

# GE Sensing

## Features

- Ranges from 1 psi to 900 psi
- Accuracy  $\pm 0.06\%$  full scale (FS) best straight line (BSL)
- Fully welded 0.69 in titanium construction
- Integral lightning surge arrestor
- Polyurethane and fluoropolymer cables
- Full range of installation accessories
- 5 year anti corrosion warranty

The PDCR 1830/1880 transducer (mV output) and PTX 1830/1880 transmitter (4 to 20 mA output) are the latest generation of fully submersible titanium high performance sensors for measurement of hydrostatic liquid levels.

## 1830/1880 Series Druck High Performance Level Pressure Sensors

1830/1880 is a Druck product. Druck has joined other GE high-technology sensing businesses under a new name—GE Industrial, Sensing.



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## Applications

The PDCR/PTX 1830/1880 Series incorporates many enhanced features gained from experience in supplying thousands of sensors for small and large scale installations worldwide. Example applications include:

- Potable water  
From ground water borehole to surface water level measurements in rivers, canals and reservoirs.
- Waste water and remediation  
Monitoring of secondary and outflow sewage levels within certified hazardous areas and contaminated ground water levels in land fill sites.
- Tank Level  
From land based liquid storage vessels to on-board ship ballast tank monitoring within safe and certified hazardous areas.
- Sea Water  
Marine environmental applications including tide gauging, coastal flood protection and wave profiling amongst others.

## Reliability and Data Quality

The combination of a high technology sensor, together with advanced signal conditioning and packaging techniques, provides an ideal long term solution for reliable, accurate and economical level measurements.

The Druck micromachined silicon element is sealed within an all-titanium pressure module assembly, fully isolated from the pressure media. This is contained in a slimline, welded titanium body, terminated in an injection molded cable assembly. The cable features a Kevlar® strain cord and is IP68/Type 6 rated for indefinite immersion in pressure of 1000 psi.

## Lightning Surge Protection

An optional integral lightning surge arrester is available, qualified to the highest standard IEC 61000-4-5 (level 4). This protects the sensor from raised earth potentials caused by lightning strikes, which often occur in surface water applications.

## Ease of Use

A simple datum marked cable system is provided for ease of installation. 1 ft datum points are clearly marked for quick and accurate cable alignment below ground level. In addition, a full range of related accessories simplifies installation, operation and maintenance.

- Quick-release cable clamp assembly
- Slimline and short profile sink weights
- Moistureproof Sensor Termination Enclosure
- In-situ pressure test/calibration adaptors



# 1830/1880 Specifications

## Pressure Measurement

### Operating Pressure Ranges

#### PDCR 1830/1880 (mV)

- 1, 2.5 psi gauge
- 5, 10, 15, 20, 30, 50, 75, 100, 150, 200, 300, 500, 900 psi gauge or absolute

#### PTX 1830/1880 (mA)

Any zero based FS from 1 to 900 psi gauge, 5 to 900 psi absolute.

### Overpressure

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

- 8 x for ranges 1, 2.5 psi
- 6 x for range 2.5 to 5 psi
- 4 x for ranges above 5 psi (2000 psi maximum).

### Pressure Containment

- 10 x for ranges up to 5 psi gauge
- 6 x for ranges above 5 psi gauge (2000 psi maximum)
- 2900 psi for absolute ranges.

### Media Compatibility

Fluids compatible with titanium (body), acetyl (nose cone) and polyurethane or Tefzel (cable assembly)

### Pulse Power Excitation

Recommended power-on time before output sample

**PDCR 1830/1880:** 10 ms

**PTX 1830/1880:** 30 ms

For pulse power operation refer to technical note.

The minimum supply voltage ( $V_{MIN}$ ) which must appear across the pressure transmitter terminals is 9 V and is given by the following equation:

$$V_{MIN} = V_{SUP} - (0.02 \times R_{LOOP})$$

Where  $V_{SUP}$  is supply voltage in Volts,  $R_{LOOP}$  is total loop resistance in Ohms

### Excitation Voltage

#### PDCR 1830/1880 (mV)

10 V at 5 mA nominal

Output is fully ratiometric to supply within 2.5 V to 12 V limits.

#### PTX 1830/1880 (mA)

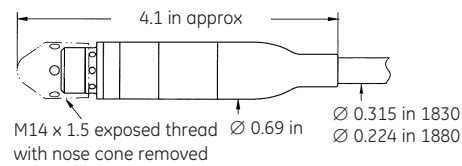
9 to 30 V

9 to 28 V for Intrinsically Safe version.

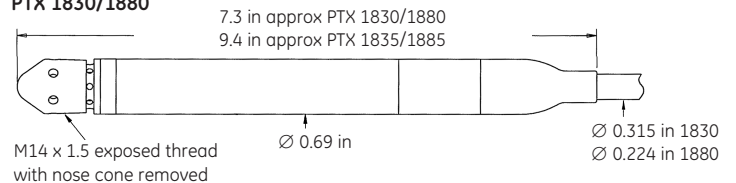
### Common Mode Voltage - PDCR 1830/1880

Typically +3.5 V to +9 V with respect to the negative supply

#### PDCR 1830/1880



#### PTX 1830/1880



#### Electrical Connections

##### PDCR 1830

Red: Supply positive  
White: Supply negative  
Yellow: Output positive  
Blue: Output negative  
Screen wire connected to case  
*(IS version - screen not connected)*  
Remaining cores not connected

##### PTX 1830/1880 Lightning protection

Red: Supply positive  
Black: Supply negative  
Screen wire connected to case  
*(IS version - screen not connected)*  
Remaining cores not connected

### Output Signal

#### PDCR 1830/1880

- 25 mV for 1 psi range
- 50 mV for 2.5 and 5 psi ranges
- 100 mV for ranges 10 psi and above

#### PTX 1830/1880

4 to 20 mA proportional, for zero to FS pressure.

## Performance Specification

### Accuracy

Combined effects of Non-linearity, Hysteresis and Repeatability:

- Standard:  $\pm 0.1\%$  FS BSL maximum
- Option D:  $\pm 0.06\%$  FS BSL maximum ( $\pm 0.08\%$  maximum for 1.5 psi and below).

### Zero Offset and Span Setting

#### PDCR 1830/1880

- Typical:  $\pm 1.5$  mV
- Maximum:  $\pm 3$  mV

#### PTX 1830/1880

Maximum:  $\pm 0.05$  mA

### Long-Term Stability

$\pm 0.1\%$  typically per annum

### Operating Temperature Range

-5 to 140 °F (-21 to 60°C)

### Compensated Temperature Range

30 to 86 °F (-1 to 30°C)

# GE Sensing

## Temperature Effects

- ±0.3% FS Temperature Error Band (TEB) for 5 psi range and above
- ±0.6% FS TEB for ranges below 5 psi.

## Intrinsic Safety

### PDCR 1830/1880:

CSA/UL: Class I Div I Groups A, B, C, D  
 Class II Div I Groups E, F, & G  
 Class III

FM: Class I, II, III Div I Groups A, B, C, D, E, F, G.

### PTX 1830/1880:

CSA: Class I Div I Groups A, B, C, D  
 Class II Div I Groups E, F, & G  
 Class III

FM: Class I, II, III Div I Groups A, B, C, D, E, F, G.

**Lightning surge arrestor** (optional on PTX only) Integral lightning protection assembly certified to standard IEC 61000-4-5 (level 4)

## Shock and Vibration

MIL-STD-810E, method 514.4. Category 10 min. integrity Figure 514.4-16

Product will withstand 20 g peak shock half sine wave 9 ms duration in all axes, also 2000 g peak shock 0.5 ms duration in all axes.

## Insulation

Standard: >100 MΩ at 500 VDC

Intrinsically Safe version: <5 mA at 500 Vac

## Physical Specification

### Pressure Connection

Standard: Radial holed M14 x 1.5 mm male thread fitted with protective acetyl nose cone.

### Electrical Connection

**1830:** Vented polyurethane cable with integral Kevlar® strain relief cord rated to 119 lb load.

**1880:** Vented flourpolymer

### Ingress Protection

Type 6/IP68 to 1000 psi

### Cable Lengths

To be specified as required in 1 ft increments up to 1600 ft.

For longer lengths refer to GE Sensing.

## CE marking

CE marked for electromagnetic compatibility and pressure equipment directive.

## Documentation

Detailed user instructions are provided with specific calibration data.

## Options

- FM/CSA certification
- Threaded pressure port (welded) 1/4, 1/8 NPT male, 7/16 UNF male, G1/4, G1/8 male.

## Accessories

A full range of accessories is available to enhance installation, operation and maintenance of the 1830/1880 Series as listed below:

- STE moistureproof sensor termination enclosure (202-034-01)
- Slimline sink weight Ø 0.69 in (DA2608-1-01)
- Short sink weight Ø 1 in (DA4068-1-01)
- Cable clamp system (192-373-01)
- 360° rotatable calibration adaptor to:
  - G1/8 (DA4112-1-01)
  - 1/8 NPT (DA4112-2-01)
- Economical direct calibration adaptor to:
  - G1/8 (DA2537-1-01)
  - 1/8 NPT (DA2537-2-01)

## Ordering Information

- (1) Select model number
- (2) Pressure range and scale units

Code	Model	Code	Cable type	Code	Lightning protection
PDCR18	mV output	3	Polyurethane	0	Not fitted
PTX 18	mA output	8	Flourpolymer	5	Fitted

- (3) Options (if required)
- (4) Cable length required
- (5) Accessories (order as separate items).



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