CIMCON digital

solutions for the digital economy

VIBit-BP

Easy-to-Install, Battery Powered, Tri-axial Vibration and Temperature Sensor for Anomaly Detection

KEY FEATURES

VIBit-BP is an intelligent, powerful, and compact battery-powered sensor that monitors the condition of machines or equipment to predict their failures in advance to avoid costly downtime, increase reliability, and reduce O&M costs. Designed to work in rugged industrial environment, VIBit-BP is a very compact and lightweight vibration sensor that can be easily installed on a range of equipment to detect abnormal vibrations and high temperatures without requiring any external power or connecting wires. This enables production and utility managers to know the real-time condition of their equipment.

- A fully standalone sensor that is battery powered with no wires to connect.
- Wirelessly transmits vibration and temperature data using powerful BLE (Bluetooth Low Energy) connectivity, allowing reliable remote condition monitoring by maintenance engineers, vibration experts, and data scientists.
- VIBit-BP plays a crucial role in aiding manufacturing plants, facilities, and utilities to closely monitor the condition of their machinery. By proactively detecting potential issues in advance it empowers operators to take preventive measures in time, thereby minimizing plant downtime and increasing operational efficiency.

ADDITIONAL FEATURES

Asset Health and KPI

The sensor offers a comprehensive overview of asset health and Key Performance Indicators (KPIs), facilitating quick and intuitive monitoring of critical parameters.

Reporting

VIBit-BP supports comprehensive reporting features, providing detailed insights into the condition of monitored equipment. These reports contribute to informed decision-making and strategic planning.

FFT Graphs

VIBit-BP provides Frequency Domain Analysis with FFT (Fast Fourier Transform) graphs, enabling in-depth frequency analysis of vibration data, which is essential for understanding machinery behavior and potential faults.

Easy Mounting

The sensor is designed for effortless installation and can be conveniently mounted on equipment studs, simplifying the deployment process.

AI/ML-Based Analytics

Leveraging the power of Artificial Intelligence (AI) and Machine Learning (ML), VIBit-BP offers advanced fault diagnostics. Real-time and historical data are analyzed to predict potential issues, enhancing proactive maintenance strategies.

User-Friendly Interface

With these additional features, VIBit-BP not only enhances its monitoring capabilities but also provides advanced analytical tools and user-friendly interfaces for a comprehensive and insightful understanding of machinery health.

EQUIPMENT FAULTS BEING REPORTED

• Static unbalance of rotor	Belt/chain drive abnormalities
• Couple unbalance of rotor	• Belt / chain resonance
• Radial misalignment across coupling	• Eccentric drive/driven pulley
• Angular misalignment across coupling	Centrifugal pump abnormalities:
• Loose mounting of structural & support components	• Cavitation
• Looseness in rotating components	• Flow related issues due to improper operation
• Excessive clearances in bearings	• Impeller vane frequency due to excessive hydraulic forces
• Various defects in rolling element bearings likerace, cage damages etc.	• Excessive mechanical loadings on pump connections
• Bearing damages due to electric current leak	Centrifugal fans/blowers/compressor abnormalities
• Lubrication issues in rolling element bearings	• Surge/stall
• Resonance	• Flow related issues due to improper operation
• Rubbing between rotating and static hydrodynamics forces	• Blade pass frequency due to excessive aerodynamic forces
Electrical induction drive motors	• Excessive leakage across sealing arrangements
• Air gap problem due to stator or rotor eccentricity	Electric DC drive motors
• Cracked/loose rotor bars	• SCR firing faults (Silicon Controlled Rectifier)
• Stator shorts	Diesel Engines abnormalities like
• Soft foot	• Bearing wear
Gear drive abnormalities	• Mounting wear and tear
• Gear wear/abnormal meshing	Conveyor rollers
• Gear/pinion misalignment	• Misalignment across both bearings of the roller
• Gear/pinion excessive backlash	• Roller eccentricity
• Gear/pinion eccentricity	Positive displacement compressors/blowers (lobe/screw/reciprocating and more)
• Gear/pinion pitch line runout	
• Gear/pinion tooth damage	• Piping vibration due to excessive pressure pulses
Positive displacement pumps (gear/reciprocating and more)	• Excessive noise and vibration due to undesirable aerodynamic interaction of static and rotating components
• Piping vibration due to excessive pressure pulses	
• Excessive noise and vibration due to hydraulic pressure pulses	High vibration in equipment mounted on “Isolators” due to malfunction/damage of the “Isolators”

SUPPORTED ASSETS

(includes various configurations)

Category	Type	Applications
Centrifugal pumps	All types	Wide Range of Industrial and Commercial Applications
Positive Displacement pumps	All types	Industrial, Oil & Gas, Food Processing, etc.
Centrifugal compressors / fans / blowers	All types	HVAC, Manufacturing, Power Generation, etc.
Positive Displacement compressors	All types	Gas transmission, refrigeration, process industries
Gear boxes	All types	Automotive, Industrial Machinery, Wind Turbines
AC Electrical Drive Induction Motors	All Sizes, Capacities	Machinery, Pumps, Fans, Conveyors, Compressors
DC Electrical Drive Motors	All Sizes, Capacities	Robotics, Electric Vehicles, Industrial Equipment
Conveyor Rollers	All types	Material Handling, Logistics, Warehousing
Diesel Engines	Various types	Automotive, Power Generation, Construction, Marine

EQUIPMENT MOUNTED ON

Rigid Foundations

Flexible Foundations

Isolators

SUPPORTED INDUSTRIES


Pharmaceutical

Cement


Automobile


Beverages


Textile


Food Processing


Mining


Chemical


Paint


Tire


Paper


Steel


Fertilizer


Hospitals

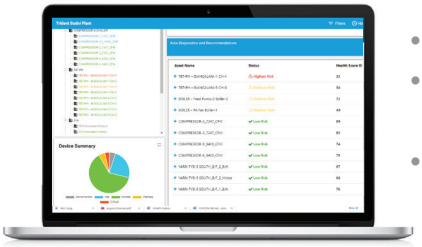
Hotels


Oil & Gas


Power


Furniture

HOW IT WORKS



Dashboard & Alert

- Enterprise-wide Asset Health Visibility
- Machine Fault mode visibility with severity and recommended action
- Collaborate with O&M staff and Machine OEMs using workflow

Cloud/ On-premise

GSM/WiFi/LAN

- Fast Fourier Transformation (FFT) Model
- AI/ML-based Anomaly Detection Model
- Machine Fault Diagnostics Model
- Remaining Useful Life (RUL) Model
- SDK (Software development kit) & API (Asset Programming Interface)

Secure BLE Communication

VIBit-BP VIBit-BP

Machines

Covers a large range of rotating equipment across various industries

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Customer Facility

Dedicated page for customers to compare health and performance across devices. Customers can also access and dig into site-level performance.

Machine Efficiency Status

Quick overall health status of multiple devices.

Overall Equipment Status

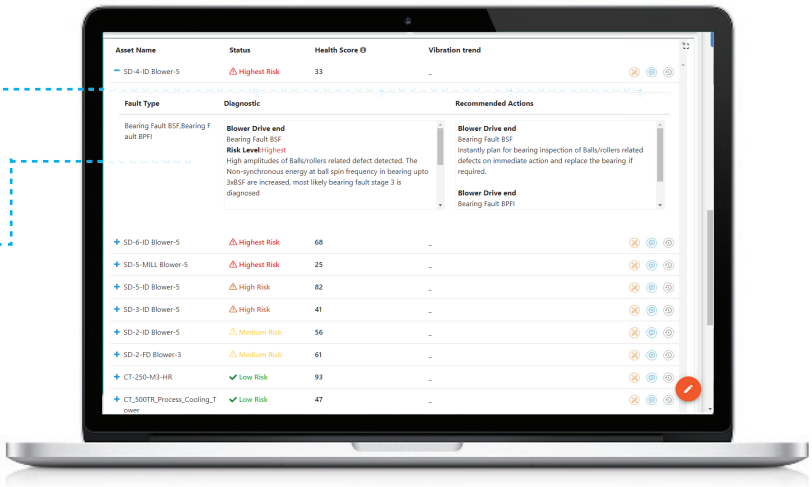
Get overall equipment efficiency for a period of time, further helping to decide proper equipment usage.

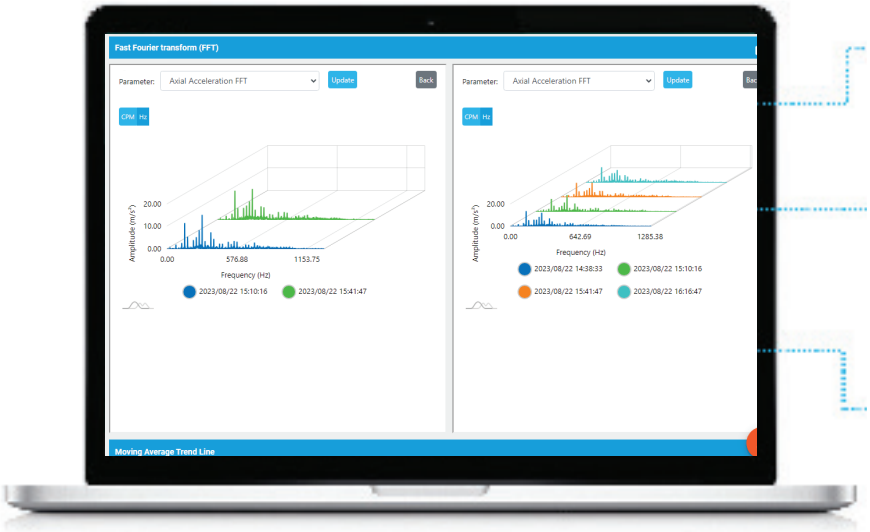
Status of Individual Asset

Individual asset health status can be checked with color indication and a further dig for expert verification.

Real Time & Historical Waveform

Real-time and historical waveform to check various parameters.





Asset Name Customization

User-friendly names can be created as needed.

User Friendly Widgets

Easy-to-understand dashboards and widgets are used to show whether parameters fall within the defined specifications.

Real Time Waveforms

Get real-time information in terms of waveforms.

SPECIFICATIONS

DEVICE SPECS

Device Technology	MEMS Based
Vibration Sensor	3-axis MEMS Sensor. Amplitude range: +/-16g
Frequency Range	0.5Hz to 6KHz in X, Y & Z directions
Sampling Rate	26.7K samples/second
Shock Tolerance	10000g for 0.2ms
Linear Acceleration sensitivity	0.488mg/LSB (+/-16g)
Low Noise	75ug/sqrt (Hz)
Resolution	16-bit
Data from Sensor	3-axis acceleration & veloccity RMS, 3-axis acceleration & velocity FFT.
FFT Frequency resolution	0.8Hz and 0.4Hz
Temperature Sensor	Semiconductor sensor with max 0.2°C accuracy over -40°C to +100°C range
Contact Temp. Range	-40°C to +125°C
Bluetooth Low-Power Range	Typical 40 mtrs LOS, Indoor, +0dBm

DATA CONFIGURATION

Data Transfer Interval Configuration	1 hour for telemetry and 24 hours for FFT by default, default rate could be changed
Remote Monitoring & Configuration	Through web based application

BLUETOOTH V5.2

Tx Power	+6dBm (Max)
Frequency Range	2400MHz to 2483.5MHz
Receiver Sensitivity	-98.9dBm, 1Mbps, 244 byte payload
Security	Pair with encryption

ELECTRICAL SPECS

Power supply	Replaceable 3.6V battery
Sampling time	7 sec. per hour
Battery life	Typical 10 years (1 sample per hour) at 25'C
Battery type	8500mAhr, Tadiran TL-4920
Operating temperature	-40°C to +60°C with battery
Storage temperature	-40°C to +50°C with battery
Humidity	0% to 90%, non condensing

MECHANICAL SPECS

Size	Dia: 47.5mm, Height: 82mm
Weight	210 gms
Base	SS
Cover	Polycarbonate
Ingress Protection	IP 66/67

COMPLIANCE INFORMATION

FCC	In progress
ATEX	In progress
CE	In progress

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