PDCR 4000

PDCR 4000 Series

Druck

High Performance Millivolt Output Pressure Transducers

- ± 0.04% accuracy
- ranges from 70mbar to 700bar
- Gauge, absolute & differential
- ± 0.1% Stability per annum
- 400% Overpressure
- Hastelloy & stainless wetted parts

PDCR 4000 Series

High Performance Millivolt Output Pressure Transducers

The Druck PDCR 4000 Series, a range of high performance millivolt output pressure transducers, is a continuation of a successful family of products started in the early 1970's. This new generation of transducers offers enhanced levels of measurement accuracy, stability and reliability with a flexible specification to meet the varied and demanding needs of today's industrial and OEM users.

At the heart of each transducer are the latest advances in micro-machined silicon diaphragm technology from Druck's own class 100 silicon processing facility. The pressure sensitive 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, which is electron beam welded in front of the seal.

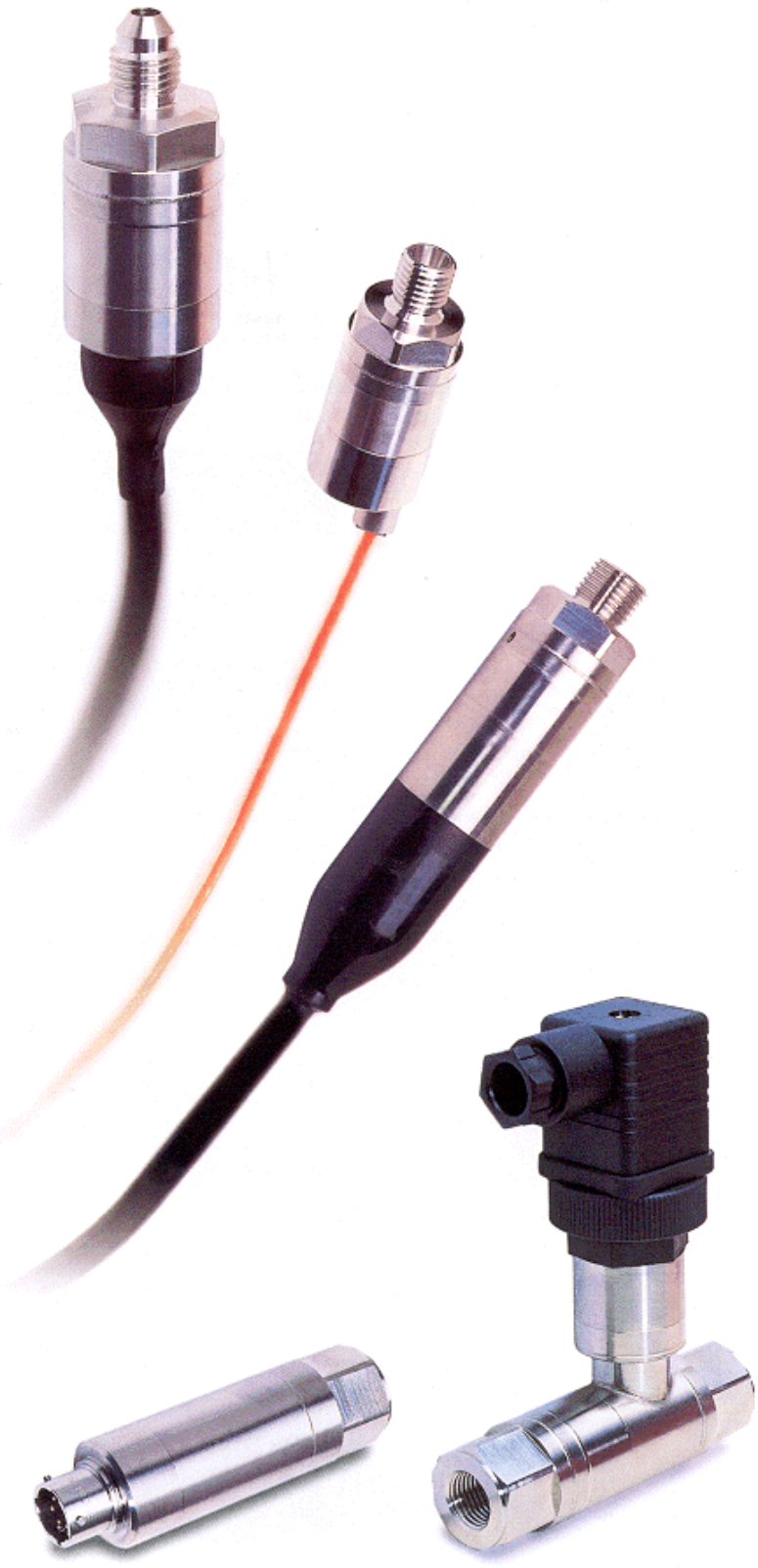
Packaged with conditioning electronics into a Hastelloy and Stainless Steel enclosure for optimum corrosion resistance, the PDCR 4000 is compact, rugged and able to operate reliably, even in the most hostile environments.

Large quantities of PDCR 4000 sensor "cores" are produced and held in stock. These are then selected and completed with pressure and electrical connections to meet individual customer requirements. This partially built core concept ensures flexibility of choice, whilst maintaining a short delivery. Additionally, every core is fully tested over its complete pressure and temperature range to ensure one hundred percent compliance.

The high performance PDCR 4000 is ideally suited to meet the demands of a wide range of applications, particularly in harsh operating environments where:

- accuracy
- stability
- reliability
- overpressure
- choice of specification

are important selection criteria, together with quick delivery.



Pressure Measurement Specification

Operating Pressure Ranges

70, 140 mbar gauge
350, 700 mbar, 1, 1.5, 2, 3.5, 5, 7, 10, 15, 20, 35 and 60 bar gauge or absolute
70, 135, 200, 350, 500 and 700 bar sealed gauge or absolute
70, 140, 350, 700 mbar, 1, 1.5, 2, 3.5, 5, 7, 10, 15, 20 and 35 bar differential (maximum line pressure 70 bar)
For lower pressure ranges e.g. 0.1 mbar refer to LP series data sheet.

Other pressure units can be specified e.g. psi, KPa, inH_2O.

All transducers will accurately respond to pressures below atmospheric (negative pressures).

Overpressure

The operating pressure range may be exceeded by the following multiples with negligible effect on calibration.
Gauge and absolute:
10 x for ranges up to 350 mbar
6 x for ranges up to 700 mbar
4 x for ranges up to 60 bar (140 bar max)
2 x for ranges up to 700 bar

Differential (positive side):
10 x for ranges up to 350 mbar
6 x for ranges up to 700 mbar
4 x for ranges up to 20 bar
100 bar for 35 bar range

Differential (negative side):
6 x for ranges up to 350 mbar
4 x for ranges up to 700 mbar
2 x for ranges up to 5 bar
10 bar for 7 bar to 35 bar ranges

This overpressure capability can be further improved by selecting a range higher than required and operating with a lower output.

Pressure Containment

Gauge and differential (positive side):
12 x for ranges up to 350 mbar
8 x for ranges up to 700 mbar
6 x for ranges up to 60 bar (200 bar maximum)

Differential (negative side):
8 x for ranges up to 350 mbar
6 x for ranges up to 700 mbar
4 x for ranges up to 35 bar (15 bar maximum)

Sealed gauge and absolute:
200 bar for ranges up to 60 bar
1400 bar for ranges 70 bar and above

Pressure Media

Fluids compatible with Hastelloy C276 and stainless steel 316L.

Differential negative port: fluids compatible with stainless steel 316L, silicon, pyrex and epoxy.

Excitation Voltage

10 Volts at 5 mA nominal.
For pulse powered operation, the recommended power-on time is 10ms before sample.

Output is ratiometric to supply within the following limits:
1 V to 12 V for ranges up to 60 bar
4.5 V to 12 V for ranges 70 bar and above

Output Voltage

50 mV for 70, 140 and 350 mbar
100 mV for 700 mbar and above

Transducers with ranges up to 60 bar can be over ranged 2 x Full Scale to provide up to 200mV output. Linearity is slightly degraded but stability is improved.

For higher outputs up to 10 V refer to PMP 4000 series datasheet.

Common Mode Voltage

Typically +3.5 V to +9 V with respect to the –ve supply at 10 V excitation.

Output Impedance

2 kê nominal.

Load impedance

Greater than 100 k ê for quoted performance.

Performance Specification

Accuracy

Combined effects of Non-linearity, Hysteresis and Repeatability.
Standard : ± 0.08% FS BSL maximum
Option (A) : ± 0.04% FS BSL maximum

Higher accuracies can be selected from the core stock database.

Zero Offset & Span Setting

Typical : ± 1.5 mV
Maximum : ± 3 mV

Improved settings are available where interchangeability is critical.
Option (D): ± 1mV

Stability

± 0.1% FS typically per annum

For ranges up to 350 mbar multiply x 2

Long term stability is improved by using a lower pressure range in the overrange condition at a reduced excitation voltage.

Operating Temperature Range

-20° to +80°C standard

-54 to +125°C available, refer to PDCR 9X2 series datasheet

Temperature Effects

Standard: ± 0.3% FS TEB over 0 to 50°C
± 1.0% FS TEB over -20 to 80°C

For ranges up to 350 mbar multiply x3

Improved Temperature Error Band (TEB) can be selected from the core stock database.

Acceleration Sensitivity

Typically 0.04% FS/g for 350 mbar decreasing to 0.0003% FS/g for ranges above 60 bar, 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% FS/g at 30g peak 10Hz to 2kHz, limited by 12 mm double amplitude, (MIL-STD 810C Proc 514.2-2 Curve L)

Physical Specification

Pressure Connection

70 mbar to 60 bar ranges

Male:-	Female:-
G1/8B (60° Int cone)	G1/4
G1/4B (60° Int cone)	1/4"NPT
G1/4B (flat end)	
1/4"NPT	
7/16"UNF	
M14 x 1.5 mm DIN 3863-8	
Depth cone	

Others available on request - refer to Druck

70 bar to 700 bar ranges: G1/4 (Female)

Adaptors available on request - refer to Druck

Weight

120 gms nominal (70 mbar to 60 bar ranges)
170 gms nominal (70 bar to 700 bar ranges)
200 gms nominal for differential types

Electrical Connection

A wide range of cable and connector versions are available. Refer to ordering information and installation drawings overleaf.

Intrinsic Safety

Optional certified Intrinsically Safe for use with barrier sytems to EEx ia IIC T4 amb 80°C.
Apparatus Cert Ex 94C2539 - type PDCR IS-1703.
Refer to option (F).

Options

(A) Improved accuracy ± 0.04% FS BSL.

(B) Internal 'R' Cal Facility (ranges up to 60 bar).
Connecting an external link results in a positive shift of 80%.
(Not available for PDCR 4X2X, PDCR 4X7X).

(C) Mating electrical connector (PDCR 4X6X).

(D) Improved zero and span settings ± 1mV.

(E) Negative calibration

(F) Intrinsic safety (ranges up to 60 bar).

Accessories

A traceable calibration certificate with performance data and installation notes is supplied as standard.

Calibration Standards

Pressure transducers manufactured by Druck are calibrated against precision pressure calibration equipment which is traceable to international standards.

Continuing development sometimes necessitates specification changes without notice.

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Ordering Information

Please state the following:

(1) Select model number

PDCR	Basic type number

Code	Pressure reference
40	Gauge, sealed gauge or absolute
41	Differential

Code	Electrical Connection
0	Core (trimmed PCB)
1	6 Core vented cable
2	4 Core PTFE cable
3	6 Core vented depth cable
6	6 Pin bayonet plug
7	Rotatable DIN plug and socket

Code	Calibrated temperature range
0	0 to 50°C
1	-20 to 80°C

PDCR	40	2	1	Typical model number

(2) Pressure range and units
(3) Gauge, sealed gauge or absolute
(4) Pressure connection
(5) Cable length where applicable
(6) Options (if required)

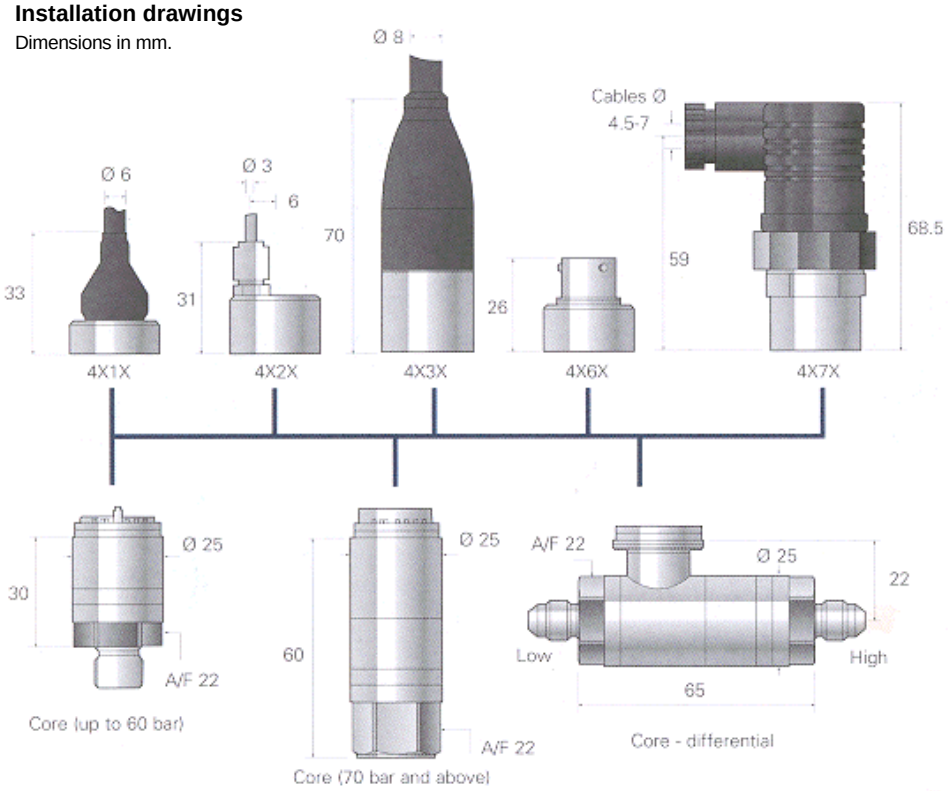
Related Products

Druck manufactures a wide range of pressure transducers and transmitters, associated digital indicators, barometers, and a complete range of precision process calibrators and controllers for the field, workshop and laboratory.

Pictured Left to right
DPI 610 Field Portable Pressure Calibrator
TRX-II Portable Documenting Process Calibrator
LPM 9000 Low Pressure Transducer
DPI 280 Digital Process Indicator

Installation drawings

Dimensions in mm.



Electrical Connections					
Model Code	Supply + ve	Supply – ve	Output + ve	Output – ve	R Cal
PDCR 4X0X upto 60 bar	4	3	5	1	2
PDCR 4X0X upto 700 bar	4	5	3	2	n/a
PDCR 4X1X	Re	Wh	Ye	Bl	Or
PDCR 4X2X	Re	Bl	Ye	Gr	n/a
PDCR 4X3X	Re	Wh	Ye	Bl	Or
PDCR 4X6X	A	D	B	C	E
PDCR 4X7X	1	2	3	E	n/a

Re = Red core
Wh = White core
Ye = Yellow core
Bl = Blue core
Gr = Green core
Or = Orange core

Note:
Screen and black core not connected to transducer bode except PDCR 4X3X

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