

ChronoLogic CL4200 – 2.5 GS/s Digital Input / Output

- DC to 1.25 Gbps data rate
- 400 ps Resolution
- Simultaneous signal generation / capture
- Multi-Standard Input / Output Interface
- Programmable Sampling Rates
- Programmable Pre-Emphasis
- Programmable Hysteresis
- Over 100 channels
(synchronized with USB-inSync™)



Distributed Virtual Instrument

Overview

The Distributed Virtual Instrument (DVI) product range provides users with the ultimate in test & measurement flexibility. Each DVI is a stand-alone unit that provides a specific functionality in a small, rugged form factor with all of the plug-and-play benefits of USB. In addition, DVI's can be combined and used as building blocks to create large, synchronous test setups consisting over more than 100 devices with multiple functionalities. ChronoLogic's Maestro – Master Timing Hub further ensures nanosecond phase accuracy of all measurements and clocks.

The CL4200 Digital Input / Output device can be combined with any other member of the ChronoLogic DVI or USB-inSync™ family to create a truly expandable virtual instrument.

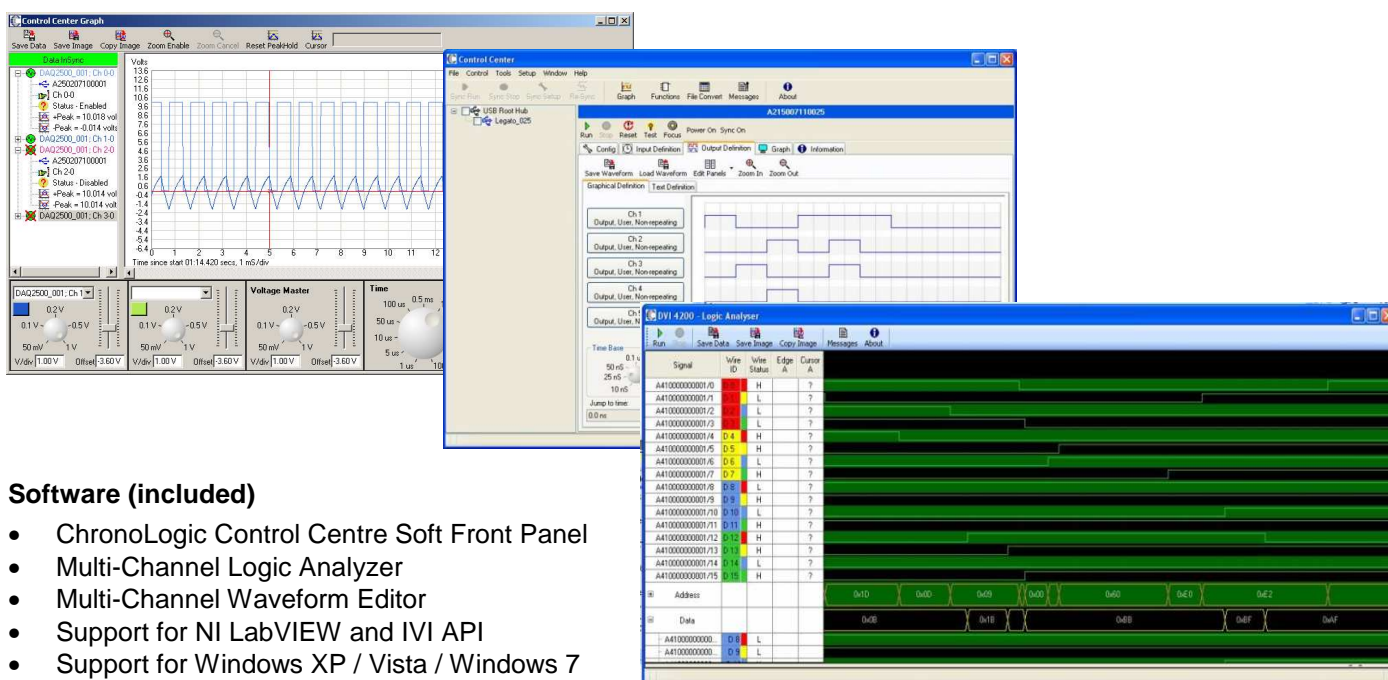
The CL4200 offers outstanding flexibility and can be used to generate or capture any digital signal from DC to 1.25 GHz. The input channel accepts single-ended LVCMOS signals with variable trigger level and most commonly used differential signals. It offers built-in termination with programmable termination voltage level. The output can generate either single-ended LVCMOS signals or LVDS signals. A macro language interface allows you to easily create complex waveform patterns with 400ps resolution. The input channel can be configured to trigger the generation of programmable output patterns. The CL4200 also includes 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.

Features and Benefits

- Independent input and output sampling rates up to 2.5 GHz
- Multi-Standard input channel accepts LVCMOS, LVDS, LVPECL, CML, User Specific
- Trigger level programmable (LVCMOS mode only)
- Programmable input hysteresis
- Multi-Standard output channel generates LVCMOS or LVDS signals.
- LVDS output offers programmable pre-emphasis to compensate for cable losses
- Generates any signal form with a minimum timing grid of 400 ps
- All modules synchronized to 1ns using USB-inSync™ technology
- LabVIEW™ drivers and IVI Programming API included

Software

The CL4200 DVI is supplied with ChronoLogic's Control Center software, complete with a simple to use Graphical User Interface (GUI). Also provided is ChronoLogic's sophisticated waveform editor and logic analyser software which combines multiple devices in one user interface. For advanced users, access to extended low-level device functionality is available through our IVI programming API. This enables interfacing through Windows based software application including MS Office, Visual Studio and National Instruments LabVIEW™. Additional LabVIEW™ device drivers are available so that USB-inSync™ devices can be quickly implemented within an existing test environment.



Software (included)

- ChronoLogic Control Centre Soft Front Panel
- Multi-Channel Logic Analyzer
- Multi-Channel Waveform Editor
- Support for NI LabVIEW and IVI API
- Support for Windows XP / Vista / Windows 7

Detailed Product Specifications

The CL4200 is a high-speed digital input / output device capable of generating or capturing digital signals with a resolution of 400ps. The device can generate and capture any signal form from DC up-to 1.25 GHz. Input and output can be used simultaneously which makes it possible to generate signals and capture responses with a very high accuracy. The maximum performance is achieved when the device is used in differential mode. Our free waveform editor can be used to create any waveform signal with the convenience of a graphical user interface. A script language allows implementation of loops and counters to create complex waveforms. You can combine several devices if more than one channel is required and analyze the captured waveforms using our logic analyzer software. The ChronoLogic DVI family is designed to combine modules with different functionality to build application specific measurement setups. For example, you can combine the CL4200 with our CL4100 logic analyzer and CL4000 analog digitizer to build a complex virtual instrument. Connecting the devices using one of our USB Master-HUBs via standard USB cables and hubs ensures nanosecond phase accuracy. All devices will be automatically synchronized to less than one nano second – without using any trigger connections between the devices. ChronoLogic's Control Centre software combines the functionality of all devices in one virtual software interface so all connected units appear as one multi-functional device. Advanced users can implement the functionality in LabView or any other programming software using IVI programming API.

Typical data at 25°C if not otherwise noted
Input Specification (all modes)

Number of channels:	1
Input coupling:	DC
Input analogue bandwidth:	> 3 GHz
Input common-mode range:	-2 V to +3 V (max)
Input differential voltage:	±5 V max
Maximum input overload:	-3 V to +4 V (max)
Input threshold (SE-Mode):	0 to 3 V (programmable)
Input offset voltage:	±1 mV (typical)
Input hysteresis:	1 mV to 55 mV (programmable)
Recommended input slew rate:	>5 V/μs
Maximum Data Rate:	2.5 GSPS
Input termination modes:	Differential 100Ω 50 Ω to V _{TERM} 50 Ω to GND (programmable)
Termination voltage V _{TERM} :	0 to 3.3 V (programmable)
Supported input standards:	LVDS, LVPECL, CML, LVCMOS, independent 50 Ω, sine wave (analogue), transformer coupled.

Output Specification (differential)

Number of channels:	1
Output coupling:	DC
Output standard:	LVDS
Output offset voltage:	1.2 V (typical)
Differential output voltage:	350 mV (typical)
Short circuit current:	55 mA (max)
Output data rate:	1.25 Gbps (max)
Signal Rise/Fall time:	80 ps (typical)
Output impedance:	100 Ω
Output pre-emphasis:	OFF +3 dB @ 1.5 GHz +6 dB @ 1.5 GHz +9 dB @ 1.5 GHz (programmable)

Output Specification (single-ended)

Number of channels:	1 (Output +)
Output coupling:	DC
Output standard:	LVCMOS
Output low voltage:	< 0.5 V (typical)
Output high voltage:	3 V (open output) 1.5 V (50 Ω terminated)
Short circuit current:	±60 mA (max)
Bandwidth:	> 275 MHz (typical)
Slew Rate:	800 V/μs (typical)
Output impedance:	50 Ω

Onboard Memory

For signal capture/generation:	1 GBit (shared for input/output)
--------------------------------	-------------------------------------

Time base System

Sampling clock frequency:	up-to 2.5 GHz
Timing jitter:	15 ps RMS
Time base accuracy:	±50 ppm, 1 ns across modules using Maestro MTH

Standard sampling intervals / output rates

400 ps, 800 ps, 1.2 ns, 1.6 ns, 2 ns, 2.4 ns, 2.8 ns
 3.2 ns, 3.6 ns, 4 ns, 4.4 ns, 4.8 ns, 5.2 ns, 5.6 ns
 6 ns, 6.4 ns, 6.8 ns, 7.2 ns, 7.6 ns, 8 ns, 8.4 ns
 8.8 ns, 9.6 ns, 10 ns.

Trigger System

Modes:	Edge
Sources:	Input, other DVI devices, software
Slope:	Rising or falling

Power Requirements (typical)

USB +5V DC:	200 mA (max)
External power:	12 V/ 500 mA (max)
External power connector:	DIN 45323 (2 mm pin)

Digital Input / Output Connectors

Connector type:	SMA (positive polarity)
-----------------	-------------------------

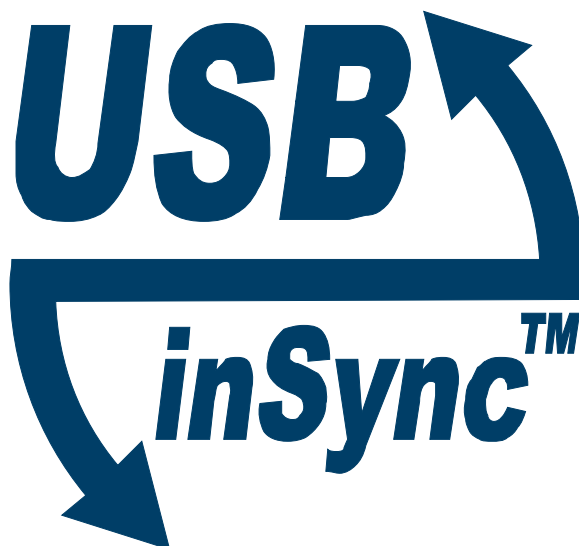
Mechanical

Enclosure:	Aluminium
Dimensions (L x W x H):	130 x 68 x 34 mm
Weight:	250 gram

Environment

Operating temperature:	0 to 45 °C
Storage temperature:	-20 to 70 °C
Relative humidity:	10 to 90%, non condensing

Certifications currently pending



USB-inSync™ is a revolutionary technology which adds highly accurate timing and synchronization to the already powerful Universal Serial Bus (USB). While preserving all the features of USB, the enhanced capability of USB-inSync™ enables new applications and solutions never before possible. USB-inSync™ has transformed the fundamental properties of USB and opened up a new range of possibilities. USB-inSync™ will become the solution of choice for PC I/O applications where portability, expandability, synchronous performance, and cost are significant considerations.

ChronoLogic's USB-inSync™ specification defines a rugged PC-based I/O platform for test, measurement and automation systems. USB-inSync™ builds upon the USB specification that has become the preferred connectivity standard for portable, office and home computer environments. USB-inSync™ is an extension to USB that combines the widespread inter-compatibility features of USB with the advanced timing and software features required for an industrial PC I/O communication platform. These advances open up a new world of possibilities in the development of synchronized systems for distributed test and measurement, data acquisition, automation and manufacturing applications.

No license is granted by implication or otherwise under any patent or patent rights of ChronoLogic Pty Ltd.
Trademarks and registered trademarks are the property of their respective owners.
Specifications subject to change without notice.

© 2011 ChronoLogic Pty Ltd. All rights reserved.