Metal Samples along with Sensor Networks Inc., offers the smartPIMS® Cellular non-intrusive ultrasonic corrosion/erosion monitoring system which is battery powered and has an 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. The smartPIMS® Cellular is used 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.

**monitor corrosion rate**
resolution to 0.001” (0.025mm) • high-risk areas • historically problematic locations

**monitor “low spots”**
post-NDE screening of pits to monitor remaining thickness • measures down to 0.040” (1.02mm)

**replace/augment intrusive methods**
validation of coupons, ER probes, etc.

**reduce costs**
reduce scaffolding and insulation removal/refitting for internal corrosion monitoring • more accurate/reliable data improving operations

- Operates on battery (5-7 years at 1 reading/day).
- Cellurally 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.
## Technical Specifications

### Digital Sensor Interface

**Transmitter:**
- **Type:** Cellular (3G/4G-LTE)
- **Encryption Type:** Secure Socket Layer (SSL)
- **Model:** smartPIMS® cellular
- **Battery Type:** Li D-cell, 3.6 VDC, qty. 2
- **Battery Life:** 5 years (typical, based on 1 reading/day)

**Ultrasonic System:**
- **Channels:** 16 ultrasonic, 1 temperature
- **Pulser Voltage:** ±5V bipolar square wave
- **Analog Frequency:** 1–10 MHz (-3dB)
- **Gain:** -10dB to +70dB
- **Digitizer Frequency:** 40 Msps

**Certification:**
- Class I, Div. 2, Groups A-D, T4, Class 1, Zone 2, IIC, T4
- II 3G, Ex ec IIC T4 Gc, Tamb -20°C to +60°C

**Enclosure:**
- **Type:** Instrumentation housing
- **Material/rating:** Cast aluminum / NEMA 4X, IP66
- **Temperature Range:** -4°F to + 140°F (-20°C to +60°C)

**Dimensions (w/o antenna):** 5.44 × 5.63 × 5.13" (138 × 143 × 130mm)

**Weight:** 5.5 lb (2.5 kg)

### Transducers

**Transducer Cable:**
- **Type:** Coaxial, ¼” dia.
- **Max. Length to Transducer:** Standard 10’ (3.0m) and 25’ (7.6m), custom to 50’ (15.2m)

<table>
<thead>
<tr>
<th>Transducers</th>
<th>Dual-Element Contact</th>
<th>Delay-Line Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model:</strong></td>
<td>XD-301</td>
<td>XD-201</td>
</tr>
<tr>
<td><strong>Application:</strong></td>
<td>Severe pitting</td>
<td>Ultra-High-Temp</td>
</tr>
<tr>
<td><strong>Frequency:</strong></td>
<td>5 MHz</td>
<td>7 MHz</td>
</tr>
<tr>
<td><strong>Active Area (dia.):</strong></td>
<td>0.375” (10mm)</td>
<td>0.375” (10mm)</td>
</tr>
<tr>
<td><strong>Overall (dia. x h):</strong></td>
<td>0.75” x 0.75” (19 x 19mm)</td>
<td>0.8” x 2.25” (20.3 x 57.2mm)</td>
</tr>
<tr>
<td><strong># of transducers:</strong></td>
<td>1-8</td>
<td>1-16</td>
</tr>
<tr>
<td><strong>Resolution:</strong></td>
<td>0.001” (0.025mm)</td>
<td>0.001” (0.025mm)</td>
</tr>
<tr>
<td><em><em>Thickness range</em>:</em>*</td>
<td>0.040 - 6.0” (1.0 - 150.0mm)</td>
<td>0.125 - 1.0” (3.0 - 25.0mm)</td>
</tr>
<tr>
<td><strong>Temp. range:</strong></td>
<td>-22 to +275°F (-30 to +135°C)</td>
<td>-22 to +932°F (-30 to 500°C)</td>
</tr>
<tr>
<td><strong>Attachment:</strong></td>
<td>magnet / adhesive</td>
<td>mechanical clamp</td>
</tr>
</tbody>
</table>

*minimum resolutions stated as typical values, but will vary with pipe condition