non-intrusive ultrasonic sensors for corrosion/erosion monitoring

Sensor Networks’ smartPIMS® Cellular non-intrusive ultrasonic corrosion/erosion monitoring system is battery powered with integral SIM card and cellular radio. The Digital Sensor Interface (DSI) unit is programmed to take thickness measurements at any user-defined time interval, then send the data to webPIMS™, a cloud based back-end for analysis, trending and more. Use smartPIMS® Cellular for:

- Frequent data collection to resolve corrosion-rate or pitting issues.
- Quick, easy installation—temporary or permanent.
- Areas difficult or expensive to access and not conducive to manual data collection.

Operates on battery (5-7 years at 1 reading/day).
Cellularly transmits data to webPIMS™.
Offers 16 single- or 8 dual-element UT sensor channels.
Transducers available to withstand -22°F (-30°C) to 932°F (500°C).
Maintains 1 mil (0.001" / 0.025mm) resolution and 0.040" (1mm) minimum wall thickness.
Sensors install buried or above-ground, temporarily or permanently.
ATEX, IECEx, UL/CSA and Japanese hazardous-area certifications.

"We only use smartPIMS® magnetic UT probes for in situ corrosion monitoring; we’re forbidden to weld on operating equipment."
- Refinery Customer

"With multiple magnetic probes, we can measure several locations and then reposition based on UT and AUT data."
- Midstream Customer
## Transmitters

**type**
- cellular (3G/4G-LTE)  
- smartPIMS®

**encryption type**
- secure socket layer (SSL)

**model no.**
- smartPIMS® Cellular

**battery type**
- Li D-cell, 3.6 VDC, qty. 2

**battery life**
- 5 years (typical, based on 1 reading/day)

**ultrasonic system**
- Class I, Div. 2, Groups A-D, T4, Class 1, Zone 2, IIC, T4
- II 3G, Ex ec IIC T4 Gc, T amb -20ºC to +60°C

**enclosure**
- instrumentation housing
- NEMA 4X, IP66

**type**
- standard 10' (3.0m) and 25' (7.6m), custom to 50' (15.2m)

**maximum length to transducer**
- coaxial, ¼" dia.

**Specifications**

<table>
<thead>
<tr>
<th>Transducer Type</th>
<th>Single-Element Contact</th>
<th>Dual-Element Contact</th>
<th>Delay-Line Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>XD-101</td>
<td>XD-301</td>
<td>XD-201</td>
</tr>
<tr>
<td>Application</td>
<td>general purpose</td>
<td>severe pitting</td>
<td>ultra-high-temp</td>
</tr>
<tr>
<td>Frequency</td>
<td>5 MHz</td>
<td>5 MHz</td>
<td>7 MHz</td>
</tr>
<tr>
<td>Active Area (Dia.)</td>
<td>0.25&quot; x 0.35mm</td>
<td>0.375&quot; x 10mm</td>
<td>0.375&quot; x 10mm</td>
</tr>
<tr>
<td>Overall (Dia. x H)</td>
<td>1.0 x 1.0&quot;</td>
<td>0.75 x 0.75&quot;</td>
<td>0.8 x 2.25&quot;</td>
</tr>
<tr>
<td># of Transducers</td>
<td>1-16</td>
<td>1-8</td>
<td>1-16</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.001&quot;/0.025mm</td>
<td>0.001&quot;/0.025mm</td>
<td>0.001&quot;/0.025mm</td>
</tr>
<tr>
<td>Thickness Range</td>
<td>0.206-6.0&quot;</td>
<td>0.046-6.0&quot;</td>
<td>0.125-10.0&quot;</td>
</tr>
<tr>
<td>Temp Range</td>
<td>-22 to +149°F</td>
<td>-22 to +300°F</td>
<td>-22 to +932°F</td>
</tr>
<tr>
<td>Attachment</td>
<td>magnet/adhesive</td>
<td>magnet/adhesive</td>
<td>mechanical clamp</td>
</tr>
</tbody>
</table>

**Note:**
- Minimum resolutions stated as typical values, but will vary with pipe condition

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