

TRANSPAK™ T773

Frequency Input, Isolating Field Configurable Two-Wire Transmitter



Provides an Isolated Current Loop in
Proportion to a Frequency Input



Benefits

- Eliminates Ground Loops
- Digitally-Synthesized,
Field Configurable Ranges
(105Hz to 18kHz)
- Wide Ranging
Zero and Span Adjustability
- Direct Magnetic Pickup Input
- Velocity/Flow Applications
- Protects Equipment with
1000VRMS Isolation

Description

The T773 isolating two-wire transmitter has 5 input ranges and 2 output ranges, all of which are field selectable via top-accessed DIP switches. The T773 can accept square, triangle or pulse waveforms up to 18KHz with amplitudes from 10mVrms to 35V peak-to-peak. The T773 provides 1000Vrms of transformer-coupled isolation with outputs of either 4-20mA or 10-50mA. Current outputs are in proportion to a selected frequency input.

The T773 has 30% zero “turn-up” and 80% span “turn-down” adjustments within any user-selected input range. For example, Range 3 of Table 1 specifies 0 to 2100Hz with a minimum span of 420Hz (2100Hz - 420Hz = 1680Hz, or 80%). This 80% adjustability allows the user to field calibrate the unit for the maximum range of 0 to 2100Hz down to the minimum range of 0 to 420Hz. The maximum obtainable offset is 30% of the calibrated span: a calibrated range of 0 of 1000 Hz can be offset by 300Hz (e.g., 300Hz to 1000Hz).

Application

The T773 is useful in any application requiring isolation of a 2-wire loop current from a pulse output transducer, such as a magnetic pickup or a turbine flowmeter. The output of the T773 can be used to drive a digital meter for direct display of flow or velocity, or to interface with a computer or PLC for monitoring and control applications.

The T773 is CSA approved for intrinsically safe operation in Class I, Division 1, Groups A, B, C and D hazardous locations when installed per manufacturing drawing number.

Options

- U Urethane Coating of internal circuitry for protection from corrosive atmospheres.



ACTION INSTRUMENTS

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Calibration

Factory settings are:

Input Range: 1

Output Range: 4-20mA

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

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 and configure switches S1 through S5.

4. Determine the percent of span by the ratio of the desired maximum input to the input limit in Table 1 (e.g., 1000Hz/2100Hz = 48%).

5. Set the step Span rotary switch to the desired percent of span (e.g., 48% = position 4).

Percent of Span	Position
100%	A
≥90%	9
≥80%	8
≥70%	7
≥60%	6
≥50%	5
≥40%	4
≥30%	3
≥20%	2

6. Determine Zero turn-up % by the ratio of desired minimum input to the desired maximum input (e.g., 0/1000Hz = 0%).

7. Set step Zero turn-up switch to offset % (e.g., 0% = position 0).

Zero Turn-Up %	Position
0%	0
≤10%	1
≤20%	2
≤30%	3

8. Connect the input to a calibrated frequency source. Connect the output loop to a voltage supply and monitor the output current (refer to the terminal wiring).

9. Set the calibrator to the desired minimum and adjust the fine zero to obtain an output of either 4mA or 10mA.

10. Set the calibrator to the desired maximum and adjust the fine span to obtain an output of either 20mA or 50mA. Repeat steps 9 and 10, if necessary, for maximum accuracy.

Note: If loop current "swings" on input ranges 1-2, close S-5 for extra filtering.

Field Mounting

The T773 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.

For protection against extreme moisture, hose-directed water (NEMA 4) or hazardous envi-

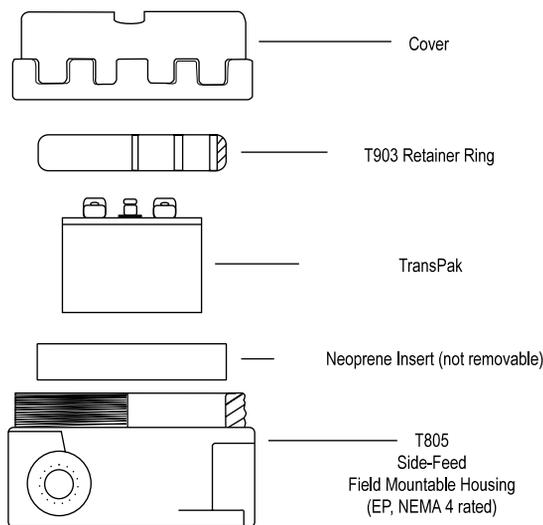
Table 1: T773 Input Ranges

Range	Input Limits	Minimum Span	Switch Position				
			1	2	3	4	5
1	0 to 18KHz	3600Hz				■	
2	0 to 9KHz	1800Hz			■		
3	0 to 2100Hz	420Hz		■			■
4	0 to 525Hz	105Hz	■				■

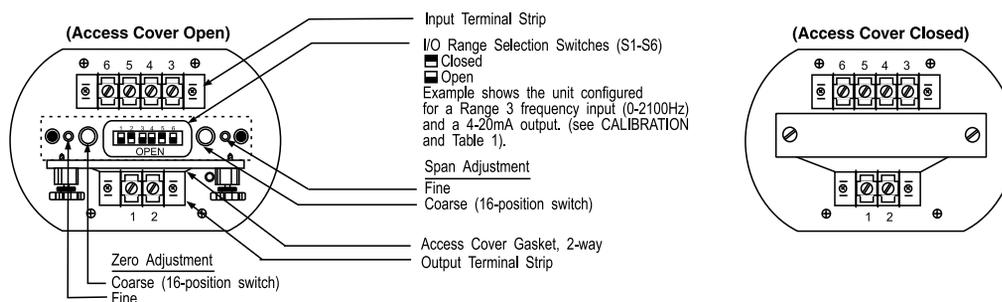
Key: ■ = 1 = ON or Closed

ronments, use the T805 explosion-proof housing. The T805 provides a 1/2" and 3/4" FPT port for operation in harsh process environments. The T805 is FM and CSA certified for use in Class I, Groups B, C & D and Class II, Groups E, F & G hazardous locations.

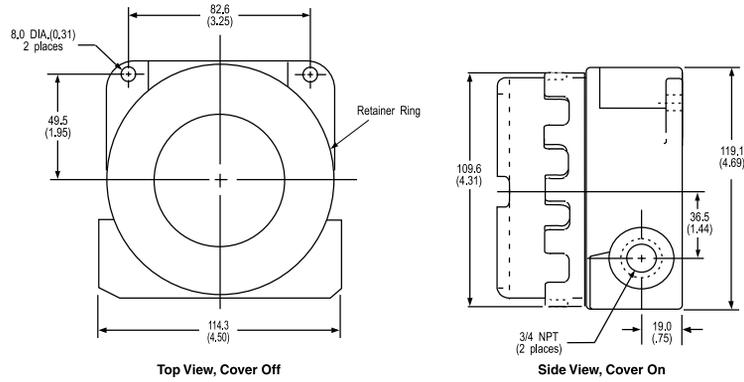
T805 Explosion Proof Housing (Optional)



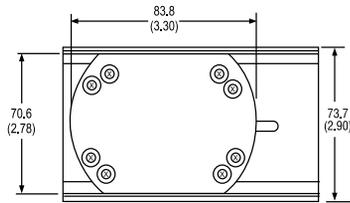
Top View Diagram



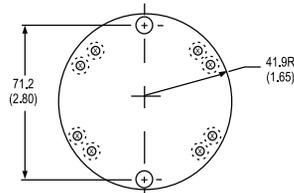
Mounting Hardware



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



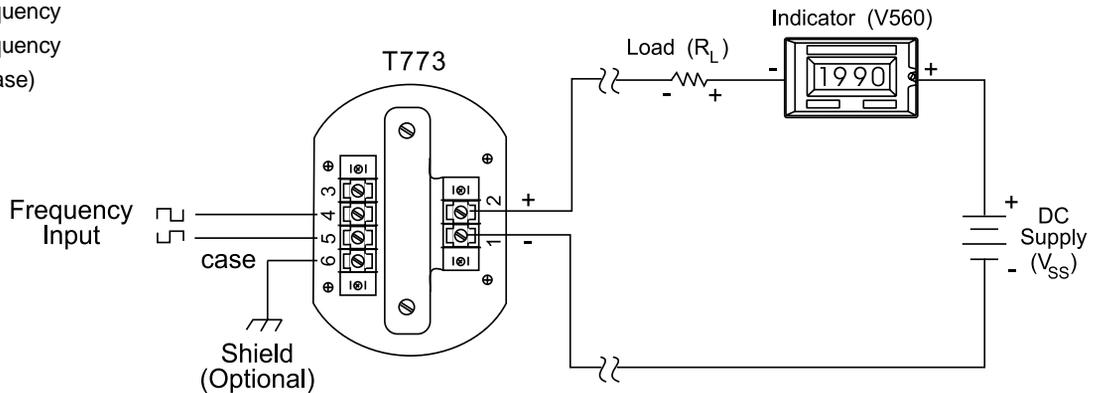
T902 MOUNTING PLATE
(For snap-track mounting;
includes snap track)
Aluminum Alloy #6061 (0.06in, thick)



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

T773 Terminal Connections

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



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 Table 1
- Type: Capacitive coupled
- Minimum Amplitude:
105-2150Hz: 10mVrms
>2150Hz: 15mVrms
- Maximum Amplitude:
35Vp-p
- Impedance
100-1KHz: >6k Ohms
>1KHz: >40k Ohms

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: 13 to 75VDC
- 10-50mA: 13 to 50VDC

Line Regulation

- 0.07% of span (13-75V)

Load Regulation

- 0.05% of span (0-3k Ohms)

Voltage Drop

- 13VDC @ 20mA

Stability

- Zero: $\pm 0.015\%$ of span/ $^{\circ}\text{C}$, typical,
 $\pm 0.028\%$ / $^{\circ}\text{C}$, max.
- Span: $\pm 0.022\%$ of span/ $^{\circ}\text{C}$, typical,
 $\pm 0.043\%$ / $^{\circ}\text{C}$, max.

Overall Accuracy (Includes Linearity, Hysteresis, Stability)

- $\pm 0.2\%$ of adjusted span, max.

Zero Adjustability

- 30% "turn-up" of span

Span Adjustability

- 80% "turn-down" of full-scale limit (Table 1)

Repeatability

- $\pm 0.05\%$ of span

Response Time (63% response)

- <9KHz: 500mSec.
- >9KHz: 40mSec.

Output Ripple, P-P

(% at max. input range frequency; 0% turn-down)

- Range 1: 0.5% (18KHz)
- Range 2: 0.5% (9KHz)
- Range 3: 0.7% (2100Hz)
- Range 4: 1.2% (525Hz)

Common Mode Rejection

- 60Hz: 97dB, DC: 120dB

Common Mode Range

- 60Hz: 75Vrms, max.
- DC: 1KV, max.

RFI Effect (1.5W, 470MHz at 1.5 ft.)

- <1% of span error

Isolation

- 1000Vrms maximum input to output, input to case, output to case

Operating Temperature Range

- 4-20mA: -40 to 80 $^{\circ}\text{C}$ (-40 to 176 $^{\circ}\text{F}$)
- 10-50mA: -40 to 60 $^{\circ}\text{C}$ (-40 to 140 $^{\circ}\text{F}$)

Weight

- 0.58lbs

Agency Approval

- CSA approved intrinsically safe for hazardous locations (File No. LR42272-70).

Models & Accessories

Ordering Information

Specify:

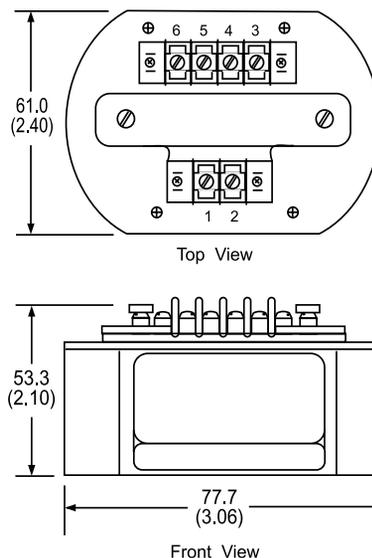
- Model: **T773-0000**
- Options: U (Urethane coating)
- Optional Custom Factory Calibration: Specify **C620** with desired input and output range.

Accessories

Model	Description
M004	Snap-in Channel Track, 4 feet.
T902	Mounting plate for M004, includes 4" track.
T910	Bulkhead (flat surface) Mounting plate.
T805	Side feed field-mountable housing (EP & NEMA 4 rated), uncoated (specify Option P for white polyester powder coat).
AP9046	Action Pak 24/40VDC 65mA Power Supply.
T609	24V, 600mA Loop 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)



Factory Assistance

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

703-669-1318

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