

Type 500X

Electropneumatic Transducer (I/P, E/P)

Economical and reliable electrical conversion to pressure

The ControlAir Type 500X converts a current or voltage input signal to a linearly proportional pneumatic output pressure. This versatile instrument is designed for control applications that require a high degree of reliability and repeatability at an economical cost. Optional NEMA 4X (IP65) version allows for splashdown and outdoor installation. Typically, these units are used for applications that require the operation of valve actuators, pneumatic valve positioners, damper and louver actuators, final control elements, relays, air cylinders, web tensioners, clutches, and brakes. Industries that utilize the Type 500X include Petrochemical, HVAC, Energy Management, Textile, Paper, Paper Converting, Food and Drug

Features

- Low Cost
- Integral Volume Booster
- Compact Size
- Low Air Consumption
- Field Reversible
- Flexible Zero & Span Adjustments
- Standard Process Inputs
- Split Ranging



ControlAir Inc.

Type 500X

Low Cost. Compact. Reliable.

The Type 500X is available in two different versions. The lower range model is designed for standard process control applications which typically utilize a 3 to 15 psig output. The extended range unit provides up to 120 psig output for higher pressure industrial pneumatic and process control system requirements.

Principle of Operation

The Type 500X Transducer is a force balance device in which a coil is suspended in the field of a magnet by a flexure. Current flowing through the coil generates axial movement of the coil and flexure. The flexure moves towards the nozzle and creates back pressure which acts as a pilot pressure to an integral booster relay. Input signal increases (or decreases for reverse acting) cause proportional output pressure increases.

Zero and Span are calibrated by turning adjust screws on the front face of the unit. Adjustment of the zero screw repositions the nozzle relative to the flexure. The span adjustment is a potentiometer that controls the amount of current through the coil.

NEMA-4X (IP65) Enclosure

Optional Factory Mutual NEMA 4X enclosure rating allows for installation in splashdown or outdoor environments. Unit also meets the requirements of IEC standards IP65.

Mounting

The Type 500X may be mounted by pipe, panel, or bracket. Field adjustment of the zero may be required if position is changed. High external vibration may cause output fluctuations. Mounting in a vibration-free area is recommended.

Split Ranging

If split ranging is required the 4-20 mA input, 3-15 psig output version (ControlAir part number 500-AC) can be recalibrated to provide a 3-9 psig or 9-15 psig output.

Intrinsically Safe

The Type 500X has been tested and approved by Factory Mutual as Intrinsically Safe Class I, II, and III, Division 1, Groups C, D, E, F and G when used with an apparatus meeting the following entity requirements:

V_{max} = 29.9 V C_i = 0 C_i is capacitance
I_{max} = 65 mA L_i = 35 mH L_i is inductance

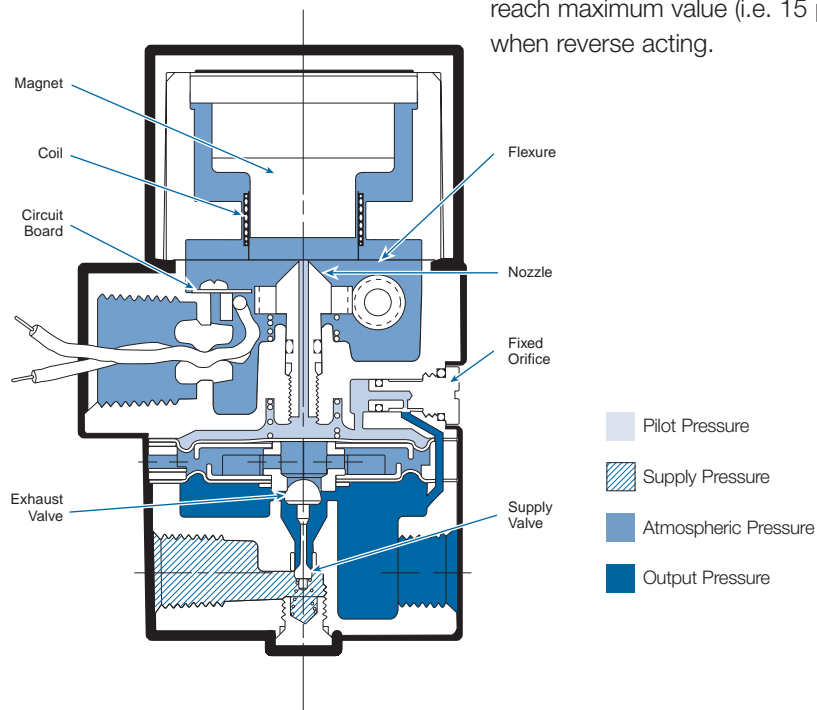
Installation should be in accordance with ControlAir interconnection drawing no. 431-990-013. This drawing is included in the Type 500X Installation, Operation and Maintenance Instruction. The Intrinsically Safe approval is a standard feature of the Type 500X and applies only to units with a 4-20 mA input signal that are installed with the following barriers:

R.Stahl, Inc. barriers:	MTL, Inc. barriers:
9001/01-280-100-10	728
9002/13-280-110-00	787S+
	4045

The Type 500X is also Factory Mutual Approved as Nonincendive for Class I, Division 2, Groups A, B, C and D, and suitable for Class II and III, Division 2, Group F and G. Barriers are not required for nonincendive rating.

Field Reversible

In the reverse acting mode the output is the opposite of the direct acting mode (i.e. 4-20 mA input creates a 15-3 psig output). To change from direct acting to reverse acting simply reverse the polarity of the signal leads and recalibrate. Input signal failure causes output pressure to reach maximum value (i.e. 15 psig) when reverse acting.





Specifications

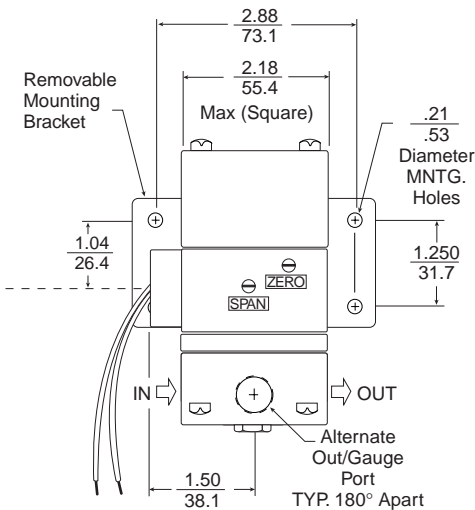
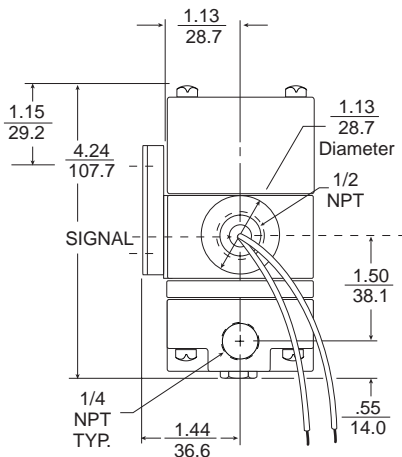
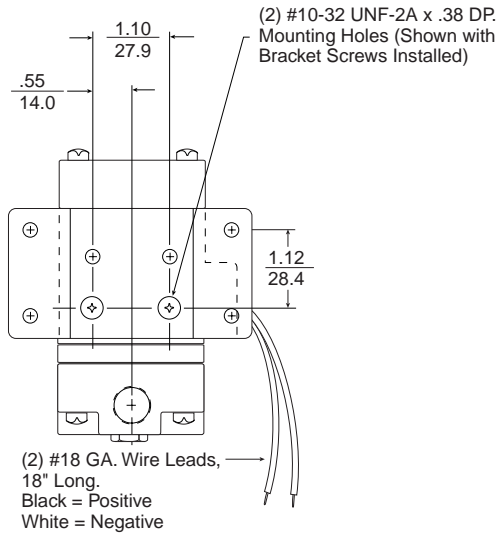
	LOW OUTPUT RANGE (UP TO 30 PSIG)	HIGH OUTPUT RANGE (UP TO 120 PSIG)
Min./Max. Supply Pressure	Minimum - 3 psig (.21 BAR) Above maximum output Maximum - 100 psig (7 BAR)	Minimum - 5 psig (0.35 BAR) above maximum output Maximum - 150 psig (10.5 BAR)
Supply Pressure Sensitivity	<± 0.1% of span per psig (<± 0.15% of span per 0.1 BAR)	<± .04% of span per 1.0 psig (0.07 BAR)
Terminal Based Linearity	<± 0.75% of span	<± 1.5% of span typical, ± 2.0% max.
Repeatability	< 0.5% of span	< 0.5% of span
Hysteresis	< 1.0% of span	< 0.5% of span
Response Time	Dependent on pressure range - typically less than 0.25 sec for 3-15 psig units	
Flow Rate	4.5 scfm (7.6 m3/hr ANR) at 25 psig (1.7 BAR) supply 12.0 scfm (20.0 m3/hr ANR) at 100 psig (6.8 BAR) supply	20.0 scfm (34.0 m3/hr) at 150 psig (10.5 BAR) supply
Relief Capacity	2 scfm (3.4 m3/hr) at 5 psig (2.4 BAR) above 20 psig (1.3 BAR) setpoint	7 scfm (11.9 m3/hr) at 10 psig (0.7 BAR) above 20 psig (1.3 BAR) setpoint
Maximum Air Consumption	.05 scfm (.07 m3/hr) midrange typical	.07 scfm (.14 m3/hr) midrange typical
Media	Oil free, clean dry air filtered to 40 micron	
Temp. Range (Operating)	-20°F to +140°F (-30°C to 60°C)	
Port Sizes	1/4 NPT (Pneumatic) 1/2 NPT (Electric)	1/4 NPT (Pneumatic) 1/2 NPT (Electric)
Weight	2.1 lbs. (0.94 kg)	

Type 500X

Dimensional Drawings

Type 500X

Ordering Information



Type 500X I/P Transducers

Part Number	Input	Output Range		Impedance
		psi	BAR	
500-AA	4-20 mA	3-9	0.2-0.6	90 Ohms
500-AB	4-20 mA	9-15	0.6-1.0	90 Ohms
500-AC	4-20 mA	3-15	0.2-1.0	180 Ohms
500-AD	4-20 mA	3-27	0.2-1.8	220 Ohms
500-AE	4-20 mA	6-30	0.4-2.0	220 Ohms
500-AF	4-20 mA	1-17	0.1-1.2	250 Ohms
500-BC	10-50 mA	3-15	0.2-1.0	70 Ohms
500-BD	10-50 mA	3-27	0.2-1.8	85 Ohms
500-BE	10-50 mA	6-30	0.4-2.0	85 Ohms
500-AG	4-20 mA	2-60*	0.14-4.1	225 Ohms
500-AH	4-20 mA	3-120*	0.2-8.2	260 Ohms
500-BF	0-60 mA	2-120*	0.15-8.2	220 Ohms

Type 500X E/P Transducers

Part Number	Input	Output Range		Impedance
		psi	BAR	
500-CC	0-5 VDC	3-15	0.2-1.0	615 Ohms
500-CD	0-5 VDC	3-27	0.2-1.8	530 Ohms
500-CE	0-5 VDC	6-30	0.4-2.0	530 Ohms
500-DC	1-9 VDC	3-15	0.2-1.0	985 Ohms
500-DD	1-9 VDC	3-27	0.2-1.8	840 Ohms
500-DE	1-9 VDC	6-30	0.4-2.0	840 Ohms
500-CF	0-5 VDC	2-60*	0.14-4.1	500 Ohms
500-EH	0-10 VDC	3-120*	0.2-8.2	805 Ohms

*Output shown is as calibrated at the factory. Large span adjustment capability allows recalibration to achieve output ranges from 3-35 psig (0.2-2.4 BAR) with 2-60 psig unit to 3-145 psig (0.2-10 BAR) with 2-120 psig unit.

Options/Accessories: Add proper letter onto end of part number

- D** - Din Connector: DIN 43650 Connector provided mounted to unit. Orients in 4 directions.
- W** - NEMA 4X: Enclosures for splashdown/outdoor use.
- U** - 1/4" BSP: 1/4" BSP porting.
- G** - Pressure Gauge: 2" face, back mounted. Dual scale. 0-15 PSI, 0-30 PSI, 0-60 PSI, 0-160 PSI

Warranty

ControlAir, Inc. products are warranted to be free from defects in materials and workmanship for a period of eighteen months from the date of sale, provided said products are used according to ControlAir, Inc. recommended usages. ControlAir, Inc.'s liability is limited to the repair, purchase price refund, or replacement in kind, at ControlAir, Inc.'s sole option, of any products proved defective. ControlAir, Inc. reserves the right to discontinue manufacture of any products or change products materials, designs or specifications without notice. Note: ControlAir does not assume responsibility for the selection, use, or maintenance of any product. Responsibility for the proper selection, use, and maintenance of any ControlAir product remains solely with the purchaser and end user.



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