



Type P200 / P290

Pneumatic-to-Current P/I Transducers

Reliable, user-oriented performance

ControlAir's P200 and P290 P/I transducers represent outstanding value in pneumatic to current technology. All solid state circuitry converts standard 3-15, 3-27 or 6-30 psig instrument air into 4-20 or 10-50 mA outputs (4-20 mA only for FM and CSA approval) with uncompromising accuracy and durability. Custom pressure ranges are also available.

The P200's explosion-proof housing allows it to stand up to the most hazardous and demanding applications. The P290 serves the same function except in high-density and panelmounted applications.

The P200 is FM approved and CSA certified as NEMA 4 (Enc. 4) for all locations and explosion-proof for Class I, Div. 1, Groups A, B, C, D; dust ignition-proof for Class II, Div. 1, Groups E, F, G; and suitable for Class III, Div. 1 locations.

The P290 is available with high density DIN rail adapters, offering space saving flexibility with easy plug-in installation.

Features

- $\pm 0.10\%$ Accuracy
- Non-interactive Calibration
- Transient, Over-current and Reverse Polarity Protection
- RFI Immune

P290M shown with optional Din Rail Adapter



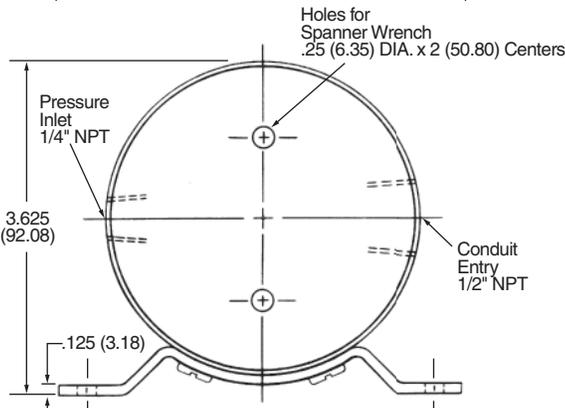
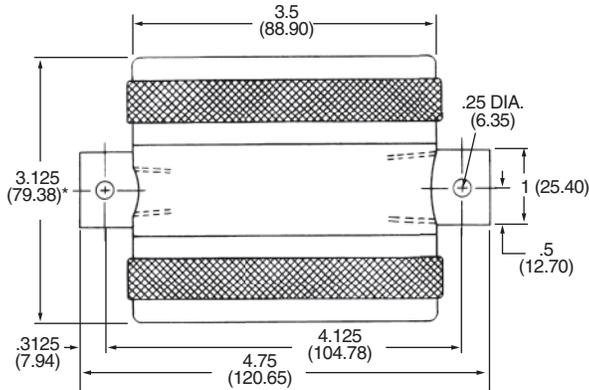
Type P200 / P290 User-friendly, compact and versatile pneumatic-to-P200

Specifications

	P200	P290
Inputs	Instrument Air: 3-15 psig (0.2-1.0 bar) 3-27 psig (0.2-1.8 bar) 6-30 psig (0.4-2.0 bar)	
Maximum Input	3 times full scale without recalibration 4 times full scale without failure	
Outputs with over-current limit	P200, 2 wire: 4-20 mA and 10-50 mA	P290M, 2 wire: 4-20 mA, with over-current limit
Allowable Loads (24 VDC Power)	700 Ω	2-wire: 700 Ω , standard
Accuracy	$\pm 0.15\%$ of span guaranteed; $\pm 0.10\%$ of span typical. Includes combined effects of linearity, hysteresis and repeatability errors	
Hysteresis	Negligible	
Repeatability	$\pm 0.10\%$ of span max; $\pm 0.03\%$ of span typical	
Resolution	Infinite	
Output Ripple	None	
Protection	N/A	Reverse polarity, transient, over-current
Response Time	10 m Sec to 99% of step change	
Temperature Stability	Span and Zero: $\pm 0.007\%$ of span per $^{\circ}\text{F}$ maximum deviation from 77°F calibration	
Power Supply Stability	Less than 0.005% of span change in output per volt change at the input terminals	
Power Supply	10 VDC min. to 42 VDC max. at input terminals. Can indefinitely withstand up to 100 VDC without failure	10 VDC min. to 42 VDC max. at input terminals
RFI/EMI Effect	Meets or exceeds SAMA PMC 33.1, 1978, 2-abc: 0.1% of span at 10 volts/meter	
Operating Temperature Range	-40°F to 161°F (-40°C to 72°C)	-40°F to 167°F (-40°C to 75°C)
Storage Temperature Range	-60°F to 161°F (-51°C to 72°C)	-60°F to 185°F (-51°C to 85°C)
Calibration Adjustments	Multiturn span and zero potentiometers with approximately $\pm 20\%$ of span adjustment range	Non-interactive, multiturn span and zero potentiometers with approximately $\pm 10\%$ of span adjustment range
Loss-of-air Indication	N/A	LED illuminates when input pressure falls below 60% of the live-zero input or, on optional alarm units, LED illuminates during alarm condition
Mounting Position Effect	None	
In-process Output Monitoring	Current: For accurate reading, ampmeter must have less than $20\ \Omega$ input resistance on 4-20 mA output (0.40 VDC drop)	
Connections	Signal Air: 1/4" NPT female Electrical Wiring: 1/2" NPT female to barrier terminal strip	Signal Air: 1/8" NPT female Electrical Wiring: Miniature terminal block accepts solid or stranded wire up to 14 AWG

Dimensions

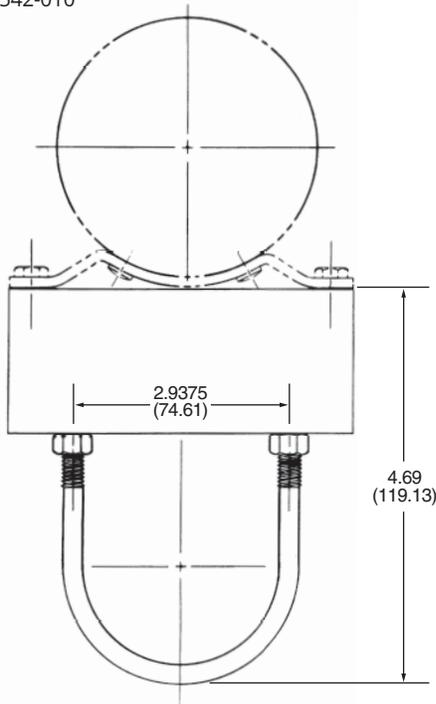
P200



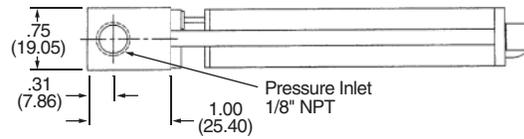
*Allow 1" (25.40) each end for removal of covers

P200 2" Pipe, "U" Bolt Mounting

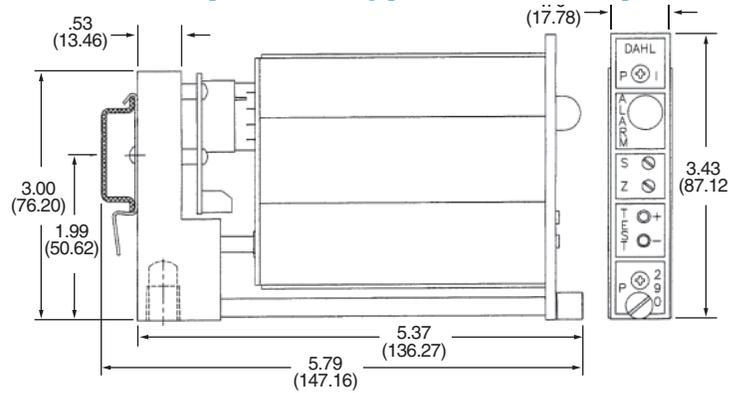
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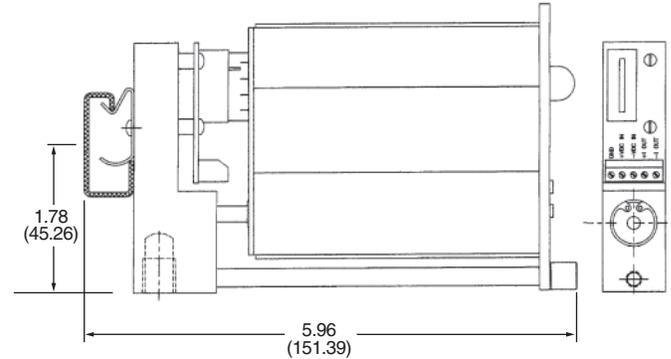
P290 with optional C or G Din Rail Adapter



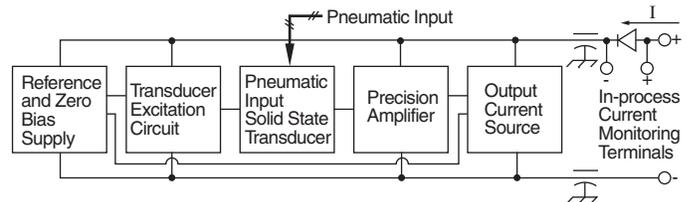
P290 with optional C type Din Rail Adapter



P290 with optional G type Din Rail Adapter



Principles of Operation



A precision voltage reference circuit supplies a stable and highly regulated voltage to all other portions of the circuit. An excitation circuit drives the solid state, piezo-resistive transducer which has the configuration of a Wheatstone Bridge. Upon the application of pressure to the transducer, a force and resultant strain causes the bridge to become unbalanced in direct proportion to the applied pressure. The voltage thus obtained is amplified, scaled, and summed with another reference voltage to produce the output current source.

Type P200 / 290

Ordering

Part Number	Description
P200	P/I Device, 2-wire, FM explosion-proof, 4-20 mA standard, 10-50 mA optional
P290M	P/I Module, 2-wire, 4-20 mA output*
P290DC	Adapter for C type din-rail (optional)
P290DG	Adapter for G type din-rail (optional)

*For stand alone operation, P290M requires either P290DC or P290DG Din Rail Adapter

Input Ranges - P200 and P290

P/N	Standard Input Ranges
P11	3-15 psig (0.2-1.0 bar)
P12	3-27 psig (0.2-1.8 bar)
P13	6-30 psig (0.4-2.0 bar)

Options - P200

P/N	Custom Input Ranges (psig) Specify range
P50	0-.72 to 0-6.0 (0.08-0.4 bar)
P51	0-6.0 to 0-18.0 (0.4-1.2 bar)
P52	0-18.0 to 0-30.0 (1.2-2 bar)

P/N	Description
P21	Lightening Surge Protector
P23	Extra 316 SS Tag
P28	CSA Intrinsically Safe (4-20 mA only)
P29	CSA Explosion-proof (4-20 mA only)
P45	10-50 mA output (P200 only)

Part Number = Model + Input Range + Options

Examples: P200 + P11 + P21
P290 + P50 (0-5)



Approvals



The P200 has been approved by Factory Mutual and the Canadian Standards Association as NEMA 4 (Enc. 4) for all locations and explosion-proof for Class I, Div. 1, Groups A, B, C, D; dust ignition-proof for Class II, Div. 1, Groups E, F, G; and suitable for Class III, Div. 1 locations. CSA intrinsic safety approvals for Class I, Div. 1, Groups A, B, C, D. Contact ControlAir for further details.

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. Drawing downloads available at www.controlair.com



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P/N 441-625-048 11/17