



Bearing Defender

BEARING HEALTH STATUS

IN SECONDS

The wireless Bearing Defender offers instant advice on the health of your bearings.

Easy to use and incredibly fast, a first level of bearing health assessment can be achieved by all level of personnel. It such provides an easy leverage of improvement of your reliability program, especially when your reliability experts are fully focused on the most critical assets.

Patented Wireless Measurement

With its unique metrological performances, the Bearing Defender makes sure that your machine can keep spinning without risk.

A first level warning indicates automatically an abnormal behavior resulting from bearing defects, unbalance or misalignment, or other faults. Combining data from three directions, even faults occurring in a single axis can be detected with one measurement.

SMART VIBRATION SENSOR

Smart Indicators Computed From X, Y, And Z Directions

3D Bearing Health Indicator
3D Misalignment or Unbalance Indicator
Green, Yellow, Red indicators
3D Miscellaneous defect Indicator



No bearing defect
Unbalance or misalignment defect to be corrected
Miscellaneous defect to be monitored



Tri-Axial Vibration Readings

Vibration Velocity, Acceleration, Displacement ..
RMS values averaged on 5s

Bearing Defect Factor™ (DEF)

Bearing health grade - absolute value (0 to 12)

High frequency acceleration

RMS value filtered from 3kHz to 20kHz (averaged on 5s)

ISO Standard compliance

ISO10816-3

Acquisition mode

Live reading of overall values or recorded mode

Measurement duration

8s typical (affected by distance and communication quality)

Audio listening

listen to live measurement (e.g. while greasing)

Easy Setup

ISO10816-3 classification

Guided and automatic selection of the machine class

Vibration setup

Automatic definition of the measurements based on the machine class

Reporting

Report format

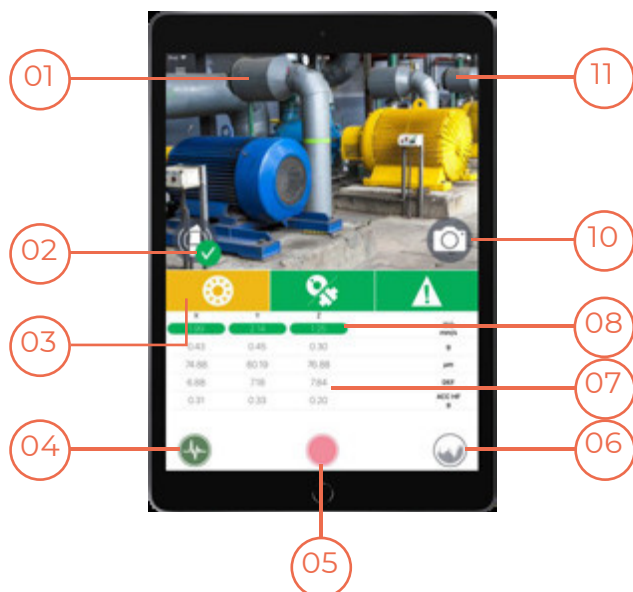
Screenshot available from any screen

Communication

Screenshots can be sent through native functions of the smartphone or tablet (Email, MMS...)



Main Screen Ergonomics



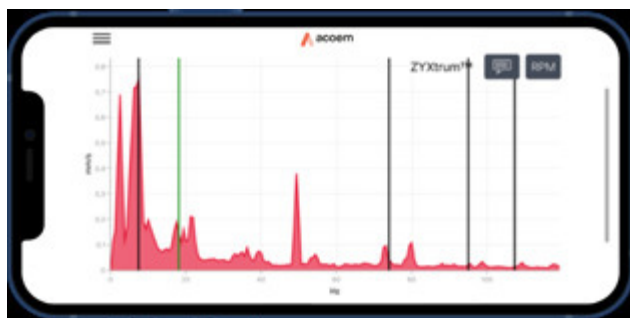
- 01 – Menu to access other features
- 02 – Sensor communication
- 03 – Smart 3D Indicators (Green, Yellow, Red)
- 04 – Play Live (overalls)
- 05 – Record & process smart indicators
- 06 – Access to the ZYXtrum™
- 07 – Vibration readings
- 08 – ISO10816 Alarm levels
- 09 – Take a picture of the machine
- 10 – Audio Listening

Oneprod Zyxtrum™:

The Tri-Axial Fft Display

In addition to the vibration reading and smart indicators, the ONEPROD ZYXtrum™ combines the vibration from three directions into a single FFT display. This display accentuates the fault frequencies that can be observed in the signals.

It can then be easy to confirm the presence of a bearing fault with the automatic positioning of frequency markers, but also ease the communication with your experts when they are required.

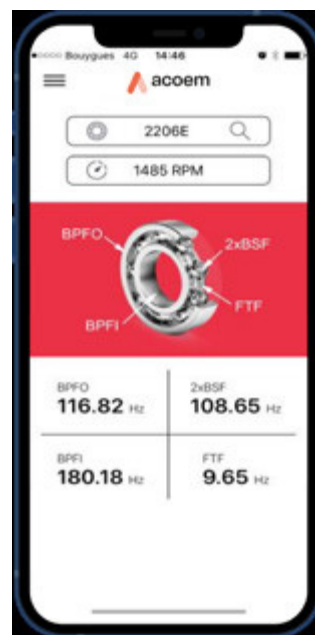


Example of bearing defect: one of the bearing fault frequency matches with a peak on the ZYXtrum™

- ZYXtrum™
- FTTs measured in X, Y and Z are combined into single display
- Resolution
- 3200 lines
- Frequency range
- 2 Hz to 2000 Hz
- Scale
- Linear or Logarithmic
- Zoom
- Touchscreen zoom capabilities
- Cursor
- Single cursor with frequency, amplitude, and direction of the max value (X,Y or Z)
- Bearing fault frequencies display
- Markers on the ZYXtrum™
- Rotation speed adjustment
- Real rotation speed automatically setup from the ZYXtrum™

Bearing Frequency Calculator

- Bearing references.....
- 30.000+ bearing references
- Search tool
- Based on the OEM and/or bearing reference
- Fault frequencies calculation
- Automatic calculation of bearing fault frequencies: BPFO, BPFI, FTF, BSF
- Rotation speed input
- Manual input or set up from the ZYXtrum™
- Fault frequency display.....
- Values, markers on the ZYXtrum™



Packaging & Deliverables

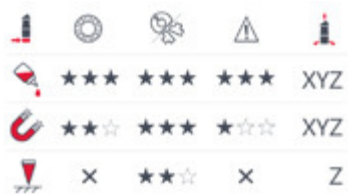
Each Bearing Defender is delivered in the following package:

- 1 Tri-axial wireless sensor
- 1 USB power supply module with international plugs and USB cable
- 1 High power bipolar magnet (suited for curved shafts) with orientation key for tri-axial positioning
- 1 Carry-on bag
- 1 Contact point to make single axis measurements on small surfaces
- 1 Printed safety instructions manual
- 1 Printed calibration certificate



Optional accessories (not included):

- Rugged Android smartphone or tablet
- Cementing studs with glue for best measurement performances



Content of the Bearing Defender package

Compatibility

iOS 9.3 or sup
Android 4.4.2 or sup
Smartphone & Tablets
Universal app (icon-based)



Wireless Sensor Specifications

Hardware type

Reference - CAC1008000

Metrology

Three axial measurements - Synchronous acquisition in X, Y and Z directions

Sampling frequency - 51.2 kHz on all axes (Fmax 20kHz)

Sensing element - Piezoelectric / Annular shear mode

Sensing element internal sensitivity, 24°C - 100mV/g

(numerically converted)

Sensitivity adjustment - Factory-calibrated and adjusted

Full scale - 80 g

Signal-to-Noise ratio - > 80dB

Amplitude non-linearity - 1% max

Frequency response after triaxial mechanical assembly :

– ± 3 dB (Z) - 0.4 Hz – 15 kHz

– ± 3 dB (XY) - 0.4 Hz – 6 kHz

Full bandwidth - 20 kHz on all axes

Accuracy- +/- 5% @ 120 Hz, 1g

Transverse response sensitivity (120Hz, 1g) < 5% (< -26dB)

Electrical noise, nominal:

– Broadband 0 Hz–5 kHz < 5 mg

– > 1 Hz < 20 μ g/ $\sqrt{\text{Hz}}$

– Peak velocity (after 1 integration on the time signal) < 0.13 mm/s

Physical

Dimensions - $\varnothing 42$ x H116 mm

Weight - 373g

Mounting - M6 threaded hole

Housing material - Stainless steel

Environmental

Operating temperature range - -20°C to 60°C

Resistance to shocks - 5,000 g peak

Resistance to continuous vibration - 500 g peak

Protection - IP65

Battery

Type - Li-Ion

Operating lifetime - 8 hours

Rechargeable - By USB (power supply adapter in standard delivery)

Charging time - ~8 hours with the standard 500 mA charge current.

Automatic stand-by - After 10 min if no connection has been established

Communication

Wireless protocol - Wi-Fi Point to point

Typical wireless range - Up to 25 meters line of sight depending on the environment.

Wi-Fi communication channel - User setting: 1, 6, 11

Sync protocol - Proprietary

Standard mobile systems compatibility - iOS (9.3 or sup.), Android (4.4.2 or sup.)

Patented technology

Patent Number - US 9,921,136



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