Petasense Vibration Mote
Wireless Vibration + Temperature Sensor for monitoring industrial rotating machines

Real-time Asset Monitoring

Machine Learning Analytics

Enterprise Grade Security

Web + Mobile Dashboard

800.215.1485 | sales@petasense.com | petasense.com
Petasense Vibration Mote
Wireless sensor for continuous asset monitoring

The Vibration Mote is a wireless, triaxial vibration and temperature sensor. It is powered by a standard battery and communicates via WiFi or Bluetooth. Simply mount on rotating equipment and start collecting data instantly.

- **Truly Wireless**
  Eliminate costs and hassles of wiring with battery powered, WiFi enabled sensors.

- **Easy Installation**
  Start collecting data in minutes by installing with epoxy or stud mounting.

- **Smart Device Access**
  Take on-demand measurements from nearby machines with Bluetooth.

- **Enterprise-grade Security**
  TLS protocol with AES encryption ensures secure device-to-cloud communication.

- **Industrial Compliance**
  Class 1 Div 2 for hazardous environments, food-safe enclosure, FCC, RoHS and NEMA 250 compliant.

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<table>
<thead>
<tr>
<th>Model 1</th>
<th>1.6 kHz bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Detect imbalance, misalignment, structural and rotating looseness and late stage bearing wear</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model 2</th>
<th>5.5 kHz bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Everything in Model 1 plus early stage bearing wear, pump cavitation, gear teeth problems and more</td>
</tr>
</tbody>
</table>

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Petasense Cloud + Mobile
Access real-time asset health, anywhere anytime

Scalable & Fault Tolerant
Collect, store and analyze data in a robust cloud platform, securely hosted on Microsoft Azure

Machine Health Dashboard
Access the real-time health of your assets with a simple color-coded machine condition system

Reports and Alerts
Receive machine condition reports and instant alerts when vibration levels exceed alarm limits

Vibration Analysis Software
Explore trend, waveform and spectrum charts with interactive cursors and sidebands

RESTful Web APIs
Easily integrate with SCADA, data historians and EAM/ERP systems

Machine Learning Analytics
A key feature of Petasense technology, Machine Learning utilizes advanced data-science algorithms and multi-parameter analysis to provide a health score for your machines.

The machine health score helps you make informed maintenance decisions without the need for vibration analysis expertise.
Petasense Infrastructure
Designed for a variety of applications

Connect Petasense Motes
Collect Petasense Cloud
Analyze Machine Learning
Monitor Web & Mobile

Making Industrial IoT possible for a variety of industries and assets including

Power Generation
- Chill and boiler pumps
- Cooling towers
- Generator fans

Oil & Gas
- Gas compressors
- Centrifugal pumps
- Gearboxes

Critical Facilities
- Air handler units
- Exhaust fans
- Chillers

Pharmaceuticals
- Homogenizers
- Agitators
- Mixers

Integrating with existing enterprise systems

The Petasense Cloud can easily integrate with data historians, like OSIsoft Pi or eDNA, and EAM software from leading vendors like IBM, SAP and Oracle

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# Petasense Vibration Mote

## Specifications

### Smart Features
- Triaxial accelerometer and temperature sensor
- WiFi and Bluetooth enabled
- Standard lithium battery (CR123 A - 1500 mAh 3V)

### Rugged Enclosure
- Food-grade plastic cover
- Corrosion resistant stainless steel base (SS316)
- Ingress protection (IP67/IPX9K)

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accelerometer</strong></td>
<td>Tri-axial MEMS sensor</td>
</tr>
<tr>
<td><strong>Frequency Response</strong></td>
<td>2 to 1600 Hz (+/- 3 dB)</td>
</tr>
<tr>
<td><strong>Measurement Range</strong></td>
<td>+/- 0.004g to +/- 8g</td>
</tr>
<tr>
<td><strong>Transverse Sensitivity</strong></td>
<td>&lt; 10%</td>
</tr>
<tr>
<td><strong>AD Conversion</strong></td>
<td>14 Bit</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>Up to 4000 LOR</td>
</tr>
<tr>
<td><strong>Sensitivity</strong></td>
<td>0.976 mg/LSB</td>
</tr>
<tr>
<td><strong>Sampling Rate</strong></td>
<td>6 options from 20 Hz to 6666 Hz</td>
</tr>
</tbody>
</table>

### Model 2
- **Accelerometer** | Tri-axial Piezoelectric sensor |
- **Frequency Response** | 10 to 5500 Hz (+/- 3 dB) |
- **Measurement Range** | +/- 0.004g to +/- 5.17g |
- **Transverse Sensitivity** | < 10% |
- **AD Conversion** | 12 Bit |
- **Resolution** | Up to 8192 LOR |
- **Sensitivity** | 50 mV/g |
- **Sampling rates** | Up to 20 kHz |

### Physical

| **Dimensions** | Base diameter: 37.5 mm  
| Height: 56.8 mm |
| **Weight** | 125 g |
| **Mounting (epoxy or stud)** | Adhesive: food-contact safe cyanocrylate or industrial grade two-part epoxy  
| Stud: 6.35 mm (¼") 28 UNF tapped hole |
| **Shock Resistance** | 2 meter fall, 16 g continuous vibration, UV resistant (optional) |

### Environmental

| **Temperature Measurement Range** | -40°C to 85°C (-40°F to 185°F) (+/- 5% accuracy) |
| **Operating Temperature Range** | -40°C to 85°C (-40°F to 185°F) |
| **Storage Temperature** | < 85°C (185°F) without battery |

### Power

| **Source** | CR123 A Lithium 1500 mAh 3V battery |
| **Battery Life** | 1-2 years with 8 measurements a day, event detection and Bluetooth enabled, 0 to 40°C (32 to 104°F)*  
| *20% reduced battery life if operating in temperatures below -10°C (15°F) |

### Connectivity

| **Wireless Protocol** | 802.11 b/g/n WiFi 2.4 GHz  
| Bluetooth Low Energy 2.4 GHz |
| **Antenna** | Integrated antenna with 2.5dBi max gain |
| **Processor** | 32-bit 144 MHz ARM Cortex M4F processor - remote firmware updates |

### Configuration & Storage

| **User Interface (web + mobile)** | Petasense Web: internet browser access  
| Petasense Mobile: iOS mobile application (no software installations needed) |
| **Security** | Petasense Motes and Cloud communicate using TLS protocol with AES encryption |
| **Qualifications** | Location Safety E114224  
| Class 1 Div 2 Group ABCD  
| FCC 2A/JW7-00001  
| IP67, NEMA 250, RoHS Compliant |

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*20% reduced battery life if operating in temperatures below -10°C (15°F)*