# DynaLogger HF+s PO (DynaPortable)

**PN 10112-PO | NCM 9027.89.99 | HS 9002789**

**Datasheet Feb. 2024**


## Overview

The **HF+s PO** wireless sensor is designed to identify failure mode symptoms or defects in machinery and equipment in **a wide variety of field applications**. Due to its broad frequency spectrum, the **HF+s PO** delivers complete triaxial vibration monitoring for **low to high-speed equipment**. In addition, the solution features an **online platform**, which does not require local installation, with several tools that assist in data analysis and enable constant monitoring of asset health.

The **HF+s PO** IoT sensor has a spectral/waveform monitoring mode. In **spectral monitoring**, different tools can be used: spectrum, waveform (linear, circular and orbital), frequency filters, cepstrum, spectral envelope (demodulation), autocorrelation, and multi-metrics.

## IoT Solution for Wireless Monitoring

- Compact sensor, with wide frequency range.
- High frequency and amplitude resolution.
- Low-speed applications (less than 10 RPM).
- Sensor with low spectral noise.
- Truly simultaneous triaxial measurement.
- Remote sensor update.

## Main assets monitored

- Motors
- Pumps
- Fans
- Gearboxes
- Compressors and chillers
- Bearings in assets with high and low speed

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| Technical Specifications | |
|---|---|
| **Model** | HF+s PO |
| **Dimensions** | 39 x 39 x 64 mm |
| **Weight** | 222 g |
| **Case Material** | LEXAN™ |
| **Pin and base material** | INOX 316L |
| **Color** | Orange |
| **Mounting** | Magnetic base |
| **Visual Signaling (LED)** | Red / Green |
| **Accelerometer** | MEMS Triaxial |
| **Accelerometer Impact Limit** | 10,000 g in 0.2 ms |
| **Operating temperature[1,2]** | -10°C ≤ T ≤ 84°C |
| **Certifications** | |
| **Homologation / Certification** | ANATEL/CE/ACMA/FCC/IC/INMETRO |
| **Battery** | |
| **Voltage** | 3 V |
| **Autonomy[3]** | Up to 3 years |
| **Communication and System** | |
| **Bluetooth** | BLE 5.3 / 2,400 – 2,483.5 MHz |
| **Free Field Range[4]** | 100 m |
| **RF Output Power** | 0.4 dBm |
| **App Communication** | Android and iOS |

**1** It is possible to monitor assets whose temperature exceeds 84°C, especially assets with intermittent characteristics and with room temperature below 24°C. However, Dynamox does not provide warranty in these cases. Specific condition for application outside explosive atmospheres. **2** The application at temperatures below 0°C impacts the battery autonomy. This effect worsens the lower the temperature, estimating a reduction of about 50% of useful life in applications at -20°C. Specific condition for application outside explosive atmospheres. **3** DynaPortable's battery information may vary depending on what is pre-defined in the contract. **4** Reference in free field. Bluetooth communication distance may vary with obstacles, interference and device.

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## Spectral Monitoring and Waveform

| | |
|---|---|
| **Analysis Tools** | Spectrum |
| | Frequency filters |
| | Envelope (demodulation) |
| | Cepstrum |
| | Spectral Waterfall |
| | Autocorrelation |
| | Circular and orbital waveform |
| | Advanced metrics: Multiband RMS, peak-to-peak, Kurtosis, FC, FC+, Carpet Energy, and RMS Envelope. |
| **Frequency Response (± 5%)** | 5 kHz |
| **Frequency Response (± 3dB)** | 5 kHz |
| **Spectral noise density** | < 75 µg/√Hz |
| **Sample Rate** | Up to 26 kHz |
| **Minimum Frequency Resolution** | 0.006 Hz (8 bits) and 0.012 Hz (16 bits) |
| **Minimum Amplitude Resolution[1]** | 16 mg (8 bits) and 61 µg (16 bits) |
| **Amplitude Range** | Up to ±16 g |
| **Lines of Resolution (LOR)** | 98,304 (uniaxial) and 32,768 (triaxial) |
| **Maximum Frequency** | 571 Hz to 13 kHz (configurable) |
| **Maximum Collection Time[2]** | 172.2 s (uniaxial) and 57.3 s (triaxial) |

## Spectral Monitoring Settings

### Triaxial Simultaneous

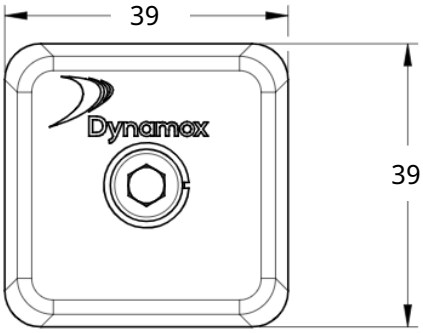
| Max. Freq. (Hz) | Duration (s) | | | | | | RPM min. [3] |
|---|---|---|---|---|---|---|---|
| **13,145** | 0.08 | 0.16 | 0.31 | 0.62 | 1.25 | 2.5 | 24.0 |
| **6,572** | 0.16 | 0.31 | 0.62 | 1.25 | 2.5 | 5.0 | 12.0 |
| **2,629** | 0.4 | 0.8 | 1.6 | 3.1 | 6.2 | 12.5 | 4.8 |
| **1,314** | 0.8 | 1.6 | 3.1 | 6.2 | 12.5 | 24.9 | 2.4 |
| **571** | 1.8 | 3.6 | 7.2 | 14.3 | 28.7 | 57.3 | 1.0 |
| **No. Lines** | 1,024 | 2,048 | 4,096 | 8,192 | 16,384 | 32,768* | - |

### Uniaxial

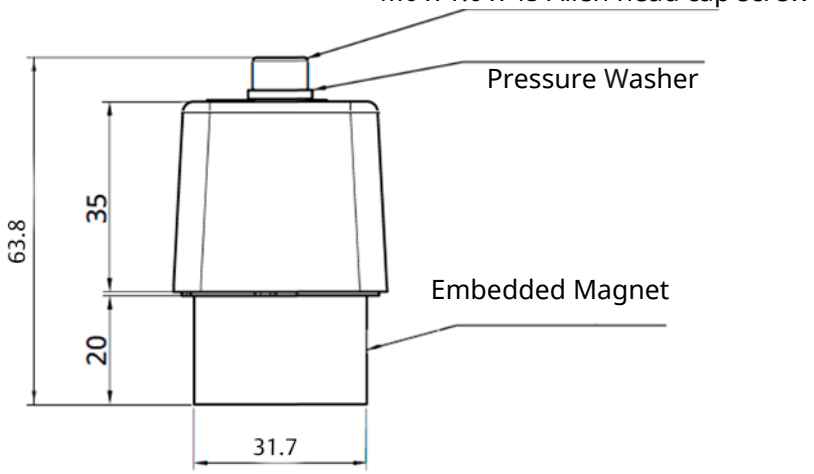
| Max. Freq. (Hz) | Duration (s) | | | | | | | | RPM min. [3] |
|---|---|---|---|---|---|---|---|---|---|
| **13,145** | 0.08 | 0.16 | 0.31 | 0.62 | 1.25 | 2.5 | 3.7 | 7.5 | 8.0 |
| **6,572** | 0.16 | 0.31 | 0.62 | 1.25 | 2.5 | 5.0 | 7.5 | 15.0 | 4.0 |
| **2,629** | 0.4 | 0.8 | 1.6 | 3.1 | 6.2 | 12.5 | 18.7 | 37.4 | 1.6 |
| **1,314** | 0.8 | 1.6 | 3.1 | 6.2 | 12.5 | 24.9 | 37.4 | 74.8 | 0.8 |
| **571** | 1.8 | 3.6 | 7.2 | 14.3 | 28.7 | 57.3 | 86.0 | 172.0 | 0.3 |
| **No. Lines** | 1,024 | 2,048 | 4,096 | 8,192 | 16,384 | 32,768 | 49,152 | 98,304* | - |

1 - Calculated amplitude resolution is based on the accelerometer digital output in µg/LSB or mg/LSB.
2 - Check the setting in the 'Spectral Monitoring Settings' table.
3 - Minimum RPM based on the longest measurement considering one full revolution of the shaft.
* - Setting available with 8 bits of amplitude resolution.

# Geometric dimensions




Dimensions in millimeters



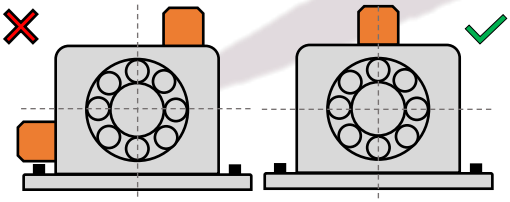

# Quick Mounting Guide

- Define the critical points of the machines to be monitored to place the HF+s PO.

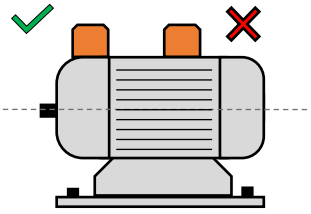
- It is only necessary to place one HF+s PO per monitoring spot, because the devices are triaxial.

- Avoid placing it in areas of the housings that present any stiffness loss, such as cooling fins, covers, and protections. Try to mount it in rigid parts of the machine, preferably near the bearings.


- Align one of the axes of the HF+s PO with the actual axis of the machine. These axes are shown in the schematic above and on the body of the devices.



It is recommended, if possible, to install the DynaLogger centrally on the component.



Installation on cooling fins and covers is not recommended.
Note: For motors, the recommendation is to install a sensor on the drive end and another one on the non-drive end for complete monitoring.

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