

## Differential Pressure Transducer

Model PR-282



- 100% solid state diffused piezoresistive silicon wafers
- Rugged all stainless steel pressure cavities
- Unique "Double D" port design
- No nulling valve required
- Extremely stable and sensitive
- More than four supply voltage and output options

The PR-282 is an all stainless steel, 100% solid state wet/wet differential pressure transducer incorporating dual diffused piezoresistive sensing elements with stainless steel media isolation. The unit is compatible to all media encountered in HVAC applications including freon, ammonia, treated water and steam. PR-282 is designed to monitor and control pump differential pressure, CW/HW system differential pressure, chiller/boiler differential pressure drop, among other applications.

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The PR-282 incorporates a unique dual sensor design with an electronic differentiation to eliminate the nulling/equalizing valve and to offer a rugged and reliable transducer for wet/wet differential pressure applications. This dual sensor assembly enables the PR-282 to handle thermal shock, water hammer, surges and other destructive conditions. System static pressure, pump surges or steam/water hammer may far exceed the rated range of a differential pressure transducer. Other units, due to design constraints, require a nulling valve to equalize the pressure between the high and low pressure ports prior to start up. This nulling valve manifold is expensive to fabricate in the field. Also, each time the system is turned off the nulling valve has to be opened prior to start up and then closed off once the system has stabilized. This may not be feasible or practical in most of the applications. The PR-282 dual sensor assembly eliminates the nulling valve, its related costs and start up problems.

The PR-282 sensing elements are 100% solid state diffused piezoresistive silicon wafers featuring low hysteresis, excellent repeatability, and long term stability. The sensing elements are connected as four-active-element bridge circuits for optimum linearity and sensitivity. Signal conditioning, temperature compensation and pressure differentiation are performed by industrial quality integrated circuits to provide an accurate, linear, and high level output that requires no additional signal conditioning. The PR-282 also has "on card" regulation which enables it to accept nonregulated DC or AC power. MAMAC Systems has available a reliable PS-200 power supply and TR-201 power transformer at competitive pricing. We highly recommend using our power sources to eliminate any start up problem and to retain single source accountability for all peripherals.

The PR-282 has unique "Double D" design all stainless steel ports. The sensing elements are welded to the ports and both have stainless steel isolation between the sensor and media. In HVAC applications, thermal shock has always been a problem. A rapid change in temperature may cause epoxy seals to break and O-rings to blow out. The coefficient of thermal expansion of epoxy, neoprene and Buna-N is not the same as steel. A rapid temperature change will cause

the ports and sensor to expand and the dissimilar coefficient of thermal expansion will result in the epoxy seals breaking and the O-rings loosening resulting in a leak. The PR-282 with welded construction and all stainless steel pressure cavities performs reliably under thermal shock conditions.

Another problem well known in our industry is that if a bulkhead fitting is used to secure the sensor to the enclosure, overtightening the fitting will result in the sensor twisting and the lead wires may break or the calibration may shift. To eliminate this problem, our engineers have incorporated a unique Double D design port which is secured to the enclosure with two retaining E-rings. The Double D shape of the ports eliminates any possibility of the sensor twisting due to overtightening and the E-rings provide a rugged means to securely attach the sensing elements to the enclosure. The ports have wrench flats on each side to assist in tightening the pipe fitting to the ports.

The dual all stainless steel pressure cavities enable our PR-282 to be compatible to all media encountered in HVAC applications including freon, ammonia, steam, chilled/hot water, among others. This feature enables one unit to be compatible for all applications. The PR-282 is shipped fully calibrated and tested with a minimum 24 hours burn-in to provide trouble free start up. Easily accessible zero and span trimmers are provided if field calibration is needed. The PR-282 has a unique 16 gage steel NEMA 1 enclosure designed to facilitate installation and provide easily accessible wiring termination. The pressure ports have industry standard 1/8 inch NPT process connection to accommodate any pipe fitting.

The PR-282 is compatible with most control systems and is also a highly reliable, stable and versatile differential pressure transducer.

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## SPECIFICATIONS:

**Accuracy:**  $\pm 0.1\%$ \*

**Max Diff Pressure:** 200% of rated range

**Linearity:**  $\pm 0.1\%$

**Max Static Pressure:** 200% of DP range

**Repeatability:**  $\pm 0.1\%$

**Media:** Liquid/gases compatible to 304SS

**Hysteresis:**  $\pm 0.1\%$

**Enclosure:** 16 gage steel

**Port:** 1/8" NPT

**Finish:** Painted Gray PMS2GR88B

**Compensated Temperature Range:** 0°-180°F

**Max. Supply Voltage:** 24 VAC/28 VDC nonregulated

**Mounting Orientation Error:** None (100% solid state)

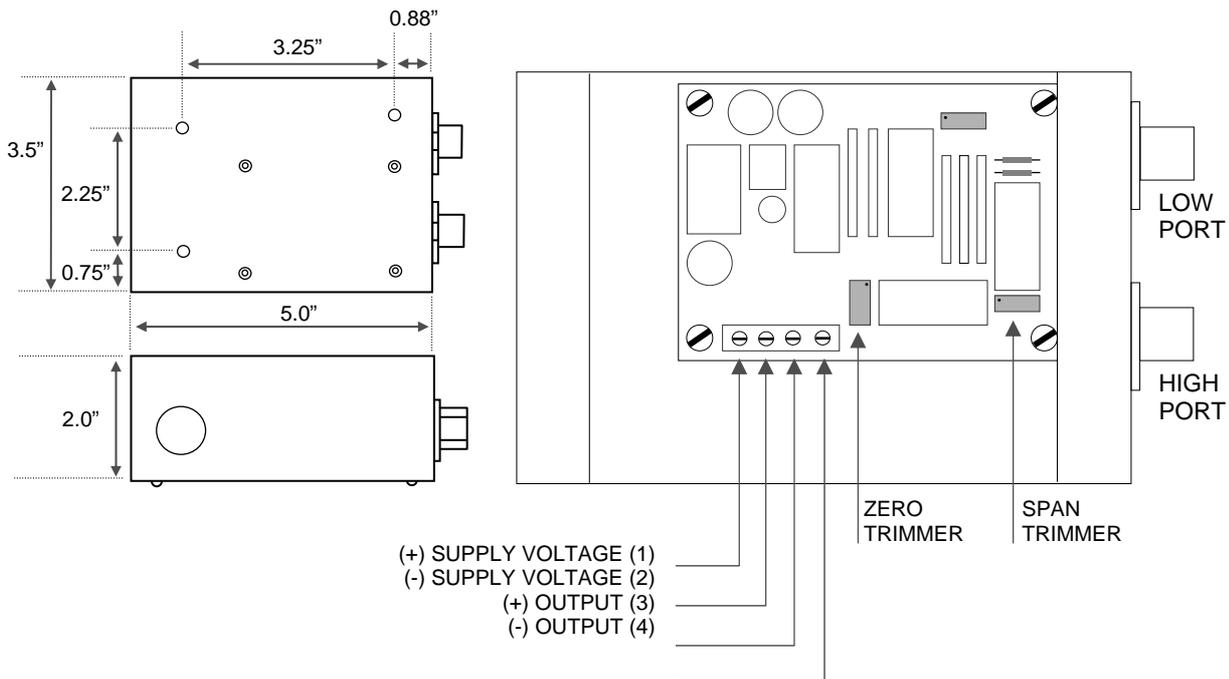
## ORDERING INFORMATION: PR-282-

OUTPUT	PRESSURE RANGE	SUPPLY VOLTAGE			
(1) 0-1 VDC	(1) 0-20 psid	(A) 24 VDC	- 1	- 2	- B
(2) 0-5 VDC	(2) 0-30 psid	(B) 24 VAC			
(3) 0-10 VDC**	(3) 0-50 psid	(C) 115 VAC			
(4) 4-20mA*	(4) 0-100 psid	(D) 12 VDC			
(6) Custom	(5) 0-200 psid	(E) Custom			
	(6) 0-300 psid				
	(7) Custom				

\* Available with 24 VDC supply only.

\*\* Not available with 12 VDC supply.

## DIMENSIONS AND CALIBRATION:



## PR-282

### DIMENSIONS AND CALIBRATION:

**NOTE: ALL UNITS ARE FACTORY CALIBRATED TO MEET OR EXCEED PUBLISHED MAMAC SPECIFICATIONS. IF FIELD ADJUSTMENT IS NEEDED, PLEASE PERFORM THE FOLLOWING STEPS:**

1. Connect terminals 1 and 2 to appropriate power source.
2. For output options 1-3, connect the plus lead of an accurate voltmeter to terminal #3 and for output option 4, connect amp meter plus lead to terminal #3. Connect common to terminal #4.
3. Apply low pressure to the unit and carefully adjust the zero trimmer to obtain desired low output.
4. Apply high pressure to the unit and carefully adjust span trimmer to obtain desired high output pressure.
5. Repeat steps 3 and 4 until no further correction is needed.