Fluke 805 Vibration Meter

Technical Data

The reliable, repeatable, accurate way to check bearings and overall vibration.

Make go or no-go maintenance decisions with confidence. The Fluke 805 Vibration Meter is the most reliable vibration screening device available for frontline mechanical troubleshooting teams that need repeatable, severity-scaled readings of overall vibration and bearing condition.

What makes the Fluke 805 the most reliable vibration screening device available?

- Innovative sensor design minimizes measurement variations caused by device angle or contact pressure
- Consistent data quality at both low and high frequency ranges
- Four-level severity scale assesses urgency of problems for overall vibration and bearing condition
- Exportable data via USB
- Trending in Microsoft® Excel using built-in templates
- Overall vibration measurement (10 Hz to 1,000 Hz) for acceleration, velocity and displacement units of measurement for a wide variety of machines
- Crest Factor+ technology provides reliable bearing assessment using direct sensor tip measurements between 4,000 Hz and 20,000 Hz
- Colored lighting system (green, red) and on-screen comments indicate how much pressure needs to be applied to take measurements
- Temperature measurement with Spot IR Sensor increases diagnostic capabilities
- On-board memory holds and saves up to 3,500 measurements
- Audio output for listening to bearing tones directly
- External accelerometer support for hard to reach locations
- Flashlight for viewing measurement locations in dark areas
- Large screen with high resolution for easy navigation and viewing

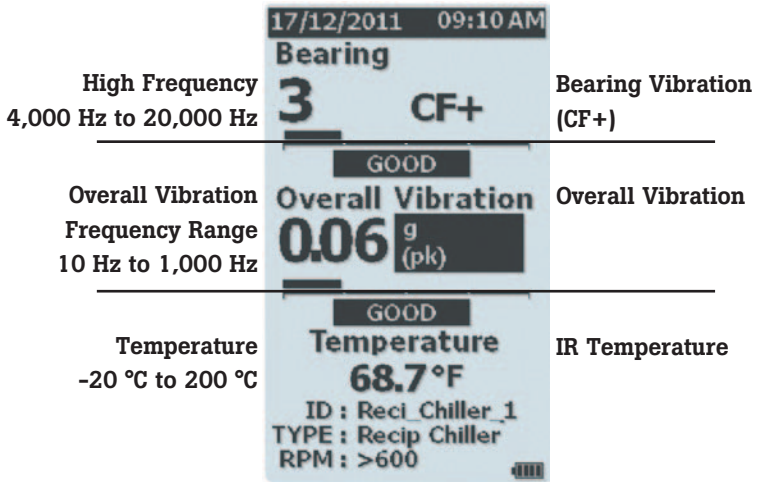
What is Crest Factor +?

Fluke 805 with Crest Factor + takes the confusion out of bearing assessment

The original Crest Factor is used by vibration analysts to identify bearing faults. It is defined as the ratio of the peak value/RMS value of a time domain vibration signal.

A key limitation of using Crest Factor to identify bearing faults is that the Crest Factor does not increase linearly as the bearing degrades. In fact, the Crest Factor can actually decrease as a bearing nears catastrophic failure due to large RMS values.

In order to overcome this limitation, Fluke uses a proprietary algorithm known as Crest Factor + (CF+). CF+ values range from 1 to 16. As the bearing condition worsens, the CF+ value increases. To keep things simple, Fluke has also included a four-level severity scale that identifies the bearing health as Good, Satisfactory, Unsatisfactory or Unacceptable.



Exporting and Trending with the 805

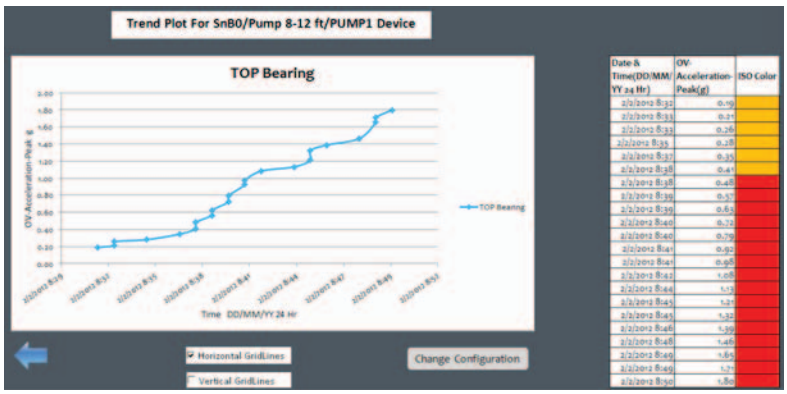
Export and Trend in Excel

Trending, or repeated vibration measurements kept in a spreadsheet over time, is the best method to track machine health. With 805 you can easily:

- Export your result to Excel through USB connection
- Trend the readings with the pre-built Excel templates and plot graphs
- Compare the overall vibration readings to ISO Standards (10816-1, 10816-3, 10816-7)

Import measurements from the 805 Vibration Meter to an Excel template on your PC in order to trend the bearing parameters: overall vibration, CF+, and temperature. Looking at just the number alone for the overall vibration or temperature might not be of much benefit to the operator or technician if they don't know what the number means. The user may not know what is normal or what indicates a problem.

If measurements taken on the operator rounds are easily loaded into Excel, then the trend will show patterns of something that is becoming abnormal. The user can now see a clear picture of the changing bearing condition and deteriorating health of the machine.



Sample trend plot using the Fluke 805 trending template.

Use the Fluke 805 Vibration Meter to check these machine categories:

Chiller (refrigeration)
- Reciprocating (Open motor and compressor separate)
- Reciprocating (Hermetic motor and compressor)
- Centrifugal (Hermetic or Open Motor

Fans
- Belt-driven Fans 1800 to 3600 RPM
- Belt-driven fans 600 to 1799 RPM
- General direct drive fans (direct coupled)
- Vacuum blowers (belt or direct drive)
- Large forced draft fans (fluid film brgs.)
- Large induced draft fans (fluid film brgs.)
- Shaft-mounted intergral fan (extended motor shaft)
- Axial flow fans (belt or direct drive)

Cooling tower drives
- Long, hollow drive shaft (motor)
- Belt drive (motor and fan - all arrangements)
- Direct drive (motor and fan - all arrangemetns

Centrifugal Pumps
Note: height is measured from grade to top motor bearing
- Vertical pumps (12′ to 20′ height)
- Vertical pumps (8′ to 12′ height)
- Vertical pumps (5′ to 8′ height)
- Vertical pumps (0′ to 5′ height)
- Horizontal centrifugal end suction pumps – direct coupled
- Horizontal centrifugal double suction pumps – direct coupled
- Boiler feed pumps (turbine or motor driven)

Positive Displacement Pumps
- Positive displacement horizontal piston pumps (under load)
- Positive displacement horizontal gear pumps (under load)

Air compressors
- Reciprocating
- Rotary screw
- Centrifugal with or without external gearbox
- Centrifugal – internal gear (axial meas.)
- Centrifugal – internal gear (radial meas.)

Blowers
- Lobe-type rotary blowers (belt or direct drive)
- Multi-stage centrifugal blowers (direct drive)

Generic gearboxes (rolling element bearings)
- Single stage gearbox

Machine tools
- Motor
- Gearbox input
- Gearbox output
- Spindles – roughing operations
- Spindles – machine finishing
- Spindles – critical finishing

Technical specifications

Vibration meter	
Low frequency range (overall measurement)	10 Hz to 1,000 Hz
High frequency range (CF+ measurement)	4,000 Hz to 20,000 Hz
Severity levels	Good, Satisfactory, Unsatisfactory, Unacceptable
Vibration limit	50 g peak (100 g peak-peak)
A/D converter	16-bit
Signal to noise ratio	80 dB
Sampling rate	
Low frequency	20,000 Hz
High frequency	80,000 Hz
Real time clock backup	Coin battery
Sensor	
Sensitivity	100 mV / g ± 10%
Measurement range	0.01 g to 50 g
Low frequency range (overall measurement)	10 Hz to 1,000 Hz
High frequency range (CF+ measurement)	4,000 Hz to 20,000 Hz
Resolution	0.01 g
Accuracy	At 100 Hz ± 5 % of measured value
Amplitude units	
Acceleration	g, m/sec^2
Velocity	in/sec, mm/sec
Displacement	mils, mm
Infrared thermometer (temperature measurement)	
Range	-20 °C to 200 °C (-4 °F to 392 °F)
Accuracy	±2 °C (4 °F)
Focal length	Fixed, at ~3.8 cm (1.5″)
External sensor Note: Fluke supports, but does not provide, external sensors.	
Frequency range	10 Hz to 1,000 Hz
Bias voltage (to supply power)	20 V dc to 22 V dc
Bias Current (to supply power)	Maximum 5 mA
Firmware	
Calibration	Factory calibration required
External interfaces	USB 2.0 (full speed) communication
Data capacity	Database on internal flash memory
Upgrade	through USB
Memory	Up to 3,500 measurements
Radiated emission	
Electrostatic discharge: Burst	Standard EN 61000-4-2
Electromagnetic interference	Standard EN 61000-4-3
RE	Standard CISPR 11, Class A

Environmental	
Operating temperature	-20 °C to 50 °C (-4 °F to 122 °F)
Storage temperature	-30 °C to 80 °C (-22 °F to 176 °F)
Operating humidity	10 % to 95 % RH (non-condensing)
Operating/ Storage altitude	Sea Level to 3,048 meters (10,000 feet)
IP rating	IP54
Vibration limit	500 g peak
Drop test	1 meter
General specifications	
Battery type	AA (2) Alkaline or Lithium-ion 2 V dc
Battery life	250 measurements
Size (L x W x H)	25.72 cm x 16.19 cm x 9.84 cm (10.13 in x 6.38 in x 3.875 in)
Weight	1.16 kg (2.55 lb)
Connectors	USB mini-B 7-pin, stereo audio output jack (3.5 mm Audio Plug), external sensor jack (SMB connector)

Ordering information

Fluke-805 Vibration Meter

Includes: 805 Vibration Meter, USB cable, storage case, belt holster, quick reference guide, CD-ROM (includes MS Excel template and documentation), and two AA batteries

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Fluke Corporation
PO Box 9090, Everett, WA 98206 U.S.A.

Fluke Europe B.V.
PO Box 1186, 5602 BD
Eindhoven, The Netherlands

For more information call:
In the U.S.A. (800) 443-5853 or
Fax (425) 446-5116
In Europe/M-East/Africa +31 (0) 40 2675 200 or
Fax +31 (0) 40 2675 222
In Canada (800)-36-FLUKE or
Fax (905) 890-6866
From other countries +1 (425) 446-5500 or
Fax +1 (425) 446-5116
Web access: http://www.fluke.com

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Part number - Fluke 805ES

External Vibration Sensor for the 805 Vibration Meter

Overview

- **External Vibration Sensor for the 805 Vibration Meter**
  The Fluke 805ES is an external vibration sensor that is ideal in situations for which it is either difficult or impractical to use the onboard vibration sensor tip of the 805 Vibration Meter. The 805ES allows you to take measurements in crowded or hard-to-reach locations, behind machine guards or enclosures, or in out-of-reach places where it is difficult to apply sufficient manual pressure to the 805 Vibration Meter.

  - Low-profile 90-degree sensor body allows the sensor to get into tight spots
  - Rugged, coiled cable minimizes dangling, while stretching to more than 7ft when needed
  - Powerful "U" shaped magnet mount creates a firm connection to flat, or curved measurement surfaces
  - Rugged, sealed cable connector with strain relief tail reduces cable wear
  - Removable sensor magnet to allow for direct attachment to a sensor mounting pad, or threaded hole on a piece of equipment
  - Connects directly to 805 Vibration Meter SMB connector located in the heel of the meter

Specs

Performance	
Measurement range	7 g pk (68.7 m/s² pk)
Frequency range	0 to 6000 cpm (0 to 100 Hz)
Relay	3A Form C 480 VAC
Relay (Contacts) (DPDT)	Normally open / closed
Environmental	
Temperature range (Operating)	-13 to 140°F (-25 to 60°C)
Enclosure rating	IP66
Physical	
Size (Width x Height x Depth)	4.35 x 3.30 x 4.35 in (110.5 x 83.8 x 110.5 mm)
Weight	2.5 lb (1.134 kg)
Sensing element	Magnet
Housing material	Aluminum alloy
Electrical connector	Screw terminals
Screw terminal wire size	24-14 AWG (0.2 - 2.5 mm²)
Cable input	3/4-14 NPT
Mounting hole size	0.25 in (6.4 mm)
Sensing geometry	Inertial element