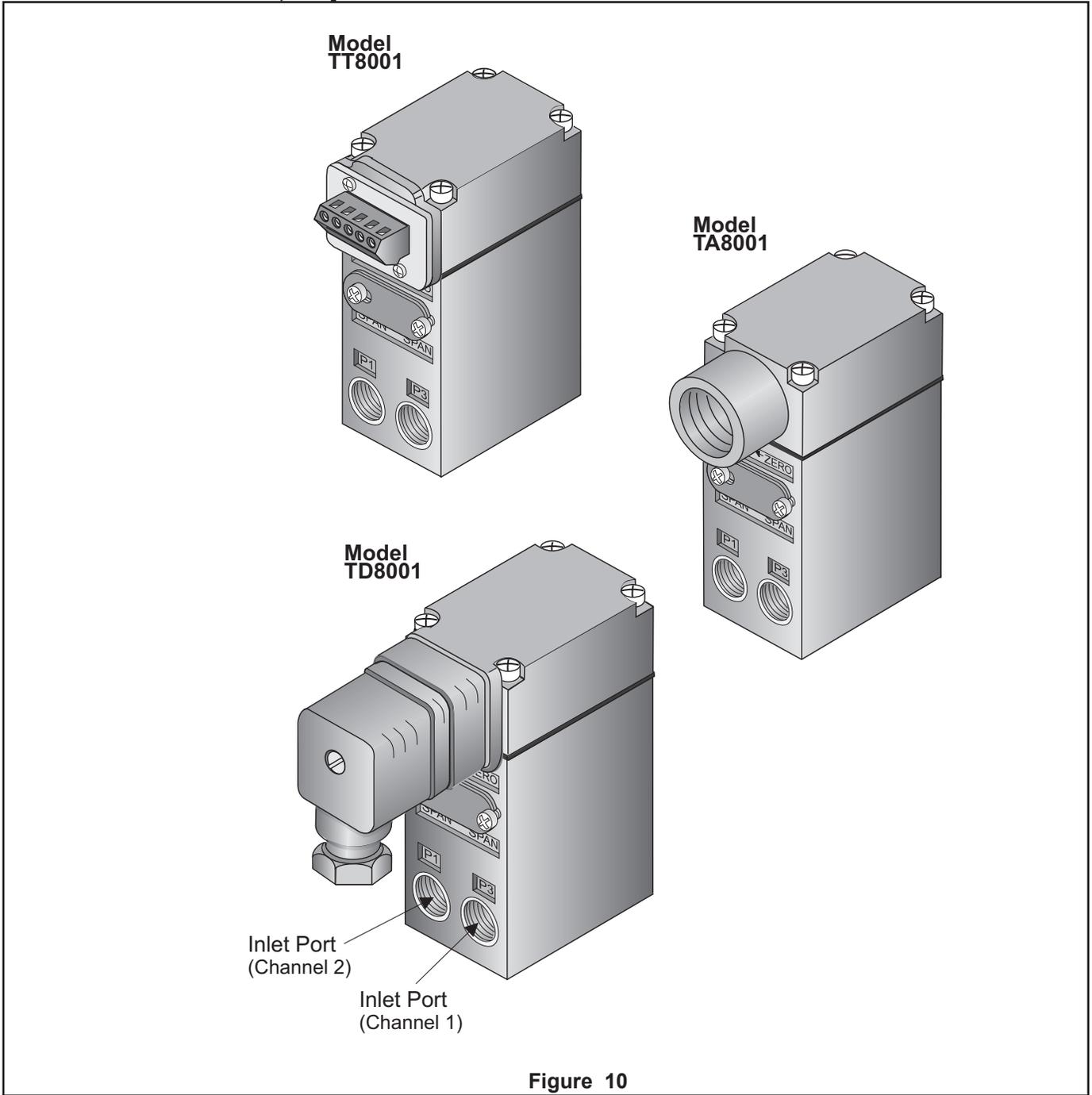


FAIRCHILD T8001 SERIES STANDARD RANGE MINIATURE TWO-WIRE, P/I PRESSURE TRANSDUCER

Installation, Operation and Maintenance Instructions



OPERATION

The Model T8001 Series transducers convert pneumatic input pressure to a linearly proportional analog output signal.

You can configure the Model T8001 Series transducers as single or dual channel units. The dual channel unit has two PC boards, in the same housing, that function independently of each other. For more information, see Figure 8.

**Specifications:
T8000 Standard Range Transducers**

	psig, [BAR], (kPa)						
Pneumatic Input Range	0-5 [0-0.3] (0-35)	3-15 [0.2-1.0] (20-100)	3-27 [0.2-1.8] (20-180)	6-30 [0.4-2.0] (40-200)	0-30 [0-2.0] (0-200)	0-60 [0-4.0] (0-400)	1-120 [0-8.0] (0-800)
Current Output	4-20 mA or 10-50 mA						
Supply Voltage	12-28 VDC for 4-20 mA or 10-50 mA						
Minimum Output Span	4 [0.28] (28)	12 [0.8] (80)	23 [1.45] (145)	23 [1.45] (145)	23 [1.45] (145)	38 [2.6] (260)	75 [5.0] (500)
Maximum Output Span	10 [0.7] (70)	30 [2.0] (200)	60 [4.0] (400)	60 [4.0] (400)	60 [4.0] (400)	100 [7.0] (700)	200 [14.0] (1400)

Independent Linearity
+0.15% Full Scale

Hysteresis & Repeatability
Less than 0.1% Full Scale

Resolution
Infinite

Environmental
Operating Temperature: -40°F to 176°F (-40°C to 80°C)
Humidity: 95 % Relative Humidity

Load - Maximum
800 OHMS @ 20 mA
320 OHMS @ 50 mA

Stability
Compensated Range: 32°F to 122°F (0°C to 50°C)
Temperature Compensation:
Zero ±1% FS - 32°F to 122°F (0°C to 50°C)
Span ±.5% FS- 32°F to 122°F (0°C to 50°C)
Drift Less than ± 0.1% FS/Year

Electrical
Calibration:
Zero -40 to 85% Full Scale
Span -25 to 85%
Response time Output less than 10 m-seconds from 10 to 90% input

Reverse Polarity Protected:
Output Ripple Less than 5mV peak to peak
Damping 7 seconds 10% to 90% FS jumper selectable

Mechanical
Damage Pressure: 3 times rated input or 200 psig, [15 BAR], (1500 kPa) whichever is less. 20 psig, [1.5 BAR], (150 kPa) for 5 psig, [.35 BAR], (35 kPa) range.

Recalibration Pressure: 2 times rated input
Vibration: No effect 10-200 Hz@ 2-10 G's

RFI/EMI Effect
Less than 0.1% of Span @ 10 /m class 2 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 /m level 3, 27-500 mHz band per IEC Standard 801-3 1984 (wire in conduit). EMC Directive 89/336 EEC European Norms EN 50081-2 & EN 50082-2.

Materials of Construction
Body and Housing Aluminum
Trim Stainless Steel, Brass, Zinc Plated Steel
Wetted Materials. Aluminum, Glass, Ceramic, Delrin, Nitrile, Silicone, RTV, Nickel
Material Compatibility Liquids and gases compatible with wetted materials

Hazardous Location Classifications:

**Factory Mutual (FM) Approvals:
Intrinsically Safe: (4-20 mA)
TAFI8001**

CLASS I, II, III, DIV 1, GROUPS A, B, C, D, E, F, G T4 Ta -40°C to +80°C.
1/0 AEx ia IIC T4 Ta -40°C to +80°C.

TTFI8001, TRFI8001, TDFI8001

CLASS I, DIV 1, GROUPS A, B, C, D T4 Ta -40°C to +80°C.
1/0 AEx ia IIC T4 Ta -40°C to +80°C.

**Non-incendive
TAFI8001**

CLASS I, II, III, DIV 2, GROUPS A, B, C, D, E, F, G T6 Ta -40°C to +76.5°C.
Type 4X

TTFI8001, TRFI8001, TDFI8001

CLASS I, DIV 2, GROUPS A, B, C, D T6 Ta -40°C to +76.5°C.

Entity Parameters - PER CHANNEL

$V_{max}^1 = 28V$	$C_i^3 = 0.013\mu F$
$I_{max}^2 = 100mA$	$L_i^4 = 0mH$
$^1V_{max} = \text{Max Voltage}$	$^3C_i = \text{Capacitance}$
$^2I_{max} = 100\text{Max Current}$	$^4L_i = \text{inductance}$

Nonincendive Field Wiring Parameters

$V_{max}^1 28V$	$C_i^3 = 0.013\mu F$
$I_{max}^2 = 100mA$	$L_i^4 = 0mH$
$^1V_{max} = \text{Max Voltage}$	$^3C_i = \text{Capacitance}$
$^2I_{max} = \text{Max Current}$	$^4L_i = \text{Inductance}$

TDFI8001 units are single channel only.



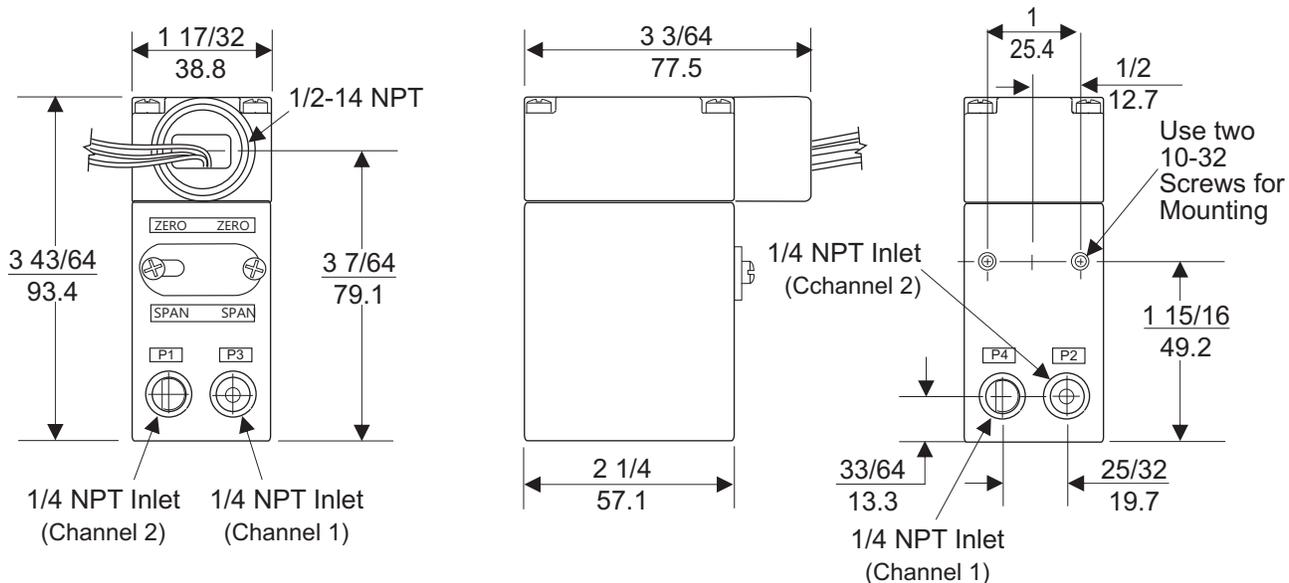


Figure 1: Model TA8001 Outline Dimensions

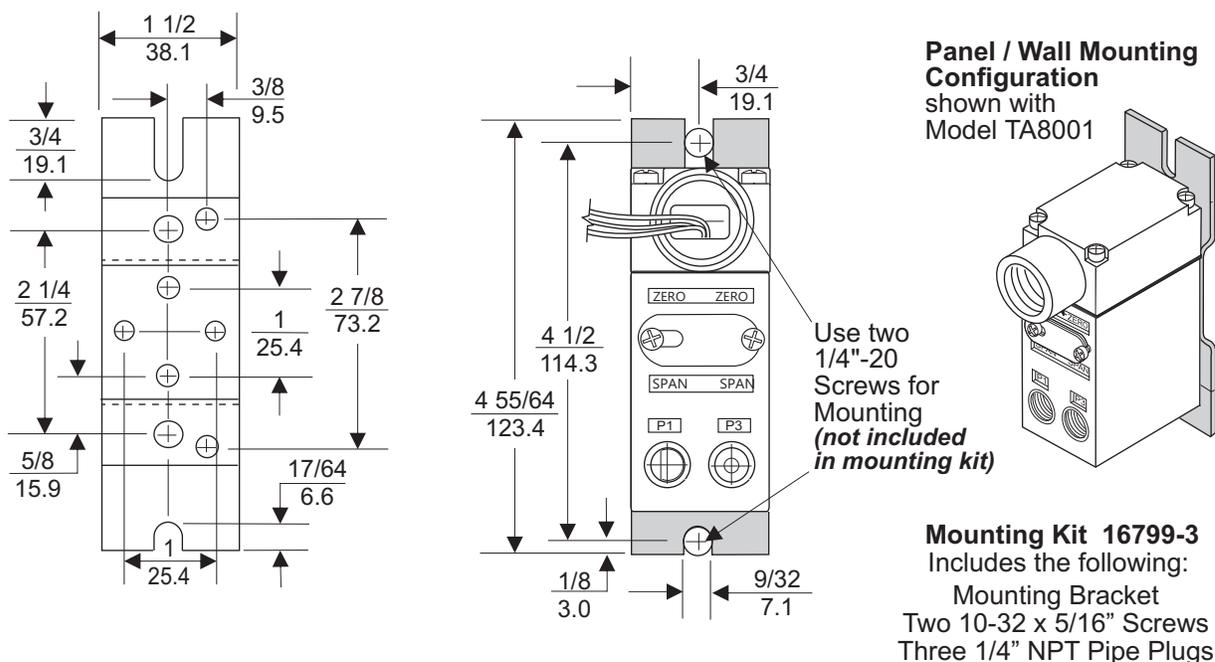


Figure 2: Mounting Kit 16799-3 (Included with unit)

INSTALLATION

Use Panel Mounting Kit 16799-3 with two 10-32 tapped mounting holes, included with the unit, to mount the Model T8001 Series on a flat surface. Remove the break-away tabs on the mounting plate when used with pipe clamps. For more information, see Figure 2.

A DIN Rail Mounting Kit 16893, is available to install the unit on DIN Rails. This mounting kit is included with the unit. For more information, see Figure 6. Use Mounting Kit 19254-1 to install the unit on a 2" pipe. For more information, see Figure 7.

LEGAL NOTICE: The information set forth in the foregoing Installation Instructions shall not be modified or amended in any respect without prior written consent of Fairchild Industrial Products Company. In addition, the information set forth herein shall be furnished with each product sold incorporating Fairchild's unit as a component thereof.

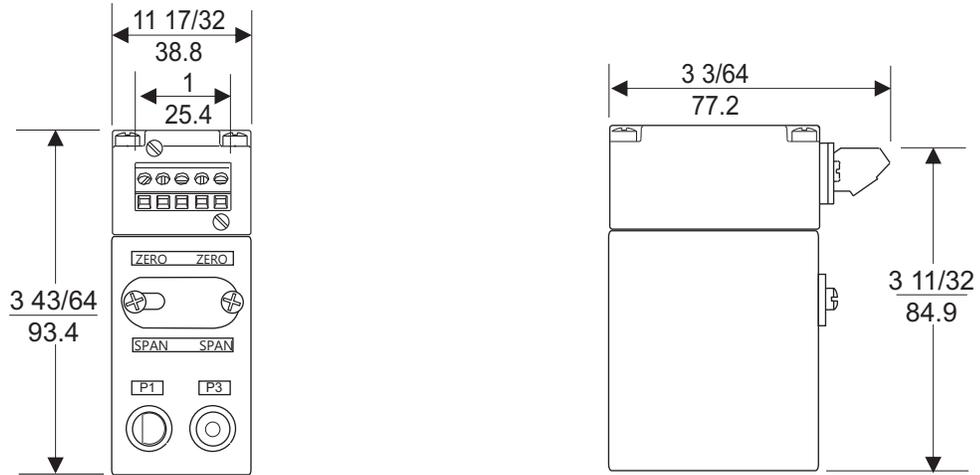


Figure 3: Model TT8001 Outline Dimensions

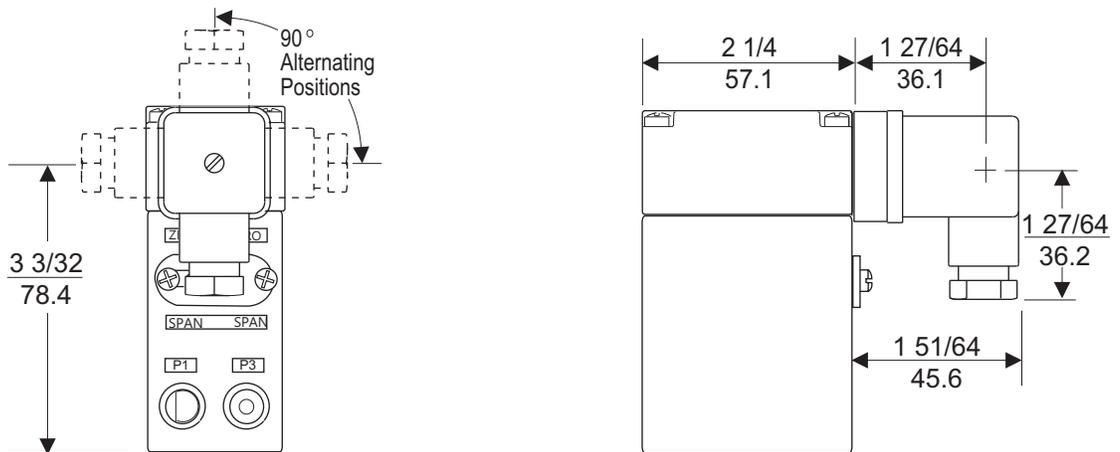


Figure 4: Model TD8001 Outline Dimensions

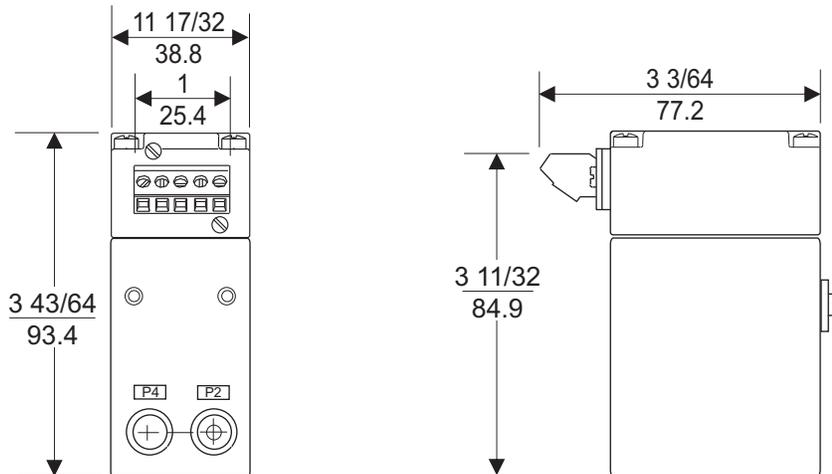


Figure 5: Model TR8001 Outline Dimensions

NOTE: The TR8001 Transducer is designed to use the TR Rack Kit. Physical construction is the same as the TT8001 (Terminal Block) unit with one exception; the terminal block is located on the back. For more information, see Figure 5.

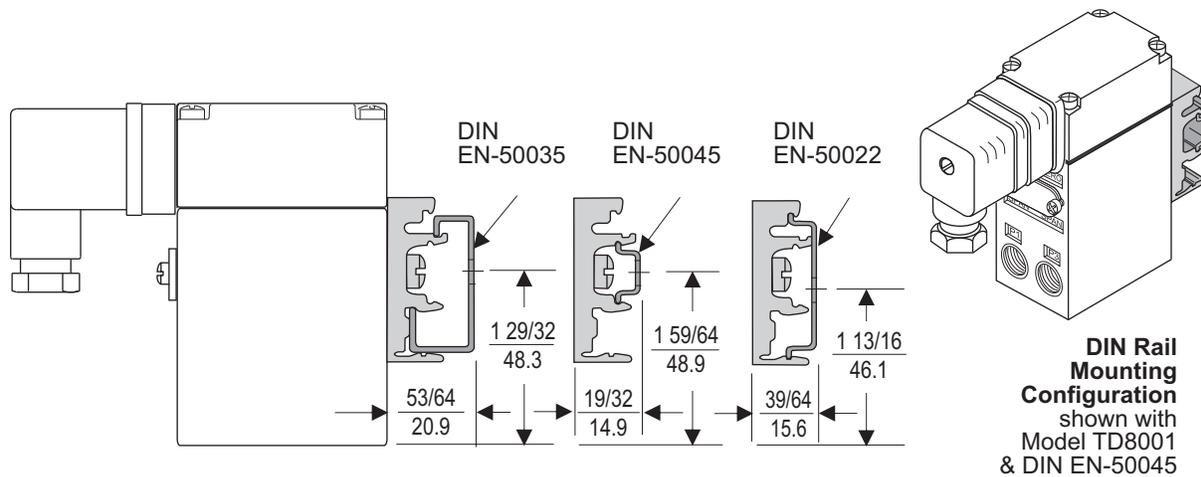
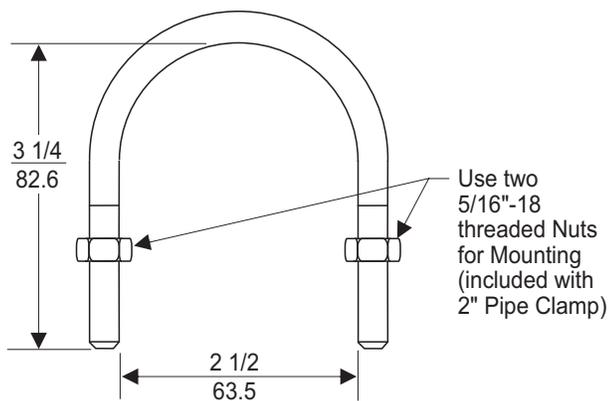
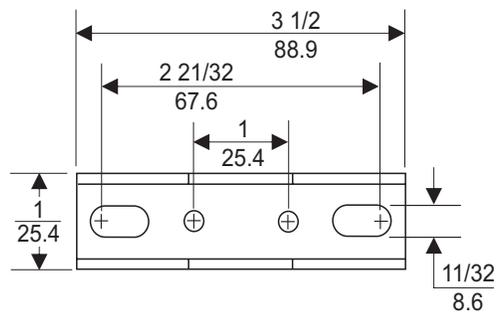
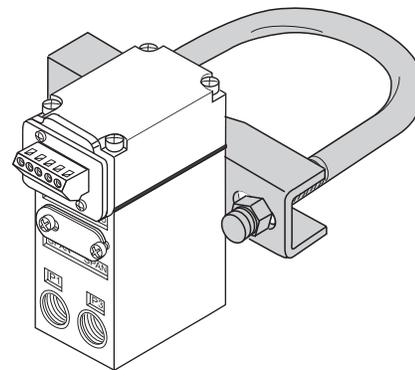


Figure 6: DIN Rail Mounting Kit 16893 (Included with unit)



2" Pipe Mounting Configuration
shown with Model TT8001



Mounting Kit 19254-1
includes the following:
Mounting Bracket • 2" Pipe Clamp
Two 10-32 x 5/16" Screws

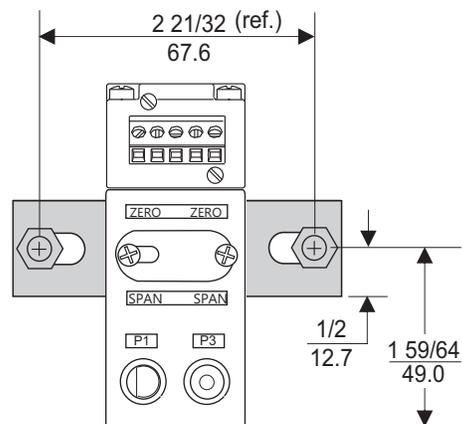


Figure 7: Optional Mounting Kit 19254-1 (Sold Separately)

Pneumatic Connections

Clean all pipelines to remove dirt and scale before installation.

Apply a minimum amount of pipe compound to the male threads of the fitting only. **Do Not use teflon tape as a sealant.** Start with the third thread back and work away from the end of the fitting to avoid contaminating the transducer. Install the transducer in the air line.

The inlet ports are labeled on the ends of the transducer. For more information, see Figure 10. Tighten connections securely.

Electrical Connections

Make connections to the Terminal Block, Conduit Connector, or the DIN Connector as shown in Figure 8.

• Wiring in Hazardous Areas

Wiring in hazardous areas should be performed in accordance with Tables 1 and 2 and any local codes that apply.

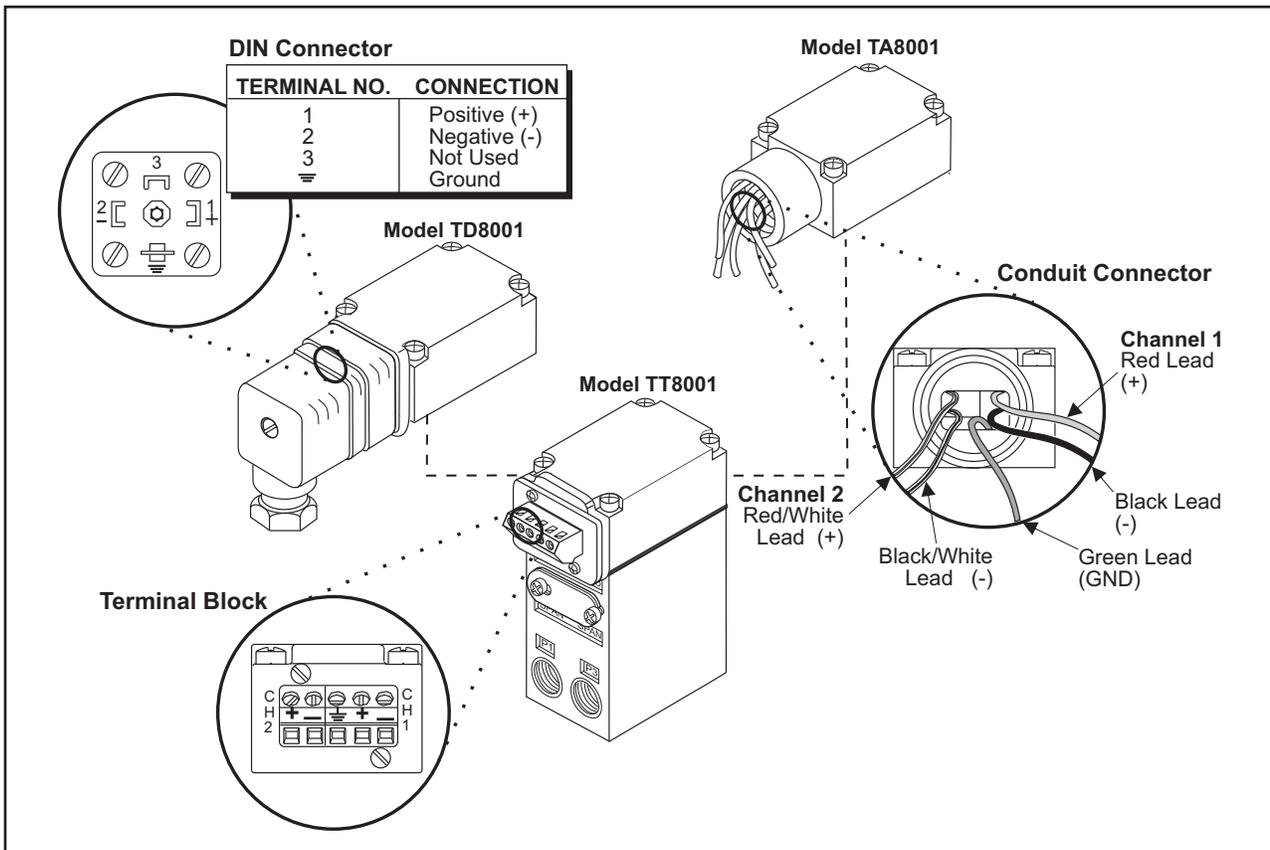
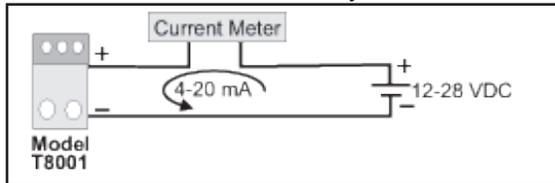
Hazardous Location Wiring Requirements

Wiring hazardous areas should comply with the codes on Table 1 and with any local codes that apply.

Country	Agency	Installation Codes
U.S.	FM Approvals	ANSI/ISA RP 12.6 ANSI/NFPA 70 (NEC)
Canada	CSA	CEC Part 1
Europe, Global	ATEX, IECEx	EN 60079-14, IEC 60079-14

Agency	
FM Approvals	18601
CSA	Pending
ATEX, IECEx	Pending

• Two-wire Transmission System



WARNING: THE APPARATUS ENCLOSURE CONTAINS ALUMINUM AND IS CONSIDERED TO CONSTITUTE A POTENTIAL RISK OF IGNITION BY IMPACT OR FRICTION. CARE MUST BE TAKEN INTO ACCOUNT DURING INSTALLATION AND USE TO PREVENT IMPACT OR FRICTION.

PART OF THE TDFI8001/TD8001 ENCLOSURE IS CONSTRUCTED ON NON-METALLIC MATERIAL TO PREVENT THE RISK OF ELECTROSTATIC SPARKING. THE ENCLOSURE SHALL BE CLEANED WITH A DAMP CLOTH.

CALIBRATIONS and ADJUSTMENTS

Calibration Requirements

- Digital volt meter with a capacity of current measurement within 0.1% accuracy and 1-microampere resolution.
- Current source supply capable of delivering a minimum of 20mA.
- Pneumatic supply capable of delivering a maximum of 10 psig over the maximum input.
- Pressure gage capable of a maximum digital readout of 10 psig over the maximum input.

You can make the following adjustments:

- Full-range operation
- Forward and reverse modes
- Calibration-zero and span
- Split-range operation
- Damping option

FULL-RANGE OPERATION

For Forward and Reverse Mode Operation, see Figure 8. Ensure that the jumper settings are correct. For more information, see Table 3.

Forward Acting Mode Adjustment

- Forward Acting Calibration-Zero
1. Set configuration jumpers per Table 3. See Figure 8.
 2. Apply the minimum input pressure. Adjust the Zero screw for minimum output signal. Turn the screw clockwise to increase current or counterclockwise to decrease current.
- Forward Acting Calibration-Span
3. Apply the maximum input pressure and adjust the Span screw for maximum output signal. Turn the screw clockwise to increase current or counterclockwise to decrease current.
 4. Repeat steps 2 and 3 until you achieve the required output range. For more information, see Figure 8.

Reverse Acting Mode Adjustment

5. Set Configuration jumpers per Table 3. See Figure 8.
6. Connect the input pressure to the transducer as shown in the installation instructions, Figure 10.
 - Set Reverse Acting Calibration
7. Apply the minimum input pressure and adjust the Zero screw for maximum output signal. Turn the screw clockwise to increase pressure and counterclockwise to decrease pressure.
 - Reverse Acting Calibration-Span
8. Apply the maximum input pressure and adjust the Span screw for minimum output signal. Turn the screw clockwise to increase pressure and counterclockwise to decrease pressure.
9. Repeat steps 7 and 8 until you achieve the required output range. For more information, see Figure 8.

Damping Adjustment

Set the Damping Adjustment, jumper J8, for optimum response and stability in specific applications. For more information, see Figure 8.

Description		Mode		ZERO						SPAN		
		J2/J7	J2/J7	J3		J4		J5		J6		
Jumper Configurations		F	R	F	R	N	SR	N	SR	A	B	C
Forward Mode												
Input		Output										
0-100%		0-100%	X		X		X		X		X	
Reverse Mode												
Input		Output		X		X	X		X		X	
0-100%		100-0%										

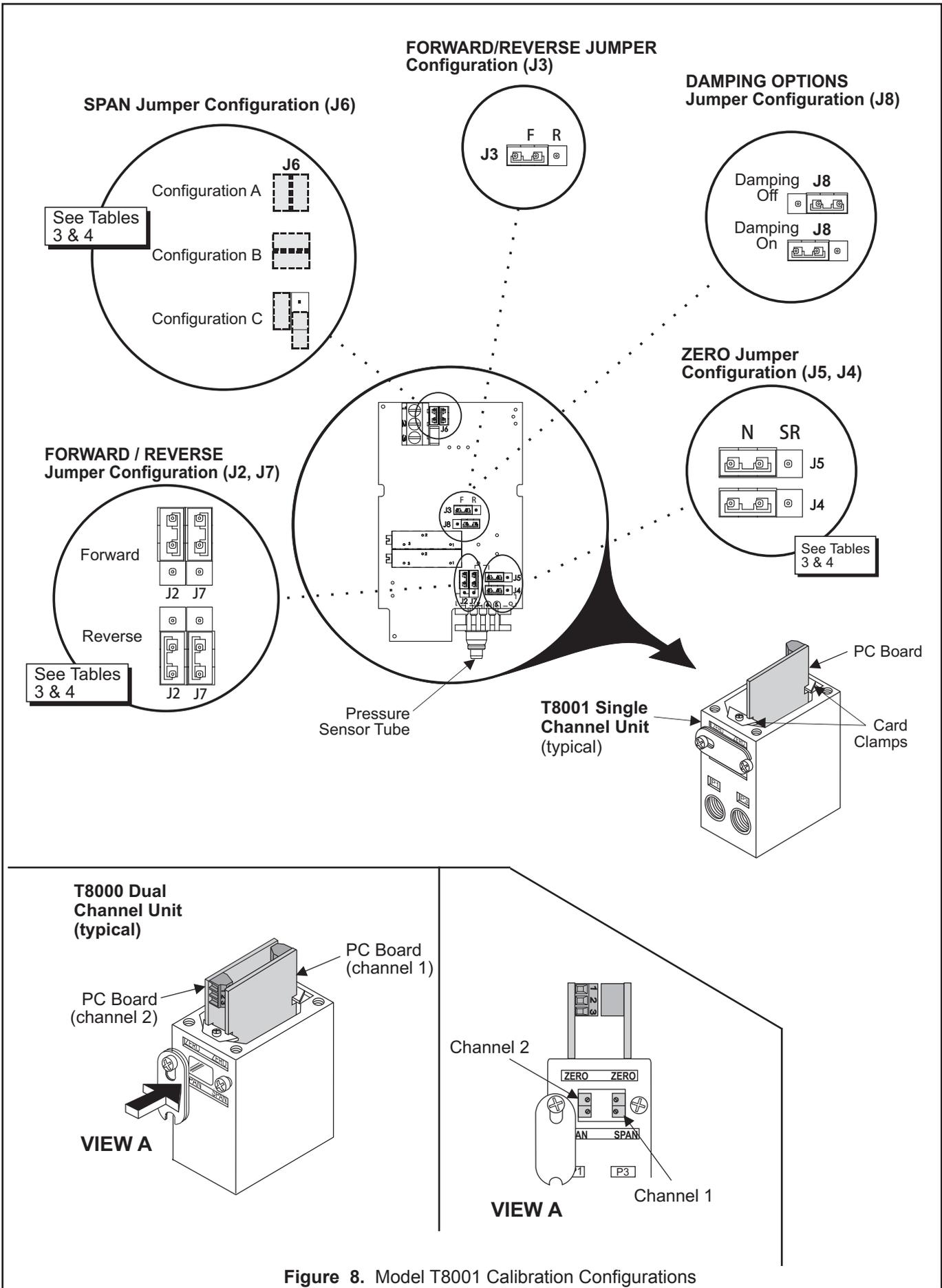


Figure 8. Model T8001 Calibration Configurations

Split-range Operation

Use the appropriate Forward or Reverse Acting configuration shown in Figure 8. Ensure that the jumper settings are correct. For more information, see Table 4.

Description				Mode		ZERO				SPAN				
Jumper				J2/J7	J2/J7	J3		J4		J5		J6		
Configurations				F	R	F	R	N	SRI	N	SRI	A	B	C
Forward Mode														
SRO	Input 0-100%	/	Output 0-50%	X		X		X		X				X
	Input 0-100%		Output 50-100%	X		X		X		X				
SRI	Input 0-50%	/	Output 0-100%	X		X		X		X			X	
	Input 50-100%		Output 0-100%	X		X			X		X		X	
	Input 20-60%	/	Output 0-100%	X		X			X	X			X	
	Input 60-100%		Output 0-100%	X		X			X		X		X	
	Reverse Mode													
SRO	Input 0-100%	/	Output 0-50%		X		X	X		X				X
	Input 0-100%		Output 50-100%		X		X	X		X				X

MAINTENANCE

To add or remove a second channel or to replace a PC Board, use the following steps.

1. Remove the four Screws holding the Cover to the Body.
2. To remove the PC Board, loosen the Card Clamps and lift the board straight up. To replace the board, align the Pressure Sensor Tube in the PC Board with the hole in the bottom of the Housing and push straight down on the board. For more information, see Figure 3.
3. Tighten the Card Clamps.

NOTE: Parts must be completely dry before you reassemble the unit.

TROUBLESHOOTING

Table 5. Troubleshooting	
Problem	Solution (check)
No Output	Input pressure and proper polarity of power supply, connection. Replace PC Board
Unstable Output	Input pressure for stability.
Unable to achieve Span in split range	Jumper setting
Unable to achieve Zero in Reverse Acting Operation	Jumper setting

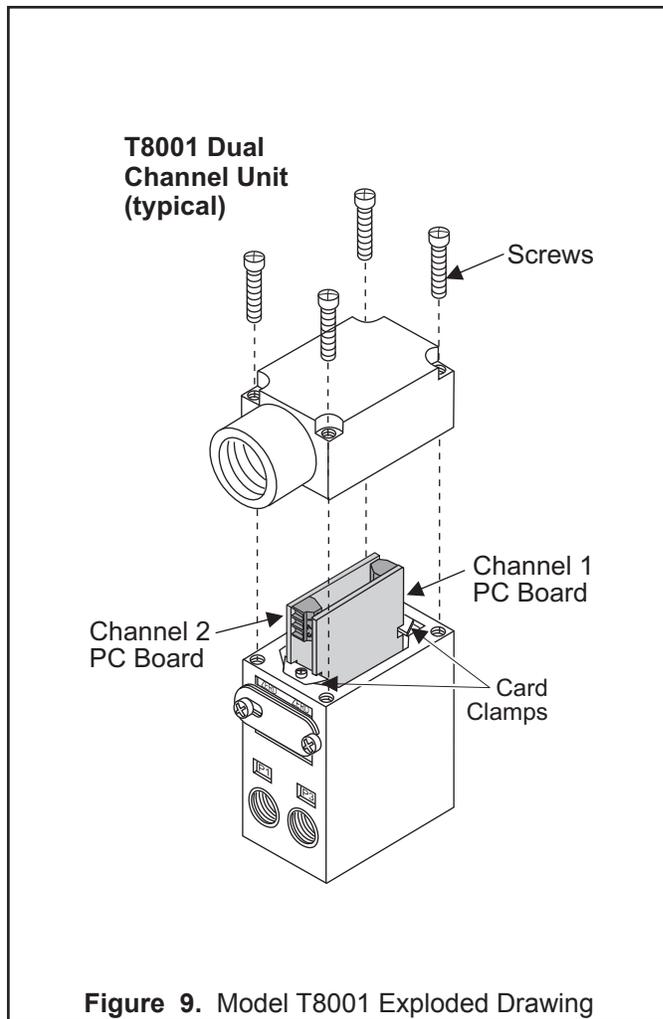


Figure 9. Model T8001 Exploded Drawing

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