

ChronoLogic CL4000 – Distributed Virtual Instrument

- 14 bit Oscilloscope/Digitizer
- 100MS/s sample rate
- 200 MHz Bandwidth
- 85dBc SFDN
- Input ranges from 80mVpp to 80Vpp
- Fully Isolated inputs
- Probe calibration output
- Over 100 channels (synchronized with USB-inSync™)



Overview

The ChronoLogic Distributed Virtual Instrument range offers scalable measurement solutions without being restricted to a fixed channel count. Over 100 channels can be synchronized with increased accuracy, just by connecting the devices to a ChronoLogic Maestro Master Timing Hub. No other connection is required. Each module can be triggered to within ± 1 ns accuracy via the USB bus. The CL4000 Oscilloscope/Digitizer can be combined with any other member of the ChronoLogic DVI or USB-inSync™ family to create a truly expandable virtual instrument.

The CL4000 offers all of the flexibility of a standard scope, with 10 fixed input ranges from 80mVpp to 80Vpp and an adjustable DC offset. A variable gain feature allows nearly step-less gain adjustment over the entire input range. It also features a 128 MB onboard memory for measurements requiring extended data captures. The compact plug-and-play form factor and rugged aluminium enclosure makes the DVI Scope ideal for portable, bench top, and OEM applications. ChronoLogic's free Control Centre Software provides an interactive interface with the ability to combine different functionality into one virtual device.

Preliminary Specifications (subject to change)

Operating temp 0°C to 45°C (typical)

14-Bit Input Channel

- Up-to 100 MS/s real-time sampling
- 200 MHz bandwidth with software selectable 20 MHz noise filter
- ± 40 mV to ± 40 V input ranges
- 1 MOhm and 50 Ohm input impedance
- 128 MB of memory
- Expandable to over 100 channels
- 480 Mbit/s USB2 interface
- Two-year calibration interval and 0 to 45 °C operating temperature

Triggering and Clocking

- Edge, window, hysteresis, and digital triggering
- Ability to capture pre-trigger and post-trigger acquisition data
- Internal 100 MHz ultra low jitter clock, synchronised within all DVI modules

Software

- ChronoLogic Control Centre Soft Front Panel
- Support for NI LabVIEW

Acquisition System

- Number of channels: 1
- Vertical resolution: 14 bits
- Input ranges, bandwidth (-3 dB), and offset range (see table next page):

Fixed Range	Variable Range	Minimum Bandwidth	Vertical Offset Range
±40 mV	±20 to ±40 mV	100 MHz	±4 V
±100 mV	±50 to ±100 mV	100 MHz	±4 V
±200 mV	±100 to ±200 mV	100 MHz	±4 V
±400 mV	±200 to ±400 mV	200 MHz	±4 V
±1 V	±0.5 to ±1 V	200 MHz	±4 V
±2 V	±1 V to ±2 V	200 MHz	±4 V
±4 V	±2 V to ±4 V	200 MHz	±4 V
±10 V	±5 V to ±10 V	200 MHz	±50 V
±20 V	±10 V to ±20 V	200 MHz	±50 V
±40 V	±20 V to ±40 V	200 MHz	±50 V

Note: Variable ranges are not calibrated

Bandwidth limit filters: 20 MHz noise filter
(Software selectable)

Maximum sampling rate: 100 MS/s

Onboard sample memory: 128 MB
(64 million samples)

Input impedance: 1 MΩ || 12 pF
50 Ω (switchable)

Maximum input overload: ±100V peak @ 1 MΩ
5V RMS @ 50 Ω

Input coupling: AC, DC, GND

AC coupling cut-off frequency: 7 Hz

Dynamic Range

Spurious-Free dynamic range: 85 dBc @ 2 MHz

Harmonic distortion: -85 dBc @ 2 MHz

Probe Calibration output

Output Voltage: 1 Vpp square wave

Frequency: 1 kHz

Impedance: 50 Ω

Time base System

Sampling clock frequency: 100 MHz

Jitter: 0.5 ps RMS

Phase noise: -160 dBc/Hz
(100 kHz to 1 MHz)

Time base accuracy: ±50 ppm, 1ns across
modules using
Maestro MTH

Trigger System

Modes: Edge, hysteresis, window, digital,
immediate, software

Sources: Analog, digital, other DVI devices,
software

Slope: Rising or falling

External Trigger

Input impedance: 10 kΩ

Input voltage range: 0 to 5 V

High level Input voltage: 2.1 V min

Low level input voltage: 0.9 V max

Maximum overload: ±10 V

Power Requirements (typical)

USB +5V DC: 500mA
(700mA peak)

External power: 12V/ 500mA max

Switchover USB/External: Automatically

Isolation

Maximum isolation Voltage: ±100 V peak

Mechanical

Enclosure: Aluminium

Dimensions (L x W x H): 130 x 68 x 34 mm

Weight: 400 gram

Environment

Operating temperature: 0 to 45 °C

Storage temperature: -20 to 70 °C

Relative humidity: 10 to 90%, non
condensing

Calibration

Self-Calibration: Offset, time base

External calibration: 2 years

Internal reference drift: 50 ppm/1000 h