



P599 Series Electronic Pressure Transducers Catalog Page

Description

The P599 Series Electronic Pressure Transducers are compact, economical, rugged, direct-mount pressure transducers designed for use in commercial and industrial refrigeration and air conditioning applications. These transducers provide a proportional analog signal based on the sensed pressure.

The P599 Series Transducers feature environmentally protected electronics with stainless steel construction. The digitally compensated P599 Transducers are highly accurate over a broad temperature range, resisting the effects of wide ambient temperature swings, high humidity, condensation, and icing.

The pressure port is machined from 304L stainless steel. No o-rings or organic materials are exposed to the pressure media, allowing for a leak-proof, all-metal, sealed pressure system. The P599 Series Transducers operate with any corrosive or non-corrosive refrigerants that are compatible with stainless steel (304L SS), including water condensate, carbon dioxide, glycol, most refrigerants (including ammonia), and many other compatible fluids and gases. The P599 Transducers also can be used with the following natural refrigerants: NH₃ (ammonia) and CO₂ (carbon dioxide) in accordance with hazardous location requirements.

The P599 Series provides transducers in a variety of pressure ranges, covering most common refrigeration and air conditioning applications. Refer to the *P599 Series Electronic Pressure Transducers Product/Technical Bulletin (LIT-12012446)* for important product application information.

Refer to the *P599 Series Electronic Pressure Transducers Product/Technical Bulletin (LIT-12012446)* for the product code matrix that identifies all of the potential P599 Series Electronic Pressure Transducer models and product code numbers. This table shows the P599 Transducer product code matrix and the potential non-standard transducer models that can be built. Not all non-standard models are available. Non-standard models are only sold in bulk quantity orders of 100 or more. Contact your Johnson Controls Sales Representative for more information regarding bulk purchase of non-standard P599 Transducers

Features and Benefits

- **Industrial Duty Design**—Offers a sealed design that includes a snubber to dampen pressure pulsations and has no o-rings for reliable performance in the most harsh environments.
- **10 Million Plus Full Scale Pressure Cycle Rated Life Span**—Provides life use with no degradation of accuracy or

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performance over the life of the transducer.

- **Approved for Today's Refrigerants**—Use with an extensive number of refrigerants, including HCFC, HFC, CO₂, and ammonia.
- **Environmentally Protected Electronics**—Provide high vibration tolerance and prevent ingress and egress that can occur through suction line icing and thawing.

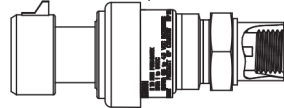
Repair Information

If a P599 Series Electronic Pressure Transducer fails to operate within its specifications, replace the unit. For a replacement P599 Transducer, contact the nearest Johnson Controls® representative.

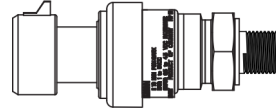
Selection Charts

Standard North American P599 Transducer Examples

Packard Connector
1/4 in. SAE 45° Internal Flare with Depressor



Packard Connector
1/8 in. - 27 NPT External



P599 Transducer Standard Models, 0.5 to 4.5 VDC Ratiometric with a Packard® Connector for PSI Applications (Part 1 of 2)

Product Code Number	Pressure Range		Pressure Port	Individual or Kit
	Minimum Pressure (Pmin)	Maximum Pressure (Pmax)		
P599RAPS100C	-10 psi (20 in. Hg)	100 psi	1/8 in. - 27 NPT external	Individual
P599RAPS100K				Kit
P599RCPS100C			1/4 in. - SAE 45° internal flare with depressor	Individual
P599RCPS100K				Kit
P599RAPS101C	0 psi	100 psi	1/8 in. - 27 NPT external	Individual
P599RAPS101K				Kit
P599RCPS101C			1/4 in. - SAE 45° internal flare with depressor	Individual
P599RCPS101K				Kit



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P599 Transducer Standard Models, 0.5 to 4.5 VDC Ratiometric with a Packard Connector for PSI Applications (Part 2 of 2)

Product Code Number	Pressure Range		Pressure Port	Individual or Kit
	Minimum Pressure (Pmin)	Maximum Pressure (Pmax)		
P599RAPS102C	0 psi	200 psi	1/8 in. - 27 NPT external	Individual
P599RAPS102K				Kit
P599RCPS102C			1/4 in. - SAE 45° internal flare with depressor	Individual
P599RCPS102K				Kit
P599RAPS105C	0 psi	500 psi	1/8 in. - 27 NPT external	Individual
P599RAPS105K				Kit
P599RCPS105C			1/4 in. - SAE 45° internal flare with depressor	Individual
P599RCPS105K				Kit
P599RAPS107C	0 psi	750 psi	1/8 in. - 27 NPT external	Individual
P599RAPS107K				Kit
P599RCPS107C			1/4 in. - SAE 45° internal flare with depressor	Individual
P599RCPS107K				Kit

P599 Transducer Standard Models, 0 to 10 VDC with the Packard Connector for PSI Applications

Product Code Number	Pressure Range		Pressure Port	Individual or Kit
	Minimum Pressure (Pmin)	Maximum Pressure (Pmax)		
P599VAPS101C	0 psi	100 psi	1/8 in. - 27 NPT external	Individual
P599VAPS101K				Kit
P599VCPS101C			1/4 in. - SAE 45° internal flare with depressor	Individual
P599VCPS101K				Kit
P599VAPS105C	0 psi	500 psi	1/8 in. - 27 NPT external	Individual
P599VAPS105K				Kit
P599VCPS105C			1/4 in. - SAE 45° internal flare with depressor	Individual
P599VCPS105K				Kit
P599VAPS107C	0 psi	750 psi	1/8 in. - 27 NPT external	Individual
P599VAPS107K				Kit
P599VCPS107C			1/4 in. - SAE 45° internal flare with depressor	Individual
P599VCPS107K				Kit

P599 Transducer Standard Models, 4 to 20 mA with the Packard Connector for PSI Applications

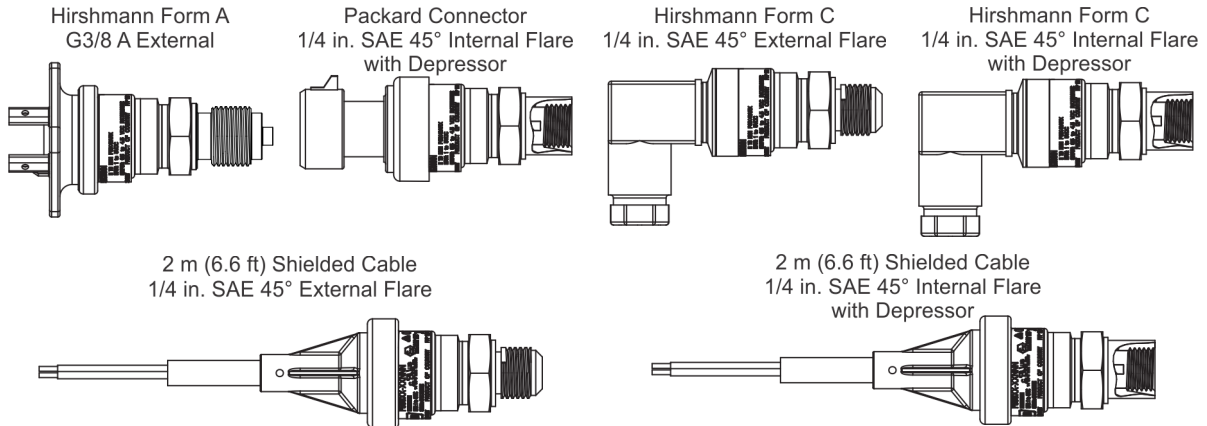
Product Code Number	Pressure Range		Pressure Port	Individual or Kit
	Minimum Pressure (Pmin)	Maximum Pressure (Pmax)		
P599AAPS101C	0 psi	100 psi	1/8 in. - 27 NPT external	Individual
P599AAPS101K				Kit
P599ACPS101C			1/4 in. - SAE 45° internal flare with depressor	Individual
P599ACPS101K				Kit
P599AAPS105C	0 psi	500 psi	1/8 in. - 27 NPT external	Individual
P599AAPS105K				Kit
P599ACPS105C			1/4 in. - SAE 45° internal flare with depressor	Individual
P599ACPS105K				Kit
P599AAPS107C	0	750	1/8 in. - 27 NPT external	Individual
P599AAPS107K				Kit
P599ACPS107C			1/4 in. - SAE 45° internal flare with depressor	Individual
P599ACPS107K				Kit

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products. © 2017 Johnson Controls. www.johnsoncontrols.com



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Standard European P599 Transducer Examples



P599 Transducer Standard Models, 0.5 to 4.5 VDC Ratiometric for BAR Applications

Product Code Number	Pressure Range		Pressure Port	Electrical connector
	Minimum Pressure (Pmin)	Maximum Pressure (Pmax)		
P599RCHS401C	-1 bar	8 bar	1/4 in. - SAE 45° internal flare with depressor	Hirschmann® Form C
P599RCPS401C				Packard
P599RCPS402C	-1 bar	15 bar		Packard
P599RCHS404C	0 bar	30 bar		Hirschmann Form C
P599RCPS404C				Packard
P599RCSS409C	0 bar	35 bar		Shielded cable
P599RCPS405C	0 bar	50 bar		Packard
P599RCSS411C	0 bar	52 bar		Packard
P599RJJS412C	-1 bar	59 bar	G3/8 A external	Hirschmann Form A
P599RJJS413C	-1 bar	159 bar		

P599 Transducer Standard Models, 0 to 10 VDC for BAR Applications (Part 1 of 2)

Product Code Number	Pressure Range		Pressure Port	Electrical connector
	Minimum Pressure (Pmin)	Maximum Pressure (Pmax)		
P599VBHS401C	-1 bar	8 bar	1/4 in. - SAE 45° external flare	Hirschmann Form C
P599VCHS401C			1/4 in. - SAE 45° internal flare with depressor	
P599VCPS401C			1/4 in. - SAE 45° internal flare with depressor	Packard
P599VBSS401C			1/4 in. - SAE 45° external flare	Shielded cable
P599VCSS401C			1/4 in. - SAE 45° internal flare with depressor	
P599VCPS406C	-1 bar	9 bar	1/4 in. - SAE 45° internal flare with depressor	Packard
P599VBSS402C	-1 bar	15 bar	1/4 in. - SAE 45° external flare	Shielded cable
P599VCHS402C			1/4 in. - SAE 45° internal flare with depressor	Hirschmann Form C
P599VBHS404C	0 bar	30 bar	1/4 in. - SAE 45° external flare	Hirschmann Form C
P599VCHS404C			1/4 in. - SAE 45° internal flare with depressor	
P599VCPS404C			1/4 in. - SAE 45° internal flare with depressor	Packard
P599VBSS404C			1/4 in. - SAE 45° external flare	Shielded cable
P599VCSS404C			1/4 in. - SAE 45° internal flare with depressor	
P599VCPS407C	-1 bar	39 bar	1/4 in. - SAE 45° internal flare with depressor	Packard

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P599 Transducer Standard Models, 0 to 10 VDC for BAR Applications (Part 2 of 2)

Product Code Number	Pressure Range		Pressure Port	Electrical connector
	Minimum Pressure (Pmin)	Maximum Pressure (Pmax)		
P599VCHS405C	0 bar	50 bar	1/4 in. - SAE 45° internal flare with depressor	Hirschmann Form C
P599VCSS405C				Shielded cable

P599 Transducer Standard Models, 4 to 20 mA for BAR Applications

Product Code Number	Pressure Range		Pressure Port	Electrical connector
	Minimum Pressure (Pmin)	Maximum Pressure (Pmax)		
P599ABHS401C	-1 bar	8 bar	1/4 in. - SAE 45° external flare	Hirschmann Form C
P599ACHS401C			1/4 in. - SAE 45° internal flare with depressor	
P599ACPS401C			1/4 in. - SAE 45° internal flare with depressor	Packard
P599ABSS401C			1/4 in. - SAE 45° external flare	Shielded cable
P599ACSS401C			1/4 in. - SAE 45° internal flare with depressor	
P599ABHS402C	-1 bar	15 bar	1/4 in. - SAE 45° external flare	Hirschmann Form C
P599ACHS402C			1/4 in. - SAE 45° internal flare with depressor	Packard
P599ACPS402C			1/4 in. - SAE 45° internal flare with depressor	
P599ACPS403C	0 bar	15 bar	1/4 in. - SAE 45° internal flare with depressor	Packard
P599ABHS404C	0 bar	30 bar	1/4 in. - SAE 45° external flare	Hirschmann Form C
P599ACHS404C			1/4 in. - SAE 45° internal flare with depressor	
P599ACPS404C			1/4 in. - SAE 45° internal flare with depressor	Packard
P599ABSS404C			1/4 in. - SAE 45° external flare	Shielded cable
P599ACSS404C			1/4 in. - SAE 45° internal flare with depressor	
P599ACHS405C	0 bar	50 bar	1/4 in. - SAE 45° internal flare with depressor	Hirschmann Form C
P599ACPS405C				Packard
P599ACSS405C				Shielded cable

Accessories

Wire Harnesses for Use with Packard Connectors

Product Code Number	Length
WHA-PKD3-200C	2.0 m (6.6 ft)
WHA-PKD3-400C	4.0 m (13 ft)
WHA-PKD3-600C	6.0 m (19.63 ft)



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Technical Specifications

Signal Output Types	0.5 to 4.5 VDC Ratiometric 0 to 10 VDC 4 to 20 mA 0 to 5 VDC 1 to 5 VDC
Pressure Port Type [Required Assembly Torque]	1/8 in. - 27 NPT, external thread ANSI B1.20.1 [16.26 N•m (12 ft•lb)] 1/4 in. SAE 45° flare, external thread [16.26 N•m (12 ft•lb)] 1/4 in. SAE 45° flare with Schrader® Valve depressor, internal thread [16.26 N•m (12 ft•lb)] 1/4 in. - 18 NPT, external thread ANSI B1.20.1 [20.33 N•m (15 ft•lb)] 1/2 in. - 20 UNF-2A external, [20.33 N•m (15 ft•lb)] 1/4 in. - 18 NPTF external, [20.33 N•m (15 ft•lb)] M16 X 1.5 Ermeto® internal thread, ISO 8434-1 [33.89 N•m (25 ft•lb)]
Electrical Connector	AMP, 174357-2 Hirschmann Form C, 9.5 mm EN 175 301 - 803 Hirschmann Form A, 18 mm EN 175 301 - 803 Packard, Metri-Pack 150 series, P2S Shielded cable; shield not connected to the sensor body M12 X 1P, DS/EN 60947-5-2
Units of Measurement	BARS (PSIS) BARA (PSIA)
Temperature Range	Compensated temperature: -40° to 125°C (-40° to 257°F) Media temperature (pressure side): -40° to 125°C (-40° to 257°F) Operating temperature (ambient air): -40 to 100°C (-40° to 212°F) Storage temperature, -40° to 125°C (-40° to 257°F)
Accuracy	Total accuracy: +/- 1.5% Best-Fit Straight Line (BFSL): +/- 0.5% Long term stability (1 year): +/- 1.25%
Required Output Signal Supply Voltage	0.5 to 4.5 VDC Ratiometric: 4.75 to 5.25 VDC 0 to 10 VDC: 12 to 33 VDC 4 to 20 mA: 9 to 32 VDC 0 to 5 VDC and 1 to 5 VDC: 9 to 33 VDC
Maximum Signal Input Current	0.5 to 4.5 VDC Ratiometric: 3 mA 0 to 10 VDC: 5 mA 4 to 20 mA: 24 mA 0 to 5 VDC and 1 to 5 VDC: 5 mA
Electrical Protection	<ul style="list-style-type: none"> Standard response time: 5 ms, +/- 4 ms Output impedance: greater than 25 ohm Output load shall be greater than 10K ohm (resistance signal out can support for volt out models) Reverse wiring protection: (+ and common) (+ and signal out) (common and signal out) Short-circuit protected: (signal out at maximum span to earth) Minimum ohms (body to term): 100 M ohm at 500 VDC
Physical	<ul style="list-style-type: none"> Pressure cycles: 10 million full scale Burst pressure for transducers with Pmax < 52 bar (750 psi): 259 bar (3,750 psi) Burst pressure for transducers with Pmax > 52 bar (750 psi): 1,034 bar (15,000 psi) Proof pressure: 3x full-scale (Pmax) for 1 minute Minimum pressure: 0 bar (0 psia) indefinitely Proof pressure: 2x full-scale indefinitely Vibration: 16.4 G random Mechanical shock: EN 60068-2-27 (25 g, 11 ms, half sine) Shock/drop: 4 meter 6 times any axis Piezoresistive sensor filled with silicone oil All media side materials: 304L stainless steel Mechanical damping: built-in snubber
Field Installed Electrical Connection IP Ratings	<ul style="list-style-type: none"> AMP, IP67 Hirschmann A, IP65 Hirschmann C, IP65 Packard, IP67 Cable, IP67 M12 X 1P, IP67 Factory Assembled Environmental Protection, IP67 stainless steel sensor body to plastic seal
Compliance	<p>United States: Controllers, Refrigeration - Component, SDFY2.SA516; Controllers, Refrigeration for use in Hazardous Locations - Component STDX2.E483641; Class I, Division 2, Group A, B, C, and D FCC Part 15 Class B</p> <p>Canada: Controllers, Refrigeration - Component, SDFY8.SA516 Controllers, Refrigeration for use in Hazardous Locations - Component STDX8.E483641; Class I, Division 2, Group A, B, C, and D</p> <p>Europe: LVD, EMC, RoHS, WEEE</p> <p>Australia/New Zealand: RCM, Emissions Compliant</p>