

**REAL TIME CONDITIONING  
MONITORING FOR MOTORS AND  
TURBINES**

# Kled Measurement Serves in

## Manufacturing



## Cement



## Steel



## Petrochemical



# KL-75 | High Performance Edge Vibrations Analyzer

Edge Analytics for real time vibrations insights

Users configurable defects diagnostics

LEDs for visual indication of Machine health

MODBUS RS-485 communication for local PLCs

24x7 Monitoring

Attaches to bearing locations for higher measurement accuracy



# FFT Spectrum Analysis

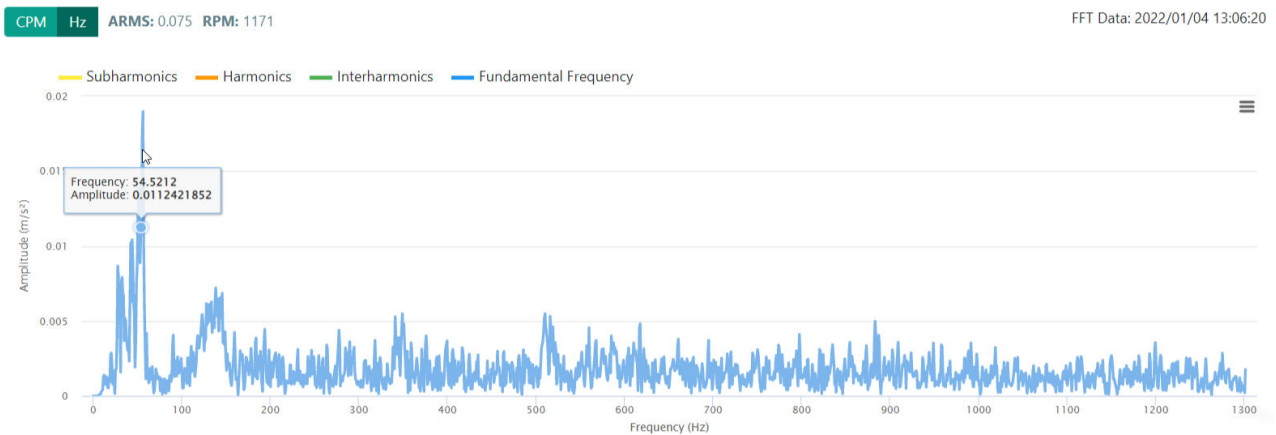
A vibration FFT (Fast Fourier Transform) spectrum is a very useful tool for machine vibration analysis.

FFT spectrum determines the health of the machine and identifies possible impending problems like looseness, unbalance, misalignment, lubrication issues, and more.

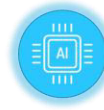
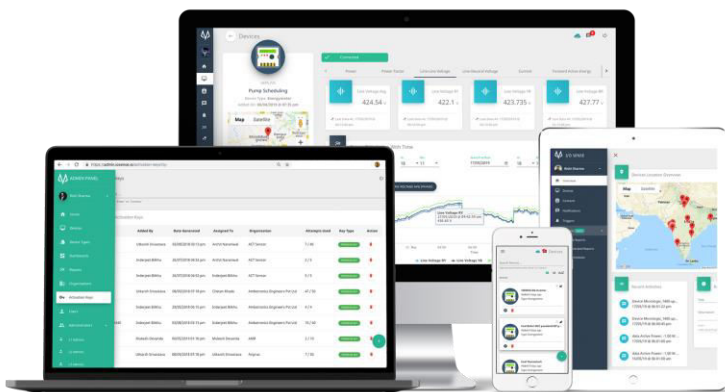
The FFT Spectrum produces peaks at identified fault frequencies. These peaks may indicate specific faults.

By looking for harmonics of the fault frequency, additional information can be assessed as to whether the generated frequencies are an indication of the fault.

For example; If a peak appears at the fundamental fault frequency and another peak appears at two times (2x) the fundamental fault frequency, it is an indication that a fault is present in the machine being monitored.



## Powered by I/O Sense Cloud Infrastructure



**AI Powered Modules and Analytics Engine**



**Configurable DIY Drag-n-Drop Platform**



**Hostable on any Network Infra**



**Military Grade Security**



**Global Compatibility to any 3<sup>rd</sup> Party Nodes**



**Completely Customizable No-Coding IoT Stack**

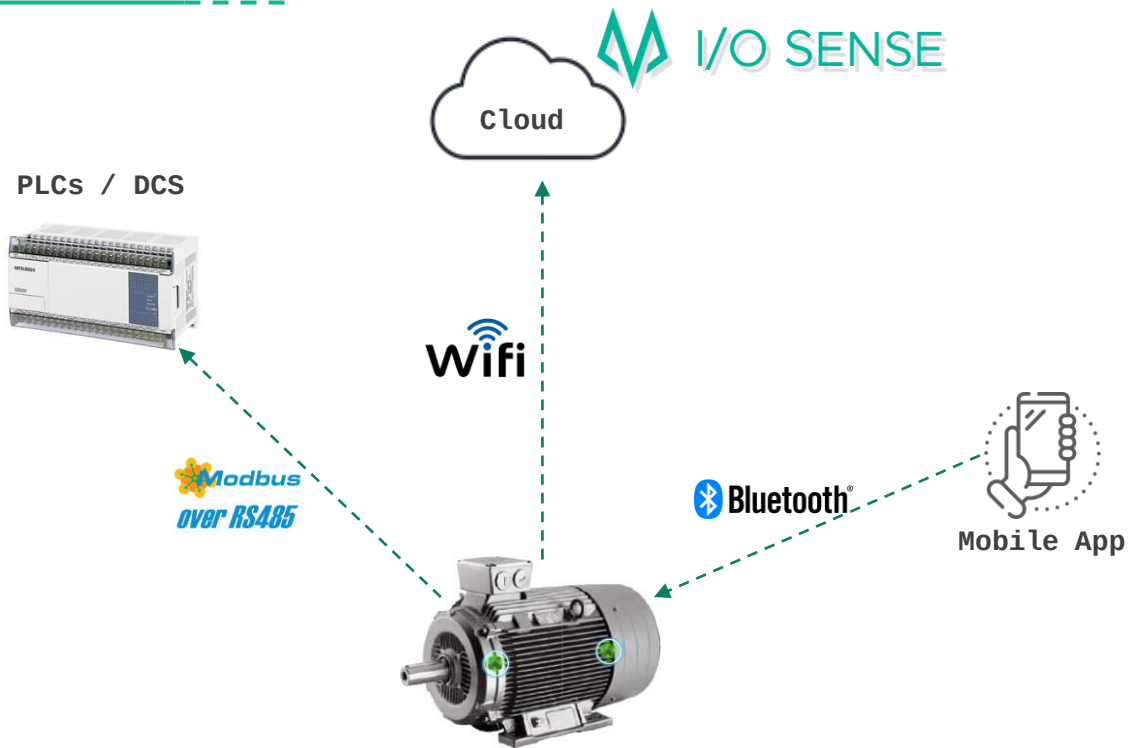


**Plug-and-play Field Installations**



**Highly Scalable Multi-tenant Architecture**

## How it Works

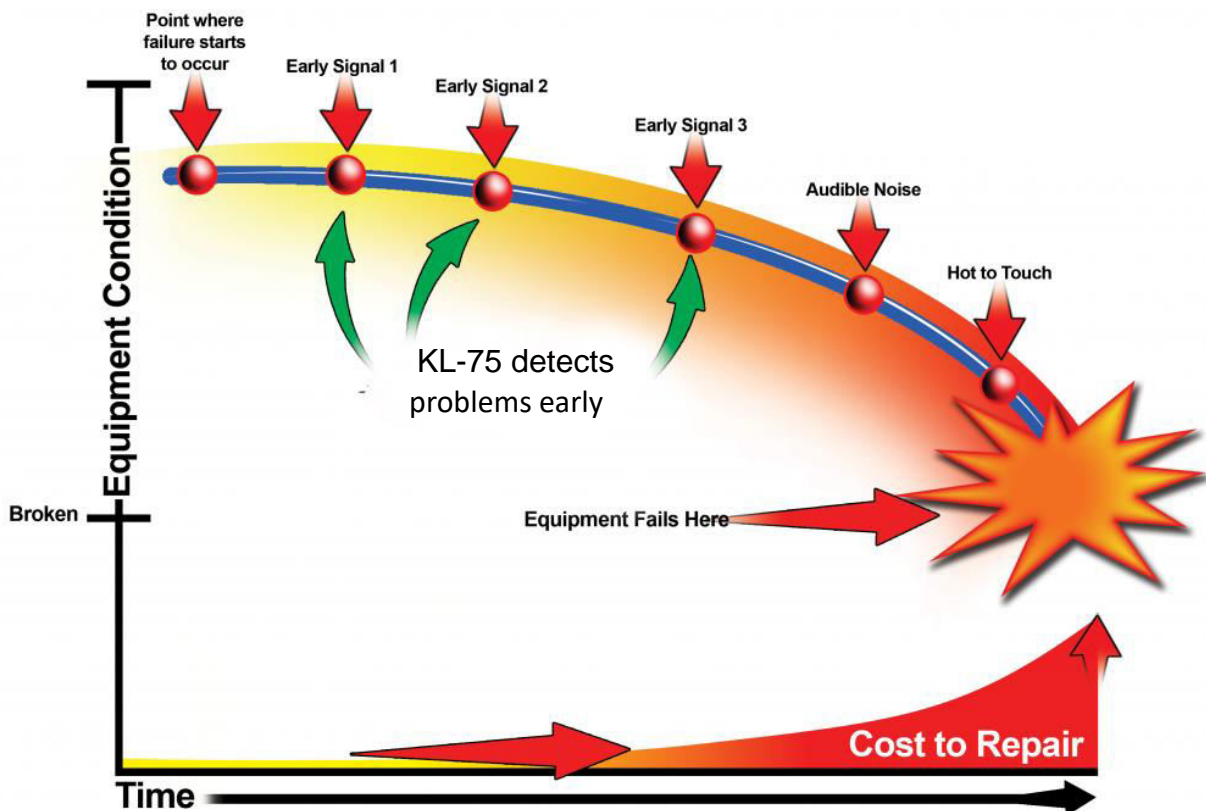


## Host of Equipment Faults being Reported

- » Misalignment
- » Excessive Load
- » True or False Brinelling
- » Overheating
- » Reverse loading
- » Normal fatigue failure
- » Loose or tight fits
- » Gear box friction
- » Gear box impacting
- » Fan blade rubbing
- » Shaft and casing misalignment
- » Shaft and fan blade imbalance
- » Particulate build-up
- » Erosion of Blades
- » Rotor/Stator eccentricity
- » Structural issues
- » Electrical issues
- » Defective belts
- » Very high vibrations
- » Loose connections
- » Cavitation
- » Resonance
- » Vane pass frequency
- » Blade pass frequency

# Supported Assets

- » Fan and blower motors
- » Cooling water pumps
- » Compressed air pumps
- » Preheated water pumps
- » Cooling towers rotating assets
- » Conveyor motors
- » Dust collector or air handler motors
- » Chillers
- » Gear boxes
- » Mixers
- » Dryers
- » Wastewater pumps
- » Clean room fans
- » Construction site dewatering pumps
- » Centrifugal pumps
- » Axial fans
- » Centrifugal fans / pumps / compressors
- » Electric motors
- » Bottlers
- » Labelers



# KL-75 Specifications

## Device Specifications

Sensing Technology	MEMS Based
Vibration Sensor	3-axis MEMS Sensor
Frequency Range	5Hz to 1.3kHz
Sampling Rate	3.33kHz
Shock Tolerance	10,000g for 0.2ms
Linear Acceleration sensitivity	0.122mg/LSB (Max 2%)
Low Noise	75ug/sqrt(Hz)
Resolution	16-bit
Data from Sensor	3-axis acceleration RMS & velocity RMS, 3-axis acceleration RMS & velocity
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 0.5 sec to 2 sec (depending on LOR selection) <ul style="list-style-type: none"><li>• FFT data transfer every 20 mins,</li><li>• FFT data on-demand from server</li><li>• FFT data on alarm</li></ul>
Local Monitoring & Configuration	Mobile Android & iOS applications
Remote Monitoring & Configuration	Through portal
OTA	Over-The-Air FW upgrade

# KL-75 Specifications

## Wireless Specifications

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 Specifications

Power Supply	External 24VDC+/-10%
Power Supply Protections	Over current, EFT (Level 4), ESD (Level-4)
Connections	4-pin M8 connector for power supply & RS-485 connections.
External M8 Connector Cable	5mtr cable provided with product
Operating temperature	-40°C to +85°C

## Mechanical Specifications

Size	40mm (L)X 40mm (W)X 33mm (H)
Weight	78 gms
Axis Orientation	Indication for X-axis
Enclosure	Polycarbonate, IP67
Mounting	Magnetic mount & stud mount options. Stud mount option recommended for better results. Mounting accessories Vibration plate & stud are provided with product.



Thank  
you! —