

**TECH OFFER**

## Low-Cost, High-Precision and Versatile Vibration Monitoring Sensor



### KEY INFORMATION

**TECHNOLOGY CATEGORY:**

Electronics - Sensors & Instrumentation

Green Building - Sensor, Network, Building Control & Optimisation

Energy - Sensor, Network, Power Conversion, Power Quality & Energy Management

**TECHNOLOGY READINESS LEVEL (TRL):** TRL6

**COUNTRY:** THAILAND

**ID NUMBER:** TO175326

### OVERVIEW

The demand for cost-effective and efficient vibration monitoring solutions is increasing due to growing concerns about disaster preparedness, infrastructure resilience, and industrial safety. As investments in smart cities, transportation infrastructure, and industrial automation expand, the need for real-time, accessible, and affordable monitoring solutions is becoming more critical to ensuring safety and operational efficiency.

To address these challenges, the technology owner has developed a highly versatile and low-cost vibration sensor that provides real-time, multi-axis vibration data monitoring with high sensitivity and accuracy - at a significantly lower cost than existing commercial solutions. This sensor is particularly suited for applications requiring high precision and stability, including inertial measurement units, platform stabilization systems, industrial machinery diagnostics, and transportation and environmental

monitoring. Unlike traditional vibration monitoring systems, which often require expensive proprietary software and complex installation, this user-friendly solution enables both professionals and non-specialists to access real-time data via a standard web interface, eliminating the need for specialized software.

The technology owner is seeking collaborations with government agencies, civil engineering firms, construction companies, transportation authorities, industrial monitoring services, and research organizations to deploy and scale this innovation.

## TECHNOLOGY FEATURES & SPECIFICATIONS

This vibration monitoring sensor is built on low-power, low-noise MEMS technology and offers:

- High sensitivity and multi-axis vibration detection for accurate data collection
- Real-time monitoring accessible via a standard web browser, eliminating the need for proprietary software
- Versatile deployment across multiple scenarios, including urban infrastructure, industrial facilities, and remote sites
- Seamless integration with existing monitoring systems for enhanced data-driven decision-making
- Modular and customizable design, suitable for both large-scale infrastructure projects and localized vibration analysis
- Compact and lightweight design, requiring minimal installation space
- Easy-to-Install: requiring only a power connection and internet access
- Intuitive graphical user interface (GUI) for effortless operation without programming expertise

## POTENTIAL APPLICATIONS

This vibration sensor is designed to enhance safety, efficiency, and infrastructure resilience across various industries. Its real-time, high-sensitivity monitoring enables proactive risk management and operational optimization in the following areas:

- **Disaster management:** Early detection and warning of earthquakes, unstable terrain, landslides, and structural instability
- **Structural health monitoring:** Preventive maintenance and integrity assessments for bridges, tunnels, and high-rise buildings
- **Industrial vibration monitoring:** Equipment condition tracking, predictive maintenance, and operational efficiency optimisation
- **Transportation monitoring:** Traffic vibration analysis and stability assessment of roads, railway tracks, and bridges

## UNIQUE VALUE PROPOSITION

- **Cost-effective:** 30-40% lower than commercial alternatives
- **High accuracy & sensitivity:** Detects minute vibrations with superior performance
- **Versatile & customisable:** Adaptable to various applications and industry requirements
- **User-friendly & easy deployment:** No specialized software required