FINE CONTROLS (UK) LTD

Fine Controls have been supplying process controls & instrumentation equipment since 1994, & now serves an ever expanding customer base, both in the UK & globally.

We offer a full range of valve & instrumentation products & services, with our product rangerepresenting leading technologies & brands:

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Temperature: Temperature Probes & Thermowells, Temperature ransmitters,Temperature Regulators & Temperature Displays

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Pressure: Pressure Gauges &Transmitters, Precision & High Pressure Regulators & I-P Converters, Volume boosters.

Precision Pneumatics: Pressure Regulators, I-P Converters, Volume Boosters, Vacuum Regulators

Valves: Solenoid & Pneumatic Valves, Control Valves & Positioners, Actuated Ball, Globe or Diaphragm Valves & Isolation Valves

Services: Repair, Calibration, Panel Build, System Design & Commissioning

A rotork Brand FAIRCHILD

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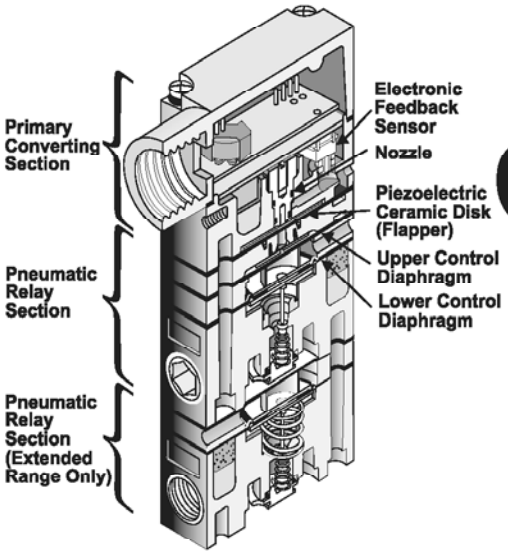
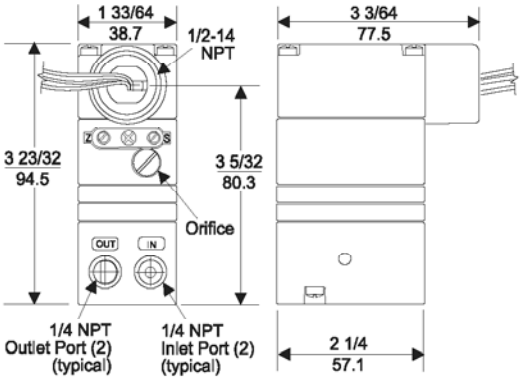
Fine Controls (UK) LTD, Bassendale Road, Croft Business Park,
Bromborough, Wirral, CH62 3QL UK
Tel: 0151 343 9966
Email: sales@finecontrols.com

Features

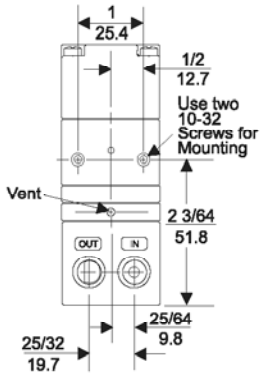
- The T7800 Series Transducers provide maximum versatility for precision applications.
- Field Reversible Feature provides output that is inversely proportional to input signal.
- RFI/EMI Protection eliminates susceptibility to electromagnetic and radio interference.
- Internal Electronic Feedback and 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.



Model TA7800 Standard Range



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



Operating Principles

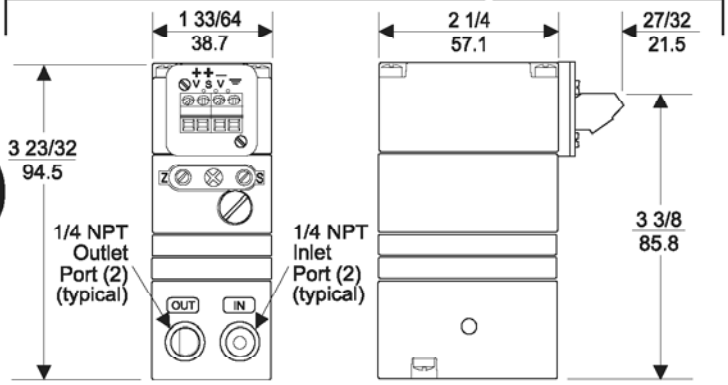
STANDARD RANGE

The Model T7800 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.

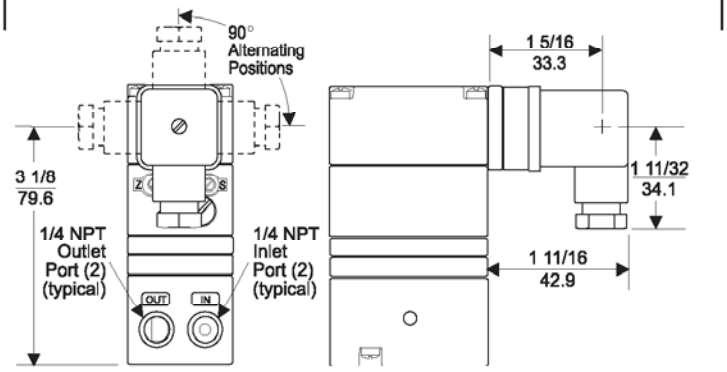
EXTENDED RANGE

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

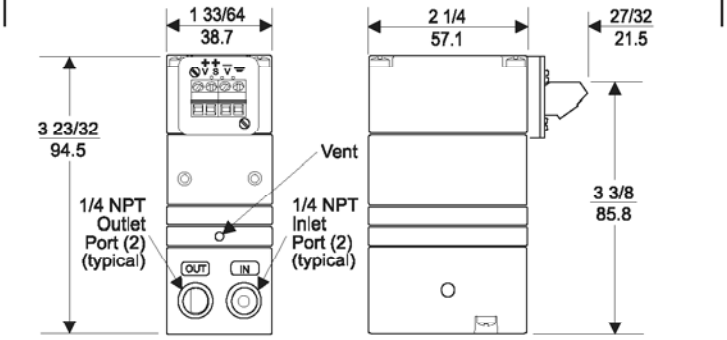
Model TT7800 Standard Range



Model TD7800 Standard Range

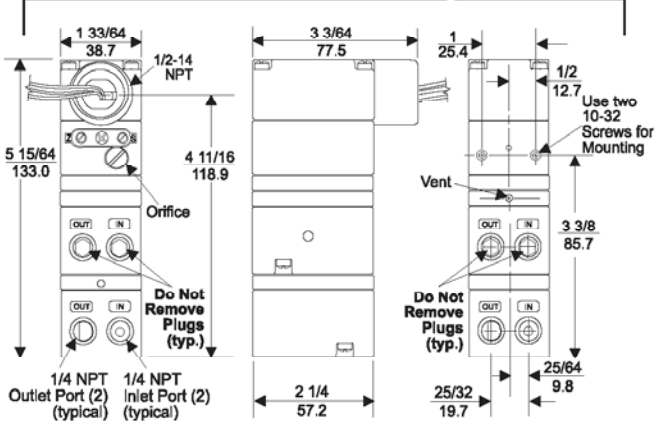


Model TR7800 Standard Range



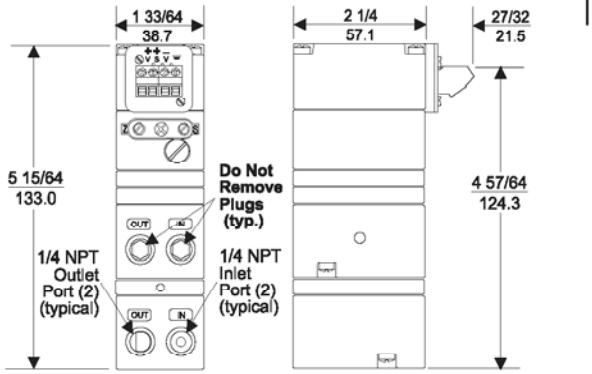
Model TR7800 for use with TR Manifold Rack Kit. TR7800 unit same as TT7800 except terminal block is located on rear.

Model TA7800 Extended Range

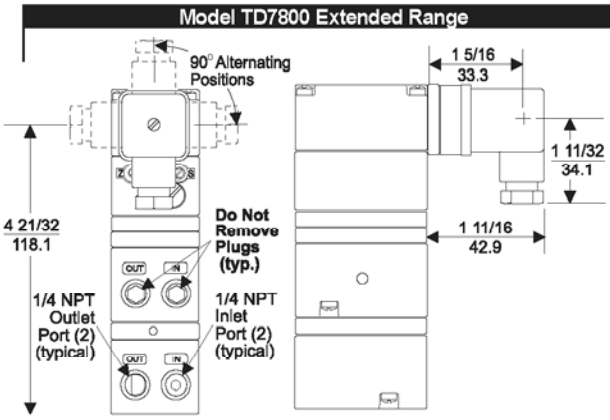


Note: Unused IN and OUT Ports are plugged (typical)

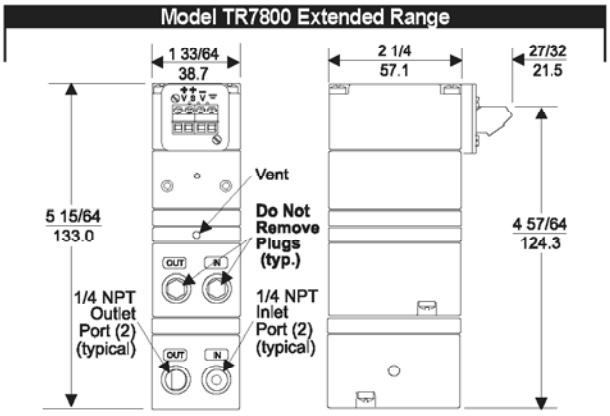
Model TT7800 Extended Range



Model TD7800 Extended Range



Model TR7800 Extended Range



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

Standard Range Specifications

	psig [BAR] (kPa)	SET POINT 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	-40°F to + 160°F (-40°C to + 71.2°C)			
	Storage	-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 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

		SET POINT				
	psig [BAR] (kPa)	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 Storage	-40°F to + 160°F, (-40°C to + 71.2°C) -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)	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*

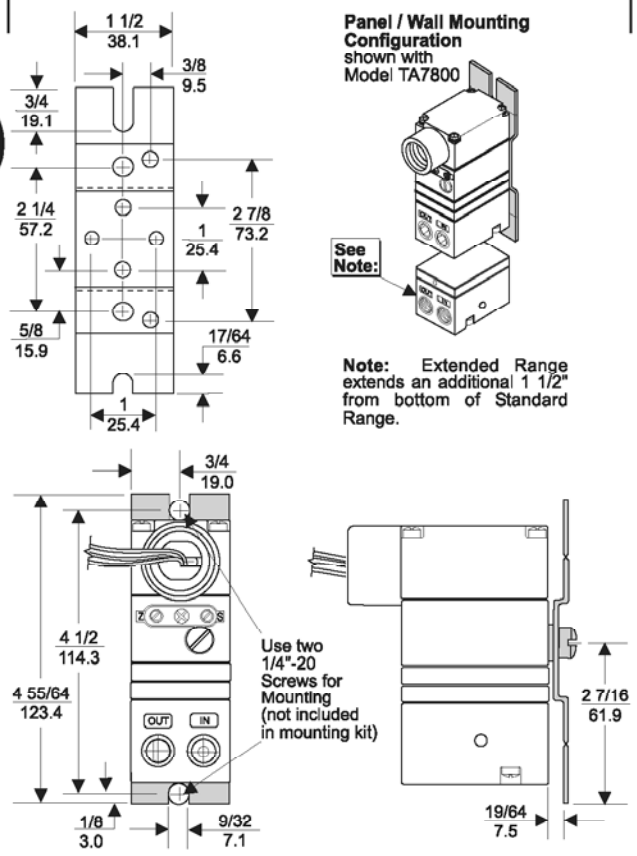
Hazardous Area Specifications

	Intrinsically Safe (4-20 mA Only)	Division 2
Factory Mutual (FM) Approvals ***Entity Parameters*** Vmax[1]= 30 VDC; Ci[3] = 0 Imax[2]= 200 mA; Li[4] = 0 [1]*Vmax = Max. Voltage* [3]*Ci = Capacitance* [2]*Imax = Max. Current* [4]*Li = Inductance* ***Non-Incendive Field Wiring Parameters*** Vmax[1]= 30 VDC; Ci[3] = 0; Li[4] = 0 [1]*Vmax = Max. Voltage* [3]*Ci = Capacitance* [4]*Li = Inductance*	**TDFI7800, TAFI7800** 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 T5 (-40 °C to +66 °C) T6 (-40 °C to +40 °C)	**TDFI7800, TAFI7800, TDFN7800, TAFN7800** 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 T5 (-40 °C to +66 °C) T6 (-40 °C to +40 °C)
	TTFI7800, TRFI7800 Class I, Division 1, Groups C and D; Temperature Code T5 (-40 °C to 66 °C) T6 (-40 °C to 40 °C)	**TTFI7800, TRFI7800** **TTFN7800, TRFN7800** Class I, Division 2, Groups A, B, C and D; Non Incendive: 4-20 mA, voltage input units; Temperature Code T5 (-40 °C to +66 °C) T6 (-40 °C to +40 °C)
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, TACI7800** 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 (Ta -40 °C to +40 °C). T4A (Ta -40 °C to +66 °C)	**TDCI7800, TTCI7800, TRCI7800** Class I, Division 2, Groups A, B, C and D; Rated 4-20 mA, 30 VDC maximum; Temperature Code T6 (Ta +66 °C).
	TACI7800 Class I, Division 1, Groups C and D; Rated 4-20 mA, 30VDC maximum; Temperature Code T6 (Ta -40 °C to +40 °C). T4A (Ta -40 °C to +66 °C)	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 (Ta +66 °C).
ATEX Approvals ***Transducer Parameters*** Umax[1]= 28 V; Pi[3] = 0.7 W Imax[2]= 100 mA; Ci[4] = 12 nF; Li[5] = 0 [1]*Umax = Max. Voltage* [3]*Pi = Max. Power* [2]*Imax = Max. Current* [4]*Ci = Capacitance* [5]*Li = Inductance*	**TAEI7800, TDEI7800** EEx ia IIB, T4, T_{amb} = -40°C to 72°C ⟨Ex⟩ II 1G (T4), IP65 Enclosure **TTEI7800, TREI7800** EEx ia IIB, T4, T_{amb} = -40°C to 72°C ⟨Ex⟩ II 1G (T4)	
IECEx Approvals ***Transducer Parameters*** Ui[1]= 28 V; Pi[3] = 0.7 W Imax[2]= 100 mA; Ci[4] = 12 nF; Li[5] = 0 [1]*Umax = Max. Voltage* [3]*Pi = Max. Power* [2]*Imax = Max. Current* [4]*Ci = Capacitance* [5]*Li = Inductance*	**TAEI7800, TDEI7800** EEx ib IIB, T4, Gb T_a = -40°C to +64°C Ex ib IIIB T135°C Db T_a = -40°C to +55°C IECEx SIR 08.0130 IP65 Enclosure **TTEI7800, TREI7800** Ex ib IIB, T4, Gb T_a = -40°C to +64°C IECEx SIR 08.0130	

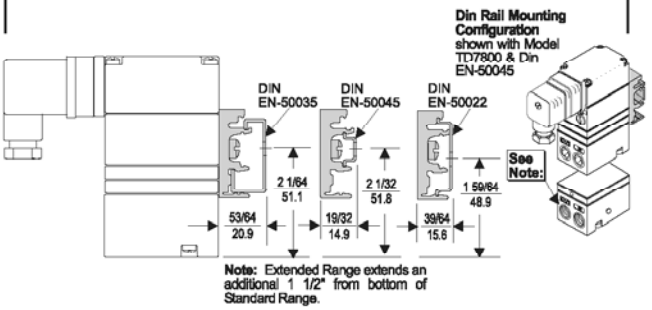
FM APPROVED

Mounting Kits

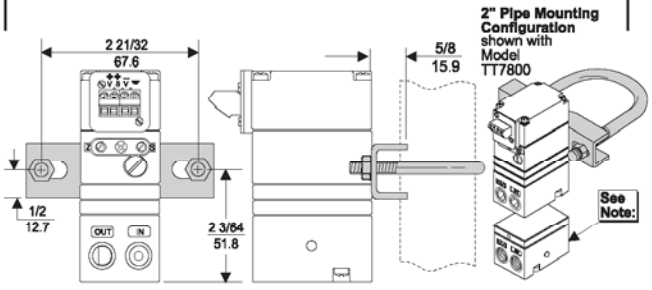
Mounting Bracket: 16799-1



Mounting Bracket: 16893



Mounting Bracket: 19254-1



Model T7800 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

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 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.