SECTION B

ELECTRO-PNEUMATIC TRANSDUCERS

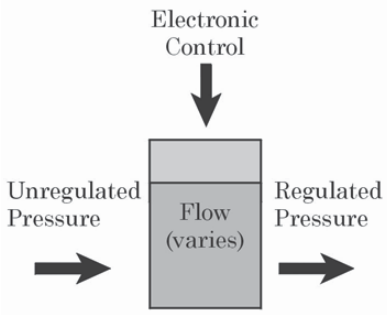
Electro-Pneumatic Transducers

Fairchild transducers are accurate, compact, lightweight, and fast responding. Some models include an analog feedback input option that controls the process variable independent of transducer output.

Many models are approved for splash-proof, explosion-proof, and intrinsically safe use. With a large combination of inputs and outputs, we can provide transducers for every application.

Motorized Regulator

One of the most reliable types of electro-pneumatic control is the motor to pressure regulator. This technology uses a motor to turn the adjusting screw of a pressure regulator. Regulated output pressure is adjusted using AC, DC, or analog pulse control signals. These units are sturdy, reliable, and lock 1n the last setting when the power is interrupted.



- 24X Series
- 24C Series

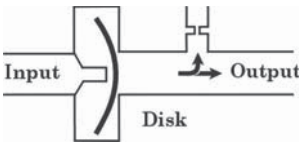
Electro-pneumatic Transducers

The electro-pneumatic Transducer was developed as a smaller, lighter, and more cost effective alternative to the Motorized Regulator. An electro-pneumatic I/P, E/P, and D/P transducer receives an analog or digital input control signal and converts it to a regulated pneumatic output that is directly or inversely related to the input.

Piezo-ceramic Technology

This technology is relatively new to I/P and E/P control. A piezo electric ceramic disk actuates the nozzle. An electronic signal to the disk causes a deflection that opens or partially closes the orifice. Internal electronic feedback assures precise output pressure control. This technology is extremely resistant to shock, vibration, and changes in positional orientation.

Fairchild's piezo-ceramic technology transducers are:



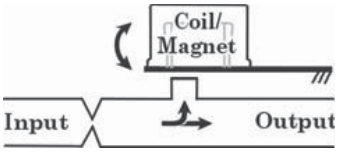
- T7800/01
- TXI7800/01
- TXI7850/01

Voice Coil Technology

This is a traditional, proven type of control technology. In voice coil systems, a flapper nozzle is attached to a voice coil that is suspended in a magnetic field. The strength of an electronic signal to the coil moves the coil into or out of the magnetic field. This movement causes a flapper nozzle to open or partially close a nozzle and change the regulated output.

Fairchild's voice coil technology transducers are:

- T5200 Series
- T5220 Series
- T5221
- T5400
- T5420
- T5700
- T6000 Series

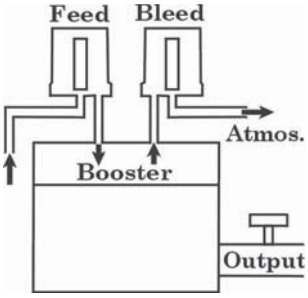


Feed and Bleed Technology

This is the latest type of technology. This system uses microprocessor controlled electro-pneumatic solenoid valves to feed supply pressure to the regulated output and bleed excess pressure to atmosphere. Analog or digital input control signals control the solenoids that monitor and maintain the regulated output. This technology is extremely resistant to shock and vibration.

Fairchild's feed and bleed technology transducers are:

- T1750
- T7900



Electro-Pneumatic Transducers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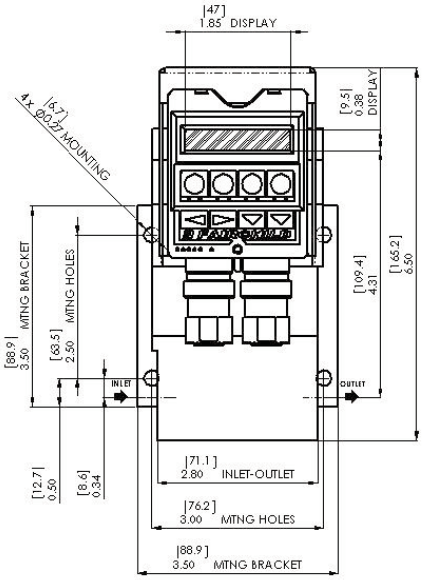
	T1750 High Pressure I/P, E/P	**T5700** High Flow Voice Coil I/P, E/P	**T6000** Voice Coil I/P, E/P	**T6100** Lock in Last Position I/P	**T7800/01** Piezo Ceramic I/P, E/P	**TXI7800/01 TXI7850/51** Explosion-Proof I/P, E/P	**T7900** High Flow Digital I/P, E/P
Max Flow Capacity: SCFM (m^3/HR)	1000 (1699.2) Supply = 600 psig	47 (79.9) Supply =120 psig	9 (15.3) Supply =120 psig	5.0 (8.5) Supply = 21 psig	9 (15.3) Supply =120 psig	9 (15.3) Supply =120 psig	100 (17.0) Supply =100 psig
Output Pressure: PSIG (kPa)	300-750 (2070-5170)	3–15 (20–100)	3–15, 0–120 (20–100), (0–800) 6 ranges	3-15 (20-100)	3–15, 0–120 (20–100), (0–800) 6 ranges	3–15, 3-27, 6-30 (20–100), (20-180), (40-200)	0-30, 0-75, 0–150 (0–200), (0-500),
Exhaust Capacity: SCFM (m^3/HR) Downstream pressure 5 psig above 9 psig setpoint	200 (340) @ downstream pressure 300 psig	< 9 (15.3)	2 (3.4)	2 (3.4)	2 (3.4)	2 (3.4)	50 (85)
Max Air Consumption: SCFH (m^3/HR)	0 @ steady state	3 (.08)	5.0 to 17.0 (0.14) to (0.48) Varies with model	5.0 (0.14)	5.5 to 15.0 (0.16) to (0.42) Varies with model	13.5 (0.38)	0 @ steady state
Accuracy: % FS	±0.5 Independent Linearity	±0.5 Independent Linearity	0.5 to 1.0 Independent Linearity Varies with model	0.5	±0.15 (typical)	±0.15	±0.5
Repeatability: % FS	<0.1	<0.1	0.25 to <1.0	.025	<0.1	<0.1	<0.1
Supply Pressure: PSIG (kPa)	1000 (7000) Maximum	18–150 (120–1000)	20–150 (150–1000)	20-40 (150-280)	20–150 (150–1000)	20–120 (150–800) Maximum	200 (1400) Maximum
Supply Voltage: DC	24 VDC	Signal Powered	Signal Powered	Signal Powered	Current Input Signal Powered Voltage Input 7.2–30 VDC	Signal Powered	24 VDC
Input Signal	4-20 mA, 0-10 VDC	4–20 mA, 10–50 mA 1–5 VDC, 1–9 VDC	4-20 mA, 10–50 mA 0-5 VDC, 0–10 VDC, 1–5 VDC, 1–9 VDC	4-20 mA	4-20 mA DC, 0–10 VDC, 1–9 VDC 1-5, 0-5 VDC Limited Availability	4-20 mA	4-20 mA, 0-10 VDC
Pipe Size	1/4", 3/8",1/2", 3/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4", 3/8", 1/2"
Underwriting Group Approvals: *		CE	F, C, E, CE	F, CE	F, C, E, CE	A, F, C, E, CE	CE
Dimensions (Aprx.) Inches (mm)	3 x 4 15/16 x 6 3/4 (76 x 126 x 172)	Dia. 3 H 6 1/2 (Dia. 76 H 165)	1 1/2 x 3 1/8 x 3 3/4 (38 x 79 x 95)	2 1/2 x 2 1/2 x 6 1/2 (64 x 64 x 165)	1 1/2 x 3 1/8 x 3 3/4 (38 x 79 x 95)	3 11/16 x 3 13/16 x 4 5/8 (94 x 97 x 117.5)	3 x 3 1/8 x 7 3/4 (76 x 79 x 197)

FM APPROVED CSA Ex CE *

A	=	SAA, Australia	E	=	ATEX, IECx*
F	=	FM, Factory Mutual	C	=	CSA, Canadian Standards
CE	=	CONFORMITÉ EUROPEÉNNE	* T7800 Series		

Features

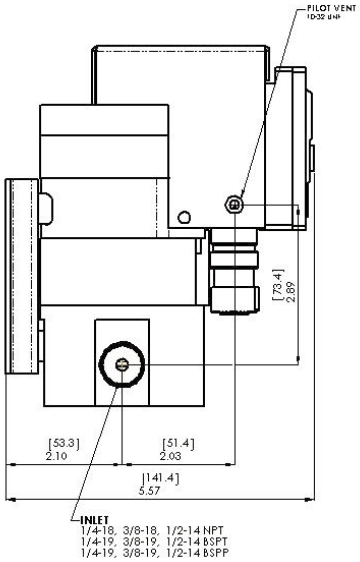
- Output pressure displays in psig, [BAR], (kPa), or user-defined pressure units.
- Reverse acting capability for analog input and output signals.
- Select Current or Voltage mode for input signal or optional analog channels using the keypad.
- Independently adjustable PID tuning coefficients.
- Fully functional keypad and display.
- Backlit Liquid Crystal display screen.

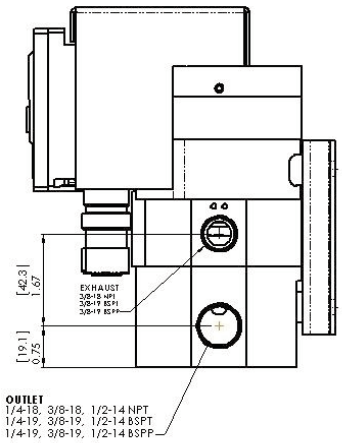


Operating Principles

The Model T1750 Transducers have a closed-loop, integrated, microprocessor control system that regulates outlet pressure. You can control the output from the Model T1750 using the keypad or from an analog control signal.

The Feed and Bleed Solenoid Valves control pressure in the Signal Chamber of the Booster Section. A pressure sensor measures the outlet pressure and provides a feedback signal to the Electronics Section. Any variation in pressure between the setpoint and the outlet pressure activates the Feed and Bleed Solenoid Valves to change the output pressure.





Specifications

Supply Pressure
1000 psig, [70 BAR], (7000 kPa) Maximum

Flow Capacity
220 SCFM (373.8 m^3/HR) @ 600 psig, [40 BAR], (4000 kPa) supply

1000 SCFM (1699.2 m^3/HR) @ 600 psig, [40 BAR], (4000 kPa) supply (3/4" NPT Port Version only).

Exhaust Capacity
200 SCFM (340 m^3/HR) where downstream pressure is 300 psig, [21.0 BAR], (2100 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint

Supply Pressure Effect
No Measurable Effect

Input Signal
4-20 mA, 0-10 VDC

Electrical Supply
24 VDC ± 10%

Power Consumption
Less than 5 watts

Air Consumption
0 @ steady state output with Deadband @ 1% of Full Scale

Ambient Temperature Limits
0°F to +140°F, (-18°C to 60°C)

Accuracy / Repeatability / Linearity / Hysterisis
< +/- 0.50% of Span (per ISA S51.1)

Deadband
Adjustable from 0-10% of Full Scale

Materials of Construction

Body and Housing	Anodized Aluminum
Trim	Plated Steel
Elastomers	Fluorocarbon
Valve	Stainless Steel
Valve Seat	PVDF

Catalog Information

Catalog Number T1750 [ ] [ ] [ ] [ ] [ ]

Input

0-10 VDC	0
4-20 mA	4
DeviceNet ™	D

Output

0-300 psig	04
0-500 psig	05
0-750 psig	06
[0-20 BAR]	14
[0-35 BAR]	15
[0-50 BAR]	16
(0-2.0 MPa)	24
(0-3.5 MPa)	25
(0-5.0 MPa)	26

Port Size

1/4"	02
3/8"	03
1/2"	04
3/4" [1]	06

Pipe Thread Type

NPT Thread	O
BSPT Thread	U
BSPP Thread	H

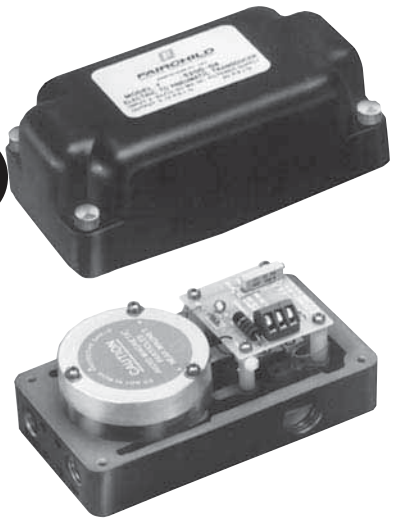
Option Type

No Option Board	N

[1] *Required for 1000 SCFM unit*

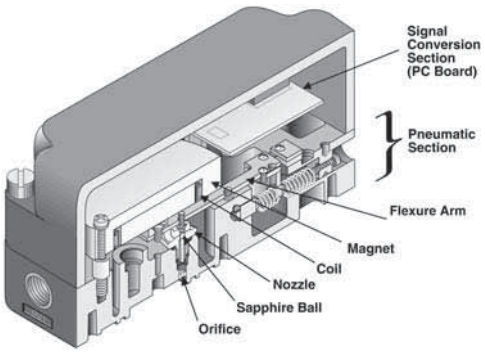
T1750 Cables and Connectors (Sold Separately)

Part Number	Description
055-IPI-089-M	Male Connector (Feedback Output)
055-IPI-089-F	Female Connector (Control Input)
032-IPI-009-3M	Male cable with one connector (3 meter)
032-IPI-009-3F	Female cable with one connector (3 meter)



Features

- Fast Response to Input Signal changes results in faster loop control and savings in process materials.
- Minimal Air Consumption allows use in systems where operating gas is expensive.
- Five Input Signal Ranges meet most process and machine requirements.
- Temperature Compensation provides stable operation over wide temperature Range.
- Compact Size permits use in space restricted areas.
- Vibration Resistance maintains set points under adverse vibration conditions.
- Various Mounting Configurations allow installation flexibility for most applications.
- NEMA 3R Enclosure available for outdoor and indoor installations.

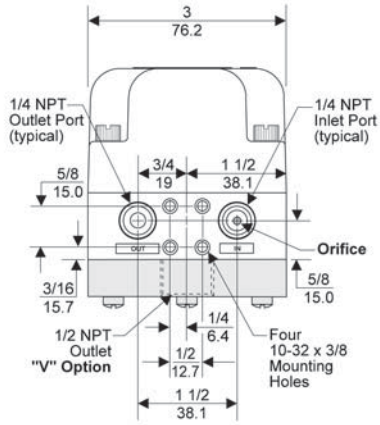


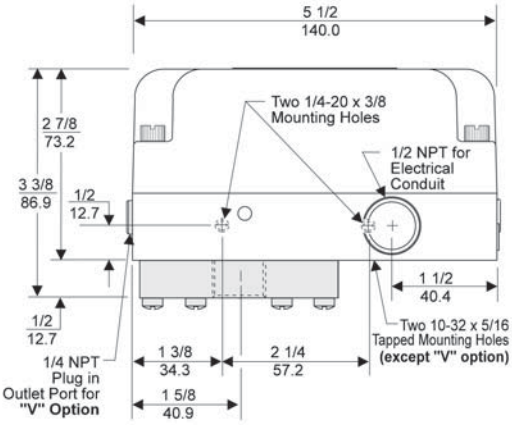
Operating Principles

The T5200 Transducer is an electro-pneumatic device that is controlled by a 4-20 mA current in a control loop. This device is made up of two sections, the Signal Conversion Section and the Pneumatic Section.

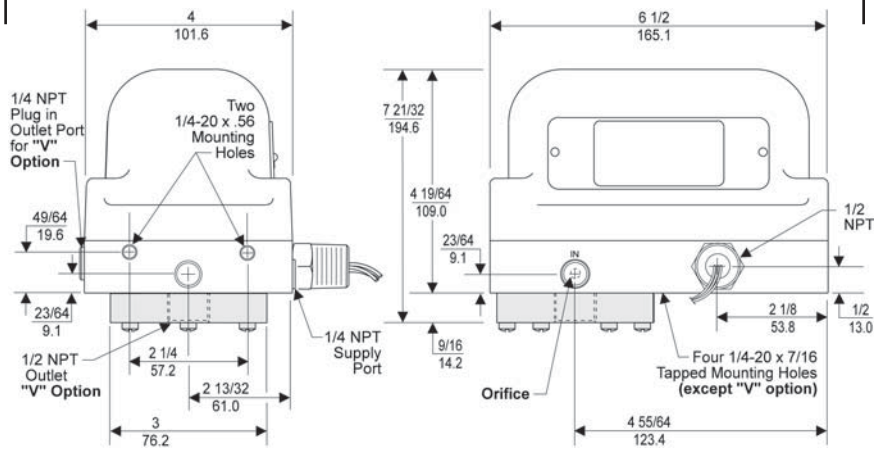
The Signal Conversion Section (PC Board) accepts a 4-20 mA current from the control loop. This signal current is applied to a coil which creates a magnetic force that moves a Flexure Arm.

The Pneumatic Section operates as a force balance system. A Sapphire Ball floats inside a Nozzle and controls the output pressure by exhausting air supplied through an Orifice. This Sapphire Ball acts as a piston exerting a force which is balanced against the force of the Flexure Arm.





T5200 Explosion-Proof

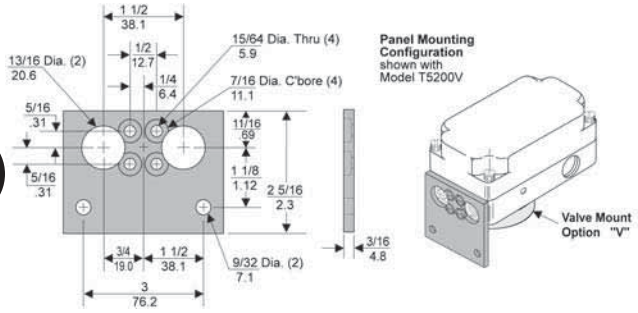


Hazardous Area Specifications

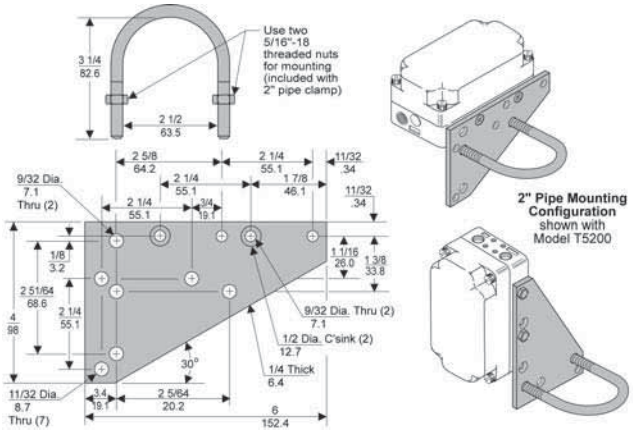
<table>
<tr><th></th><th>Explosion-Proof</th><th>Intrinsically Safe</th></tr>
<tr><td rowspan="3">Factory Mutual (FM) Approvals</td><td>TFXPD5200
Class I, Division 1, Groups B, C and D;
Class II, Division 1, Groups E, F, and G;
Maximum Ambient 65° C.</td><td rowspan="2">TFI5200
Class I, Division 1, Groups A, B, C, and D;
Class II, Division 1, Groups E, F, and G;
Class III, Division 1, Fibers;
NEMA 3R Enclosure. (Upright Position ONLY)</td></tr>
<tr><td>TFXPDI5200
Class I, Division 1, Groups A, B, C, and D;
Class II, Division 1, Groups E, F, and G;
Class III, Division 1, Fibers;
NEMA 3R Enclosure. (Upright Position ONLY)</td></tr>
<tr><td>TFN5200
NEMA 4X Enclosure.</td><td>Entity Parameters
Voc[1] = 40 VDC, Ca[3] = 0 µF
Isc[2] = 125 mA, La[4] = 0 mH
[1]Voc = Open Circuit Voltage, [3]Ca = External Capacitance
[2]Isc = Short Circuit Voltage, [4]La = External Inductance</td></tr>
<tr><td>Canadian Standards Association (CSA) Approvals</td><td>Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:
Rated: 28V Maximum 300 Ohm Minimum</td><td>TCI5200
Class I, Division 1, Groups A, B, C, and D;
Class II, Division 1, Groups E, F, and G;
Type 3 Enclosure;
Rated 1-5 mA, 4-20 mA, 10-50 mA,
1-5 VDC, 1-9 VDC;
Temperature Code T4A.</td></tr>
</table>

FM APPROVED

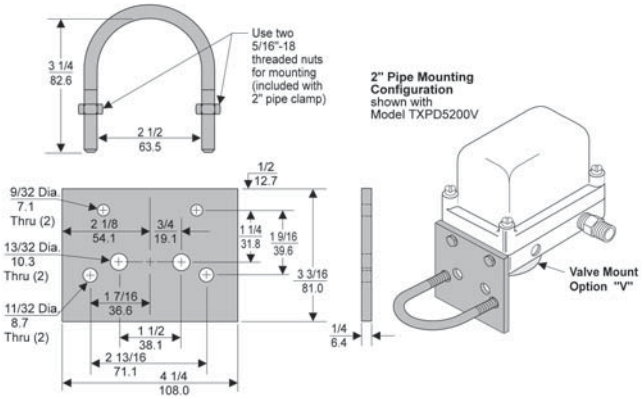
Mounting Kits



Mounting Bracket: 15268



Mounting Bracket: 14596



Mounting Bracket: 14140

Model T5200 Transducer Kits & Accessories

Mounting Bracket Kits.....15268 (sold separately)
14596 (sold separately)
14140 (sold separately)

Installation

For Installation Instructions, refer to the *Fairchild T5200 Series Electro-Pneumatic Transducer Installation, Operation and Maintenance,* IS-500T5200.

Catalog Information

Catalog Number T [ ] [ ] [ ] **5200** [ ] [ ] [ ]

Underwriting Group
Canadian Standard C
Factory Mutual . . . . . F

Approval Class
Explosion-Proof[1] . . . . . XPD
NEMA 4X/IP65[1] . . . . . N
None (leave blank) . . . . .

Intrinsically Safe[2] I
None (leave blank) . . . . .

Input
1-5 mA 1
4-20 mA 4
10-50 mA[3]
1-5 VDC 5
1-9 VDC 9

Output Pressure Units
psig 0
[BAR] 1
(kPa) 2

Options
Valve Mount V

[1] Factory Mutual Approval Only.
[2] Intrinsically Safe Units cannot be set for Reverse Acting Mode in field.
[3] Units shipped calibrated 4-20 mA; 10-50 mA units must be calibrated in field.

Specifications

Supply Pressure
20 + 2 psig, [1.5 + 0.15 BAR], (150 + 15 kPa)

Output Capacity (SCFM)
0.15 (0.26 m^3/HR) Maximum

Air Consumption (SCFM)
0.16 (0.27 m^3/HR) Maximum

Output Range
3-15 psig, [0.2-1.0 BAR], (20-100 kPa)

Supply Pressure Effect
+ 0.3% of Span for a 1 psig, [0.1 BAR], (10 kPa) supply change

Impedence / Input Signal

Range	*OHMS*
1-5 mA	2000
4-20 mA	120[1]
10-50 mA	50[1]
1-9 VDC	2550
1-5 VDC	375

Shock & Vibration Effect
Negligible up to 2 g's between 5 Hz and 200 Hz

Terminal Based Linearity
+ 0.50% Full Scale

Independent Linearity
+ 0.25% Full Scale

Temperature Coefficient
Less than 1% of Span / 50° F (10° C)

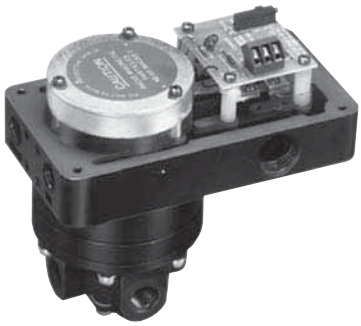
Hysteresis
Within 0.1% Full Scale

Frequency Response
-3 db @ 20 Hz (unloaded)

Ambient Temperature
-40° F to +150° F, (-40° C to +65.5° C)

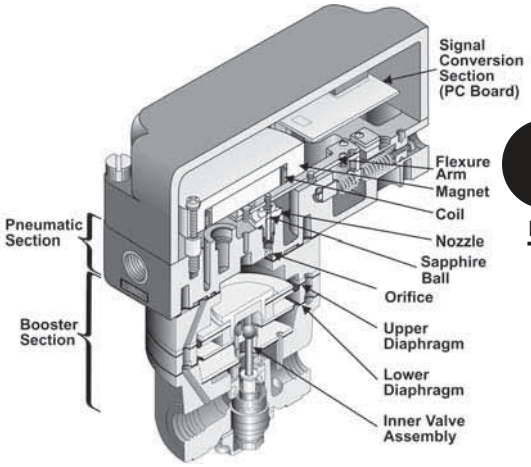
Materials of Construction
Body and Housing . . . . . .Aluminum
Ball and Orifice. . . . . Sapphire, Brass
Nozzle . . . . . Stainless Steel

[1] *Add 332 OHMS for CSA Units.*



Features

- Fast Response to Input Signal changes results in faster loop control and savings in process materials.
- Integrated Volume Booster Output meets input requirements of final control elements requiring a higher capacity output signal and/or increased output pressure.
- Six Input Signal Ranges meet most process and machine requirements.
- Negative Bias Option allows zero pressure based operation.
- Five Booster Ratios meet industrial equipment requirements for higher output pressure ranges.
- Temperature Compensation provides stable operation under environmental changes.
- Vibration Resistance maintains set points under adverse vibration conditions.
- Various Mounting Configurations allow installation flexibility for most applications.
- NEMA 3R or optional NEMA 4X Enclosure for outdoor and indoor installations.
- Conduit Port for convenient wiring.



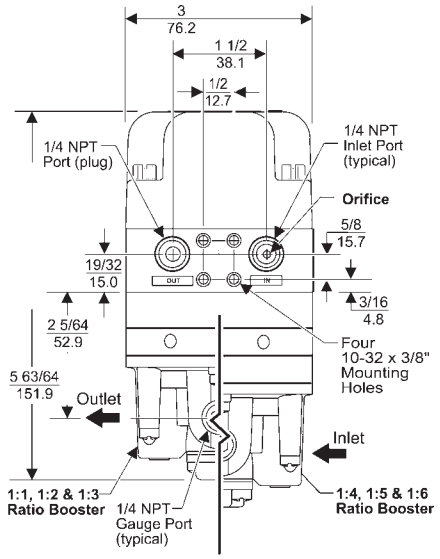
Operating Principles

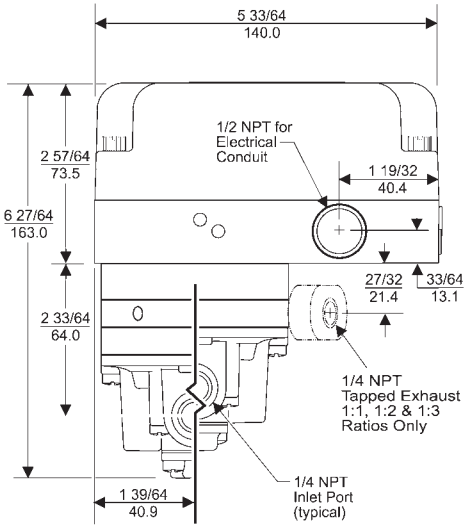
The T5220 Transducer is an electro-pneumatic device that converts a DC current or voltage input signal to a proportional pneumatic output This device is made up of three sections, the Signal Conversion Section, the Pneumatic Section and Booster Section.

The Signal Conversion Section (PC Board) accepts a DC current or voltage. This signal is applied to a coil which creates a magnetic force that moves a Flexure Arm.

The Pneumatic Section operates as a force balance system. A Sapphire Ball floats inside a Nozzle and controls the output pressure by exhausting air supplied through an Orifice. This Sapphire Ball acts as a piston exerting a force which is balanced against the force transferred to the Flexure Arm by the Coil.

The Booster Section amplifies the output pressure of the transducer. At set point, the force due to transducer output pressure acting on the top of the Upper Diaphragm is balanced by the force due to booster output pressure acting on the underside of the Lower Diaphragm. Any imballance results in actuation of the appropriate supply valve or exhaust valve to correct the output pressure.

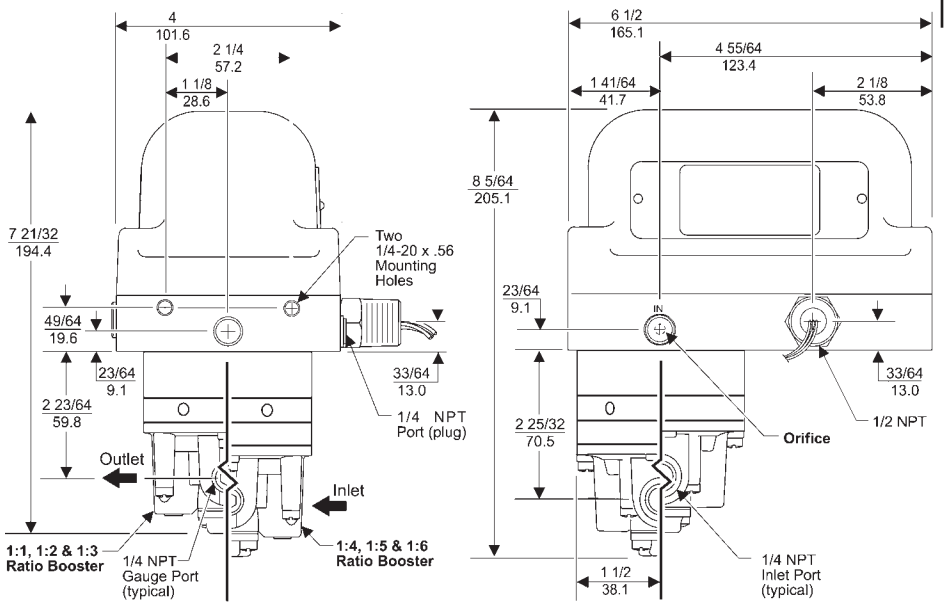




B

Model T5220

T5220 Explosion-Proof

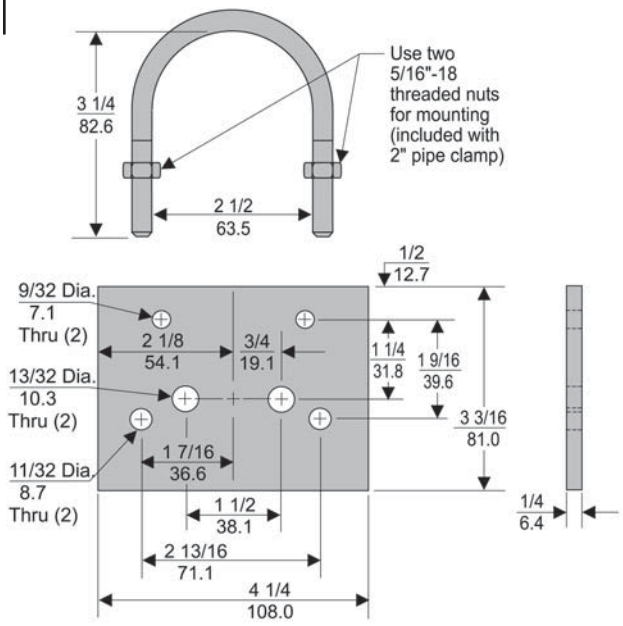


Hazardous Area Specifications

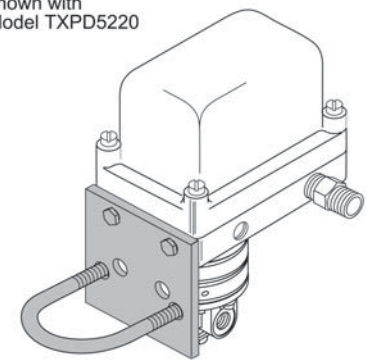
	Explosion-Proof	Intrinsically Safe
Factory Mutual (FM) Approvals	**TFXPD5220** Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F, and G; Maximum Ambient 65° C.	**TFI5220** Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1, Fibers; NEMA 3R Enclosure. ***(Upright Position ONLY)***
	TFXPDI5220 Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1, Fibers; NEMA 3R Enclosure. ***(Upright Position ONLY)***	***Entity Parameters*** Voc^1 = 40 VDC; Ca^3 = 0 µF Isc^2 = 125 mA; La^4 = 0 mH *[1]Voc = Open Circuit Voltage*; *[3]Ca = External Capacitance* *[2]Isc = Short Circuit Voltage*; *[4]La = External Inductance*
	TFN5220 NEMA 4X Enclosure.	
Canadian Standards Association (CSA) Approvals		**TCI5220** Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Type 3 Enclosure; Rated 1-5 mA, 4-20 mA, 10-50 mA, 1-5 VDC, 1-9 VDC; Temperature Code T4A.
FM APPROVED		***Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:*** Rated: 28V Maximum 300 Ohm Minimum

Mounting Kits

14140

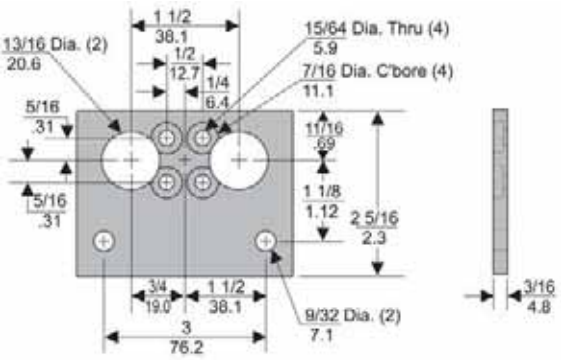


2" Pipe Mounting Configuration shown with Model TXPD5220



Mounting Kit 14140
Includes the following:
Mounting Plate • 2" Pipe Clamp
Support Bar • Two 1/4" Lockwashers
Two 1/4-20 x 5/8" Bolts • Two 3/8" Lockwashers
Two 3/8-16 Nuts • Two 3/8-16 x1 1/2" Caps

15268

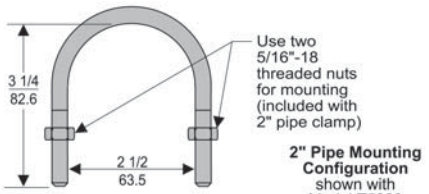


Panel Mounting Configuration shown with Model T5220

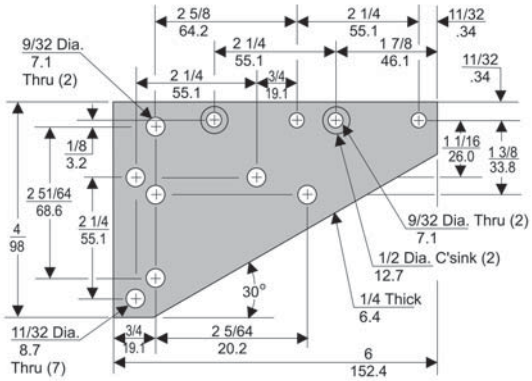
NOTE:
For Outdoor Use, Mount In Upright Position. (cover up)

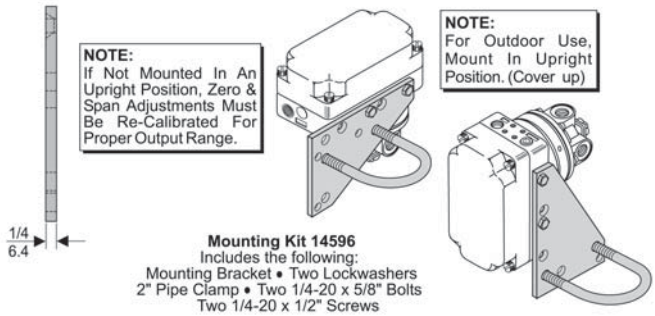
Mounting Kit 15268
Includes the following:
Mounting Bracket • Four 10-32 x 7/16" Screws

14596



2" Pipe Mounting Configuration shown with Model T5220





Mounting Kit 14596
Includes the following:
Mounting Bracket • Two Lockwashers
2" Pipe Clamp • Two 1/4-20 x 5/8" Bolts
Two 1/4-20 x 1/2" Screws

Model T5220 Transducer Kits & Accessories

Mounting Bracket Kits.....14140 (sold separately)
15268 (sold separately)
14596 (sold separately)

Specifications

Supply Pressure[1]
20 + 2 psig, [1.5 + 0.15 BAR], (150 + 15 kPa)

Output Capacity (SCFM)
15 (25.5 m^3/HR) Max. @ 20 psig, [1.5 BAR], (150 kPa) supply. 45 (76.5 m^3/HR) @ 100 psig, [7.0 BAR], (700 kPa) (with separate supply.)

Exhaust Capacity (SCFM)
7 (11.9 m^3/HR) downstream pressure @ 5 psig, [.35 BAR], (35 kPa) above 3 psig, [0.2 BAR], (20 kPa) set point.
14 (23.8 m^3/HR) downstream pressure @ 5 psig, [.35 BAR], (35 kPa) above 15 psig, [1.0 BAR], (100 kPa) set point.

Air Consumption (SCFM)
0.28 (0.48 m^3/HR) Max. (dead end) @ 20 psig, [1.5 BAR], (150 kPa) supply

Output Range (1:1 Ratio)
3-15 psig, [0.2-1.0 BAR], (20-100 kPa)

Supply Pressure Effect
+ 0.3% of Span for a 1 psig, [0.07 BAR], (7 kPa) supply change between 18-22 psig, [1.2-14.5 BAR], (120-145 kPa).

Shock & Vibration Effect
Negligible up to 2 g's between 5 Hz and 200 Hz

Terminal Based Linearity
+ 0.50% Full Scale (T5220 only), within 0.6% Output Span (T5222-T5226)

Independent Linearity
within 0.25% Full Scale (T5220 only), within 0.3% Output Span (T5222-T5226)

Hysteresis & Repeatability
within 0.1% Full Scale (T5220 only), within 0.1% Times Ratio of Output Span (T5222-T5226)

Impedence / Input Signal	***Range***	***OHMS (nominal)***
	1-5 mA	2000
	4-20 mA	120[2]
	10-50 mA	50[2]
	1-5 VDC	375
	0-6 VDC	375[3]
	0-12 VDC	2550[3]
	1-9 VDC	2550

[2] **Add 332 for CSA Approved Units**
[3] **Not approved for Intrinsically Safe Ratings**

Ambient Temperature
-40° F to +150° F, (-40° C to +65.5° C)

Temperature Coefficient
Less than 1% of Span / 50° F (10° C)

Materials of Construction
Body and Housing . . . . . Aluminum
Ball and Orifice . . . . . Sapphire, Brass
Nozzle . . . . . Stainless Steel

Table 1. Pressure Ranges

Ratio	Standard Output			Negative Bias Output (B) Option		
	psig	[BAR]	(kPa)	psig	[BAR]	(kPa)
1:1[1]	3-15	[0.2-1.0]	(20-100)	0-12	[0-0.8]	(0-80)
1:2[2]	6-30	[0.3-2.0]	(30-200)	0-24	[0-1.5]	(0-150)
1:3[2]	9-45	[0.6-3.0]	(60-300)	0-36	[0-2.5]	(0-250)
1:4[2]	12-60	[0.9-4.0]	(90-400)	0-48	[0-3.0]	(0-300)
1:5[2]	15-75	[1.0-5.0]	(100-500)	0-60	[0-4.0]	(0-400)
1:6[2]	18-90	[1.2-6.0]	(120-600)	0-72	[0-5.0]	(0-500)

[1] Standard unit is configured for common supply to transducer and booster.
[2] Units require 20 psig, [1.5 BAR], (150 kPa) for transducer and a separate supply for booster. A common supply of up to 110 psig, [7.7 BAR], (770 kPa) can be used provided the prefix Z147 is added to the original order, and the supply pressure is noted.

Catalog Information

Catalog Number T [ ][ ][ ][ ] 522 [ ]-[ ][ ][ ]

Underwriting Group
Factory Mutual . . . . . F
Canadian Standard C

Approval Class
Explosion-Proof[1] . . . . . XPD
NEMA 4X/IP65[1] . . . . . N
None (leave blank) . . . . .

Intrinsically Safe[2] I
None (leave blank) . . . . .

Options
Negative Bias- *3 psig, [0.2 BAR], (20 kPa)* . . . . B
High Option[3] . . . . . HI

Booster Ratio[4]
1:1 (standard) 0
1:2 2
1:3 3
1:4 4
1:5 5
1:6 6

Input
1-5 mA 1
4-20 mA 4
10-50 mA[5] . . . . .
1-5 VDC 5
0-6 VDC[6] 6
0-12 VDC[6] 8
1-9 VDC 9

Output Pressure Units
psig 0
[BAR] 1
(kPa) 2

Options
Tapped Exhaust - *1:1, 1:2, or 1:3 Ratios Only* . . . . . E

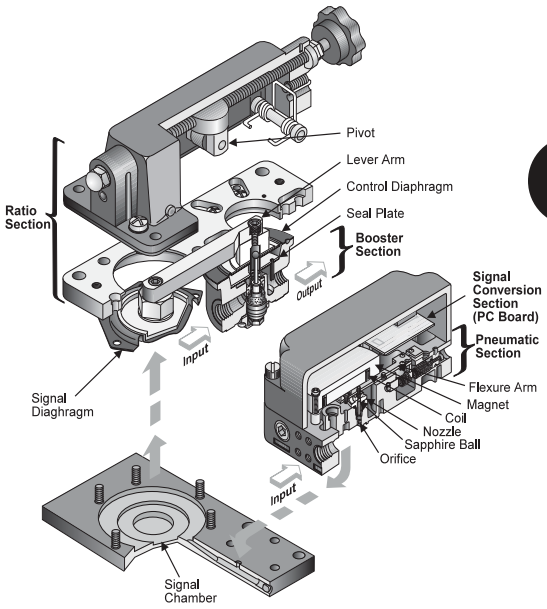
[1] Factory Mutual Approval Only.
[2] Intrinsically Safe Units cannot be set for Reverse Acting Mode in field.
[3] If high flow (SCFM) is required for the standard 1:1 ratio, select HI Option. Separate supply is required.
[4] Refer to Table 1. for Pressure Ranges
[5] Units shipped calibrated 4-20 mA; 10-50 mA units must be calibrated in field.
[6] Not approved for intrinsically safe ratings.

Installation

For Installation Instructions, refer to the *Fairchild T5220 Series Electro-Pneumatic Transducer Installation, Operation & Maintenance Instructions,* IS-500T5220.

Features

- Maintains consistent output Pressure under shock and vibration conditions.
- Temperature Compensation provides stable operation over wide operating Temperature Ranges
- Adjustable Positive and Negative Bias permits use with various final control elements.
- High Output Flow meets requirements for most industrial control applications.
- Adjustable Gain allows a single device to cover most industrial and process control requirements.



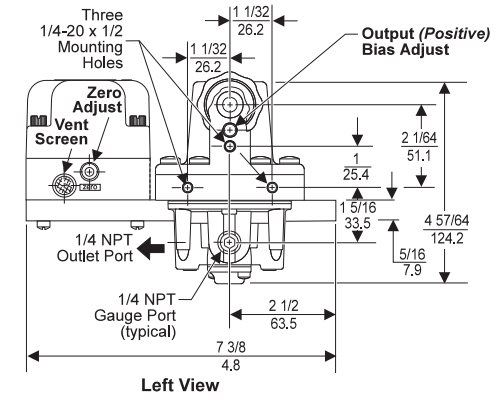
Operating Principles

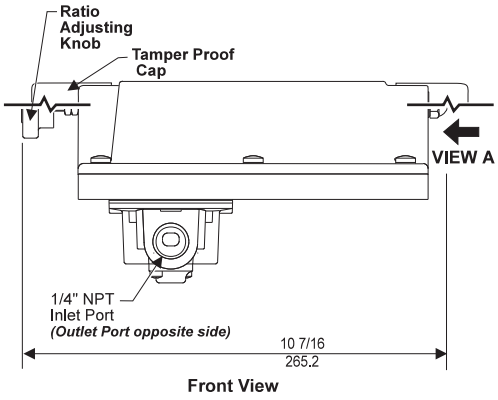
The T5221 Transducer is an electro-pneumatic device that converts a DC current or voltage input signal to a proportional output pressure. This device is made up of four sections, the Signal Conversion Section, the Pneumatic Section, the Ratio Section, and the Booster Section.

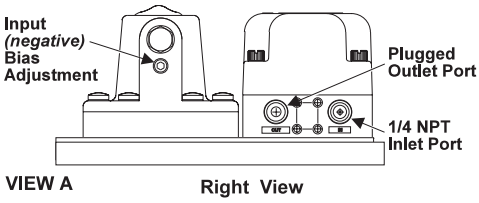
The Signal Conversion Section (PC Board) accepts a DC current or voltage. This signal current is applied to a Coil which creates a magnetic force that moves a Flexure Arm.

The Pneumatic Section operates as a force balance system. A Sapphire Ball floats inside a Nozzle and controls the output pressure by exhausting air supplied through an Orifice. This Sapphire Ball acts as a piston exerting a force which is balanced against the force transferred to the Flexure arm by the Coil. Signal pressure from the Pneumatic Section is routed to the underside of the Signal Diaphragm in the Ratio Section. Signal pressure acting on the Signal Diaphragm transmits a force through the lever to the Control Diaphragm of the booster. The output pressure is a function of signal pressure times the ratio of lever arm lengths on either side of the Pivot.

The Booster Section supplies the unit's output pressure. At set point, the lever Arm force acting on the top of the Control Diaphragm is balanced by the force due to the booster output pressure acting on the underside of the Control Diaphragm.







Hazardous Area Specifications

	Intrinsically Safe	
Factory Mutual (FM) Approvals	**TFN5221** NEMA 4X Enclosure	**TFI5221** Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Fibers; NEMA 3R Enclosure. ***(Upright Position ONLY)***
Canadian Standards Association (CSA) Approvals		**TCI5221** Class I, Division 1, Groups A, B, C, and D; Class II, Division1, Groups E, F, and G; Type 3 Enclosure; Rated 1-5 mA, 4-20 mA, 10-50 mA, 1-5 VDC, 1-9 VDC; Temperature Code T4A.

Entity Parameters	
Voc^1= 40 VDC	Ca^3 = O µ F
Isc^2= 200 mA	La^4 = O mH
[1]*Voc = Open Circuit Voltage*	[3]*Ca = External Capacitance*
[2]*Isc = Short Circuit Voltage*	[4]*La = External Inductance*

Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:
Rated: 28V Maximum 300 Ohm Minimum

FM APPROVED

Specifications

Output Range
Minimum: 10” (25.4 cm) Water Column to 50” (127 cm) Water Column
Maximum: 0-150 psig, [0-10 BAR], (0-1000 kPa)

Supply Pressure
Transducer: 20 + 2 psig, [1.5 + 0.15 BAR], (150 + 15 Kpa)
Ratio Relay [1]: 250 psig, [17 BAR], (1700 kPa)

Air Consumption
0.36 (0.6 m^3/HR) Maximum

Output Capacity (SCFM)
40 (68 m^3/HR) Maximum with 100 psig, [7 BAR], (700 kPa) Booster supply

Exhaust Capacity (SCFM)
5.5 (9.4 m^3/HR) downstream pressure @ 5 psig, [.35 BAR], (35 kPa) above 20 psig, [1.5 BAR], (150 kPa) setpoint.

Supply Pressure Effect
Transducer: 1 % of Span for a + 2 psig, [.15 BAR], (15 kPa) change.
Ratio Relay: Less than 0.1 psig, [.007 BAR], (.7 kPa) for 100 psig, [7 BAR], (700 kPa) change.

[1] Supply Pressure must be no less than 10 psig, [0.7 BAR], (70 kPa) above max. booster output.

Terminal Based Linearity
+ 0.50 % Full Scale

Independent Linearity
+ 0.25 % Full Scale

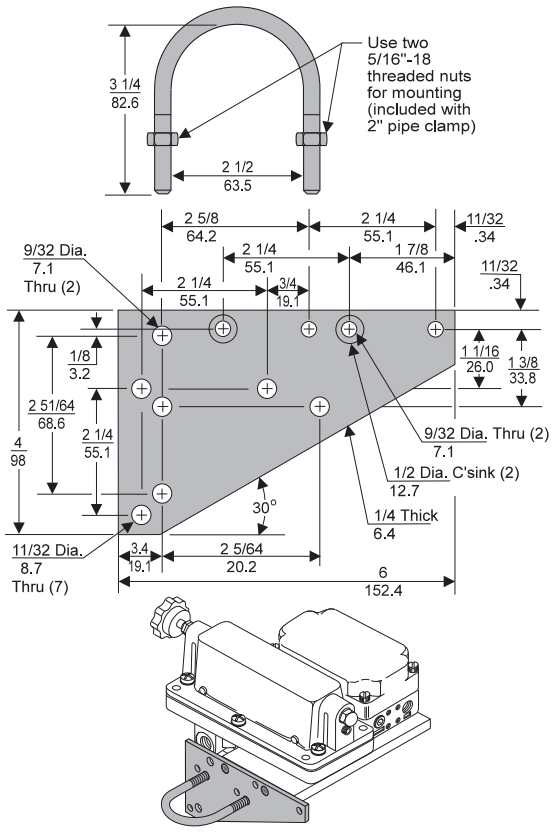
RFI/EMI Effect
Less than 0.5% of Span @ 30 v/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 v/m level 3, 27-500 mHz Band per IEC Standard 801-3 1984. EMC Directive 89/336/EEC European Norms EN 50081-2 and EN 50082-2.

Impedence / Input Signal	***Range***	***OHMS***
	1-5 mA	2000
	4-20 mA	120 (Add 332 OHMS for CSA units)
	10-50 mA	50 (Add 332 OHMS for CSA units)
	1-5 VDC	375
	1-9 VDC	2550

Ambient Temperature
-40 ° F to + 150 ° F, (-40 ° C to 65.5 ° C)

Materials of Construction
Body and Housing . . . . . .Aluminum
Ball and Orifice . . . . . .Sapphire
Nozzle . . . . . .Stainless Steel

Mounting Kits



2" Pipe Mounting Configuration shown with Model T5221

Mounting Bracket: 15307-1

Model T5221 Transducer Kits & Accessories

Mounting Bracket Kits .....15307-1 (included with unit)

Catalog Information

Catalog Number T ☐ ☐ 5221 ☐ ☐ ☐

Underwriting Group

Canadian Standard	C
Factory Mutual	F

Approval Class

Intrinsically Safe[1]	I

Input

1-5 mA	1
4-20 mA	4
10-50 mA [2]	
1-5 VDC	5
1-9 VDC	9

Output Pressure Units

psig	0
[BAR]	1
(kPa)	2

Options

Tamper Proof	T

[1] *Intrinsically Safe units cannot be set for Reverse Acting Mode in field.*
[2] *Units shipped calibrated 4-20 mA; Units must be calibrated 10-50 mA in field.*

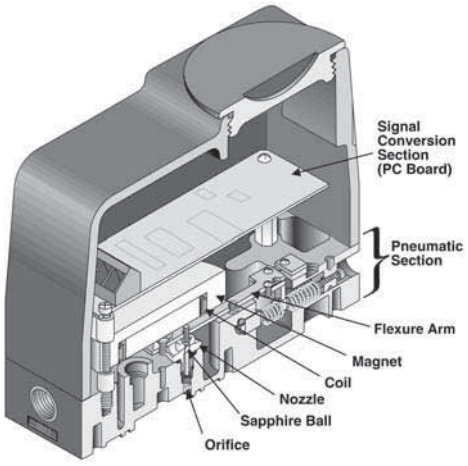
Installation

For installation instructions, refer to the *Fairchild T5221 Electro-Pneumatic Transducer Installation, Operation and Maintenance Instructions,* IS-500T5221.

For operation instructions, refer to the *Fairchild T5221 Electro-Pneumatic Transducer Installation, Operation and Maintenance Instructions,* OM-500T5221.

Features

- Fail Safe High or Low will return the output to 3 psig for Direct Acting Mode or to 15 psig for Reverse Acting Mode if the power is lost, regardless of the logic selected.
- Field Reversible Feature provides output which is directly or inversely proportional to the input signal.
- 115 VAC, 230 VAC, and 24 VDC Power Options permit use with most power sources.
- Temperature Compensation provides stable operation over wide operating Temperature Range.
- 5VDC or 15VDC Logic assures compatibility with most digital input systems.
- Vibration Resistance maintains set points, under adverse vibration conditions.
- Various Mounting Configurations allow installation flexibility for most applications.
- External Zero Adjustment provided for ease of calibration.

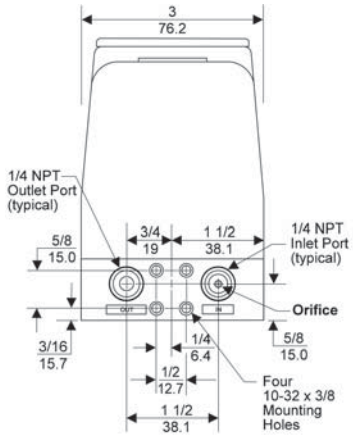


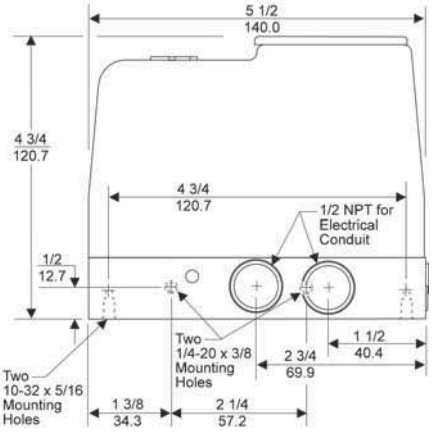
Operating Principles

The T5400 Transducer is a digital-pneumatic device that provides a pneumatic output signal controlled by 8 bit digital data instructions from a central control room, a remote control location, or a local control station. This device is made up of two sections, the Signal Conversion Section and the Pneumatic Section.

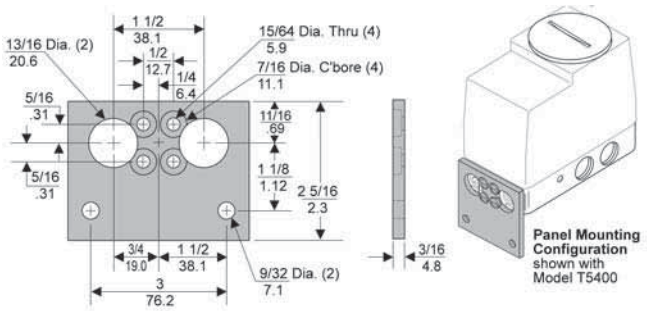
The Signal Conversion Section (PC Board) accepts an 8 bit parallel wired digital signal. Full scale output is divided into 255 parts and the output level is based on the logic state (high or low) of the 8 bits. An enable line allows the unit to accept information from a parallel bus. The digital input signal is converted to an analog signal. The signal is then applied to a Coil which creates a magnetic force that moves a Flexure Arm.

The Pneumatic Section operates as a force balance system. A Sapphire Ball floats inside a Nozzle and controls the output pressure by exhausting air supplied through an Orifice. This Sapphire Ball acts as a piston exerting a force which is balanced against the force of the Flexure arm.

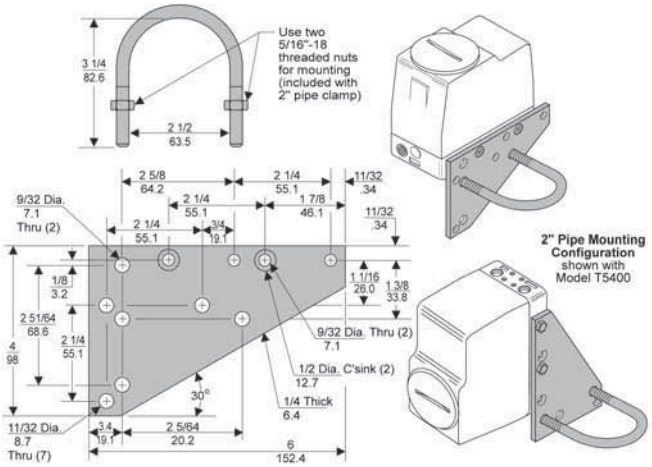




Technical Information



Mounting Bracket: 15268



Mounting Bracket: 14596

Model T5400 Transducer Kits & Accessories

Mounting Bracket Kits.....15268 (sold separately)
14596 (sold separately)

Catalog Information

Catalog Number **T** [ ] **5400** [ ] [ ]

Option

Noise Suppression	NS

Power

24 VDC - 3 Watts	24
115 VAC - 3 Watts	115
230 VAC - 3 Watts	230

Output Pressure Units

psig	0
[BAR]	1
(kPa)	2

Installation

For Installation Instructions, refer to the Fairchild *Model T5400 Digital-Pneumatic Transducer Installation, Operation and Maintenance Instructions,* IS-500T5400.

Specifications

Supply Pressure
20 ± 2 psig, [1.5 ± 0.15 BAR], (150 ± 15 kPa)

Output Capacity (SCFM)
0.15 (0.26 m^3/HR) Maximum

Air Consumption (SCFM)
0.16 (0.27 m^3/HR) Maximum

Output Range
3-15 psig, [0.2-1.0 BAR], (20-100 kPa)

Supply Pressure Effect
1% of Span for a 2 psig, [0.14 BAR], (14 kPa) supply change

Voltage Requirement
115/230 VAC ± 10% 50-60 Hz, 24 VDC ± 10%

Input Data[1]
8 Bit Parallel, 1 Bit Enable (TTL or CMOS compatible)

Terminal Based Linearity
± 0.50% Full Scale

Independent Linearity
± 0.25% Full Scale

Resolution
0.4% of Span

Hysteresis
Within 0.2% Full Scale

Repeatability
Within 0.2% Full Scale

Sinking Current
5 VDC Logic – 0.5 mA per Bit, 15 VDC Logic – 1.5 mA per Bit

Ambient Temperature
-40° F to +150° F, (-40° C to +65.5° C)

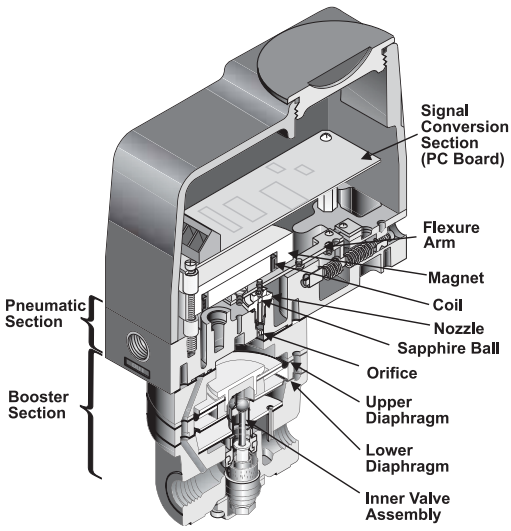
Materials of Construction

Body and Housing	Aluminum
Ball and Orifice	Sapphire
Nozzle	Stainless Steel

[1] *Data must be on line 0.5 microseconds before enable strobe and 0.5 microseconds during enable period to start output pressure change.*

Features

- The T5420 Digital-Pneumatic Transducer is compatible with most digital systems using TTL and CMOS Logic.
- Fail safe High or Low will return the output to 3 psig for Direct Acting Mode or to 15 psig for Reverse Acting Mode if the power is lost, regardless of the logic selected.
- Field Reversible Feature provides output which is directly or inversely proportional to the input signal.
- Integrated Volume Booster Output meets input requirements of final control elements requiring a higher capability output signal, increased output pressure, and/or increased flows.
- Vibration resistance maintains set points, under adverse vibration conditions.
- Various Mounting Configurations allow installation flexibility for most applications.
- External Zero Adjustment provided for ease of calibration.



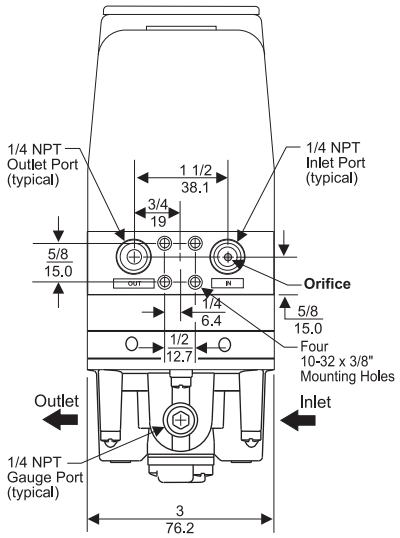
Operating Principles

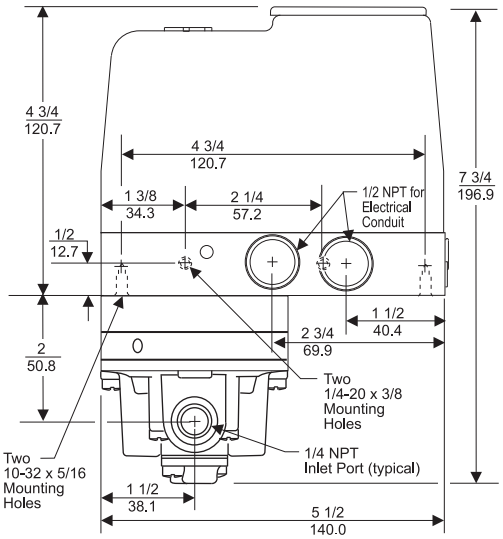
The Model T5420 Transducer is a digital-pneumatic device that provides a pneumatic output signal controlled by 8 bit digital data instructions from a central control location. This device is made up of three sections, the Signal Conversion Section, Pneumatic Section and Booster Section.

The Signal Conversion Section (PC Board) accepts an 8 bit parallel wired digital signal. Full scale output is divided into 255 parts and the output level is based on the logic state (high or low) of the 8 bits. An enable line allows the unit to accept information from a parallel bus. The digital input signal is converted to an analog signal. The signal is then applied to a Coil which creates a magnetic force that moves a Flexure Arm.

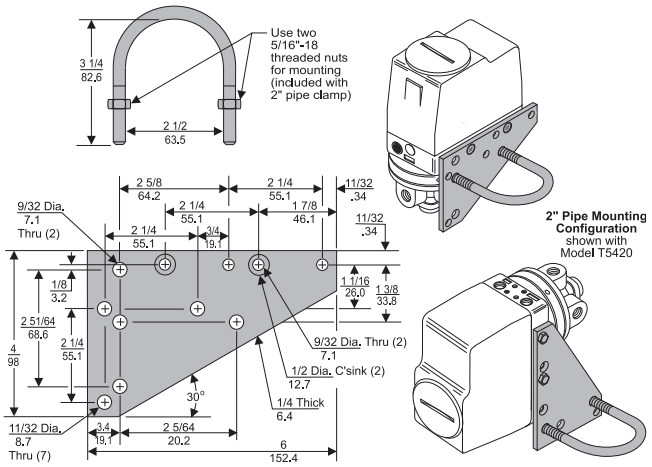
The Pneumatic Section operates as a force balance system. A Sapphire Ball floats inside a Nozzle and controls the output pressure by exhausting air supplied through an Orifice.

The Booster Section amplifies the output pressure of the Pneumatic Section.

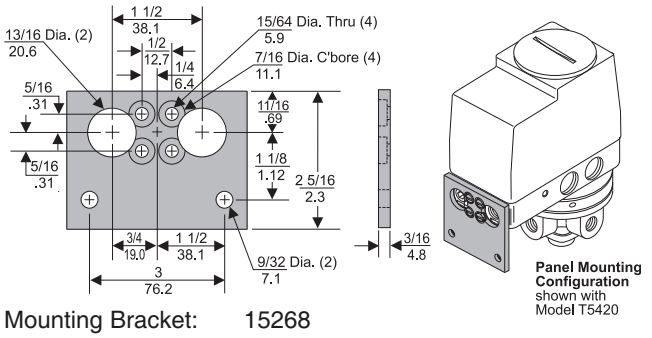




Mounting Kits



Mounting Bracket: 14596



Mounting Bracket: 15268

Model T5420 Transducer Kits & Accessories

Mounting Bracket Kits.....15268 (sold separately)
14596 (sold separately)

Installation

For Installation Instructions, see the *Fairchild Model T5420 Digital Pneumatic Transducer Installation, Operation and Maintenance Instructions*, IS-500T5420.

Table 1. Output Pressure Ranges

Ratio	Standard Output psig	[BAR]	(kPa)	Negative Bias Output psig	[BAR]	(kPa)
1:1[1]	3-15	[0.2-1.0]	(20-100)	0-12	[0-0.8]	(0-80)
1:2[2]	6-30	[0.4-2.0]	(40-200)	0-24	[0-1.5]	(0-150)
1:3[2]	9-45	[0.6-3.0]	(60-300)	0-36	[0-2.5]	(0-250)
1:4[2]	12-60	[0.8-4.0]	(80-400)	0-48	[0-3.0]	(0-300)
1:5[2]	15-75	[1.0-5.0]	(100-500)	0-60	[0-4.0]	(0-400)
1:6[2]	18-90	[1.2-6.0]	(120-600)	0-72	[0-5.0]	(0-500)

[1] Standard unit is configured for common supply to transducer and booster.

[2] Units require 20 psig, [1.5 BAR], (150 kPa) for transducer and a separate supply for booster. A common supply of up to 110 psig, [7.7 BAR], (770 kPa) can be used provided the prefix Z147 is added to the original order.

Catalog Information

Catalog Number T [ ] 5420 [ ] [ ] [ ]

Option

Negative Bias - 3 psig, [0.2 BAR], (20 kPa)	B
High Option[1]	HI
Noise Suppression	NS

Booster Ratio [2]

1:1 (Standard)	0
1:2	2
1:3	3
1:4	4
1:5	5
1:6	6

Power

24 VDC - 3 Watts	24
115 VDC - 3 Watts	115
230 VDC - 3 Watts	230

Output Pressure Units

psig	0
[BAR]	1
(kPa)	2

[1] If higher flow (SCFM) is required for the standard 1:1 ratio, select HI Option.

[2] Refer to Table 1. for Pressure Ranges.

Specifications

Supply Pressure[1]
20 + 2 psig, [1.5 + 0.15 BAR], (150 + 15 kPa)

Output Capacity (1:1 Ratio)
3-15 psig, [0.2-1.0 BAR], (20-100 kPa)

Air Consumption (SCFM)
0.16 (0.27 m^3/HR) Maximum (Dead End) @ 20 psig, [1.5 BAR], (150 kPa) supply

Output Capacity for Booster (SCFM)
15 (25.5 m^3/HR) Maximum @ 20 psig, [1.5 BAR], (150 kPa) supply 45 (76.5 m^3/HR) @ 100 psig, [7.0 BAR], (700 kPa) with separate supply

Supply Pressure Effect
1% of Span for 2 psig, [0.15 BAR], (15 kPa) supply change

Voltage Requirement
115/230 VAC + 10% 50-60 Hz, 24 VDC + 10%

Input Data[2]
8 Bit Parallel, 1 Bit Enable (TTL or CMOS compatible)

Independent Linearity
+ 0.25% Full Scale (T5420 ONLY), within 0.3% Output Span (T5422-T5426 ONLY)

Resolution
0.4% of Span

Hysteresis & Repeatability
within 0.1% Full Scale (T5420 ONLY), within 0.1% Times Ratio of Output Span (5422-T5426 ONLY)

Sinking Current
5 VDC Logic 0.5 mA per Bit, 15 VDC Logic 1.5 mA per Bit

Ambient Temperature
32°F to + 150°F, (0°C to + 65.5°C)

Materials of Construction
Body and Housing . . . . . .Aluminum
Ball and Orifice . . . . . .Sapphire, Brass
Nozzle . . . . . .Stainless Steel

[1] Supply Pressure must be no less than 10 psig, (0.7 BAR}, (70 kPa) above maximum booster output.

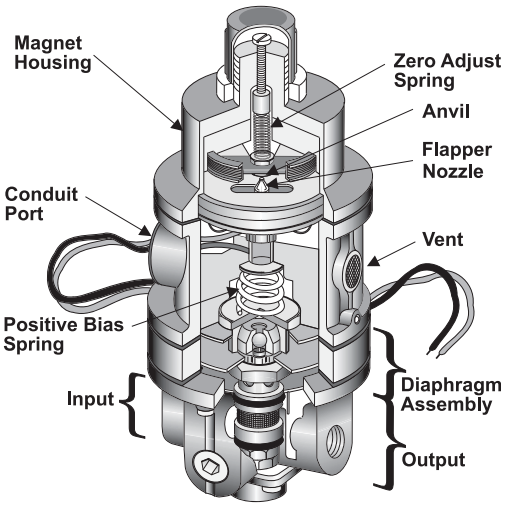
[2] Data must be on line 0.5 microseconds before enable strobe and 0.5 microseconds during enable period to start output pressure change.

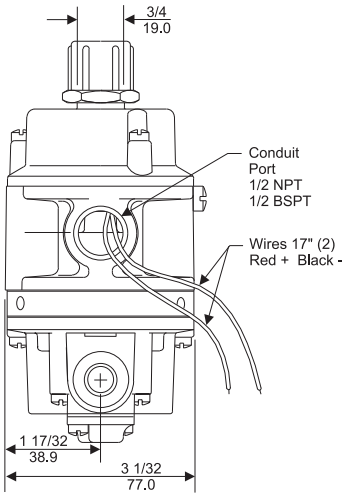
Features

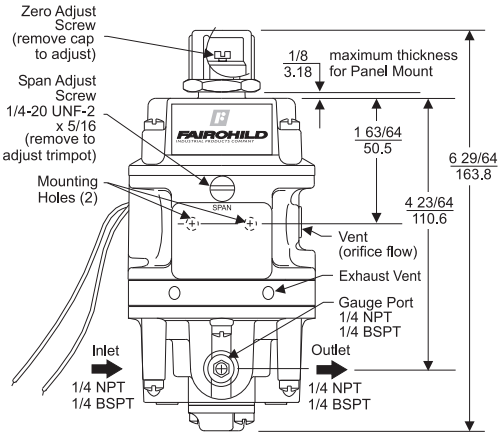
- Low Droop under flow conditions allows improved control of downstream pressure.
- Immunity to Supply Pressure Change permits use of normal plant air.
- Minimal Air Use in dead end service (.05 SCFM) reduces air consumption.
- High Forward and Exhaust Capacity permits increased process speed.
- Transducer can be configured to deliver an output which is directly or inversely proportional to the input.
- Split Range Operation permits two or more functions to be controlled from a common signal source (except 1-5 VDC unit).
- Built in Supply Pressure Regulator eliminates need for a separate regulator.
- Wall or Panel Mounting allows convenient installation.

Operating Principles

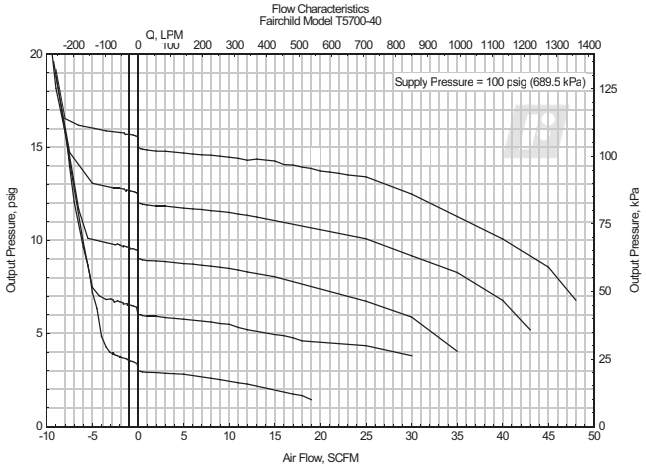
The Model T5700 is an electro-pneumatic device that converts a current signal to a linear pneumatic output. This device uses a force balance system in which a built-in supply regulator also functions as a pneumatic amplifier. Together the flapper and the nozzle work to control the pressure in the intermediate housing. This pressure acts on a diaphragm assembly which in turns controls the output pressure.



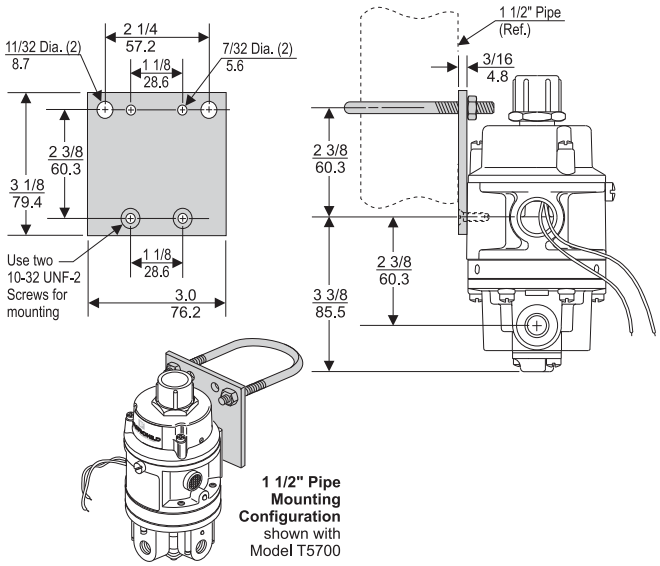




Technical Information



Mounting Kits



1 1/2" Pipe Mounting Configuration shown with Model T5700

Mounting Bracket: 15396

Model T5700 Transducer Kits & Accessories

Mounting Bracket Kits .....15396 (included with unit)

Installation

For installation instructions, refer to the *Fairchild Model T5700 Electro-Pneumatic I/P, E/P Transducer Installation, Operation and Maintenance Instructions,* IS-500T5700.

Catalog Information

Catalog Number **T5700-** [ ] [ ] [ ]

Input[1]

4-20 mA or 10-50 mA	4
1-5 VDC or 1-9 VDC	9

Output

3-15 psig	0
[0.2-1.0 BAR]	1
(20-100 kPa)	2

Options

BSPT Thread	U

[1] *Units are factory calibrated for 4-20 mA or 1-9 VDC input, but can be field calibrated for other inputs.*

Specifications

Output Range
3-15 psig, [0.2-1.0 BAR], (20-100 kPa)

Supply Pressure
18-150 psig, [1.2-10.0 BAR], (120-1000 kPa)

Flow Capacity (SCFM)
17 (28.9 m^3/HR) for 20 psig, [1.4 BAR], (140 kPa)
47 (79.9 m^3/HR) for 120 psig, [8.0 BAR], (800 kPa)

Exhaust Capacity (SCFM)
over 9 (15.3 m^3/HR) for downstream pressure 5 psig, [.035 BAR], (.35 kPa) above setpoint

Maximum Air Consumption
0.05 (.08 m^3/HR) with 20-120 psig, [1.5-8.0 BAR], (150-800 kPa) supply

Independent Linearity
+0.5% Full Scale

Supply Pressure Effect
+0.3% Full Scale for +50 psig, [3.5 BAR], (350 kPa) change

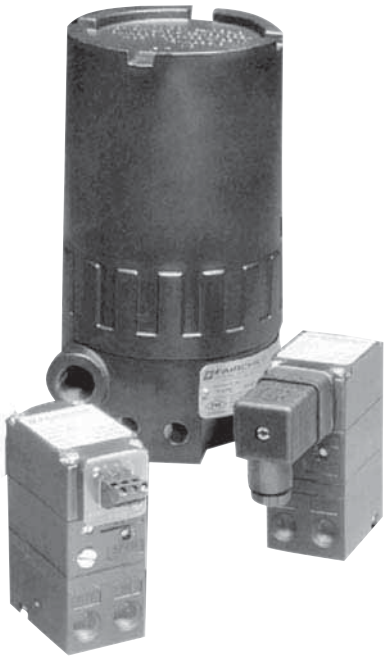
Terminal Base Linearity
+1.0% Full Scale

Hysteresis & Repeatability
Within 0.1% Full Scale

Input Impedence	***Input Range***	***OHMS***
	4-20 mA	62
	10-50 mA	26
	1-5 VDC	510
	1-9 VDC	1020

Temperature Range
-40°F to +150°F, (-40°C to +65°C)

Materials of Construction
Housing.....Aluminum
Orifice .....Sapphire
Diaphragm.....Buna N Dacron Fabric



The T6000 Series is designed for precision applications providing maximum versatility. The modular construction permits any basic unit to be used in the explosion-proof, rack, wall, pipe, panel, DIN rail or 3, 5, 10, or 15 unit manifold configurations. Servicing or calibration is quick and easy.

Features

- Field reversible feature provides output which is directly or inversely proportional to the input signal.
- RFI/EMI Protection eliminates susceptibility to electromagnetic and radio interference.
- Six output pressure ranges meet final control element requirements.
- Six input signal ranges meet most process and machine requirements.
- Compact size permits use in space restricted areas.
- Explosion-Proof NEMA 4X, IP65, Type 4 Enclosure available for outdoor and indoor installations.
- Input and Output ports on both front and bottom simplifies pneumatic piping.

Operating Principles

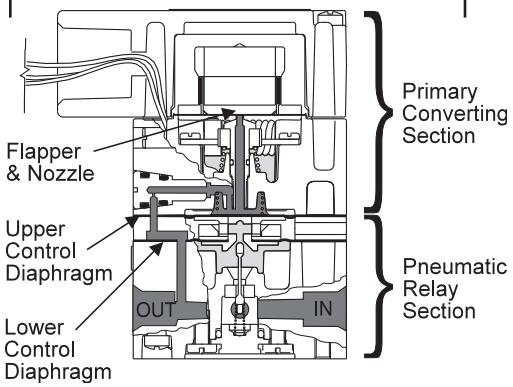
Standard Range

The T6000 Series is an electro-pneumatic device that converts a DC input signal to a pneumatic output. This device is made up of two sections, the Primary Converting Section and the Pneumatic Relay Section. The Coil and Suspension Spring, in the Primary Converting Section, is used as a Flapper. Together the Flapper and Nozzle work to control the signal pressure. The signal pressure acts on the Upper Control Diaphragm, in the Pneumatic Relay Section, which sets the output pressure. The output pressure is sensed by the Lower Control Diaphragm, in the Pneumatic Relay Section, which maintains the output pressure.

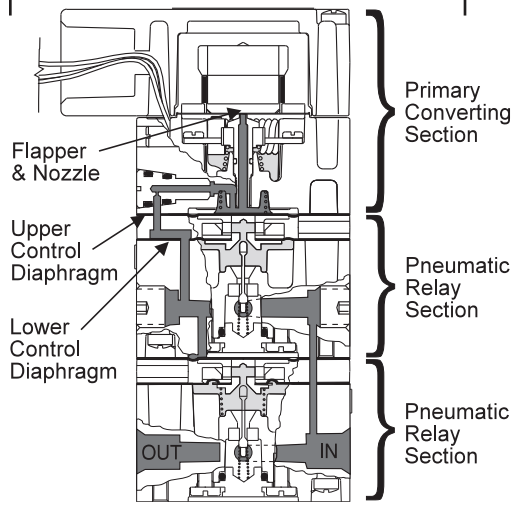
Extended Range

The Extended Unit is made up of three sections, the Primary Control Section, the Pneumatic Relay Section, and an additional Pneumatic Relay Section. The additional Relay Section is used to amplify the output pressure.

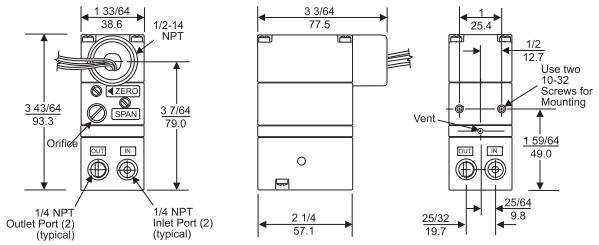
T6000 Standard Range



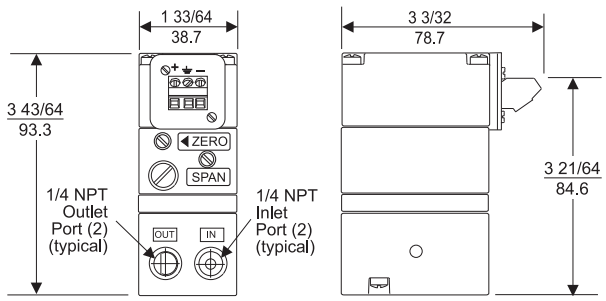
T6000 Extended Range



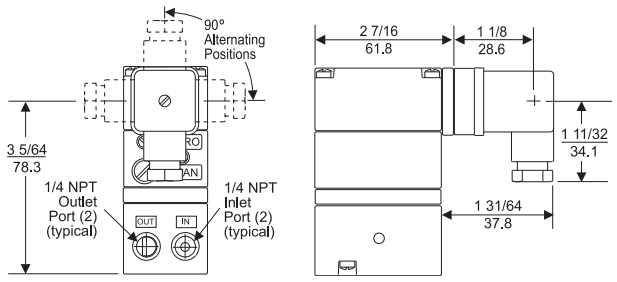
TA6000 Standard Range



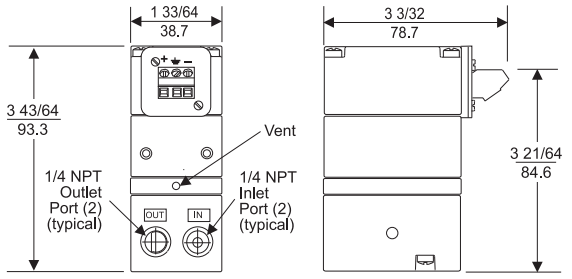
TT6000 Standard Range



TD6000 Standard Range



TR6000 Standard Range



NOTE: Model TR6000 Transducer is designed for use with the TR Rack Kit. Physically, it is the same as the TT6000 Unit except that the terminal block has been rotated to the rear.

Specifications: T6000 Standard Range Transducers

Output Range	**psig [BAR] (kPa)**	**3-15 [0.2-1.0] (20-100)**	**3-27 [0.2-1.8] (20-180)**	**6-30 [0.4-2.0] (40-200)**
Supply Pressure[1]	**psig [BAR] (kPa)**	20-120 [1.5-8.0] (150-800)	32-120 [2.2-8.0] (220-800)	35-120 [2.4-8.0] (240-800)
Minimum Span	**psig [BAR] (kPa)**	5 [0.35] (35)	10 [0.7] (70)	10 [0.7] (70)
Impedance (OHMS) / Input Signal	**4-20 mA**	197	204	204
	10-50 mA	79	82	82
	0-5 VDC	550	532	532
	0-10 VDC	1100	1064	1064
	1-5 VDC	500	483	483
	1-9 VDC	1000	970	970
Air Consumption (per ISA S51.1) SCFH		5.0 (.14 m^3/HR)	6.0 (.17 m^3/HR)	6.0 (.17 m^3/HR)
Independent Linearity (per ISA S51.1)		+0.5% FS	+0.5% FS	+0.5% FS
Hysteresis & Repeatability (per ISA S51.1)		0.25% FS	0.25% FS	0.25% FS

Supply Pressure Effect on Output
0.25 psig, [0.17 BAR], (1.7 kPa) for a 25 psig, [1.7 BAR], (170 kPa) supply change

Flow Rate (SCFM)
2.5 (4.25 m^3/HR) @ 25 psig, [1.7 BAR, (170 kPa) Supply & 9 psig, [0.6 BAR], (60 kPa) Output.
9.0 (15.3 m^3/HR) @ 120 psig, [8.0 BAR, (800 kPa) Supply & 9 psig, [0.6 BAR], (60 kPa) Output.

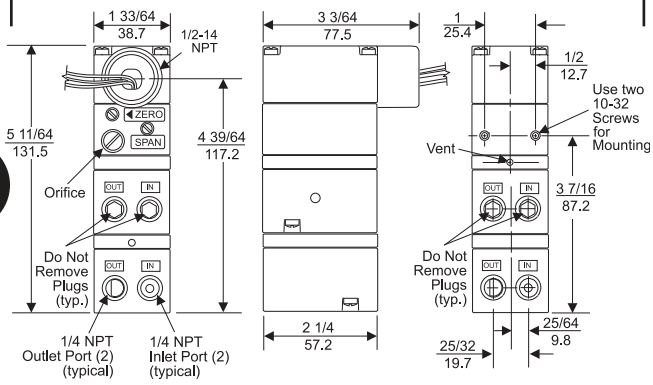
RFI / EMI Effect
Less than 0.5% of Span @ 30 V/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 V/m level 3, 27-500 mHz Band per IEC Standard 801-3 1984. EMC Directive 89/336/EEC European Norms EN 50081-2 and EN 50082-2.

Temperature Range (per ISA S51.1)
-20 °F to +150°F, (-30°C to +65°C)

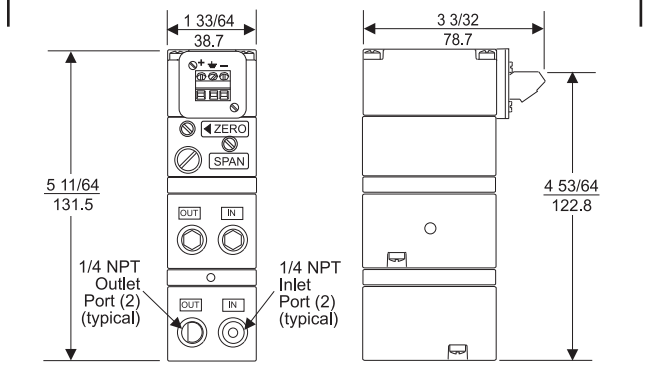
Materials of Construction
Body and Housing. . . . . Aluminum
Trim . . . . . Zinc Plated Steel
Diaphragm . . . . . Nitrile
Orifice . . . . . Nickel Plated Brass

[1] Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa) above minimum output.

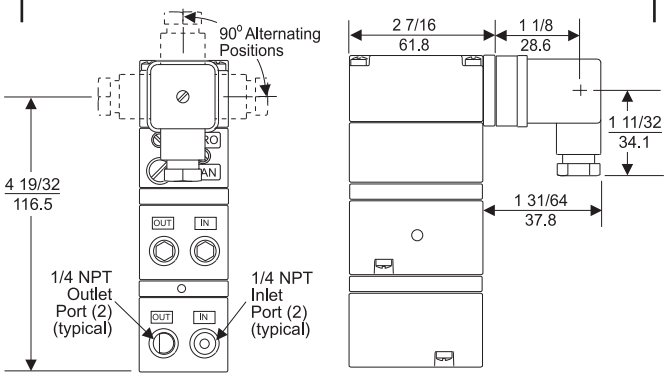
TA6000 Extended Range



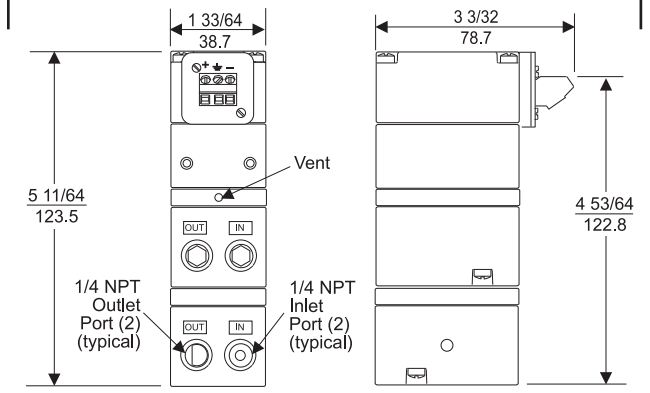
TT6000 Extended Range



TD6000 Extended Range



TR6000 Extended Range



NOTE: Model TR6000 Transducer is designed for use with the TR Rack Kit. Physically, it is the same as the TT6000 Unit except that the terminal block has been rotated to the rear.

Specifications:
T6000 Extended Range Transducers

		0-30 [0-2.0] (0-200)	0-60 [0-4.0] (0-400)	0-120 [0-8.0] (0-800)
Output Range	**psig [BAR] (kPa)**			
Supply Pressure[1]	**psig [BAR] (kPa)**	35-150 [2.5-10.0] (250-1000)	65-150 [4.6-10.0] (460-1000)	125-150 [8.8-10.0] (880-1000)
Minimum Span	**psig [BAR] (kPa)**	12 [0.8] (80)	25 [1.5] (150)	50 [3.5] (350)
Impedance (OHMS) / Input Signal	**4-20 mA**	250	256	270
	10-50 mA	100	103	108
	0-5 VDC	439	469	446
	0-10 VDC	878	938	893
	1-5 VDC	400	453	430
	1-9 VDC	800	750	714
Air Consumption (per ISA S51.1) SCFH		12.0 (.34 m^3/HR)	13.0 (.36 m^3/HR)	17.0 (.48 m^3/HR)
Independent Linearity (per ISA S51.1)		±0.75% FS	±1.0% FS	±1.0% FS
Hysteresis & Repeatability (per ISA S51.1)		<1.0% FS @ 35 psig, [2.5 BAR], (250 kPa)	<1.0% FS @ 65 psig, [4.6 BAR], (460 kPa)	<1.0% FS @ 125 psig, [8.8 BAR], (880 kPa)
Supply Pressure Effect on Output For a 25 psig, [1.7 BAR], (170 kPa) supply change	**psig [BAR] (kPa)**	0.5 [0.03] (4.0)	1.0 [0.07] (7.0)	1.5 [0.1] (10.5)

Flow Rate (SCFM)
11 (18.7 m^3/HR) @ 150 psig, [10 BAR, (1000 kPa) Supply & 9 psig, [0.6 BAR], (60 kPa) Output.

RFI / EMI Effect
Less than 0.5% of Span @ 30 V/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 V/m level 3, 27-500 mHz Band per IEC Standard 801-3 1984. EMC Directive 89/336/EEC European Norms EN 50081-2 and EN 50082-2.

Temperature Range (per ISA S51.1)
-20 °F to +150°F, (-30°C to +65°C)

Materials of Construction
Body and Housing. . . . . Aluminum
Orifice. . . . . Nickel Plated Brass
Trim . . . . . Zinc Plated Steel
Diaphragm . . . . . Nitrile

[1] Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa) above maximum output.

Hazardous Area Specifications

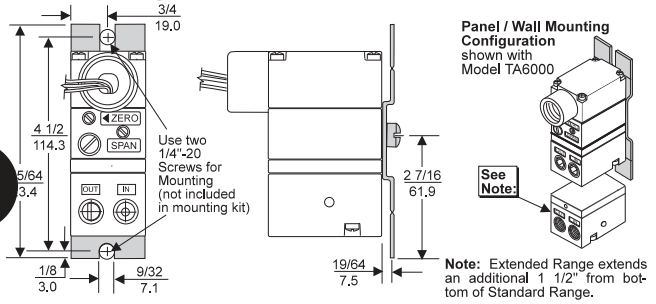
	Explosion-Proof	Intrinsically Safe
Factory Mutual (FM) Approvals FM APPROVED	Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F, and G; NEMA 4X Enclosure.	Class I, II, and III, Division 1, Groups A, B, C, D, E, F, and G. ***Entity Parameters*** Vmax[1] = 40 VDC, Ci[3] = O µ F Imax[2] = 125 mA, Li[4] = 3 mH [1]*Vmax = Max. Voltage* [3]*Ci = Capacitance* [2]*Imax = Max. Current* [4]*Li = Inductance*
Canadian Standards Association (CSA) Approvals	Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F, and G; Type 4 Enclosure.	Class I, Division 1, Groups A, B, C and D; Temperature Code T3C. Rated 4-20 mA, 30 VDC Maximum. ***Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:*** System Type 1: Single Channel Polarized Rated: 28V Max. 300 Ohm Min. System Type 2: Dual Channel Polarized Rated: 28V Max. 300 Ohm Min. System Type 3: a. 28V Max. 300 Ohm Min. & 10V Max. 50 Ohm Min. return. b. 28.5V Max. 300 Ohm Min. & 9V Max. 50 Ohm Min. return.
ATEX Approvals		Ex II 1G EEx ia IIC T4 (T_a = -20°C to +65°C) ***Transducer Parameters*** Umax[1] = 28 V, Pi[3] = 0.653 W Imax[2] = 93 mA, Ci[4] = 0 Li[5] = 0 [1]*Umax = Max. Voltage* [3]*Pi = Max. Power* [2]*Imax = Max. Current* [4]*Ci = Capacitance* [5]*Li = Inductance*

[1] *ATEX not available for Explosion-Proof.*

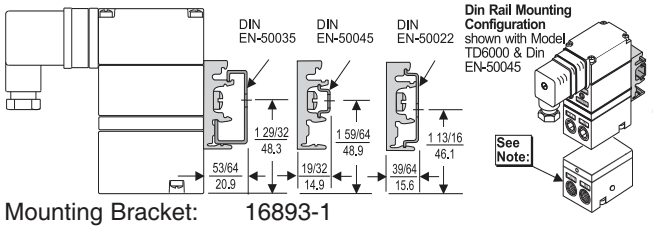
[2] *Intrinsically Safe for Current Inputs Units Only.*

FM APPROVED

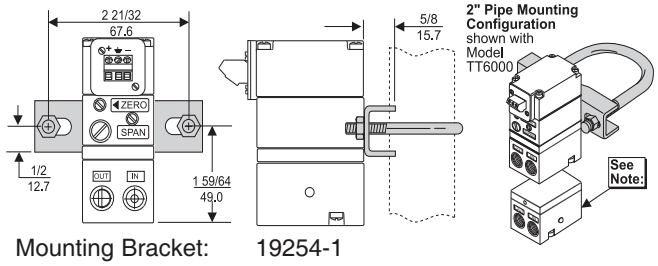
Mounting Kits



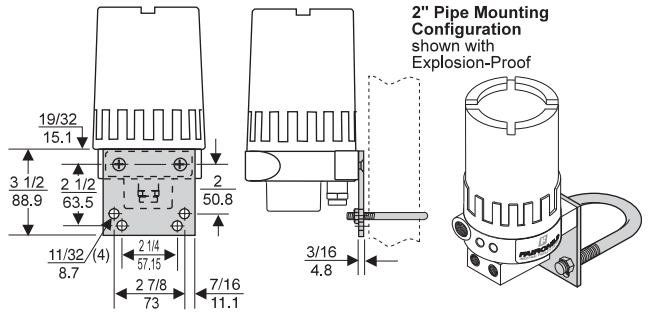
Mounting Bracket: 16799-1



Mounting Bracket: 16893-1



Mounting Bracket: 19254-1



Mounting Bracket: 18187-1

Model T6000 Transducer Kits & Accessories

Mounting Bracket Kits . . . . 16799-1 (included with unit)
16893-1 (included with unit)
19254-1 (sold separately)
18187-1 (sold separately)

Catalog Information

Catalog Number T [ ][ ][ ] 6000 [ ][ ][ ]

Electrical Connections

1/2 NPT Conduit	A
Fitting with Pigtail	
DIN43650 Connection	D
Rack Mount	R
Terminal Block	T
(leave blank for Explosion-Proof)	

Underwriting Group

Canadian Standards	C
ATEX [1]	E
Factory Mutual	F

Approval Class

Explosion-Proof	XPD
Dust Ignition-Proof (includes NEMA 4X/IP 65)	
Intrinsically Safe [2]	I
None (leave blank)	

Input

4-20 mA	4
10-50 mA	3
1-5 VDC	5
0-5 VDC	7
1-9 VDC	9
0-10 VDC	0

Output (Select appropriate psig, [BAR], or (kPa) range.)

3-15 psig	01
3-27 psig	02
6-30 psig	03
0-30 psig	04
0-60 psig	05
0-120 psig	06
[0.2-1.0 BAR]	11
[0.2-1.8 BAR]	12
[0.4-2.0 BAR]	13
[0-2.0 BAR]	14
[0-4.0 BAR]	15
[0-8.0 BAR]	16
(20-100 kPa)	21
(20-180 kPa)	22
(40-200 kPa)	23
(0-200 kPa)	24
(0-400 kPa)	25
(0-800 kPa)	26

Options

BSPT Thread [3]	U
IP65 Enclosure	W

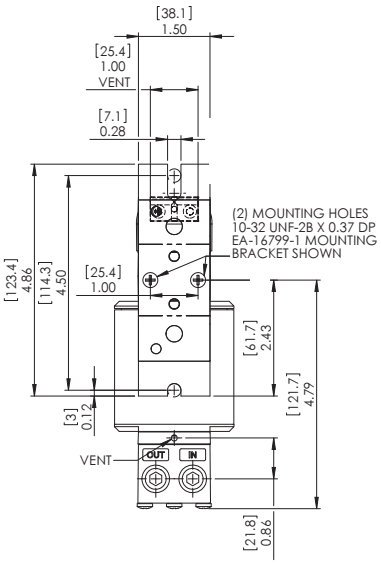
[1] *ATEX not Available for Explosion-Proof.*

[2] *Intrinsically Safe for Current Input Units Only.*

[3] *Not Available for CSA Explosion-Proof Units.*

Features

- Locks in “Last Position” to accurately capture setpoint
- Etremely low drift after power loss permits transducer to maintain set point
- IP65 Rating to handle moist applications
- Single part number makes it easy to specify and cover all your needs
- Superior Construction including a mois ture resistant PCB and zinc coated components

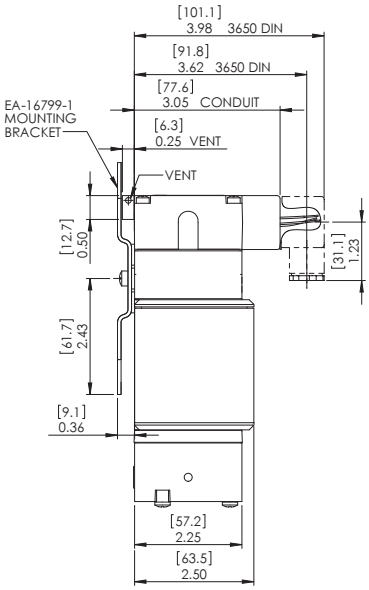


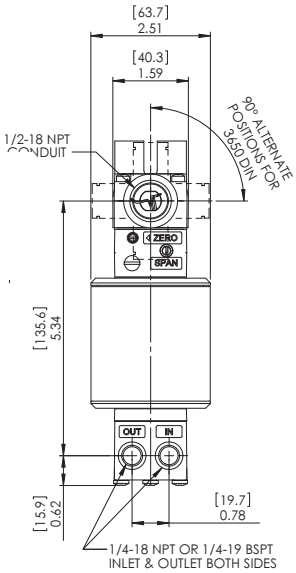
Operating Principles

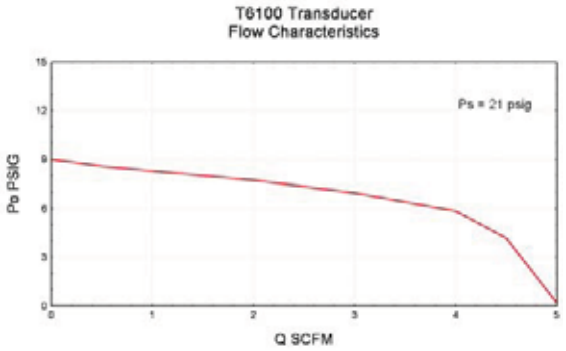
Uniquely, the T6100 “Lock in Last Place” feature now provides flexibility, reliability and safety in applications requiring protection from signal failures to critical control system instruments.

Design of the T6100 relies on a proprietary integrated solenoid valve module interposed between the flapper-nozzle pilot and the booster section. Upon signal failure, an electrical charge stored within the active electronic circuit controlling the integrated solenoid valve module maintains the current to the voice coil at its last setpoint. Simultaneously, a high energy pulse closes the solenoid valve, trapping the signal pressure within the signal chamber at the last setpoint. The booster continues to provide its normal forward and exhaust flow, with the constant signal pressure now captured and maintained within the signal chamber.

The electronic circuit activates the solenoid valve immediately upon detection of a signal that falls below a base value of 3.5mA. Upon restoration of the signal, the electronic circuit sends a high energy pulse to open the solenoid valve, restoring the pilot section’s pressure control of the signal pressure to the booster as in a typical transducer. The electronic detection circuit, in series with the T6100’s signal conditioning circuit, merely adds an additional voltage drop to the T6100’s normal control loop. Advanced valve orifice design of the T6100 increases its forward flow capacity to a minimum of 5-scfm at 21-psig supply pressure.







Technical Specifications:

Output Range	**psig [BAR] (kPa)**	**3-15 [0.2-1.0] (20-100)**
Supply Pressure[1]	**psig [BAR] (kPa)**	20-40 [1.5-2.8] (150-280)
Minimum Span	**psig [BAR] (kPa)**	5 [0.35] (35)
Impedance	**4-20 mA**	197
Air Consumption (per ISA S51.1) SCFH		5.0 (.14 m^3/HR)
Independent Linearity (per ISA S51.1)		+0.5% FS
Hysteresis & Repeatability (per ISA S51.1)		0.25% FS

Supply Pressure Effect on Output
0.25 psig, [0.17 BAR], (1.7 kPa) for a 25 psig, [1.7 BAR], (170 kPa) supply change

Flow Rate (SCFM)
5 (8.5 m^3/HR) @ 21 psig, [1.7 BAR, (170 kPa) Supply & 9 psig, [0.6 BAR], (60 kPa) Output.

RFI / EMI Effect
Less than 0.5% of Span @ 30 V/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 V/m level 3, 27-500 mHz Band per IEC Standard 801-3 1984. EMC Directive 89/336/EEC European Norms **EN 50081-2 and EN 50082-2**.

Temperature Range (per ISA S51.1)
-20 °F to +150°F, (-30°C to +65°C)

Materials of Construction
Body and Housing . . . . . Aluminum
Trim . . . . . .Zinc Plated Steel
Diaphragm . . . . . .Nitrile
Orifice . . . . . Nickel Plated Brass
Weight . . . . . .1000 grams
Mounting . . . . Surface Mounting, or 2" pipe mount brkts available
Mounting Position . . . . . Vertical Preferred; Other positions re-zero
Degree of Protection. . . . . .IP 65 Rating

Failure Mode - Output Pressure locks at last value when signal fails

Drift Rate . . . . . .2% per hour Maximum

Electrical Connection . . . . . .33mm square DIN 43650 connector mountable in four directions

Ordering Information

Catalog No.:

T ☐ 6100 ☐ ☐☐ ☐

Electrical Connection
1/2" NPT Conduit Fitting . . . . . A
DIN 43650 Connection . . . . . D

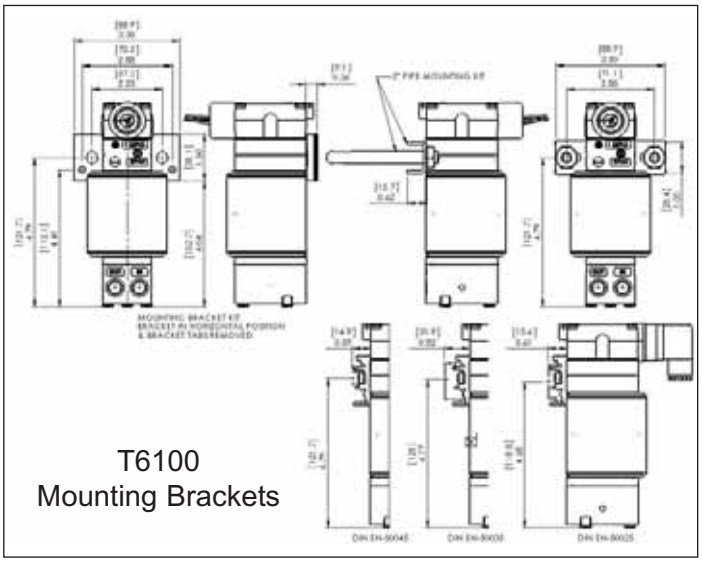
Input
4-20 mA 4
(two wire, 7 Volt drop maximum at 20 mA)

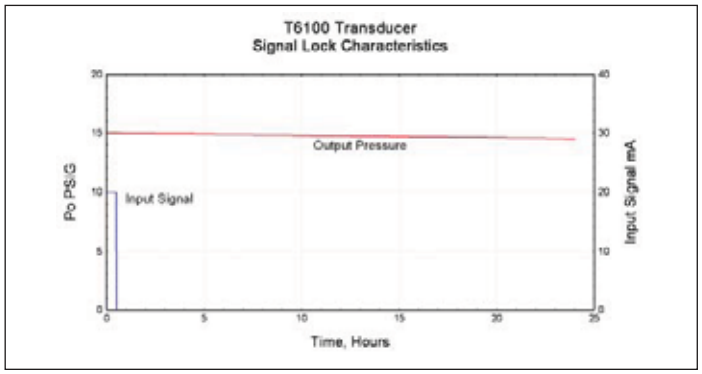
Output*
3-15 psig 01
0.2-1.0 BAR 11
20-100 kPa 21

Options:
BSPT Thread**. . . . . U

* Special Ranges Available Upon Request

** Standard Pneumatic Connections are 1/4" NPT



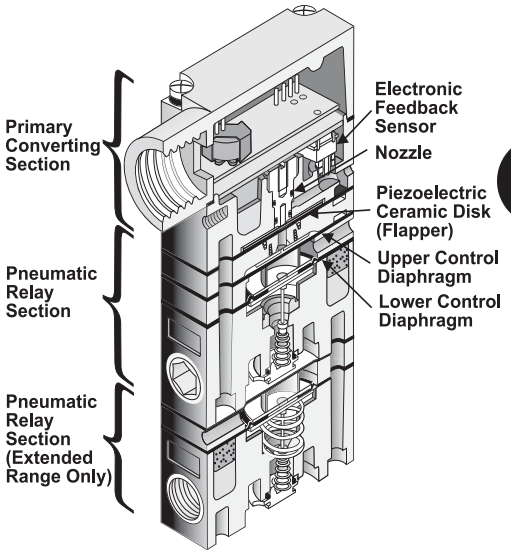


Installation

For installation instructions, refer to the *Fairchild Model T6100 Lock In Place Electro-Pneumatic I/P, Transducer Installation, Operation and Maintenance Instructions,* IS-10006100.

Features

- The T7800/7801 Series Transducers provide maximum versatility for precision applications.
- Field Reversible Feature provides output that is inversely proportional to input signal.
- RFI/EMI Protection eliminates susceptibility to electromagnetic and radio interference.
- Internal Electronic Feedback and solid state controlled Piezoelectric Actuator provide precise control of output pressure regardless of vibration or position.
- Damping Adjustment for optimum tuning response.
- Split range operation lets a common signal source control two or more functions.
- Compact size for use in restricted spaces.
- Two temperature range versions available.
- Various mounting configurations allow installation flexibility for most applications.
- NEMA 4X, Type 4 Enclosure and IP65 rated for indoor and outdoor installations.
- Canadian Registration Numbers (CRN) certification for all territories and provinces.



Operating Principles

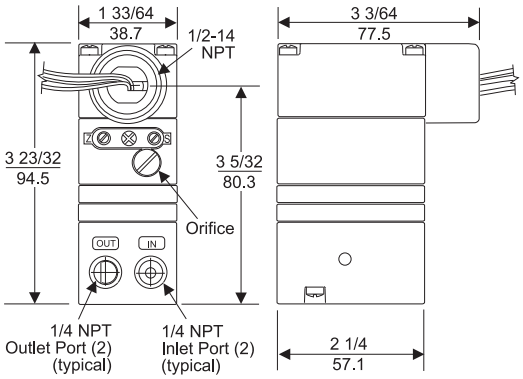
STANDARD RANGE

The Model T7800/7801 Series converts a DC input signal to a linear proportional pneumatic output. It includes the Primary Converting Section and the pneumatic Relay Section. The Piezoelectric Ceramic Actuator, in the Primary Converting Section, functions as a Flapper. The Flapper and Nozzle work together to control the signal pressure. The signal pressure that sets the output pressure acts on the Upper Control Diaphragm in the Pneumatic Relay Section. The Lower Control Diaphragm in the Pneumatic Relay Section senses the output pressure.

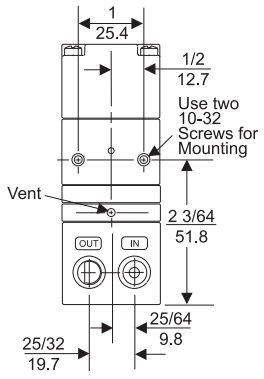
EXTENDED RANGE

In the Extended Range units, an additional Relay Section amplifies the output pressure.

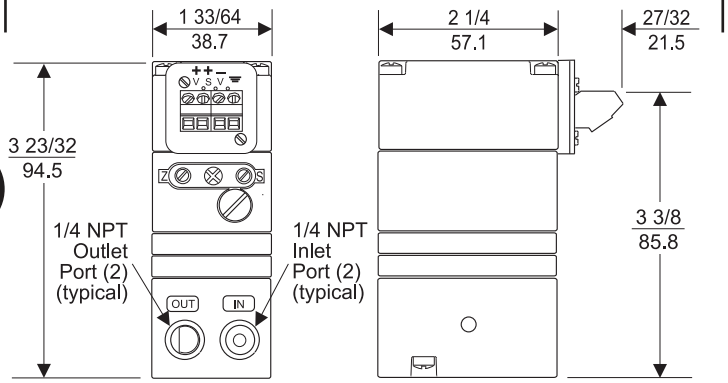
Model TA7800 Standard Range



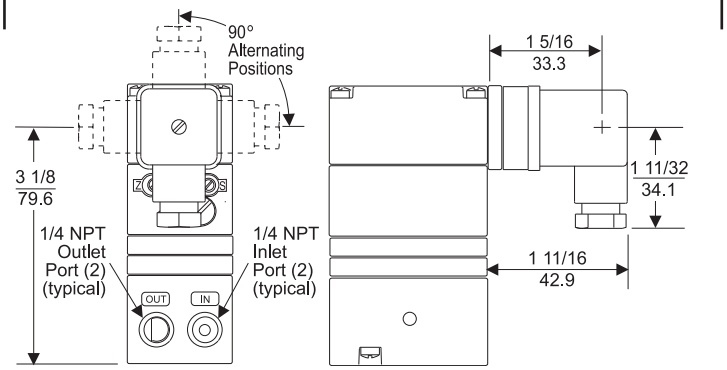
Note: Unused IN and OUT Ports are plugged (typical)



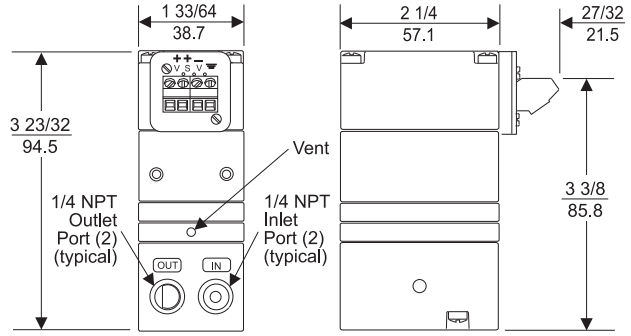
Model TT7800/7801 Standard Range



Model TD7800/7801 Standard Range

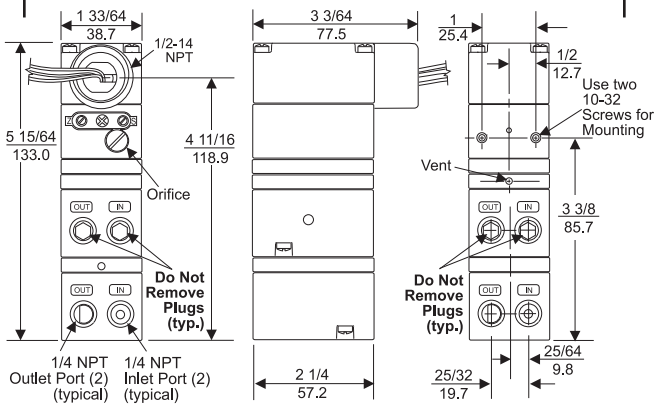


Model TR7800/7801 Standard Range



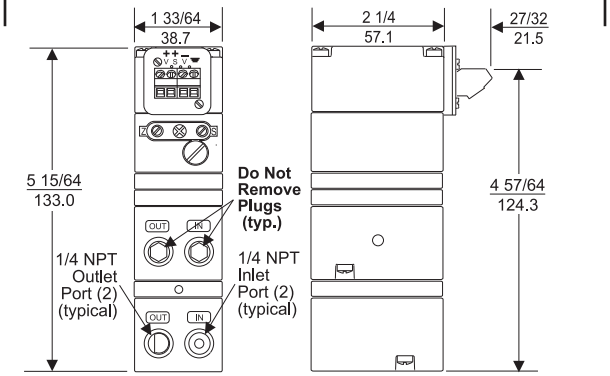
Model TR7800/7801 for use with TR Manifold Rack Kit. TR7800/7801 unit same as TT7800/7801 except terminal block is located on rear.

Model TA7800/7801 Extended Range

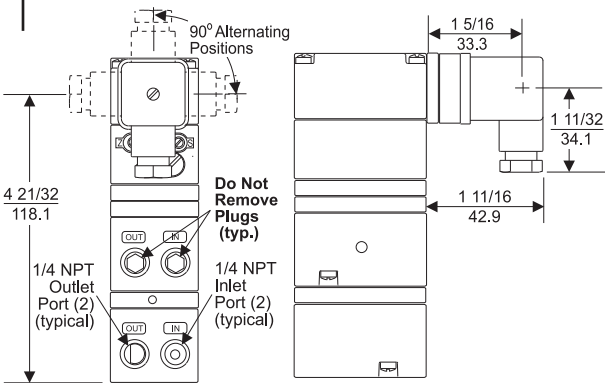


Note: Unused IN and OUT Ports are plugged (typical)

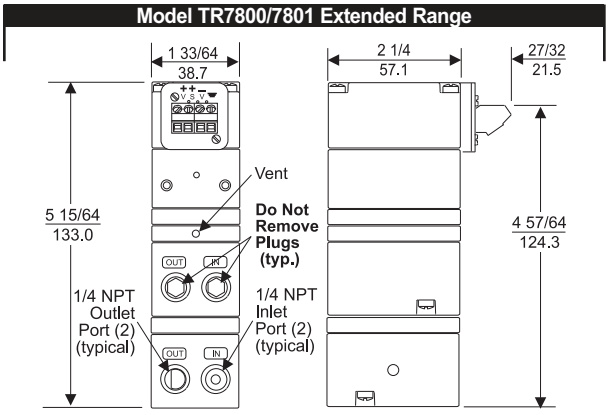
Model TT7800/7801 Extended Range



Model TD7800/7801 Extended Range



Model TR7800/7801 Extended Range



Model TR7800/7801 for use with TR Manifold Rack Kit. TR7800/7801 unit same as TT7800/7801 except terminal block is located on rear.

Standard Range Specifications

		SET POINT			
	psig [BAR] (kPa)	3 [0.2] (20)	9 [0.6] (60)	15 [1.0] (100)	30 [2.0] (200)
Maximum Air Consumption	**All Ranges SCFH**	3.5 (.10 m³/HR)	7.0 (.20 m³/HR)	9.5 (.27 m³/HR)	13.5 (.38 m³/HR)
Flow Rate (SCFM)		2.5 (4.25 m³/HR) @ 25 psig, [1.7 BAR], (170 kPa) supply & 9 psig, [0.6 BAR], (60 kPa) Output		**OR** 9.0 (15.3 m³/HR) @ 120 psig, [8.0 BAR], (800 kPa) supply & 9 psig, [0.6 BAR], (60 kPa) Output	
Temperature Range	**Operating 7800**	-40°F to + 160°F (-40°C to + 71.2°C)			
	Operating 7801	-10°F to + 160°F (-23°C to + 71.2°C)			
	Storage 7800/7801	-40°F to + 180°F (-40°C to + 82.2°C)			
Span/Zero Adjustments		Screwdriver adjustments located on front of unit			
Required Operating Voltages		**Two Wire Current Input** 7.2 VDC @ 20 mA (4-20 mA signal)			
Supply Voltages		**Three Wire Voltage Input** 7.2-30 VDC, less than 3 mA			
Signal Impedance		**Three Wire Voltage Input** 10 Kilohms			

	OUTPUT RANGE		
psig [BAR] (kPa)	3-15 [0.2-1.0] (20-100)	3-27 [0.2-1.8] (20-180)	6-30 [0.4-2.0] (40-200)
Input Range	4-20 mA DC, 0-10 VDC, 1-9 VDC		
Supply Pressure[1]	20-120 [1.5-8.0] (150-800)	32-120 [2.2-8.0] (220-800)	35-120 [2.4-8.0] (240-800)
Minimum Span	5 [0.35] (35)	10 [0.7] (70)	10 [0.7] (70)
Frequency Response	-3 db @ 5 Hz per ISA S26.4.3.1 load configuration A.		
Accuracy (ISA S51.1)	0.25% Full Scale Guaranteed 0.15% Full Scale Typical		
Hysteresis (ISA S51.1)	0.1% Full Scale		
Deadband	0.02% Full Scale		
Repeatability (ISA S51.1)	0.1% Full Scale		
Position Effect	No Measurable Effect		
Vibration Effect	Less than +1% of Span under the following conditions: 5-15 Hz @ 0.8 inches constant displacement 15-500 Hz @ 10 Gs.		
Reverse Polarity Protection	No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 60 mA.		
RFI/EMI Effect	Less than 0.5% of span @ 30 v/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 v/m level, to 2 GHz Band per EN 61000-4-3:1998 +A1 EMC Directive 89/336/EEC European Norms EN 61326		
Supply Pressure Effect	No Measurable Effect		
Temperature Effect	[+0.5% +0.04% / °F Temperature Change] of Span typical		
Materials of Construction	Body and Housing . . . . . .Chromate Treated Aluminum Orifice . . . . . .Nickel Plated Brass & Sapphire Trim . . . . . .Stainless Steel, Brass & Zinc Plated Steel Elastomers . . . . . .Nitrile Finish . . . . . .Epoxy Powder Coating		

[1] *Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa), above maximum output*

Extended Range Specifications

	psig [BAR] (kPa)	SET POINT 0 [0] (0)	15 [1.0] (100)	30 [2.0] (200)	60 [4.0] (400)	120 [8.0] (800)
Maximum Air Consumption	**0-30 psig SCFH**	3.1 (.09 m^3/HR)	7.8 (.22 m^3/HR)	11.8 (.33 m^3/HR)		
	0-60 psig SCFH	1.6 (0.4 m^3/HR)	4.7 (.13 m^3/HR)	7.8 (.22 m^3/HR)	13.3 (.37 m^3/HR)	
	0-120 psig SCFH	0.5 (.01 m^3/HR)		3.8 (.11 m^3/HR)	7.6 (.21 m^3/HR)	15.1 (.42 m^3/HR)
Flow Rate (SCFM)		11.0 (18.7 m^3/HR) @ 150 psig, [10 BAR], (1000 kPa) supply & midscale output				
Temperature Range	**Operating 7800**	-40°F to + 160°F, (-40°C to + 71.2°C)				
	Operating 7801	-10°F to + 160°F, (-23°C to + 71.2°C)				
	Storage 7800/7801	-40°F to + 180°F, (-40°C to + 82.2°C)				
Span/Zero Adjustments		Screwdriver adjustments located on front of unit				
Required Operating Voltages		**Two Wire Current Input** 7.2 VDC @ 20 mA (4-20 mA signal)				
Supply Voltages		**Three Wire Voltage Input** 7.2 - 30 VDC, less than 3 mA				
Signal Impedance		**Three Wire Voltage Input** 10 Kilohms				

	psig [BAR] (kPa)	OUTPUT RANGE 0-30 [0-2.0] (0-200)	0-60 [0-4.0] (0-400)	0-120 [0-8.0] (0-800)
Input Range		4-20 mA DC, 0-10 VDC, 1-9 VDC		
Supply Pressure[1]		35-150 [2.4-10] (240-1000)	65-150 [4.6-10] (460-1000)	125-150 [8.8-10] (880-100)
Minimum Span		12.5 [0.85] (85)	25 [1.5] (150)	50 [3.0] (300)
Frequency Response		-3 db @ 2 Hz per ISA S26.4.3.1 load configuration A.		
Accuracy (ISA S51.1)		0.25% Full Scale Guaranteed 0.15% Full Scale Typical		
Hysteresis (ISA S51.1)		0.25% Full Scale		
Deadband		0.02% Full Scale		
Repeatability (ISA S51.1)		0.1% Full Scale		
Position Effect		0.125% @ 90° & 0.25% @ 180°		
Vibration Effect		Less than +1% of Span under the following conditions: 5-15 Hz @ 0.8 inches constant displacement 15-500 Hz @ 10 Gs.		
Reverse Polarity Protection		No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 60 mA.		
RFI/EMI Effect		Less than 0.5% of span @ 30 v/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 v/m level, to 2 GHz Band per EN 61000-4-3:1998 +A1 EMC Directive 89/336/EEC European Norms EN 61326		
Supply Pressure Effect		< 0.1 psig change for 10 psig supply change		
Temperature Effect		[+0.5% +0.06% / °F Temperature Change] of Span typical		
Materials of Construction		Body and Housing . . . . . .Chromate Treated Aluminum Orifice . . . . . .Nickel Plated Brass & Sapphire Trim . . . . . .Stainless Steel, Brass & Zinc Plated Steel Elastomers . . . . . .Nitrile Finish . . . . . .Epoxy Powder Coating		

[1] *Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa), above maximum output*

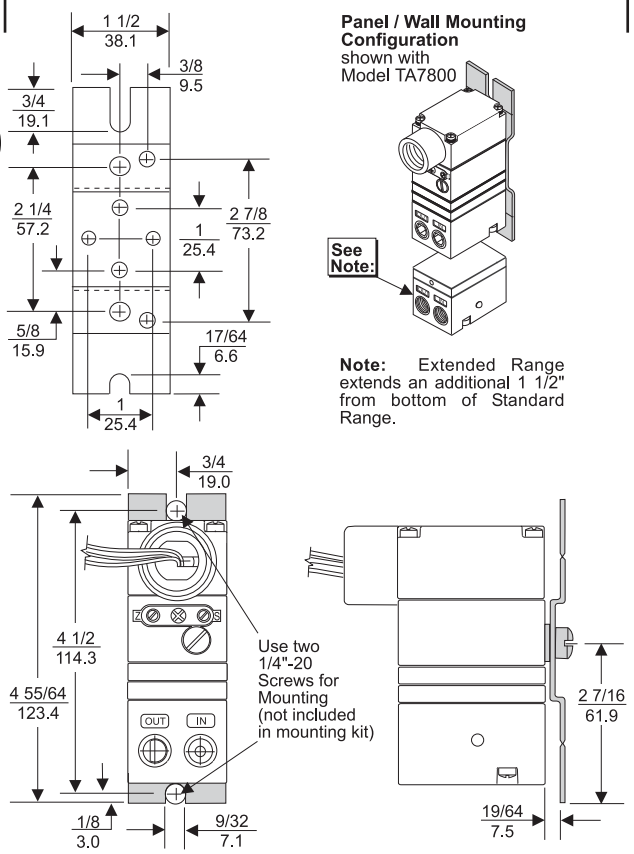
Hazardous Area Specifications

	Intrinsically Safe (4-20 mA Only)	Division 2
Factory Mutual (FM) Approvals ***Entity Parameters*** Vmax[1]= 30 VDC; Imax[2]= 200 mA Ci[3] = O µ F; Li[4] = O mH [1]*Vmax = Max. Voltage* [2]*Imax = Max. Current* [3]*Ci = Capacitance* [4]*Li = Inductance* ***Non-Incendive Field Wiring Parameters*** Vmax[1]= 30 VDC Ci[3] = O µ F; Li[4] = O mH [1]*Vmax = Max. Voltage* [3]*Ci = Capacitance* [4]*Li = Inductance*	**TDFI7800/7801, TAFI7800/7801** Class I, Division 1, Groups C and D; Class II, Division 1, Groups E,F and G; Class III, Division 1, Fibers; NEMA 4X Enclosure; Temperature Code T4, T_{amb} = -20 °C to 65 °C	**TDFI7800/7801, TAFI7800/7801, TDFN7800/7801, TAFN7800/7801** Class I, Division 2, Groups A, B, C and D; Suitable for Class II, Division 2, Groups F and G; Class III, Division 2; NEMA 4X Enclosure; Non-Incendive 4-20 mA, voltage input units ; Temperature Code T4.
	TTFI7800/7801, TRFI7800/7801 Class I, Division 1, Groups C and D; Temperature Code T4, T_{amb} = -20 °C to 65 °C	**TTFI7800/7801, TRFI7800/7801, TTFN7800/7801, TRFN7800/7801** Class I, Division 2, Groups A, B, C and D; Non-Incendive 4-20 mA, voltage input units; Temperature Code T4.
Canadian Standards Association (CSA) Approvals ***Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:*** System Type 1: Single Channel Polarized Rated: 28.5V Max. 300 Ohm Min. System Type 2: Dual Channel Polarized Rated 28.5V Max. 300 Ohm Min. and 10V Max. 50 Ohm Min. System Type 3: Dual Channel Polarized Rated: 28.5V Max. 300 Ohm Min. and 28V Diode return per channel	**TDCI7800/7801, TACI7800/7801** Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Type 4 Enclosure; Rated 4-20 mA, 30 VDC maximum; Temperature Code T6.	**TDCI7800/7801, TTCI7800/7801, TRCI7800/7801** Class I, Division 2, Groups A, B, C and D; Rated 4-20 mA, 30 VDC maximum; Temperature Code T6.
	TTCI7800/7801, TRCI7800/7801 Class I, Division 1, Groups C and D; Rated 4-20 mA, 30VDC maximum; Temperature Code T6.	**TACI7800/7801** Class I, Division 2, Groups A, B, C and D; Class II, Division 2, Groups E, F and G; Type 4 Enclosure; Rated 4-20 mA, 30 VDC maximum; Temperature Code T6.
ATEX Approvals ***Transducer Parameters*** Umax[1]= 28 V; Imax[2]= 100 mA Pi[3] = 0.7 W; Ci[4] = 0; Li[5] = 0 [1]*Umax = Max. Voltage* [2]*Imax = Max. Current* [3]*Pi = Max. Power* [4]*Ci = Capacitance* [5]*Li = Inductance*	**TAEI7800/7801, TDEI7800/7801** EEx ia IIB, T4, T_{amb} = -20°C to 72°C ⟨Ex⟩ II 1G (T4), II 1D (T85°C) IP65 Enclosure	
	TTEI7800/7801, TREI7800/7801 EEx ia IIB, T4, T_{amb} = -20°C to 72°C ⟨Ex⟩ II 1G (T4)	
IECEx Approvals ***Transducer Parameters*** Ui[1]= 28 V; Imax[2]= 100 mA Pi[3] = 0.7 W; Ci[4] = 12 nF; Li[5] = 0 [1]*Umax = Max. Voltage* [2]*Imax = Max. Current* [3]*Pi = Max. Power* [4]*Ci = Capacitance* [5]*Li = Inductance*	**TAEI7800/7801, TDEI7800/7801** EEx ib IIB, T4, Gb T_a = -40°C to 64°C Ex ib III T135°C Db T_a = -40°C to 55°C IECEx SIR 08.130 IP65 Enclosure	
	TTEI7800/7801, TREI7800/7801 Ex ib IIB, T4, Gb T_a = -40°C to 64°C IECEx SIR 08.0130	

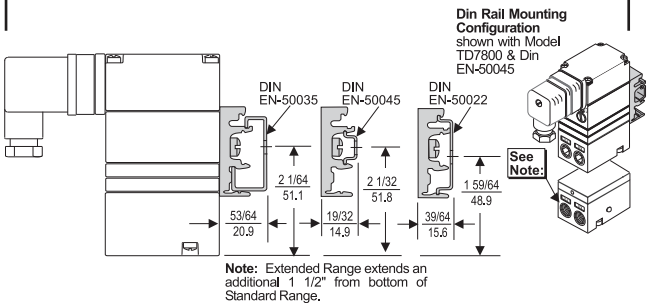
FM APPROVED

Mounting Kits

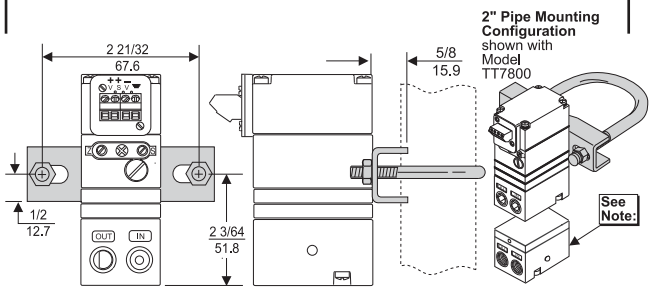
Mounting Bracket: 16799-1



Mounting Bracket: 16893



Mounting Bracket: 19254-1



Model T7800/7801 Transducer Kits & Accessories

Mounting Bracket Kits .....16799-1 (included with unit)
16893 (included with unit)
19254-1 (sold separately)

Catalog Information

Catalog Number T [ ][ ][ ] 7 8 0 [ ][ ][ ][ ]

Electrical Connections

1/2 NPT Conduit	A
Fitting with Pigtail	
DIN43650 Connection	D
Rack Mount	R
Terminal Block	T

Underwriting Group

Canadian Standards	C
ATEX	E
Factory Mutual	F
None (leave blank)	

Approval Class

Intrinsically Safe[1]	I
Non-Incendive (Division 2)[2]	N
None (leave blank)	

Temperature Range

-40°F to +160°F	0
-10°F to +160°F	1

Input

4-20 mA	4
1-5 VDC[6]	5
0-5 VDC[6]	7
1-9 VDC	9
0-10 VDC	0

Output

3-15 psig[3]	01
3-27 psig[3]	02
6-30 psig[3]	03
0-30 psig[4]	04
0-60 psig[4]	05
0-120 psig[4]	06
[0.2-1.0 BAR][3]	11
[0.2-1.8 BAR][3]	12
[0.4-2.0 BAR][3]	13
[0-2.0 BAR][4]	14
[0-4.0 BAR][4]	15
[0-8.0 BAR][4]	16
(20-100 kPa)[3]	21
(20-180 kPa)[3]	22
(40-200 kPa)[3]	23
(0-200 kPa)[4]	24
(0-400 kPa)[4]	25
(0-800 kPa)[4]	26

Options

BSPT Thread[5]	U

[1] Intrinsically Safe Approval includes Non-Incendive (Division 2), available on 4-20 mA units only.

[2] Non-Incendive (Division 2) approval on FM voltage input units only

[3] Standard Range

[4] Extended Range

[5] Available on all units **EXCEPT** Factory Mutual and Canadian Standards Underwriting Group units.

[6] Limited Availability

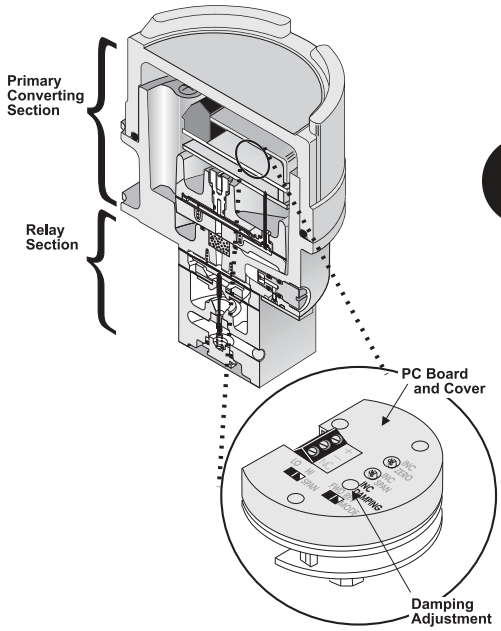
Installation

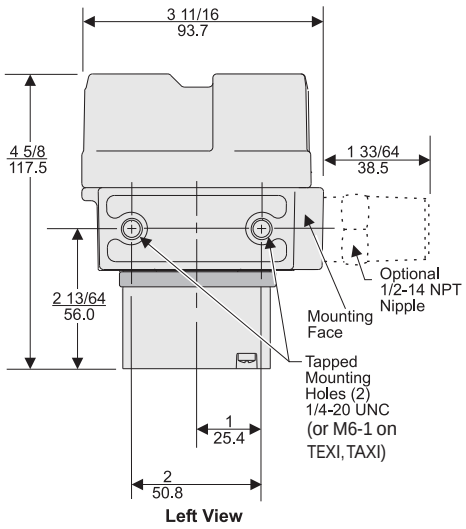
For installation instructions, refer to the *Fairchild T7800/01 Standard Range Electro-Pneumatic Transducer Installation, Operation and Maintenance Instructions,* IS-50T7800S and IS-50T7800E.

Optional manifolds are available to mount 3, 5, 10 or 15 transducers. An optional rack kit is available to mount 10 transducers in a standard 19" rack. For more information, see the *Fairchild Manifold and Rack Kit,* CS-4000MRKT.

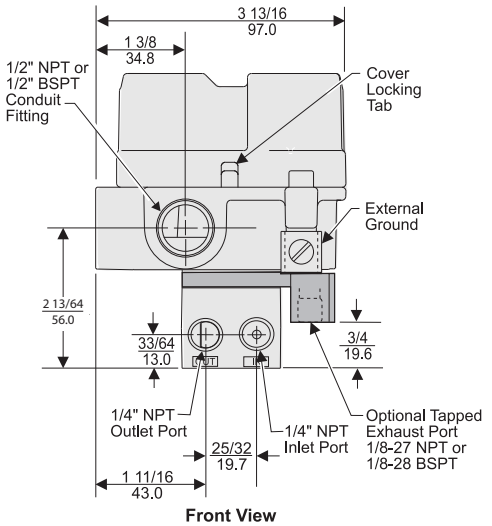
Features

- Internal electronic feedback maintains precise output pressure control.
- Piezoelectric actuator disk provides stability regardless of vibration or position.
- RFI/EMI protection eliminates susceptibility to electromagnetic interference.
- Field selectable outputs in three pressure ranges match final control element requirements.
- Field reversible feature provides output that is directly or inversely proportional to input signal.
- Does not contain copper-based metals.
- Compact size for use in restricted areas.
- -10°F and -40°F temperature ranges available.
- Damping adjustment allows tuning for optimum response.
- Optional version approved for use with Natural Gas or Industrial Methane as a supply media.
- Explosion-proof NEMA 4X, IP65, Type 4 enclosure for outdoor and indoor installations.
- Optional tapped exhaust port vents exhaust gas.
- Canadian Registration Numbers (CRN) certification for all territories and provinces.





Left View



Front View

Operating Principles

The Model TXI7800/7801 Transducer is an electronically controlled pressure sensitive device that converts a current signal to a pneumatic output. This device is composed of the Primary Converting Section and the Relay Section. The Piezoelectric ceramic disk in the Primary Section functions as a flapper. The flapper and the nozzle work together to control the signal pressure in the Relay Section. The signal pressure acts on a diaphragm assembly that controls the pressure in the output chamber.

The output pressure is sensed by the lower control diaphragm to maintain the output pressure. The output pressure is also sensed by the feedback control circuit, which compares the output pressure and input signal (setpoint) to maintain constant output pressure.

The Damping Adjustment on the PC Board allows tuning the transducer for optimum response and stability. Large downstream volumes generally require more damping to achieve output pressure stability.

Specifications

		SET POINT			
	psig [BAR] (kPa)	3 [0.2] (20)	9 [0.6] (60)	15 [1.0] (100)	30 [2.0] (200)
Maximum Air Consumption	**All Ranges SCFH**	3.5 (.10 m³/HR)	7.0 (.20 m³/HR)	9.5 (.27 m³/HR)	13.5 (.38 m³/HR)
Flow Rate (SCFM)		2.5 (4.25 m³/HR) @ 25 psig, [1.7 BAR], (170 kPa) supply & 9 psig, [0.6 BAR], (60 kPa) Output		**OR** 9.0 (15.3 m³/HR) @ 120 psig, [8.0 BAR], (800 kPa) supply & 9 psig, [0.6 BAR], (60 kPa) Output	
Temperature Range	**Operating**	**7800** -40°F to + 160°F (-40°C to + 71.2°C)			
	Storage	**7801** -10°F to + 160°F (-23°C to + 71.2°C)			
	Storage	**7800/7801** -40°F to + 180°F (-40°C to + 82.2°C)			
Span/Zero Adjustments		Screwdriver adjustments located under cover			

	OUTPUT RANGE		
psig [BAR] (kPa)	3-15 [0.2-1.0] (20-100)	3-27 [0.2-1.8] (20-180)	6-30 [0.4-2.0] (40-200)
Input Range	4-20 mA		
Supply Pressure [1,2]	20-120 [1.5-8.0] (150-800)	32-120 [2.2-8.0] (220-800)	35-120 [2.4-8.0] (240-800)
Minimum Span	5 [0.35] (35)	10 [0.7] (70)	10 [0.7] (70)
Frequency Response	-3 db @ 5 Hz per ISA S26.4.3.1 load configuration A.		
Required Operating Voltages	7.2 VDC @ 20 mA (4-20 mA signal)		
Accuracy (ISA S51.1)	0.25% Full Scale Guaranteed 0.15% Full Scale Typical		
Hysteresis (ISA S51.1)	≤ 0.1% Full Scale		
Deadband	≤ 0.02% Full Scale		
Repeatability (ISA S51.1)	≤ 0.1% Full Scale		
Position Effect	No Measurable Effect		
Vibration Effect	Less than +1% of Span under the following conditions: 5-15 Hz @ 0.75 inches constant displacement 15-500 Hz @ 10 Gs.		
Reverse Polarity Protection	No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 60 mA.		
RFI/EMI Effect	Less than 0.5% of span @ 30 v/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 v/m level, to 2 GHz Band per EN 61000-4-3:1998 +A1 EMC Directive 89/336/EEC European Norms EN 61326		
Supply Pressure Effect	No Measurable Effect		
Temperature Effect	[+0.5% +0.04% / °F Temperature Change] of Span typical		
Materials of Construction	Body and Housing . . . . . .Chromate Treated Aluminum Orifice . . . . . .Aluminum & Sapphire Trim . . . . . .Stainless Steel & Zinc Plated Steel Elastomers . . . . . .Nitrile Finish . . . . . .Epoxy Powder Coating		

[1] *Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa), above maximum output.*

[2] *Atex Approved unit 40 psig, [2.8 BAR], (280 kPa). Atex Approved unit with "N" option 120 psig, [8.0 BAR], (800 kPa) for Air or Group IIA gases.*

Extended Range Specifications

	psig [BAR] (kPa)	SET POINT 0 [0] (0)	15 [1.0] (100)	30 [2.0] (200)	60 [4.0] (400)	120 [8.0] (800)
Maximum Air Consumption	0-30 psig SCFH	3.1 (.09 m³/HR)	7.8 (.22 m³/HR)	11.8 (.33 m³/HR)		
	0-60 psig SCFH	1.6 (0.4 m³/HR)	4.7 (.13 m³/HR)	7.8 (.22 m³/HR)	13.3 (.37 m³/HR)	
	0-120 psig SCFH	0.5 (.01 m³/HR)		3.8 (.11 m³/HR)	7.6 (.21 m³/HR)	15.1 (.42 m³/HR)
Flow Rate (SCFM)		11.0 (18.7 m³/HR) @ 150 psig, [10 BAR], (1000 kPa) supply & midscale output				
Temperature Range	Operating TXI7800	-40°F to + 160°F, (-40°C to + 71.2°C)				
	Operating TXI7801	-10°F to + 160°F, (-23°C to + 71.2°C)				
	Storage TXI7800/7801	-40°F to + 180°F, (-40°C to + 82.2°C)				
Span/Zero Adjustments		Screwdriver adjustments located on front of unit				
Required Operating Voltages		**Two Wire Current Input** 7.2 VDC @ 20 mA (4-20 mA signal)				
Supply Voltages		**Three Wire Voltage Input** 7.2 - 30 VDC, less than 3 mA				
Signal Impedance		**Three Wire Voltage Input** 10 Kilohms				

	psig [BAR] (kPa)	OUTPUT RANGE 0-30 [0-2.0] (0-200)	0-60 [0-4.0] (0-400)	0-120 [0-8.0] (0-800)
Input Range		4-20 mA DC, 0-10 VDC, 1-9 VDC		
Supply Pressure[1]		35-150 [2.4-10] (240-1000)	65-150 [4.6-10] (460-1000)	125-150 [8.8-10] (880-100)
Minimum Span		12.5 [0.85] (85)	25 [1.5] (150)	50 [3.0] (300)
Frequency Response		-3 db @ 2 Hz per ISA S26.4.3.1 load configuration A.		
Accuracy (ISA S51.1)		0.25% Full Scale Guaranteed 0.15% Full Scale Typical		
Hysteresis (ISA S51.1)		0.25% Full Scale		
Deadband		0.02% Full Scale		
Repeatability (ISA S51.1)		0.1% Full Scale		
Position Effect		0.125% @ 90° & 0.25% @ 180°		
Vibration Effect		Less than +1% of Span under the following conditions: 5-15 Hz @ 0.8 inches constant displacement 15-500 Hz @ 10 Gs.		
Reverse Polarity Protection		No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 60 mA.		
RFI/EMI Effect		Less than 0.5% of span @ 30 v/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 v/m level, to 2 GHz Band per EN 61000-4-3:1998 +A1 EMC Directive 89/336/EEC European Norms EN 61326		
Supply Pressure Effect		< 0.1 psig change for 10 psig supply change		
Temperature Effect		[+0.5% +0.06% / °F Temperature Change] of Span typical		
Materials of Construction		Body and Housing . . . . . .Chromate Treated Aluminum Orifice . . . . . .Nickel Plated Brass & Sapphire Trim . . . . . .Stainless Steel, Brass & Zinc Plated Steel Elastomers . . . . . .Nitrile Finish . . . . . .Epoxy Powder Coating		

[1] *Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa), above maximum output*

2 Atex Approved unit 40 psig [2.8 BAR] (280 kPa); Atex Approved unit with "N" option 120 psig [8.0 BAR] (800 kPa) for Air or Group !!A Gases

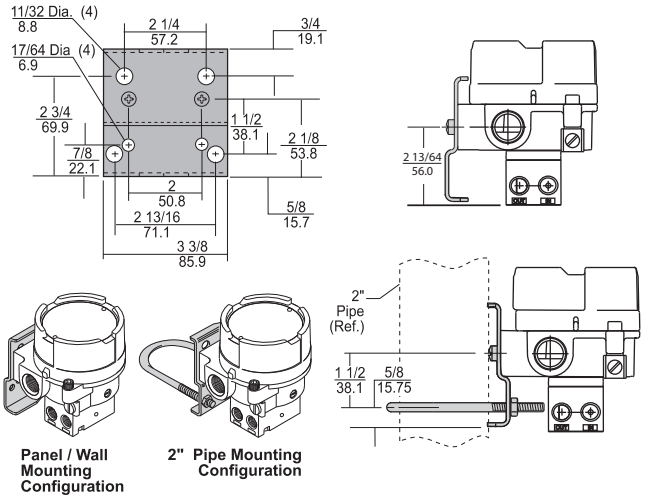
Hazardous Area Classifications

	Explosion-Proof	Intrinsically Safe
Factory Mutual (FM) Approvals FM APPROVED	**Air as supply pressure media** Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1, Fibers; Class I, Division 2, Groups A, B, C and D; NEMA 4X Enclosure; Max. Ambient 65°C; Temperature Code T5. **Group D gases, including Natural Gas as supply pressure media** Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Class I, Division 2, Groups A, B, C and D; Class II, Division 2, Groups E, F and G.	**Air as supply pressure media** Class I, Division I, Groups C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Fibers; NEMA 4X Enclosure; Max. Ambient 65°C; Temperature Code T4. ***Entity Parameters*** Vmax[1]= 30 VDC, Ci[3] = O µ F Imax[2]= 200 mA, Li[4] = O mH [1]*Vmax = Max. Voltage*, [3]*Ci = Capacitance* [2]*Imax = Max. Current*, [4]*Li = Inductance*
Canadian Standards Association (CSA) Approvals	**Air as supply pressure media** Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F and G; Class I, Division 2, Groups A, B, C and D; Class II, Division 2, Groups E, F and G. Type 4X Enclosure; Temperature Code T5; Max. Ambient 65°C. **Group D gases, including Natural Gas as supply pressure media** Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Class I, Division 2, Groups A, B, C and D. Class II, Division 2, Groups E, F and G.	**Air as supply pressure media** Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Type 4X Enclosure; Temperature Code T4; Rated 4-20 mA, 30 VDC maximum. ***Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:*** System Type 1: Single Channel Polarized Rated: 28.5V Max. 300 Ohm Min. System Type 2: Dual Channel Polarized Rated 28.5V Max. 300 Ohm Min. and 28V Diode return per channel System Type 3: Dual Channel Polarized Rated: 28.5V Max. 300 Ohm Min. and 10V Max. 50 Ohm Min.
	Flame-Proof	**Intrinsically Safe**
Explosive Atmospheres Directive (ATEX) Approvals*	**Air as supply pressure media** Ⓔx II 2 GD EEx d IIB + H_2, T5 (-20°C to +65°C) Ambient; IP65 Enclosure. **Group IIA gases, including Natural Gas as supply pressure media** Ⓔx II 2 GD EEx d IIB , T5 (-20°C to +65°C) Ambient; IP65 Enclosure.	**Air as supply pressure media** Ⓔx II 1 G (T4) II1D (T 85°C) EEx ia IIB, T4 (-20°C to +72°C) Ambient; IP65 Enclosure.
Standards Australia (SAA) Approvals*	**Air as supply pressure media** Ex d IIB + H_2, T5 (-20°C to +65°C) Ambient; IP65 Enclosure. ***Transducer Parameters*** Umax[1]= 28 V, Pi[3] = 0.7 W, L_i[5] = 0 Imax[2]= 100 mA, Ci[4] = 0 [1]*Umax = Max. Voltage*, [3]*Pi = Max. Power*, [5]*Li = Inductance* [2]*Imax = Max. Current*, [4]*Ci = Capacitance*	**Air as supply pressure media** Ex ia IIB , T4 (-20°C to +72°C) Ambient.

*

IECEx Approvals	***Transducer Parameters*** Ui[1]= 28 V, Pi[3] = 0.7 W, L_i[5] = 0 Ii[2]= 100 mA, Ci[4] = 0 [1]*Ui = Max. Voltage*, [3]*Pi = Max. Power*, [5]*Li = Inductance* [2]*Ii = Max. Current*, [4]*Ci = Capacitance* **TEXI7800/01** (Ta -40°C to 64°C) Ex ia IIB T4 Gb Ex ib IIIB T74°C Db IECEx SIR 09.0003 IP65 Enclosure

Mounting Kit



Model TXI7800/7801 Transducer Kits & Accessories

Mounting Bracket Kits

19021-1: TCXI7800/7801,TFXI7800/7801 (sold separately)

19021-2: TEXI7800/7801, TAXI7800/7801 (sold separately)

Catalog Information

Catalog Number T [ ] X I 780 [ ] [ ] [ ] [ ] [ ]

Underwriting Group

SAA	A
Canadian Standard	C
ATEX	E
Factory Mutual	F

Temperature Range

-40°F to +160°F	0
-10°F to +160°F	1

Input

4-20 mA	4

Output

3-15 psig	01
3-27 psig	02
6-30 psig	03
0-30 psig	04
0-60 psig	05
0-120 psig	06
[0.2-1.0 BAR]	11
[0.2-1.8 BAR]	12
[0.4-2.0 BAR]	13
[0-2.0 BAR]	14
[0-4.0 BAR]	15
[0-8.0 BAR]	16
(20-100 kPa)	21
(20-180 kPa)	22
(40-200 kPa)	23
(0-200 kPa)	24
(0-400 kPa)	25
(0-800 kPa)	26

Options

Tapped Exhaust	E
Natural Gas media approval, Group D gases [4] (Includes Nipple; TCXI, TEXI, TFXI only) [1, 2]	N
BSPT Thread [3]	U

20 ft cable length[4]	2
50 ft cable length[4]	5
100 ft cable length[4]	0

[1] Not approved for Intrinsically Safe.
[2] Tapped Exhaust option required.
[3] Available for ATEX and SAA only. NOT available with "N" Option.
[4] 10 ft cable standard. Longer lengths available. Contact factory for details and availability.

Installation

For installation instructions, refer to the *Fairchild Model TXI7800/7801 Explosion-proof Electro-pneumatic Transducer Installation, Installation Instructions*, II-5TXI7800.

For operation and maintenance instructions, refer to the *Fairchild Model TXI7800 Explosion-proof Electro-pneumatic Transducer Operation and Maintenance Instructions*, OM-5TXI7800.

Features

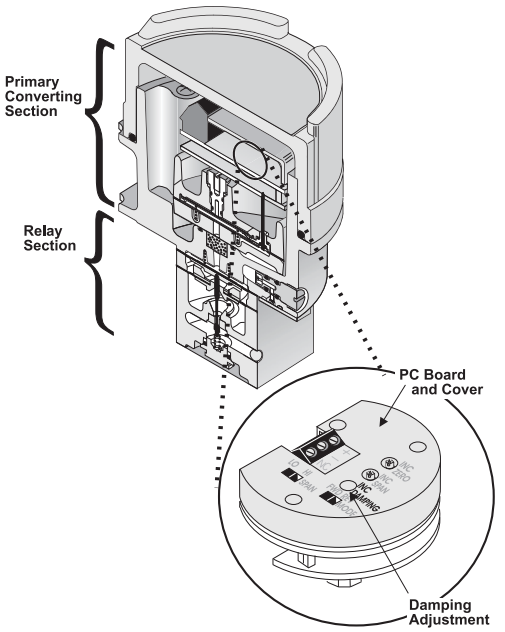
- Explosion-proof NEMA 4X, IP65, Type 4 enclosure for outdoor and indoor installations.
- Optional tapped exhaust port vents exhaust gas.
- Canadian Registration Numbers (CRN) certification for all territories and provinces.
- Does not contain copper-based metals.
- Compact size for use in restricted areas.
- Internal electronic feedback maintains precise output pressure control.
- Piezoelectric actuator disk provides stability regardless of vibration or position.
- RFI/EMI protection eliminates susceptibility to elecromagnetic interference.
- Optional version approved for use with Natural Gas or Industrial Methane as a supply media.
- Encapsulated critical components designed to make unit moisture resistant in tough environments

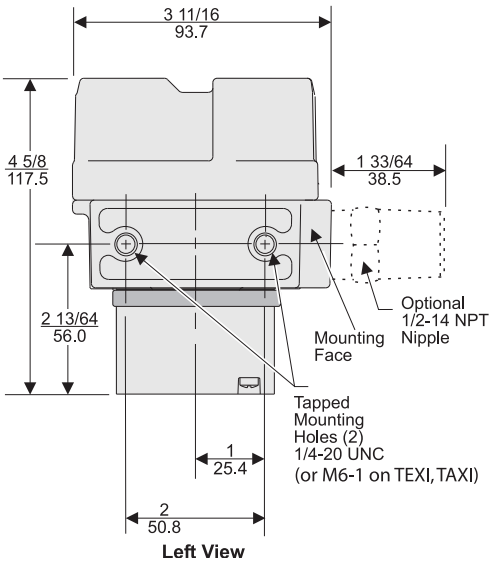
Operating Principles

The Model TXI7850/7851 Transducer is an electronically controlled pressure sensitive device that converts a current signal to a pneumatic output. This device is composed of the Primary Converting Section and the Relay Section. The Piezoelectric ceramic disk in the Primary Section functions as a flapper. The flapper and the nozzle work together to control the signal pressure in the Relay Section. The signal pressure acts on a diaphragm assembly that controls the pressure in the output chamber.

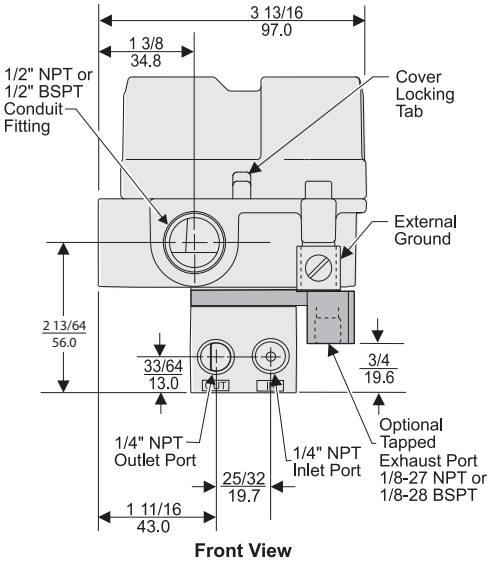
The output pressure is sensed by the lower control diaphragm to maintain the output pressure. The output pressure is also sensed by the feedback control circuit, which compares the output pressure and input signal (setpoint) to maintain constant output pressure.

The Damping Adjustment on the PC Board allows tuning the transducer for optimum response and stability. Large downstream volumes generally require more damping to achieve output pressure stability.





Left View



Front View

Specifications

		SET POINT			
	psig [BAR] (kPa)	3 [0.2] (20)	9 [0.6] (60)	15 [1.0] (100)	30 [2.0] (200)
Maximum Air Consumption	**SCFH**	3.5 (.10 m³/HR)	7.0 (.20 m³/HR)	9.5 (.27 m³/HR)	13.5 (.38 m³/HR)
Flow Rate (SCFM)		2.5 (4.25 m³/HR) @ 25 psig, [1.7 BAR], (170 kPa) supply & 9 psig, [0.6 BAR], (60 kPa) Output		**OR**	9.0 (15.3 m³/HR) @ 120 psig, [8.0 BAR], (800 kPa) supply & 9 psig, [0.6 BAR], (60 kPa) Output
Temperature Range	**Operating**	**7800** -40°F to + 160°F, (-40°C to + 71.2°C)			
	Operating	**7801** -10°F to + 160°F, (-23°C to + 71.2°C)			
	Storage	**7800/7801** -40°F to + 180°F, (-40°C to + 82.2°C)			
Span/Zero Adjustments		Screwdriver adjustments located under cover			

	OUTPUT RANGE		
psig [BAR] (kPa)	3-15 [0.2-1.0] (20-100)	3-27 [0.2-1.8] (20-180)	6-30 [0.4-2.0] (40-200)
Input Range	4-20 mA		
Supply Pressure [1,2]	20-120 [1.5-8.0] (150-800)	32-120 [2.2-8.0] (220-800)	35-120 [2.4-8.0] (240-800)
Minimum Span	5 [0.35] (35)	10 [0.7] (70)	10 [0.7] (70)
Frequency Response	-3 db @ 5 Hz per ISA S26.4.3.1 load configuration A.		
Required Operating Voltages	7.2 VDC @ 20 mA (4-20 mA signal)		
Accuracy (ISA S51.1)	0.25% Full Scale Guaranteed 0.15% Full Scale Typical		
Hysteresis (ISA S51.1)	≤ 0.1% Full Scale		
Deadband	≤ 0.02% Full Scale		
Repeatability (ISA S51.1)	≤ 0.1% Full Scale		
Position Effect	No Measurable Effect		
Vibration Effect	Less than ±1% of Span under the following conditions: 5-15 Hz @ 0.75 inches constant displacement 15-500 Hz @ 10 Gs.		
Reverse Polarity Protection	No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 60 mA.		
RFI/EMI Effect	Less than 0.5% of span @ 30 v/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 v/m level, to 2 GHz Band per EN 61000-4-3:1998 +A1 EMC Directive 89/336/EEC European Norms EN 61326		
Supply Pressure Effect	No Measurable Effect		
Temperature Effect	[+0.5% +0.04% / °F Temperature Change] of Span typical		
Materials of Construction	Body and Housing . . . . . .Chromate Treated Aluminum Orifice . . . . . .Aluminum & Sapphire Trim . . . . . .Stainless Steel & Zinc Plated Steel Elastomers . . . . . .Nitrile Finish . . . . . .Epoxy Powder Coating		

[1] *Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa), above maximum output.*

[2] *Atex Approved unit 40 psig, [2.8 BAR], (280 kPa). Atex Approved unit with "N" option 120 psig, [8.0 BAR], (800 kPa) for Air or Group IIA gases.*

Extended Range Specifications

	psig [BAR] (kPa)	SET POINT 0 [0] (0)	15 [1.0] (100)	30 [2.0] (200)	60 [4.0] (400)	120 [8.0] (800)
Maximum Air Consumption	**0-30 psig SCFH**	3.1 (.09 m^3/HR)	7.8 (.22 m^3/HR)	11.8 (.33 m^3/HR)		
	0-60 psig SCFH	1.6 (0.4 m^3/HR)	4.7 (.13 m^3/HR)	7.8 (.22 m^3/HR)	13.3 (.37 m^3/HR)	
	0-120 psig SCFH	0.5 (.01 m^3/HR)		3.8 (.11 m^3/HR)	7.6 (.21 m^3/HR)	15.1 (.42 m^3/HR)
Flow Rate (SCFM)		11.0 (18.7 m^3/HR) @ 150 psig, [10 BAR], (1000 kPa) supply & midscale output				
Temperature Range	**Operating**	**TXI850** -40°F to + 160°F, (-40°C to + 71.2°C)				
	Operating	**TXI7851** -10°F to + 160°F, (-23°C to + 71.2°C)				
	Storage	**TXI7850/7851** -40°F to + 180°F, (-40°C to + 82.2°C)				
Span/Zero Adjustments		Screwdriver adjustments located on front of unit				
Required Operating Voltages		**Two Wire Current Input** 7.2 VDC @ 20 mA (4-20 mA signal)				
Supply Voltages		**Three Wire Voltage Input** 7.2 - 30 VDC, less than 3 mA				
Signal Impedance		**Three Wire Voltage Input** 10 Kilohms				

	psig [BAR] (kPa)	OUTPUT RANGE 0-30 [0-2.0] (0-200)	0-60 [0-4.0] (0-400)	0-120 [0-8.0] (0-800)
Input Range		4-20 mA DC, 0-10 VDC, 1-9 VDC		
Supply Pressure[1]		35-150 [2.4-10] (240-1000)	65-150 [4.6-10] (460-1000)	125-150 [8.8-10] (880-100)
Minimum Span		12.5 [0.85] (85)	25 [1.5] (150)	50 [3.0] (300)
Frequency Response		-3 db @ 2 Hz per ISA S26.4.3.1 load configuration A.		
Accuracy (ISA S51.1)		0.25% Full Scale Guaranteed 0.15% Full Scale Typical		
Hysteresis (ISA S51.1)		0.25% Full Scale		
Deadband		0.02% Full Scale		
Repeatability (ISA S51.1)		0.1% Full Scale		
Position Effect		0.125% @ 90° & 0.25% @ 180°		
Vibration Effect		Less than +1% of Span under the following conditions: 5-15 Hz @ 0.8 inches constant displacement 15-500 Hz @ 10 Gs.		
Reverse Polarity Protection		No damage occurs from reversal of normal supply current (4-20 mA) or from misapplication of up to 60 mA.		
RFI/EMI Effect		Less than 0.5% of span @ 30 v/m class 3 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 v/m level, to 2 GHz Band per EN 61000-4-3:1998 +A1 EMC Directive 89/336/EEC European Norms EN 61326		
Supply Pressure Effect		< 0.1 psig change for 10 psig supply change		
Temperature Effect		[+0.5% +0.06% / °F Temperature Change] of Span typical		
Materials of Construction		Body and Housing . . . . . .Chromate Treated Aluminum Orifice . . . . . .Nickel Plated Brass & Sapphire Trim . . . . . .Stainless Steel, Brass & Zinc Plated Steel Elastomers . . . . . .Nitrile Finish . . . . . .Epoxy Powder Coating		

[1] *Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa), above maximum output*

2 Atex Approved unit 40 psig [2.8 BAR] (280 kPa); Atex Approved unit with "N" option 120 psig [8.0 BAR] (800 kPa) for Air or Group !!A Gases

Hazardous Area Classifications

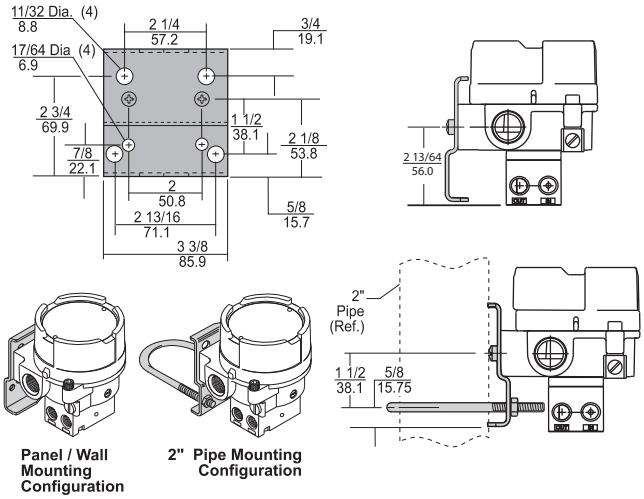
	Explosion-Proof	Intrinsically Safe
Factory Mutual (FM) Approvals FM APPROVED	**Air as supply pressure media** Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1, Fibers; Class I, Division 2, Groups A, B, C and D; NEMA 4X Enclosure; Max. Ambient 65°C; Temperature Code T5.	**Air as supply pressure media** Class I, Division I, Groups C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Fibers; NEMA 4X Enclosure; Max. Ambient 65°C; Temperature Code T4. ***Entity Parameters*** Vmax[1]= 30 VDC; Ci[3] = O µ F Imax[2]= 200 mA; Li[4] = O mH [1]*Vmax = Max. Voltage*; [3]*Ci = Capacitance* [2]*Imax = Max. Current*; [4]*Li = Inductance*
	Group D gases, including Natural Gas as supply pressure media Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Class I, Division 2, Groups A, B, C and D; Class II, Division 2, Groups E, F and G.	
Canadian Standards Association (CSA) Approvals CSA®	**Air as supply pressure media** Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F and G; Class I, Division 2, Groups A, B, C and D; Class II, Division 2, Groups E, F and G. Type 4X Enclosure; Temperature Code T5; Max. Ambient 65°C.	**Air as supply pressure media** Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Type 4X Enclosure; Temperature Code T4; Rated 4-20 mA, 30 VDC maximum. ***Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:*** System Type 1: Single Channel Polarized Rated: 28.5V Max. 300 Ohm Min. System Type 2: Dual Channel Polarized Rated 28.5V Max. 300 Ohm Min. and 28V Diode return per channel System Type 3: Dual Channel Polarized Rated: 28.5V Max. 300 Ohm Min. and 10V Max. 50 Ohm Min.
	Group D gases, including Natural Gas as supply pressure media Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F and G; Class I, Division 2, Groups A, B, C and D. Class II, Division 2, Groups E, F and G. ***Factory Sealed***	
	Flame-Proof	**Intrinsically Safe**
Explosive Atmospheres Directive (ATEX) Approvals*	**Air as supply pressure media** Ⓔx II 2 GD EEx d IIB + H_2, T5 (-20°C to +65°C) Ambient; IP65 Enclosure.	**Air as supply pressure media** Ⓔx II 1 G (T4) II1D (T 85°C) EEx ia IIB, T4 (-20°C to +72°C) Ambient; IP65 Enclosure.
	Group IIA gases, including Natural Gas as supply pressure media Ⓔx II 2 GD EEx d IIB, T5 (-20°C to +65°C) Ambient; IP65 Enclosure.	

* ***Transducer Parameters***

Umax[1]= 28 V; Pi[3] = 0.7 W; L_i[5] = 0
Imax[2]= 100 mA; Ci[4] = 0

[1]*max = Max. Voltage*; [3]*Pi = Max. Power*; [5]*Li = Inductance*
[2]*Imax = Max. Current*; [4]*Ci = Capacitance*

Mounting Kit



Model TXI7850/7851 Transducer Kits & Accessories

Mounting Bracket Kits.....
19021-1: TCXI7850/7851, TFXI7850/7851 (sold separately)
19021-2: TEXI7850/7851 (sold separately)

Catalog Information

Catalog Number T [ ] **XI785** [ ] [4] [ ] [ ] [ ]

Underwriting Group

Canadian Standard	C
ATEX	E
Factory Mutual	F

Temperature Range

-40°F to +160°F	0
-10°F to +160°F	1

Input

4-20 mA	4

Output

3-15 psig	01
3-27 psig	02
6-30 psig	03
0-30 psig	04
0-60 psig	05
0-120 psig	06
[0.2-1.0 BAR]	11
[0.2-1.8 BAR]	12
[0.4-2.0 BAR]	13
[0-2.0 BAR]	14
[0-4.0 BAR]	15
[0-8.0 BAR]	16
(20-100 kPa)	21
(20-180 kPa)	22
(40-200 kPa)	23
(0-200 kPa)	24
(0-400 kPa)	25
(0-800 kPa)	26

Options

Tapped Exhaust	E
Natural Gas media approval, Group D gases [4] (Includes Nipple; TCXI, TEXI, TFXI only) [1, 2]	N
BSPT Thread [3]	U

20 ft cable length[4]	2
50 ft cable length[4]	5
100 ft cable length[4]	0

[1] Not approved for Intrinsically Safe.
[2] Tapped Exhaust option required.
[3] Available for ATEX only. NOT available with "N" Option.
[4] 10 ft cable standard. Longer lengths available. Contact factory for details and availability.

Installation

For installation instructions, refer to the *Fairchild Model TXI7850/7851 Explosion-proof Electro-pneumatic Transducer Installation, Installation Instructions*, II-5TXI7850.

For operation and maintenance instructions, refer to the *Fairchild Model TXI7850/7851 Explosion-proof Electro-pneumatic Transducer Operation and Maintenance Instructions*, OM-5TXI7850.

Model T7900 Analog Control
Model T7900 DeviceNet™ Communication

Features

The Model T7900 Series Electro-Pneumatic Transducers include the Model T7900 with Analog Output and the Model T7900D with DeviceNet ™ Communication.

The Model T7900 controls pressure in proportion to an analog electrical input signal. An internal feedback sensor monitors output pressure to achieve high accuracy.

The Model T7900D Transducer with DeviceNet™ Communications controls output pressure in response to a digital communication command.

***Common Features of the* T7900 & T7900D**

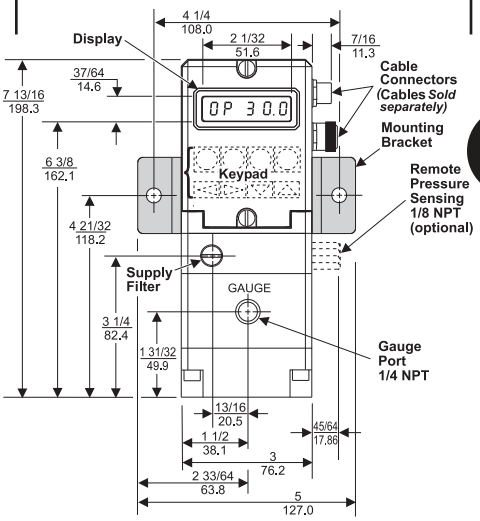
- RFI/EMI protection eliminates electromagnetic and radio interference.
- Output pressure displays in psig, BAR, kPa, or user-defined pressure units.
- Reverse acting capability for analog input and output signals.
- Select Current or Voltage mode for input signal or optional analog channels using the keypad.
- Independently adjustable PID tuning coefficients.
- Fully functional keypad and display.
- Backlit Liquid Crystal display screen.

Operating Principles

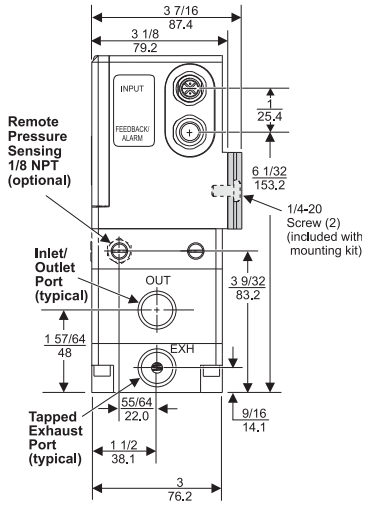
The Model T7900 Series Transducers have a closed-loop, integrated, microprocessor control system that regulates outlet pressure. You can control the output from the Model T7900 using the keypad or from an analog control signal. You can control the output from the Model T7900D using the keypad and through DeviceNet ™ Communication network.

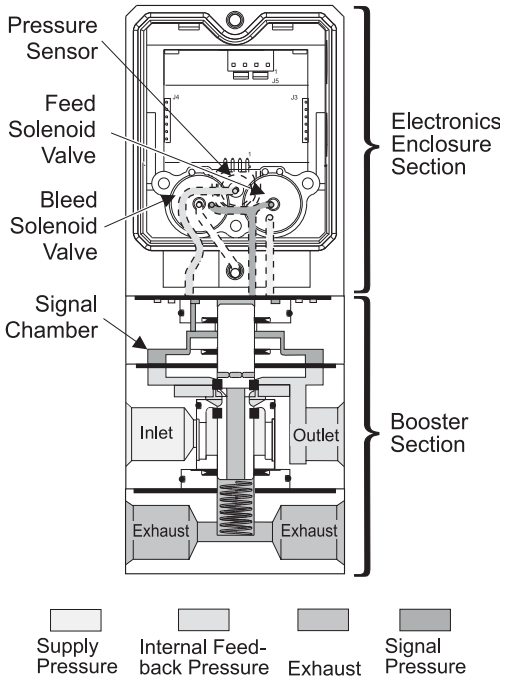
The Feed and Bleed Solenoid Valves control pressure in the Signal Chamber of the Booster Section. A pressure sensor measures the outlet pressure and provides a feedback signal to the Electronics Section. Any variation in pressure between the setpoint and the outlet pressure activates the Feed and Bleed Solenoid Valves to change the output pressure.

Shown with Mounting Kit 19634-1 (Included with unit)

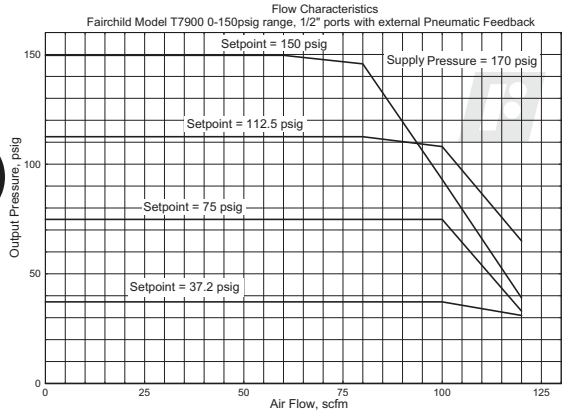


Shown with Mounting Kit 19634-1 (Included with unit)





Technical Information



Specifications

Supply Pressure[1]
200 psig, [14 BAR], (1400 kPa) Maximum

Pneumatic Outputs	**psig:**	0-30	0-75	0-150
	[BAR]:	[0-2]	[0-5]	[0-10]
	(kPa):	(0-200)	(0-500)	(0-1000)
Minimum Span	**psig:**	12	30	60
	[BAR]:	[0.8]	[2.0]	[4.0]
	(kPa):	(80)	(200)	(400)

Input Signal
4-20 mA, 0-10 VDC

Flow Rate (SCFM)
100 (170 m^3/HR) @ 100 psig, [7 BAR], (700 kPa) supply @ 20 psig, [1.5 BAR], (150 kPa) setpoint

Exhaust Flow (SCFM)
50 (85 m^3/HR) @ 60 psig, [4 BAR], (350 kPa) downstream pressure @ 5 psig, [.35 BAR], (35 kPa) above setpoint

Air Consumption
0 @ steady state output with Deadband @ 1 % of Full Scale

Supply Pressure Effect
No Measurable Effect

Electrical Supply
24 VDC ± 10 %

Power Consumption
Less than 5 watts

Analog Output Signal / Impedence
4-20 mA/500 ohms Maximum, 0-10 VDC/400 ohms Minimum

Deadband (ISA S51.1)
Adjustable from 0 to 10 % of Full Scale

Unit Accuracy (ISA S51.1)
Less than 0.50% Output Span

Frequency Response
-3 db @ 1 HZ per ISA S26.4.3.1 load Configuration A

Vibration Effect
Less than 1 % of Span under the following conditions: 5 - 15 Hz @ 0.8 inches constant displacement 15-500 Hz @ 10 g's

RFI/EMI Effect
Less than 0.5%. EMC Directive 89/336/EEC European Norms EN 50081-2 & EN 50082-2.

Temperature Range
0° F to + 160° F, (-18° C to + 71° C)

Materials of Construction
Body and Housing .....Chromate Treated Aluminum
Cover and Pintle .....Acetel Plastic
Trim .....Zinc Plated Steel
Elastomers.....Fluorocarbon and Silicone
Finish .....Epoxy

[1] *Supply Pressure must be no less than 5 psig, [0.35 BAR], (35 kPa) above maximum output.*

Catalog Information

Catalog Number T7900 [ ][ ][ ][ ][ ][ ]

Input
0-10 VDC 0
4-20 mA 4
DeviceNet ™ ..... D

Output
0-30 psig 04
0-75 psig 05
0-150 psig 07
[0-2.0 BAR] 14
[0-5.0 BAR] 15
[0-10.0 BAR] 17
(0-200 kPa) 24
(0-500 kPa) 25
(0-1000 kPa) 27

Pipe Size
1/4" NPT 02
3/8" NPT 03
1/2" NPT 04

Pipe Thread Type
NPT Thread ..... O
BSPT Thread ..... U
BSPP Thread ..... H

Option Type
No Option Board ..... N
0-10 VDC Analog Output 0
4-20 MA Analog Output 4
0-10 VDC Feedback Input [1] 5
4-20 MA Feedback Input [1] 6

Option
External Pneumatic Feedback ..... P

[1] *Consult factory for availability*

***Unique Feature of the* T7900D**

- DeviceNet ™ Communications that connect the Model T7900D to a digital network to increase functional flexibility, installation speed, and reduce system wiring cost.

***Available Options for the* T7900D Series Transducer**

- Optional analog output channel configured as an output pressure monitor or as a user-defined output.
- External Pneumatic Feedback port to monitor down stream pressure.
- Optional Feedback Input Channel configurable to control setpoint, External process variable, or accept a user defined input. (Consult factory for availability.)

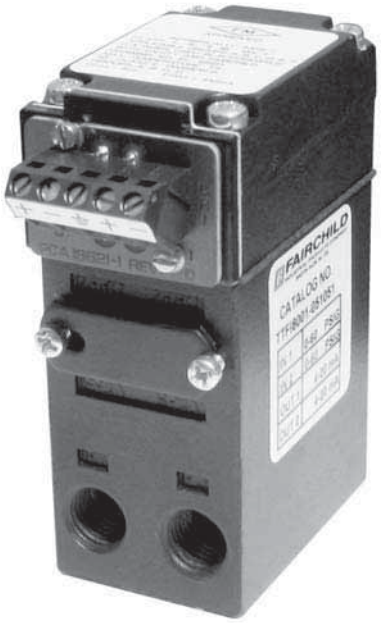
T7900 Cables and Connectors (sold separately)

Part Number	Description
055-IPI-089-M	Male Connector (Feedback Output)
055-IPI-089-F	Female Connector (Control Input)
032-IPI-009-3M	Male cable with one connector (3 meter)
032-IPI-009-3F	Female cable with one connector (3 meter)

Installation

For operating instructions, refer to the corresponding *Fairchild Model T7900 Electro-Pneumatic I/P, E/P Transducer Operation and Maintenance Instructions*, OM-500T79FI, OM-500T79AB, OM-500T79AO, OM-500T79DB, OM-500T79DI, OM-500T79DO.

For installation instructions, refer to the *Fairchild Model T7900 Electro-Pneumatic I/P, E/P Transducer Installation Instructions,* II-500T7900.



The T8000 Series is designed for precision applications providing maximum versatility. The modular construction permits any basic unit to be used in the explosion-proof, rack, wall, pipe, panel, DIN rail or 3, 5, 10, or 15 unit manifold configurations. Servicing or calibration is quick and easy.

Features

- Field reversible feature provides output which is directly or inversely proportional to the input signal.
- RFI/EMI Protection eliminates susceptibility to electromagnetic and radio interference.
- Outputs of 4-20 mA or 10-50 mA cover standard loop outputs.
- Seven input signal ranges cover all standard inputs.
- Compact size permits use in space restricted areas.
- Explosion-Proof NEMA 4X, IP65, Type 4 Enclosure available for outdoor and indoor installations.
- Input and Output ports on both front and rear simplifies pneumatic piping.
- Conduit Fitting, Terminal strip or DIN connectors allow easy wiring to units
- Various mounting configurations allow installation flexibility for most applications.

Operating Principles

Standard Range

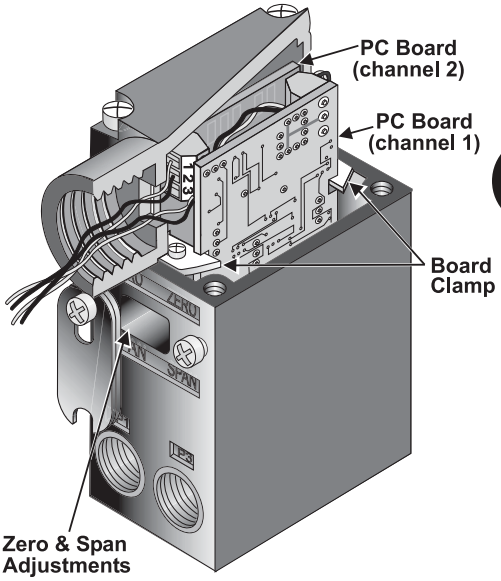
The T8000 Series is a miniature two wire pressure device that converts a pneumatic input signal to a linearly proportional output current.

The PC Board Assembly contains a Piezoresistive Pressure Sensor, which is connected in a Wheatstone bridge configuration. The input air pressure on the Pressure Sensor induces a Piezoresistive change which causes a bridge unbalance. As a result, a differential signal is applied to the current source device which supplies the loop.

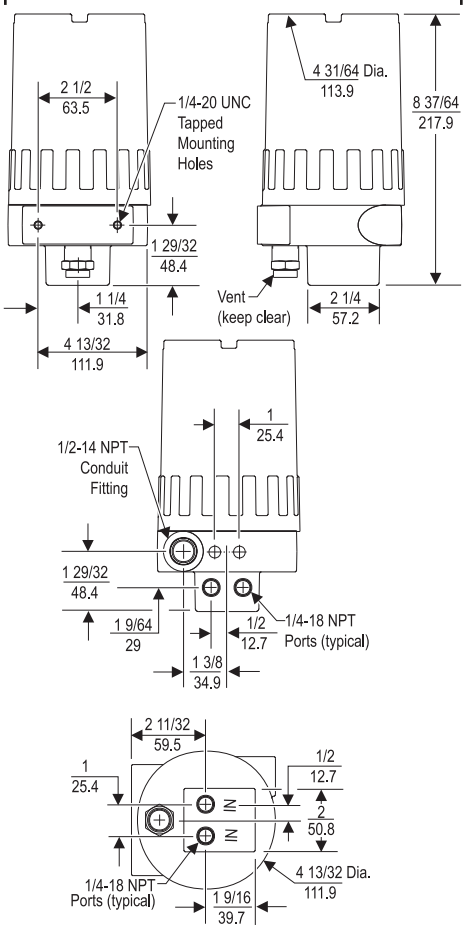
The Zero and Span adjustments are easily accessible from the front of the unit. The T8000 Series may be configured as a Single or Dual Channel Unit. The Dual Channel Unit consists of two PC Boards that are enclosed within the same housing and function independently of each other. This unit may be offered in any one of the seven standard input pressure signals or in any combination.

Explosion-Proof

The TX8000 Unit consists of a TT8000 Series Transducer enclosed in an explosion-proof/NEMA 4X (IP65) housing.

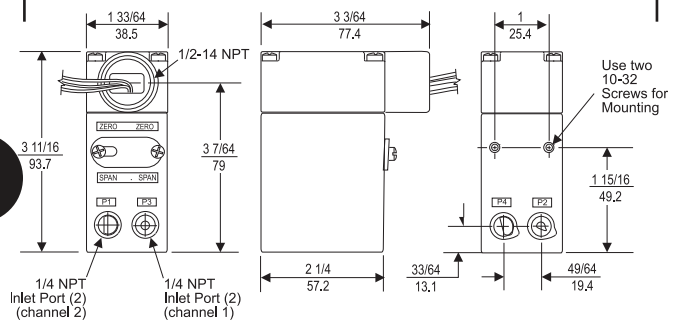


TA8000 Explosion-Proof

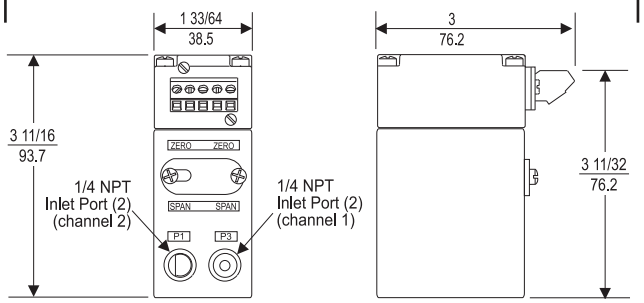


B
Model T8000

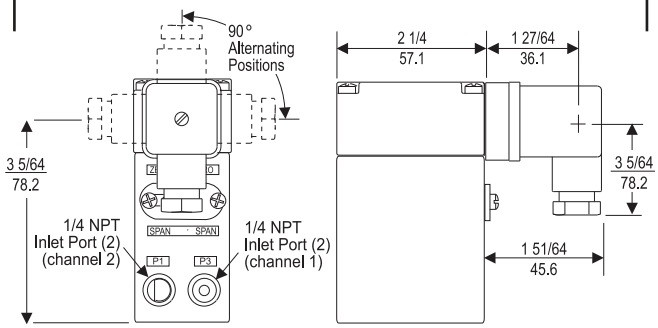
TA8000 Standard Range



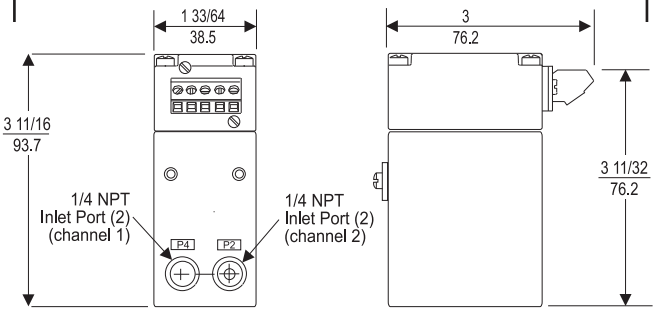
TT8000 Standard Range



TD8000 Standard Range



TR8000 Standard Range



NOTE: Model TR8000 Transducer is designed for use with the TR Rack Kit. Physically, it is the same as the TT8000 Unit except that the terminal block has been rotated to the rear.

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	12-50 VDC for 4-20 mA 12-30 VDC for 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
1900 OHMS @ 20 mA
360 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 .25% FS/30 Days

Electrical
Calibration:
- Zero: -66 to 125% Full Scale
- Span: -25 to 200%
- 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 V/m class 2 Band ABC (20-1000 mHz) per SAMA PMC 33.1 1978 and less than 0.5% of Span @ 10 V/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 Area Classifications

Factory Mutual (FM) Approvals

FM APPROVED

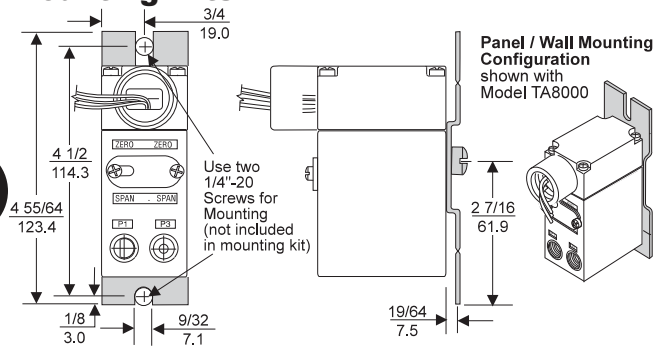
Explosion-Proof	Intrinsically Safe
Class I, Division 1, Groups B, C and D; Class II, Division 1, Groups E, F and G; NEMA 4X Enclosure.	**TAFI8001, TFXI8001** Class I Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; NEMA 4X Enclosure; re Code T5.
Non-Incendive	
TAFI8001 Class I, Division 2, Groups A, B, C and D; NEMA 4X Enclosure.	**TDFI8001, TTFI8001, TRFI8001** Class I Division 1, Groups A, B, C, and D. Class II, Division 1, Groups E, F, and G. Class III, Division 1; Temperature Code T5.
TDFI8001, TTFI8001,TRFI8001 Class I, Division 2, Groups A, B, C, and D.	***Entity Parameters*** Vmax[1]= 30 VDC Imax[2]= 100 mA Ci[3] = 0.0132 µ F Li[4] = 0 mH [1]*Vmax = Max. Voltage* [2]*Imax = Max. Current* [3]*Ci = Capacitance* [4]*Li = Inductance*

Canadian Standards Association (CSA) Approvals

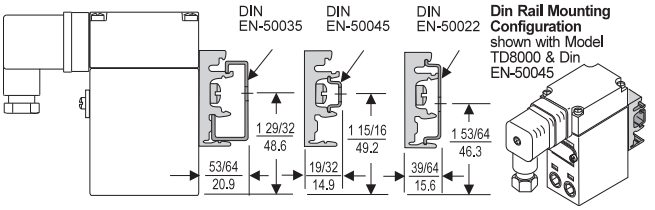
Explosion-Proof	Intrinsically Safe
Class I, Division 1, Groups B, C, and D; Class II, Division 1, Groups E, F, and G; Type 4 Enclosure; Rated 4-20 mA or 10-50 mA, 30 VDC Max. Maximum Ambient 65°C.	**TACI8001, TCXI8001** Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups E, F, and G; Type 4 Enclosure; Rated 4-20 mA, 30 VDC Maximum; Temperature Code T4.
Division 2	
TACI8001 Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups E, F, and G; Type 4 Enclosure; Rated 4-20 mA, 30 VDC Max.; Temperature Code T3 C.	**TDCI8001, TTCI8001, TRCI8001** Class I, Division 1, Groups A, B, C and D; Rated 4-20 mA, 30 VDC Maximum; Temperature Code T5.
TDCI8001, TTCI8001, TRCI8001 Class I, Division 2, Groups A, B, C and D; Rated 4-20 mA, 30 VDC Maximum; Temperature Code T3 C.	***Approvals are valid when connected through a Shunt Zener Diode Safety Barrier meeting the following parametric requirements:*** System Type 1 and 4: Single Channel Polarized Rated: 28V Max. 300 Ohm Min. System Type 2 and 5: Dual Channel Polarized Rated 28V Max. 300 Ohm Min. & 28V Diode return per channel. System Type 3: a. 28V Max. 300 Ohm Min. & 10V Max. 50 Ohm Min. return. b. 28.5V Max. 300 Ohm Min. & 9V Max. 50 Ohm Min.return. & 10V Max. 50 Ohm Min. return.

FM APPROVED

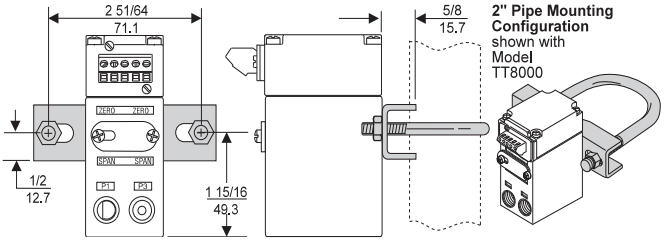
Mounting Kits



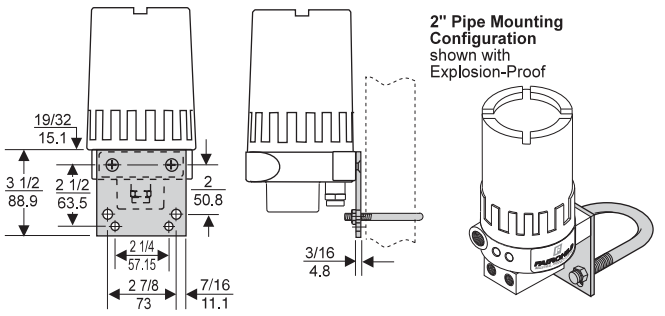
Mounting Bracket: 16799-1



Mounting Bracket: 16893-1



Mounting Bracket: 19254-1



Mounting Bracket: 18187-1

Model T8000 Transducer Kits & Accessories

Mounting Bracket Kits . . . . 16799-1 (included with unit)
16893-1 (included with unit)
19254-1 (sold separately)
18187-1 (sold separately)

Catalog Information

Catalog Number **T** [ ][ ][ ] **8001** [ ][ ][ ][ ][ ]

Electrical Connections

1/2 NPT Conduit	A
Fitting with Pigtail	
DIN43650 Connection	D
Rack Mount	R
Terminal Block	T
(leave blank for Explosion-Proof)	

Underwriting Group

Canadian Standards	C
Factory Mutual	F

Approval Class [1]

Explosion-Proof.	X
NEMA 4X (IP65)	
Intrinsically Safe [2]	I

Pneumatic Input Channel 1
(Select appropriate psig, [BAR], or (kPa) range.)

0-5 psig	00
3-15 psig	01
3-27 psig	02
6-30 psig	03
0-30 psig	04
0-60 psig	05
0-120 psig	06
[0-0.35 BAR]	10
[0.2-1.0 BAR]	11
[0.2-1.8 BAR]	12
[0.4-2.0 BAR]	13
[0-2.0 BAR]	14
[0-4.0 BAR]	15
[0-8.0 BAR]	16
(0-35 kPa)	20
(20-100 kPa)	21
(20-180 kPa)	22
(40-200 kPa)	23
(0-200 kPa)	24
(0-400 kPa)	25
(0-800 kPa)	26

Current Output Channel 1

4-20 mA	1
10-50 mA	2

If Channel 2 Not Used 00

If Channel 2 is used, select appropriate psig, [BAR], or (kPa) range from Input Channel 1 above. . . . . .

Current Output Channel 2

4-20 mA	1
10-50 mA	2

Options

BSPT Thread	U

[1] *Select Approval(s) Required.*
[2] *Includes Division 2 Approval.*