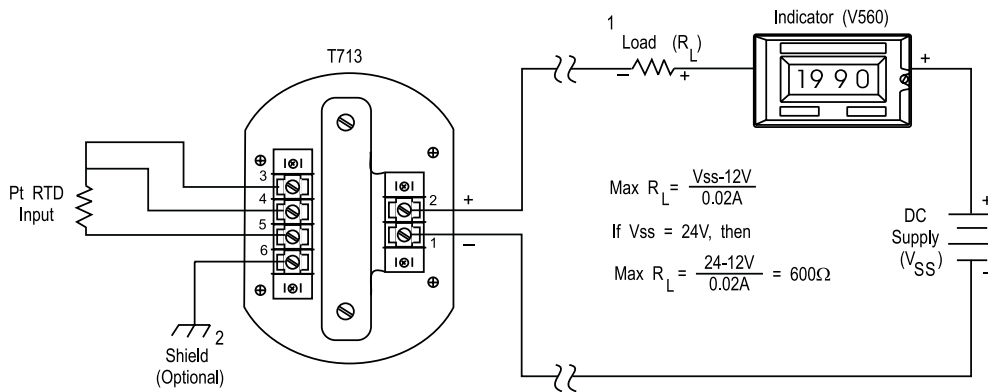
**T902 MOUNTING PLATE**  
(For snap-track mounting;  
includes snap track)  
Aluminum Alloy #6061 (0.06in, thick)



**T910 MOUNTING PLATE**  
(For bulkhead mounting)  
Aluminum Alloy #6061 (0.06in, thick)

**T713 Terminal Connections**

1. Loop Output (-)
2. Loop Output (+)
3. RTD Exc (+)
4. RTD (-)
5. RTD (-)
6. Shield (Gnd)



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

## Specifications

### Input Span Range (Min/Max):

See Tables 1, 2

### Excitation Current:

1mA, typical

### Leadwire Resistance Effect:

1% of span error with up to 40 Ohms/lead

### 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 - Voltage Effect:

0.05% of span

### Maximum Change in Load Effect:

0.05% of span

### Loop Voltage Drop:

12VDC @ 20mA

### Linearizing Accuracy:

T713-0000:  $\pm 0.1\%$  of standard R/T tables, typical; 0.2% max.

T713-0013:  $\pm 0.21\%$  of standard R/T tables, typical; 0.3% max.

### Stability:

Zero:  $\pm 0.02\%$  of span/ $^{\circ}\text{C}$ , typical, or 2mV, whichever is greater

Span:  $\pm 0.01\%$  of span/ $^{\circ}\text{C}$ , typical

### 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

### Response Time:

150ms, typical, 400ms max.

### Output Ripple:

0.1% of span, rms, typical

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

<1% of span error

### Isolation:

600V DC maximum, input to output to case

### Temperature Range:

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

### Weight:

0.64lbs

### Agency Approval:

FM approved intrinsically safe for hazardous locations, certificate No. II. 2M2A5AX (3611).

## Ordering Information

### Models & Accessories

#### Specify:

1. Model:

T713-0000

T713-0013 (-200 $^{\circ}\text{C}$  offset)

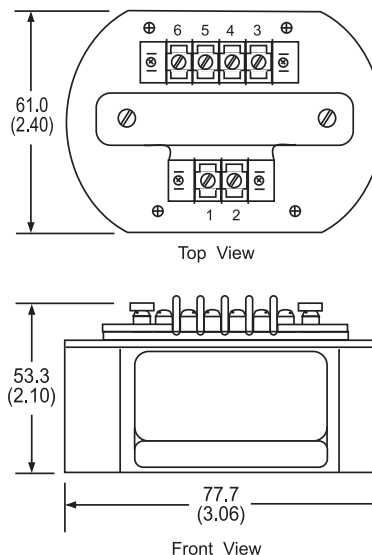
2. Optional Custom Factory Calibration: Specify C620 with desired input and output range.

#### Accessories

- M004 Snap-in Channel Track, 4 ft. (nonconducting).
- T902 Mounting plate for M004, includes 4" track.
- T910 Bulkhead (flat surface) mounting plate.
- AP9046 Action Pak 24/40VDC, 65mA Power Supply.
- T805 NEMA 4, explosion proof enclosure.
- 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.
- C620 Factory calibration (user specified).

## Dimensions

Dimensions in millimeters (inches)



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## Factory Assistance

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

**703-724-7314**

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