



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
- External Zero and Span Adjustments
- Standard Process Inputs
- Split Ranging
- Field Reversible (General Purpose Unit)
- Conduit or DIN 43650 Connections
- Intrinsically Safe Approval (option)



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

Standard for the Intrinsically Safe ("H") version and optional for the general purpose model, FM Approvals NEMA 4X enclosure rating allows for installation in splashdown or outdoor environments. Unit also meets the requirements of IEC standards IP65. Conduit connection only.

Mounting

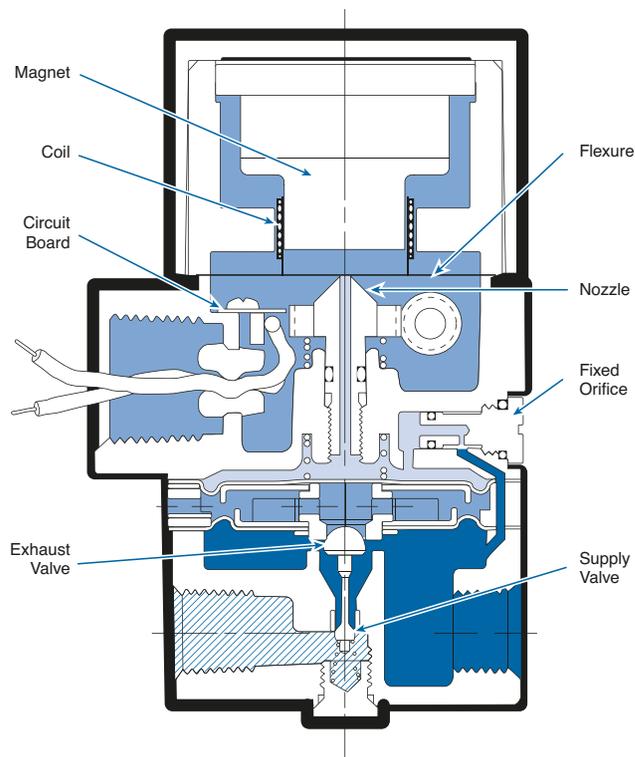
The Type 500X may be mounted by pipe, panel, or bracket. Field adjustment of the zero may be required if position is changed. High external vibration may cause output fluctuations. Vertical mounting in a vibration-free area is recommended.

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.

Reverse Acting

General purpose models are all reverse acting capable. FM Approvals Intrinsically Safe model is reverse acting when ordered as such.



Hazardous Area Classification (Option H)

Factory Mutual (FM) Approval ("H" option)

Standard feature for 4-20mA units

Intrinsically Safe (1/2" NPT Conduit)

Class I, II, III, Division 1,
Groups C, D, E, F, & G
Temp. Code T4 Ta = 60° C
Rated 4-20 mA, 30 VDC Max.

Intrinsically Safe (DIN)

Class I Division 1,
Groups C & D
Rated 4-20 mA, 30 VDC Max.

Entity Parameters

V_{max} = 30 Vdc Ci = 0 uF
I_{max} = 125 mA Li = 35 mH

Non-Incendive (Conduit & DIN)

Class I, Division 2,
Groups A, B, C & D
Enclosure Nema 4X (IP 65)
Temp. Code T4 Ta = 60° C

Suitable for (Conduit only)

Class II & III, Division 1 & 2,
Groups F & G

Enclosure

NEMA-4X (IP65)



Functional Specifications

| | Standard Range | | | | | | High Output | |
|-----------------------------------|--|---------------------|---|---|---|---------------------|---|---|
| Input | 4-20 mA, 0-5 VDC, 1-9 VDC, 0-10 VDC | | | | | | 4-20 mA, 0-5 VDC, 0-10 VDC | |
| Outputs psig (bar) | 3-9 (0.2-0.6) | 9-15 (0.6-1.0) | 3-15, 15-3 (0.2-1.0) | 3-27, 27-3 (0.2-1.8) | 6-30, 30-6 (0.4-2.0) | 1-17 (0.1-1.2) | 2-60 (0.14-4.1) | 3-120 (0.2-8.2) |
| Supply Pressure psig (bar) | 12-100 (0.8-6.9) | 18-100 (1.2-6.9) | 18-100 (1.2-6.9) | 30-100 (2.1-6.9) | 33-100 (2.3-6.9) | 20-100 (1.4-6.9) | 65-150 (4.5-10.3) | 125-150 (8.6-10.3) |
| Max. Air Consumption | 0.05 scfm (1.41 NL/min) midrange typical | | | | | | 0.07 scfm (1.98 NL/min) midrange typical | |
| Flow Rate | 4.5 scfm (127.35 NL/min) at 25 psig (1.7 bar) supply 12.0 scfm (339.6 NL/min) at 100 psig (6.8 bar) | | | | | | 20.0 scfm (566 NL/min) at 150 psig (10.5 bar) | |
| Response Time | Dependent on pressure range - typically less than 0.25 sec for 3-15 psig units | | | | | | | |
| Relief Capacity | 2 scfm (56.6 NL/min) at 5 psig (2.4 bar) above 20 psig (1.3 bar) setpoint | | | | | | 7 scfm (198 NL/min) at 10 psig (0.7 bar) above 20 psig (1.3 bar) setpoint | |
| Temp. Range (Operating) | -20° F to +140° F (-30° C to 60° C) | | | | | | | |
| Impedance | 4-20 mA 90 Ohms | 4-20 mA 90 Ohms | 4-20 mA 180 Ohms 0-5 VDC 615 Ohms 1-9 VDC 985 Ohms | 4-20 mA 220 Ohms 0-5 VDC 530 Ohms 1-9 VDC 840 Ohms | 4-20 mA 220 Ohms 0-5 VDC 530 Ohms 1-9 VDC 840 Ohms | 4-20 mA 250 Ohms | 4-20 mA 225 Ohms 0-5 VDC 500 Ohms | 4-20 mA 260 Ohms 0-10 VDC 805 Ohms |

Performance Specifications

| | | |
|------------------------------------|---|--|
| Terminal Based Linearity | <± 0.75% of span | <± 1.5% of span typical, ± 2.0% max |
| Hysteresis | < 1.0% of span < 0.5% of span | |
| Supply Pressure Sensitivity | <± 0.1% of span per psig (<± 0.15% of span per 0.1 bar) | <± 0.04% of span per 1.0 psig (0.07 bar) |
| Repeatability | < 0.5% of span < 0.5% of span | |

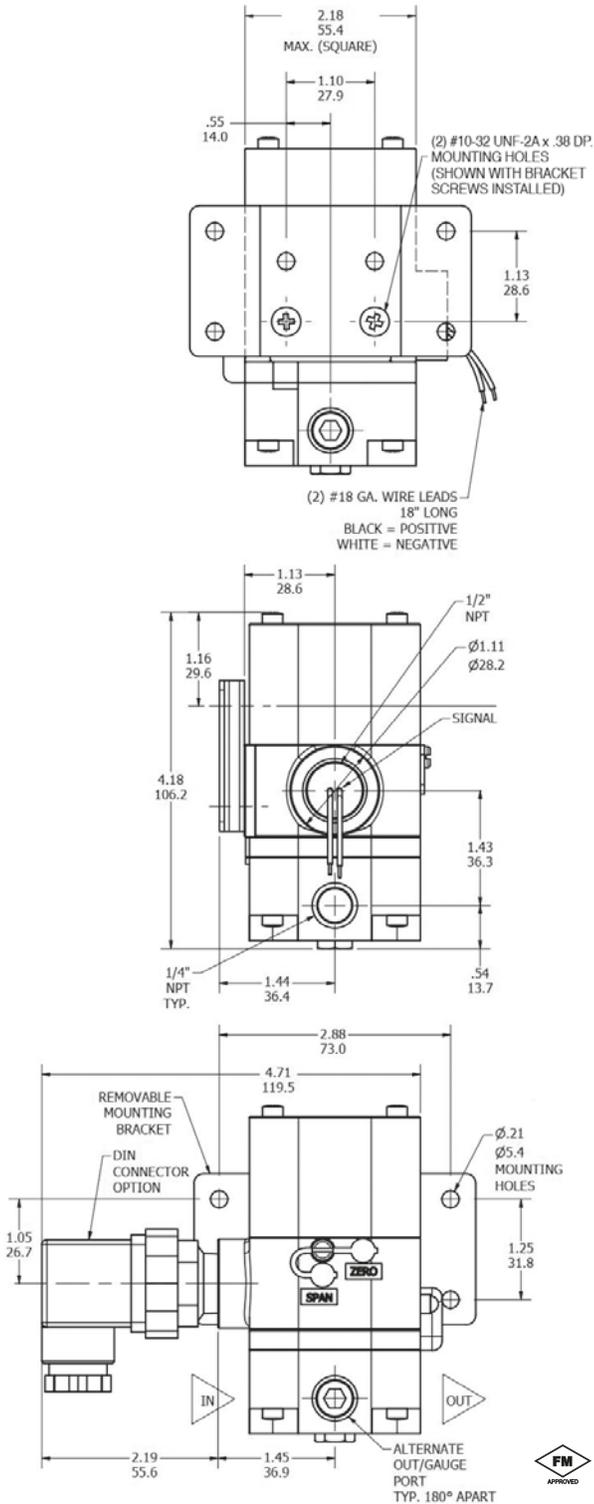
Physical Specifications

| | | |
|-------------------------------|---|---|
| Port Sizes | Pneumatic: 1/4 NPT (1/4 BSP option) Electric: 1/2 NPT (1/2 BSP option) | Pneumatic: 1/4 NPT (1/4 BSP option) Electric: 1/2 NPT (1/2 BSP option) |
| Media | Oil free, clean dry air filtered to 40 micron | |
| Electrical Connections | Conduit 1/2" NPT (standard) DIN 43650 (option) | |
| Enclosure | Nema 1 (General Purpose) Nema 4X (IP65) (option or standard with Intrinsically Safe) | |
| Weight | 2.1 lbs. (0.94 kg) | 2.1 lbs (0.94 kg) |



Type 500 Electropneumatic Transducer (I/P, E/P)

DIMENSIONAL DRAWING (in/mm)



Ordering Use this coding system to order

General Purpose Type 500X I/P Transducers (non-hazardous area)

| Model | Options |
|---------------------|--------------------------------------|
| 500 | |
| Input Signal | Output psig bar |
| A 4-20 mA | A 3-9 0.20-0.6 |
| | B 9-15 0.6-1.0 |
| | C 3-15 0.20-1.0 |
| | D 3-27 0.20-1.8 |
| | E 6-30 0.40-2.0 |
| | F 1-17 0.10-1.2 |
| | G 2-60* 0.14-4.1 |
| | H 3-120* 0.20-8.2 |

D DIN 43650 connector
W Nema-4X/IP65
U 1/4" BSP Porting

Note: Options "D" and "W" cannot be combined.

General Purpose Type 500X E/P Transducers (non-hazardous area)

| Model | Options |
|---------------------|--------------------------------------|
| 500 | |
| Input Signal | Output psig bar |
| C 0-5 Vdc | C 3-15 0.20-1.0 |
| | D 3-27 0.20-1.8 |
| | E 6-30 0.40-2.0 |
| | G 2-60* 0.14-4.1 |
| D 1-9 Vdc | C 3-15 0.20-1.0 |
| | D 3-27 0.20-1.8 |
| | E 6-30 0.40-2.0 |
| E 0-10 Vdc | H 3-120* 0.20-8.2 |

D DIN 43650 connector
W Nema-4X/IP65
U 1/4" BSP Porting

Note: Options "D" and "W" cannot be combined.

Intrinsically Safe Type 500X

With FM Approvals (FM) Intrinsically Safe Area Approvals
Nema-4X/IP65 Enclosure, Conduit Connection only.

| Model | Options |
|--------------------------------------|--|
| 500 | A H |
| Input Signal | Agency Approvals |
| A 4-20 mA | U 1/4" BSP Porting |
| Output psig bar | H FM Approvals Intrinsically Safe (Conduit Connection only) |
| A 3-9 0.20-0.6 | |
| B 9-15 0.6-1.0 | |
| C 3-15 0.20-1.0 | |
| D 3-27 0.20-1.8 | |
| E 6-30 0.40-2.0 | |
| F 1-17 0.10-1.2 | |
| G 2-60* 0.14-4.1 | |
| H 3-120* 0.20-8.2 | |
| L 15-3 1.0-0.20 | |
| M 27-3 1.8-0.20 | |
| N 30-6 2.0-0.40 | |

*Output shown 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.

Warranty ControlAir LLC 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 LLC recommended usages. ControlAir LLC's liability is limited to the repair, purchase price refund, or replacement in kind, at ControlAir LLC's sole option, of any products proved defective. ControlAir LLC 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. Drawing downloads available at www.controlair.com

ControlAir

8 Columbia Drive / Amherst, NH 03031 USA / www.controlair.com / sales@controlair.com / 603-886-9400 / FAX 603-889-1844
An ISO 9001:2015 Registered Company

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INPROCESS
AUTOMATIZACIÓN INDUSTRIAL



Contáctanos:
Telf. (+511) 640 1666
Cel. (+51) 941 451 011



Cotizaciones:
ventas@inprocess.com.pe



inprocess.com.pe