

# Sensor Overview

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# Brochure

The premier vibration sensor for Machine Learning and AI software. Digitally delivering the most accurate, precise, high resolution machine data.

## GET IN TOUCH

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**TriVibe** enhances **ML/AI vibration visualization** by delivering **world-class resolution** data:

- Over **50,000 samples per second** available: High Resolution
- **Customizable** dynamic data output. High pass, low pass, band pass filters available in the sensor.
- Digitally **integrateable** to any gateway or system via RS485 port.
- Customizable **overall data** output to your machine application.
- Source code available in Python on Jupyter notebooks for **easy integration and programming**.

Manufactured for **quality** and an extremely **long lifespan**:

- **USA** designed and manufactured.
- **Design specific** for customers' machine application.
- **Mounting options:** drilled and tapped with 1/4" - 28, or M6 bolt, magnet and epoxy
- **1 year warranty** by default, extendable to 5 year.
- Filling demand for **over 10,000** units per year currently.
- **Redundant accelerometers** on each access capable of verifying calibration throughout lifespan of sensor. **6 total accelerometers** in each sensor (2 per axis).

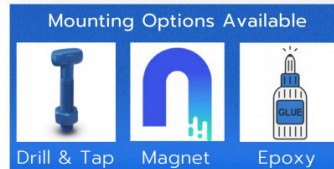
Designed for all **specifications** and **applications** where vibration is needed:

- **Daisy chained** to **cut down** on wiring installation **costs**.
- **0.8 Hz to 6000 Hz**
- **Impact monitoring** mode for compressor cylinders and reciprocating pumps.
- Measures **temperature** with an internal RTD.
- **3 Axis** monitoring.
- **CSA, UL, CE, RCM, IECEx certified.**
- **Hazardous locations:** suitable mounting options and approvals.
- Submersible capable of continuously operating in up to **30 feet (9m)** of fresh water
- **IP68 waterproof** standard

**Designed** to make continuous vibration data collection easy.  
**Imagined** to deliver high fidelity vibration data like never before.  
**Quality** that lasts a lifetime.



Daisy Chained  
Modbus RS485  
Set up.  
Gateway  
pictured: Moxa



Measured Outputs:



Vibration or  
Impact



Temp

Vibration data output options:

-Raw Dynamic Data  
 -Vibration Spectrum

-Overall Trends

-High Pass

-Low Pass

-Band Pass



# Features & Software

## Overview

Figure 1: TriVibe Sensor

Machine Saver's IIOT TriVibe provides the highest resolution vibration data for small antifriction (ball/roller) element bearing machines in the world. The TriVibe gathers information needed for Machine Learning Artificial Intelligence Data with superb resolution for slow and high speed machines all with one universal TriVibe.

TriVibe has the lowest total cost of ownership (TCO) with our unique "wire less" semi-tethered approach which allows 24/7 information gathering, internal calibration verification, no batteries to replace and no lost machine information.

TriVibe delivers multi sensor, multi axis, 50,000+ samples per second via serial Modbus RS485, polling overall vibration and temperature data continuously near real-time. TriVibe captures the time waveform and spectral FFT data on all axis simultaneously for high resolution machine health information to determine the root cause of the machine anomalies before the problem. The TriVibe paired with our gateway or our edge devices with machine learning algorithms can learn faster and more accurately to automatically diagnose impending machine failures long before they occur.

## Layout

### Features and Benefits

Maintenance free – no battery to change

No periodic calibration verification required

Acquire spectrum (FFT) data via MODBUS automatically upon an alarm

Easy mounting with small footprint

One cable run between all sensors

1Hz to 8kHz frequency response

Programmable band pass filters

Programmable alarm setpoints

Configurable for impact or mechanical looseness sensing

IP67 (NEMA 6P)

Includes temperature sensor

## Compatible Software

Modbus Client - A Graphical User Interface for reading, writing and monitoring Modbus RTU + Modbus TCP.

MachineCloud (Reporting Portal) - Cloud Based System, 24/7 Monitoring by Level 4 Analysts, Simple Maintenance Reports Upon Detection and Verification of Anomaly.

MachineCloud (Analysis Portal) - Cloud Based System for Vibration Analysts, Machine Learning Anomaly Detection Filters, Focused Component-Based Issue Highlighting, Banding Alarms.

# Specifications and Dimensions

## Specifications

### High Frequency Internal Sensor

Frequency Range	Axis 1 & Axis 3 - 1.5 Hz to 8000 Hz Axis 2 - 1.5 Hz to 5100 Hz
Sensitivity	~100 mV/g
Amplitude Range	0 to 20 g
Sample Rate	50,000 Samples/Second
Overall Filter Range	1.1 Hz to 6553.4 Hz

### Low Frequency Internal Sensor

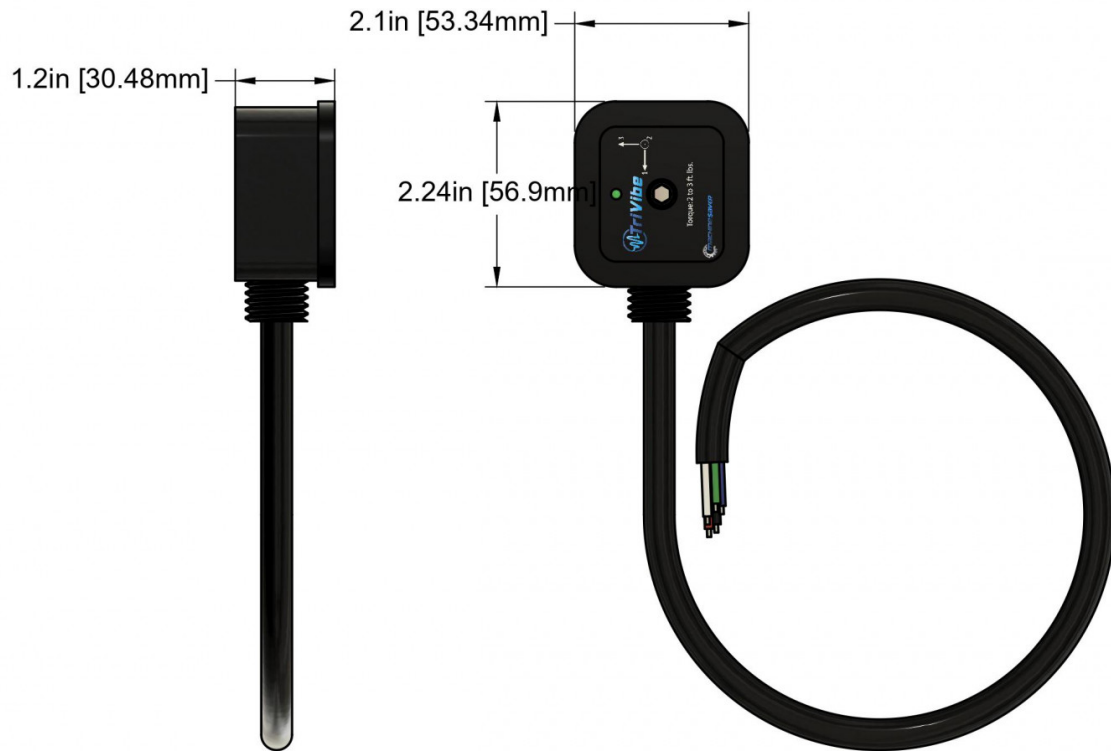
Frequency Range	All Axes - 1.5 Hz to 1000 Hz
Sensitivity	~800 mV/g
Amplitude Range	0 to 2 g
Sample Rate	50,000 samples/second
Overall Filter Range	1.1 Hz to 6553.4 Hz

### Communication

Configuration	All Functions Settable via Modbus Read/Write OR Graphical User Interface Software
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Baud rate	115,200 bits/second
Byte Size	8
Parity	None
Stop Bits	1
Handshakes	None
Minimum Timeout	0.100 Seconds
Minimum Interpacket Delay	0.001 Seconds

# Dimensions



PROJECT  
**TRIVIBE\_1.0**

TITLE  
**TRIVIBE\_1.0**

APPROVED Leo Bach 6/29/2022

CHECKED Bryson Carroll 6/29/2022

DRAWN Luke Benjamin 6/28/2022

SIZE	SCALE	DWG NO
A	1:2	TRIVIBE_1.0

REV
1.01

**Figure 1: TriVibe Dimensional Drawing.**