VIBRATION ANALYZER

VIBE ANALYZER

Precise Machine Diagnostics for Everyone

The VIBE ANALYZER is a tool designed for detailed vibration analysis in various industrial applications. Its primary purpose is to provide accurate and reliable data that helps optimize machine performance and prevent unplanned downtime. Thanks to its advanced technology and intuitive interface, the VIBE ANALYZER is a must-have tool for engineers and technicians to maximize efficiency and operational safety.

Hardware Specifications of the VIBE ANALYZER

- **24-bit Converter -** Captures precise data with minimal noise for highly accurate measurements.
- **Low-Noise MEMS Accelerometer - Ensures** reliable vibration measurement with high sensitivity and low noise.
- **High Sampling Frequency -** Up to 32,768 samples per second, which allows for detailed signal analysis and precise diagnostic results.
- **Customizable FFT Resolution -** Choice between FFT resolutions of 1–0.125 Hz (32k–256k samples) for flexible and detailed frequency spectrum analysis.
- **Wide Frequency Range - Covers** 5–15,000 Hz, enabling comprehensive diagnostics of various types of machine vibrations.
- **Multiple Measurement Metrics -** Supports various metrics including gRMS, gPeak, mm/s RMS, mm/s Peak, Crest Factor, Enveloped g, and displacement in µm RMS for comprehensive vibration analysis.
- **Complete Visualization -** Provides time records, FFT spectra, and envelope analysis for easy interpretation of the measured data.
- **Audio Playback -** Offers playback of recorded signals for intuitive inspection and identification of issues.
- **Data Storage -** Exports measured values to CSV format for further analysis and processing using external software tools.

- **Compact Design -** An elegant aluminum housing measuring 25 × 25 × 80 mm and weighing only 120 g, ideal for portable use and easy installation. The overall length, including the magnet and USB connector cover is 100 mm.
- **Power and USB-C Connection -** Powered and transferring data via a mobile device, tablet, or PC, ensuring flexible and convenient use in the field or in the workshop.
- **Multi-Platform Compatibility -** The application is available for Android, Windows, and Linux, allowing wide usage and integration with various devices and systems.

Hardware Parameters

Accelerometer:

- Range: ±100 g
- Frequency Response: Up to 23 kHz
- Resonant Frequency: 42 kHz
- Ultra-Low Noise: 75 µg/√Hz
- Built-in Self-Test for Diagnostics
- Shock Resistance: Up to 10,000 g

Processor:

- Core: ARM Cortex-M7 @ 600 MHz
- Memory: 1024 KB RAM (512 KB high-performance), 1984 KB Flash
- USB Speed: 480 Mbps

ADC (Analog-to-Digital Converter):

- Resolution: 24 bits
- Delta-Sigma Architecture for Accurate Measurement and Filtering
- Sampling Frequency: Up to 32,768 samples per second

Software Application Specifications

VIBE APP functions

- Analyzes measured data from the external VIBE ANALYZER accelerometer.
- Monitors acceleration, velocity, and displacement values using interactive charts.
- Allows zooming into parts of the graph via touch interaction.

Diagnostic measurement methods:

- Acceleration RMS, peak values, and FFT spectrum in g.
- Velocity RMS, peak values, and FFT spectrum in mm/s.
- Envelope Detection of bearing fault frequencies.
- Displacement Time series measurements in µm.

Advanced functions

Intelligent Diagnostics

- Bearing Condition Analysis
- FFT Automatic identification of frequencies and vibrations.
- Automatic detection of potential issues in the FFT velocity data (e.g. rotor imbalance, misalignment, mechanical looseness)

Settings:

- FFT Resolution: Choose between 32k–256k samples (record length 1–8 seconds, FFT resolution 1–0.125 Hz).
- Frequency Ranges: Analyze acceleration and velocity vibrations according to the chosen frequency range.

Design and construction

- Durable Aluminum Casing
  A 2 mm thick aluminum housing for reliable use in the field.
- Integrated Mounting Mechanism - stainless Steel Profile features an M6 thread for secure mounting directly on the device using a strong neodymium magnet (holding force 27 kg) or via a screw connection.

Construction details

The analyzer is housed in an aluminum case measuring 25 × 25 × 80 mm with a wall thickness of 2 mm. On one side, a stainless-steel profile is inserted that carries the PCB (printed circuit board) to ensure optimal vibration transmission without losses. The stainless-steel profile includes an internal M6 thread for mounting the magnet or for direct screwing onto the measured object. The magnet is a neodymium type, enclosed, with a diameter of 25 mm and a holding force of 27 kg. On the opposite side is a plastic cap with a USB-C connector for DC 5V power and data transfer.

The analyzer's software is developed for use on Android devices (mobile phones and tablets). The mobile app, called **VIBEDYNAMICS**, is available for download on Google Play and is also provided for Windows and Linux. These versions can be obtained from the website: www.vibedynamics.eu

VIBE ANALYZER
VIBRATION SOLUTIONS

Operation conditions

Temperature Range:
The vibration analyzer operates correctly within an ambient temperature range of –20 °C to +85 °C. Using the device outside this range may lead to inaccurate measurements or permanent damage to components.

Supply Voltage:
Recommended supply voltage when using USB connection (with a mobile, tablet, or computer) is 5 V ± 0.25 V.

Mechanical Resistance:
The analyzer should be protected from mechanical impacts and vibrations exceeding the limits of the ADXL1005 component (±100 g).

Warranty

The warranty period for the VIBE ANALYZER is 12 months from the date of purchase.

Ecological Disposal of the Vibration Analyzer

If the vibration analyzer is no longer functional or if you decide to discontinue its use, do not dispose of it with regular waste. The device contains electronic components that can be harmful to the environment.

Disposal Procedure:

- The vibration analyzer is classified as electronic waste and must be handed in at an approved collection center or facility designated for the disposal of electronic equipment.
- Follow local regulations and laws regarding the disposal of electronic devices.
- Do not attempt to disassemble the device or dispose of it with normal municipal waste, as it contains environmentally hazardous materials.

Maintenance and Firmware Updates

Maintenance
The device requires no special maintenance. Keep the analyzer clean and regularly inspect cables and connectors to prevent mechanical damage and contamination.
Clean only with a soft cloth slightly dampened with clean water. Do not use aggressive chemicals, solvents, or abrasive materials.

Firmware Updates
Firmware can be updated by connecting the analyzer to a computer via a USB cable using the "Firmware Updater App for Windows" available on our website. The latest firmware is available on our website. Regularly check for updates to obtain important bug fixes, stability enhancements, and new features.

Mobile Application Updates
For optimal performance, update the mobile application regularly. The app is available on Google Play and updates typically bring new features, bug fixes, and performance optimizations.

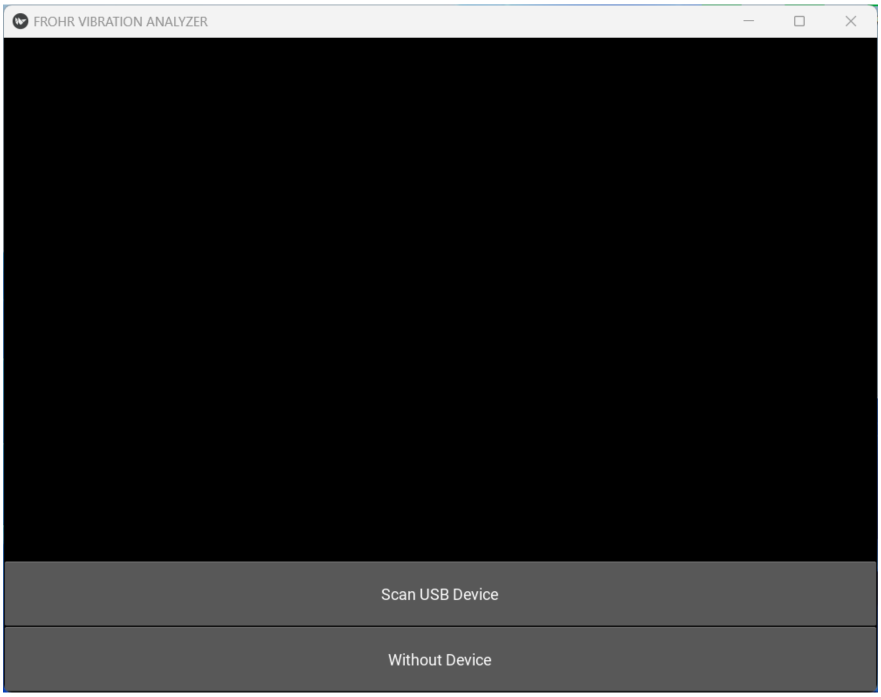
Following these guidelines will ensure the longevity, stability, and accuracy of your vibration analyzer.

OPERATING MANUAL

1. App start:

When starting the application, you will see two options on the screen:

1) Scan USB Device
2) Without Device.



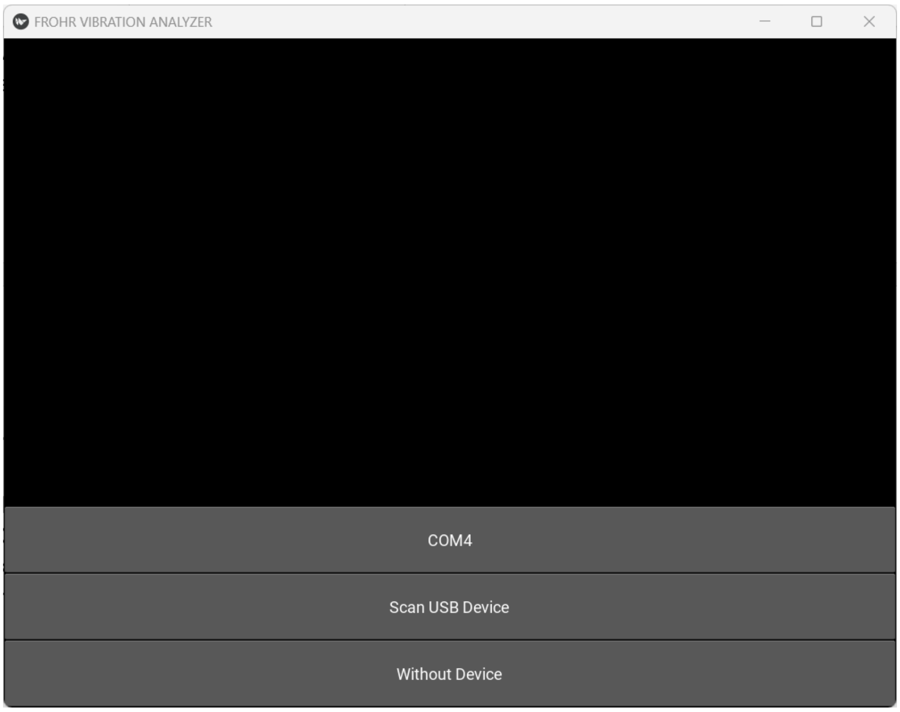
Without Device launches the application without connecting an analyzer.

Scan USB Device detects connected devices.

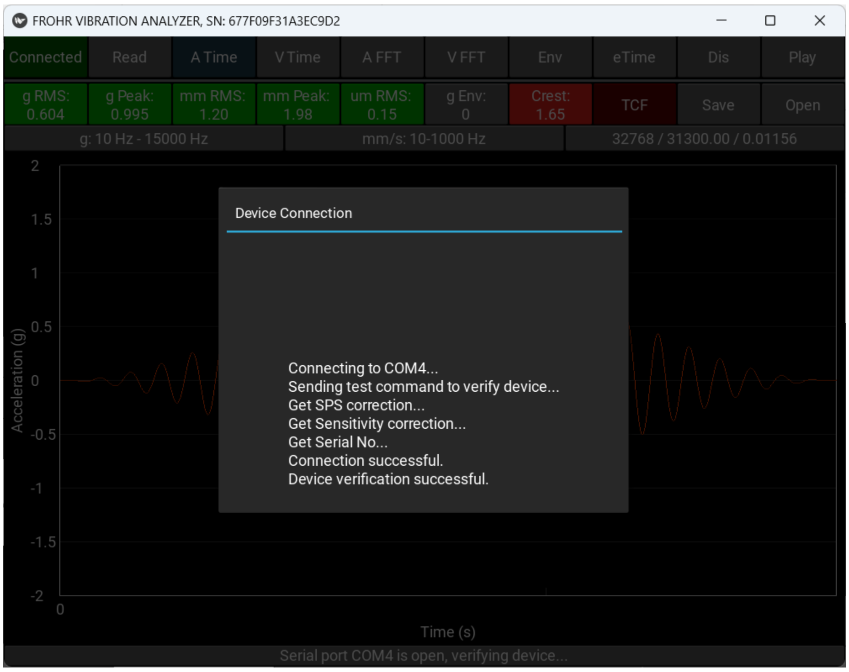
On Windows, if the VIBE ANALYZER is connected via USB, you will see an active COM port (e.g., COM4). On Android, you might see a device path such as /dev/bus/usb/001/002.

Clicking this option connects the analyzer and takes you to the main screen. (Note: On Android, you must also confirm the USB connection, affirming that you wish to connect the USB Serial device. If after confirmation the main screen does not appear and the buttons are shown again, press “Scan” and select the device name once more to switch to the main screen.)

Windows:
Press the **Scan USB Device** button:



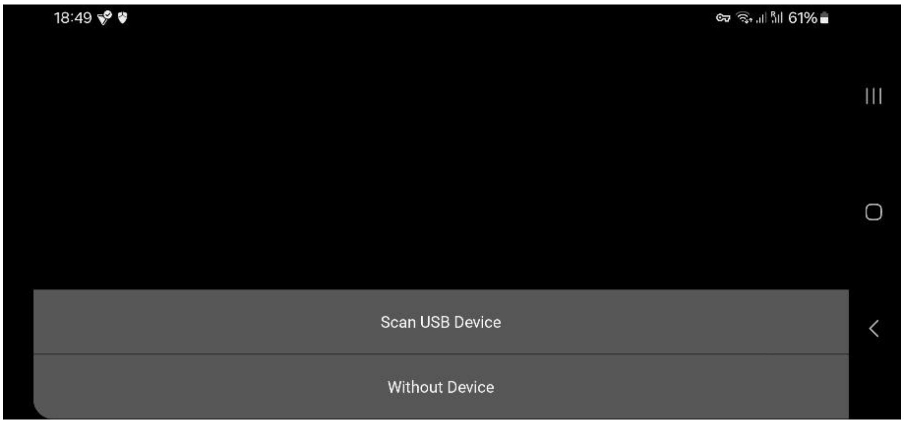
After selecting, for example, COM4, the analyzer begins connecting.



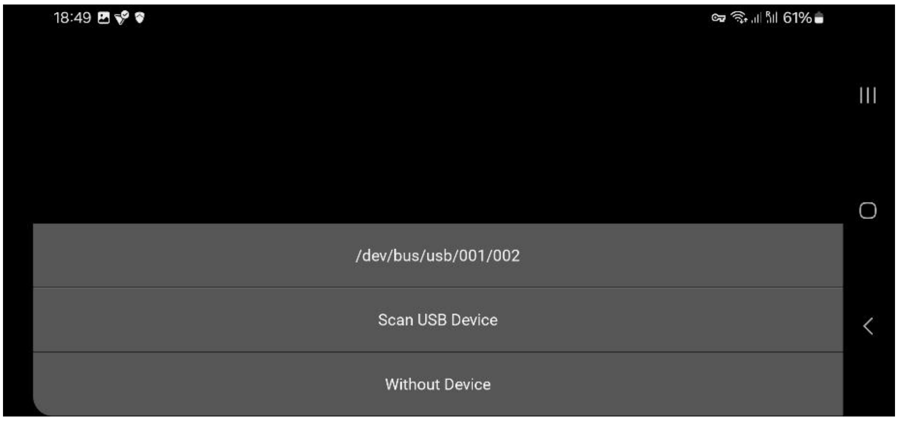
You will then see the main screen featuring the initial generated signal.

Android:

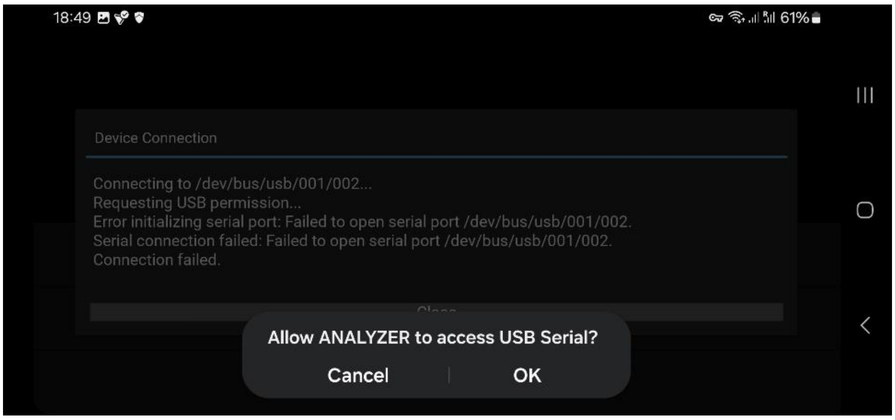
With the VIBE ANALYZER connected, tap the **Scan USB Device** button:



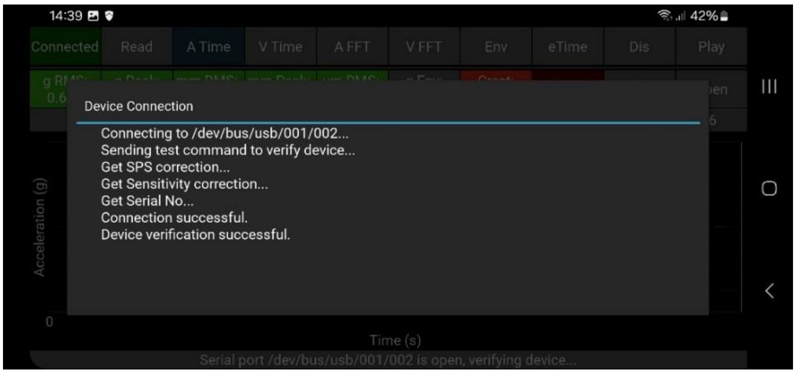
Select a path such as /dev/bus/usb/001/002 (the numbers may change even with the same device).



Allow the USB connection when prompted:

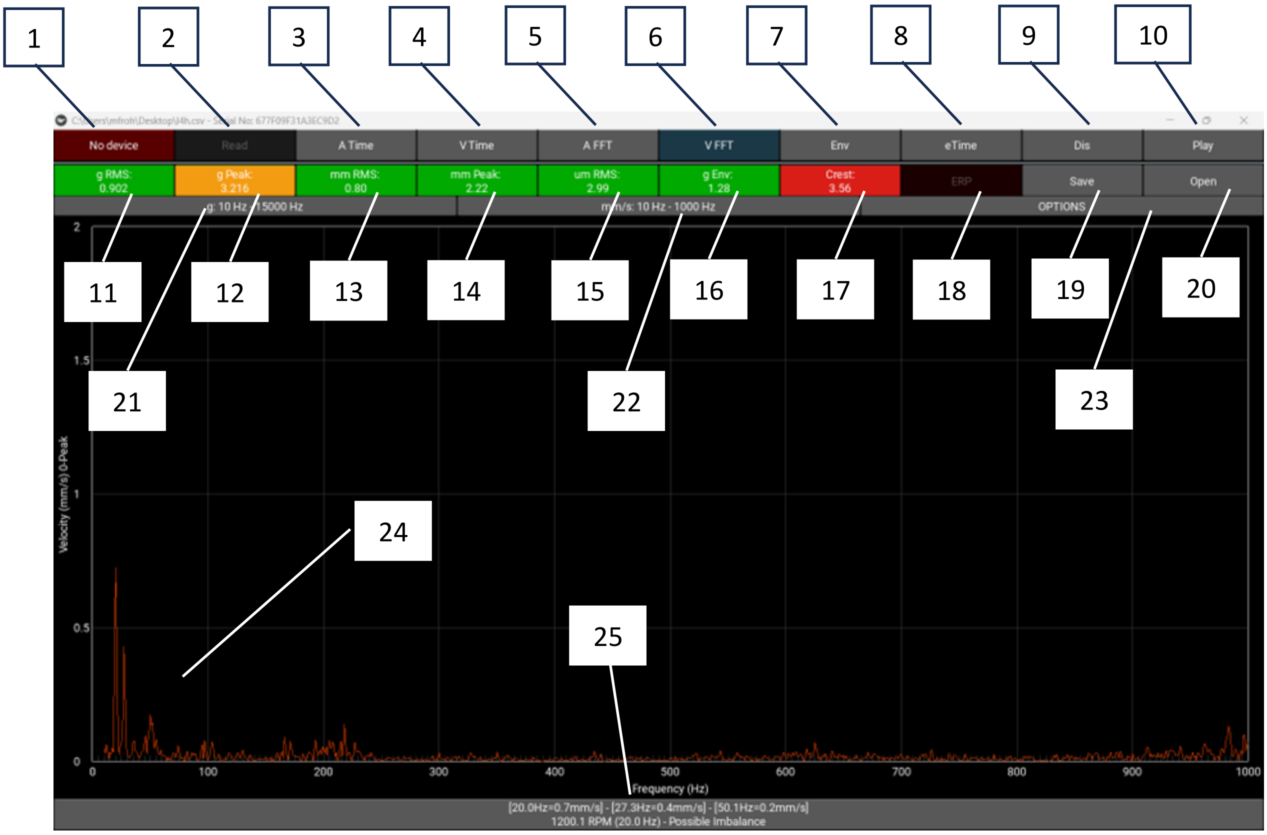


We will see connection popup:



The analyzer will then connect, and you will be taken to the application's main screen:

Basic Functions Overview



1. **Device Connection:** Indicates when the analyzer is connected.
2. **Start/Stop Data Reading:** Starts or stops the data acquisition from the analyzer.
3. **A time = Acceleration Time:** Time record of vibration acceleration in g.
4. **V time = Velocity Time:** Time record of vibration velocity in mm/s.
5. **A FFT = Acceleration FFT:** FFT spectrum of vibration acceleration in g.
6. **V FFT = Velocity FFT:** FFT spectrum of vibration velocity in mm/s.
7. **Env = Envelope Spectrum:** FFT spectrum of the envelope; used for detecting fault frequencies in bearings.
8. **eTime = Enveloped Time:** Time record of the envelope.
9. **Dis = Displacement:** Time record of displacement in µm.
10. **Play:** Plays the signal through a speaker or headphones.
11. **gRMS:** Overall effective value of the acceleration.
12. **g Peak:** Maximum vibration acceleration peak.
13. **mm RMS:** Overall effective value of the vibration velocity.
14. **mm Peak:** Maximum vibration velocity peak.
15. **um RMS:** Overall effective value of the vibration displacement.
16. **g Env:** Overall effective value of the acceleration envelope.
17. **Crest (Crest Factor):** Ratio of g0-Peak to gRMS.
18. **ERP:** API for reading data into other applications or websites, with server and port settings (default is 127.0.0.1:8000).
19. **Save:** Saves the current measurement into a CSV file.
20. **Open:** Opens a CSV file and plots and calculates the vibration values.
21. **Global Frequency Range Settings for Vibration Acceleration Measurements:** (Range can be saved in Options; otherwise, the standard range is restored on restart.)
22. **Global Frequency Range Settings for Vibration Velocity Measurements:** Range can be saved in Options; otherwise, the standard range is restored on restart.)
23. **Settings for Record Length, Cursor, and Data Sending to the Server.**
24. **Data Plotting.**
25. **Information Panel: App info popup and** Fault detection in Velocity and Enveloped FFT.

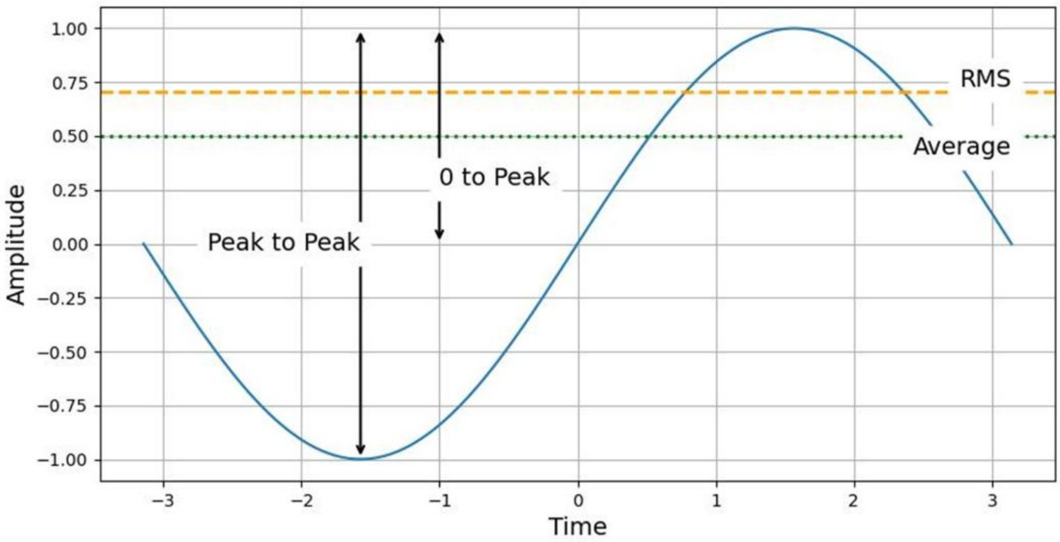
VIBRATION ANALYSIS – BASICS

Acceleration (or Acceleration):
In the context of vibration analysis, acceleration (often denoted by the letter a) is the measure of the change in velocity of an oscillatory motion over time. When we observe a machine, structure, or component subjected to vibrations, acceleration tells us how rapidly the instantaneous speed of its movement is changing. While displacement indicates by how much and in which direction the system deviates from its equilibrium position, and velocity shows the intensity and direction with which that point changes its position, acceleration reveals how abruptly this movement changes. High acceleration values typically indicate intense shocks, overloads, or high dynamic forces acting on the structure. Acceleration is expressed in units of g or m/s^2.

Velocity (or Speed):
In the context of vibration analysis, velocity (usually denoted as v) is the measure of the change in displacement (position) over time. Simply put, while displacement indicates where the measured point is located at any given time, velocity expresses how quickly and in which direction that position is changing. Displacement informs us whether a given point is at its equilibrium, above it, below it, or in another position. Velocity indicates whether the system is returning to, moving away from, or overshooting that equilibrium position, and with what intensity. If the velocity is positive, the point moves in one direction (for example, upward or to the right, depending on the chosen coordinate system); if negative, it moves in the opposite direction. Velocity is given in the unit mm/s.

Displacement (or Deflection):
In vibration analysis, displacement (often denoted as x(t)) represents the instantaneous position of a point, component, or the entire system relative to its initial (equilibrium) state. In other words, it shows by how much and in which direction the given point deviates from its rest position. A displacement of zero indicates that the point is exactly in its equilibrium (initial) position. A positive displacement signifies that the point is located on one side of the equilibrium (for example, upward, to the right, or outward), while a negative displacement indicates deviation in the opposite direction. Displacement is expressed in the unit µm.

RMS, 0-Peak, Peak-Peak, Average



RMS:
RMS is a measure of the signal's energy and corresponds to the equivalent direct current (DC) value that would have the same effect (e.g., thermal or power) as the analyzed alternating current (AC) signal. In vibration analysis, RMS gives a better idea of the "intensity" of the vibrations than a simple maximum or average.

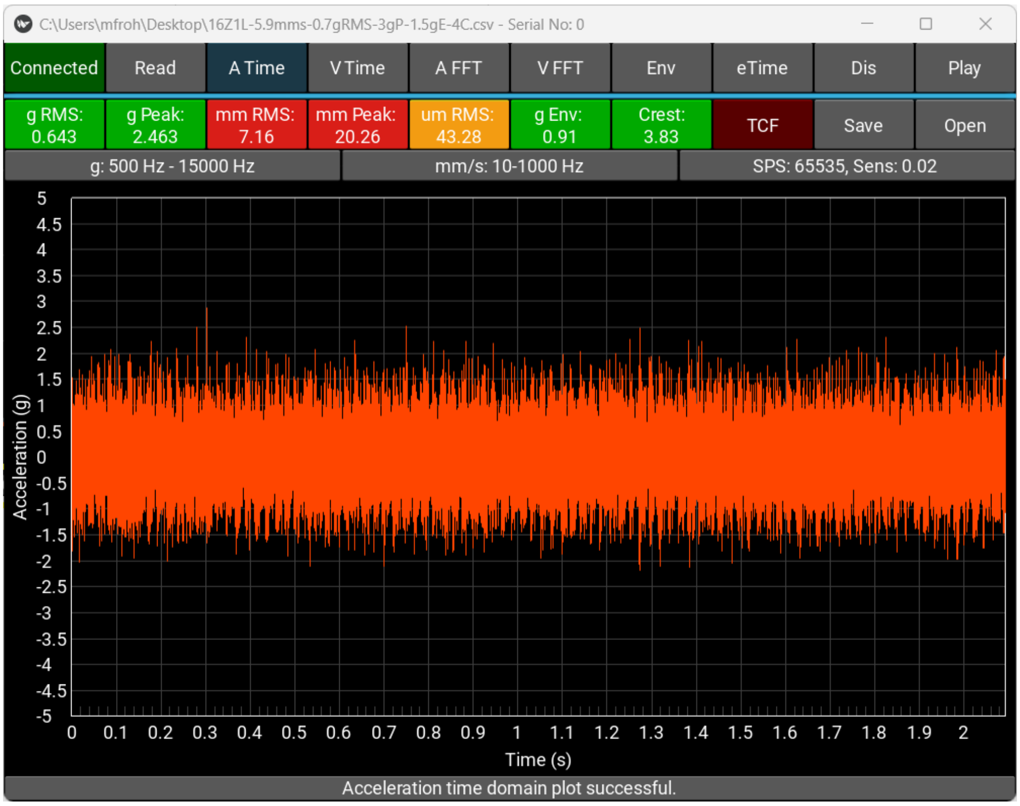
0-Peak:
0-Peak is the maximum instantaneous value of the signal from the zero level to the highest achieved peak. In other words, the 0-Peak value represents the greatest amplitude (peak) in the upward or downward direction from the zero axis. For a symmetric sinusoidal signal, the 0-Peak value is equal to the amplitude of the sine wave.

Peak-Peak:
Peak-Peak is the difference between the maximum positive and the maximum negative peaks of the signal. The Peak-to-Peak value therefore indicates the total range (swing) of the signal from its lowest value to its highest. For example, for a sinusoidal signal with amplitude A, the Peak-to-Peak value is 2×A.

Average:
Average is the simple arithmetic mean of all the measured signal values over time. If the signal is symmetric around zero (for example, an ideal sine wave), its average value over one complete period is zero. In such cases, the average does not provide information about the vibration magnitude; however, for asymmetric signals, the average can be significant (e.g., in the case of vibrations with a DC offset or unidirectional deformations).

Time Domain Plot:
A time domain plot, or vibration time record, is a graphical representation of a signal as a function of time. The horizontal axis always represents time (t), while the vertical axis shows the parameter being monitored (for example, voltage, velocity, acceleration, displacement, or other metrics). For instance, when measuring the vibration of a machine, the time domain plot will display how the measured signal (e.g., acceleration) changes over time. This lets you observe whether there are regular periodic changes (such as a sine waveform), irregular jumps (impacts), a gradual increase or decrease in the signal, or a combination of different phenomena. Time analysis allows you to directly see how the values change in real time, making it useful for identifying events as they occur (like machine start-up, sudden sharp changes, or transient phenomena).

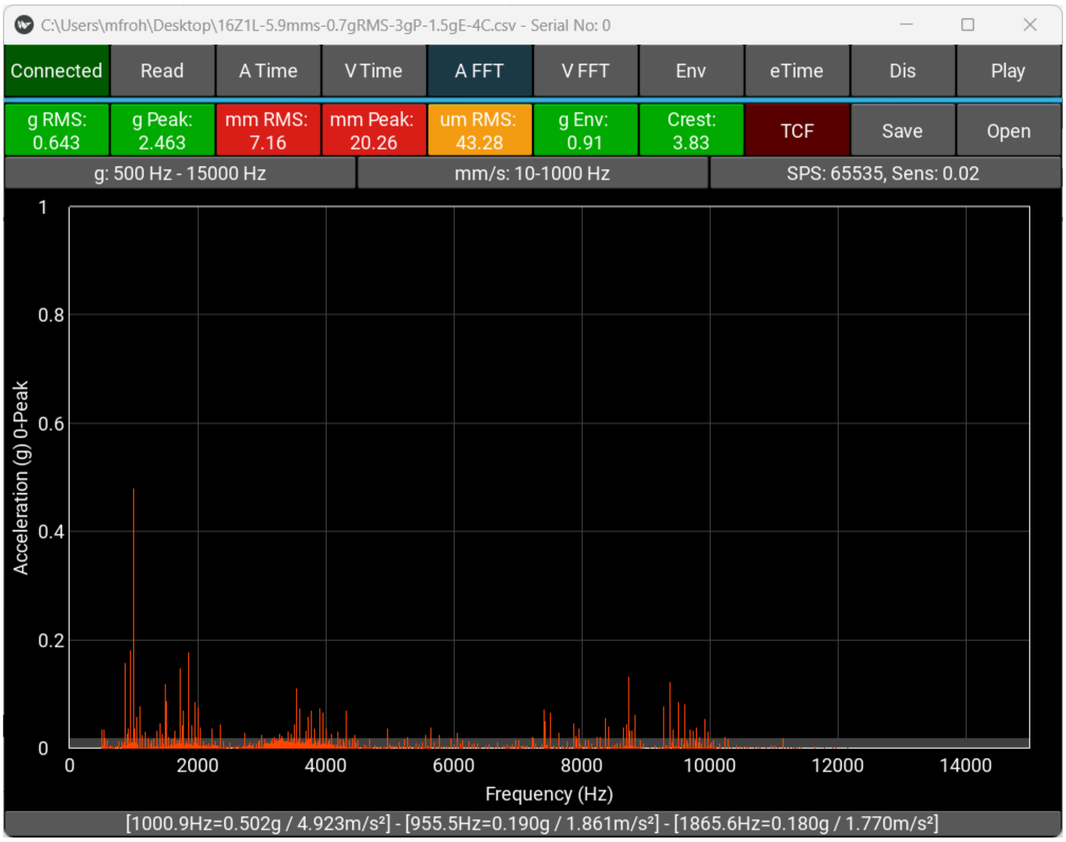
Time domain:



FFT is a mathematical tool that transforms a signal from the time domain—where it is represented as a quantity varying over time—into the frequency domain, where it is expressed as a spectrum consisting of individual frequencies and their amplitudes. When you have a time signal, such as vibrations measured on a machine (a time record of acceleration), this signal can be very complex and comprise a combination of many different frequencies. Simply looking at the time doamin does not immediately reveal which frequencies are present or how intense they are. FFT allows you to break down (or "unpack") this signals into its individual frequency components.

The typical output of an FFT is a graph, with frequency (in Hz) displayed on the horizontal axis and the magnitude (either amplitude or energy) of the signal at each frequency on the vertical axis. This graphical representation makes it easy to identify dominant frequencies, resonances, periodically recurring events, interferences at specific frequencies, and other characteristic features of the signal.

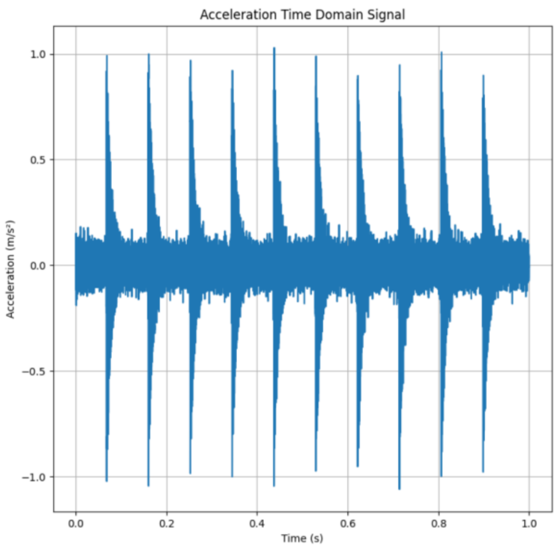
In machine vibration diagnostics, FFT is especially useful for pinpointing which mechanical components are generating vibrations. For example, if you observe a pronounced peak in the FFT spectrum at a frequency that corresponds to the rotor's rotation rate, you can conclude that there may be an issue such as rotor imbalance.
FFT:



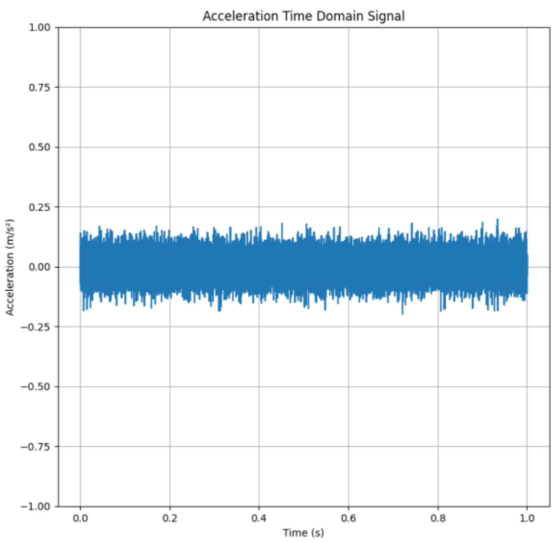
Detailed Description of Functions and Measurements in the VIBE APP:

1. Device Connection
   If button 1 shows “Connected,” the device is connected. If it becomes disconnected during measurement, the button will display “No device.” Reconnect the device and click the button to open the connection screen, then press Scan USB Device and proceed as usual.
   If there is a connection issue, close the application, reconnect the VIBE ANALYZER, and try connecting again.
2. Read – Data Acquisition from the Analyzer
   When the analyzer is connected, the button is gray. Clicking it initiates data acquisition, turning the button green and displaying “Reading.” The default visualization is the Acceleration Time Domain, i.e., the time record of vibration acceleration.
3. A Time – Acceleration Time – Time Record of Acceleration
   The acceleration amplitude is shown in g. These are raw data in the frequency range of 10–15,000 Hz. Within this frequency range, you can see both mechanical issues (e.g., a sinusoid) and high frequency bearing problems. However, interpreting such issues directly from the time record can be more challenging. For instance, at 1,500 rpm (25 Hz = 25 peaks per sinusoid), you might see another sinusoid at around 200 Hz, possibly indicating bearing damage. Generally, acceleration is used in higher-frequency ranges to detect bearing damage.

Time domain plot with damaged bearing

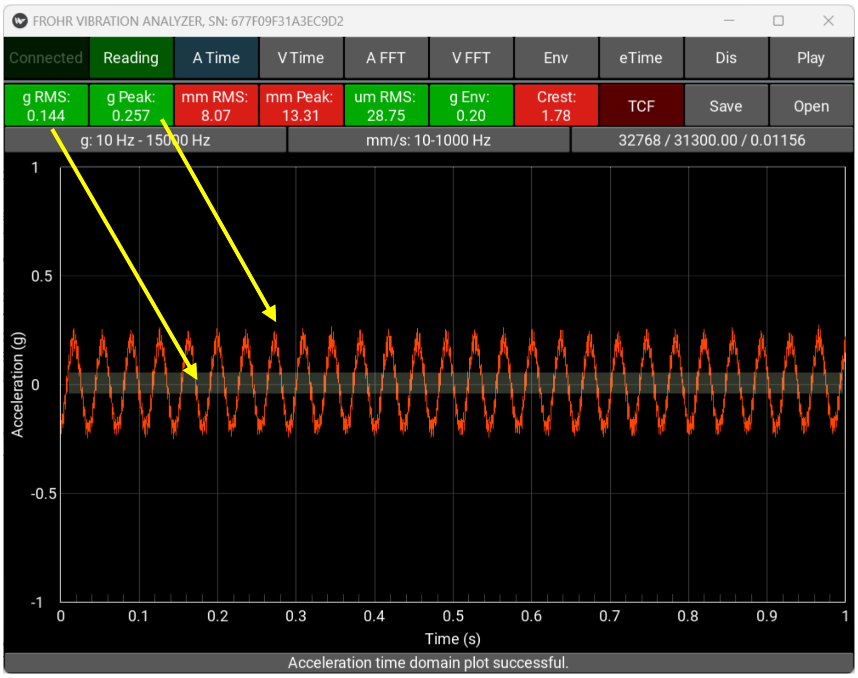


Normal time domain plot, no faults



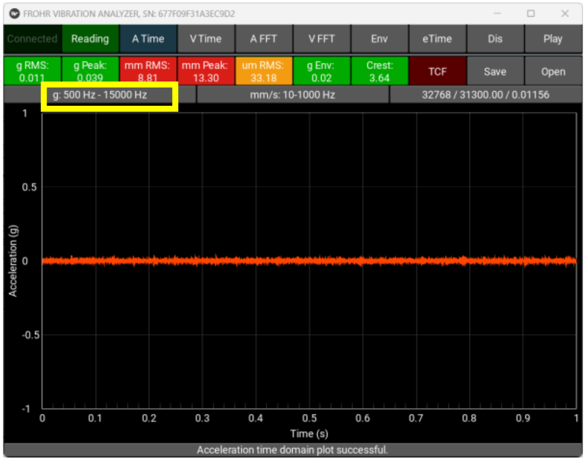
For plotting acceleration and detecting bearing damage, it is advisable to use a frequency range starting at around 500 Hz, in order to filter out mechanical issues such as imbalance, misalignment, etc.

What is 0 – Peak and RMS:

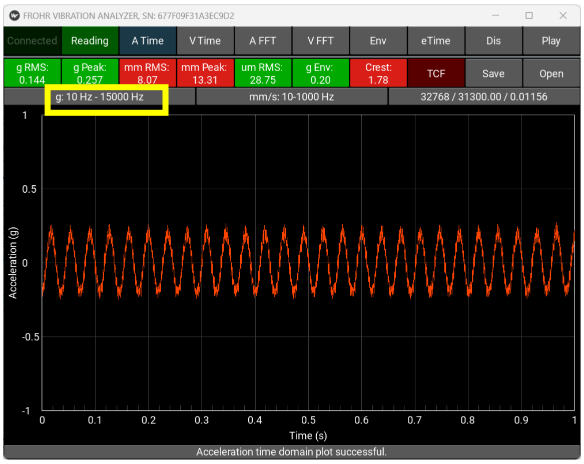


Same signal but different frequency range:

500–15000 Hz



10–15000 Hz:

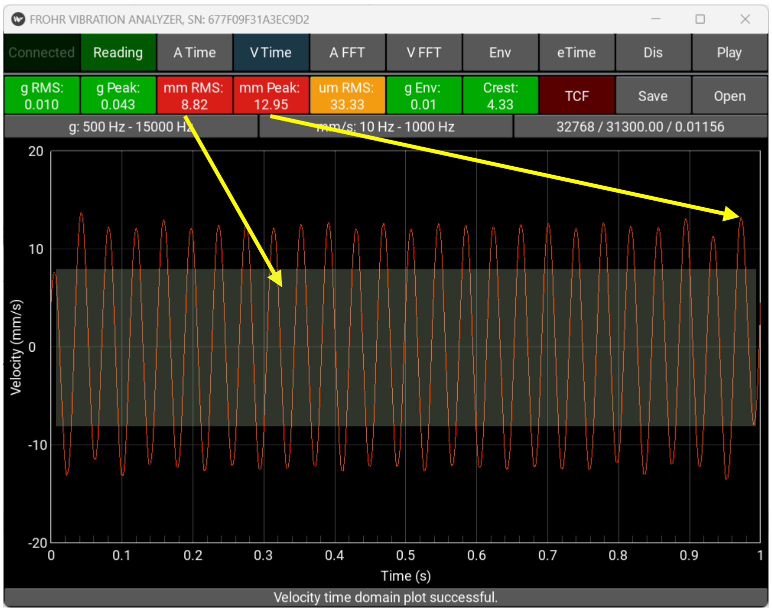


We can see that the acceleration values are very small, so it is likely not bearing damage—except in the final stage of bearing failure, where the damage also manifests at lower frequencies. However, there are increased vibration velocity values in mm/s RMS and Peak—see the next point.

1. V Time – Velocity Time Domain – Time Record of Velocity

The amplitude is in mm/s. This represents an integrated acceleration signal, meaning a 90° phase shift and the amplitude recalculated from g to mm/s. The typical vibration velocity range is 10–1000 Hz (depending on the machine's rotational speed). By analyzing vibration velocity, we can detect mechanical issues such as imbalance, rotor/coupling misalignment, and mechanical looseness. In the final stage of bearing failure, fault frequencies may also appear.

Now the time record of vibration velocity in mm/s is displayed. We can see an almost perfect sinusoid, which may indicate rotor imbalance.



2. A FFT – Acceleration FFT – FFT acceleration spectrum

The FFT spectrum of acceleration is a graphical representation showing which frequencies the acceleration signal contains and to what extent (i.e., amplitude) those frequencies are present. While the time record of acceleration shows how the acceleration value changes over time, the FFT (Fast Fourier Transform) gives us a view of the same signal in terms of frequencies.

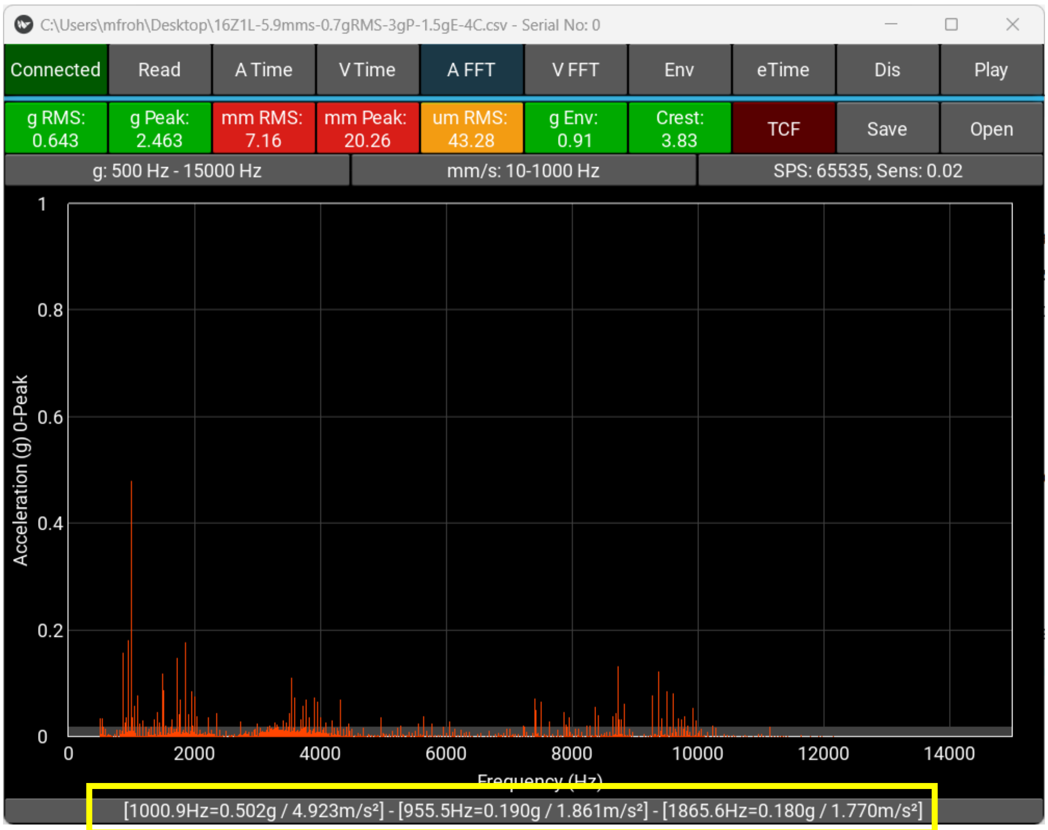
The resulting spectrum may include:

- **A pronounced peak at certain frequencies:** for instance, at the machine's rotational frequency (1× RPM), at frequencies corresponding to multiples of that rotation speed (harmonic components), or at specific frequencies characteristic of particular faults (e.g., bearing failures, gear tooth issues, or structural resonances).
- **Lower amplitudes at other frequencies:** these are typically noise or less significant components of the vibrations.

What does this mean in practice?

Acceleration is sensitive to high-frequency components and is therefore used to detect, for example, early stages of bearing or gear tooth damage. When analyzing an acceleration spectrum, you can:

- **Identify high-frequency energy** arising from worn or damaged components.
- **Differentiate between various types of faults** (imbalance or misalignment typically appear at lower frequencies, whereas bearing and gear tooth damage manifest in higher frequency ranges).



3. **Velocity FFT – FFT velocity spectrum**

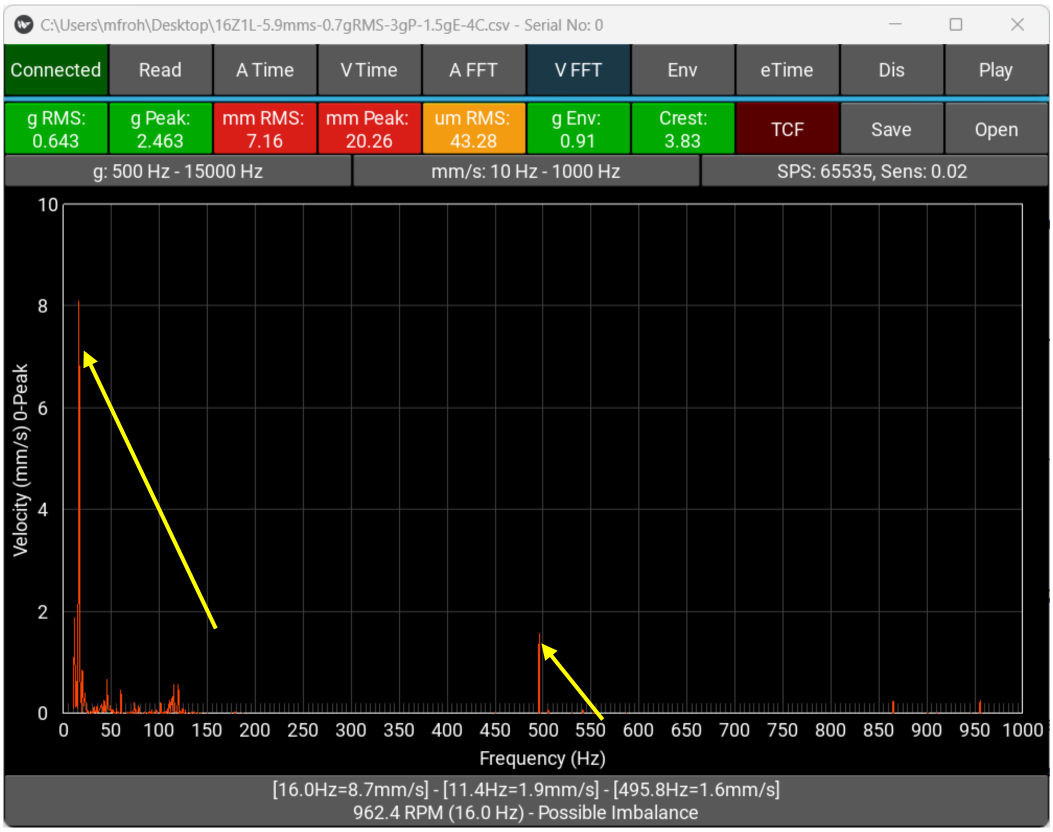
The velocity FFT is the frequency representation of the vibration velocity time signal. While the time-domain record shows how velocity changes over time, the Fourier Transform (FFT) breaks this change down into individual frequency components and shows which frequencies exhibit significant oscillations and with what intensity (amplitude).

A velocity FFT is regarded as a highly useful tool in vibration diagnostics because:

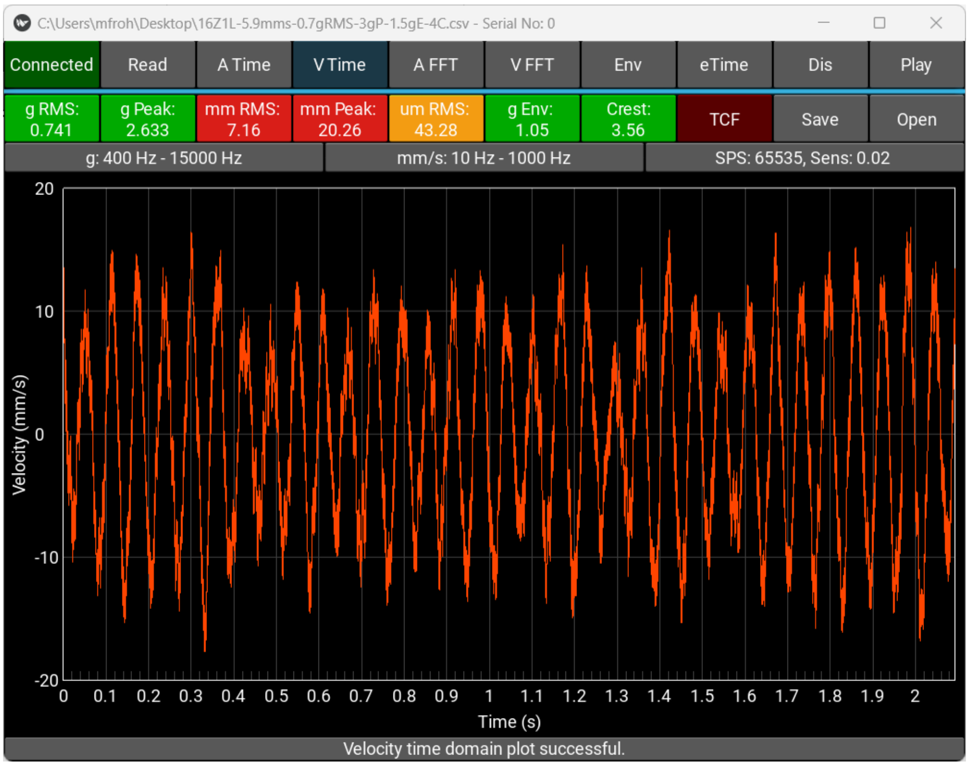
- **It provides a clear view of faults related to machine speed** (e.g., imbalance, misalignment), often more distinct than displacement or acceleration.
- **Velocity is often considered the most balanced parameter** for diagnostics. Unlike acceleration, which is highly sensitive to high frequencies, velocity retains information about important mid-frequency energy.
- **A prominent peak** at a frequency corresponding to the rotor's speed or its multiples may indicate mechanical imbalance, misalignment, or looseness.

By comparing spectra over time (e.g., periodic measurements), you can observe whether new peaks appear, whether the amplitudes of existing peaks grow, or whether they shift. This helps in detecting and addressing developing faults early.

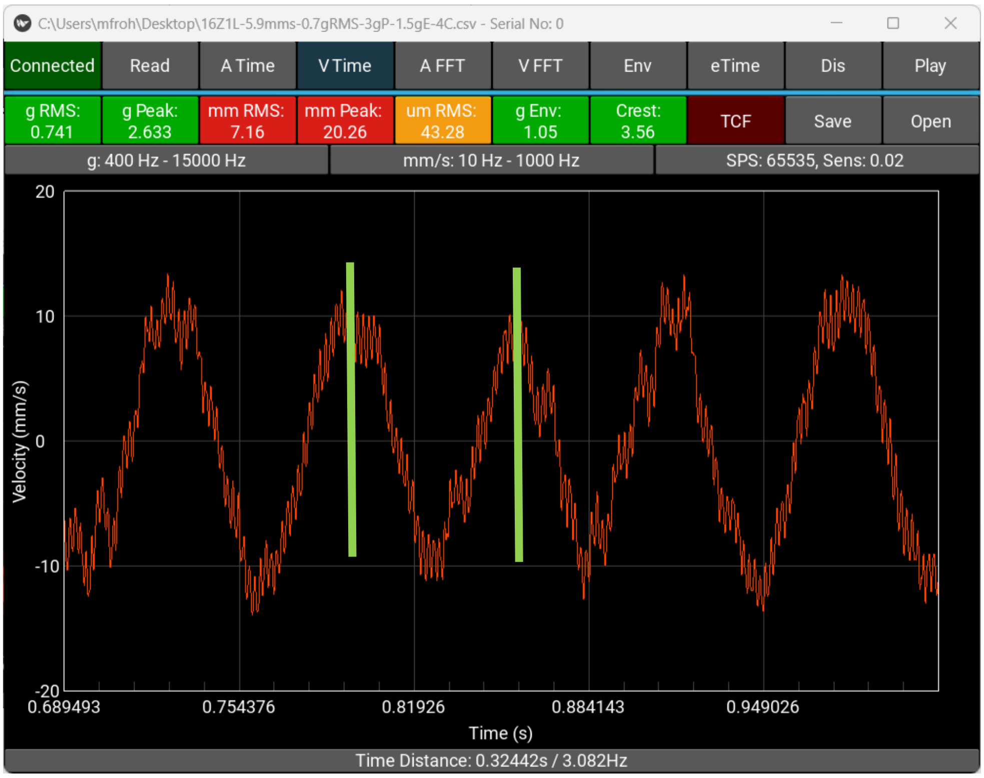
In the velocity spectrum shown, you can see a dominant peak at 16 Hz. By calculating 16 Hz × 60, you get 960 rpm. Knowing the motor runs at 960 rpm, this spectrum suggests a possible rotor imbalance. There is also a peak at 496 Hz.



Similarly, we can see these frequencies in the velocity time record as well.
Here is the entire time span from a single measurement:



Zoom:



The highlighted time segment is 0.0625 s. The frequency calculation is 1/t = 1/0.0625 = 16 Hz.

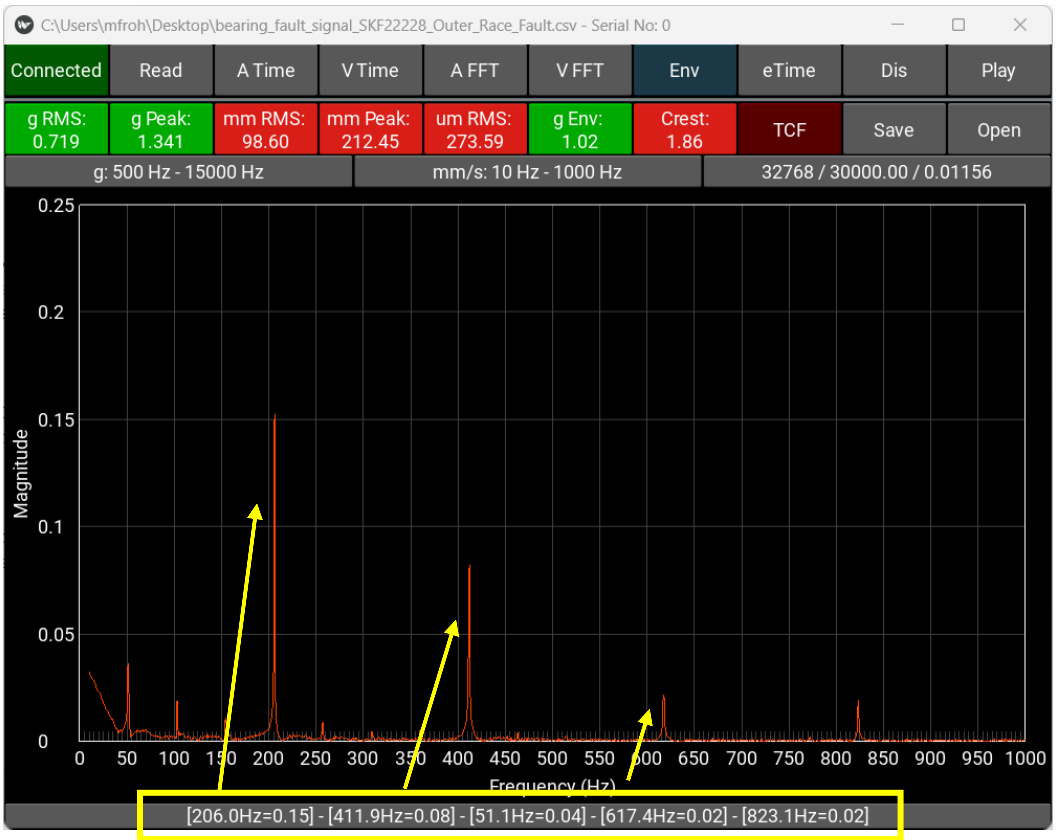
We can also observe the previously mentioned 496 Hz there:

The highlighted time interval is 0.002016 s, meaning 1/t = 1/0.002016 = 496 Hz.

4. **Env = Enveloped Spectrum**
   This refers to a specialized method of processing vibration or acoustic signals that help reveal frequencies not immediately apparent in a conventional frequency spectrum. Put simply, rather than focusing on the raw oscillations of the signal, we examine its "envelope"—the slower amplitude variations that may be caused by periodic impacts or irregularities.

- Bearing Damage Detection: In ball or roller bearings, characteristic impact frequencies arise when a raceway, ball, or roller is damaged. These impacts often have low amplitude and are "masked" by other parts of the signal. Envelope analysis allows for clearer identification of these signals.
- Identification of Periodic Events: Any periodic changes in a signal's amplitude (modulation) become much more distinct in the envelope than in the original frequency spectrum.

The enveloped spectrum (envelope analysis) is a way to extract information on periodic amplitude changes from the original signal. It transforms a complex vibration signal into a form that more clearly indicates specific faults in mechanical components. This method is commonly employed in predictive maintenance and the diagnosis of rotating machines, particularly bearings and gearboxes.
For example, a 22228 bearing with an outer race defect has a calculated fault frequency of 206 Hz. You can then see multiples of this frequency in the data, giving near certainty that the bearing is damaged.

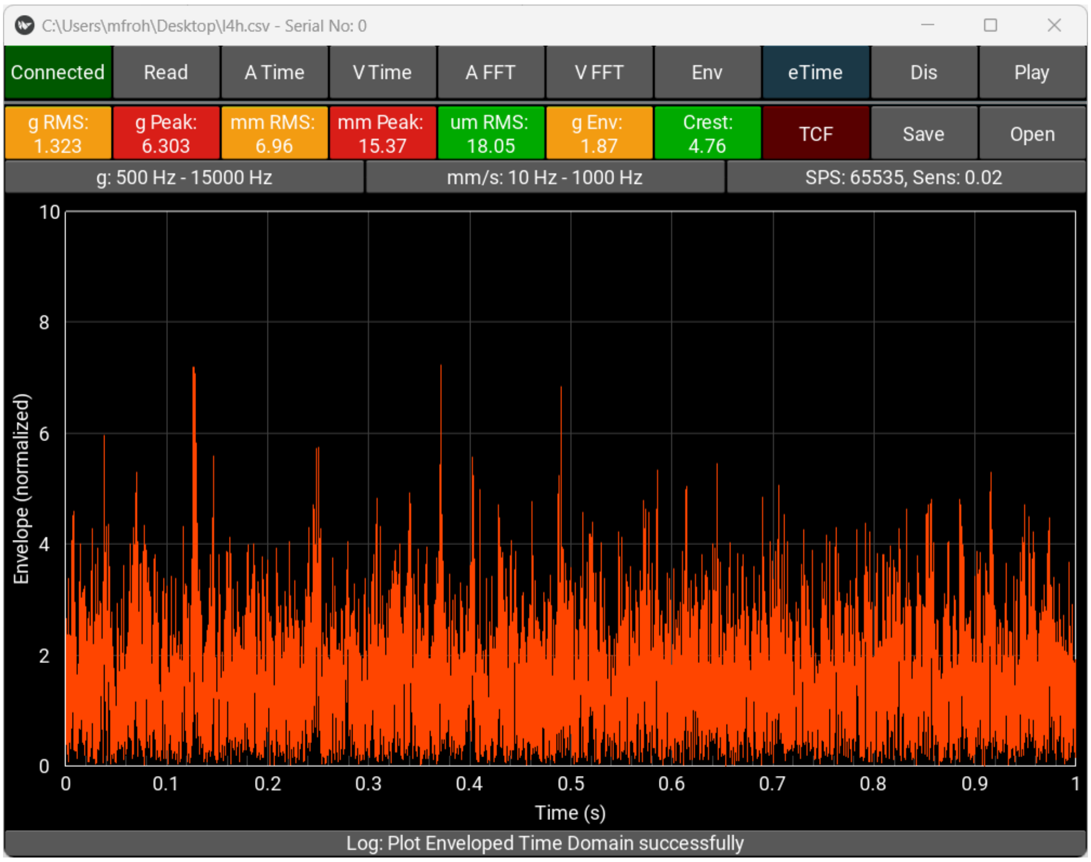

C:\Users\mfroh\Desktop\bearing_fault_signal_SKF22228_Outer_Race_Fault.csv - Serial No: 0
Connected
Read
A Time
V Time
A FFT
V FFT
Env
eTime
Dis
Play
g RMS: 0.719
g Peak: 1.341
mm RMS: 98.60
mm Peak: 212.45
um RMS: 273.59
g Env: 1.02
Crest: 1.86
TCF
Save
Open
g: 500 Hz - 15000 Hz
mm/s: 10 Hz - 1000 Hz
32768 / 30000.00 / 0.01156
Magnitude
Frequency (Hz)
[206.0Hz=0.15] - [411.9Hz=0.08] - [51.1Hz=0.04] - [617.4Hz=0.02] - [823.1Hz=0.02]

5. **eTime – Enveloped Time Domain – The Signal's Amplitude Envelope**

This refers to the time progression of the original vibration signal's envelope. Instead of observing fast, high-frequency oscillations, we focus on the slower amplitude changes, i.e., the "envelope." This envelope captures how the overall signal level varies over time and suppresses rapid oscillations.

- Clearer Visualization: Instead of a complex signal where it's difficult to identify patterns, you get a simpler curve that clearly shows rises and falls in amplitude.
- Detection of Periodic Faults: Periodic changes in the envelope (e.g., impulses at regular time intervals) may point to specific machine faults.

In short, the enveloped time domain is like viewing the signal through a "microscope" that highlights only the amplitude's "cover," without the rapid oscillations. This highlights phenomena that might otherwise remain hidden in the original, more chaotic signal.



6. Dis – Displacement Time Domain

This represents a graphical depiction of how the position of a point in a system (for example, a vibrating part of a machine or structure) changes over time. The vertical axis typically shows the displacement in units of length (e.g., micrometers), while the horizontal axis shows time.

Put simply, the displacement time domain is a fundamental way of visualizing vibration: it shows how a point moves over time and makes it easier to understand the extent and nature of the vibration.

A displacement time-domain plot is particularly effective for illustrating low-frequency movement characteristics, such as “slower,” oscillatory motions and large deviations. It helps determine the maximum displacement (amplitude) and also makes it possible to identify the vibration period (how long it takes for one full cycle back and forth).

7. **Play – Audio Playback of Current Analyzer Data**
   This function plays the currently captured data from the analyzer through speakers or headphones. The frequency range is determined by the acceleration parameters.

   Playing back the signal from the analyzer is primarily intended to aid in the understanding and interpretation of recorded data. Even though we have time-domain and frequency-domain charts available, listening to the signal itself can offer an additional valuable perspective. So, why is it useful to listen to a recorded signal?

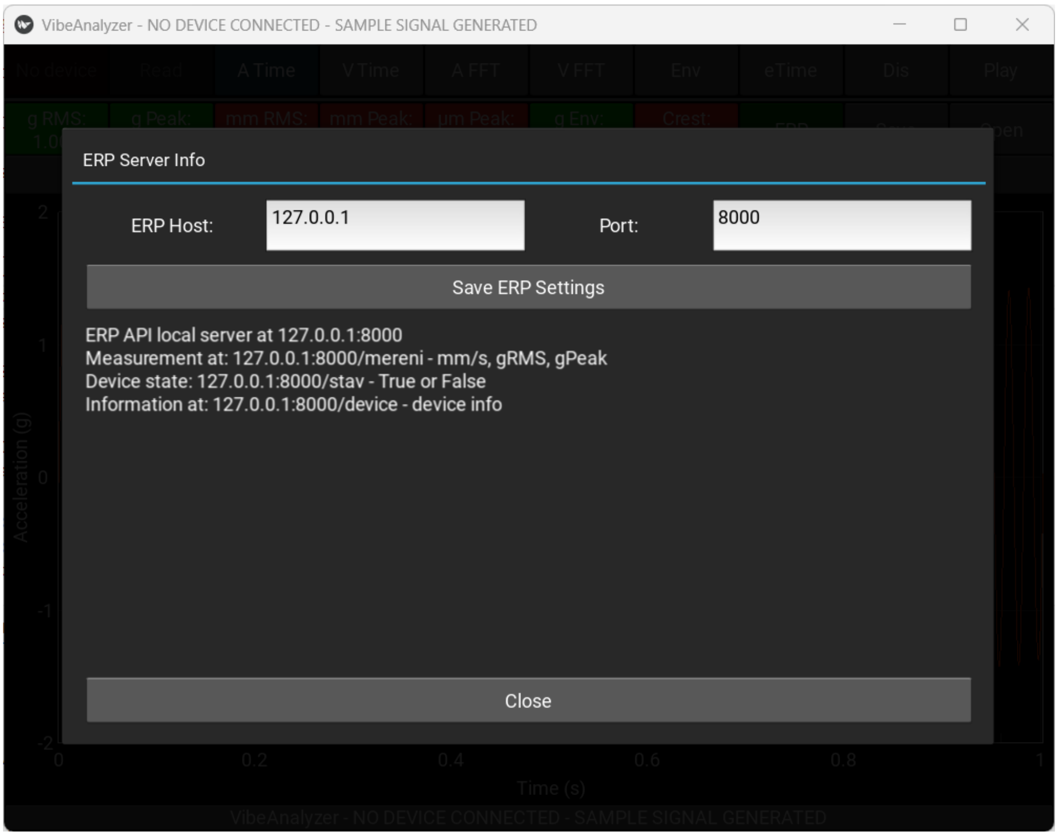
   Intuitive Fault Recognition:
   Human hearing is highly sensitive and can detect irregularities, impacts, or "strange" sounds in the signal that may not be easily discernible from graphs or numeric values. For instance, it could be a characteristic noise from a damaged bearing, scraping, knocking, or friction of parts.

   Better Understanding of Vibration Characteristics:
   By listening, you can more easily distinguish various behaviors—regular rhythmic sounds (imbalance, misalignment), irregular impacts (potential damage), or high-frequency "whistles" (possibly bearing wear). This allows even less experienced technicians to quickly gauge the nature of the problem.

   Additional Insights for Analysis:
   While spectral and time analyses provide detailed numerical data, listening can offer an extra "feel" and a quick check of whether the measured signal aligns with the machine's expected behavior. If a machine is supposed to run quietly and smoothly yet you hear irregular knocking, you can quickly determine that something is amiss.

ERP API settings

When you press the ERP button, information about the ERP is displayed.



Now the service is running in the background, and you can close the window. The ERP button will turn green. This is a local server at the address 127.0.0.1:8000.

Vibration measurement occurs upon accessing 127.0.0.1:8000/mereni. If an external application requests that address, the analyzer data will be automatically retrieved, calculated, and sent. The values are returned in the format: [{"mm": 0.0, "g": 0.00, "peak": 0.00}]. The “mm” value is the RMS velocity in mm/s, “g” is the RMS acceleration, and “peak” is the acceleration’s 0-Peak value.

You can check the device status (connected/disconnected) at 127.0.0.1:8000/stav, which returns: {"stav": true} or {"stav": false}.

Information about the device is available at 127.0.0.1:8000/device in the format: {"device_name": "Device Name", "serial_ready": true, "SPS": 00000, "Sensitivity": 0.0000}.