PMP4000

PMP 4000 Series

Amplified Output Pressure Transducers

- ± 0.04% accuracy
- 400% overpressure
- 0.1% stability per annum
- Ranges from 1 to 10,000 PSI
- Available 3-4 weeks ARO

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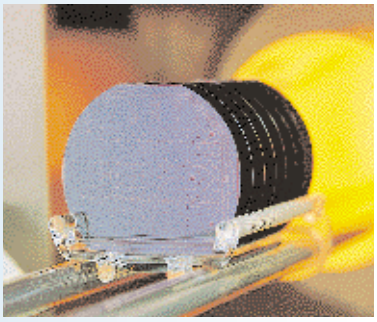
For over 25 years Druck has manufactured precision pressure sensors with a capability to meet critical applications in industrial, aerospace and research environments.

The PMP 4000 Series is the latest complete range of high level output pressure transducers offering new levels of measurement accuracy, stability and flexibility from a standard production device.



Silicon wafers being loaded into an oxidation furnace.

At the heart of the 4000 Series is an advanced, high stability pressure measurement element, micro-machined from single crystal silicon within Druck's own Class 100 processing facility. The silicon element is mounted within a high integrity glass-to-metal seal and is fully isolated from the pressure media by a Hastelloy isolation diaphragm, electron beam welded to the front of the glass-to-metal seal.

Surface mount electronics condition the output from the silicon diaphragm, correct for thermally induced errors and configure the output to the required high level voltage. Advanced design features built into the electronic circuitry enables minimum sensor size with utmost reliability. The electronics incorporate power supply regulation, reverse polarity, over-voltage and short circuit protection, coupled with EMC protection components.

The fully encapsulated solid state design ensures integrity of product under high levels of shock and vibration, with an ingress protection rating of NEMA 4X, dependent upon the electrical termination selected.

Every sensor is fully tested over both pressure and temperature ranges to demonstrate compliance to the specification. Prior to shipping, the sensor is adjusted to meet the particular pressure range and units, configured to the desired high level output voltage and completed with a range of electrical connections.

The demountable electrical connection formats allow the user to access the zero and span trim controls for system interchangeability and ease of re-calibration. A range of stainless steel pressure connections interface the sensor to the process media.

The PMP 4000 Series from Druck is ideally suited to meet the demands of the industrial, automotive, and aerospace test cell markets. New levels of performance measurement (± 0.04%) coupled with excellent stability negates the need for regular re-calibration periods, thus significantly reducing the cost of ownership.

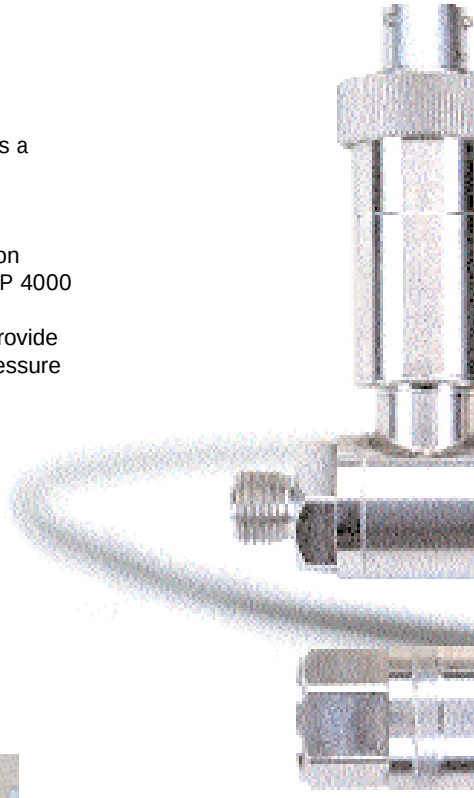
Test applications include R&D, road test, engine test, flying testbed, environmental test and many others where accuracy, stability, and durability are of paramount importance.

A combination of

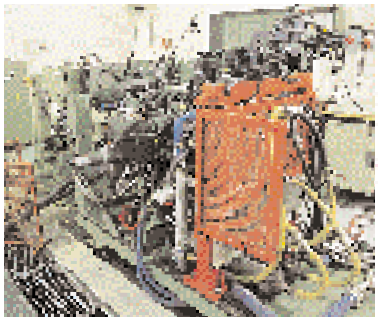
- High Accuracy
- High Overload
- Excellent Stability
- Fast Dynamic Response

makes the Druck PMP 4000 Series a world leader in the industrial and automotive test market.

With the benefit of the latest silicon measurement technology, the PMP 4000 Series can withstand the most demanding applications and still provide the performance of a precision pressure measurement instrument.



Computerized testing and calibration of pressure transducers.



Automotive engine shown on a research and development test bed.

Standard Specification

Operating Pressure Ranges

Any zero based span available between 1 psi to 10,000 psi gauge and 5 to 10,000 psi absolute. Limited to 500 psi for differential formats.

PMP 4000
1, 2.5 psi gauge
5,10,15, 20, 30, 50, 75, 100, 150, 200, 300, 500. 900 psi gauge or absolute
1000, 2000, 3000, 5000, 7500, 10000 psi sealed gauge or absolute
11.6 to 17.4 psia (Barometric Range)

PMP 4100
1, 2.5, 5, 10, 15, 20, 30, 50, 75, 100, 150, 200, 300, 500 psi differential

Intermediate ranges, compound ranges (e.g., -15 to +30 psig), bi-directional differential ranges, and other pressure units may be specified

For pressure ranges down to ±0.04 inches H_2O refer to the LP Series data sheets

Over Pressure

Gauge and Absolute
- 10 x for ranges 1 and 2.5 psi
- 6 x for range 5 psi
- 4 x for ranges 10 to 900 psi to a maximum of 2000 psig
- 2 x for ranges 1000 to 10,000 psi to a maximum of 15,000 psig

Differential
Positive (Hi) side -
- 10 x for ranges 1 and 2.5 psi
- 6 x for range 5 psi
- 4 x for ranges 10 to 300 psi
- 3 x for range 500 psi

Negative side:-
Must not exceed positive side by greater than -
- 6 x for 1 and 2.5 psi
- 4 x for 5 psi
- 150 psi for ranges 150 to 500 psi

Line Pressure

1000 psig maximum

Positive Pressure Media

Fluids compatible with stainless steel 316L and Hastelloy C276.

Excitation Voltage

9 to 32 Vdc
For all ranges below 10 psi, 15 to 32 Vdc.

Output Voltage

1 psi 0-2 Vd.c. max
2.5 psi 0 to 5 Vd.c. max
5 psi and above
0 to 5 Vd.c. 3 wire
Alternative 3 wire outputs can be specified.
e.g. 1 to 5 V, 0 to 10 V, -5 to + 5 V etc.
Maximum offset voltage is 2.5 V.
Maximum full scale voltage is 10 V with 15 V minimum supply.
Bi-directional outputs available.

Output Impedance

<20 Ω.

Load Impedance

Greater than 10 kΩ for quoted performance.

Shunt Calibration

Connecting an external link between the appropriate terminals results in a positive shift of 80% FSO. Other values are available - refer to Druck.
Not available for PMP 4070 and PMP 4170

Combined Non-linearity, Hysteresis and Repeatability

Standard: ±0.08% F.S. BSL
Option A: ±0.04% F.S. BSL (available for 2.5 psi and higher ranges).

Zero Offset and Span Setting

±5% site adjustable by sealed, non-interacting potentiometers. Demountable electrical connections only.

Stability

0.1% F.S./annum
For ranges below 5 psi this value may increase.

Operating Temperature Range

-40° to +180°F
This temperature range can be extended.

Temperature Effects

Standard:
±1% FS TEB for range 32° to +122°F
±2% FS TEB for range -5° to +180°F

Option A:
±0.5% FS TEB for range 32° to +122°F
±1% FS TEB for range -5° to +180°F
For ranges below 5 psi, these values are pro rata to 5 psi
Improved specifications available - refer to Druck.

Acceleration Sensitivity

Typically 0.02% F.S./g for 5 psi range decreasing to 0.0003% F.S./g for ranges above 900 psi, along the sensitive axis.

Mechanical Shock

1000g, 1ms half sine pulse in each of 3 mutually perpendicular axes will not affect performance.

Vibration

Response less than 0.05% F.S./g at 30g peak 10Hz-2kHz, limited by 12mm double amplitude. (MIL-STD 810C Proc 514.2-2 Curve L)

Weight

4 oz Nominal for ranges 1 psi to 900 psi
6 oz Nominal for ranges 1000 to 10,000 psi
7 oz Nominal for differential ranges.

Electrical Connection

A wide range of cable and connector versions are available. Some electrical options are demountable to allow access to zero and span potentiometers.
See installation drawings and ordering information for details.

Pressure Connection

$^1/_4$" NPT Female (required on 1000 psi and higher ranges)
$^1/_4$" NPT Male
MS 33656-4 Fitting ($^1/_4$ AN).
Others available on request.

Ordering Information

Please state the following:

(1) Select model number

Code	Base Model Number
PMP40XX	Gauge or absolute
PMP41XX	Differential

Code	Electrical Connection
00	Core
10	Fixed cable
15	Demountable cable
20	Cable gland
30	Submersible
50	Fixed male conduit
60	Fixed 6 pin bayonet connector
65	Demountable 6 pin bayonet connector
70	DIN plug/socket
80	Fixed Hi-rose connector
85	Demountable Hi-rose connector
90	WK6-32S connector

Typical model number: PMP4070

(2) Pressure range and units
(3) Gauge or absolute (PMP 4000 only)
(4) State Option A (if required).
(5) Output voltage at zero pressure
(6) Output voltage at full scale pressure
(7) Pressure connection required

Accessories

Mating electrical connector
DPI 280 Series Digital Indicator
DPI 145 Precision Indicator

For non-standard requirements - refer to Druck.

Calibration Standards

Instruments manufactured by Druck are calibrated against precision pressure calibration equipment which is traceable to NIST.

Continuing development sometimes necessitates specification changes without notice.

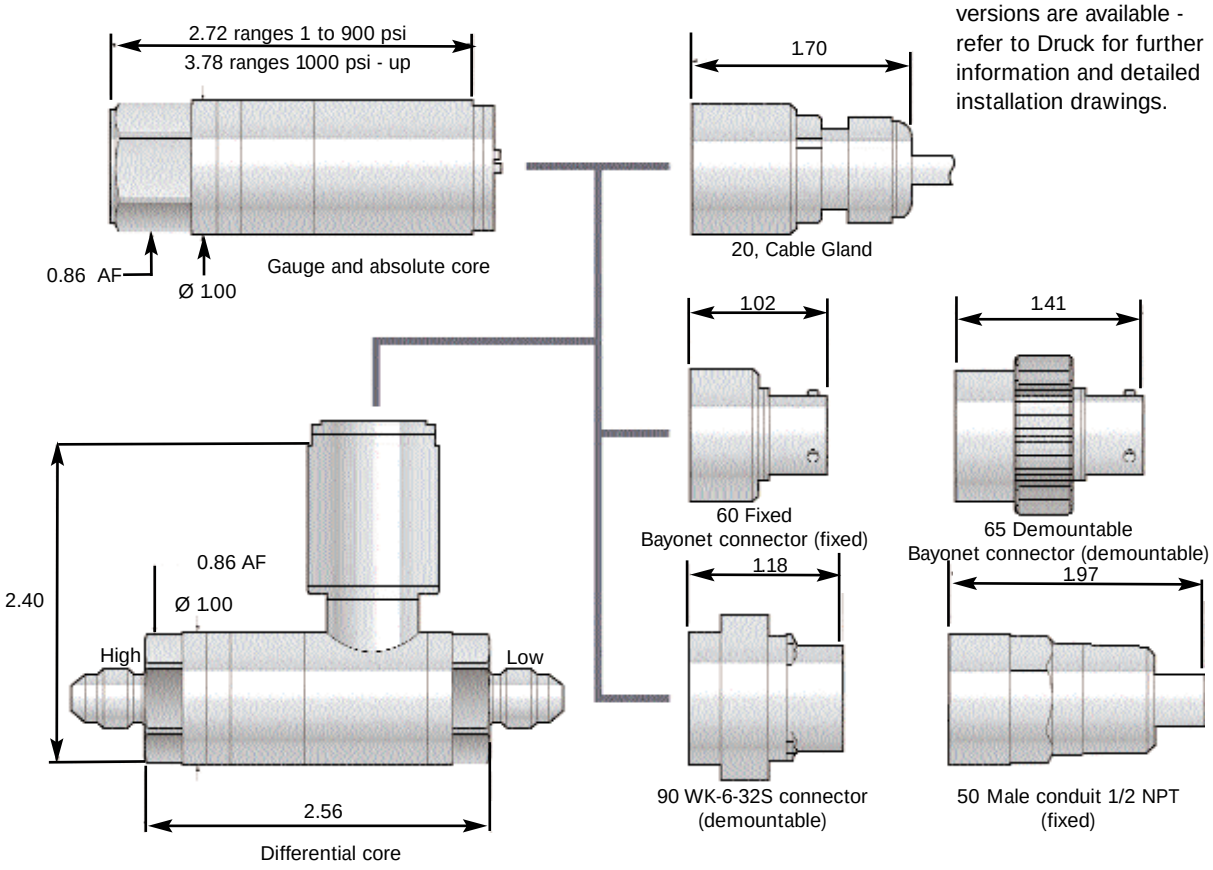
Druck is an ISO 9001 registered company.

P M P 4 0 0 0 S e r i e s

Amplified Output Pressure Transducers

Installation Drawings - dimensions in inches.

A full range of alternative cable and connector versions are available - refer to Druck for further information and detailed installation drawings.



Associated Products

Left: DPI 610 Field Portable Pressure Calibrator
Center: TRX-II Portable Documenting Calibrator
Right: DPI 605 Precision Portable Pressure Calibrator
Inset: LP Series of Low Pressure Sensors

Druck manufactures a comprehensive range of pressure instrumentation to complement the PMP 4000 Series.

Portable pressure, temperature and electrical field calibrators allow for local calibration reducing plant down time while maintaining the quality requirements of ISO 9000. In addition, the Druck range of calibration equipment is completed by primary standard deadweight testers.

The LP Series provides full scale absolute ranges as low as 0.03 psia and differential ranges as low as ±0.04 inches H_2O wet/wet differential pressure.

For further information and product data sheets - refer to Druck.

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