DETECT FAULTS, DETERMINE AND ANALYZE NOISE AND VIBRATION WITH EASE USING ADVANCED FUNCTIONS. THE IDEAL SOLUTION FOR MACHINERY QUALITY ASSURANCE.
INTRODUCTION

Machinery and its components are vibrating during operation. FFT (Fast Fourier Transform) analysis is a measurement tool to identify, predict, and prevent failures in rotating machinery.

FFT is very useful for analysis of time-dependent phenomena. The vibrations may be displayed by plotting the amplitude against frequency. To perform a frequency analysis the vibration signals are broken down into individual frequencies.

The Dewesoft FFT analyzer based on a combination of first-class data acquisition units and powerful software has it all: top performance, advanced cursor functions, high freely selectable line resolution, flexible averaging as well as many advanced functions for in-depth analysis.

APPLICATIONS

Frequency analysis is the base for any task in noise and vibration. FFT is the foundation for analyzing, monitoring, and controlling various systems and is widely used in engineering, science, and mathematics. A wide variety of application areas benefit from FFT; in addition to mechanical analysis, for example also to conventional radar, sonar, communications and speech signal-processing, biomedical engineering, imaging, spectroscopy, and geophysical analysis.

FFT is applied for vibration analysis in industries using rotating machinery, e.g. producing paper, clothes or chemicals, generating power, extracting petroleum, or treating water and handling domestic waste. FFT is also used for acoustic analysis e.g. in automotive and transportation industries among others for noise identification and qualification.

FUNCTIONALITY

Any vibration has three measurable quantities, amplitude, phase and frequency, determining its characteristics. FFT is a mathematical method for transforming from the time domain to the frequency domain.

FFT is used to analyze vibration data e.g. to determine the characteristic changes in rotating machinery caused by imbalance, misalignment, mechanical looseness, faults in gear drives, defects in rolling-element bearings, and/or defects in sleeve bearings.
KEY FEATURES

RESULT DISPLAY
2D or 3D graph visualization.

AVERAGING
Block history with linear, peak, exponential averaging or overall calculation.

MULTI-PURPOSE ADVANCED MARKERS
Maximum marker, free marker, zoom marker, sideband marker, harmonic marker, Kinematic markers.

KINEMATIC MARKERS
Different machinery sets can be created in the database. This simplifies fault detection during measurement through adjustment of all markers when the main frequency is changed.

ADVANCED MATH
Auto and cross spectrum, complex spectrum, waterfall spectrum, cepstrum, two-sided FFT, short-time Fourier transform, bearing fault analysis.

CURSOR VALUE ESTIMATE
Innovative window interpolation technique allows precise amplitude and frequency estimation.

EXPORT
Data export to most often used formats: UNV, Excel, Matlab, Flexpro, TXT, CSV...

ANY LINE RESOLUTION
Selectable line resolution for most demanding tasks.
### SPECS

#### DAQ SYSTEM - SIRIUS ACC TYPE INPUT

<table>
<thead>
<tr>
<th>Inputs</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input types</td>
<td>Voltage, IEPE</td>
<td></td>
</tr>
<tr>
<td>ADC Type</td>
<td>24bit delta-sigma dual core with anti-aliasing filter</td>
<td></td>
</tr>
<tr>
<td>Sampling Rate</td>
<td>Simultaneous 200kS/sec</td>
<td></td>
</tr>
<tr>
<td>Ranges (Dual Core Low Range)</td>
<td>±10V (±500mV)</td>
<td>±500mV (NA)</td>
</tr>
<tr>
<td>Input Accuracy (Dual Core)</td>
<td>±0.1% of reading ±0.1(1)mV</td>
<td>±0.1 of reading ±1(NA)mV</td>
</tr>
<tr>
<td>Dynamic Range@10kS (Dual Core)</td>
<td>140 dB (160 dB)</td>
<td>135 dB (NA)</td>
</tr>
<tr>
<td>Typ. SNR@50kS (Dual Core)</td>
<td>107 dB (125 dB)</td>
<td>100 dB (NA)</td>
</tr>
<tr>
<td>Typ. CMR @ 50Hz/1kHz</td>
<td>140/120 dB</td>
<td>140/120 dB</td>
</tr>
<tr>
<td>Gain Drift</td>
<td>Typical 10 ppm/K, max. 30 ppm/K</td>
<td></td>
</tr>
<tr>
<td>Offset Drift</td>
<td>Typical 0.5 μV/K + 2 ppm of range/K, max 2 μV/K + 10 ppm of range/K</td>
<td></td>
</tr>
<tr>
<td>Gain Linearity</td>
<td>&lt;0.02%</td>
<td></td>
</tr>
<tr>
<td>Inter Channel Phase-mismatch</td>
<td>0.02° * fin [kHz] + 0.1° (@ 200 kS/sec)</td>
<td></td>
</tr>
<tr>
<td>Channel Cross talk</td>
<td>&gt;160 dB @ 1kHz</td>
<td></td>
</tr>
<tr>
<td>Input Coupling</td>
<td>DC, AC 0.1 Hz, 1Hz</td>
<td></td>
</tr>
<tr>
<td>Input Impedance</td>
<td>1 MΩ (270kΩ for AC coupling ≥ 1Hz) in parallel with 100pF</td>
<td></td>
</tr>
<tr>
<td>Overvoltage Protection</td>
<td>In+ to In−: 50 V continuous; 200V peak (10msec)</td>
<td></td>
</tr>
<tr>
<td><strong>IEPE mode</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excitation</td>
<td>2, 4, 8, 12, 16 or 20mA</td>
<td></td>
</tr>
<tr>
<td>Compliance voltage</td>
<td>25 Volt</td>
<td></td>
</tr>
<tr>
<td>Output Impedance</td>
<td>&gt;100 kΩ</td>
<td></td>
</tr>
<tr>
<td>Sensor detection</td>
<td>Shortcut: &lt;4Volt; Open: &gt;19Volt</td>
<td></td>
</tr>
<tr>
<td><strong>Additional Specifications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input connector BNC</td>
<td>BNC</td>
<td></td>
</tr>
<tr>
<td>TEDS support</td>
<td>IEPE mode only</td>
<td></td>
</tr>
</tbody>
</table>

#### SOFTWARE: DEWESoft X3

**Recommended**

- Processor: Intel Core i7 with 4 Cores (3rd generation or higher)
- RAM: 8 gigabyte (GB)
- Hard drive: Solid-state drive (SSD)
- Graphic card: Compatible with DirectX 11
- Display: 1280x720 (HD Ready)
- Operating system: Windows 10 64-bit

*Actual requirements may be different due to specific setup configuration.*

#### TYPICAL CONFIGURATIONS

**Basic FFT (4ch):**
- Sirius MINI 3xACC, 1xACC+
- Accelerometer (1x-4x)
- Microphone (1x-4x)
- 1x Tacho*

**Standard FFT (8ch):**
- Sirius Dual core 6xACC, 2xACC+
- Accelerometer (1-8)
- Microphone (1-8)
- Tacho (1-2)*

**Advanced FFT:**
100+ ACC or CHG channels in configuration of chained Sirius slices or Krypton

**RELATED PRODUCTS**

- Bearing analysis
- Order tracking
- Tonorial vibration
- Balancing

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DEWESOFT WORLDWIDE:
Austria, Belgium, Brazil, China, Denmark, France, Germany, Hong Kong, India, Italy, Mexico, Russia, Singapore, Slovenia, Sweden, UK, USA and partners in more than 50 countries.

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dewesoft.com/support/distributors

HEADQUARTERS
Gabrsko 11A, 1420 Trbovlje, Slovenia
+386 356 25 300
www.dewesoft.com
support@dewesoft.com or sales@dewesoft.com

LEARN MORE:
dewesoft.com/applications/rotating-machinery/fft-analyzer

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*Typical CMR: 140/120 dB @ 1kHz.*