

GE Sensing

Features

- Ranges from 0.75 mH₂O to 600 mH₂O
- Accuracy $\pm 0.06\%$ full scale (FS) best straight line (BSL)
- Fully welded 17.5 mm titanium construction
- Integral lightning surge arrestor
- Polyurethane and hydrocarbon resistant cables
- Full range of installation accessories
- 5 year anti corrosion warranty

The PDCR 1830/1840 transducer (mV output) and PTX 1830/1840 transmitter (4 to 20 mA output) are the latest generation of fully submersible titanium high performance sensors for measurement of hydrostatic liquid levels.

1830/1840 Series

Druck High Performance Level Pressure Sensors

1830/1840 is a Druck product.
Druck has joined other
GE high-technology sensing
businesses under a new
name—GE Sensing.



Applications

The PDCR/PTX 1830/1840 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, using potable water approved (1830) cable and hydrocarbon resistant (1840) cable.

- 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 moulded cable assembly. The cable features a Kevlar® strain cord and is IP68 rated for indefinite immersion in 700 mH₂O, with a selection of cable material to meet the application.

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. Incremental 1 m 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
- Pressure test/calibration adaptors



1830/1840 Specifications

Pressure Measurement

Operating Pressure Ranges

PDCR 1830/1840 (mV)

0.75, 1.5 mH₂O gauge, 3.5, 7, 10, 15, 20, 35, 50, 70, 100, 150, 200, 350, 600 mH₂O gauge and absolute

PTX 1830/1840 (mA)

Any zero based FS from 0.75 to 600 mH₂O gauge and 3.5 to 600 mH₂O absolute.

Elevated zero, compound and reversed output ranges available. Refer to GE Sensing for further information.

Other units may be specified e.g. ftH₂O, inH₂O, bar, mbar, kpa, kg/cm²

Overpressure

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

- 8 x for ranges up to 1.5 mH₂O
- 6 x for ranges above 1.5 to 3.5 mH₂O
- 4 x for ranges above 3.5 mH₂O (1400 mH₂O maximum)

Pressure Containment

- 10 x for ranges up to 3.5 mH₂O gauge
- 6 x for ranges above 3.5 mH₂O gauge (1400 mH₂O maximum)
- 200 bar for absolute ranges.

Media Compatibility

Fluids compatible with titanium (body), acetyl (nose cone) and polyurethane or Hytrel® 6108 (cable assembly).

Excitation Voltage

PDCR 1830/1840 (mV)

10 V at 5 mA nominal

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

PTX 1830/1840 (mA)

9 to 30 V

9 to 28 V for Intrinsically Safe version.

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

Pulse Power Excitation

Recommended power-on time before output sample

PDCR 1830/1840: 10 ms

PTX 1830/1840: 30 ms

For pulse power operation refer to technical note.

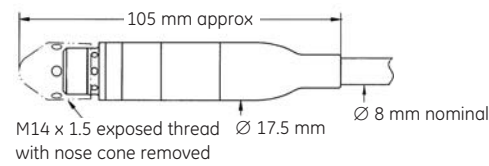
Output Signal

PDCR 1830/1840

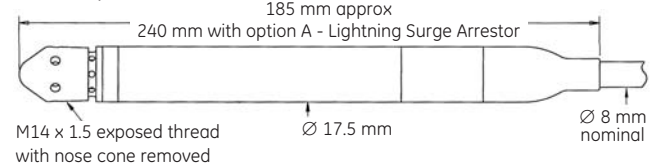
- 25 mV for 0.75 mH₂O range
- 50 mV for 1.5 and 3.5 mH₂O ranges
- 100 mV for ranges 7 mH₂O and above

PTX 1830/1840

PDCR 1830/1840



PTX 1830/1840



Installation drawing

Electrical Connections

PDCR 1830 - Polyurethane cable

PDCR 1840 - Hytrel® 6108 cable

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 - Polyurethane cable

PTX 1840 - Hytrel 6108 cable

Red: Supply positive

Blue: Supply negative

Screen wire connected to case

(IS version - screen not connected)

Remaining cores not connected

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

Common Mode Voltage - PDCR 1830/1840

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

Output Impedance - PDCR 1830/1840

2 kΩ nominal.

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% FS BSL maximum for 1 mH₂O and below).

Zero Offset and Span Setting

PDCR 1830/1840

- Typical: ±1.5 mV
- Maximum: ±3 mV

PTX 1830/1840

Maximum: ±0.05 mA

Long-Term Stability

±0.1% FS typically per annum.

Operating Temperature Range

-20 to 60°C (-4 to 140°F)

Compensated Temperature Range

-2 to 30°C.

Temperature Effects

- ±0.3% FS Temperature Error Band (TEB) for 3.5 mH₂O range and above
- ±0.6% FS TEB for ranges below 3.5 mH₂O.

Shock and Vibration

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

Intrinsic Safety (Option B)

PDCR 1830/1840: ATEX: Certified (BAS 02 ATEX 1250X) for use with IS barrier systems to EEx ia IIC T4 (80°C ambient) for cable lengths up to 29 metres

PTX 1830/1840: ATEX: Certified (BAS 01 ATEX 1018X) for use with IS barrier systems to EEx ia IIC T4 (-40°C ≤ Tamb ≤ 80°C) for cable lengths up to 300 metres maximum

Physical Specification

Pressure Connection (Option C)

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

Option C: Screw on welded male pressure connection available
G1/8B (60° Int cone)
G1/4B (60° Int cone or flat end)
1/4 NPT
7/16 UNF to M533656-4

Electrical Connection

1830: Vented polyurethane cable with integral Kevlar® strain relief cord rated to 54 kg load. Water ingress protection IP68 to 700 mH₂O.

1840: Vented Hytrel® 6108 cable (hydrocarbon resistant) with integral Kevlar® strain relief cord rated to 54 kg load. Water ingress protection IP68 to 700 mH₂O.

Cable Lengths

To be specified as required in 1 metre increments up to 500 metres.

For longer lengths refer to GE Sensing.

CE marking

CE marked for electromagnetic compatibility, pressure equipment directive and, for ATEX version only, use in potentially explosive atmospheres.

Documentation

Detailed user instructions are provided with specific calibration data. Supplied in English, French, German, Italian, Spanish or Portuguese. Language selected on order.

Accessories

A full range of accessories is available to enhance installation, operation and maintenance of the 1830/1840 Series as listed below:

- STE moistureproof sensor termination enclosure (202-034-01)
- 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 (S01830E)
STE box Slimline sink weight
Cable clamp Direct calibration adaptor

Options

(A) Lightning Surge Arrestor (PTX 1830/1840 only)

Integral lightning protection assembly certified to standard IEC 61000-4-5 (level 4).

(B) Intrinsically Safe Version

(C) Alternative Pressure Connection

In place of the standard acetyl nose cone, a welded male pressure connection can be supplied.

(D) Improved Accuracy

An improved accuracy of ±0.06% FS BSL is available (±0.08% FS BSL for ranges below 1 mH₂O (1.5 psi))

Ordering Information

Please state the following:

- (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)

Code	Model	Code	Cable type
PDCR18	mV output	3	Polyurethane
PTX 18	mA output	4	Hytrel® 6108
		0	Not used

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 in www.gesensing.com/productservices/service.htm



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