We make things MOVE

BPT Series
Analog Pressure Transducer

Bimba is part of
IMI Precision Engineering

We Make Things Move®

A forward-thinking innovator, Bimba provides industry-leading pneumatic, hydraulic, electric and vacuum motion solutions that are easy-to-use, reliable and ready for your engineering challenges.

Doing whatever it takes to help you get the job done is what the Bimba companies do best. With an extensive line of industry-leading air cylinders, rotary actuators, linear thrusters, rodless cylinders, NFPA, hydraulics, flow controls, position-sensing cylinders, valves, switches and air preparation equipment, the people of Bimba are ready to tackle your toughest applications.

Bimba is part of IMI Precision Engineering, a world leader in motion and fluid control technologies. Wherever precision, speed and engineering reliability are essential, we deliver exceptional solutions which improve the productivity and efficiency of customers' equipment.

Our range of high-performance products, such as actuators, valves, valve islands, pressure monitoring controls and air preparation products together with trusted products brands including IMI Norgren, IMI Buschjost, IMI FAS, IMI Herion and IMI Maxseal underpin our position as a leading global supplier.

Part of IMI plc, we have a sales and service network in 75 countries, as well as manufacturing capability in the USA, Germany, China, UK, Switzerland.

Contents

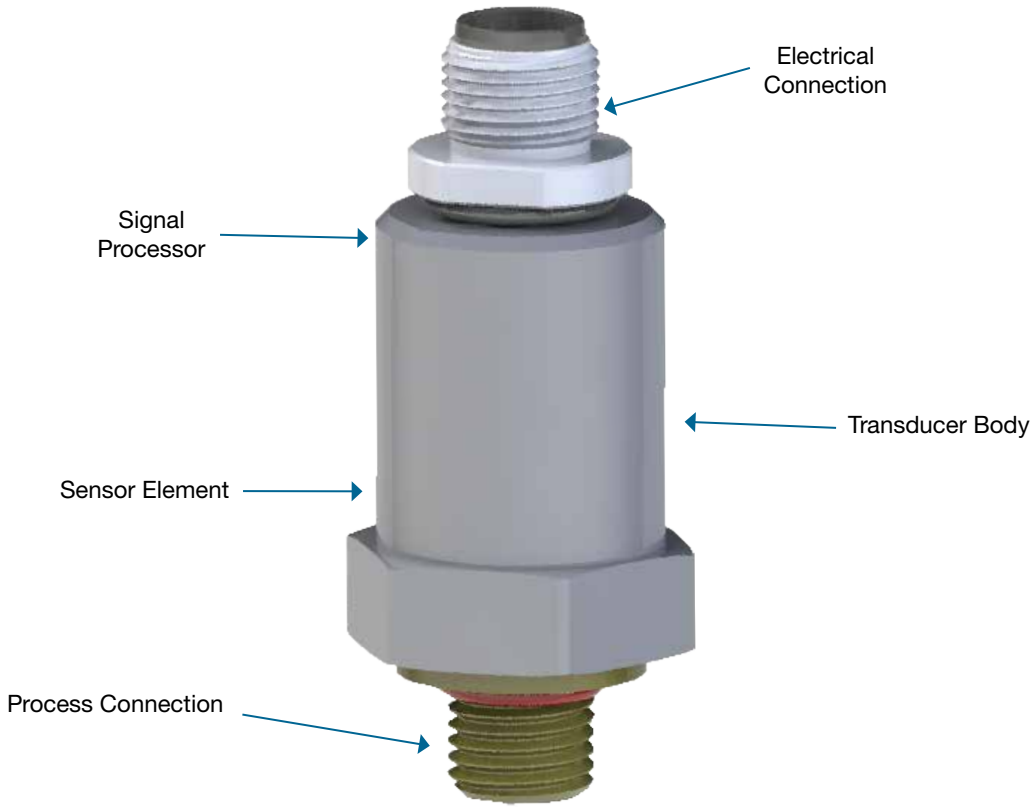
BPT Series Analog Pressure Transducers

Get more accuracy when measuring the pressure of a fluid or gas in a vessel by using Bimba's new BPT Series Analog Pressure Transducer. This collection of transducers consists of a media isolated, stainless steel pressure or vacuum transducer that can be used in a wide variety of different applications.

Due to the stainless housing diaphragm, prevention of contamination from chemicals, dust, and other materials is acheived resulting in less chance for failure. The stainless steel diaphragm is integrated into the process connection which completely isolates the sensing element from the media providing a more environmentally, robust design.

Bimba offers a wide range of configurable options in order for you to get the best product for your specific application. With seventeen configurable options in stock, these options can be shipped out to you for quick delivery. With our low-cost, competitive pricing on these models as well as the non-stocked configurations, the BPT Series Analog Pressure Transducers are an ideal option for any pressure sensing application.

Product Features



Features and Benefits

- Compact in size providing an easy and simple installation
- All stainless steel housing and wetted components:
  - » Robust design with complete isolation of the sensing element from the media
  - » Protection from harmful chemicals, dust, and other materials that could cause failure to the device
  - » Enables long service life in harsh environments
- Affordable, cost-effective solution with the ability to be configured:
  - » 2,880 total configurations available to meet your specific application
  - » 17 common stocked configurations available for quick, reliable delivery
- Excellent performance with 0.4% accuracy

The BPT Series Analog Pressure Transducer utilizes a sensing element that consists of a stainless steel diaphragm with an electrical circuit attached. As the diaphragm flexes due to changes in pressure, the electrical output of the circuit changes. The signal processor uses this change to generate the output signal of the transducer. The transducer has a signal processor that provides calibration and temperature compensation and the output signal to ensure measurement accuracy.

The transducer is also composed of a stainless steel body that protects the sensor element and signal processor from the environment. Several output signals are available to match the needs of your control unit along with multiple connector types to meet your application requirements.

Materials of Construction

Transducer	
Connector	DIN: Nylon
	Packard: Nylon
	Deutsch: PBT-509H
	M12: Zinc plated brass
	M12 O-ring: NBR
	Cable Jacket: PVC
Body	316 SS
Diaphragm	316 SS or 17-4 SS
Port	316 SS

How It's Used

Application Ideas

- Industrial process control systems
- Hydraulic systems
- Pneumatic systems
- Food and beverage applications
- Pumps and Compressors
- Energy and Water Management
- Construction
- Agricultural Equipment Industries

Target Applications

The BPT Series Analog Pressure Transducer is uniquely suited for a wide range of applications where the measurement of media pressure is required. This transducer series is ideal for pressure measurement in pneumatic and hydraulic cicuits:

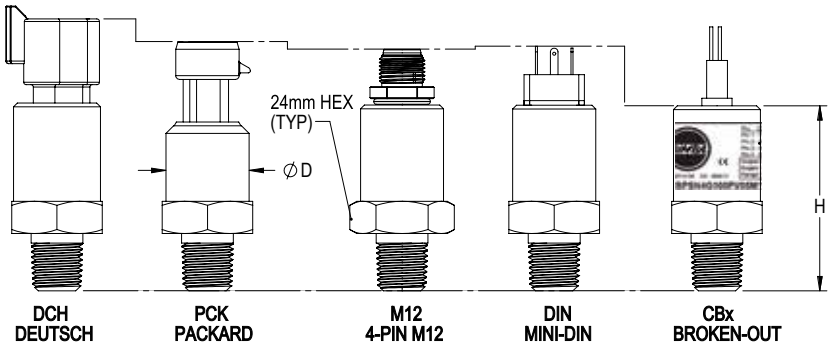
- Pump/compressor pressure
- Pressure drop across a filter
- Equipment pressure at the FRL
- Liquid level measurement
- Hydraulic press

Advantages

Feature	Advantage	Benefit
Media isolated stainless steel diaphragm	Environmentally, robust design with complete isolation of the sensing element	Protection from harmful chemicals, dust, and other materials that could cause failure to the device
Configurable with a variety of options	Ability to design your transducer to meet your needs with different options	Fits your application based on your needs
17 stocked configurations	Quick and fast delivery	Ability to keep less parts stocked in inventory
Wide range of electrical options	Do not need an adapter	Fits most applications without needing adapters or extra parts

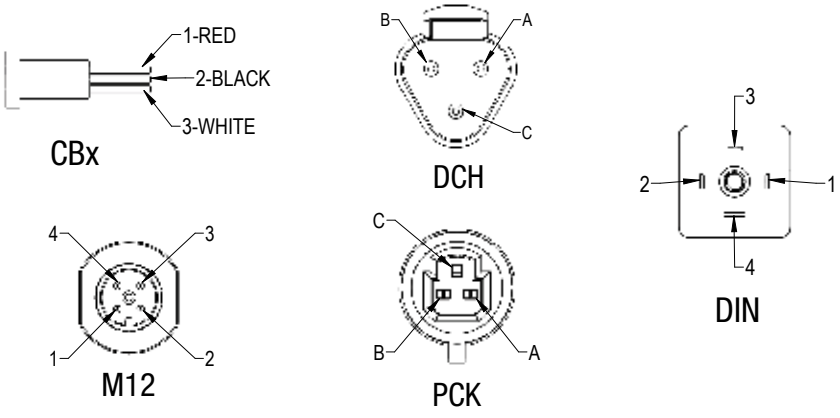
Dimensions

Key specification information for the BPT Analog Pressure Transducer is given below. For additional specification information, contact Bimba Customer Service at cs@bimba.com, or 800.44.BIMBA (800.442.4622).



	Dimension by Port Type						
	Ø D inch [mm]	L inch [mm]	H inch [mm]				
			Port Order Code				
Connector	All Ports	All Ports	G4	N4	N8	R4	U7
CBx	0.9 [23]	1.3 [34]	1.8 [46]	1.9 [49]	1.9 [47]	1.9 [49]	1.8 [45]
DCH	0.9 [23]	2.2 [57]	2.7 [69]	2.8 [72]	2.8 [70]	2.8 [72]	2.7 [68]
DIN	0.9 [22]	2.0 [50]	2.4 [62]	2.6 [65]	2.5 [63]	2.6 [65]	2.4 [61]
M12	0.9 [22]	1.9 [49]	2.4 [61]	2.5 [64]	2.4 [62]	2.5 [64]	2.4 [60]
PCK	0.9 [22]	2.0 [51]	2.5 [63]	2.6 [66]	2.5 [64]	2.6 [66]	2.4 [62]

Wiring Instructions



	Voltage Output				mA Output			
	Pin 1	Pin 2	Pin 3	Pin 4	Pin 1	Pin 2	Pin 3	Pin 4
	Pin 2	Pin B	Pin C	N/A	Pin A	Pin B	Pin C	N/A
	Red	Black	White	N/A	Red	Black	White	N/A
CBx	Supply V+	Output+	COM	N/C	Supply+	Output+	N/C	N/C
DCH	COM	Supply V+	N/C	Output+	Output+	Supply+	N/C	N/C
DIN	Supply V+	Output+	COM	N/C	Supply+	Output+	N/C	N/C
M12	Supply V+	Output+	COM	N/C	Supply+	N/C	Output+	N/C
PCK	COM	Supply V+	Output+	N/C	Output+	Supply+	N/C	N/C

Specifications

Performance Specifications	
Performance @25 C (77°F)	
Accuracy	0.4% FS, BFSL
Thermal Error	1% FS
Total Error	1.4% FS
Long Term Stability	0.2% FS
Zero and Span Offset Tolerance	1.5%
Operating Conditions	
Compensated Temperatures	-10 to 100°C (14 to 212°F)
Operating Temperatures	-20 to 125°C (-4 to 257°F)
Shock	50g, 11ms, 1/2 sign
Vibration	11g peak from 10 to 400 Hz
Ingress Protection Rating	up to IP67
Electrical Characteristics	
Current Consumption Approx.	4 mA (1-5V, 0-5V, 0.5-4.5V, 4-20 mA)
	11 mA (0-10V)
	23 mA (4-20 mA)
Supply Voltage/Output	8-28 VDC (1-5V, 0-5V, 4-20mA)
	5 VDC (0.5-4.5V, 0.5-4.5V Ratiometric)
	12-36 VDC (0-10V)
Materials	
Housing and pressure port	316 stainless steel, wetted materials stainless steel
Diaphragm	316 stainless steel < 1500 PSI 17-4 SS > 1500 PSI No internal seals
Proof Pressure	3x rated pressure
Burst Pressure	4x rated pressure
Approvals	CE, ROHS

Glossary of Terms

Term	Definition
Absolute Pressure	Pressure measured against a sealed vacuum of zero pressure reference
Accuracy	The maximum deviation in output of the sensor versus the true pressure input due to non-linearity, hysteresis and non-repeatability
Atmospheric Pressure	The current air pressure
AWG	American Wire Gauge, a standard method denoting wire diameter
Bar	A unit of pressure measurement equal to 10.5 Newton per square meter or 14.686psi
Burst Pressure	The minimum applied pressure at which a leak may occur in a pressure sensor
Compensated Temperature Range	The temperature range over which a pressure sensor is calibrated to perform within specified parameter
Compensation	The modification of the output signal to account for known sources of error for example temperature
Dead Volume	In a pressure sensor the volume of the pressure port that is occupied by the media being sensed
Diaphragm	The flexible element in a pressure sensor is calibrated to perform within specified parameter
Die	A silicon chip that contains a sensing element
Drift	An undesirable change in the output over time of a sensor that is not caused by a change in input or operating conditions
Electrical Connection	Provides power to the transducer and the signal out from the transducer
Excitation Voltage	The required input voltage to operate a device
Full Scale Output	The output of a sensor at full scale pressure at a given voltage
Full Scale Span	The change in output over the operating pressure range at a given voltage
Gage/Gage Pressure	Pressure measured in reference to atmospheric pressure
Gel Coat	A protective layer of silicone gel placed over the sense die to protect it from moisture and other contaminants
Housing	The protection cover over the electronic components of an electronic device
Ideal Transfer Function	A straight line which is independent of temperature passing though the offset with a slope equal to the full scale span over the operating pressure range
Linearity	The maximum deviation of the sensor output from the Ideal Transfer Function
Long Term Stability	The maximum change in the zero signal and output span signal under reference condition within one year
Maximum Applied Pressure	See Proof Pressure
Maximum Operating Pressure	The upper limit of the operating pressure range
Measured Fluid/Media	The fluid that comes into contact with the pressure sensor. Compatibility with the wetted materials is critical to the proper performance of the sensor
Media Isolated	Media isolated products use stainless steel or other metal diaphragms that are integrated into the process connection which completely isolates the sensing element from the media. This makes the media isolated transducers less susceptible to damage from different media
Media Resistant	Media resistant sensors use a gel coating to protect the sensor element from the media. They may also use an internal o-ring to seal the body to the housing. Both gel coatings and o-rings can be degraded by a variety of chemicals
MEMS	Micro Electro Mechanical System describes the technology used to create the sense die in a pressure sensor
Non-linearity	See Linearity
Null	See Offset
Offset	The minimum absolute value of the output. Achieved when the reference pressure of a sensor is applied to all pressure ports, also called Null of Zero
Offset Error	The maximum deviation in measured offset from the ideal at a given temperature
Operating Pressure Range	The pressure range over which the sensor will produce an output within specified limits
Operating Temperature Range	The temperature range over which the sensor will produce an output within specified limits
Output	The electrical signal produced by the sensor due to an applied pressure
Over Pressure	The maximum pressure that can be applied to a sensor without damaging the sensor also called overload pressure or proof pressure
Port	The portion of a pressure sensor that is used to connect the sensor to the measured media
Pressure	Force over area
Pressure Element	The part of a pressure sensor that responds directly to a change in input pressure
Pressure Hysteresis	The maximum difference in output of any value within the pressure range when the value is approached first with inscreasing pressure then decreasing pressure at a specified temperature
Pressure Range	See operating pressure range
Pressure Vessel	A closed container designed to hold gases at a greater or less than atmospheric pressure
Process Connection	The process connection is used to connect the pressure transducer to the fitting in the media line
Proof Pressure	See over pressure
PSI	A unit of pressure measurement equal to one pound per square inch or 0.0689 bar or 6894.74 Newtons per square meter
Rated Pressure	The pressure value up to which the specifications of a sensor are guaranteed
Rated Pressure Output Voltage	The output voltage when the rated pressure is applied

Glossary of Terms Continued

Term	Definition
Reference Temperature	The pressure which the measure pressure is compared
Repeatability	The maximum difference in output reading at a given pressure when the pressure is applied repeatedly from the same direction
Resolution	The smallest change in the output reading that can be meaningfully distinguished
Response Time	The length of time required for the output of a transducer to rise to a specified % of its final output in response to a step change of input pressure
Sensitivity	The ratio of the output signal change to corresponding input pressure change at a set supply voltage
Sensor	The basic building block in a transmitter, transducer or switch that senses the environment, a device that converts a measurement to electrical signal, sometimes used to describe a transducer or transmitter
Sensor Element	The sensor element consists of a diaphragm with a whetstone bridge attached. As the diaphragm flexes due to changes in pressure, the electrical output of the bridge changes. The signal processor uses this change to generate the output signal of the transducer. The sensor element is designed around specific pressure ranges which Bimba's BPT Series transducers offers 16 different options for pressure ranges from vacuum to 5000 PSI
Shift	A permanent change in the output of a sensor often caused by overpressure or pressure spikes
Signal Processor	Internal circuit that converts the raw out of the sensor to the desired electrical output. Bimba's BPT Series transducers offer six electrical outputs: 4 to 20 mA, 0 to 5 VDC, 0 to 10 VDC, 1 to 5 VDC, 0.5 to 4.5 VDC, and 0.5 to 4.5 VDC Ratiometric.
Snubber	A device added to a pressure port to damp pressure spikes and fluctuations to prevent damage to the sensor
Span	The algebraic difference between the upper and lower limits of the pressure range
Span Error	The maximum deviation in the measured full scale span from the ideal full scale span
Storage Temperature Range	The range of temperature that a sensor can be exposed without excitation or pressure applied that after exposure when the sensor is returned to the operating temperature range it will perform as specified
Supply Current	The electrical current supplied to a device
Supply Pressure	The pressure supplied to a cylinder
Supply Voltage	The specified voltage required for a device to operate within specification
Switch	A sensor provides a discrete output (on or off) when a set limit is reached
Thermal Hysteresis	The maximum difference between output readings when the same temperature is reached consecutively from the same direction under the same operating conditions
Total Error	The sum of the accuracy and thermal errors for a sensor
Transceiver	Transmitter and a Receiver (or Driver and Receiver)
Transducer	A device that converts energy from one form to another. A fully packaged, signal, compensated and calibrated sensor
Transducer Body	The body protects the sensor element and signal processor from the environment. Bimba's BPT Series transducers have a 316 stainless steel body for use in a wide variety of applications
Transfer Function	The equation that defines the output product as a function of pressure over the operating pressure and temperature ranges
Transmitter	A sensor with additional electronics and packaging producing a 4-20mA output
Vacuum	Pressure below atmospheric pressure
Warm up time	The time from power up to the first usable reading from a sensor
Wetted Materials	The parts of a pressure sensor that in contact with the media being measured
Zero Offset	See Offset

Cable Harness - How to Order

The model numbers of the Cable Harnesses consists of an alphanumeric cluster designating series, connector 1, connector 2, wire count, shielding and length that together makes up the complete part number to use when ordering. Use the ordering information below to build a valid part number.

An example of a Cable Harness with a M12 connection 1, flying leads connection 2, 3 wire count and 6 meter length is shown below in the part number configurator.

Connector 1	
M12	4 Pin M12
PCK	3 Pin Packard
DIN	Mini-DIN
DCH	3 Pin Deustch

Wire Count*	
03	3 Wire
04	4 Wire

CBL-M12-FLY-03-S-06

Series	
CBL	Cable Harness

Connector 2	
FLY	Flying Lead

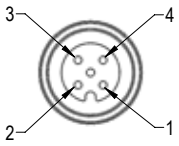
Shielding	
S	Shielded

Length	
03	3 Meter
06	6 Meter

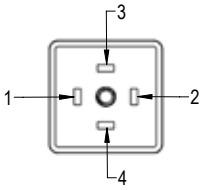
** Wire count is determined by the number of pins in the connector.*

Cable Harness Pin Out

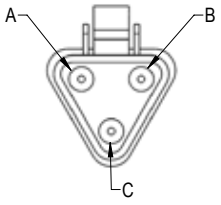
	Pin 1 (A)	Pin 2 (B)	Pin 3 (C)	Pin 4
CBL-M12-FLY-04-S-0X	Brown	White	Blue	Black
CBL-PCK-FLY-03-S-0X	Black	Red	White	N/A
CBL-DIN-FLY-04-S-0X	Red	Black	White	Green
CBL-DCH-FLY-03-S-0X	Red	White	Black	N/A



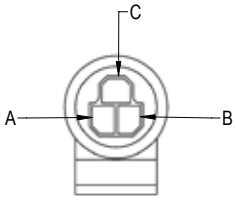
M12 | M12 4-Pin Female



DIN | 9.4mm Mini DIN Female



DCH | Deutsch DT06-3S-P032 Female



PCK | 3 Pin Packard Connector

Cable Performance Specifications

Part Number	Wire Gauge	Temperature Range	IP Rating	Jacket
CBL-PCK-FLY-03-S-0X	22 AWG	-40 to 212°F (-40 to 100°C)	IP66	PVC
CBL-M12-FLY-04-S-0X	22 AWG	-4 to 194°F (-20 to 90°C)	IP69K	PUR
CBL-DIN-FLY-04-S-0X	22 AWG	-13 to 176°F (-25 to 80°C)	IP65	PVC
CBL-DCH-FLY-03-S-0X	18 AWG	-40 to 221°F (-40 to 105°C)	IP67	PVC

How to Order

The model numbers of the BPT Analog Pressure Transducer consists of an alphanumeric cluster designating series, port size, rated pressure, units, output signal and connector that together makes up the complete part number to use when ordering. Use the ordering information below to build a valid part number.

An example of a BPT Analog Pressure Transducer with a port size of 1/4" NPT Male with a rated pressure of vacuum ~ 85, 1 to 5 VDC output signal with a M12 connection is shown below in the part number configurator.

Port Size	
N4	1/4" NPT Male
N8	1/8" NPT Male
U7	7/16" UNF Male
G4	G 1/4" Male
R4	R 1/4" Male

Output Signal	
C20	Current 4 to 20ma
V05	0 to 5 VDC
V10	0 to 10 VDC
V15	1 to 5 VDC
V45	0.5 to 4.5 VDC
R45	0.5 to 4.5 VDC Ratiometric

BPTN4V085PV15M12

Series	
BPT	BPT Analog Pressure Transducer

Rated Pressure	
V000	Vac ~ 0
V015	Vac ~ 15
V045	Vac ~ 45
V085	Vac ~ 85
V135	Vac ~ 135
V185	Vac ~ 185
V285	Vac ~ 285
G015	0 ~ 15
G025	0 ~ 25
G050	0 ~ 50
G100	0 ~ 100
G250	0 ~ 250
G500	0 ~ 500
G01K	0 ~ 1000
G03K	0 ~ 3000
G05K	0 ~ 5000

Units	
P	PSI

Connector	
M12	4 Pin M12
DCH	3 Pin Deutsch
PCK	Packard
DIN	Mini DIN
CB2	2m Cable
CB5	5m Cable

Stocked Configurations

Part Number	Description
BPTN4G100PC20M12	All stainless steel pressure transducer, 1/4" NPT port, rated pressure 0-100 PSI,4-20mA output, 4 Pin M12 electrical connection
BPTN4G100PV05M12	All stainless steel pressure transducer, 1/4" NPT port, rated pressure 0-100 PSI,0-5V output, 4 Pin M12 electrical connection
BPTN4G250PC20M12	All stainless steel pressure transducer, 1/4" NPT port, rated pressure 0-250 PSI,4-20mA output, 4 Pin M12 electrical connection
BPTN4G250PV05M12	All stainless steel pressure transducer, 1/4" NPT port, rated pressure 0-250 PSI,0-5V output, 4 Pin M12 electrical connection
BPTN4G500PC20M12	All stainless steel pressure transducer, 1/4" NPT port, rated pressure 0-500 PSI,4-20mA output, 4 Pin M12 electrical connection
BPTN4G500PV05M12	All stainless steel pressure transducer, 1/4" NPT port, rated pressure 0-500 PSI,0-5V output, 4 Pin M12 electrical connection
BPTN4G03KPC20M12	All stainless steel pressure transducer, 1/4" NPT port, rated pressure 0-3000 PSI,4-20mA output, 4 Pin M12 electrical connection
BPTN4G03KPV05M12	All stainless steel pressure transducer, 1/4" NPT port, rated pressure 0-3000 PSI,0-5V output, 4 Pin M12 electrical connection
BPTN4G500PR45PCK	All stainless steel pressure transducer, 1/4" NPT port, rated pressure 0-500 PSI,0.5 to 4.5 Ratiometric output, Packard electrical connection
BPTN8G100PC20M12	All stainless steel pressure transducer, 1/8" NPT port, rated pressure 0-100 PSI,4-20mA output, 4 Pin M12 electrical connection
BPTN8G100PV05M12	All stainless steel pressure transducer, 1/8" NPT port, rated pressure 0-100 PSI,0-5V output, 4 Pin M12 electrical connection
BPTN8G250PC20M12	All stainless steel pressure transducer, 1/8" NPT port, rated pressure 0-250 PSI,4-20mA output, 4 Pin M12 electrical connection
BPTN8G250PV05M12	All stainless steel pressure transducer, 1/8" NPT port, rated pressure 0-250 PSI,0-5V output, 4 Pin M12 electrical connection
BPTU7G03KPC20M12	All stainless steel pressure transducer, 7/16 UNF port, rated pressure 0-3000 PSI,4-20mA output, 4 Pin M12 electrical connection
BPTU7G03KPR45M12	All stainless steel pressure transducer, 7/16 UNF port, rated pressure 0-3000 PSI,0.5 to 4.5 Ratiometric output, 4 Pin M12 electrical connection
BPTU7G03KPC20DCH	All stainless steel pressure transducer, 7/16 UNF port, rated pressure 0-3000 PSI,4-20mA output, 3 Pin Deutsch electrical connection
BPTU7G03KPR45DCH	All stainless steel pressure transducer, 7/16 UNF port, rated pressure 0-3000 PSI,0.5 to 4.5 Ratiometric output, 3 Pin Deutsch electrical connection

IMI Precision Engineering operates four global centres of technical excellence and a sales and service network in 75 countries, as well as manufacturing capability in the USA, Germany, China, UK, Switzerland, Czech Republic, Mexico and Brazil.

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Bimba
25150 S. Governors Hwy
University Park, IL 60484

Tel: +1 708 534 8544
Fax: +1 708 235 2014

For further information, scan this QR code or visit **www.bimba.com**

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