

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

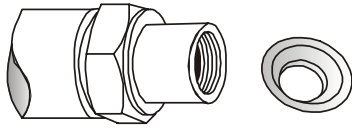
Observe maximum operation pressure when testing the installation. Exceeding the maximum over-pressure will permanently damage the sensor. Avoid severe pressure pulsation on pressure connections by positioning transmitter away from compressor discharge. When there are no severe pulsation and/or vibrations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



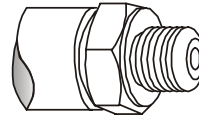
### CAUTION:

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.

## Pressure Connections



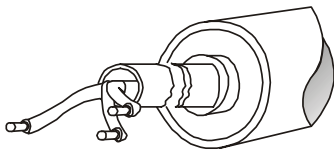
Internal 7/16 - 20 UNF Thread  
& flared washer



External 7/16 - 20 UNF Thread

## Wiring

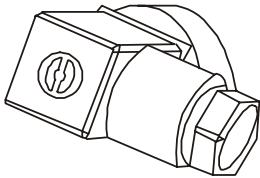
### 3 meters shielded cable



#### 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

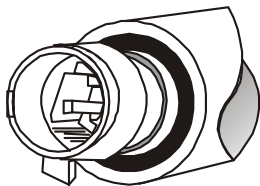
### Hirschman form "C"



#### 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

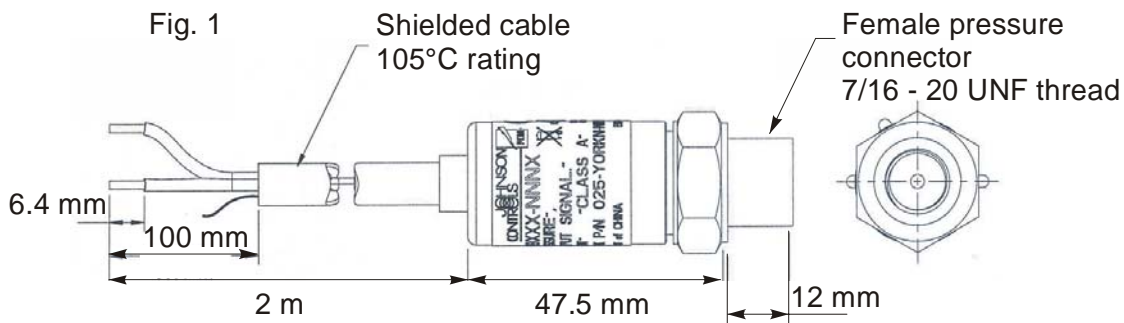
### Packard socket



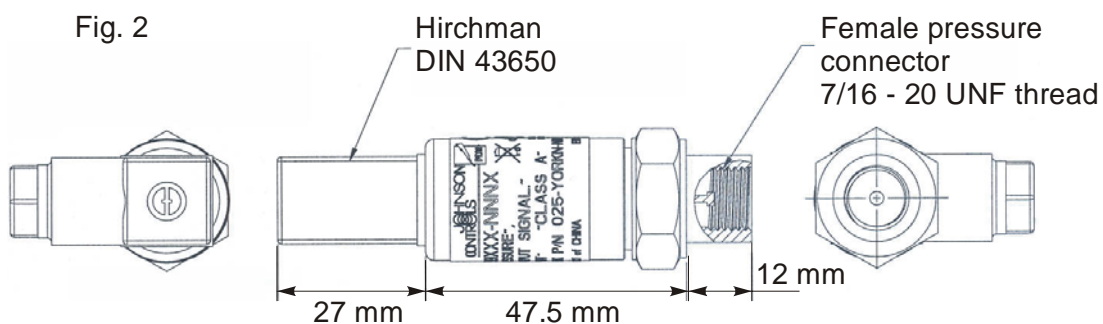
#### Packard P499 model electrical connections:

- **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

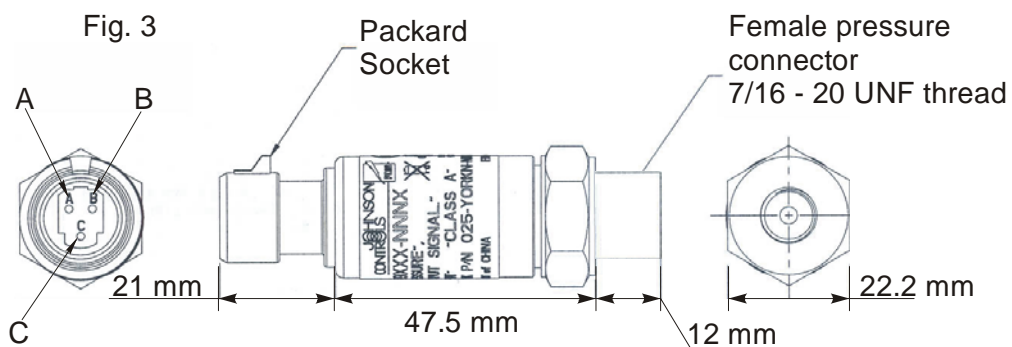
## Dimensions



**Shielded cable Female**



**Hirschman Female**



**Packard Female**

## Ordering Codes

**P499-**

-

**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

### Output

### Supply

A = 0.4 mA - 20 mA

9 V - 32 V

R = DC 0.5 V - 4.5 V

4.75 V - 5.25 V

V = DC 0 V - 10 V

12 V - 30 V

## Technical Specifications

<b>Products</b>	<b>P499 Series Electronic Pressure Transducer</b>	
<b>Pressure Ranges</b>	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)
<b>Output signal</b>	4 - 20 mA, 0.5 VDC to 4.5 VDC or 0 VDC to 10 VDC	
<b>Overload</b>	2x Upper rated pressure without calibration shift	
<b>Burst Pressure</b>	5x rated pressure	
<b>Media Compatibility</b>	Fluids compatible with 17-4 PHTM stainless steel	
<b>Supply Voltages</b>	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	
<b>Storage Conditions</b>	-40 to 125 °C 0 to 100% RH	
<b>Electrical Connections</b>	DIN43650-C, Cable 2M Shielded, Packard (Metri Pack)	
<b>Compensated Temperature</b>	-20 to 85 °C	
<b>Operating Temperature</b>	-40 to 125 °C	
<b>Accuracy</b>	± 0.25% FS BFSL	
<b>Total error band</b>	± 1% FS	
<b>Material</b>	17-4 PHTM stainless steel	
<b>Vibration</b>	20 G at 20-200 Hz	
<b>Shock</b>	200 G / 11 ms	
<b>CE conformity</b>	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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