



# P51 SERIES

## Gage Pressure Transducer (Air, Gases & Liquids)



The P51 Series is designed to provide excellent accuracy and reliability in commercial, industrial, and process control applications where performance is critical. The bulk micro-machined transducer features a stainless steel diaphragm with welded construction that contains no O-rings, which makes them compatible with any gas or liquid compatible with 304L or 316L stainless steel. The P51 Series transducers include optional 1/4" NPT, 1/8" NPT or a 7/16-20 Female Schrader fitting. Some of the compatible gases and liquids include refrigerants, glycol, motor oil, diesel, hydraulic fluid, brake fluid, water, waste water, Hydrogen, Nitrogen and air. The P51 Series transducers can also be ordered with an optional NIST Calibration Certificate and it must be ordered separately when ordering the transducers for an additional cost. Accessory items such as pressure snubbers and pigtail syphons are available to protect the transducers from line pressure surges (pulsations) or extreme operating temperatures. For more information regarding the

temperature and pressure ratings of the pigtail syphons, please see the Pigtail Syphon data sheet. A minimum order quantity of 10 units may apply depending on current inventory levels.

**Applications:** Refrigeration, Fuel Cells, Pumps, Hydraulics, Compressors, Robotics, Pneumatics, Agriculture, Spraying Systems, Process Control, Flow, Hydrogen Storage, Steam Lines, Boilers, Chillers, Water Systems

The P51 Series Pressure transducers are covered by ACI's Two (2) Year Limited Warranty. The warranty can be found in the front of ACI's Sensors & Transmitters catalog, as well as on ACI's website, [workaci.com](http://workaci.com).

### PRODUCT SPECIFICATIONS

<b>Supply Voltage:</b>	<b>0.5 to 4.5 VDC Output Only:</b> 5.00 VDC +/- 0.500 VDC <b>4 to 20 mA and 1 to 5 VDC Outputs Only:</b> +8 to 30 VDC (No Load) <b>4-20 mA Output:</b> 250 Ohm Load: +13 to 30 VDC   500 Ohm Load: +18 to 30 VDC	
<b>Reverse Polarity Protection:</b>	<b>4-20 mA and 1 to 5 VDC Outputs only:</b> +/- 16 V over 5 minutes	
<b>Overvoltage Protection Option:</b>	<b>0.5 to 4.5 Volt Output ("4.50V" option only):</b> +/- 16V over 5 minutes	
<b>Output Load Impedance:</b>	<b>4-20 mA Output:</b> 800 Ohms maximum @ 24 VDC   <b>Formula:</b> (Supply VDC - 8 VDC) / 0.020A <b>0.5 to 4.5 VDC and 1-5 VDC Output Signals:</b> 15K Ohms minimum	
<b>Supply Current:</b>	<b>4 to 20 mA:</b> 25 mA minimum   <b>0.5 to 4.5 VDC:</b> < 3 mA   <b>1 to 5 VDC:</b> < 5 mA	
<b>Output Signals:</b>	4 to 20 mA (2-Wire, Loop Powered); 0.5 to 4.5 VDC (3-Wires); 1 to 5 VDC (3-Wires)	
<b>Response Time:</b>	< 1 ms	
<b>Pressure Range:</b>	See "Ordering Grid" on back of data sheet	
<b>Accuracy @ 22°C (71.6°F)<sup>1</sup>:</b>	<b>15 to 60 PSIG/PSIS:</b> < +/- 1.0% FS   <b>75 to 300 PSIG/PSIS:</b> < +/- 0.5% FS <b>500 to 750 PSIS 3:</b> < +/- 0.5% FS   <b>1000 to 5000 PSIS 3:</b> < +/- 1% FS <b>15 to 200 PSIA:</b> < +/- 0.5% FS   <b>300 to 750 PSIA:</b> < +/- 0.5% FS   <b>1000 to 3000 PSIA:</b> < +/- 1% FS	
<b>Thermal Error (-40 to 105°C)<sup>2</sup>:</b>	<b>15 to 60 PSIG/PSIS:</b> < +/- 1.0% FS   <b>75 to 300 PSIG/PSIS:</b> < +/- 0.5% FS <b>500 to 750 PSIS:</b> < +/- 0.5% FS   <b>1000 to 3000 PSIS:</b> < +/- 1% FS <b>15 to 200 PSIA:</b> < +/- 0.5% FS   <b>300 to 750 PSIA:</b> < +/- 0.5% FS   <b>1000 to 3000 PSIA:</b> < +/- 1% FS	
<b>Stability (250 Hours @ 225°F (125°C)):</b>	+/- 0.03% FS @ 0 PSIG; +/- 0.12% FS @ 1000 PSIG	
<b>Proof Pressure   Burst Pressure:</b>	<b>Proof Pressure:</b> <b>3 to 15 PSI:</b> 3X FS <b>16 to 3000 PSI (0.5-4.5V, 1-5V):</b> 2X FS <b>16 to 3000 PSI (4-20mA):</b> 3X FS	<b>Burst Pressure:</b> <b>3 to 15 PSIA/PSIS:</b> 3X FS <b>3 to 300 PSIG:</b> 3X FS <b>16 to 3000 PSIA/PSIS:</b> 10x FS/15,000 PSI (Whichever is less)
<b>Thermal Shock:</b>	300 Cycles (105°C to -40°C, 0.5 hour soaks @ Temperature (2s Transfer))	
<b>Vibration (100 to 2000Hz, 20g Sinusoidal, 3 Axes):</b>	144 Hours	
<b>Operating   Storage Temperature Range:</b>	-40 to 257°F (-40 to 125°C)   -40 to 176°F (-40 to 80°C)	
<b>Operating Humidity Range:</b>	0 to 95% RH, non-condensing	
<b>Media Type:</b>	Any gas or liquid compatible with 304L or 316L Stainless Steel	
<b>Transducer Housing Material:</b>	Stainless Steel	
<b>Process Fitting Material   Thread Size:</b>	304L or 316L Stainless Steel   See Ordering Grid for more details	
<b>Recommended Torque Specification:</b>	All Ports except "U": 150 lbs-in (16.95 Nm); Ports "U": 120 lbs-in (13.56 Nm)	
<b>Wiring Connections:</b>	Packard Connector (Cables ordered separately per "Ordering Grid" on back of data sheet) "-I24" (24" Lead Length): PVC Jacketed Cable 18 (0.823 mm <sup>2</sup> ) or 24 AWG (0.2047 mm <sup>2</sup> ) "-MD" Din 43650: Hirschman® Connector with 90° Mating Connector	
<b>NIST Certificate:</b>	Ordered Separately (See "Ordering Grid" on back of data sheet)	
<b>Approvals:</b>	UKCA, CE, RoHS2, WEEE, ISO 9001	
<b>EMC Compatibility:</b>	150 V/m	
<b>Product Dimensions (Length x Diameter):</b>	2.60" (66.6 mm) x 0.875" (22.23 mm)	

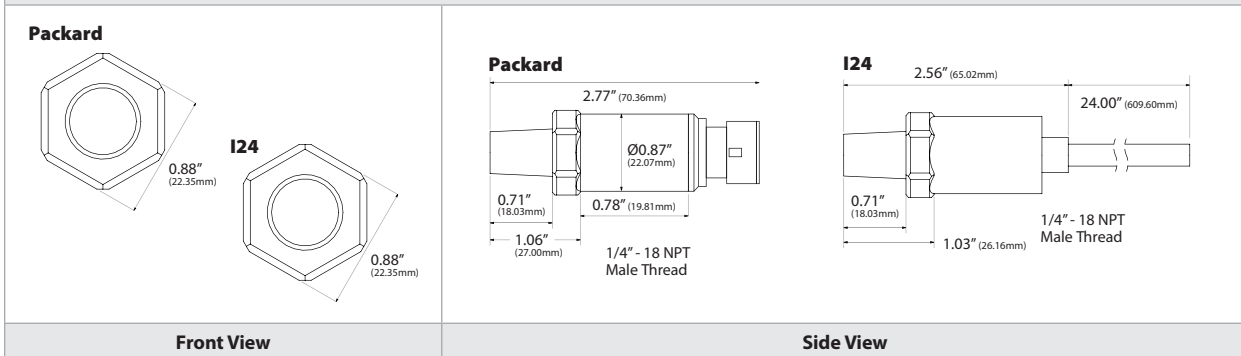


**PRODUCT SPECIFICATIONS**

<b>Product Weight:</b>	<b>P51 Series Transducers:</b> 0.32 lbs. (0.145 kg)
	<b>A/GP 2'Harness:</b> 0.09 lbs. (0.040 kg)   <b>A/GP 6'Harness:</b> 0.20 lbs. (0.091 kg)
	<b>A/GP 10'Harness:</b> 0.32 lbs. (0.145 kg)   <b>A/GP 20'Harness:</b> 0.62 lbs. (0.282 kg)
	<b>A/GP 30'Harness:</b> 0.92 lbs. (0.417 kg)   <b>A/GP 40'Harness:</b> 1.22 lbs. (0.554 kg)

**Note 1:** Accuracy includes Hysteresis, Repeatability, and Non-linearity (BFSL) | **Note 2:** Additional error over temperature range | **Note 3:** Sealed Gage pressure transducers are not vented to atmosphere, but are calibrated to have 0.5VDC, 1VDC or 4mA at +14.5 PSIG

**DIMENSIONAL DRAWING**



**CUSTOM ORDERING**

Model # Example: P51 100 A B 124 20mA 000 000

**MODEL #**

<b>A. Sensor Series</b> <i>No Selection Required</i>	P51 →	<b>P51</b>
<b>B. Full Scale Pressure Range</b> <i>Select One (1)</i>	<b>3</b> = 3 PSI (20.684 kPa) <b>75</b> = 75 PSI (517.107 kPa) <b>750</b> = 750 PSI (5.171 MPa) <b>5</b> = 5 PSI (34.474 kPa) <b>100</b> = 100 PSI (689.476 kPa) <b>1000</b> = 1000 PSI (6.895 MPa) <b>10</b> = 10 PSI (68.948 kPa) <b>200</b> = 200 PSI (1.379 MPa) <b>1500</b> = 1500 PSI (10.342 MPa) <b>15</b> = 15 PSI (103.421 kPa) <b>300</b> = 300 PSI (2.068 MPa) <b>2000</b> = 2000 PSI (13.790 MPa) <b>50</b> = 50 PSI (344.738 kPa) <b>500</b> = 500 PSI (3.447 MPa) <b>3000</b> = 3000 PSI (20.684 MPa)	
<b>C. Pressure Units</b> <i>Select One (1)</i>	<b>G</b> = Gage Pressure (Ranges from: 3-300 PSIG) <b>S</b> = Sealed Gage Pressure (Ranges from: 15 to 3000 PSIS) <b>A</b> = Absolute Pressure (Ranges from: 15 to 3000 PSIA)**	
<b>D. Port/Fitting Configurations</b> <i>Select One (1)</i>	<b>A</b> = 1/4"-18 NPT Thread, 304L SS, 7/8" Hex <b>B</b> = 1/8"-27 NPT Thread, 304L SS, 7/8" Hex <b>U</b> = 7/16"-20-2B Female (1/4" Flare Female Schrader w/ Depressor) Fitting, 304L SS, 5/8" Hex <b>UB</b> = 1/8"-27 NPT Thread 304L SS, 7/8" Hex (Use only with 3 to 10 PSI Pressure Ranges) <b>UC</b> = 1/4"-18 NPT Thread 6.0 ID, 304L SS, 7/8" Hex (Use only with 3 to 10 PSI Pressure Ranges) <b>Z</b> = 1/4"-18 NPT Thread, 316L SS, 7/8" Hex <b>W</b> = 1/8"-27 NPT Thread, 316L SS, 7/8" Hex	
<b>E. Connector/Lead Style</b> <i>Select One (1)</i>	<b>I24</b> = 24" PVC Cable   <b>MD</b> = Din 43650 micro mini with 90° Right Angle Mating Connector   <b>P</b> = Packard Connector (3 Pin) (Requires an A/GP Cable Harness below)	
<b>F. Output Signal</b> <i>Select One (1)</i>	<b>4.5V</b> = 0.5 to 4.5 VDC (5V Input Only)   <b>4.50V</b> = 0.5 to 4.5 VDC with Over Voltage Protection   <b>5V</b> = 1 to 5 VDC   <b>20mA</b> = 4 to 20 mA	
<b>G. Factory Supplies</b> <i>No Selection Required</i>	000 = Default →	<b>000</b>
<b>H. Factory Supplied</b> <i>No Selection Required</i>	000 = Default →	<b>000</b>

**Note\*\*:** Calibration is as follows: Absolute transducers are calibrated to have 0.5VDC, 1VDC, or 4mA respectively at 0PSIA (-14.7PSI)

**Note:** Minimum Order Quantity is 10 pieces. All orders are non-cancelable, non returnable.



**ACCESSORIES ORDERING**

Model #	Item #	Description
A/GP 2' Harness	142606	A/GP 2' (0.610 m) Packard Wire Harness, Plenum Rated
A/GP 6' Harness	135614	A/GP 6' (1.83 m) Packard Wire Harness, Plenum Rated
A/GP 10' Harness	116601	A/GP 10' (3.05 m) Packard Wire Harness, Plenum Rated
A/GP 20' Harness	135613	A/GP 20' (6.10 m) Packard Wire Harness, Plenum Rated
A/GP 30' Harness	135703	A/GP 30' (9.14 m) Packard Wire Harness, Plenum Rated
A/GP 40' Harness	136995	A/GP 40' (12.19 m) Packard Wire Harness, Plenum Rated
A/0.25" SNUB A/G	137105	¼" NPT Stainless Steel Snubber for Air/Gas
A/0.25" SNUB WTR	137104	¼" NPT Stainless Steel Snubber for Water/Light Oils
GP NIST***	142927	GP NIST Calibration Certificate

**Note\*\*\*:** The A/GP Harness and GP NIST must be ordered separately when ordering transducers with Packard Connector or any of the Gage Pressure transmitters with a NIST Calibration Certificate

**ADDITIONAL ACCESSORIES ORDERING**

Item #	Description
100307	249 Ohm, 1/4W, +/- 1% Tolerance, 50 PPM Resistor (Only Needed to Convert to 1-5 VDC)
100306	249 Ohm, 1/4W, +/- 0.1% Tolerance, 50 PPM Resistor (Recommended for Best Accuracy) (Only Needed to Convert to 1-5 VDC)
100469	499 Ohm, 1W, +/- 1% Tolerance, 50 PPM Resistor (Only Needed to Convert to 2-10 VDC)