

GE

Measurement & Control

# 1830 Series

## Druck High Performance Level Pressure Sensors



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

### 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 cable
- Full range of installation accessories
- 5-year anticorrosion warranty



## Applications

The PDCR/PTX 1830 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 6P 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. 2 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 Specifications

## Pressure Measurement

### Operating Pressure Ranges

#### PDCR 1830 (mV)

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

Nominal values

#### PTX 1830 (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 (cable assembly)

### Pulse Power Excitation

Recommended power-on time before output sample

PDCR 1830: 10 ms

PTX 1830: 30 ms

For pulse power operation refer to technical note.

The minimum supply voltage (V<sub>MIN</sub>) 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<sub>SUP</sub> is supply voltage in Volts, R<sub>LOOP</sub> is total loop resistance in Ohms

### Excitation Voltage

#### PDCR 1830 (mV)

10 V at 5 mA nominal

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

#### PTX 1830 (mA)

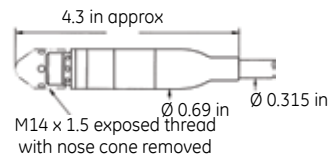
9 to 30 V

9 to 28 V for Intrinsically Safe version.

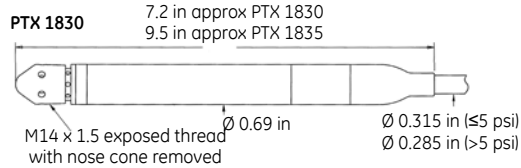
### Common Mode Voltage - PDCR 1830

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

#### PDCR 1830



#### PTX 1830



#### Electrical Connections

##### PDCR 1830

Red: Supply positive  
White: Supply negative  
Yellow: Output positive  
Blue: Output negative  
Screen wire connected to case  
Remaining cores not connected

##### PTX 1830

Red: Supply positive  
Black: Supply negative  
Screen wire connected to case  
Remaining cores not connected

### Output Impedance - PDCR 1830

2 kΩ nominal

### Output Signal

#### PDCR 1830

- 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

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

## Performance Specification

### Accuracy

Combined effects of Non-linearity, Hysteresis and Repeatability:

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

### Zero Offset and Span Setting

#### PDCR 1830

- Typical: ±1.5 mV
- Maximum: ±3 mV

#### PTX 1830

Maximum: ±0.04 mA

### Long-Term Stability

±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)

### 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

CSA/FM: Class I, II, III, Division 1,  
Groups A, B, C, D, E, F, G.  
T4 (Ta ≤80°C)

### PTX 1830 (Not available for PTX 1835)

CSA/FM: Class I, II, III, Division 1,  
Groups A, B, C, D, E, F, G.  
T4 (Ta ≤80°C)

### 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

Vented polyurethane cable with integral Kevlar® strain  
relief cord rated to 200 lb load.

### Ingress Protection

Type 6P/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 Measurement &  
Control.

### Documentation

Detailed user instructions are provided with specific  
calibration data.

## Accessories

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

- STE moistureproof sensor termination enclosure  
(202-034)
- Slimline sink weight Ø17.5 mm (DA2608-1-01)
- Short sink weight Ø25 mm (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)
- Accessory pack contains (TAS-A187)  
STE box Slimline sink weight  
Cable clamp Direct calibration adaptor

## Options

- Improved accuracy (option D)
- FM/CSA certification
- Threaded pressure port (welded) 1/4 NPT male

## Ordering Information

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

- (1) Select model number
- (2) Pressure range and scale units
- (3) Options (if required)
- (4) Cable length required
- (5) Accessories (order as separate items).
- (6) Supporting Services (order as separate items)

## Supporting Services

Our highly trained staff can support you, no matter where  
you are in the world. We can provide training, nationally  
accredited calibration - both initially and at periodic  
intervals - extended warranty terms and even rental of  
portable or laboratory calibrators. Further details can be  
found at [www.ge-mcs.com](http://www.ge-mcs.com).



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