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Fieldpaq II 4 channel handheld analyzer

Introduction

Fieldpaq II is a portable 4 channel real-time analyzer that is built for advanced noise and vibration measurements in the field. For measurements in harsh environments, Fieldpaq II is manufactured with a ruggedized housing by a dual injection molding process and protective sealing to provide an IP 65 rating.

Fieldpaq II is equipped with a large 5-inch color (800 x 480 high resolution) touch screen. The combination of Microsoft's powerful WinCE operating system and touch screen operation provides a user friendly and intuitive interface.

Fieldpaq II acquires measurement signal with precision 24 bit sigma delta AD converters to provide a high dynamic range, up to 40 kHz maximum bandwidth. Fieldpaq II is powered by a 800 MHz CPU for running the Windows CE system and the DSP chip TI TMS320C6713B for performing signal analysis at extremely fast real-time rates.

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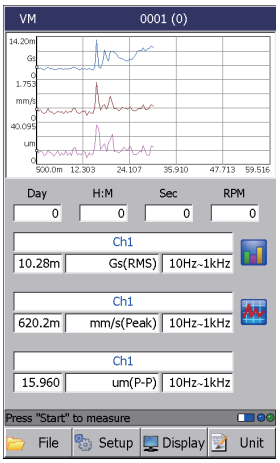
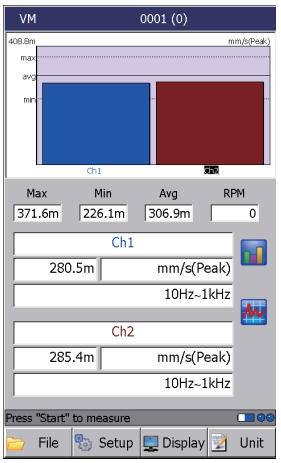
Vibration Meter

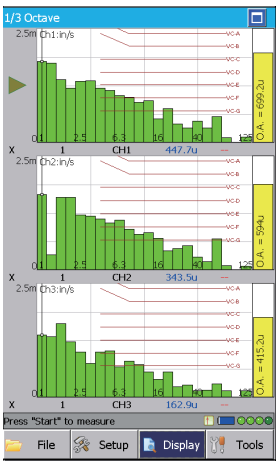
The overall vibration level is a basic parameter for determining a machine's operational condition. By simulating the operation of an analog meter, Fieldpaq II's vibration meter program performs time domain integration,filtering, root mean square (RMS) calculations and true peak detection for accurate measurements of vibration levels. One to Four channels can be measured at the same time, displaying the results to a trend chart, bar chart, or you may record the data continuously to a file. Easily check vibration severity with the built-in ISO 10816-3 standard. The user may select different filter settings for specialized measurements.



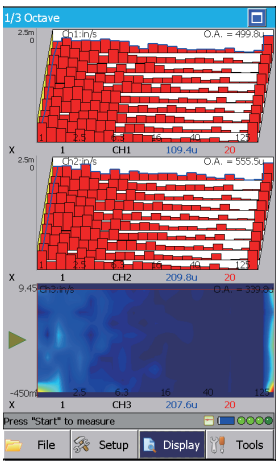


Octave Spectrum Analysis

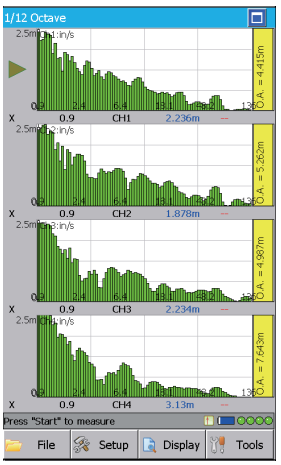
The octave analysis program utilizes real-time digital filtering technology to generate octave, 1/3 octave or 1/12 octave spectrum. Conforming to the IEC 61260 & IEC 61672 standards, the octave program is best suited for acoustic or vibration measurements in the field. For vibration applications, the octave program can perform measurements with user-defined weightings. One example is that fieldpaq II can perform measurements with the special weighting of ISO 6954, ISO8041, ISO2631 and more. When measuring floor vibration, fieldpaq II can display the VC curves on the spectrum, providing real-time evaluation of the vibration severity in the field.



Display VC (Vibration Criteria) curves on 1/3 octave spectrums for quick evaluation of floor vibration.



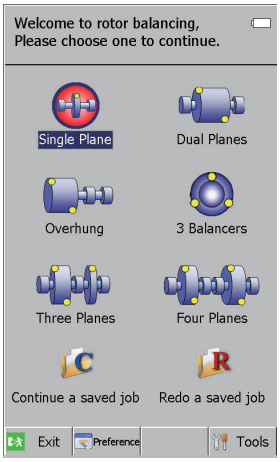
Supports continuous measurements and shows the results on waterfall or intensity plots

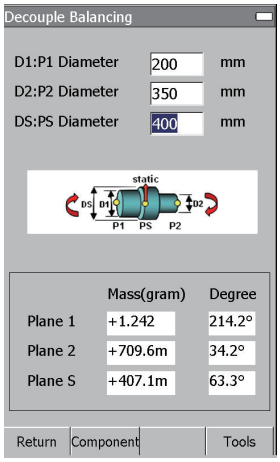


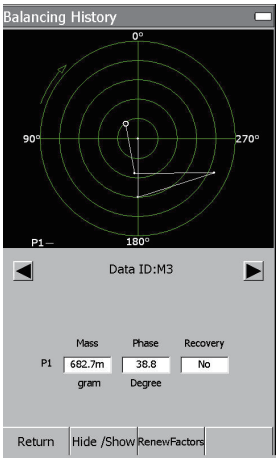
Real-time four channel measurements of Octave, 1/3 Octave and 1/12 Octave spectrums

Rotor Balancing

The Fieldpaq II's balancing software package supports simultaneous 4 channel measurements with multiple point balancing technique. When using multiple point balancing, vibration in BOTH horizontal and vertical directions is minimized at the same time. By conducting coast-down measurements for 1X vibration, the heavy spot can be easily identified with only one measurement saving you time, money and increasing safety. This technique prevents the user from danger by putting the trial weights in the wrong place, and shortens the balance time. Other features/functions are:





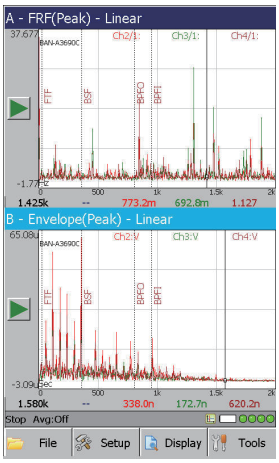


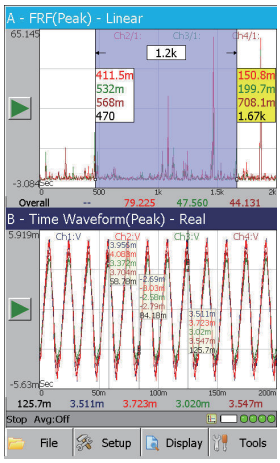
- Multi-point balancing
- Component calculation
- Drill depth calculation
- Allowable residual unbalance calculated from the ISO 1940 standard
- Unequal radii calculation
- Decoupled balancing (couple + static)
- Review historical vibration data on a polar plot
- Review historical balancing data on a polar plot
- Heavy spot estimation with one shot measurement
- Redo a previous balancing job with saved balancing factors
- Continue an unfinished balancing job from a saved file

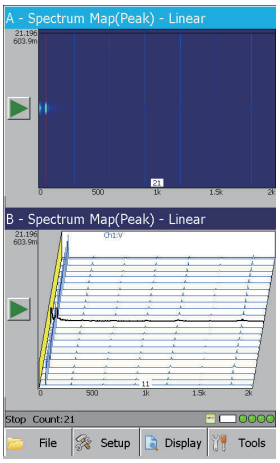
FFT Spectrum Analysis

Fieldpaq II's FFT program allows you to conduct cross-channel analysis such as FRF, coherence, and cross power spectrum that are required for modal test, ODS testing or sound intensity measurements. FFT program supports continuous spectral measurements and waterfall display, which is required for analysis of varying speed machines.

- General vibration analysis
- Modal testing
- Bearing diagnosis
- Sound intensity measurement
- Operational deflection shape measurement







Fieldpaq II's FFT program also supports bearing vibration analysis as a standard feature. By taking advantage of demodulation technology, one may see the fault frequencies of a bearing on a demodulated spectrum at its early stage of damage. Fieldpaq II's demodulated spectrum uses a wavelet based Hilbert Transform algorithm, which shows clear spectral pattern(s) and low levels of sidebands.

Specifications

Hardware Feature	Technical Specifications
Operating system	Windows CE™
Number of input channels	4 analog channels and 1 aux channel
Connector of input channels	Channel 1, 2: BNC, Channel 2, 3, 4 LEMO 4 pin and Aux: LEMO 6 pin
Channel coupling	AC, DC, IEPE
Aux channel	Tacho signal input and power supply
DSP processor	TI TMS320C6713B
External memory	SD card
Battery	Li-Po 7.4V 5800 mAhr, rechargeable
PC communication interface	USB 1.1, mini B type USB connector
LCD display	800 x 480 5 inch TFT color touch screen
Operating temperature	-10˚C to + 50˚C
Sealing / Ruggedness	IP 65
Housing material	Dual material: hard ABS plastic and soft TPR
Weight	1.3 kg (2.8 lb)
Size	9.6 x 5.2 x 2.5 inch (245 x 132 x 63 mm)
Max input signal range	±20 Volt
Dynamic range	130 dB (measured from spectrum)
A/D converter	24 bit sigma-delta A/D converter
Frequency range	DC to 40 kHz
Input impedance	1M Ohm

Feature for FFT Analysis	
FFT real time rate	40 kHZ, 4 channel @12800 lines
FFT resolution	100-12,800 lines
Spectral map	3D waterfall or intensity plots for continuous spectrum measurements
Time windows	Hanning, hamming, flattop, rectangular, force, exponential
Analysis functions	Spectrum, power spectrum, cross power spectrum, FRF, time waveform, envelope spectrum, orbit, coherence and PSD
Engineering units	Automatic units transform with pre-defined table
Zoom FFT	Yes
Average	Linear, exponential, time, peak hold
Trigger	External, input channel triggering, pre/ post triggering
Cursor	Single, harmonic, harmonic+ single, peak,dual, side band cursor and mark cursor
Envelope filters	500~2kHz, 1k~2.5kHz, 2k~5kHz, 5k~10kHz or user defined.

Feature for Rotor Balancing	
Rotor type for balancing	Single plane, dual plane, 3 plane, 4 plane, overhung dual plane, 3 weights balancing
Balancing speed	60 rpm to 300,000 rpm
Order resolution	Low, normal, high, 0.03, 0.015, 0.008, and 0.004
Average number	10, 20, 50 and 100
Balancing grade	Built-in ISO 1940 standard or user defined
Tools	1X coast down order trace, decoupled balancing (static and couple), unequal radii, component calculation, drill depth, vibration history, balancing history and recalculation of balancing coefficients

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Feature for Octave Analysis	
Octave spectrum	Full octave, 1/3 octave and 1/12 octave
Maximum band with 4 channel on	Full octave: 32k Hz, 1/3 octave: 20kHz, 1/12 octave: 5kHz
Maximum band with 1 channel on	Full octave: 32kHz, 1/3 octave: 40kHz, 1/12 octave: 20kHz
Integration time (second)	1/128, 1/64, 1/32, 1/16, 1/8, 1/4, 1/2, 1, 2, 4
Detection method	Fast, slow, impulse, linear
Trigger sources	Off, external, input channels, manual
Weighting	A, C, flat ISO 2631, 6954, 8041 and user defined
Continuous measurements format	Waterfall and intensity map displays
Floor vibration criteria	VC curves or user defined

Feature for Vibration Meter	
Types of vibration	Acceleration, velocity and displacement
Types of detection	RMS, peak, peak to peak, true peak and Crest factor
Filters	2Hz-1kHz, 5Hz-1kHz, 10Hz-1kHz, 2Hz HP, 5Hz HP, 10Hz HP
Display	trend chart (vibration vs. time or rpm) or bar chart.
Severity	ISO 10816-3 or user defined

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