



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 5 units may apply depending on current inventory levels, lead times may also apply.

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

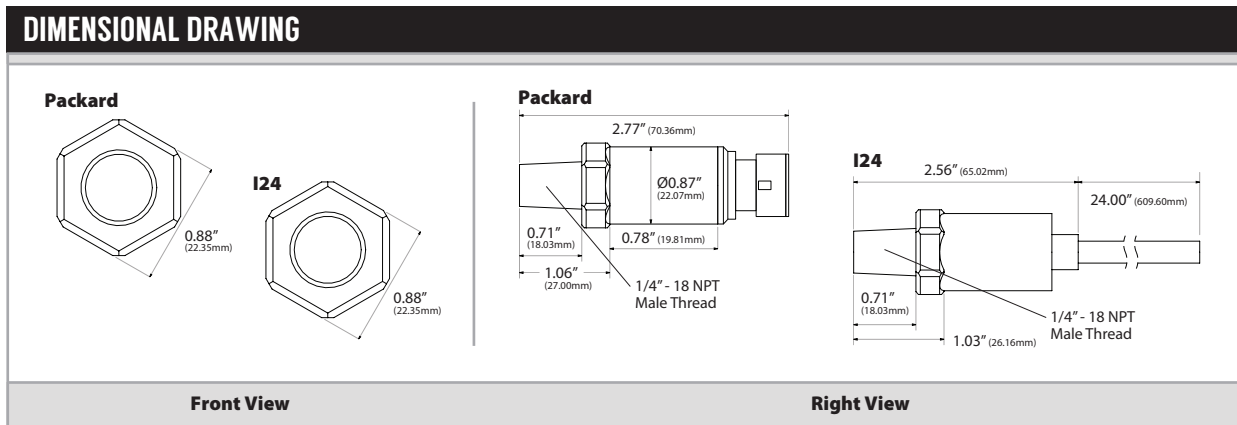
The P51 Series Pressure transducers are covered by ACI's Two (2) Year Limited Warranty. The warranty can be found in the front of ACI's Sensors & Transmitters catalog, as well as on ACI's website, www.workaci.com.

PRODUCT SPECIFICATIONS

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|---|--|
| Supply Voltage: | 0.5 to 4.5 VDC Output Only: 5.00 VDC +/- 0.500 VDC 4 to 20 mA and 1 to 5 VDC Outputs Only: +8 to 30 VDC (No Load) 4-20 mA Output: 250 Ohm Load: +13 to 30 VDC 500 Ohm Load: +18 to 30 VDC |
| Reverse Polarity Protection: | 4-20 mA and 1 to 5 VDC Outputs only: +/- 16 V over 5 minutes |
| Overvoltage Protection Option: | 0.5 to 4.5 Volt Output ("4.50V" option only): +/- 16V over 5 minutes |
| Output Load Impedance: | 4-20 mA Output: 800 Ohms maximum @ 24 VDC Formula: (Supply VDC - 8 VDC) / 0.020A 0.5 to 4.5 VDC and 1-5 VDC Output Signals: 15K Ohms minimum |
| Supply Current: | 4 to 20 mA: 25 mA minimum 0.5 to 4.5 VDC: < 3 mA 1 to 5 VDC: < 5 mA |
| Output Signals: | 4 to 20 mA (2-Wire, Loop Powered); 0.5 to 4.5 VDC (3-Wires); 1 to 5 VDC (3-Wires) |
| Response Time: | < 1 ms |
| Pressure Ranges: | See "Ordering Grid" on back of data sheet |
| Accuracy @ 22°C (71.6°F) 1: | 15 to 60 PSIG/PSIS: < +/- 1.0% FS; 75 to 300 PSIG/PSIS: < +/- 0.5% FS 500 to 750 PSIS 2: < +/- 0.5% FS; 1000 to 5000 PSIS 2: < +/- 1% FS 15 to 200 PSIA: < +/- 0.5% FS; 300 to 750 PSIA: < +/- 0.5% FS; 1000 to 3000 PSIA: < +/- 1% FS |
| Thermal Error (-40° to 105°C) 2: | 15 to 60 PSIG/PSIS: < +/- 1.0% FS; 75 to 300 PSIG/PSIS: < +/- 0.5% FS 500 to 750 PSIS: < +/- 0.5% FS; 1000 to 3000 PSIS: < +/- 1% FS 15 to 200 PSIA: < +/- 0.5% FS; 300 to 750 PSIA: < +/- 0.5% FS; 1000 to 3000 PSIA: < +/- 1% FS |
| Stability (250 Hours @ 225°F (125°C)): | +/- 0.03% FS @ 0 PSIG; +/- 0.12% FS @ 1000 PSIG |
| Proof Pressure Burst Pressure: | 15 to 300 PSIG/PSIS: 3x FS 15 to 300 PSIG/PSIS: 3x FS 15 to 3000 PSIA: 3x FS 15 to 3000 PSIA: 10x FS or 15,000 PSI (whichever is less) 500 to 750 PSIS: 3x FS 500 to 750 PSIS: 3x FS 1000 to 3000 PSIS: 3x FS 1000 to 3000 PSIS: 10x FS or 20,000 PSI (whichever is less) |
| Thermal Shock: | 300 Cycles (105°C to -40°C, 0.5 hour soaks @ Temperature (2s Transfer)) |
| Vibration (100 to 2000Hz, 20g Sinusoidal, 3 Axes): | 144 Hours |
| Operating Storage Temperature Ranges: | -40 to 257°F (-40 to 125°C) -40 to 176°F (-40 to 80°C) |
| Operating Humidity Range: | 0 to 95% RH, non-condensing |
| Media Types: | Any gas or liquid compatible with 304L or 316L Stainless Steel |
| Transducer Housing Material: | Stainless Steel |
| Process Fitting Material Thread Size: | 304L or 316L Stainless Steel See Ordering Grid for more details |
| Recommend Torque Specification: | All Ports except "U" and "Y": 150 lbs-in (16.95 Nm); Ports "U" and "Y": 120 lbs-in (13.56 Nm) |
| Wiring Connections: | Packard Connector (Cables ordered separately per "Ordering Grid" on back of data sheet) "-124" (24" Lead Length): PVC Jacketed Cable 18 (0.823 mm ²) or 24 AWG (0.2047 mm ²) "-MD" Din 43650: Hirschman® Connector with 90° Mating Connector Ordered Separately (See "Ordering Grid" on back of data sheet) |
| NIST Certificate: | Ordered Separately (See "Ordering Grid" on back of data sheet) |
| Approvals: | EMC Compliance: 10 V/m (EN61000-4-3), CE, RoHS2, WEEE, ISO 9001 |
| Product Dimensions (Length x Diameter): | 2.60" (66.6 mm) x 0.875" (22.23 mm) |
| Product Weights: | P51 Series Transducers: 0.32 lbs. (0.145 kg) A/GP 2'Harness: 0.09 lbs. (0.040 kg) A/GP 6'Harness: 0.20 lbs. (0.091 kg) A/GP 10'Harness: 0.32 lbs. (0.145 kg) A/GP 20'Harness: 0.62 lbs. (0.282 kg) A/GP 30'Harness: 0.92 lbs. (0.417 kg) A/GP 40'Harness: 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 0.5 VDC, 1 VDC or 4 mA at +14.5 PSIG





| CUSTOM ORDERING | | Model # Example: P51 100 A B I24 20mA 000 000 | MODEL # |
|--|--|---|------------|
| | | A. B. C. D. E. F. G. H. | |
| A. Sensor Series <i>No Selection Required</i> | P51 → | | P51 |
| B. Full Scale Pressure Range <i>Select One (1)</i> | 3 = 3 PSI (20.684 kPa) 75 = 75 PSI (517.107 kPa) 750 = 750 PSI (5.171 MPa) 5 = 5 PSI (34.474 kPa) 100 = 100 PSI (689.476 kPa) 1000 = 1000 PSI (6.895 MPa) 10 = 10 PSI (68.948 kPa) 200 = 200 PSI (1.379 MPa) 1500 = 1500 PSI (10.342 MPa) 15 = 15 PSI (103.421 kPa) 300 = 300 PSI (2.068 MPa) 2000 = 2000 PSI (13.790 MPa) 50 = 50 PSI (344.738 kPa) 500 = 500 PSI (3.447 MPa) 3000 = 3000 PSI (20.684 MPa) | | |
| C. Pressure Units <i>Select One (1)</i> | G = Gage Pressure (Ranges from: 25-300 PSIG) S = Sealed Gage Pressure (Ranges from: 15 to 3000 PSIS) A = Absolute Pressure (Ranges from: 15 to 3000 PSIA) | | |
| D. Port/Fitting Configuration <i>Select One (1)</i> | A = 1/4"-18 NPT Thread, 304L SS, 7/8" Hex B = 1/8"-27 NPT Thread, 304L SS, 7/8" Hex U = 7/16"-20-2B Female (1/4" Flare Female Schrader w/ Depressor) Fitting, 304L SS, 5/8" Hex UB = 1/8"-27 NPT Thread 304L SS, 7/8" Hex <i>(Use only with 3 to 10 PSI Pressure Ranges)</i> UC = 1/4"-18 NPT Thread 6.0 ID, 304L SS, 7/8" Hex <i>(Use only with 3 to 10 PSI Pressure Ranges)</i> Z = 1/4"-18 NPT Thread, 316L SS, 7/8" Hex W = 1/8"-27 NPT Thread, 316L SS, 7/8" Hex Y = 7/16"-20-2B Female (1/4" Flare Female Schrader with Depressor) Fitting, 316L SS, 5/8" Hex | | |
| E. Connector/Lead Style <i>Select One (1)</i> | I24 = 24" PVC Cable MD = Din 43650 micro mini with 90° Right Angle Mating Connector P = Packard Connector (3 Pin) <i>(Requires an A/GP Cable Harness below)</i> | | |
| F. Output Signal <i>Select One (1)</i> | 4.5V = 0.5 to 4.5 VDC (5V Input Only) 4.50V = 0.5 to 4.5 VDC with Over Voltage Protection 5V = 1 to 5 VDC 20mA = 4 to 20 mA | | |
| G. Factory Supplied <i>No Selection Required</i> | 000 = Default → | | 000 |
| H. Factory Supplied <i>No Selection Required</i> | 000 = Default → | | 000 |



| 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 |

Model # Example: A/GP 30' HARNESS -OR- 135703

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) |

Item # Example: 100307

