CoCo-80X
HARDWARE SPECIFICATIONS (v1.4)

CRYSTAL INSTRUMENTS

- Settings
- Power
- Wireless / Charge Indicator Lights
- Analysis
- Display
- File
- Input Channels
- Previous/Next
- Record/Stop
- Save
- Back
- Navigation Buttons

Acquisition Button

Touchscreen

Multi-Function F Keys

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INTRODUCTION

The CoCo-80X is a handheld data recorder, dynamic signal analyzer, and vibration data collector. It is ideal for a wide range of industries including machine condition monitoring, automotive, aviation, aerospace, electronics, and military. These industries demand quick, easy, and accurate data recording in addition to real-time processing in the field. The CoCo-80X is a perfect solution as a low cost, lightweight, battery powered handheld system with unparalleled performance and accuracy. The intuitive user interface is specifically designed for easy operation while still providing a wide variety of analysis functions.

Building on the success of the original CoCo-80, the new CoCo-80X boasts improved speed, a bigger screen, and more connection options. A significantly more powerful processor frees DSP resources for faster, more reliable, and more complex processing in real time. The 7 inch full color LCD display of the CoCo-80X nearly doubles the screen area of the original unit and offers multi-point touch screen functionality that has become the standard for electronic interfaces. On board WIFI and GPS highlight the portability of the CoCo-80X, and the addition of CAN-bus will make this a very powerful tool for automotive and construction applications.

The CoCo-80X hardware platform supports three different software working modes: Dynamic Signal Analyzer (DSA), Vibration Data Collector (VDC), and CoCo Real-Time mode. Each working mode has its own user interface and navigation structure. DSA mode is designed for mechanical structure analysis, testing and optimization, or for electrical, geophysics, and a wide range of other applications. VDC mode is dedicated to route-based machine condition monitoring, vibration data collection, and trending. CoCo Real-Time mode allows for the instrument to be operated as a benchtop testing device where commands are executed and data is displayed in real-time on an accompanying PC.

The CoCo-80X is equipped with up to 8 input channels. All hardware will ship with 8 physical BNC connectors, meaning a unit initially purchased as a 2 channel unit can be remotely upgrade to 4, 6, or 8 channels via software. The CoCo-80X accurately measures and records both dynamic and static signals. The flash storage simultaneously records 8 channels of data at up to 102.4 kHz while performing real-time frequency and time domain calculations. An embedded signal source channel provides several standard waveforms that are synchronized with the input sampling rate.

The handheld system is equipped with a bright 7.0 inch color LCD display with multi-point touch functionality as well as a physical keypad. Flexible connections via a USB 2.0 port, 100Base-T Ethernet port, 802.11 b/g/n Wifi connection, SD card interface, HDMI interface, CAN-bus/serial port, stereo headphone and microphone jack, and GPS. Connect the CoCo-80X to a PC to download files, remotely control operations, or upgrade the software through several means of network connections.

In VDC and Real-Time modes, the CoCo-80X utilizes modern database management technology to synchronize the analysis parameters, route map, and measured data with the analysis PC. Data is downloaded to a PC for managing, trending, and analysis, and is then exported to other applications using EDM software from Crystal Instruments.

HARDWARE SPECIFICATIONS

System

- **System CPU:** Dual-core Da-Vinci Series ARM+DSP Processor
- **Total RAM:** 1 GB
- **Internal Storage:** 512 MB
- **LCD:** 7"color TFT WVGA display 800x480 resolution with P-Cap touch screen, 1300 NITS
- **SD Card Storage:** up to 128 GB (removable)
- **Hard Keys:**
  - **Power:** Power on, open shutdown menu, long-press for reset
  - **Settings:** Open the main Setup page
  - **Analysis:** DSA: Open the Analysis Groups page
  - **VDC:** Open the Onsite Measurements page
  - **Display:** Returns to active test display
  - **File:** Opens the file browser to display saved data
  - **Input Channels:** Opens the Input Channel Table to configure sensitivity, input type, and filter settings
  - **Previous Trace:** Switch to the previous configured trace while in a measurement
  - **Next Trace:** Switch to the next configured trace while in a measurement
  - **Record/Stop:** Records selected timestreams, stops recording if the unit is already recording
  - **Save:** Save the selected signal data
  - **Back:** Returns to previous screen
  - **Direction Arrows:** Navigate options displayed on the screen
  - **Enter:** Select the highlighted item to edit or open
- **LED Indicators:** WIFI activity
  - 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

Analog Input Channel

- **Number of Input Channels:** 2, 4, or 8 (configured at factory)
- **Connector Type:** Isolated BNC
- **Coupling:** AC, DC, or IEPE (ICP©)
- **Input Type:** Differential or single-ended
- **Input Range:** ±20 Vpk
- **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:** 228KΩ single-end, 456KΩ differential
- **AC Coupling:** Analog high-pass filter (-3 dB @ 0.3 Hz; -0.1 dB @ 0.7 Hz)
- **Input Protection Voltage:** ±20V

- **Anti-Aliasing Filter:** Analog anti-aliasing filters (-3dB @ 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 -90dB
- **Amplitude Channel Match:** 0.3dB
- **Phase Channel Match:** Less than 0.3 degrees up to 20 kHz
- **Common Mode Range:** $\pm10V_{pk}$

Tachometer Input Channel
- **Number of Tacho Channels:** 2
- **Connector Type:** LEMO (LEMO to BNC adaptor cable available)
- **Tachometer 1:** Full feature tachometer
  - **Input Range:** ±10Vpk
  - **A/D Resolution:** 24bits
  - **Maximum Bandwidth:** 46.08 kHz
- **Tachometer 2:** Pulse counter
  - **Counter Resolution:** 50 MHz
  - **Threshold Voltage:** 3.2V

Note: Tachometer 1 and 2 share a LEMO connector. The operating modes for both are configured by software.

Output Channel
- **Number of Outputs:** 1
- **Connector Type:** LEMO (LEMO to BNC adaptor cable available)
- **Max Frequency:** 46.2 kHz
- **Output Range:** ±10 Vpk
- **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 Vpk, 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

CAN-Bus Interface
- **Standard:** ISO 11898-1 (Bosch CAN protocol 2.0 part A, B)
  - **Standard:** (11-bit) and Extended (29-bit) identifiers (Extended by default)
- **Channels:** 1
- **Connector Type:** 4-pin LEMO
  - **Breakout Cable:** 4-pin LEMO to OBD2 (car industry)

  - LEMO to screw terminal
- **Bit Rate:** up to 1 Mbit/s
  - Manual selection or Auto-detect

Interface Ports
- **Video Output:** Micro-HDMI v1.3a compliant
  - 1280x720@60Hz, 1920x1800@30Hz
- **Audio:** 3.5mm stereo headphone jack, built-in speaker
- **Ethernet:** 100Base-T Ethernet. RJ 45 connector
- **WIFI:** IEEE 802.11 b/g/n wireless compliant. Transmit range roughly 10 meters
- **GPS:** NMEA 0183, UART 4800 BPR
- **USB:** Mini-USB 2.0 client connection to PC and
  - Mini-USB 2.0 Host via OTG cable
  - Client and host share a single port, only one mode is supported at a time
- **SD Card:** SD/SDHC up to 32 GB. Default is 4GB.
  - SDXC up to 128 GB
- **Grounding:** Ground terminal to chassis

ENVIRONMENTAL AND GENERAL SPECIFICATION
Enclosure:
- **Size:** 229 x 172 x 65.5mm (L X W X H)
- **Weight:** 1.96 kg / 4.33 lbs
- **Power Consumption:** 14 watts maximum, 8 watts with LCD off
- **Battery:** 8700 mAh rechargeable Li-ion type
- **Operating Time:** 6 – 8 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:** IP31
- **Cooling:** No cooling fan required

Temperature:
- **Operational:** -20 °C to +55 °C (LCD dims below -20°C),
- **Storage:** -25 °C to +70 °C

Vibration:
- **Shock:** 50 g's, 315 in/sec, tested at 6 sides, non-operational test
- Operational, 3 sides 0.3_{grms} from 5– 500 Hz
- Non-operational, 3 sides: 2.42_{grms} from 5–500Hz