

Multi-Axis vibration analysis from Meters

 help.fractal.com/hc/en-us/articles/44199896136973-Multi-Axis-vibration-analysis-from-Meters

Vibration analysis allows for evaluating the condition of an asset by measuring its vibrational behavior along different axes. In Fractal One, this analysis is performed using independent vibration meters, where each meter represents a specific measurement axis (**wireless vibration sensor**). The information collected by these meters is consolidated in the **asset health** module, within the vibrations tab, enabling a comprehensive analysis of the asset's vibrational behavior.

Configuration of the "Vibrations" measurement unit

1. Creating the Vibrations Unit in the Unit Catalog:

Before starting to use the **Vibrations** measurement unit, it is necessary to configure it within the **unit catalog**.

2. Meter Configuration:

Create and associate the meter with the **Vibrations** unit to activate the **specialized Dashboard**.

3. Access to the Dashboard:

Once the meter is configured, you can access the **specialized Dashboard** from the **Asset Health** submodule to view advanced metrics and evaluate the condition of the equipment.

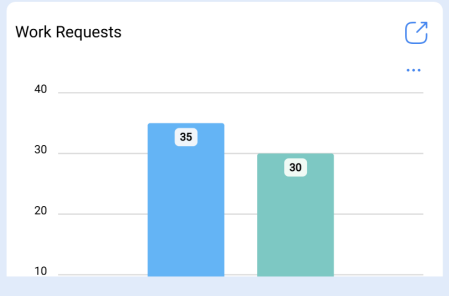
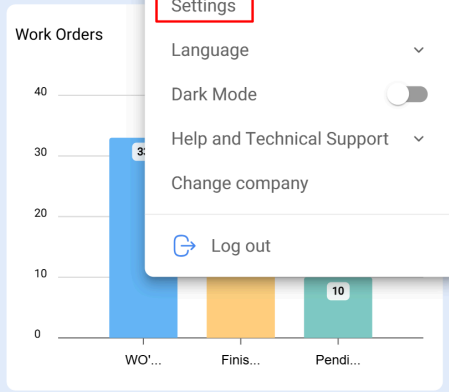
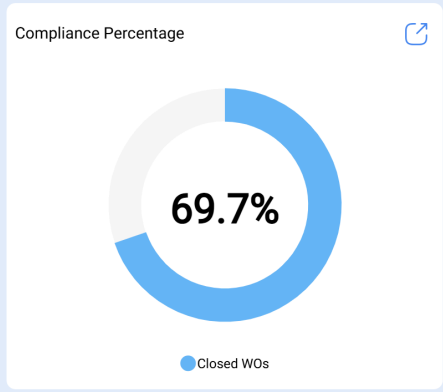
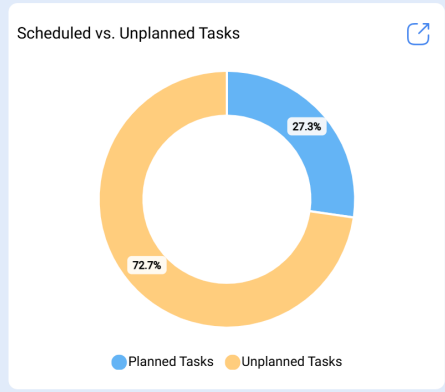
How to create a Unit in the Auxiliary Catalogs

1. To use custom units in meters, you must first create them in the Auxiliary Catalogs.
2. Go to **Settings**.

From - Until
2025-10-28 / 2025-11-28

Is part of

- 8 WOs in Process
- 2 WOs in Review
- 23 Closed WOs
- 10 Pending Tasks with Delay



- Activación fractal - port...
- Settings**
- Language
- Dark Mode
- Help and Technical Support
- Change company
- Log out

3. Select Auxiliary Catalogs.

General

User Accounts

Business Calendar

Modules

Financial

Auxiliary Catalogs

Document Management

Transactions Log

Security

API Connections

Guest Portal

Account

Type

Unit

Description ↑	Code	Unit type
<input type="checkbox"/> 002811-jc	002811-jc	On/Off
<input type="checkbox"/> APROVADO/FALHOU	1,2	Number
<input type="checkbox"/> CARGA DO MOTOR (FU %)	%	Number
<input type="checkbox"/> COMPRIMENTO	m	Number
<input type="checkbox"/> CORRENTE ELÉTRICA	A	Number
<input type="checkbox"/> CORRENTE (IN)	IN	Number
<input type="checkbox"/> CORRENTE MOTOR (IT)	IT	Number
<input type="checkbox"/> CORRENTE NOMINAL	IN	Number

Showing 57 of 57

+

4. Choose the type **Unit**.

- General
- User Accounts
- Business Calendar
- Modules
- Financial
- Auxiliary Catalogs**
- Document Management
- Transactions Log
- Security
- API Connections
- Guest Portal
- Account

Type

	Unit	Unit type
<input type="checkbox"/>	Description ↑	Code
<input type="checkbox"/>	002811-jc	002811-jc
<input type="checkbox"/>	APROVADO/FALHOU	1,2
<input type="checkbox"/>	CARGA DO MOTOR (FU %)	%
<input type="checkbox"/>	COMPRIMENTO	m
<input type="checkbox"/>	CORRENTE ELÉTRICA	A
<input type="checkbox"/>	CORRENTE (IN)	IN
<input type="checkbox"/>	CORRENTE MOTOR (IT)	IT
<input type="checkbox"/>	CORRENTE NOMINAL	IN


Showing 57 of 57

5. Click on **Add Unit**.

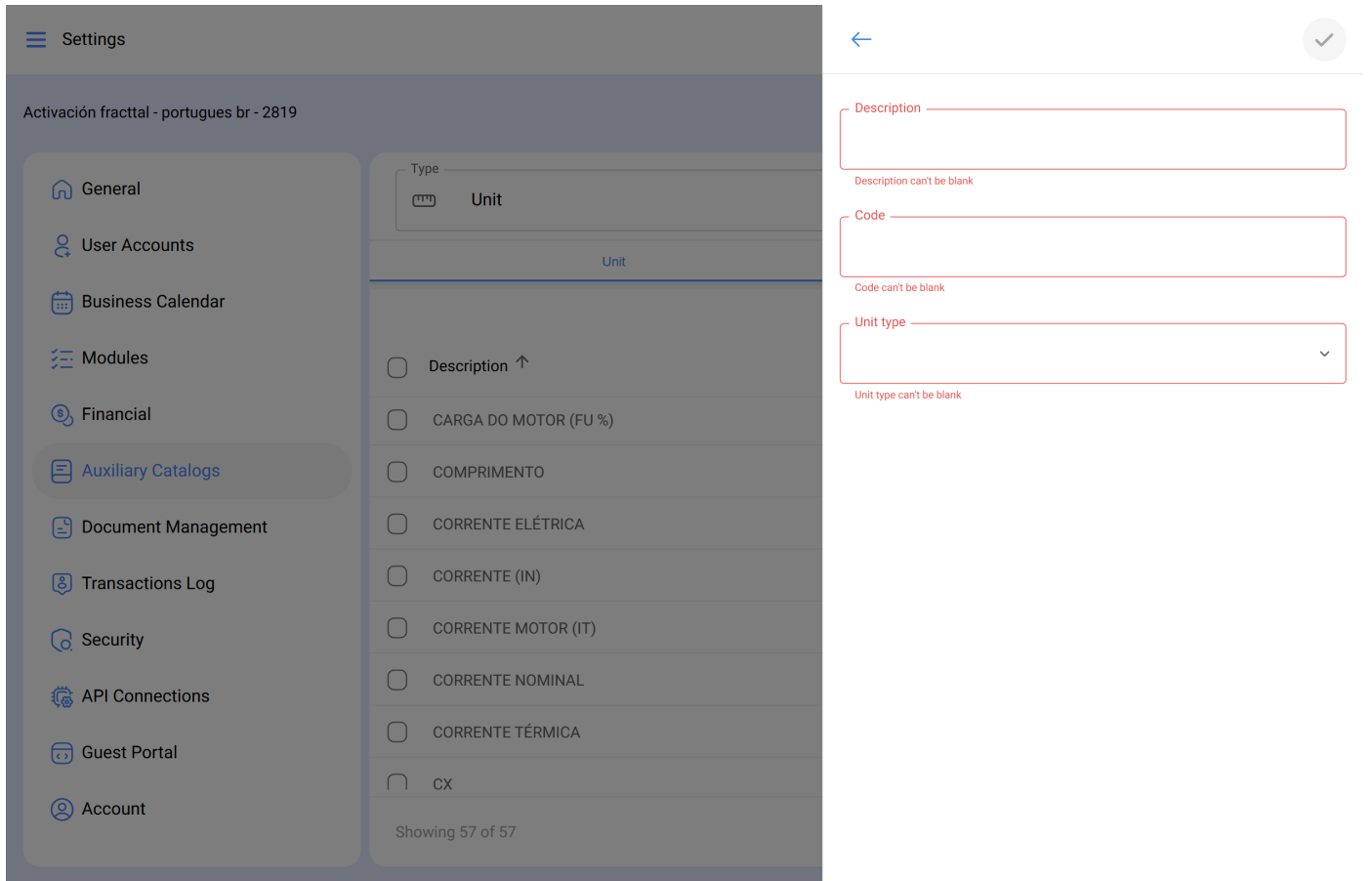
Unit

Description ↑	Code	Unit type
<input type="checkbox"/> 002811-jc	002811-jc	On/Off
<input type="checkbox"/> APROVADO/FALHOU	1,2	Number
<input type="checkbox"/> CARGA DO MOTOR (FU %)	%	Number
<input type="checkbox"/> COMPRIMENTO	m	Number
<input type="checkbox"/> CORRENTE ELÉTRICA	A	Number
<input type="checkbox"/> CORRENTE (IN)	IN	Number
<input type="checkbox"/> CORRENTE MOTOR (IT)	IT	Number
<input type="checkbox"/> CORRENTE NOMINAL	IN	Number

Showing 57 of 57



6. Enter the **description** and **code** for the unit. In **unit type**, select **Vibrations**.



Note: This creation is specific to the wireless vibration sensor. For the traditional sensor, it is not necessary to create a specific configuration for vibrations (it should be of number type).

Configuration of vibration Meters by axis

Each vibration measurement is managed through independent meters, where each meter represents a specific axis.

When creating a meter with the **Vibrations** unit, the system requires defining the axis that the meter represents.

Once configured, the meter is linked to that axis for the corresponding asset. A single asset can have between one and three vibration meters associated, one for each axis, depending on the analysis needs:

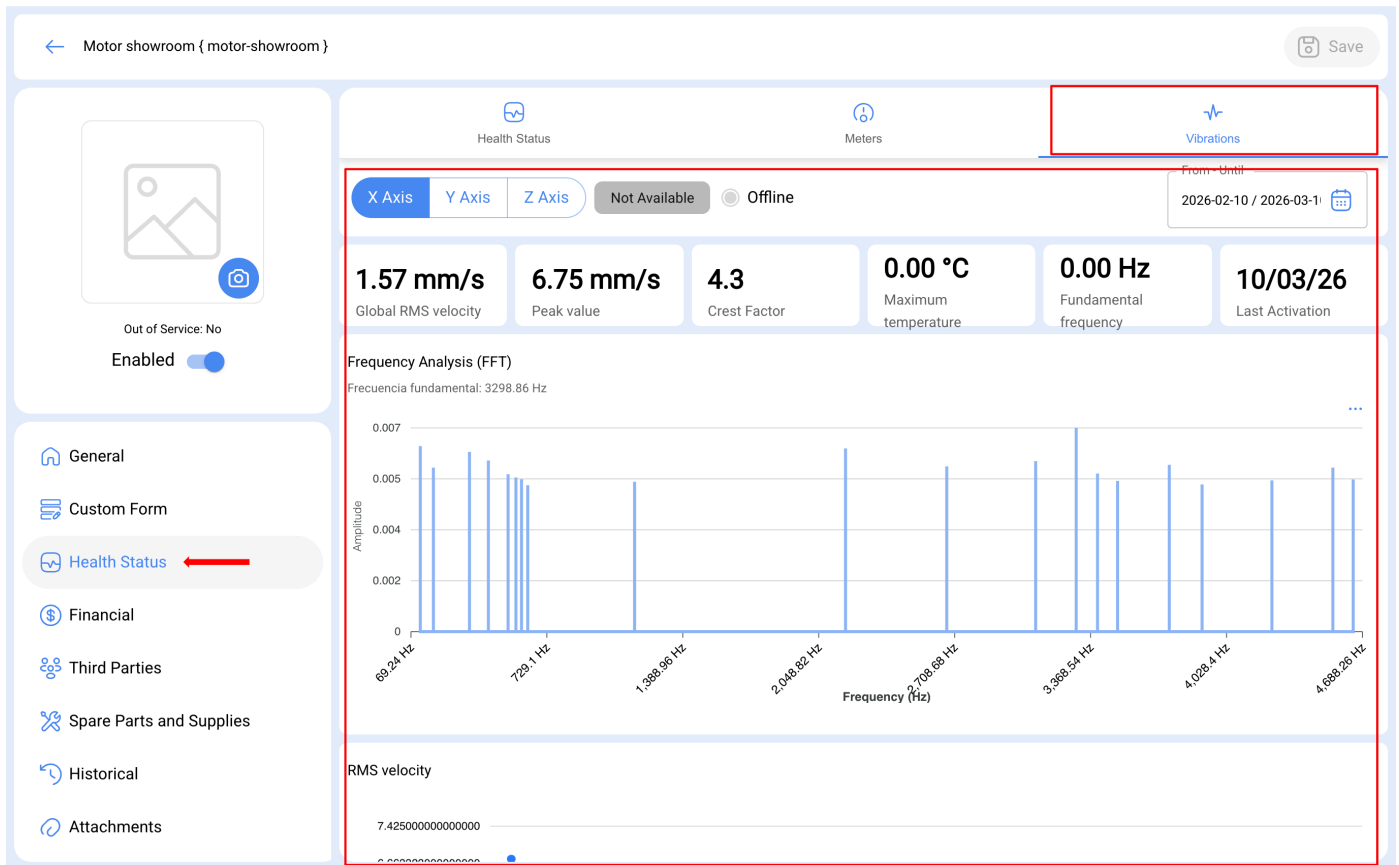
- One meter (single axis)
- Two meters (two axes)
- Three meters (complete triaxial analysis: **X, Y, and Z**)

Each meter operates independently, with its own reading history, threshold settings, and signal reception — either through manual recording or via a linked Fracttal Sense device (IoT hub).

Vibration analysis on the Asset

When an asset has at least one associated vibration meter, the system automatically enables a new analysis space within the **Asset Health** module.

Asset Health → **Vibrations**



Vibration analysis by Axes

In the **Vibrations** dashboard, the system automatically identifies the vibration meters associated with the asset and organizes the information according to the corresponding axis.

Although each meter functions independently, the information is presented in a consolidated manner to facilitate analysis.

The data is grouped by axis:

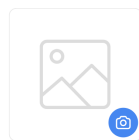
- **X**
- **Y**
- **Z**

This allows evaluating the vibrational behavior of the asset while simultaneously considering the different measurement axes.

Axis **X**

Motor showroom (motor-showroom)

Save



Out of Service: No
Enabled

- General
- Custom Form
- Health Status
- Financial
- Third Parties
- Spare Parts and Supplies
- Historical
- Attachments
- Document Management

Health Status

Meters

Vibrations

X Axis Y Axis Z Axis Not Available Offline

From - Until
2026-02-11 / 2026-03-1

1.32 mm/s

Global RMS velocity

6.75 mm/s

Peak value

5.11

Crest Factor

0.00 °C

Maximum temperature

0.00 Hz

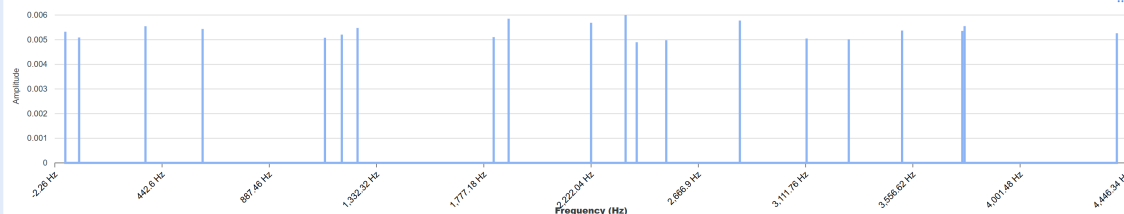
Fundamental frequency

11/03/26

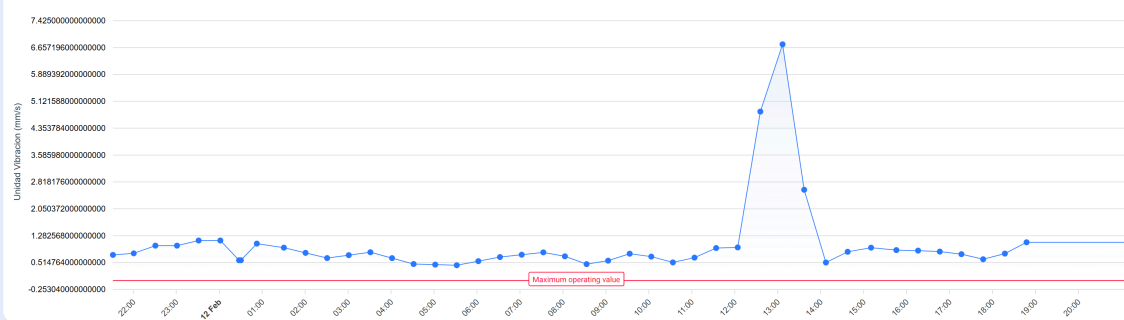
Last Activation

Frequency Analysis (FFT)

Frecuencia fundamental: 2365.20 Hz



RMS velocity



Axis Y

Motor showroom (motor-showroom)

Save

Health Status

Meters

Vibrations

X Axis Y Axis Z Axis Not Available Offline

From - Until
2026-02-11 / 2026-03-1

1.67 mm/s

Global RMS velocity

7.86 mm/s

Peak value

4.72

Crest Factor

0.00 °C

Maximum temperature

0.00 Hz

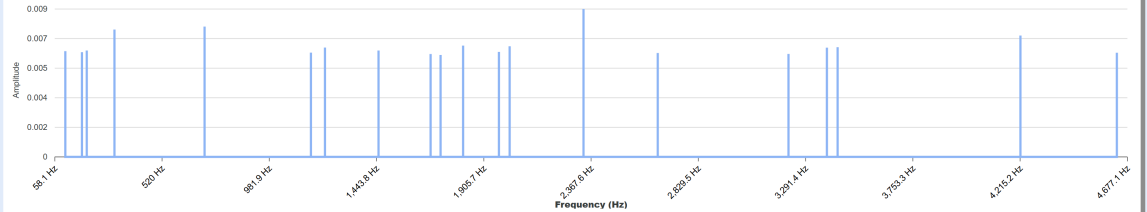
Fundamental frequency

11/03/26

Last Activation

Frequency Analysis (FFT)

Frecuencia fundamental: 2334.97 Hz






From this dashboard, it is possible to view and analyze all information related to the asset's vibrations.


For the system to calculate severity thresholds according to ISO 10816, each vibration meter must have its machine technical data configured. Without this information, the system cannot determine the ISO zone (A, B, C, or D) nor calculate the asset's severity level. To configure the technical data, access the corresponding meter within **Asset > Asset Health** and complete the technical data section.


Available metrics by Axis:

For each axis with recorded data, the system calculates and presents the following metrics:

← Motor showroom { motor-showroom }
📄 Save



Health Status


Meters


Vibrations

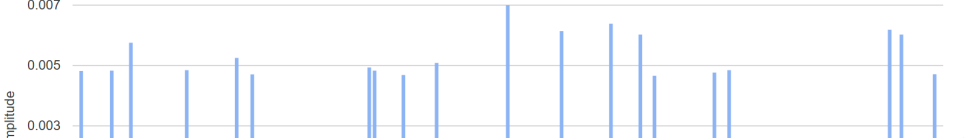
X Axis
Y Axis
Z Axis

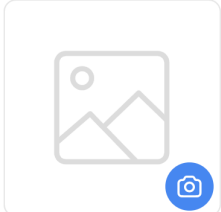
Not Available
 Offline

From - Until
 2026-04-14 / 2026-05-1 

<div style="text-align: center; font-weight: bold; font-size: 1.2em;">1.07 mm/s</div> <small>Global RMS velocity</small>	<div style="text-align: center; font-weight: bold; font-size: 1.2em;">20.91 mm/s</div> <small>Peak value</small>	<div style="text-align: center; font-weight: bold; font-size: 1.2em;">19.57</div> <small>Crest Factor</small>
<div style="text-align: center; font-weight: bold; font-size: 1.2em;">0.00 °C</div> <small>Maximum temperature</small>	<div style="text-align: center; font-weight: bold; font-size: 1.2em;">0.00 Hz</div> <small>Fundamental frequency</small>	<div style="text-align: center; font-weight: bold; font-size: 1.2em;">30/03/26</div> <small>Last Activation</small>

Frequency Analysis (FFT)
Frecuencia fundamental: 2540.16 Hz





Out of Service: No

Enabled

- 🏠 General
- 📄 Custom Form
- 📊 Health Status
- 💰 Financial

Metric	Description
Velocity RMS (overall)	Root mean square value of vibration velocity
Peak Value	Maximum detected vibration amplitude
Crest Factor	Ratio between peak value and RMS; indicates impacts or irregularities
Dominant Frequency	Extracted from FFT (Fast Fourier Transform) analysis
Severity Level	Calculated according to ISO zone: Low, Medium, or High
Maximum Temperature	Recorded during measurements (if a temperature meter is associated)

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