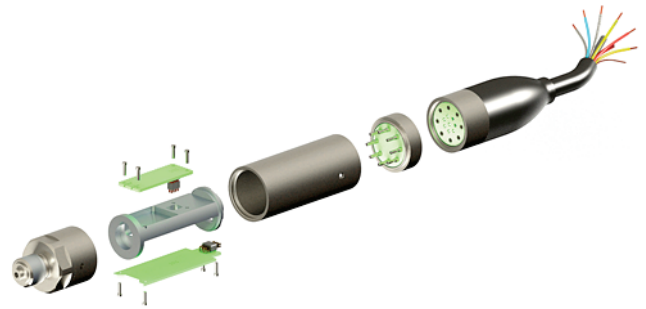


The PRECISE DPS2000 Series Digital Pressure Transmitter

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

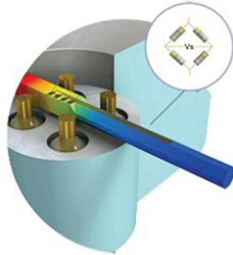
High Pressure Calibration:

- 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:

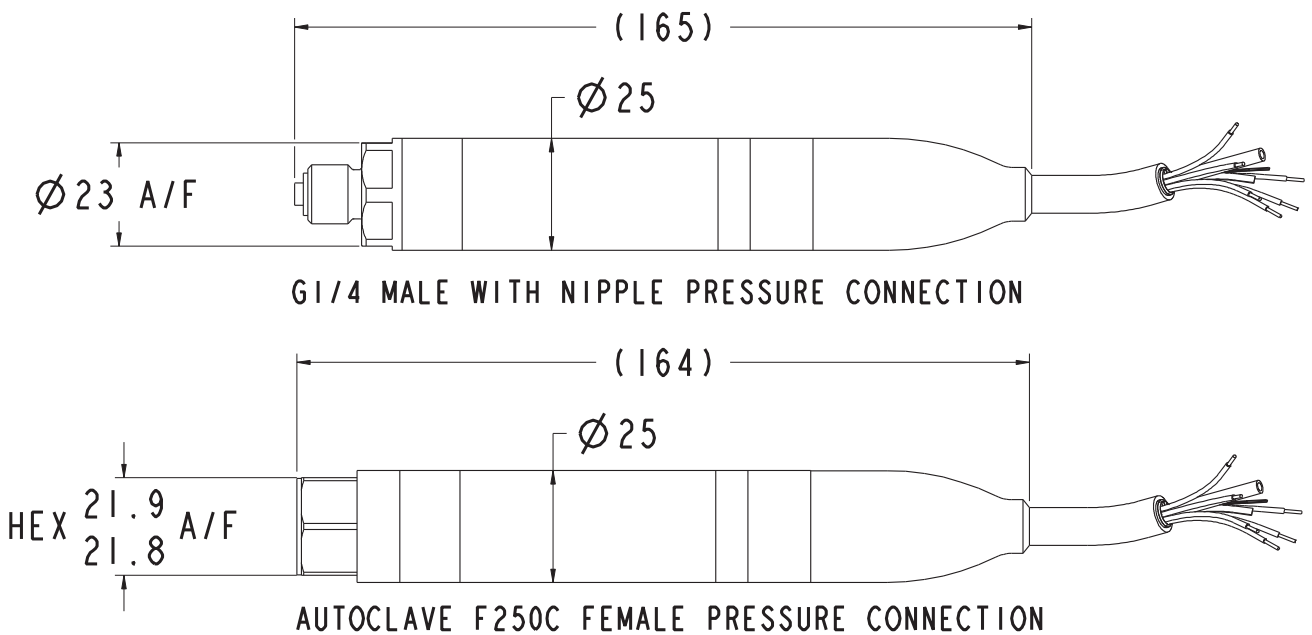
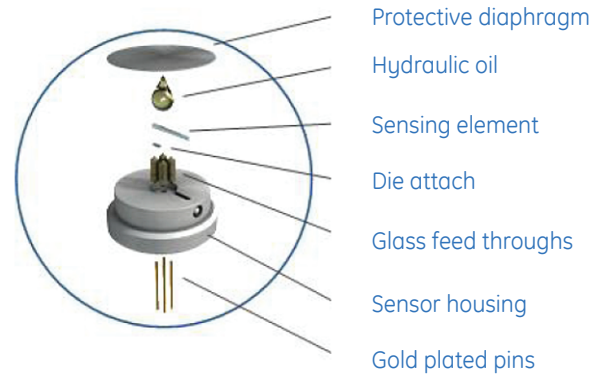
- Extreme tolerance to over-pressure and pressure spikes

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, mH₂O, 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
mH₂O
MPa
dbar

Examples: DPS202B-TA-A3-CC-H0-P1 0 to 450 bar
DPS202B-TA-A2-CC-H0-P2 0 to 30 MPa



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920-667A