

**CIMCON**  
**digital**  
solutions for the digital economy



# **VIBit**

**Easy-to-Install, Tri-axial Vibration, Temperature, and  
Acoustic Sensor for Anomaly Detection**



## KEY FEATURES

VIBit is an intelligent, powerful, and compact sensor that monitors the condition of machines or equipments to predict their failures in advance to avoid costly downtime saving time and money for its owners. Designed to work in a rugged, industrial environment, VIBit is a very compact, light-weight vibration sensor that can be easily installed on a range of equipment to detect abnormal vibrations, unusual sounds, or high temperature. This enables production floors and utilities to know the real-time condition of their equipments. The VIBit works with the CIMCON Digital Connect Application, a smartphone application that gives the maintenance engineers or technicians instant feedback on sensor readings and enables various configurations over Bluetooth.

- » Helps manufacturing plants, facilities, and utilities monitor their machine health and take preventive action before a fault occurs, reducing plant downtime and increasing overall efficiency.
- » Powerful Wi-Fi connectivity which transmits data even in the extremely noisy industrial environment, making a remote condition monitoring very reliable and helping maintenance engineers, vibration experts, and data scientists to glean further insights and predict failures.



## FEATURES

- » Covers a large range of rotating equipment across various industries
- » Powerful computing engine based on 32-bit ARM Cortex-M4 processor
- » Wi-Fi Tx power up to +15.1dBm, ensuring reliable data communication in a factory environment
- » Bluetooth low power up to +8dBm Tx power for smart phone configuration
- » RS-485 connectivity to CIMCON CIM 360 gateway or any third party gateway through Modbus protocol
- » Alarms and e-mail alerts
- » Ultra-low sensor noise 75ug/sqrt (Hz) helps detect faults in their early stages so maintenance can be planned in advance
- » FFT graphs for detailed AI/ML driven analysis
- » Real-time and historical data trending and reporting
- » Local LED indication with different colors to display status
- » Standard Industrial protections on +24V input & RS-485 interface
- » Magnetic and stud mount options
- » Asset Health and KPI cards

## EQUIPMENT FAULTS BEING REPORTED

- » Static unbalance of rotor
- » Couple unbalance of rotor
- » Radial misalignment across coupling
- » Angular misalignment across coupling
- » Loose mounting of structural & support components
- » Looseness in rotating components
- » Excessive clearances in bearings
- » Various defects in rolling element bearings like race, cage damages etc.
- » Bearing damages due to electric current leak
- » Lubrication issues in rolling element bearings
- » Resonance
- » Beat and Modulation phenomena
- » Rubbing between rotating and static components.
- » Abnormal acoustics issues due to the interaction of electromagnetic forces in motors, aerodynamics forces in Compressors/ Fans, hydrodynamics forces in Pumps etc.
- » Centrifugal pump abnormalities like:
  - cavitation
  - Flow related issues due to improper operation
  - Impeller vane frequency due to excessive hydraulic forces
  - Excessive mechanical loadings on pump connections
- » Centrifugal Fans/Blowers/Compressor abnormalities like:
  - Surge / Stall
  - Flow related issues due to improper operation
  - Blade pass frequency due to excessive aerodynamic forces
  - Excessive Leakage across sealing arrangements
- » Electrical Induction drive motors: Various fault conditions like
  - Air gap problem due to stator or rotor eccentricity
  - Cracked / loose rotor bars
  - Stator shorts
  - Soft foot
- » Electric DC drive motors:
  - SCR firing faults (Silicon Controlled Rectifier)
- » Gear drive abnormalities like:
  - Gear wear / abnormal meshing
  - Gear / Pinion misalignment
  - Gear / Pinion Excessive backlash
  - Gear / Pinion eccentricity
  - Gear / Pinion pitch line runout
  - Gear / pinion tooth damage
- » Belt / Chain drive abnormalities like:
  - Belt / chain resonance
  - Eccentric Drive / Driven pulley
- » Conveyor Rollers : Various fault conditions like
  - misalignment across both bearings of the Roller
  - Roller eccentricity
- » Positive displacement Pumps (Gear / Reciprocating etc. abnormalities like:
  - piping vibration due to excessive pressure pulses
  - excessive noise and vibration due to hydraulic pressure pulses
- » Positive displacement compressors / blowers (Lobe / Screw / Reciprocating etc.)
  - Piping vibration due to excessive pressure pulses
  - excessive noise and vibration due to undesirable aerodynamic interaction of static and rotating components.
- » High vibration in equipment mounted on "Isolators" due to malfunction / damage of the "Isolators".
- » Diesel Engines abnormalities like
  - Bearing wear
  - Mounting wear and tear



## SUPPORTED ASSETS

- » Centrifugal pumps of all types of configurations and applications
- » Positive Displacement pumps of all types of configurations applications
- » Centrifugal compressors / fans / blowers of all types of configurations and applications
- » Positive Displacement compressors of all types of configurations and applications
- » Gear boxes of all types, configurations, and applications
- » AC Electrical drive Induction Motors of all sizes, capacities and applications
- » DC Electrical drive motors of all sizes, capacities and applications
- » Conveyor Rollers of all types of configurations and applications
- » Diesel Engines

## EQUIPMENT MOUNTED ON

- » Rigid Foundations
- » Flexible Foundations
- » Isolators

## SUPPORTED INDUSTRIES

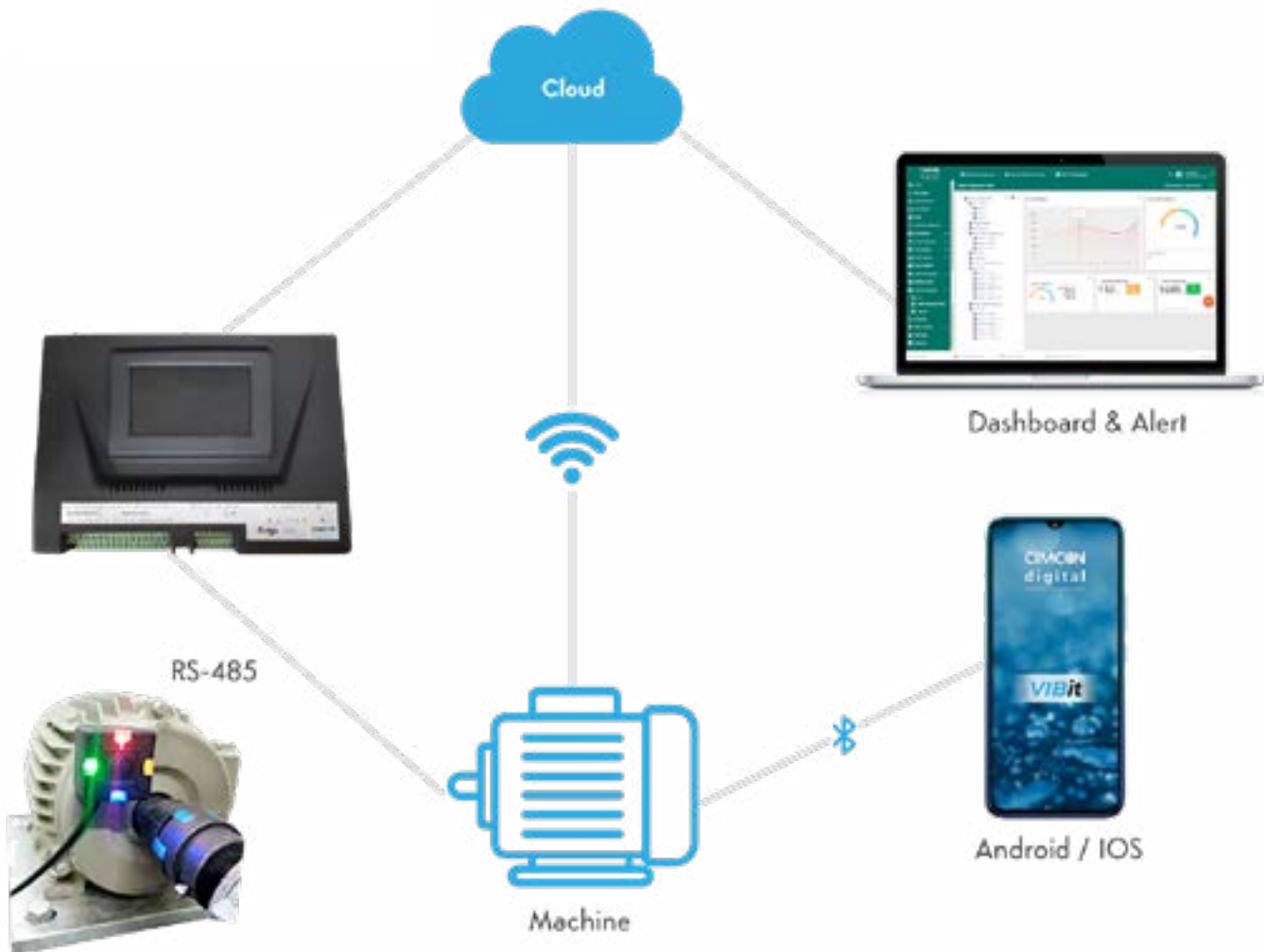
- » Textile
- » Pharmaceutical
- » Paint
- » Automobile
- » Beverages
- » Food Processing
- » Furniture
- » Cement
- » Paper
- » Power
- » Oil & Gas
- » Fertilizer
- » Chemical
- » Steel
- » Mining
- » Corporate Hospitals
- » Five Star Hotels

## EQUIPMENT MANUFACTURERS

- » Centrifugal Pumps
- » Positive Displacement Pumps
- » Centrifugal Compressors / Fans
- » Positive Displacement Compressors / blowers
- » Gear Boxes
- » Electrical Motors
- » Air Handling Unit



## HOW IT WORKS



## CLOUD-BASED HEALTH MANAGEMENT PLATFORM

Our Cloud-based Health Management platform is a powerful tool in reducing maintenance spending and increasing Mean Time Between Repairs (MTBR) by proactively identifying detrimental system conditions before catastrophic machine failure by using an Artificial Intelligence/Machine Learning (AI/ML) model to provide FFT graph analysis, asset health monitoring, real-time data, and historical data.

It provides a dashboard that helps you understand the overall equipment efficiency of assets in the form of waveforms. This further reduces unplanned downtime, increases equipment availability, and significantly reduces inventory costs.



### **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 SPECIFICATIONS

Sensing Technology	MEMS Based
Vibration Sensor	3-axis MEMS Sensor
Frequency Range	0.5Hz to 6Khz
Sampling Rate	26.7K samples/second
Shock Tolerance	10,000g for 0.2ms
Linear Acceleration sensitivity	0.488mg/LSB (±16G)
Low Noise	75µg/sqrt(Hz)
Resolution	16-bit
Data from Sensor	3-axis acceleration & velocity RMS, 3-axis acceleration & velocity FFT, 3-axis spectral features as per configuration
FFT Frequency Resolution	0.8Hz
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
Wi-Fi Range	80mtrs LoS
Bluetooth Low-Power Range	Low power, mesh, 26mtrs LoS
RS-485	RTU connectivity on Modbus protocol, 2-wire, baud rate configurable to 1.2kbps to 115.200kbps
LED indication	Red, Green, Blue, Orange

## DATA CONFIGURATIONS

Transfer Interval Configuration	Real-time transfer every 10 sec • FFT data transfer every 30 mins, • FFT data on-demand from server • FFT data on alarm
Local Monitoring & Configuration	Mobile Android & iOS applications
Remote Monitoring & Configuration	Through dashboards
OTA	Over-The-Air FW upgrade

## WIRELESS SPECS (802.11 B/G/N) COMPLIANT

Frequency Range	2412MHz to 2484MHz
Tx Power	15.1dBm (802.11 b, 1MBps), 12.5dBm (802.11 g, 6Mbps), 12.1dBm (802.11n, MCS=0)
Receiver Sensitivity	-96.3dBm (802.11b, 1Mbps), 91.5dBm (802.11g, 6Mbps), -91dBm (802.11n, MCS=0)
Security	WPA/ WPA2
Encryption	AES/ WEP
Network Protocol	MQTT/ HTTPS/ TCP/ IPv4

## BLUETOOTH V5.2

Tx Power	+8dBm (Max)
Frequency Range	2400MHz to 2483.5MHz
Receiver Sensitivity	-98.9dBm, 1Mbps, 37byte payload
Security	AES128/256, SHA-1, SHA-2(256-bit), ECC (256-bit), ECDSA, ECDH.

## ELECTRICAL SPECS

Power Supply	External 24VDC+/-10%
Power Supply Protections	Over current, EFT (Level 4), ESD (Level-4)
Connections	4-wire cable for power supply & RS-485 connections.
External Connector Cable	5mtr cable provided with product
Operating temperature	-40°C to +85°C

## MECHANICAL SPECS

Size	40mm (L)X 40mm (W)X 33mm (H)
Weight	78 gms
Axis Orientation	Indication for X-axis, and Y-axis
Enclosure	Polycarbonate, IP68
Mounting	Magnetic mount & stud mount options. Stud mount option recommended for better results. Mounting accessories Vibration plate & stud are provided with product.





## CONTACT US

### U.S. OFFICE

CIMCON DIGITAL LLC  
319 Littleton Rd, Westford, MA 01886, USA  
Email: [sales@cimcondigital.com](mailto:sales@cimcondigital.com)  
Tel: (617) 741-9291

### ASIA PACIFIC OFFICE

CIMCON DIGITAL India Pvt. Ltd.  
802, SAKAR IV, EllisBridge, Ahmedabad-380 006, India  
Tel: +91-79-2657 8639  
Fax: +91-79-2657-8659

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