CoCo-90X Hardware Specifications

- Handheld Dynamic Signal Analyzer, Data Recorder, and Vibration Analyzer
- Featuring Configurable Signal Analysis - provides unique flexibility for real-time analysis including filtering and spectral analysis.
- Mass flash memory records 16 channels of streaming signals simultaneously up to 51.2 kHz

CoCo-90X 16 Channel Handheld Dynamic Signal Analyzer

Introduction

The CoCo-90X is a 16-channel version of the CoCo-80X – a handheld data recorder, dynamic signal analyzer and vibration data collector from Crystal Instruments. 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-90X 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-90, the new CoCo-90X 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-90X is equipped with 16 input channels and accurately measures and records both dynamic and static signals. The mass flash memory records 16 channels of streaming signals simultaneously up to 51.2 kHz while simultaneously computing real-time time and frequency based functions. An embedded signal source channel provides various signal output 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.

The CoCo-90X utilizes a new signal processing method, Configurable Signal Analysis (CSA). This method provides unique flexibility for real-time analysis including filtering and spectral analysis. Data can be downloaded to a PC and managed, analyzed and exported to other applications using the EDM software from Crystal Instruments.

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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:** 16

- **Connector Type:** Lemo Connector

- **Coupling:** AC, DC, or IEPE (ICP©)

- **Input Type:** Single-ended

- **Input Range:** ±20 Vpk, ±2 Vpk, ±0.2 Vpk

- **A/D Resolution:** 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 s

- **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:** ±10Vpk

Tachometer Input Channel

- **Number of Tacho Channels:** 1

- **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

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 240VAC (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
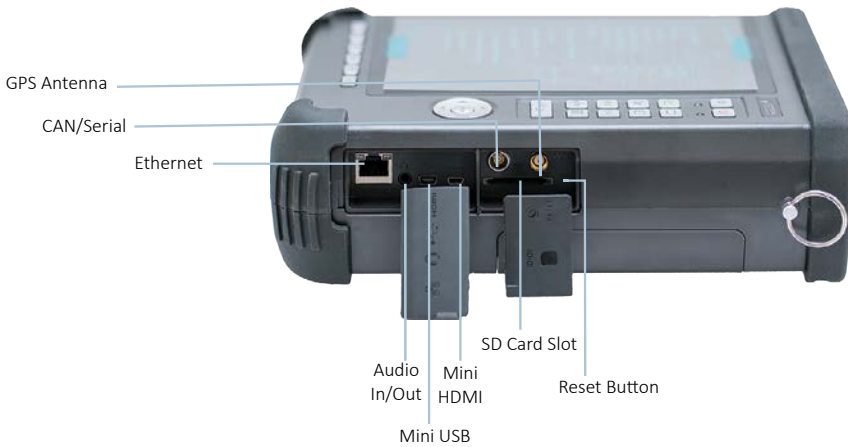- **Protection Rating:** IP31
- **Cooling:** No cooling fan required
- **Temperature:**
  ○ **Operational:** -20 °C to +55 °C (LCD dims below -20°C),
  ○ **Storage:** -25 °C to +70 °C
- **Vibration:**
  ○ **Shock:** 50 g's, 315 in/sec, tested at 6 sides, non-operational test
  ○ **Operational, 3 sides:** 0.3grms from 5– 500 Hz
  ○ **Non-operational, 3 sides:** 2.42grmsfrom 5–500Hz

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

Navigation Buttons

Touchscreen

Multi-Function F Keys

16 Input Channels

Ground
Tacho/
Output Channel

GPS Antenna

CAN/Serial

Ethernet

SD Card Slot

Audio
In/Out

Mini
HDMI

Reset Button

Mini USB

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