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TECHNOLOGY GROUP

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Find the *DynamicSignals / GaGe CompuScope 12100* at our website: *Click HERE*

We offer the widest range of high-speed and high-resolution digitizers available on the market today. Our powerful PC-based instrumentation products allow you to create reliable, flexible and high-performance solutions quickly and easily.

Reduce development time and costs for testing complex applications such as radar, wireless communications, spectroscopy, etc. by using our GageScope software or SDKs.

APPLICATIONS

Detection & Remote Sensing - Sonar, Lidar, Radar, Spectroscopy
Manufacturing test
Synthetic instrumentation
Wireless communications
Signal intelligence
Non-destructive testing

CompuScope 12100

Ultra-Fast Waveform Digitizer Card for PCI Bus



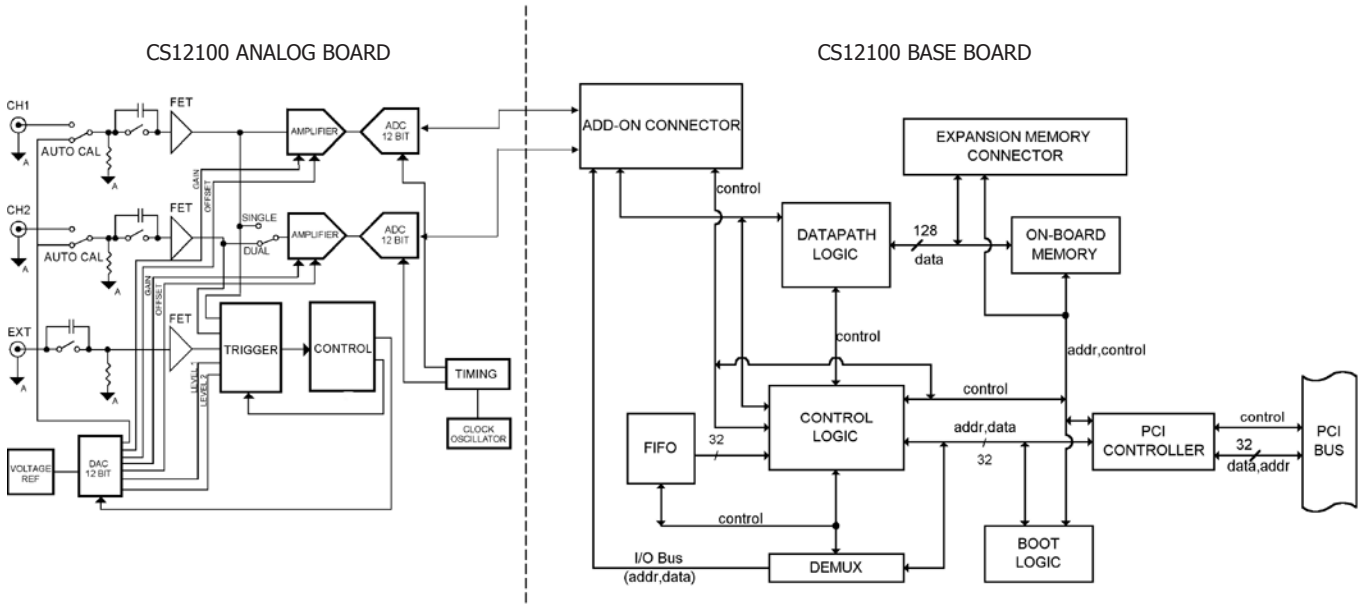
Versatile high-resolution digitizer for fast signal capture in a wide range of applications requiring high accuracy.

FEATURES

- 12 bit, 100 MS/s A/D
- Up to 8 MegaSamples of on-board acquisition memory
- 60 dB signal to noise ratio
- Multi-card systems of up to 8 channels at 100 MS/s (16 channels at 50 MS/s)
- Fast data transfer rate to PC memory
- Programming-free operation with GageScope® oscilloscope software
- Software Development Kits available for LabVIEW, MATLAB, C/C#

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CompuScope 12100 Simplified Block Diagram



COMPUSCOPE 12100
CompuScope 12100 samples analog signals at speeds up to 100 MS/s with 12 bit resolution and stores the data in on-board memory.

100 MS/S SAMPLING
CompuScope 12100 uses two monolithic sub-ranging A/D converters, each running at 50 MS/s, to provide a dual-channel simultaneous real-time sampling rate of 50 MS/s.

In the single-channel mode the two ADCs are clocked in a "ping-pong" mode to achieve up to 100 MS/s sampling. An on-board crystal-controlled timing circuit ensures timebase accuracy and long-term thermal stability.

The on-board auto-calibration circuitry allows the two channels to be matched in order to reduce the image signal.

HIGH IMMUNITY TO DIGITAL NOISE
In order to isolate the high-frequency analog circuitry from PCI bus-related digital electronics, a two-board piggy-back configuration is used. This allows maximum separation of analog and digital grounds, thereby providing high immunity to digital noise.

MEMORY DEPTH
CompuScope 12100 is available with memory depths of 1M, 4M, and 8M (12-bit samples). This memory can be used as a circular buffer for storage of pre- and post-trigger data.

In the single-channel mode, the maximum number of sample points is equal to the memory depth of the CompuScope 12100 model being used, whereas in the dual-channel mode the maximum number of sample points is half the memory depth.

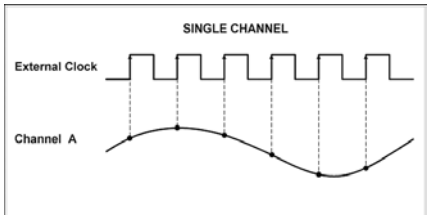
The data stored in the CompuScope 12100 memory can be transferred to the system RAM for post-processing, display or storage to hard disk without any interface bus (no GPIB bus required).

FLEXIBLE TRIGGERING
CompuScope 12100 features state-of-the-art analog triggering. An analog comparator provides triggering from either one of the input channels, or from an external signal or from software.

In addition to the trigger source, trigger level and slope are also selectable by software, making the trigger system similar to traditional oscilloscopes.

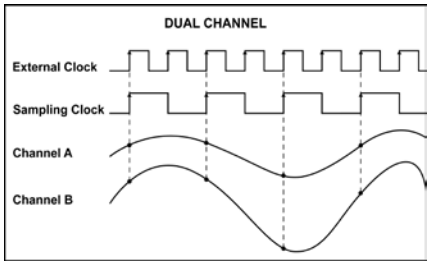
EXTERNAL CLOCK (OPTIONAL)
External clock upgrade can be ordered when a special sampling frequency is required.

In single-channel mode, the input signal is sampled at every rising edge of the External Clock.



In the dual-channel mode, sampling occurs on every other edge of the External Clock, i.e. the sample rate is half the frequency of the External Clock.

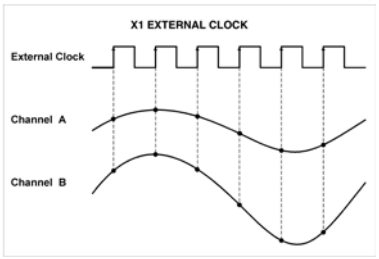
The External Clock must be a 5 Volt TTL signal with a maximum frequency of 100 MHz and minimum frequency of 10 MHz.



X1 EXTERNAL CLOCK (OPTIONAL)

A special external clock upgrade can be ordered which allows the hardware to simultaneously sample both inputs on every low-to-high transition of the External Clock, instead of every other one.

The maximum External Clock frequency for a CompuScope 12100 with this upgrade is 50 MHz, and the minimum is 5 MHz.

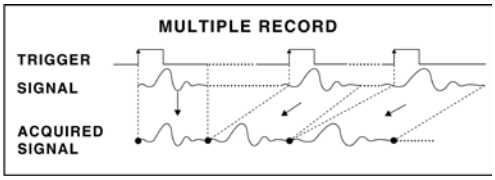


It must be noted that it is not possible to operate the card in single-channel mode once this upgrade is performed, i.e. the maximum sample rate is 50 MS/s and the maximum memory per channel is half the on-board RAM.

MULTIPLE RECORD

Even though the PCI bus allows fast data throughput to system RAM, there may still be applications in which data bursts cannot be off-loaded either due to very fast trigger repeat frequency or due to software limitations.

Multiple Recording allows CS12100 to capture data on successive triggers and stack it in on-board memory. Up to 65,536 triggers can be captured in Multiple Record mode. It should be noted that only post-trigger data can be captured in Multiple Record Mode.

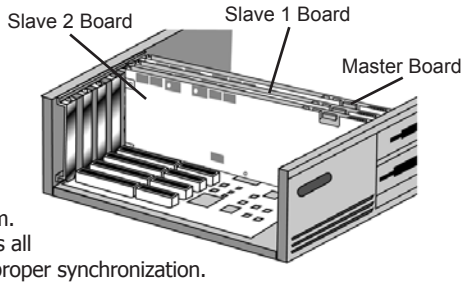


Once the CS12100 has finished capturing a Multiple Record segment, the trigger circuitry is automatically re-armed within 16 sample clock cycles to start looking for the next trigger. No software intervention is required.

MULTI-CARD SYSTEMS

One of the most unique features of the CompuScope cards is the Multi-Card system that can be configured.

A Multi-Card system, comprised of one Master and up to 7 Slave CS12100 boards, can be ordered from the factory if the user wants to capture more than two channels with a common clock and trigger. A board-to-board interconnect is supplied with the system. This interconnect carries all the signals needed for proper synchronization.



The following Master/Slave systems can be configured.

- For 1M Memory Models: 2, 4, 6 or 8 cards can be configured
- For 4M & 8M Memory Models: 2, 3 or 4 cards can be configured

GageScope can then display all channels from these boards on the same screen. Software drivers also support such Master/Slave systems.

SYSTEM REQUIREMENT

PCI-based computer with at least one free full-length PCI slot, 128 MB RAM, 50 MB hard disk and SVGA video.

SIZE

Memory Depth:	Card occupies:
1M	1 full-length slot
4M & 8M	2 full-length slots

POWER (IN WATTS)

+5 V		
Memory	Worst case	Typical
1M	12.4	11.3
4M & 8M	15.4	14.3
+12 V		
	Worst case	Typical
All Memory Models	6.6	6.0
-12 V		
	Worst case	Typical
All Memory Models	4.4	4.0

Note: Y-cable must be connected to auxiliary power connector if more than one CS12100 cards are installed

CHANNELS A & B

Inputs per card: 2

Impedance: 1 MΩ 25 pF or 50 Ω; software-selectable

Coupling: AC or DC

Resolution: 12 bits

Bandwidth:
- DC coupled: DC to 50 MHz, ±5 MHz
- AC coupled: 10 Hz to 50 MHz, ±5 MHz

Input Voltage Ranges: ±100 mV, ±200 mV, ±500 mV, 1 V, ±2 V, ±5 V

Absolute Maximum Amplitude:
- 1 MΩ Impedance: ±15 V (continuous)
- 50 Ω Impedance: ±5 V (continuous)

DC Accuracy relative to full scale input:

Input Range	Accuracy
±5 V	1%
±2 V, ±1 V	0.5%
±500 mV	0.5%
±200 mV	0.5%
±100 mV	1%

Sampling Rate
- Single-channel Mode (Channel A only): MS/s: 100, 50, 20, 10
- Dual-channel Mode (Channel A and B simultaneously): MS/s: 50, 25, 10, 5

Protection:
- 1 MΩ Impedance: Diode Clamped
- 50Ω Impedance: No Protection

Connector: BNC

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DYNAMIC PARAMETERS

Measured using 1 MHz sine wave input at 50 MS/s, dual channel mode with amplitude of 95% of full scale on the ±1V range

SNR:	60 dB
SFDR:	59 dB
SINAD:	55 dB
THD:	-57 dB
ENOB:	9.67 bits

ACQUISITION MEMORY

Data Storage:	In on-board memory
Memory Sizes:	1M, 4M, 8M
Maximum Memory Depth:	
Single-Channel Mode:	Full on-board memory
Dual-Channel Mode:	Up to half on-board memory per channel

TRIGGERING

Number of Trigger Inputs:	2 per system
Trigger Source:	CH A, CH B, Ext, Software
Input Combination:	Wired-OR
Type:	Analog triggering
Sensitivity:	±10% of full scale
Level Accuracy:	±5% of full scale
Slope:	Positive or Negative; software-selectable
Post Trigger Data:	64 *(128)* points minimum. Can be defined with a 64 *(128)* point resolution in dual *(single)* channel mode

EXTERNAL TRIGGER

Impedance:	1 MΩ, 30 pF
Amplitude:	Absolute Max ±15 V
Voltage Range:	±1 V and ±5 V
Bandwidth:	30 MHz
Coupling:	AC or DC
Connector:	BNC

INTERNAL CLOCK

Source:	100 MHz Clock Oscillator
Accuracy:	±50 ppm (0 to 70° C)

EXTERNAL CLOCK (OPTIONAL)

Maximum Frequency	100 MHz with External Clock Upgrade 50 MHz with X1 External Clock Upgrade
Minimum Frequency	10 MHz with External Clock Upgrade 5 MHz with X1 External Clock Upgrade
Signal Level:	0 to +5 Volt TTL
Termination Impedance:	50 Ω
Sampling Edge:	Rising
Coupling:	DC
Duty Cycle:	50% ±30% for External Clock Upgrade 50% ±5% for X1 External Clock Upgrade

MULTIPLE RECORD

Pre-trigger Data:	None
Record Length:	128 *(256)* points minimum. Can be defined with a 64 *(128)* point resolution in dual *(single)* channel mode
Maximum number of Triggers:	4,194,304

MULTI-CARD SYSTEMS

Operating Mode:	Master/Slave or Multiple Independent
Number of Cards in:	
Master/Slave Mode:	2, 4, 6 or 8 cards for 1M models 2, 3 or 4 cards for 4M & 8M models
Multiple Independent Mode:	Limited by backplane
Maximum Number of Channels in Master/Slave Mode:	16 at 50 MS/s (1M model) 8 at 100 MS/s (1M model)

MASTER/SLAVE SYSTEM TRIGGERING

Number of Trigger Inputs:	2 per system
Trigger Source:	CH 1, CH 2, EXT or Software (Master Card Only)
Input Combination:	Wired-OR
Sensitivity :	± 10% of full scale
Level Accuracy :	± 5% of full scale
Trigger Slope:	Positive or Negative; software-selectable

PCI BUS INTERFACE

Plug-&-Play:	Fully supported
Bus Width:	32 bits
Bus Speed:	33 MHz
Compatibility:	5 Volt PCI-compliant slot

OPERATING SYSTEMS SUPPORTED

Windows 98/ME/NT* * Version 4, SP3 or higher	CompuScope Driver version 3.60.22
Windows 2000**/XP ** SP1 or higher	CompuScope Driver version 4.xx.xx

APPLICATION SOFTWARE

GageScope: Windows-based software for programming-free operation

LITE Edition:	Included with purchase, provides basic functionality
Standard Edition:	Provides limited functionality of advanced analysis tools, except for Extended Math
Professional Edition:	Provides full functionality of all advanced analysis tools

SOFTWARE DEVELOPMENT KITS (SDK)

CompuScope SDK for C/C# for Windows*
CompuScope SDK for MATLAB for Windows
CompuScope SDK for LabVIEW for Windows

*C/C# SDK is compatible with LabWindows/CVI 7.0+ compiler.
Visual Basic.NET support available with purchase of C/C# SDK.

Contact your Gage Sales Agent for information on Linux support.

ENVIRONMENTAL

Operating Temperature:	5°C to 40°C
Relative Humidity:	Less than 80%, non-condensing
Maximum Altitude:	2,000 meters

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ELECTROMAGNETIC COMPATIBILITY

EC Council Directive 89/336/EEC
CE Compliant
EN 61326 Class A
- IEC 61000-4-2 Electrostatic Discharge (Performance Criterion B)
- IEC 61000-4-3 RF Electromagnetic Field (Performance Criterion A)
- IEC 61000-4-4 Electrical Fast Transient/Burst (Performance Criterion B)
- IEC 61000-4-5 Power Surge (Performance Criterion B)
- IEC 61000-4-6 Conducted RF (Performance Criterion A)
- IEC 61000-4-11 Voltage Dips & Interruptions (Performance Criterion B)
- EN 61000-3-2 AC Power Line Harmonics Emissions

AS/NZS 2064
- Australian emissions standard for Industrial, Scientific and Medical Equipment

Compliance demonstrated on a 3 board Master/Slave configuration

WARRANTY

One year parts and labor

Certificate of NIST Traceable Calibration is included.

All specifications subject to change without notice;
specifications are not guaranteed under all possible combinations of modes of operation.

ORDERING INFORMATION

Hardware & Upgrades	
CompuScope 12100-1M	121-001-002
CompuScope 12100-4M	121-001-003
CompuScope 12100-8M	121-001-004
CS12100 Memory Upgrades	Contact Factory
External Clock Upgrade	121-181-004
X1 External Clock Upgrade	121-181-008
Master Multi-Card Upgrade	121-181-005
Slave Multi-Card Upgrade	121-181-006
GageScope Software	
GageScope: Lite Edition	Included
GageScope: Standard Edition (with Purchase of CompuScope Hardware)	300-100-351
GageScope: Professional Edition (with Purchase of CompuScope Hardware)	300-100-354
Software Development Kits (SDKs)	
Gage SDK Pack on CD	200-113-000
CompuScope SDK for C/C#	200-200-101
CompuScope SDK for MATLAB	200-200-102
CompuScope SDK for LabVIEW	200-200-103

All Upgrades performed at the factory.

Updated February 15th, 2006

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