Pressure Product Line

Measurement made easy in space, on the ocean floor and everywhere in between
Product Line Overview
ABB Measurement & Analytics
Pressure Product Line - Key facts

- ~150,000 Transmitters delivered per year
- 80+ years of experience
- Collaboration S&OP through IBP
- 6 Factories
- 2 pressure technologies: Inductive and Piezoresistive
- Over 4 million Installed Pressure Transmitters

Locations:
- Warminster, PA USA (P+T)
- Bartlesville, OK USA (P)
- Wesseling, Germany (Pressure)
- Dammam, Saudi Arabia (P+T)
- Bangalore, India (P+T)
- Shanghai, China (P+T)
- Osaka, Japan (Pressure)
ABB Measurement & Analytics – Pressure Portfolio

Value for customer

NOTES
AP, GP, DP: Absolute, Gauge and Differential Pressure
*261 series is in Limited phase from January 2023

**ABB Measurement & Analytics – Pressure Portfolio**

- **266 MV**
  - Up to 0.04% Accuracy
  - Piezo Tech
  - Resonant Inductive & Piezo Tech
  - Level / Flow Internal Calculations
  - 10 mbar – 100 bar
  - Full Remote Seal portfolio
  - HART, Modbus

- **266xxT**
  - Up to 0.04% Accuracy (opt. 0.025%) Accuracy
  - Piezo Tech
  - AP, GP, DP
  - 10mbar – 600 bar
  - Full Remote Seal portfolio
  - HART, FF, PA

- **266xxH**
  - Up to 0.06% Accuracy
  - Resonant Inductive Tech
  - AP, GP, DP
  - 10mbar – 1050 bar
  - Full Remote Seal portfolio
  - HART, FF, PA, Wireless, 1...5V

- **Pxx100**
  - Up to 0.075% Accuracy
  - Piezo Tech - AP, GP
  - 600 mbar – 100 bar
  - Full Remote Seal portfolio
  - HART, FF, PA, Wireless

- **261(*)** Up to 0.1% Accuracy
  - Piezo Tech - AP, GP
  - 60 mbar – 600 bar
  - Specific Remote Seals
  - HART

**Portfolio Features & Benefits**

- **4 in 1**
  - 3 process variables: Pressure, Static and Temp + Compensated Flow/Level

- **Diaflex seal treatment**

- **Through The Glass**

- **Predictive maintenance through PIID**

- **Wi: Fast connection to any existing net with 10y of std battery**

- **SIL2/SIL 3 for safety loop applications**

- **Top Accuracy (up to 0.025%) & High Static**

- **All weiged remote seal technology**
ABB Measurement & Analytics – Pressure Portfolio

Positioning Outlook

- OEM and Machine Builders
- Water & Waste Water
- Metals
- Cements & Mining
- Ancillary processes
- Power Generation
- Food & Beverage
- Pulp & Paper
- Oil & Gas
- Chemical

- 266MV
- 266xxT
- 266xxH
- NEW
- UPGRADE
- PxF100
- PxD100
- PxP100
- PxS100

Low Specifications Level

Fast Delivery

Planned Delivery
### ABB Measurement & Analytics
Pressure Portfolio – Model outlook

<table>
<thead>
<tr>
<th>4 Multi Variable models</th>
<th>4 Multi Sensor Models</th>
<th>6 &quot;T&quot; Top Accuracy models</th>
<th>6 &quot;H&quot; High Accuracy models</th>
<th>7 &quot;261&quot; models</th>
<th>6 “Pxx100” models</th>
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<table>
<thead>
<tr>
<th>Pxx100 SERIES</th>
<th>261 SERIES (**)</th>
<th>266 SERIES</th>
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<tbody>
<tr>
<td>ABSOLUTE</td>
<td>GAUGE</td>
<td>ABSOLUTE</td>
</tr>
<tr>
<td>PAS100</td>
<td>PGS100</td>
<td>261AS</td>
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<td>PAF100</td>
<td>PGF100</td>
<td>261AC</td>
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</tbody>
</table>

*Include optional digit code for Digital Diaphragm Seal system
** 261 series is in Limited phase from January 2023
266 Series Deep Dive
ABB Measurement & Analytics
2600T Pressure Product Main Specifications

- Gauge and absolute pressure, diff. pressure, level, flow rate.
- Base Accuracy – 0.065% & 0.04% of set span (optional 0.025%)
- DP measurement with simultaneous measurement of P stat. (absolute pressure)
- 10 year stability - 0.15% of the URL
- Large turndown ratio of up to 100:1
- Extensive, understandable diagnostic options according to NE107 (including PILD - detection of clogged impulse lines)
- Local configuration via control buttons on the LCD display (HMI) with Easy Setup function and optional TTG button technology
- TÜV certified according to IEC 61508 for safety-critical applications (SIL2 /SIL3)
- DP nominal pressure up to PN 600
- Wireless Hart device with long standing battery aboard (10 years)
- Traditional and Digital Diagram Seal system with extensive range of seals (S26) made “in-house”
ABB can offer the best fitting solution depending on the application as different technologies.

**Resonant Inductive**
- First integral digital sensor
- Intrinsically protected against pressure overloads

**Multi-Sensor Piezo-resistive**
- High performance
- Measures both differential and absolute pressure
- Multivariable platform

**Piezo-resistive**
- Piezo-resistive sensor:
  - Gauge and absolute pressure
Design standards

- IEC
- EN
- ISO
- ISA
- ANSI
- NEMA
  - NAMUR
  - NORSOK
  - 3A Sanitary Standard
  - Hart
  - Fieldbus Foundation
  - Profibus PA
  - FCC
  - IC
**Approval standards**

- SIL2 (1oo1) and SIL3 (1oo2) for ranges up to 15,000 psi (1034 bar). (SFF) : 93%, (DC) : 85%, λDU : 67 FIT, PFDavg : 2.93 x 10^-3 10 y

- Hazardous area (explosion proof and intrinsic safe) approvals for use in every part of the world:
  - ATEX (Europe)
  - cFMus (Canada & US)
  - IECEx (world wide)
  - InMetro (Brazil)
  - NEPSI (China)
  - EAC (Russia, Kazak, Belarus)
  - PESO (India)
Tests and verifications:

- Hydrostatic pressure test
- Helium leakage test
- Dye penetrant test
- PMI
- Huey test (Urea application)
- EN 10204 - 3.1b material traceability
Remote Seals

• The entire assembly sensor-capillary-diaphragm seal does not feature gaskets or threaded joints

• All welded parts and hydraulic circuits are helium leakage tested

• The "All-welded technology" is worldwide recognized for delivering performance stability over time and delivered by default at no extra-price
ABB Measurement & Analytics
Pressure Measurement Made Easy – Top Quality Design

Own Manufactured & Engineered Diaphragm Seals

- Stainless Steel 316L
- Hastelloy C276
- Tantalum
- Hastelloy C2000
- Super Duplex UNS S32750 to ASTM SA479
- Inconel 625
- Inconel 718
- Monel 400
- Stainless Steel PFA (Teflon) Coated
- Stainless Steel Gold plated
- Diaflex (anti abrasion treatment)
- Tailor-made design items

<table>
<thead>
<tr>
<th>FLANGES ACCORDING TO:</th>
<th>Diaphragm seal with fixed flange</th>
<th>Diaphragm seal with offline flange</th>
<th>Diaphragm seal with rotating flange</th>
<th>Wafer / Pancake style diaphragm seal with side handle</th>
<th>Ring Joint Connection flanged diaphragm seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASME</td>
<td>S26FA</td>
<td>S26MA</td>
<td>S26RA</td>
<td>S2WA</td>
<td>S26RR</td>
</tr>
<tr>
<td>EN</td>
<td>S26FE</td>
<td>S26ME</td>
<td>S26RE</td>
<td>S26WE</td>
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</tr>
<tr>
<td>JIS</td>
<td>S26RJ</td>
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<tr>
<td>ISO</td>
<td>S26RH</td>
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</tr>
</tbody>
</table>

Button diaphragm seal
Chemical tee diaphragm seal
In-line diaphragm seal
Urea service diaphragm seal
Threaded diaphragm seals for Pulp & Paper applications
Sanitary diaphragm seal according to 3-A.
Off-line threaded diaphragm seal.
Union Connection diaphragm seal
Off-line Socket and Saddle diaphragm seal

S26BN S26CN S26JN S26PN S26KN S26SS S26TT S26UN S26VN
Cooling System

The Cooling System acts as a barrier to protect the electronics of the transmitter from a high process temperature. Some of the benefits are the following:

- Prevents the transmitter from becoming overheated
- Maintains fill fluid within operating viscosity and temperature limits.
- Sustains pressure transmitter overall high performance capabilities.
- Averts down-time due to extreme temperature related failures.
Diaflex
Extremely high hardness and low friction mechanical characteristics:
• Stable up to 600°C.
• Nano-structured coating
• Titanium base composite
• PVD Physical Vapor Deposition - LARC technology
• Thickness : 3-4 µm
• 4000 HV rating on Vicker Hardness scale
Diaflex is available on front bonded connection, either with AISI or HC diaphragm substrate.

H-Shield
Extremely high resistance against Hydrogen permeation effect:
• Temperature up to 420°C.
• Nano-structured coating
• Titanium composite
• PVD Physical Vapor Deposition - LARC technology
• Thickness : 2-5 µm
H-shield (*) is available on the front bonded connection and double threaded ½ NPT F & M on PGS100.

Elevate performances of ABB technologies grant device’s longer operational life
The red PFA coating is suitable for:
- anti-stick and anti-corrosion effect
- superior chemical resistance at H-temperatures 482°F/250°C
- Advanced technology of PFA coating allows to apply a thickness up to 160μm

The grey PFA coating is suitable for:
- an anti-stick effect. it is applied on an AISI 316 L ss or Hastelloy C-276
- Outstanding properties of dry lubrication and surface hardness
- Thickness up to 25μm
Available functions

- Linear for differential, gauge and absolute pressure or level measurements
- Sq. Root (x) for flow measurements using restriction type primary element, like orifice plate, integral orifice, Venturi or Dall tube and similar
- Sq. Root (x^3/x^5) for open channel flow measurements using rectangular or trapezoidal weir / V-notch (triangular) weir
- Bidirectional Flow
- 22 points custom linearization table
- Cylindrical lying tank
- Spherical tank
PILD – A predictive function for optimized maintenance

266 line has built-in advanced diagnostic functions to detect blockages in impulse lines called PILD (Plugged Impulse Line Diagnostic) for all communication protocols.

The transmitter will register an alarm and send a digital message or analogue alert when a preset blockage level is reached, in accordance to NAMUR standard.

Impulse lines can be blocked by solids in the process, increase in viscosity or the process freezing.

Blocked impulse lines can result in expensive plant shutdowns.
266 Additional Temperature Check

ABB 2600T devices certified by TUV are capable to retain functional safety capabilities after exposure to ambient temperature lower or higher than the functional limits (-40 / +85°C) with improved diagnostic:

Example:
- HART signal to send diagnostic alert message (example -10°C).
- ABB SIL 2/3 devices drives signal into alarm condition threshold are exceeded -40°C (or +85°C).

Performance always recovers stated accuracy when device return within standard operating conditions.
## ABB Measurement & Analytics

### 266 Series - All-Rounder Pressure Transmitter

<table>
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<tr>
<th>Software features</th>
<th>Functional advantages</th>
<th>Customer benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional temperature check</td>
<td>True DP dual sensor (Static)</td>
<td>Low maintenance cost due to modular electronic and easy access terminal boards. Less operator time spent in the field</td>
</tr>
<tr>
<td>Embedded transfer functions</td>
<td>Up to 600bar static pressure resistance</td>
<td>Higher productivity from capability to configure in field via TTG or external pushbuttons (R1) even in hazardous areas</td>
</tr>
<tr>
<td>Predictive maintenance through PILD</td>
<td>Ultra / Top Accuracy (0.025% / 0.04%)</td>
<td>Lower cost of ownership thanks to process resistance (Diaflex/H-Shield, all welded remote seals, SR designs)</td>
</tr>
<tr>
<td><strong>Wide environmental &amp; measurement conditions:</strong></td>
<td>Low Voltage structure</td>
<td>Improved productivity as failures can be anticipated/avoided (PILD, additional Temp check)</td>
</tr>
<tr>
<td>Multiple HazLoc Certifications</td>
<td>Easy set up, even via external pushbuttons</td>
<td></td>
</tr>
<tr>
<td>Diaflex and H-Shield* seal nano-coating</td>
<td>Multiple communication protocols &amp; modular electronics</td>
<td></td>
</tr>
<tr>
<td>SIL2/SIL 3 for safety loop applications)</td>
<td>Through The Glass</td>
<td></td>
</tr>
<tr>
<td>All-welded remote seal tech &amp; tailor made designs (SR)</td>
<td><strong>Configuration features</strong></td>
<td></td>
</tr>
<tr>
<td>S26</td>
<td><strong>Customer benefits</strong></td>
<td></td>
</tr>
</tbody>
</table>
266 DDS - Digital Diaphragm Seal
Meeting customer needs

“The response time for the remote seals is too high for my critical applications.”

“I would like more info from my devices, so I can put more process monitoring and control in place.”

“When the ambient temperature changes, I see a drift in the measure I need.”

“In case there is a failure on a tank, if the measure is done with DP remote seal, I have to change the entire capillary system.”

“Since my installations are in places with high temperature swings, I need to heat trace capillaries to ensure the correctness of measures (i.e. head effect).”

“Installing a remote seal on a vessel requires a lot of time and effort: you always have to be careful about the capillary position.”

Access to more data

Lower installation and maintenance cost

Increased performance
ABB’s Value Proposition
DDS – Digital Diaphragm Seals

Improved Performances

Product Features:
• No oil-based capillary
• Capability of extra long cable (up to 150 mt) for tall vessels
• Highest pressure (1050 bar) and overpressure limit (1575 bar)
• Contemporary single-device and combined-devices data

Customer Benefits:
• Up to 95% lower response time
• Minimized temperature effects impacts (higher accuracy, no head effect)
• Increase data availability for deeper monitoring opportunity
• No wet/dry leg maintenance

Minimized Cost Impact

Product Features:
• Independent Primary & Secondary devices
• Modular components’ structure
• Single 2-wire 4-20mA loop with single zeroing and calibration

Customer Benefits:
• Lower installation cost (no heat tracing, less operator time)
• Lower maintenance cost (i.e single items intervention)
• Lower operator time in installation and commissioning
• Economy of scale and flexibility on cable provision
**Product Look and Feel**

**DDS – Digital Diaphragm Seals**

**Overall specs**
- Extension of the 266 available portfolio
- L1 display with common HMI
- Hazardous Area Certified (ATEX, IECEx, FM)
- IP66 & IP67 protection
- SIL certified*
- C5 compliant stainless-steel housing
- Additional external push-button for haz-loc configuration
- Wide seal portfolio available
- ABB unique coatings available: Diaflex, H-Shield, PFA
- Possibility of custom connection via Engineering to Order (SR)

**Technical Solution: combined P devices**
- Gauge Secondary device
- Blind transmitter
- Gauge Primary device
- Display available
- Calculation embedded in the electronics

* SIL certified version pending.
An overview on the seals offering - Materials
DDS – Digital Diaphragm Seals

<table>
<thead>
<tr>
<th>DIRECT MOUNT CONNECTIONS ACCORDING TO:</th>
<th>Diaphragm seal with fixed flange</th>
<th>Diaphragm seal with offline flange</th>
<th>Diaphragm seal with rotating flange</th>
<th>Ring Joint Connection flanged diaphragm seal</th>
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<tr>
<th>ABB OWN DESIGNS CONNECTIONS:</th>
<th>Threaded diaphragm seals for Pulp &amp; Paper applications</th>
<th>Sanitary diaphragm seal according to 3-A</th>
<th>Off-line threaded diaphragm seal.</th>
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<td></td>
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<td></td>
<td>S26KN</td>
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<td>S26SS</td>
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<td></td>
<td></td>
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<td>S26TT</td>
</tr>
</tbody>
</table>

Available Materials for the connections:
- Stainless Steel 316L
- Hastelloy C276
- Coated Stainless Steel (Gold plated / Anti-stick / Anti-corrosion)
- Diaflex and H-Shield
- Tantalum
- Monel 400
- Hastelloy C2000
- Super Duplex UNS S32750 to ASTM SA479
- Inconel 625 / 718
Product look and feel
How does an installed DDS system look like?

Conduit metal plug*

Primary / Secondary communication cable*

Identification label (with Secondary unit Serial & common Tag)

Identification label (with Primary unit Serial & common Tag)

Cable gland*

SECONDARY UNIT

PRIMARY UNIT

*Accessory are not included and mounted in standard delivery
DDS – Accessory List

Which compatible accessories do we have with DDS?

**Cable glands:**
- M20x1,5 Ex ia cable gland
- M20x1,5 Ex d cable gland
- ½ NPT Ex ia cable gland
- ½ NPT Ex d cable gland

**AISI plugs:**
- M20x1.5 stainless steel plug (Ex d)
- 1/2 NPT stainless steel plug (Ex d)

**Electronic cables:**
- Cable for general purpose installations
- Cable for hazardous areas installations

When ordering cables, please remember that unit of measure is meters!
Target Markets and Potential Applications

DDS – Digital Diaphragm Seals

- DDS are though for specific markets:
  - Oil & Gas
  - Refining
  - Chemical
  - Less frequent: F&B, Power Generation

- These markets in fact require applications, mainly level measurement, where performance of standard remote seal are sometimes not enough.

- These application can be:
  - Chemical components storage tanks
  - Separation tanks (oil from water and gas)
  - Pressurized heater-treaters
  - Crude / Processed Oil storage tanks
  - Exhaust pressure of flue gas
  - Pipeline pressure in dairies
  - Steam pressure control
  - Pressure monitoring in LNG tanks
How does it work? Comparison with a traditional remote seal

Base case: 266MRT with direct mount and 4mt capillary seal

→ Conditions:
- 8 mt pressurized tank (Static pressure = 2 bar)
- DP level: 250 mbar
- Ambient temperature: -10°C to +10°C
- Distance between the taps: 4 mts

→ Model configuration:
- 266MRT with 400 mbar sensor
- Calibration: 0-250mbar
- Capillary: silicon filling
- Connection: one direct + one remote
- Size: 2” stainless steel flush flange as per the specs of the S26FA seal model.
How does it work? Comparison with a traditional remote seal

Base case: 266MRT with two 4mt capillary seal

→ **Conditions:**
- 8 mt pressurized tank (Static pressure = 2 bar)
- DP level: 250 mbar
- Ambient temperature: -10°C to +10°C
- Distance between the taps: 4 mts

→ **Model configuration:**
- 266MRT with 400 mbar sensor
- Calibration: 0-250mbar
- Capillary: silicon filling
- Connection: two remote
- Size: 2” stainless steel flush flange as per the specs of the S26FA seal model.

**Installation**

**Performance**

- TPE: 0.163%
- Response time: 3.11 sec.
- Head effect: 3.099%
- Total Error: 3.262%
How does it work? Comparison with a traditional remote seal

DDS case: two 266GRT direct mount

**Conditions:**
- 8 mt pressurized tank (Static pressure = 2 bar)
- DP level: 250 mbar
- Ambient temperature: -10° C to +10°C
- Distance between the taps: 4 mts

**Model configuration:**
- 2x 266GRT with 2500 mbar sensor
- Primary device Calibration: 0-250 mbar
- Secondary device Calibration: 0-2500 mbar
- Capillary: silicon filling
- Connection: direct mount
- Size:2” stainless steel flush flange as per the specs of the S26FA seal model.

**Performance Comparison**

266 GRT Digital Diaphragm Seals
- TPE: 0.655%
- Response time: 0.84 sec.
- Head effect: NO
- Total Error: 0.655%

266MRT Direct & Remote Seals
- TPE: 0.470%
- Response time: 1.84 sec.
- Head effect: 3.099%
- Total Error: 3.569%

266MRT Remote Seals
- TPE: 0.163%
- Response time: 3.11 sec.
- Head effect: 3.099%
- Total Error: 3.262%
### Functional advantages

- Cable length up to 150 mt
- Modular construction
- Electronic pressure measure data transfer
- **Wide environmental & measurement conditions:**
  - Diaflex and H-Shield* seal nano-coating
  - Wide process temperature range

### Communication protocols

- 4...20 mA
- HART
- DiT & DTM
- 4...20 mA / HART
- Full local configuration via display

### Configure & Communication

- Multiple HazLoc Certifications

### Customer benefits

- Reduced maintenance costs due to modular construction of the DDS solution (2 coupled devices).
- Reduced total operational costs due to elimination of temperature-drive drifts and lower installation costs.
- Improved performances thanks to reduced response time & increased accuracy
- Increased flexibility thanks to widest URLs span & longest sensor cable
- Improved productivity in case of substitution of old standard oil-filled capillary remote seal
266 Wireless Deep Dive
ABB WirelessHART Transmitter

ABB’s Wireless Measurement Technology

**Under pressure**

- Modern “Resonant Inductive” Technology
- Electronic optimized for ultra low power operation
- Easy on-site operation – due to large LC display
- Available for gauge, absolute and differential pressure
- Available with S26 diaphragm line
- Hardware and software write protection
- Power supply with standard battery
- Intrinsic safety for hazardous areas

Wireless Pressure Measurement – 2600T
Why Choose ABB?

Easy operating concept

- The ABB WirelessHART transmitter uses the standard display of measurement and analysis technology.
- The entire device can be commissioned through the display – from the sensor to the antenna.
- To save energy, the display is deactivated after a short period of inactivity and can be activated at the device at any time.
- The local HART interface allows you to use the device with usual configuration tools.

Maximum usability with minimum training.
ABB WirelessHART Transmitter

Why Choose ABB?

The battery is the key

Batteries make the WirelessHART transmitter easy and quick to install. The use of batteries offers

Benefits
+ Sufficient power
+ Cheap
− Finite energy reserves

Drawbacks:
− Total maintenance costs for battery replacement
  ➔ Procure, exchange and document.

Unique:
The ABB WirelessHART transmitter reduces the replacement interval of the battery to a minimum.

Maximum service life with minimum maintenance.

State of the art

<table>
<thead>
<tr>
<th>Battery life</th>
<th>Update rate</th>
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</thead>
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<tr>
<td>5 years</td>
<td>8 seconds</td>
</tr>
<tr>
<td>8 years</td>
<td>16 seconds</td>
</tr>
<tr>
<td>10 years</td>
<td>32 seconds</td>
</tr>
</tbody>
</table>

Battery life vs. Update rate: 5 years = 8 seconds; 8 years = 16 seconds; 10 years = 32 seconds.
**ABB WirelessHART Transmitter**

Why Choose ABB?

**Easy to procure standard batteries**

- The ABB WirelessHART transmitters use standard D-cells instead of special batteries.
- Standard D-cells are widely available.
- D-cells for use in potentially explosive atmospheres must be purchased from ABB.
- D-cells for use in potentially explosive atmospheres are intrinsically safe and may be hot-swapped in Zone 0.

Maximum availability at minimum cost.
ABB WirelessHART Transmitter

Why Choose ABB?

Complete wireless offer

ABB offers
- wireless transmitters,
- wireless condition monitoring,
- wireless I/O and IP networks,
- seamless integration with ABB control systems and therefore a complete system offer.
ABB Measurement & Analytics
266 Series - Wireless Pressure Transmitter

**Multiple power options**
- 10 years of standard battery
- Harvester compatible*

**Wide environmental & measurement conditions:**
- Ex Intrinsically safe
- Diaflex and H-Shield*** seal
- nano-coating
- Multiple Pressure measurement (Abs, Gauge and Differential)

**Installation – fast & easy**
- Fast connection to any existing net
- Retrofitting & no electrical background needed

**Configuration features**
- Through The Glass
- FIM, DD & DTM

**Customer benefits**
- Longest battery life in the market resulting in lower cost of ownership
- Standard battery D-Cell type resulting in lower cost of ownership
- No need for cables % related activities, resulting in lower cost of ownership (30% lower**)
- Plug & Play behavior in installation allow operators to increase their productivity. Even in HazLoc!

---

* AVAILABLE VIA SPECIAL REQUEST
** FOR A 30 A/I INSTALLATION AND DATA COLLECTION IN GP AREA
*** AVAILABLE IN THE REMOTE SEAL CONFIGURATION VIA SR
266 Multivariable Deep Dive
The 4-in-1 solution

Measurement of 3 process values
- Differential pressure
- Absolute pressure
- Temperature

Integrated calculation functionality of a flow computer
- Calculation of flow with compensation
- Compensated level measurement for gases, steam and liquids

DP accuracy up to 0,04%
Pabs accuracy of 0,1%
Volumetric flow does not take into account density, which is the main contributor to inaccurate measurement.
The density of gases changes with temperature and pressure.

<table>
<thead>
<tr>
<th>Base Condition</th>
<th>Temperature Variation</th>
<th>Pressure Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure (Mass constant)</td>
<td>1 bar / 14.5 psi</td>
<td>Pressure (Mass constant)</td>
</tr>
<tr>
<td>Temperature 20 °C / 68 °F</td>
<td>60 °C / 140 °F</td>
<td>Temperature 20 °C / 68 °F</td>
</tr>
</tbody>
</table>

+15%   

-50%
Standard approach to flow measurement

Multivariable approach to flow measurement
**ABB Measurement & Analytics**

266 Series – Multivariable Transmitter – An example of the accuracy advantage

Errors from normal to max flow (750 to 1000 SCFM)

<table>
<thead>
<tr>
<th>Source of error</th>
<th>Error without compensation</th>
<th>Error with dynamic compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmitter</td>
<td>0.22%</td>
<td>0.22%</td>
</tr>
<tr>
<td>Primary Element</td>
<td>1.2%</td>
<td>0.6%</td>
</tr>
<tr>
<td>P,T Variation</td>
<td>2.8%</td>
<td>0.35%</td>
</tr>
</tbody>
</table>

**Performance and accuracy are improved using 266 Multivariable transmitter**
**ABB Models offering**

266Jxx (3 in 1 solution without calculation)
- Multiple measurement of process values
- Differential pressure
- Absolute (line) pressure
- Process temperature

266Cxx Calculation functionality (flow computer) included
- Mass flow for gases, steam, and liquids by means of dynamic compensation
- Heat flow for water and steam
- Level measurement with density compensation
- Boiler drum level

**Measuring ranges**

<table>
<thead>
<tr>
<th>Process variable</th>
<th>Measured value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP</td>
<td>0.05 kPa to 10 MPa</td>
</tr>
<tr>
<td>P</td>
<td>up to 41 MPa / 5945 psi</td>
</tr>
<tr>
<td>T&lt;sub&gt;Process&lt;/sub&gt;</td>
<td>-200 °C to 850 °C</td>
</tr>
<tr>
<td></td>
<td>-328 °F to 1562 °F</td>
</tr>
</tbody>
</table>
ABB Measurement & Analytics
266 Series - Multivariable Transmitter
**ABB Measurement & Analytics**

**266 Series - Multivariable Transmitter advantages**

**Accurate, reliable and convenient**
Combined with manifold, connection hardware and/or primary elements into a single package, it reduces capital expenditures by 55%

**Simplicity with reduced costs**
Simplifies the piping and greatly reduces the number of leak paths, by as much as 70%

**"Right first time" installations**
Factory assembled, tested, configured and provided with a factory calibration certificate

**Simple to use with easy features**
User friendly HMI, allowing "Through-the-glass' control

**Reliable measurements**
Process diagnostics continuously monitor for impulse line plugging or freezing

**Safety by design**
Product is designed according to safety principles, both from mechanical and FW point of view, such as the SIL or the Explosion proof requirements.
### Communication protocols

- 4...20 mA
- HART
- Modbus

### Wide environmental & measurement conditions:

- Multiple HazLoc Certifications
- Diaflex and H-Shield* seal nano-coating
- SIL2/SIL 3 for safety loop applications

### Functional advantages

- 3 process variables: Pressure, Static and Temperature
- Compensated calculation of Flow and Level
- Top Accuracy (0.04%) & High Static (up to 41 Mpa)
- Predictive maintenance through PILD

### Configuration features

- Through The Glass
- FIM, DD & DTM

### Customer benefits

- Reduced cost of ownership and installation due to multiple transmitter avoidance. As well all accessory costs (i.e. valves, wet legs, electrical connections) for standard flow/level calculation are zeroed.
- Lower commissioning cost due to full local configurability and hence potential HHT avoidance.
- Increased productivity of plant delivering high performances in demanding applications like high static line pressure pipes, high temperature processes or hazardous locations.
- Increase productivity thanks to advanced issue detection by PILD and longer seal life with Diaflex on abrasive, sticky or hard processes.

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Slide 50  
* AVAILABLE IN THE REMOTE SEAL CONFIGURATION VIA SR
PxS100 – The Standard Essential transmitter
PxS100 – The Essential Pressure Transmitter

Positioning Outlook | Target markets for PxS100 are:

- WATER & WASTEWATER
- CEMENT & MINING
- PULP & PAPER*
- ANCILLARY (POWER&METALS)
- OEM & MACHINE BUILDERS

*together with PxP100 dedicated model
PxS100 – The Essential Pressure Transmitter

Features and Benefits

- **Wide choice of pressure ranges**
- **Robust front-bonded connection**
- **Easy operation**
- **Configuration and interoperability**
- **High visibility touch HMI with backlight option**
- **Flexible process connections**
- **Compact Stainless-Steel housing**
- **Fast delivery**
- **ABB unique technologies against abrasion and permeation**
- **Wide choice of pressure ranges**

©ABB
PxS100 – The Essential Pressure Transmitter

New high visibility HMI with backlit display

The new HMI has:
• high visibility thanks to
  • Wide display dimensions (2 inches)
  • Backlight option
• improved touch response for best interaction

Display menu is constructed with intuitive and easy interaction logic similar to the existing ABB navigation standards.

On top, the multiple-teeth HMI board grants full flexibility in setting any position for display readability, with a +180°/-180° rotation available.
## PxS100 – The Essential Pressure Transmitter

Flexible process connections: Threaded Adapters Modularity

<table>
<thead>
<tr>
<th>Double threaded connection</th>
<th>Threaded adapters</th>
<th>Equivalent models</th>
</tr>
</thead>
</table>

One single sensor can drive up to more than **300** equivalent models combining adapters, turndown and certification options.
PxS100 – The Essential Pressure Transmitter
Flexible process connections: Threaded Flanges Modularity

Front bonded connection  Threaded flanges  Direct mount seal equivalent models

One single sensor can drive up to more than 400 equivalent direct mount seals combining flanges, turndown and certification options
PxS100 – The Essential Pressure Transmitter

How to maximize the capability to fit different processes?

**M26 COMPATIBILITY**

PxS100 with NPT process connection can be coupled with manifolds to ease up process management and maintenance.

Leverage the materials and performances of the consolidated offering of ABB M26 selection.
PxS100 – The Essential Pressure Transmitter

Compact Stainless-Steel housing

PxS100 housing has been designed in stainless steel to be:

• Compact
• Sturdy
• Corrosion resistant
• Easy to clean (IP69K – Cleaning in Place)

On top, PxS100 has been tested and successfully delivers:

IP66 / IP67 / IP68 / IP69K
PxS100 – The Essential Pressure Transmitter

Robust front-bonded connection

Front bonded process connection is perfectly fitting in:

• Pulp & Paper
• Viscous processes

PxS100 front bonded connection will have:

• Stainless steel design
• Compact and robust geometry
• Broad range of measuring cells applicability
• AISI and HC diaphragm materials
• Availability of H-shield coating on AISI
• Availability of Diaflex coating on AISI and HC
PxS100 – The Essential Pressure Transmitter
Wide choice of pressure ranges

Gauge and Absolute Pressure Measurement

- 5 main ranges:
  - 400 mbar
  - 2.5 bar
  - 10 bar
  - 40 bar
  - 100 bar

- 4 main process connections:
  - ½ NPT M + ¼ NPT F
  - ½ NPT F
  - G ½ B
  - Front Bonded

Analog 4..20 mA & HART 7 Protocols

- Intrinsically Safe Certified under ATEX, IECEx, CSA (CA & US)

- Turndown up to 100:1

All the specifications of PxS100 enable a perfect fit on essential measurement points
PxS100 – The essential pressure transmitter

Safety & Performances

**DRINKING WATER APPROVALS**

In municipalities and applications where water is made available for people to be consumed, country approvals for drinking compatibility as sign of quality and safety. PxS100 is compliant with 2 country standards:
- DM 174 (Italy)
- WRAS (UK)

**FDA APPROVED FILLING**

FDA approval is the American standard that a filling fluid for a pressure device needs to comply with so as protect people health in case of contact. PxS100 is equipped with Mineral FDA-approved oil option.

**EXTRA ACCURACY**

Possibility of extended accuracy options in case of more accurate process measure requirements:
- 0,1% of measured span
- 0,075% of measured span
PXS100 – The Essential Pressure Transmitter

Easy operation

**Easy Set up menu**

A simple, smartphone-like approach, for the configuration menu*. Essential and of easy interpretation.

![Easy Set up menu images]

**QR code functionalities**

3 QR codes available for advanced operation on the device:

- Documentation QR Code
- DAD – Digital Advanced Diagnostic QR Code
- Channel Partner QR Code

*Easy Set up menu available on the HART version
**PxS100 – The Essential Pressure Transmitter**

**Easy operation**

**Documentation QR Code**

The QR code on the product nameplate grants a direct access to PxS100 webpage.

No more paper manuals or time losses to look for a detail on ABB documents: direct access to correct content!

**Digital Advance Diagnostics**

In case of failure / warning, a QR code will pop up. Upon scan, it will lead to an on-line doc with:
- **Resolution tips**
- **Condition details and potential causes**

The specific set of info is constructed to provide more insights to on-field operators, reducing resolution time.

**Channel Partner Support QR Code**

When purchased through ABB Channel Partners*, customers can find CP’s contact details by accessing this QR code* inside the Easy Set Up menu.

Availability of such details (i.e. name, address, phone, mail, etc.) make the difference when in need for immediate support.

*Please ask your ABB Channel Partner contact if the option is available from their end.
Diaflex

Extremely high hardness and low friction mechanical characteristics:
- Stable up to 600°C.
- Nano-structured coating
- Titanium base composite
- PVD Physical Vapor Deposition - LARC technology
- Thickness: 3-4 µm
- 4000 HV rating on Vicker Hardness scale

Diaflex is available on front bonded connection, either with AISI or HC diaphragm substrate.

H-Shield

Extremely high resistance against Hydrogen permeation effect:
- Temperature up to 420°C.
- Nano-structured coating
- Titanium composite
- PVD Physical Vapor Deposition - LARC technology
- Thickness: 2-5 µm

H-shield is available on the front bonded connection, the double threaded one and the ½ NPT Female

Elevate performances of ABB technologies grant device’s longer operational life
PxS100 – The Essential Pressure Transmitter

Interoperability - Configurability options

**HMI**
- Setting via 2 button touch display

**HANDHELD**
- Handheld Terminals (HART Transmitter)

**SOFTWARE / PC**
- FIM
- DTM
- Any third-party Frame featuring ABB DD

Setting via internal push buttons (Zero/Span) + SW write protect
PxS100 – The essential pressure transmitter

Main Specifications summary

- Consolidated coding logic in line with ABB Global Guidelines (i.e. PGS100 / PAS100)
- Improved design: still compact but increased size for better usability
- True entry level product with essential specs (0,25% base accuracy – 0,1% & 0,075% optional)
- Two main measurement types: **Absolute and Gauge**
- 5 main sensor ranges: 60 mbar / 400mb / 2,5 bar / 10 bar / 40 bar / 100 bar (20:1 TD)
- 5 main diaphragm materials: 316L, HC, Diaflex (on 316L / HC276), H-Shield
- AISI process connection with Silicon, FDA and Inert fillings (O2 service option available)
- Multiple process connections: combined ½ NPT Male - ¼ NPT Female, ½ NPT Female, G ½ B, Front Bonded
- 1 SS Housing: M16, ½ NPT*, M20x1,5* & 1 PBT **Plastic housing**
- 3 communication protocols: 4..20 mA analog output, 4..20 mA + HART7 output, I/O Link**
- Blind, Touch-Display and **Backlight Touch-Display** HMI
- Ex ia Certifications (ATEX, CSA, IECEx, INMETRO, NEPSI) & SIL 2/3**
- M26 Manifold compatibility
ABB Measurement & Analytics
Pxx100 Series – The essential Pressure transmitter

**Functional advantages**
- Backlit Touch display
- Digital Access Diagnostics (Dynamic QR Code)
- Label QR code for easier documentation access
- Wide environmental & measurement conditions:
  - Ex Intrinsically safe
  - Diaflex and H-Shield* seal nano-coating
  - IP66/67/68/69K, sturdy and compact AISI Housing

**Configure & communication**
- FIM, DD & DTM
- 4...20 mA / HART
- Full local configuration via display

**Go-to-Market Advantages**
- Double-threaded connection
- Threaded NPT adapters
- Threaded G Flanges for direct mount seal-equivalent installation

**Customer benefits**
- Higher competitiveness thanks to the targeted price / feature ratio fitting even aggressive price tiers.
- Lower cost of ownership due to ABB nano coatings increasing resistance to abrasion and diaphragm inflation
- Increased productivity thanks to the flexibility in process connections coupled to standard off-shelf device
- Increased productivity thanks to the fast availability on the market and Digital Access Diagnostics
PxF100 – The Essential transmitter for F&B applications
## PxF100 – The Essential Pressure Transmitter in F&B
### Safety & Performances

<table>
<thead>
<tr>
<th>3A</th>
<th>FDA APPROVED FILLING</th>
<th>EHEDG</th>
<th>1935/2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>The 3-A Sanitary Standards are American standards related to the design and production of equipment intended for contact with food.</td>
<td>FDA approval is the American standard that a filling fluid for a pressure device needs to comply with so as protect people health in case of contact. PxF100 is equipped with Mineral &amp; Vegetal FDA-approved oil option.</td>
<td>EHEDG (European Hygienic Engineering and Design Group) is a European-based certification that can be obtained if a product is designed and produced according to hygienic principles.</td>
<td>1935/2004 is a regulation of the European Parliament and and of the Council on materials and articles intended to come into contact with food</td>
</tr>
</tbody>
</table>
PxF100 – The Essential Pressure Transmitter in F&B

Environmental conditions

RESISTENT & STURDY

PxF100 housing has been designed in AISI to be:
- Compact
- Sturdy
- Corrosion resistant
- Easy to clean

PxF100 has been tested and successfully delivers:

IP66 / IP67 / IP68 / IP69K

PxF100 features an option to ensure proper performances during vacuum conditions.
PxF100 metal components (e.g., process connection) are processed in a vacuum oven to remove any gaseous element that might be released by vacuum conditions and affect fill fluid behavior.
Px F100 – The Essential Pressure Transmitter in F&B

Specific fittings

**Tri-Clamps**
- Tri-Clamp ISO2852 DN 25 (1 in), DIN32676 DN25 32
- Tri-Clamp ISO2852 DN 38 (1 1/2 in), DIN 32676 DN40
- Tri-Clamp ISO2852 DN 51 (2 in), DIN 32676 DN 50
- Tri-Clamp ISO2852 DN 76.1 (3 in), DIN 32676 DN65*
- Tri-Clamp ISO2852 DN 101.6 (4 in) DIN 32676 DN 100*

**Dairy 11851**
- Diary 11851 DN40 PN40
- Diary 11851 DN50 PN25
Specific fittings

**Dairy** DIN 11864-1 type A DN40 PN16
Dairy DIN 11864-1 type A DN50 PN16

**Varinline®**
Varinline® F DN25
Varinline® N DN40
PxF100 – The Essential Pressure Transmitter in F&B

Specific fittings

**NEUMO**
- Neumo Biocontrol® D50
- Neumo Biocontrol® D65

**DRD**
- DRD 65mm (DN 50)

**SMS**
- SMS 1 1/2 in PN40 (diameter 35)
- SMS 2 in PN40 (diameter 45)
DIAFLEX

ABB’s unique technology solution.

Extremely high hardness and low friction mechanical characteristics:
• Stable up to 600°C.
• Nano-structured coating
• Titanium base composite
• PVD Physical Vapor Deposition - LARC technology
• Thickness: 3-4 µm
• 4000 HV rating on Vicker Hardness scale

Diaflex is available on front bonded connection, either with AISI or HC diaphragm substrate. Diaflex has been tested against the requirements of 1935/2004 for food contact.
Cleaning & Sanitization

**TEMPERATURE RESISTANCE FOR CIP/SIP**

As per Wikipedia:

- «Clean-in-place (CIP) is a method of automated cleaning the interior surfaces of pipes, vessels, equipment, filters and associated fittings, without major disassembly. CIP is commonly used for equipment such as piping, tanks, and fillers....Industries that rely heavily on CIP are those requiring **high levels of hygiene, and include dairy, beverage, brewing, processed foods**, pharmaceutical, and cosmetics.”

- Sanitization in place (SIP) involves also the use of steam and both cleaning methods are needed to ensure the correct hygiene level of a plant / machinery.

As a result, a device that needs to be suitable for such a process, mainly in relation to the temperature that it can withstand, usually between 100° C and 150°C.

PxF100 has been designed to withstand process media temperatures up to 180°C in its standard configuration thanks to temperature dissipation neck.
Cleaning & Sanitization - Temperature behavior example

CIP cleaning process

- Water
- Alcalis
- Water
- Acids
- Water
- Steam
- Product
PxF100 – The Essential Pressure Transmitter in F&B

Flexibility

COST OPTIMIZATION AND INCREASED AVAILABILITY

Front bonded universal connection has been designed to fit multiple hygienic adapters to minimize the number of devices on stock and flexibly manage installations.

Universal connection can be ordered with diaphragm in:
- AISI 316L
- HC 276
- Diaflex on AISI
- Diaflex on HC

The combination of Universal Connection and ABB hygienic adapters is approved under 3A and EHEDG.*

ABB hygienic adapters can be ordered as single items like Pxs100’s flanges and threaded adapters.

*Universal connection fulfill 3A approvals when coupled with relevant gaskets (digit RF,RK,RN) and Hygienic adapters. Hygienic adapters and process connections pending (Ordering Code PZH)
PxF100 – The Essential Pressure Transmitter in F&B

Features and Benefits

**FUNCTIONAL ADVANTAGES**
- Backlit Touch display
- Digital Access Diagnostics (Dynamic QR Code) & documentation QR code
- 3A, EHEDG, FDA, 1935/2004 compliant connections

**WIDE ENVIRONMENTAL & MEASUREMENT CONDITIONS:**
- Ex Intrinsically safe & SIL 2/3
- Diaflex nano-coating
- IP66/67/68/69K, sturdy and compact AISI Housing

**CUSTOMER BENEFITS**
- Longer transmitter lifetime thanks to stainless steel housing and resistance to CIP / SIP
- Lower cost of ownership due to ABB nano coating, high resistance to abrasion and opportunity for competitiveness on plastic housing
- Increased productivity thanks to the flexibility delivered by hygienic adapters coupled to the universal connections
- Increased productivity thanks to Digital Access Diagnostics and availability of I/O Link protocol

**GO-TO-MARKET ADVANTAGES**
- Universal connection and hygienic adapters for CIP/SIP for up to 180 °C
- Robust Stainless-steel housing and competitive plastic housing
- Standard accuracy of 0,1% and 0,075% extended option

**CONFIGURATION AND COMMUNICATION**
- FIM, DD & DTM
- 4...20 mA / HART& I/O Link protocol
- Full local configuration via display
PxF100 – The Essential Pressure Transmitter in F&B

Main Specifications summary

- 3A & EHEDG approved designs
- Improved design: still compact but increased size for better usability
- Tailored accuracy on F&B segment (0,1% base accuracy – 0,075% optional)
- Two main measurement types: **Absolute and Gauge**
- 5 main sensor ranges: 60mbar / 400mb / 2,5 bar / 10 bar / 40 bar / 100 bar (20:1 TD)
- 5 main diaphragm materials: **316L, HC, Diaflex (on 316L / HC276), H-Shield**
- **AISI** process connection with FDA-approved (Mineral & Vegetal), silicon and inert fillings
- Large number of hygienic connections, including the universal one to be fitted on the approved adapters
- **1 SS Housing**: M16, ½ NPT*, M20x1,5* & 1 PBT **Plastic housing**
- 3 communication protocols: 4..20 mA analog output, 4..20 mA + HART7 output, I/O Link**
- Blind, Touch-Display and **Backlight Touch-Display** HMI
- Ex ia Certifications (ATEX, CSA, IECEx) & SIL 2/3**

* Pending.

** Through adapter

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Pxx100 – The Essential Pressure Transmitter

Interoperability – I/O Link Protocol

I/O LINK COMMUNICATION PROTOCOL ADVANTAGES

• Simplicity to use in comparison to FF or PA
• Standard cabling VS expensive cables used in FF or PA
• Quick connection through the embedded M12 connection
• High speed communication allows better process control
• Real time availability of process and diagnostic information

Pxx100 WITH I/O LINK ADVANTAGES

• Possibility to retrofit and substitute old devices (binary sensor usage) while benefitting local configuration
• Additional outputs (4..20 mA and secondary digital output)
• Additional functionalities on output configurations
• Advanced backlight configurability (ON/OFF, alarm blinking, dependance from Digital Output, etc)
 PxD100 – The Essential transmitter for remote seal installations
PxD100 – The Essential Remote Seal Pressure Transmitter

What is PxD100?

PxD100 is the compact remote or direct seal solution leveraging the advantages of the Pxx100 series and the efficiency of the S26 seals connections.
FDA APPROVED FILLING

FDA approval is the American standard that a filling fluid for a pressure device needs to comply with so as protect people health in case of contact. PxS100 is equipped with Mineral FDA-approved oil option.

EXTRA ACCURACY

Possibility of extended accuracy options in case of more accurate process measure requirements:
- 0,1% of measured span
- 0,075% of measured span

SAFETY

Capability of being installed in safety loops thanks to the SIL 2/3 certification*
PxD100 – The Essential Remote Seal Pressure Transmitter

Product Look and Feel
PxD100 – The Essential Remote Seal Pressure Transmitter
Superior construction technology

The entire assembly sensor-capillary-diaphragm seal does not feature gaskets or threaded joints.

All welded parts and hydraulic circuits are helium leakage tested.

The "All-welded technology" is worldwide recognized for delivering performance stability over time and delivered by default at no extra-price.
**PxD100 – The Essential Remote Seal Pressure Transmitter**

Superior construction technology

---

**MATERIALS & AVAILABLE GEOMETRIES**

Stainless Steel 316L  
Hastelloy C276  
Tantalum  
Hastelloy C2000  
Super Duplex UNS S32750 to ASTM SA479  
Inconel 625  
Monel 400  
Stainless Steel PFA (Teflon) Coated  
Stainless Steel Gold plated  
Diaflex (anti abrasion treatment)  
Tailor-made design items

---

**FLANGES ACCORDING TO:**

<table>
<thead>
<tr>
<th></th>
<th>Diaphragm seal with fixed flange</th>
<th>Diaphragm seal with rotating flange</th>
<th>Wafer / Pancake style diaphragm seal with side handle</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASME</td>
<td>S26FA</td>
<td>S26RA</td>
<td>S2WA</td>
</tr>
<tr>
<td>EN</td>
<td>S26FE</td>
<td>S26RE</td>
<td>S26WE</td>
</tr>
</tbody>
</table>
**PxD100 – The Essential Remote Seal Pressure Transmitter**

Abrasion resistance

**DIAFLEX**

ABB’s unique technology solution.

Extremely high hardness and low friction mechanical characteristics:

- Stable up to 600°C.
- Nano-structured coating
- Titanium base composite
- PVD Physical Vapor Deposition - LARC technology
- Thickness : 3-4 µm
- 4000 HV rating on Vicker Hardness scale

Diaflex is available on front bonded connection, either with AISI or HC diaphragm substrate.
PxD100 – The Essential Remote Seal Pressure Transmitter

Hydrogen permeation resistance

**H-SHIELD**

ABB’s unique technology solution.

Extremely high resistance against Hydrogen permeation effect:
- Temperature up to 420°C.
- Nano-structured coating
- Titanium composite
- PVD Physical Vapor Deposition - LARC technology
- Thickness: 2-5 µm

H-shield is available on the front bonded connection, the double threaded one and the ½ NPT Female one.

<table>
<thead>
<tr>
<th>Material</th>
<th>Ppm @ 230°C</th>
<th>Ppm @ 350°C</th>
<th>Ppm @ 420°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>HC</td>
<td>0,0011</td>
<td>0,0091</td>
<td>0,0199</td>
</tr>
<tr>
<td>AU</td>
<td>0,0009</td>
<td>0,006</td>
<td>0,0133</td>
</tr>
<tr>
<td>HSHI</td>
<td>0,00</td>
<td>0,00</td>
<td>0,0005</td>
</tr>
</tbody>
</table>
Viscous fluids

**PFA**

The red PFA coating is suitable for:
- anti-stick and anti-corrosion effect
- superior chemical resistance at H-temperatures 482°F/250°C
- Advanced technology of PFA coating allows to apply a thickness up to 160μm

The grey PFA coating is suitable for:
- an anti-stick effect. It is applied on an AISI 316 L ss or Hastelloy C-276
- Outstanding properties of dry lubrication and surface hardness
- Thickness up to 25μm
PxD100 – The Essential Remote Seal Pressure Transmitter

What is PxD100?

**Px100 FEATURES**

- High resistance stainless steel housing
- HMI on Backlit display
- High Interoperability
- Digital diagnostics & support
- Extended performances & competitiveness

**S26 FEATURES**

- All-welded leakage-free technology
- Wide selection of geometries
- Wide selection of materials and fillings
- Possibility of customization (Special Requests)
PxP100 – The Essential transmitter for P&P applications
PxP100 – The Essential transmitter for P&P applications

What is PxP100?

Model PxP100 is the new gauge pressure transmitter from ABB featuring various Pulp & Paper process connections. Its compact stainless steel housing grants robustness, resistance to harsh environment, humidity and vibration, while incorporating the high visibility display with backlight option. Tailored accuracy on P&P segment (0,1% base accuracy, 0,075% optional). The combination of various process connections with diaphragm materials are available thorough a well-know and proved ABB seal type, S26KN. Unique wetted parts material over the most common one like SST 316 L, Hastelloy-C are available, Duplex and Diaflex. The ABB All-Welded design is still the technology to achieve unrelieved performances. Threaded flush design process connections provide solutions beyond P&P. They are proven in Wastewater and sludge applications where dead-space plugging can be an issue.
PxP100 – The Essential Pressure Transmitter in P&P

Product Look and Feel
## PxP100 – The Essential Pressure Transmitter for P&P

### Industry critical requirements

<table>
<thead>
<tr>
<th>CRITICALITY</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPECIFIC FITTINGS</strong></td>
<td>Different pulp &amp; paper processes require different fitting.</td>
</tr>
<tr>
<td><strong>ABRASIVE PROCESS</strong></td>
<td>Suspended particles in high velocity media</td>
</tr>
<tr>
<td><strong>VIBRATION RESISTANCE</strong></td>
<td>Vibration often leads to device failure</td>
</tr>
</tbody>
</table>

COMING SOON
PxP100 – The Essential Pressure Transmitter in P&P

Specific connections to maximize efficiency

- 1” / 1 ½” sealing with gasket to spud
- 1” / 1 ½” NPT male threaded
- 1 in. G with ball valve connection
PxP100 – The Essential Pressure Transmitter for P&P
Superior construction technology

MATERIALS & AVAILABLE GEOMETRIES

Stainless Steel 316L
Hastelloy C276
Diaflex antiabrasion coating on AISI 316 L ss
Diaflex antiabrasion coating on Hastelloy C-276
Duplex (pending)

Threaded diaphragm seals
for Pulp & Paper applications

COMING SOON
PxP100 – The Essential Pressure Transmitter for P&P
Superior construction technology

The entire assembly does not feature gaskets or threaded joints.

All welded parts and hydraulic circuits are helium leakage tested.

The "All-welded technology" is worldwide recognized for delivering performance stability over time and delivered by default at no extra-price.
PxP100 – The Essential Pressure Transmitter in P&P
Pressure Measurement Made Easy – Top Quality Design

Diaflex
Innovative solution: extremely high hardness and low friction mechanical characteristics:

• Stable up to 600°C
• Nano-structured coating
• Titanium base composite
• PVD Physical Vapor Deposition - Larc technology
• Thickness : 3-4 µm
• 4000 HV rating on Vicker Hardness scale

Proven to extend transmitter service life in harsh pulp blending applications across all S26 seal types. Now available in an economical industry specific package.
PxP100 – The Essential Pressure Transmitter in P&P

Main specifications summary

Improved design: still compact but increased size for better usability
Tailored accuracy on P&P segment (0,1% base accuracy – 0,075%optional)
Large number of specific connections

5 main diaphragm materials: 316L, HC, Diaflex (on 316L / HC276), Duplex

Two main measurement types: Absolute and Gauge

5 main sensor ranges: 400mb / 2,5 bar / 10 bar / 40 bar / 100 bar (20:1 TD)

1 SS Housing & 1 plastic housing ** with 3 threads: M16, ½ NPT*, M20x1,5*

3 communication protocols: 4..20 mA analog output, 4..20 mA + HART7 output, I/O Link **

Blind, Touch-Display and Backlight Touch-Display HMI

Ex ia Certifications (ATEX, CSA, IECEx) & SIL 2/3 **
Remote Indicators Deep Dive
Remote indicator

Indication accuracy

- Digital: ±0,10% of span (16 mA) ± 1 digit
- Bar graph: ±1% Resolution
- 16 bit conversion Ambient temperature effect
- ±0,15% of span (16 mA)

By applying an appropriate input scaling, JDF200 shows:

• Current
• Pressure
• Temperature
• Level
• Mass and Volume Flow
• Heat Transfer Rate
• Custom variable
Macro specs

- 2600T family look and feel
- L1 display with common HMI operational logics, including Easy Setup
- Hazardous Area Certified
  - ATEX
  - IECEx
  - FM
- IP67 protection
- C4 corrosion protection painting
- Additional external push-button for haz-loc configuration
### Remote Visibility

**Multivariable display visibility**
- Up to 8 variables, including measure goodness
- Single variable (P) displayed multiple times
- Set of variables (P, T, flow) displayed in sequence

**Local display configuration**
- Tailored for specific visualization

**Multipurpose bracket system**
- One bracket for wall & pipe installation

### Delocalized Control

**Library of function block available**
- 1 Arithmetic (+, -, average, etc)
- 1 Input selector (returns output based on rules on input received)
- 1 Control selector (as ‘input selector’ but with input from control blocks)
- 2 PID (Proportional, integral, derivative)

**Backup LAS capability (Link Active Scheduler)**
- JDF300 is able to auto-activate schedule of the planned activities on the network

### FF Network Fit

**FOUNDATION™ Fieldbus architecture**
- Allows JDF300 to process/receive any variable from existing FF network devices including:
  - Pressure
  - Temperature
  - Flow
  - Setpoint
  - PID output (control variable %)

From both ABB and competitors’ products
Cost Saving
- Lower operating cost: monitoring system can be designed in a simpler way
- Lower installation cost: store one bracket code for pipe and wall installation
- Lower cost of ownership: combined certification and modular spare parts reduce immobilized capital

Improved Control
- Faster in field diagnostic improved by multiple simultaneously available data
- System failure recovery and stops avoidance through LAS capability

Enhanced Productivity
- No operators running around: more data in the same place
- No costs for training: operating the devices is the same as ABB 266 models
- Improved operators’ safety level due to elimination of need to reach difficult measurement points
ABB offering in a nutshell…
ABB Measurement & Analytics
ABB Offering Differentiators

**266 Series Multivariable:**
- High static – 410 bar
- Lowest draft range – 10 mbar
- Compensated level and flow in one device
- Calculated flow as safety function (SIL)
- In factory full configuration
- Enthalpy calculation

**266 Series Differential, Gauge and Absolute PT:**
- True dual sensor (Static sensor)
- 600bar static pressure limit
- Modular electronic
- Combination of single players features
- Diaflex and H-Shield
- Intrinsically protected on overpressure
- Standard Battery with 10 years lifetime
- Tailor made designs-ready (SR Engineering process)
- Digital Diaphragm Seal “One solution, twice the data, three main benefits”

**261 Gauge and Absolute PT:**
- Safer: SIL, IP69K and protected electronic
- Hard and resistant SS housing
- Configurable via FIM
- Wide process connection offering

**Pxx100 Series Gauge and Absolute PT:**
- Wide choice of pressure ranges
- Backlight touch HMI
- QR codes for advanced operation
- Wide range of connections (3A, EHEDG approved)
- Diaflex and H-Shield
- Robust and resistant stainless-steel housing
- Universal connection and adapters/accessories for mechanical modularity
- Drinking water approvals