

P499 Heavy Duty Pressure Transducer

Product Bulletin

Code No. LIT- ??? E
Issued 11 2006

The P499 Series is a new global Pressure Transducer with an excellent price performance ratio. The P499 exceeds the latest industrial CE/UL requirements including surge protection, and is over voltage protected in both positive and reverse polarity.

The P499 is designed to produce a linear analogue signal based on the sensed pressure. The pressure port is machined from a solid piece of 17-4PH stainless steel. There are no O-rings or welds that are exposed to the pressure media.

This results in a leak proof ,all metal sealed pressure system which withstand more than 10 million pressure cycles without failure.



Table 1: Features and Benefits

Features	Benefits
Single-piece machined steel pressure port	Provides a durable assembly, eliminates potential of refrigerant loss due to O-ring failures
Environmentally Sealed Electronics	Withstands the effects of adverse conditions found in typical equipment rooms
Reliable, Repeatable Performance and Long Operating Life	Minimizes service & replacement costs
Available in Several Pressure Ranges	Provides a single line of transmitters for all refrigeration and air conditioning application needs
Slender Body Design	Space requirements minimal

Application

The P499 is intended for use in:

- HVAC/R systems
- Automotive test stands
- Gas compressors
- Industrial process control
- Pumps & compressors
- Hydraulic/pneumatic systems
- Agricultural equipment
- Energy & water management



WARNING

P499 Electronic Pressure Transducers are intended for use in conjunction with operating controls under normal operating conditions. Where failure or malfunction of the P499 Electronic Pressure Transducers could lead to an abnormal operating condition that could cause personal injury or damage to the equipment or other property, other devices (limit or safety controls) or systems (alarm or supervisory systems) intended to warn of or protect against failure or malfunction of the P499 Electronic Pressure Transducers must be incorporated into and maintained as part of the control system.

Operation

The applied pressure is converted into an analogue electrical signal. This is achieved by the physical deformation of strain gages (Piezo film) which are bonded with high temperature glass into the stainless steel diaphragm of the pressure transducer and wired into a wheat stone bridge configuration. Pressure applied to the pressure transducer produces a deflection of the diaphragm which introduces strain to the gages. The strain produces an electrical resistance change proportional to the pressure. The P499 transducer measures pressure as psig or Gauge pressure. The sensed pressure is compared to the ambient pressure (average 1013 mbar). Sealed Gauge (bars) type Transducers and Absolute type Transmitters (bars) can be setup on request.

- DC 0.5V - 4.5V
Most economical. The actual output is directly proportional to the transducer input power or excitation (ratiometric).
- DC 0V - 10V
High output signal not as susceptible to electrical noise

Repair and replacement

P499 Electronic Pressure Transducers are sealed units, on site repair is not possible. Defective units should be returned to the factory.

For replacement please contact your supplier.

Fitting

IMPORTANT: Mount the pressure control upright. Pressure tap points must be located on the topside of the refrigerant lines. This reduces the possibility of oil, liquids, or sediment accumulating in the pressure connection linear sensor, which could cause malfunction.



CAUTION:

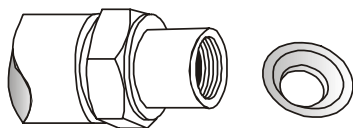
Observe maximum operation pressure when testing the installation. Exceeding the maximum over-pressure will permanently damage the sensor. Avoid severe pressure pulsation on pressure connections by positioning transmitter away from compressor discharge. When there are no severe pulsation and/or vibrations the sensor may be mounted directly to the compressor.



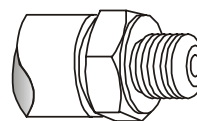
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Pressure Connections



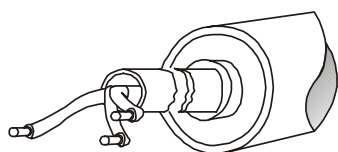
**Internal 7/16 - 20 UNF Thread
& flared washer**



External 7/16 - 20 UNF Thread

Wiring

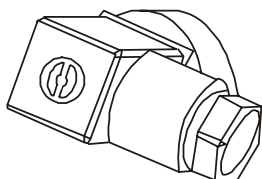
3 meters shielded cable



Shielded cable P499 model electrical connections:

- **P499AxS-xxxC:** Red = supply; Black = com.; Bare = GND
- **P499RxS-xxxC:** Red = supply; Black = com.; White = Output; Bare = GND
- **P499VxS-xxxC:** Red = supply; Black = com.; White = Output; Bare = GND

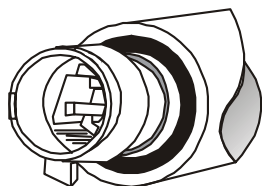
Hirschman form "C"



Hirschman P499 model electrical connections:

- **P499AxH-xxxC:** Pin1 = supply; Pin 2 = com.
- **P499RxH-xxxC:** Pin1 = supply; Pin 2 = com. Pin 3 = Output
- **P499VxH-xxxC:** Pin1 = supply; Pin 2 = com. Pin 3 = Output

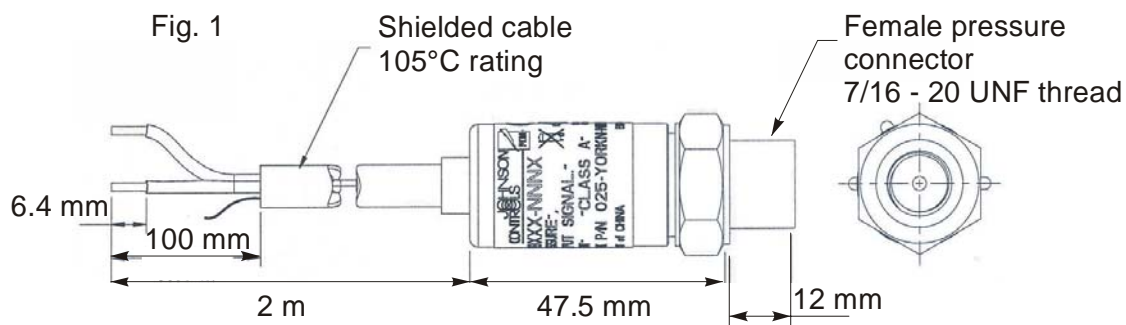
Packard socket



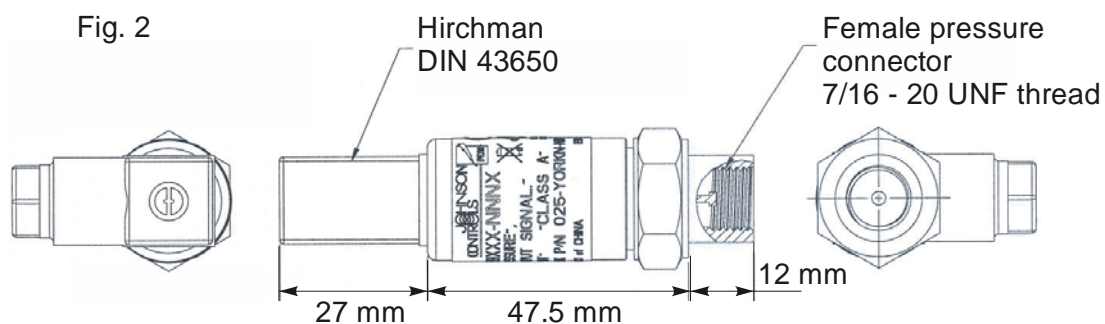
Packard P499 model electrical connections:

- **P499AxP-xxxC:** Pin A = com. Pin B = supply
- **P499RxP-xxxC:** Pin A = com. Pin B = supply; Pin C = Output
- **P499VxP-xxxC:** Pin A = com. Pin B = supply; Pin C = Output

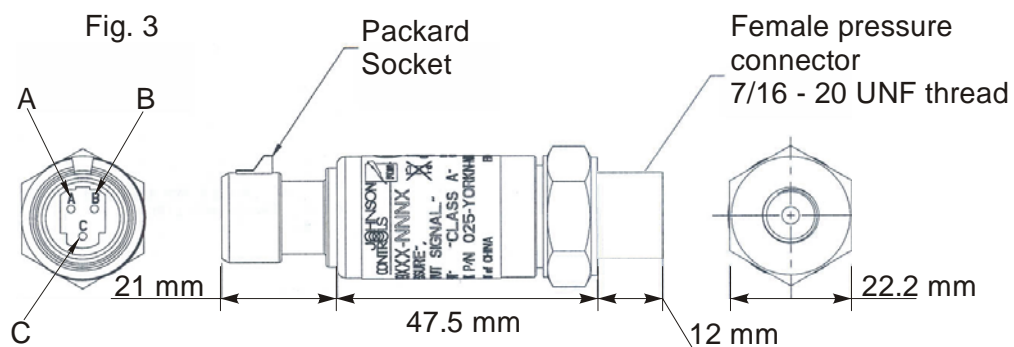
Dimensions



Shielded cable Female



Hirschman Female



Packard Female

Ordering Codes

P499-

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C Pressure Transducer

Pressure ranges

- 401 = -100 to 800 kPa (-1 to 8 bar)
- 402 = -100 to 1500 kPa (-1 to 15 bar)
- 403 = 0 to 1500 kPa (0 to 15 bar)
- 404 = 0 to 3000 kPa (0 to 30 bar)
- 405 = 0 to 5000 kPa (0 to 50 bar)

Electrical connection

- S = 2M cable
- H = Hirschmann
- P = Packard

Pressure port

- A = 1/8 NPTM
- B = 1/4 SAE Male
- C = 1/4 SAE Female

OutputSupply

- A = 0.4 mA - 20 mA9 V - 32 V
- R = DC 0.5 V - 4.5 V4.75 V - 5.25 V
- V = DC 0 V - 10 V12 V - 30 V

Technical Specifications

Products	P499 Series Electronic Pressure Transducer	
Pressure Ranges	All units are Gauge type designs	
	-100 to 800 kPa (-1 to 8 bar)	0 to 1500 kPa (0 to 15 bar)
	-100 to 1500 kPa (-1 to 15 bar)	0 to 3000 kPa (0 to 30 bar)
	-100 to 2500 kPa (-1 to 25 bar)	0 to 5000 kPa (0 to 50 bar)
Output signal	4 - 20 mA, 0.5 VDC to 4.5 VDC or 0 VDC to 10 VDC	
Overload	2x Upper rated pressure without calibration shift	
Burst Pressure	5x rated pressure	
Media Compatibility	Fluids compatible with 17-4 PHTM stainless steel	
Supply Voltages	4 mA - 20 mA output needs 9 V - 32 V	
	0.5 VDC - 4.5 VDC Ratio metric output needs 4.75 V - 5.25 V	
	0 VDC - 10 VDC output needs 12 V - 30 V	
Storage Conditions	-40 to 125 °C 0 to 100% RH	
Electrical Connections	DIN43650-C, Cable 2M Shielded, Packard (Metri Pack)	
Compensated Temperature	-20 to 85 °C	
Operating Temperature	-40 to 125 °C	
Accuracy	± 0.25% FS BFSL	
Total error band	± 1% FS	
Material	17-4 PHTM stainless steel	
Vibration	20 G at 20-200 Hz	
Shock	200 G / 11 ms	
CE conformity	EMC 89/336/EEC	

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



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