

# Model T5420 I/P, E/P Pneumatic Transducer

**B**

**Model T5420**



## 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.

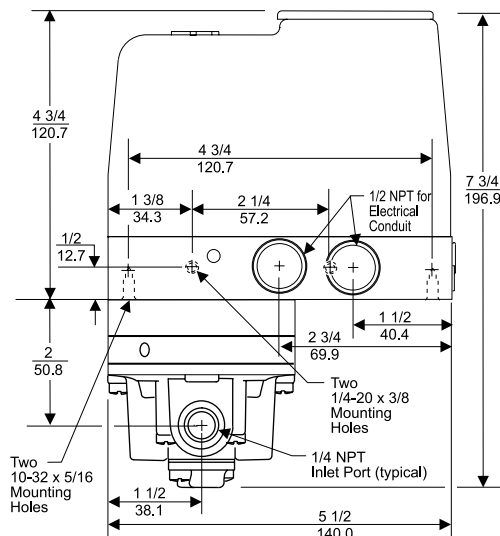
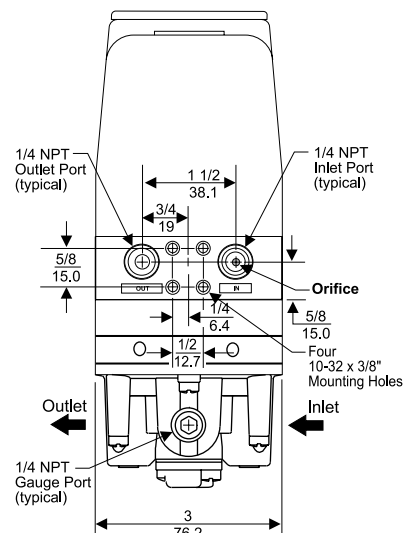
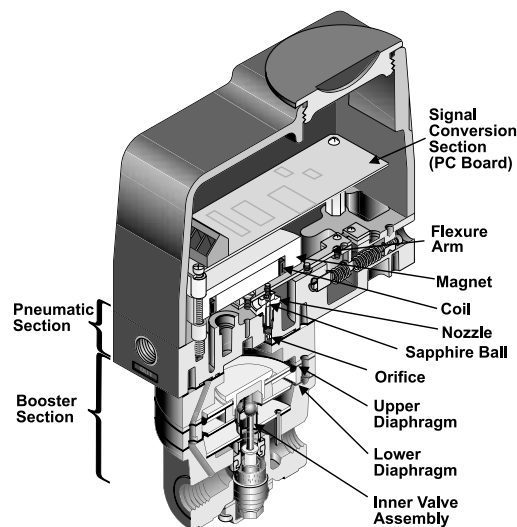
## Operating Principles

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.

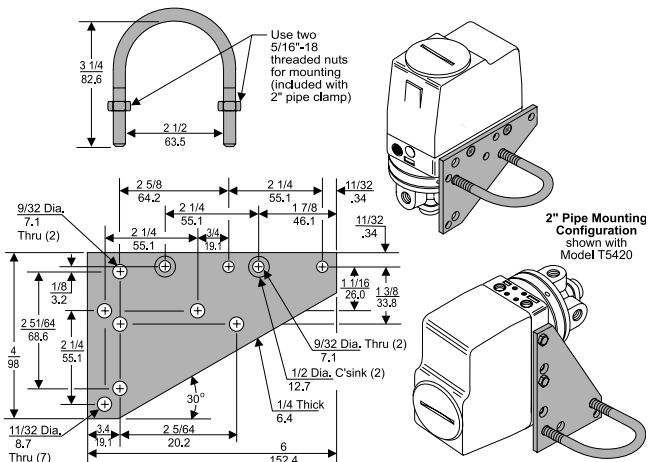
The Signal Conversion Section (PC Board) accepts an 8 bit parallel wired digital signal. Full scale output is divided into 255 parts and the output level is based on the logic state (high or low) of the 8 bits. An enable line allows the unit to accept information from a parallel bus. The digital input 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.

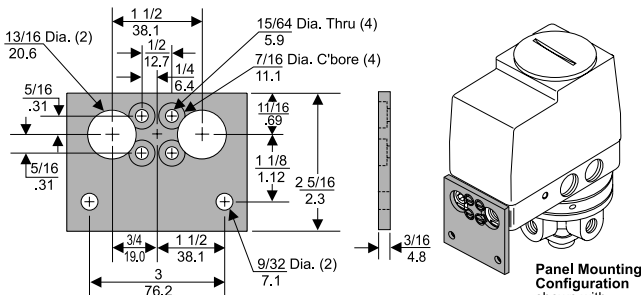
The Booster Section amplifies the output pressure of the Pneumatic Section.



## 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.

## Output Pressure Ranges

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

<sup>1</sup> Standard unit is configured for common supply to transducer and booster.

<sup>2</sup> 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<sup>1</sup> ..... HI  
 Noise Suppression ..... NS

**Booster Ratio**<sup>2</sup>  
 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**  
 psig ..... 0  
 [BAR] ..... 1  
 (kPa) ..... 2

<sup>1</sup> If higher flow (SCFM) is required for the standard 1:1 ratio, select HI Option.  
<sup>2</sup> Refer to Table 1. for Pressure Ranges.

## Specifications

- Supply Pressure**<sup>1</sup>  
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<sup>3</sup>/HR) Maximum (Dead End) @ 20 psig, [1.5 BAR], (150 kPa) supply
- Output Capacity for Booster (SCFM)**  
15 (25.5 m<sup>3</sup>/HR) Maximum @ 20 psig, [1.5 BAR], (150 kPa) supply  
45 (76.5 m<sup>3</sup>/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**<sup>2</sup>  
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

<sup>1</sup> Supply Pressure must be no less than 10 psig, (0.7 BAR), (70 kPa) above maximum booster output.

<sup>2</sup> Data must be on line 0.5 microseconds before enable strobe and 0.5 microseconds during enable period to start output pressure change.

