

MINIATURE SERIES

High Performance Pressure Transducers

- High technology, micro machined silicon sensor
- Excellent linearity and hysteresis
- High overload capability
- Fast response
- Pore water
- Scanivalve operation



MINIATURE SERIES: High Performance Transducers

INTRODUCTION

Druck's experience with silicon diaphragm micro machining technology is considerable.

For more than 15 years a commitment to continuous research and development in this field using the very latest techniques and equipment has culminated in some remarkable achievements in pressure transducer design and performance.

The miniature series is a typical example of the benefits of such work. A range of high accuracy sensors complete with thermal compensation in a miniature package providing maximum performance with minimal size and weight.

The silicon diaphragm is intricately micro machined, and semi-conductor strain gauges are diffused into the substrate to become an atomic part of the diaphragm. Each gauge is connected to form a wheatstone bridge configuration, which





is subsequently terminated to offset and thermal compensation circuitry.

High signal outputs, excellent linearity, negligible hysteresis and good repeatability performance with considerable improvements in long term stability are the benefits of using Druck miniature pressure transducers.

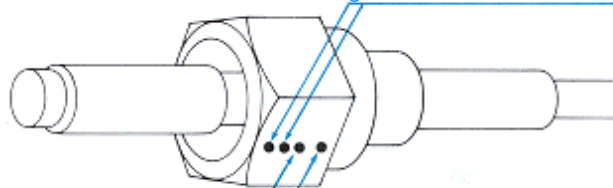
Your Specific Requirements

In addition to the sensors shown, Druck have the engineering capability to design pressure transducers to specific individual requirements. By careful consideration of the configuration, environments, compatibility and other important performance characteristics, our engineering team can design, build and exhaustively test instruments for your needs.

Please contact our Sales Office for further information.

GENERAL PURPOSE		SCANIVALVE	PORE WATER
			
Scale: 2:1			
PDCR 200	PDCR 35	PDCR 42	PDCR 81

PDCR 200 Pressure units and range identification



Multiplier

- Silver - x 0.01
- Gold - x 0.1
- Black - x 1
- Brown - x 10
- Red - x 100
- Orange - x 1000
- Yellow - x 10000

Engineering Unit

- White - psi
- Red - bar
- Blue - inH₂O
- Black - kPa

Significant figures

- Black - 0
- Brown - 1
- Red - 2
- Orange - 3
- Yellow - 4
- Green - 5
- Blue - 6
- Violet - 7
- Grey - 8
- White - 9

Example

- Black - 0
- Black - 0
- Black - 0
- Brown - 1
- White - 9
- = 100 psi

ORDERING INFORMATION

Please state the following:-

- (1) Type number
- (2) Pressure range
- (3) Gauge or differential
- (4) Temperature range
- (5) Pressure connection
- (6) Pressure media

For non-standard requirements please specify in detail.

Continuing development sometimes necessitates specification changes without notice.

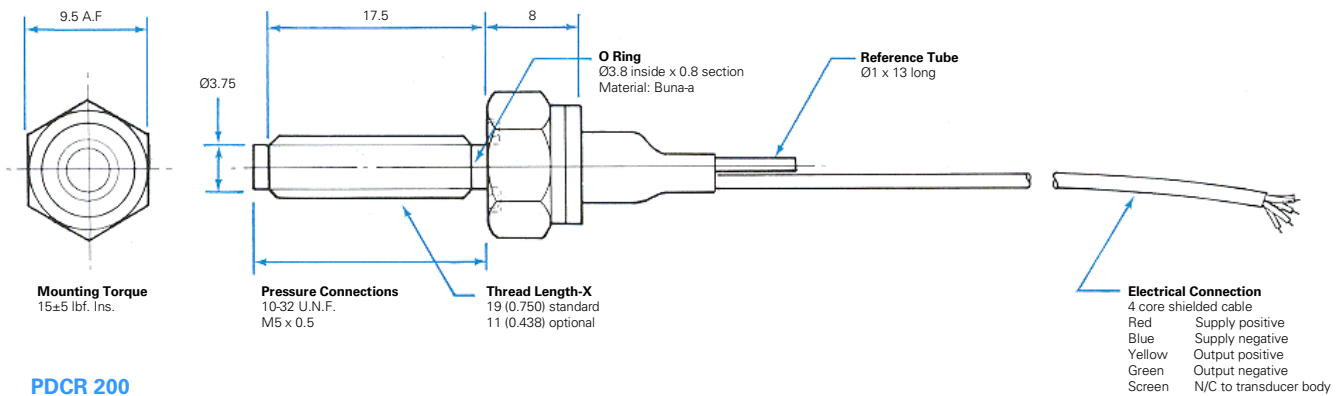
MINIATURE SERIES: Specification

	GENERAL PURPOSE		SCANIVALVE	PORE WATER
TYPE	PDCR 200	PDCR 35	PDCR 42	PDCR 81
FEATURES	FLUSH MOUNTING CHOICE OF MOUNTING THREADS HIGH OUTPUT	RUGGED CONSTRUCTION	HIGH ACCURACY HIGH OVERLOAD CAPABILITY	CERAMIC FILTER RUGGED CONSTRUCTION LONG TERM STABILITY
Standard Specification Operating pressure ranges (1)	1, 2, 3, 6, 15, 30 and 60 bar gauge or differential (2)	700 mbar, 1, 1.5, 2, 3.5, 5, 7, 10, 15, 20 and 35 bar gauge (2)	75 mbar, 175 mbar, 350 mbar, 700 mbar, 1, 3, 5, 7, 14, 20 and 35 bar gauge or differential (2)	75 mbar, 350 mbar, 1, 3, 7, 15 and 35 bar gauge
Overpressure (with negligible effect on calibration)	3 x for all ranges (3) (2 x for 1 and 2 bar range on reference side)	4 x for all ranges (3)	10 x for 75 and 175 ,mbar range (3) 6 x for 350 mbar range 4 x for 700 mbar range and above	20 x for 75 mbar range 10 x for 350 mbar range 5 x for 1 bar range 3 x for 3 bar range and above
Positive pressure media	Fluids compatible with silicon, titanium and epoxy adhesive (and ceramic porous plate for PDCR 81)			
Reference pressure media	Dry, non-conducting gases			
Transduction principle	Integrated silicon strain gauge bridge			
Excitation voltage	10 Volts 6mA nominal	10 Volts 5mA nominal	12 Volts 8mA nominal	5 Volts 6mA nominal (10 volts max.)
Output voltage (nominal) at stated excitation	150 mV for all ranges	100 mV for all ranges	15 mV for 75 mbar range, 25 mV for 175 mbar range, 50 mV for 350 mbar and 700 mbar range, 75 mV for 1 bar range and above	15 mV for 75 mbar range, 35 mV for 350 mbar range, 50 mV for 1 bar range, 75 mV for 3 bar range and above
Zero offset (4)	±15 mV maximum	±5 mV maximum	±3 mV maximum	±10 mV maximum
Span setting	±30% of nominal output	±53mV maximum (4)		±20% of nominal output
Output impedance (nominal)	1500 ohms	2000 ohms	1000 ohms	
Load impedance	Greater than 100 kohms for quoted performance			
Resolution	Infinite			
Combined non-linearity and hysteresis	±0.3% B.S.L.	±0.1% B.S.L.	±0.06% B.S.L. (5)	±0.2% B.S.L.
Operating temperature range	-20° to +120°C (6)	-20° to +80°C (6)	-40° to +80°C (6)	-20° to +120°C (6)
Temperature effects	±1.5% total error band 10° to 60°C (7)	±1.0% total error band 0° to 50°C (7)	Thermal zero shift ±0.02% F.S./°C (75 mbar range ±0.05% F.S./°C) Thermal sensitivity shift ±0.02% of reading/°C 10° to 40°C (7)	Thermal zero shift ±0.05% F.S./°C Thermal sensitivity shift ±0.2% of reading/°C (7) (8)
Natural frequency (mechanical)	75 kHz for 1 bar range increasing to 580 kHz for 60 bar range	56 kHz for 350 mbar range increasing to 360 kHz for 35 bar range		
Acceleration sensitivity	0.002% F.S./g for 1 bar decreasing to 0.005% F.S./g for 60 bar range	0.003% F.S./g for 350 mbar decreasing to 0.002% F.S./g for 35 bar range		0.005% F.S./g for 350 mbar decreasing to 0.003% F.S./g for 35 bar range
Mechanical shock	1000g for 1ms in each of three mutually perpendicular axis will not effect calibration			
Weight (nominal)	12 grams	12 grams	10 grams	30 grams with 5 metres cable
Electrical connection	1 metre shielded integral cable (9)		20 cm integral cable connects transducer and compensation package. Free socket supplied	5 metres integral Teflon vented cable

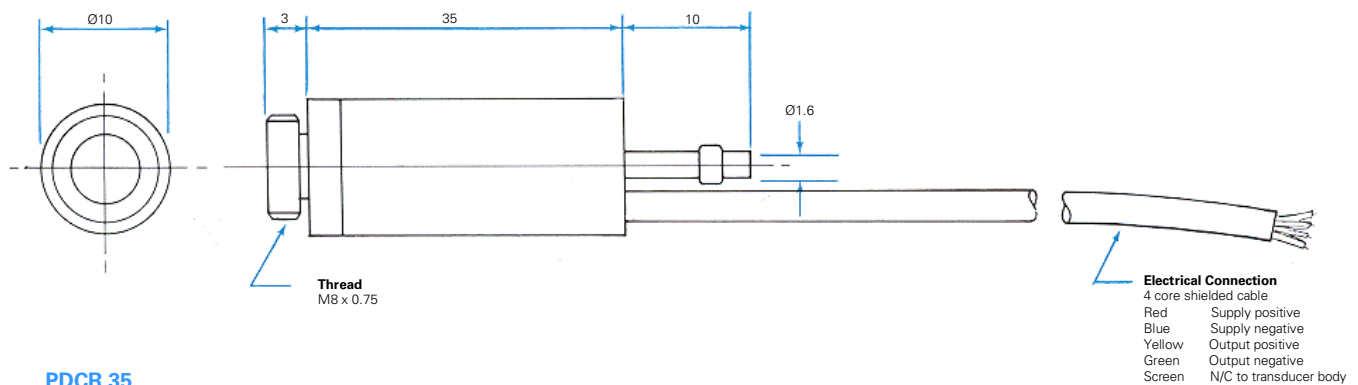
Key to table above

- (1)** Other pressure units can be specified, e.g. psi, kPa, etc.
- (2)** For absolute pressures a vacuum can be pumped on the reference side.
- (3)** The transducers can be used in a bi-directional differential mode up to ±1 bar.
- (4)** More accurate settings available.
- (5)** ±0.04% B.S.L. available.
- (6)** Temperature range can be extended.
- (7)** For special applications it is possible to give improved temperature effects over a wider temperature range.
- (8)** Constant current operation ±0.05% of reading/°C typical.
- (9)** Longer lengths available.

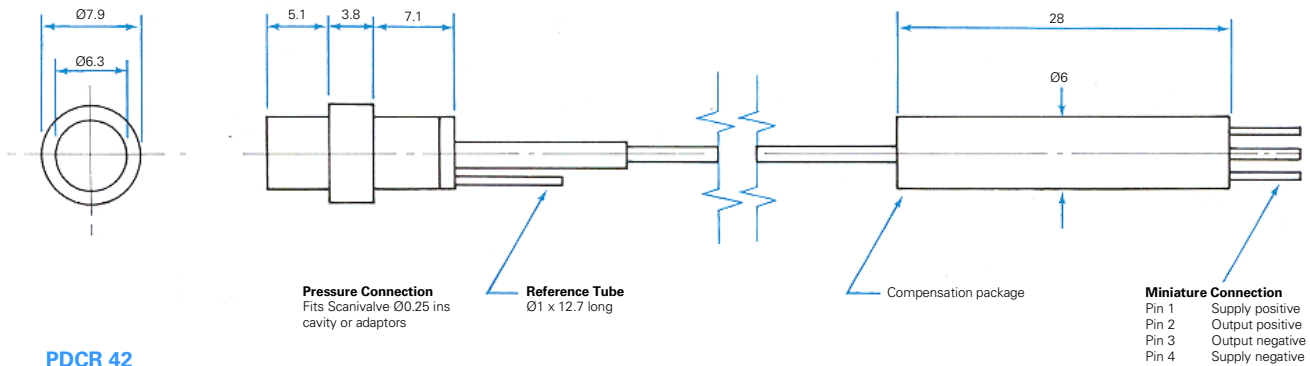
INSTALLATION DRAWINGS Dimensions: mm



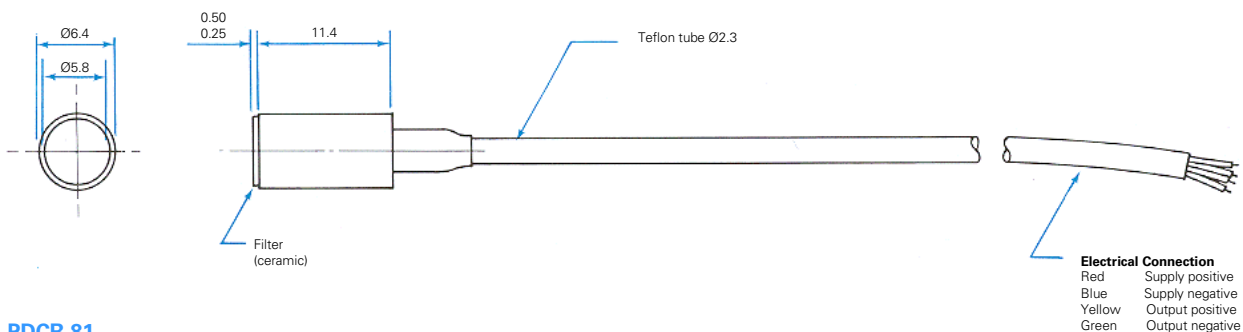
PDCR 200



PDCR 35



PDCR 42



PDCR 81

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