

CoCo-80X

HARDWARE SPECIFICATIONS (v1.2)



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 time streams, 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: $\pm 20 V_{pk}$
- 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: 228K Ω single-end, 456K Ω differential
- AC Coupling: Analog high-pass filter (-3 dB @ 0.3 Hz; -0.1 dB @ 0.7 Hz)
- Input Protection Voltage: $\pm 20V$
- 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: $\pm 10V_{pk}$

Tachometer Input Channel

- Number of Tacho Channels: 2
- Connector type: LEMO (LEMO to BNC adaptor cable available)
- Tachometer 1: Full feature tachometer
- Input range: $\pm 10V_{pk}$
- 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: $\pm 10 V_{pk}$
- D/A Resolution: 24 bits
- Dynamic Range: -90 dB
- Output Impedance: 50 Ω
- Maximum Output Current: 25 mA
- Sine Amplitude Accuracy: $\pm 1\%$ (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

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 ($\pm 10\%$) / 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 0.3g_{rms} from 5– 500 Hz
- Non-operational, 3 sides: 2.42g_{rms} from 5–500Hz