

# GE Sensing

## Features

The PDCR 4000 Series provides a complete range of mV output pressure transducers offering advanced levels of measurement accuracy stability and flexibility from a standard production device

- $\pm 0.04\%$  full scale (FS) accuracy
- Ranges from 1 to 10,000 psi (70 mbar to 700 bar)
- Gauge, absolute and differential
- $\pm 0.1\%$  FS stability per annum
- 400% overpressure
- Hastelloy and stainless wetted parts

## Applications

GE manufactures precision pressure sensors with a capability to meet critical applications in industrial and research environments.

- Test equipment
- Research and development
- Environmental test
- Monitoring critical processes
- General industrial

# PDCR 4000 Series

## Druck High Performance Millivolt Output Pressure Transducers

PDCR 4000 Series is a Druck product. Druck has joined other GE high-technology sensing businesses under a new name— GE Industrial, Sensing.



# PDCR 4000 Specifications

## Pressure Measurement

### Operating Pressure Ranges

#### PDCR 4000

- 1, 2 psi (70, 140 mbar) gauge
- 5, 10, 15, 22.5, 30, 50, 75, 100, 150, 200, 300, 500, and 900 psi (350, 700 mbar, 1, 1.5, 2, 3.5, 5, 7, 10, 15, 20, 35, and 60 bar) gauge or absolute
- 1000, 2000, 3000, 5000, 7500 and 10,000 psi (70, 135, 200, 350, 500 and 700 bar) sealed gauge or absolute

#### PDCR 4100

- 1, 2, 5, 10, 15, 22.5, 25, 30, 50, 75, 100, 200, 300 and 500 psi (70, 140, 350, 700 mbar, 1, 1.5, 2, 3.5, 5, 7, 10, 15, 20 and 35 bar) differential

Other pressure units can be specified; e.g. psi kg/cm<sup>2</sup>, kPa, inH<sub>2</sub>O, mH<sub>2</sub>O etc.

### Overpressure

The operating pressure range may be exceeded by the following multiples with negligible effect on calibration.

#### PDCR 4000

##### Gauge and absolute

- 10 x for ranges up to and including 5 psi (350 mbar)
- 6 x for 10 psi (700 mbar) range
- 4 x for ranges 15 to 900 psi (1 to 60 bar), up to maximum of 2000 psi (140 bar)
- 2 x for ranges up to and including 10,000 psi (700 bar)

#### PDCR 4100

##### Differential (positive side)

- 10 x for ranges up to 5 psi (350 mbar)
- 6 x for ranges up to 10 psi (700 mbar)
- 4 x for ranges 15 to 300 psi (1 to 20 bar)
- 1500 psi (100 bar) for 500 psi (35 bar) range

##### Differential (negative side)

- 6 x for ranges up to and including 5 psi (350 mbar)
- 4 x for 10 psi (700 mbar) range
- 2 x for ranges 15 to 75 psi (1 to 5 bar)
- 150 psi (10 bar) for ranges 100 to 500 psi (7 to 35 bar)

Gauge sensors will respond to pressures below atmospheric. For a negative pressure calibration choose option E.

*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 5 psi (350 mbar)
- 8 x for 10 psi (700 mbar) range
- 6 x for ranges up to and including 900 psi (60 bar); 3000 psi (200 bar) maximum

#### Differential (negative side)

- 8 x for ranges up to 5 psi (350 mbar)
- 6 x for 10 psi (700 mbar) range
- 4 x for ranges up to and including 500 psi (700 bar); 200 psi (15 bar) maximum

#### Sealed Gauge and Absolute

3000 psi (200 bar) for ranges upto 900 psi (60 bar)  
20,000 psi (1400 bar) for ranges 1000 psi (70 bar) and above

### Pressure Media

Fluids compatible with Hastelloy C276 and 316L stainless steel

#### PDCR 4100

##### Differential (negative port):

Fluids compatible with stainless steel 316L, silicon, pyrex and epoxy.

### Fluid Statement

Types of fluid may be restricted in accordance with the pressure equipment directive at pressure above 200 bar.

### Line Pressure

1000 psig (70 bar) maximum

### Excitation Voltage

10 V at 5 mA nominal

### Output Voltage

- 20 mV for 1 psi (70 mbar)
- 40 mV for ranges 2 psi (140 mbar)
- 100 mV for 5 psi (350 mbar) and above

*Transducers with ranges up to 900 psi (60 bar) can be over ranged 2 x full scale to provide up to 200 mV output. Linearity is slightly degraded but stability is improved.*

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

### Common Mode Voltage

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

# PDCR 4000 Specifications

## Output Impedance

2 k $\Omega$  nominal

## Load Impedance

Greater than 100 k $\Omega$  for quoted performance

## Performance

### Accuracy

Combined effects of non-linearity, hysteresis and repeatability

- Standard:  $\pm 0.08\%$  (FS) Best Straight Line (BSL) maximum
- Option (A):  $\pm 0.04\%$  FS BSL maximum available on 5 psi (350 mbar) range and above  
 $\pm 0.06\%$  FS BSL maximum for 75 psi (5 bar) range

### Zero Offset and Span Setting

- Zero:  $\pm 1.5$  mV, typical ( $\pm 3$  mV max)
- Span:  $\pm 1.5$  mV typical ( $\pm 3$  mV max)

*Option (D): improve zero and span settings  $\pm 1$  mV.*

### Stability

- $\pm 0.1\%$  FS typical per annum for ranges 10 psi (700 mbar) and above
- $\pm 0.2\%$  FS typical for ranges up to and including 5 psi (350 mbar)

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

### Operating Temperature Range

- $-4^{\circ}\text{F}$  to  $176^{\circ}\text{F}$  ( $-20^{\circ}\text{C}$  to  $80^{\circ}\text{C}$ ) standard

*Extended operating temperature range versions are available.*

### Temperature Effects

- Over 32 to  $122^{\circ}\text{F}$  (0 to  $50^{\circ}\text{C}$ )  
 $\pm 0.3\%$  FS Temperature Error Band (TEB)  
 $\pm 0.75\%$  FS TEB for 2 psi (140 mbar) range  
 $\pm 1.5\%$  FS TEB for 1 psi (70 mbar) range

- Over  $-4$  to  $176^{\circ}\text{F}$  ( $-20$  to  $80^{\circ}\text{C}$ )  
 $\pm 1\%$  FS TEB  
 $\pm 2.5\%$  FS TEB for 2 psi (140 mbar) range  
 $\pm 5\%$  FS TEB for 1 psi (70 mbar) range

### Acceleration Sensitivity

Typically  $0.04\%$  FS/g for 5 psi (350 mbar) decreasing to  $0.0003\%$  FS/g for ranges above 900 psi (60 bar), along the sensitive axis

### Mechanical Shock

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

### Vibration

Response less than  $0.05\%$  FS/g at 30 g peak 10 to 2 kHz, limited by 0.47 in (12 mm) double amplitude, (MIL-STD 810C Proc 514.2-2 Curve L)

## Physical

### Pressure Connection

- 1/4 NPT female

*Others available upon request.*

*Adapters available on request.*

### Weight

- 4.5 oz (0.12 kg) nominal, for 1 to 900 psi (70 mbar to 60 bar) ranges
- 6 oz (0.17 kg) nominal, for 1000 to 10,000 psi (70 to 700 bar) ranges
- 7 oz (0.19 kg) nominal for differential types

### Electrical Connection

Refer to ordering information and installation drawings.

### Intrinsic Safety: Ranges up to 900 psi (60 bar)

Intrinsically safe for use with barrier systems to  EEx ia IIC T4 ( $-40^{\circ}\text{C} \leq T_a \leq 80^{\circ}\text{C}$ )

*Available on PDCR 4x1x, PDCR 4x2x, PDCR 4x6x and PDCR 4x7x*

### CE Marking

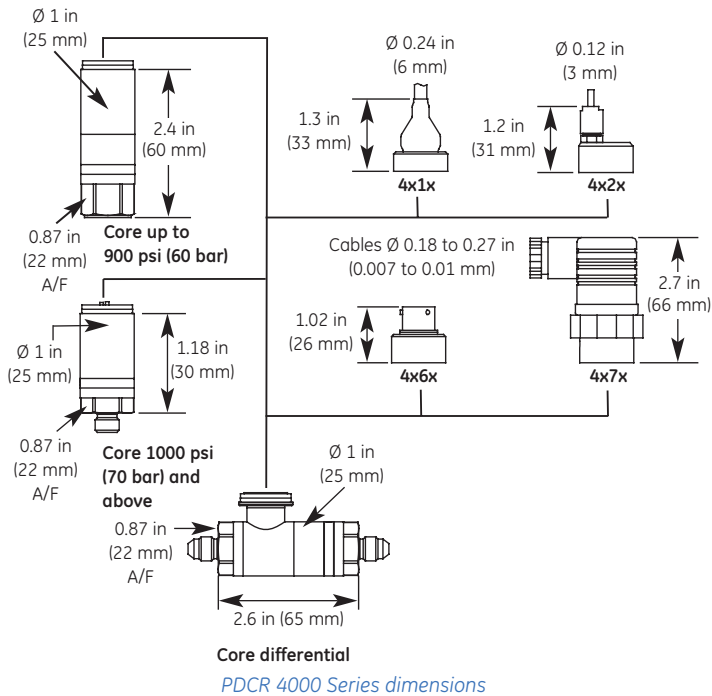
Product is CE marked for electromagnetic compatibility, pressure equipment directive, and, on options stated, use in potentially explosive atmospheres.

Emissions: EN50081-1

Immunity: EN50082-2

## Options

- A) Improved accuracy  $\pm 0.04\%$  FS BSL ( $\pm 0.06\%$  FS BSL @ 75 psi (5 bar) range)
- B) Internal shunt ('R' calibration facility): ranges up to 900 psi (60 bar). Connecting an external link results in a positive span shift of  $80\% \pm 5\%$  FS. (Not available for PDCR 4x2x, PDCR 4x7x.)
- C) Mating electrical connector (PDCR 4x6x) (Not available for IS versions.)
- D) Improved zero and span setting to  $\pm 1$  mV
- E) Negative calibration
- F) Intrinsic safety, ranges up to 900 psi (60 bar)  
Max cable length D4\*1\* = 29 m  
D4\*2\* = 19 m



Core differential  
PDCR 4000 Series dimensions

### Electrical Connection

| Model Code                         | Supply |       | Output |       | R Cal  |
|------------------------------------|--------|-------|--------|-------|--------|
|                                    | + ve   | - ve  | + ve   | - ve  |        |
| PDCR 4x0x $\leq 900$ psi (60 bar)  | 4      | 3     | 5      | 1     | 2      |
| PDCR 4x0x $\geq 1000$ psi (70 bar) | 4      | 5     | 3      | 2     | N/A    |
| PDCR 4x1x                          | Red    | White | Yellow | Blue  | Orange |
| PDCR 4x2x                          | Red    | Blue  | Yellow | Green | N/A    |
| PDCR 4x6x                          | A      | D     | B      | C     | E      |
| PDCR 4x7x                          | 1      | 2     | 3      | E     | N/A    |

Rcal only available on pressure ranges up to 60 bar

## Order Information

### (1) Select model number

#### PDCR Basic type number

| Code | Pressure Reference              |
|------|---------------------------------|
| 40   | Gauge, sealed gauge or absolute |
| 41   | Differential                    |

#### Code Electrical Connection

|   |  |
|---|--|
| 0 | Core   |
| 1 | Six core vented cable*1                            |
| 2 | Four core PTFE cable*1                             |
| 6 | Six-pin bayonet plug (mating connector - option C) |
| 7 | Rotatable DIN plug and socket                      |

#### Code Calibrated Temperature Range

|   |                               |
|---|-------------------------------|
| 0 | 32°F to 122°F (0°C to 50°C)   |
| 1 | -4°F to 176°F (-20°C to 80°C) |

#### PDCR - - - - Typical Model Number

- 2) Pressure range and units
- 3) Gauge, sealed gauge or absolute
- 4) Cable length where applicable (in ft)
- 5) Options required



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