CoCo-70X Vibration Analyzer

- Route vibration collection
- Off-Route measurements
- Job Management
- Dynamic Signal Analysis Mode

The newly designed chassis is lighter and more ruggedized, making the CoCo-70X a perfect device for route-based measurements.

Overview

The CoCo-70X is Crystal Instruments' latest handheld vibration analyzer, featuring an improved user interface and redesigned chassis. The CoCo-70X is a four-channel vibration analyzer with an IP-67 rating, designed specifically for the machinery Predictive Maintenance (PdM) community. The CoCo-70X offers powerful processing capabilities and an intuitive user-interface, providing users with an easy-to-use data collection experience. The newly designed chassis is lighter and more ruggedized, making the CoCo-70X a perfect device for route-based measurements.

The CoCo-70X serves as the vibration analyzer for Crystal Instruments' comprehensive vibration expert system, Vibration Diagnostic System (VDS). The CoCo-70X provides fast, actionable information through an effective user interface, making tasks easier and more intuitive. Effortlessly upload route data and corrective maintenance jobs from the field to the Vibration Diagnostic System. Routes are created in VDS and then uploaded to the CoCo-70X. Once routes have been uploaded to a data collector, the user can use it to gather data for some or all machines in a route. The data is then downloaded to VDS for storage in the database.

The handheld system is equipped with a 6.5" LCD display as well as a physical keypad. Flexible connections include 100Base-T ethernet, SD card interface, and stereo headphone and microphone jack. Each analog input is serviced by two 24-bit ADCs to achieve a better than 150 dBFS dynamic range. LEMO cables are used for the 4 input channels, the tachometer channel, and the signal output channel. The CoCo-70X is also equipped with TEDS (Transducer Electronic Data Sheet) detection, allowing the software to acquire the sensitivities and other manufacturing details of the transducer.

Advanced analysis tools provide a low barrier-to-entry for new users to perform sophisticated troubleshooting tests. Technicians don't need to spend time configuring tests for non-routine measurements – pre-configured analysis tools are available for all types of diagnostic applications. Other signal analysis features are available at the user's request, including continuous data recording, FFT spectral analysis, Order Tracking, Zoom Analysis, Octave Analysis, Rotor Balancing, Power System Stabilizer, customizable digital filters, and Sound Power Analysis.

High Dynamic Range

Crystal Instruments achieves its very high dynamic range for all its measurement instruments by using a unique patented technology that uses two A/D converters in each measurement channel.

With such high dynamic range of each input, the gain settings (voltage range settings) are very much eliminated.

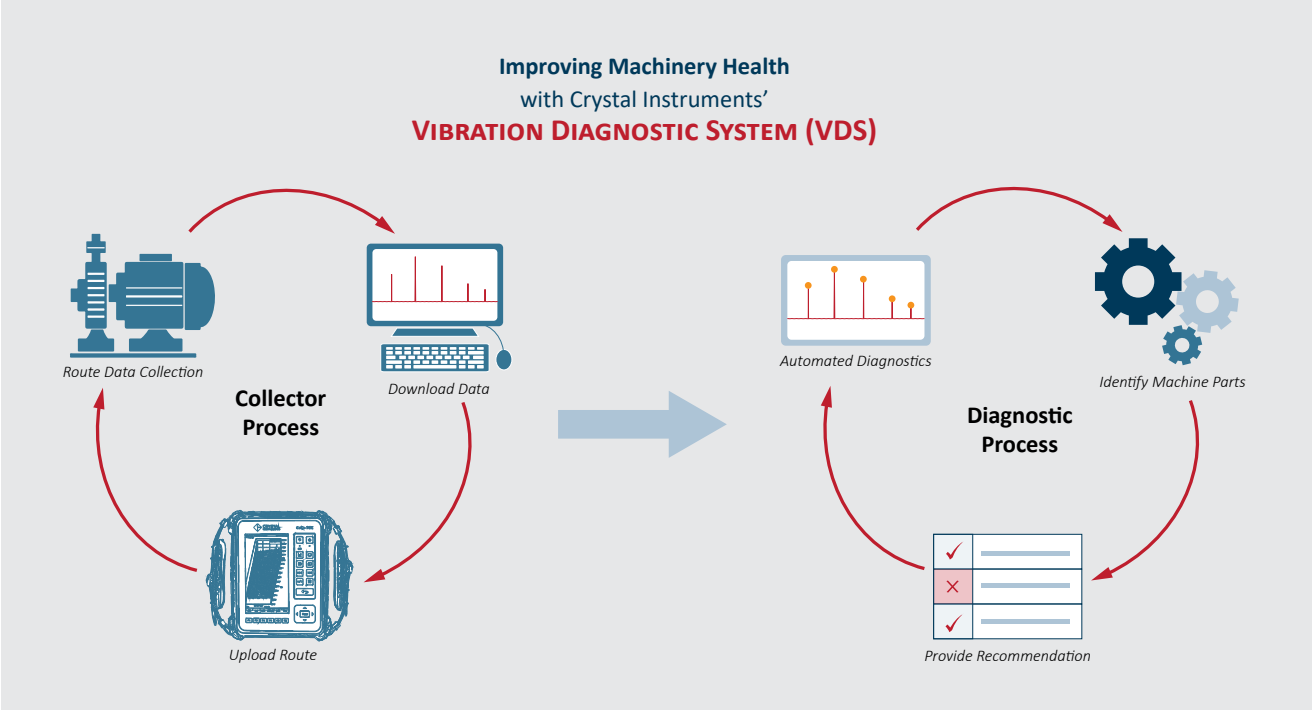
Performance

The new dual-core Da-Vinci Series processor allows for a very fast and reactive user interface, which works very well with the new touchscreen interface. This processor handles the user interface, project configuration, power management, network communication, and all peripherals. A high-speed floating point DSP manages the data input/output and real-time processing.

Portable Recording Solution

In addition to providing advanced real-time signal analysis, the CoCo-70X also serves as an excellent data recording device. The CoCo and Spider platforms support the unique ability to simultaneously perform both real-time processing and continuous data recording. To increase the reliability of data recording, a special check sum algorithm is always applied to the measurements.

vibration analysis



Hardware Specifications

Analog Input Channel	
Number of Input Channels:	4
Connector Type:	8 Pins LEMO
Coupling:	AC, DC, or IEPE (ICP©)
Input Type:	Single-ended
TEDS:	IEEE 1451.4 compliant
Input Range:	±20 V_{pk}
A/D Resolution:	2 x 24-bit per input channel
Frequency Accuracy:	±250 ppm at 1 kHz
Amplitude Accuracy:	±10 ppm
Sampling Rate:	0.48 Hz to 102.4 kHz, with 54 stages
Maximum Bandwidth:	46.08 kHz
Input Impedance:	500 kΩ
AC Coupling:	Analog high-pass filter (-3 dB @ 0.3 Hz; -0.1 dB @ 0.7 Hz)
Input Protection Voltage:	±40V
Analog Low Pass filter	1 kHz @-3dB (Enable/Disable by software)
Anti-Aliasing Filter:	Analog anti-aliasing filters (-3 dB @ 500 kHz)
Digital Filter:	Digital high-, low-, and band-pass filters
Dynamic Range:	150 dBFS (100 Hz to 4.6 kHz)
Total THD + Noise:	-95 dB (DC to 1 kHz)
Crosstalk:	Less than -90 dB
Amplitude Channel Match:	0.3 dB
Phase Channel Match:	Less than 0.3 degrees up to 20 kHz
Tachometer Input Channel	
Number of Tacho Channels:	1
RPM Range:	1 to 100,000
Connector type:	LEMO, shared with Output channel
Tachometer 1:	Full feature tachometer
Input range:	±10Vpk
A/D Resolution:	24 bits
Maximum Bandwidth:	46.08 kHz
Accuracy	
All measurements taken at a temperature of 25°C.	
For All Dynamic Input Channels:	
Frequency Accuracy (crystal based)	0.01%
Non-integrated Spectral Amplitude Accuracy	3% over the range of 3 Hz to 20 kHz
Single Integrated Spectral Amplitude Accuracy	3% over the range of 3 Hz –20 kHz
DC Accuracy (from 0.1 V to 20V)	3%
Overall Level (W/Averaging, band limited)	5% over range of 5 Hz – 48 kHz, 0.001 to 10 V_{rms}

Peak and Phase Measurements:	
1X Synchronous Peak Accuracy	3% over the range of 3 hz-1500 Hz, 0.01v -20v
1X Synchronous Phase Accuracy	3 deg over the range 3-20 kHz
Tachometer Frequency Accuracy	0.01%
Output Channel	
Number of Outputs:	1
Connector Type:	LEMO shared with Tacho
Max Frequency:	46.2 kHz
Output Range:	±10 V_{pk}
D/A Resolution:	24 bits
Dynamic Range:	-90 dB
Output Impedance:	50 Ω
Maximum Output Current:	25 mA
Sine Amplitude Accuracy:	±1% (0.34 dB) for 0.1 – 5 V_{pk}, at 1 kHz
Anti-Imaging Filtering:	160 dB/octave digital filter in addition to analog filters
Digital Filter:	high-pass and low-pass digital filters
Interface Ports	
Audio:	3.5mm stereo headphone jack, built-in speaker
Ethernet:	100Base-T Ethernet. RJ 45 connector
SD Card:	SD/SDHC up to 32 GB. SDXC up to 2 TB
Grounding:	Ground terminal to chassis
System	
System CPU:	Dual-core ARM+DSP Processor
Total RAM:	1 GB
LCD:	6.5”color TFT WVGA display 800x480 resolution
SD Card Storage:	up to 256 GB (removable)
Hard Keys:	Power, Settings, Analysis, Display, File, Input Channels, Previous Trace, Next Trace, Record/Stop, Save, Back, 5 Direction Arrows, Enter
LED Indicators:	Power lights up red when charging, green when fully charged Power Button LED turns red when the unit is on
Internal Clock:	Real-time Clock with dedicated battery
Environmental and General Specification	
Enclosure: Size: Weight:	 235*188*48.26 mm (L * W * H) 1.65 Kg
Power Consumption:	15 Watt
Battery:	6800 mAh rechargeable Li-ion type
Operating time:	8-10 hours
Charge Time:	4 hours
Power Supply:	100 to 240V_{AC} (50/60 Hz), DC power 15 V (±10%)/3A
Safety Standard:	EN 61326:1997+A1:1998+A2:2001

	EN61000-3-2: 2000 EN61000-3-3: 1995 + A1:2001
Protection Rating:	IP67
Cooling:	No cooling fan required
Temperature: Operational: Storage:	 -20 °C to +55 °C (LCD dims below -20°C), -25 °C to +70 °C
Vibration: Shock: Operational, 3 sides: Non-operational, 3 sides:	 50 g's, 315 in/sec, tested at 6 sides, non-operational test $0.3g_{rms}$ from 5– 500 Hz $2.42g_{rms}$ from 5–500 Hz

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