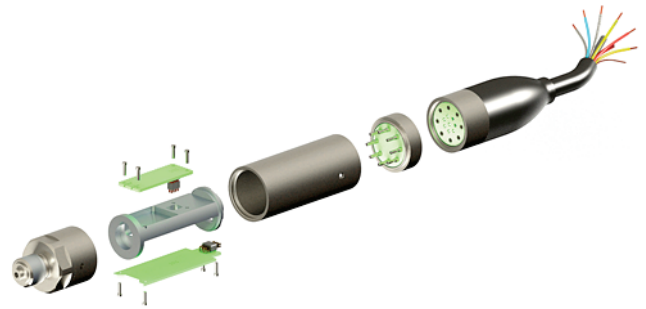


# The PRECISE DPS2000 Series Digital Pressure Transmitter

The PRECISE DPS2000 Series digital pressure transmitter is an ultra high accuracy digital pressure and temperature sensor designed for high pressure measurement in critical applications in harsh environments where accuracy and stability of the data are key to system performance.



## Features and Benefits

- Pressure ranges up to 1480 bar/21,000 psi
- Total accuracy <  $\pm 0.01\%$  FS
- Long-term stability <  $\pm 0.01\%$  FS/year
- Resolution < 2 ppm
- Shock and vibration resistant
- High overpressure capability
- Low current consumption
- RS-232 and RS-485 communication

## Applications Areas

### Oceanographic Applications:

- Vertical depth measurement
- AUVs and Submarines
- ROVs, towed arrays, bathymetry
- Tsunami detection
- Dynamic subsea positioning

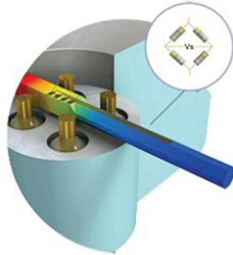
### High Pressure Calibration:

- Rugged high pressure transfer standard
- Laboratory reference
- Portable calibration equipment
- Pressure controllers
- Leak detection



# Advanced Sensing Technology

At the core of the PRECISE sensor is PRESENS' patented tubular sensing element, well proven in subsea oil and gas applications for many years. Our piezoresistive sensors are distinguished for their reliability, robustness, long-term stability and high field accuracy. This is due to the unique features of the sensing element:



## Silicon (Si) single crystal structure:

- Minimizes errors due to thermal and mechanical hysteresis
- Prevents long-term drift due to "creep"

## Tubular design:

- Mechanical decoupling of sensing area eliminates error due to mounting stress

## Operation in compressive stress:

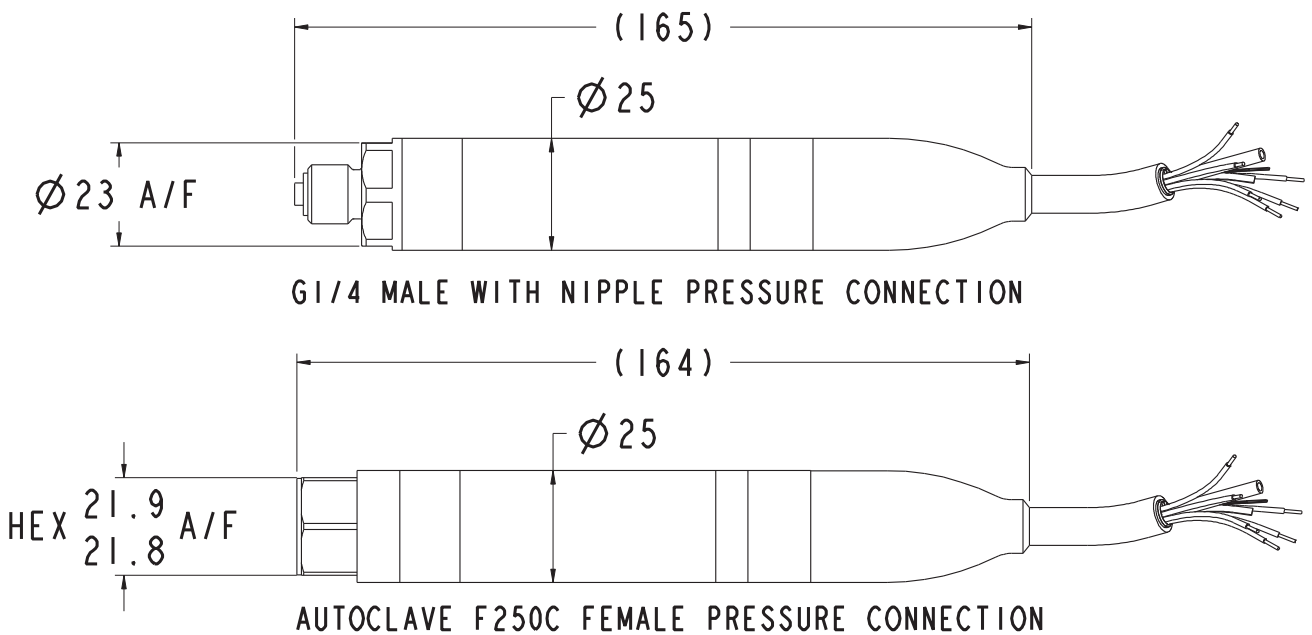
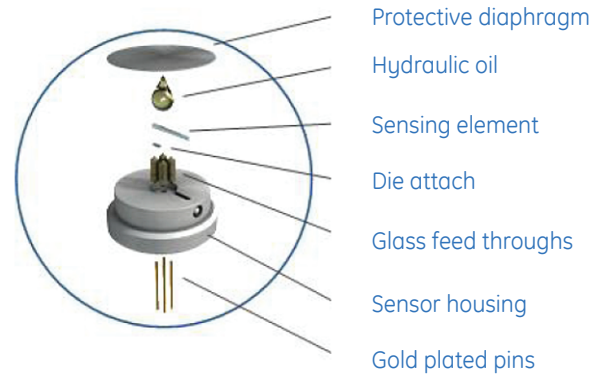
- Extreme tolerance to over-pressure and pressure spikes

## Piezoresistive resistor bridge:

- Extremely stable
- Pressure and temperature measured simultaneously

# Unique Pressure Module Design

- A thick isolation diaphragm improves protection against harsh environments
- A reduced oil volume decreases thermal errors
- A reduced oil volume improves protection against damage caused by transient step changes in pressure



**Dimensional Drawing (all dimensions in mm)**

# PRECISE Specifications

## Pressure Measurement

### Pressure Ranges

*Min. range:* 0 to 50 bar

*Max. range:* 0 to 1480 bar

### Pressure Reference

Absolute

### Overpressure

1.5 x FS ranges listed above equals the maximum pressure that can be applied to a transducer without damage or change in performance beyond the specified tolerance.

### Pressure Containment (Burst Pressure)

2 x FS ranges listed above

### Pressure Scales

bar, psi, mH<sub>2</sub>O, MPa, dbar

## Temperature Measurement

### Temperature range:

±0.6°C over the compensated temperature range

## Pressure Performance

### Accuracy

For each specification, better than

A1 ±0.04% FS

A2 ±0.02% FS

A3 ±0.01% FS

Defined as pressure hysteresis, temperature hysteresis, temperature effects, repeatability, non-linearity, zero offset and uncertainty of calibration equipment over the compensated temperature range.

### Compensated Temperature Range:

-5 to 35°C (23 to 95°F)

### Long Term Stability (drift):

0.01% FS/year max. at reference conditions

### Resolution

<2 ppm FS

### Acceleration (positional) Sensitivity

Less than 1 mbar/g

### Shock

IEC 60068-2-27: 30 g, 11 ms half-sine,

3x4 bidirectional shocks

Operating within requirements

### Vibration

IEC 60068-2-6: Sinusoidal 5-1000 Hz, 20 g, 10 ct/min

IEC 60068-2-64: Random 20-2000 Hz, 6 grms, 2 hours

Operating within requirements

## Electrical

### Power Supply Voltage

8.5-30 Vdc

### Current Consumption

Typ 4.8 mA, 24 V, receive mode

### Pulse Power Excitation

Switch on to sample time in less than 1 second

### Output Signal and Protocol

RS-232, and RS-485 programmable pressure signal output, Modbus Remote Terminal Unit (RTU)

### Programmable Lowpass Filter

User definable down to 30 mHz

### EMC/RFI Certification

IEC 61326, basic immunity test requirements

### Electrical Insulation

Greater than 1 GΩ at 100 Vdc

## Physical

### Pressure Connection

Autoclave F250C 9/16", G 1/4" Male

### Pressure Equipment Directive (PED)

97/23/EC - SEP

### Operating Temperature Range

-40 to 85°C (-40 to 185°F)

### Storage Temperature Range

-50 to 100°C (-58 to 212°F)

### Material

*Wetted Parts:* Inconel 625

*Non Wetted Parts:* Inconel 625 or AISI316

### Electrical Connection

1 metre shielded cable

### CE Approval

Designed for electromagnetic compatibility

### Calibration Certificate

Each unit is supplied with a calibration certificate stating conformity to pressure performance specifications across calibrated pressure and temperature envelope. The specifications are traceable to international standards.

# PRECISE Part Number

## 1. Specify Part String

### Model

DPS Digital Pressure Transmitter

#### Series

2 High Precision

#### Build

0 Non-Hyperbaric

#### Electrical Connection

2 1 m Polyurethane Screened Cable (Depth) IP68

#### Output

B RS-232/RS-485 Modbus

#### Compensated Temperature Range

TA -5 to 35 °C

#### Accuracy

A1 Industrial 0.04%

A2 Improved 0.02% (200 bar and above)

A3 Premium 0.01% (400 bar and above)

#### Calibration

CC Full Thermal Calibration

#### Hazardous area approval

H0 None

#### Pressure Connection

P1 G1/4 Male w/nipple, pressure ranges to 700 bar

P2 9/16-18UNF F250C Female

## 2. Specify Pressure Range

0 to (50 to 1480 bar)

## 3. Specify Pressure Units

bar

psi

mH<sub>2</sub>O

MPa

dbar

**Examples:** DPS202B-TA-A3-CC-H0-P1 0 to 450 bar

DPS202B-TA-A2-CC-H0-P2 0 to 30 MPa



[www.gemeasurement.com](http://www.gemeasurement.com)

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