Condition monitoring System / Vibration detection

Model: WH-VSU-0B-21

WiiMine ---Vibration Detecting and Monitoring System

By detecting the 3 axial acceleration periodically after being mounted on the surface of rotary device, WiiMine calculates and records the peak-to-peak acceleration values; it forecasts the potential problem or normal aging by continuous observation and comparison.

Features

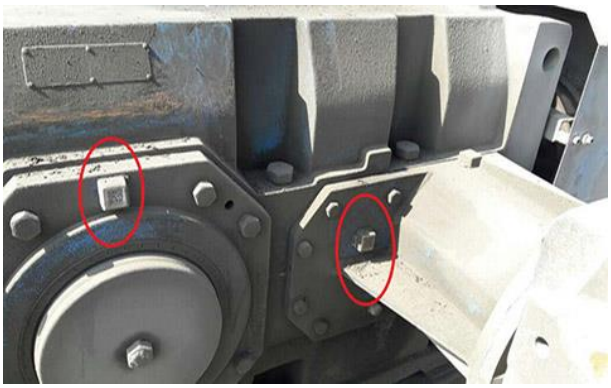
- Capacitive MEMS (digital) accelerometer;
- Battery powered sensor head, no wire is needed
- BLE Bluetooth connection between the sensor and gateway;
- Easy installation: adhesive mounting or magnet mounting;
- Optimized for low energy, long battery life;
- Expandable to hundreds of nodes per system;
- Factory calibrated average vibration output;

Applications

- Machine vibration monitoring, e.g. fan, motors, air compressors, speed reducers;
- Vibration measurement and alarm triggering;

For Reducer

For Air compressors



Overview

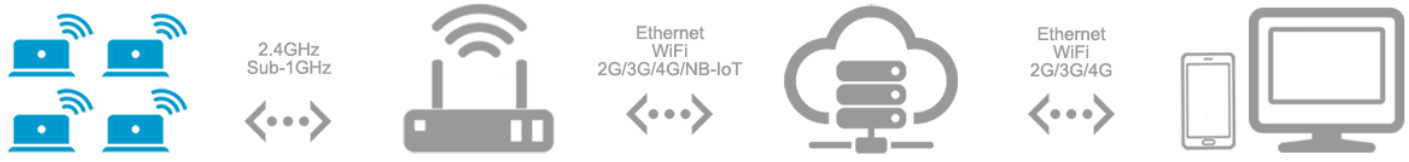
WiiMine incorporates 3-axial accelerometer, wireless connectivity and battery. Its measurement range (up to 16 g acceleration), sampling rates (up to 1.6 kHz), long battery life (1 year typical), and small size make it ideal for many vibration measurement and monitoring applications.

WiiMine supports two mounting methods: adhesive mounting and magnet mounting. Adhesive mounting is used with industrial strength double-sided tape for dielectric surface, while magnet mounting is used for metal surface. Its rugged enclosure assures WiiMine of accurate vibration data acquisition.

WiiMine performs RMS (root mean squared) averaging for vibration measurement. Because acceleration signals are extremely fast by nature, they require high speed sampling and computationally intensive processing. The onboard RMS algorithm provides a slower output so that it can be easily measured by a low speed system, greatly simplifying vibration monitoring and measurement works.

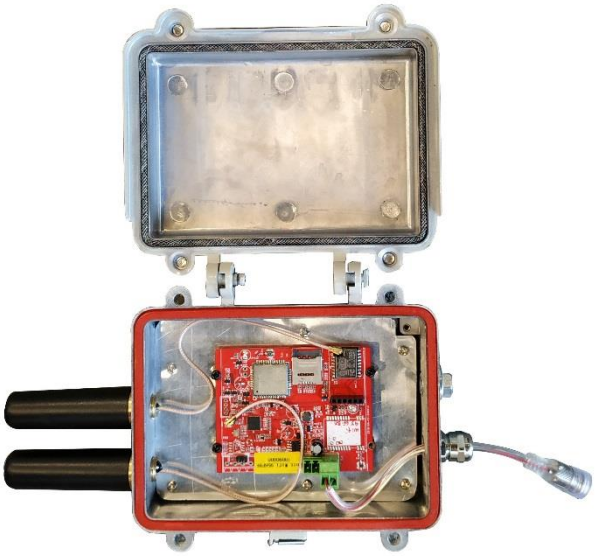
Topology

In a WSN topology, multiple WiiMines (as many as 20 sensors) can send vibration data to a gateway (the WiiGate or the WiiSA64) via wireless BLE 2.4G protocol. The gateway connected to the Internet would in turn transmit data to the cloud-based computing platform (the WiiMatrix). Users can monitor or measure the vibration data through web-based device such as a mobile phone or a PC.



WiiHey-Gateway

WiiHey Gateway has 2 Versions: NB-IOT Version and Wifi Version.
The NB-IOT version WiiHey Gateway needs to insert a NB-IOT SIM card to connect to the Internet; and the Wifi Version WiiHey gateway needs to connect to the Internet by Wifi.



For receiving the date from the WiiMine Sensor better, please install the gateway in the position that are in the middle location and close to all the sensor heads.

Dashboard UI

Technical Specifications for Sensor

Vibration Measurement	
Sensor	3-axial MEMS accelerometer
Measurement range	±8 g
Resolution	0.001 g
Sampling rate per channel	1600Hz
Frequency response	10 Hz to 800 Hz
Filter	Digital filtering (RMS) for stable measurement
Angle Measurement	
Range	360° single axis angle measurement
Accuracy	± 0.09°
PCB Temperature Measurement (Optional)	
Range	0 to 60 °C
Accuracy	± 0.5 °C, 15 to +40 °C
Wireless Connectivity	
Radio	Vibration/angle measurement: 2.4GHz Bluetooth 4.0; Gateway: NB-IOT, or Wi-Fi
Range	20 meters clear line of sight
Maximum Linking	20 pieces sensor nodes
Antenna	Built-in PCB antenna
Power	
Power source	CR2477 3V 1000maH battery
Battery life	8 months @ data uploading rate every 5 minutes (typical)
Mechanical (Sensor head)	
Dimensions	52 mm * 36 mm * 20 mm (main body)
Weight	60 g
Installation	By Magnet or adhesive tape
Environmental	
Operating Temp	-15 °C to 75 °C
IP Rating	IP65

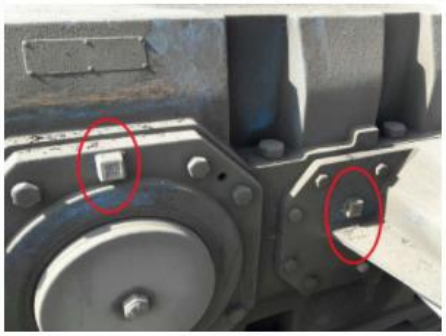
Gallery

Top View

Size

Bottom View

Magnet Mounting



Monitor Speed Reducer

Monitor Speed Reducer

Monitor Air Compressor

Monitor Air Compressor