The SmartDiagnostics® family of innovative wireless sensor products enables cost-effective predictive maintenance for industrial equipment. The system provides continuous remote monitoring of key performance indicators to track the operating health of equipment.

- Optimized for long battery life
- Full time series data sets up to 5 times per minute
- Expandable to hundreds of nodes per system

**RELIABLE MONITORING**

Vibration Sensor Nodes provide health monitoring in the most hard-to-reach, rugged locations. Each node communicates via a direct wireless link to a Primary Receiver Node, from which the data is imported into SmartDiagnostics® Software for viewing and analysis.

**FLEXIBLE CONFIGURATION**

The system is highly configurable and scalable. A system can have hundreds of sensor points, each of which can be configured to transmit data on a user-selected frequency, and unique indicators can be implemented to warn users of potential machine health issues.

**COST EFFECTIVE**

Easily installed without the downtime, expense, and labor costs of old-fashioned, hard-wired sensors. Simply place the sensors where you need them and within minutes they’ll transmit data. SmartDiagnostics® can predict failure before it occurs, saving money spent on unnecessary replacements and extending machine life. At the same time, energy costs are reduced, as properly maintained machines are more efficient.

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(814) 867-4097  
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## Vibration Sensor Node Specifications

### Mechanical
- **Weight**: 6.6 oz (188 g)
- **Enclosure Material**: 303 Stainless Steel and Radel R 5800

### Environmental
- **Storage Temperature**: -40 to 238 °F (-40 to 120 °C)
- **Min. Operating Temp.**: -4 °F (-20 °C)
- **Max. Operating Temp.**: 230 °F (110 °C) surface @ 72 °F (22 °C) ambient
  - 212 °F (100 °C) surface @ 105 °F (40 °C) ambient
  - 167 °F (75 °C) surface @ 167 °F (75 °C) ambient
- **IP Rating**: IP68, dust-tight and water-tight
- **Impact Resistance**: Survives 5-ft drop onto concrete surface
- **Hazardous Certification**: Class I, Division 2, Groups A-D, T5 (model SD-VSN-3N)

### Wireless Radio
- **Radio**: KCF DART™ Wireless 2.4GHz ISM band, FCC ID #Z5ISD2
- **Range**:
  - 800ft (240m) in open field
  - 200ft (60m) in congested industrial space
  - Repeater SD-R adds up to 2400ft (730m) of range
- **Antenna**: Internal dipole antenna

### Power
- **Power Source**: 3-Volt Lithium Manganese Dioxide (CR123A)
- **Battery Life**:
  - Full spectrum acquisition every:
    - 60 minutes – 8 years
    - 15 minutes – 6 years
    - 2.5 minutes – 2 years
  - Note: battery life is somewhat reduced at extremely cold temperatures

### Accelerometer
- **Range**: +/- 19 g typical, +/- 16 g nominal
- **Resolution**: 0.866 mg nominal w/ individual NIST-traceable calibration
- **Noise Floor**: 1.496 mg RMS @ 64 Hz / 13.01 mg RMS @ 8192 Hz
- **Transverse Sensitivity**: 10% Typical
- **Frequency Response**: +/- 5% 0-2700 Hz, +/- 3 dB 2700-4000 Hz
- **Samples per Acquisition**: 4096 (standard) or 1650 (battery saver)
- **Spectral Lines**: 2048 (standard) or 825 (battery saver)
- **Anti-aliasing Filter**: 4000 Hz low-pass cut-off, 3rd-order Sallen-Key
- **Sampling frequency**: 64 Hz – 8192 Hz configurable (see table)

### Temperature Sensor
- **Range**: -4 to 167 °F (-20 to 75 °C)
- **Resolution**: +/- 1 °F (+/- 0.5 °C)

### Accelerometer Sampling

<table>
<thead>
<tr>
<th>Sampling Frequency (Hz)</th>
<th>Sample Duration (s) Std. (batt. saver)</th>
<th>Spectral Resolution (Hz) Std. (batt. saver)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8192</td>
<td>0.5 (0.2)</td>
<td>2.0 (5.0)</td>
</tr>
<tr>
<td>4096</td>
<td>1.0 (0.4)</td>
<td>1.0 (2.5)</td>
</tr>
<tr>
<td>2048</td>
<td>2.0 (0.8)</td>
<td>0.5 (1.24)</td>
</tr>
<tr>
<td>1024</td>
<td>4.0 (1.6)</td>
<td>0.25 (0.62)</td>
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<tr>
<td>512</td>
<td>8.0 (3.2)</td>
<td>0.13 (0.31)</td>
</tr>
<tr>
<td>256</td>
<td>16.0 (6.4)</td>
<td>0.063 (0.16)</td>
</tr>
<tr>
<td>128</td>
<td>32.0 (13)</td>
<td>0.031 (0.08)</td>
</tr>
<tr>
<td>64</td>
<td>64.0 (26)</td>
<td>0.016 (0.04)</td>
</tr>
</tbody>
</table>

### Configurations

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD-VSN-3</td>
<td>Standard vibration and temperature sensor</td>
</tr>
<tr>
<td>SD-VSN-3N</td>
<td>Class I, Division 2 Certified vibration sensor for use in hazardous locations (US and Canada ETL control number 4008627)</td>
</tr>
</tbody>
</table>

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes Or Modifications Not Expressly Approved By The Party Responsible For Compliance Could Void The User’s Authority To Operate The Equipment.

Learn more at kcftech.com/hardware