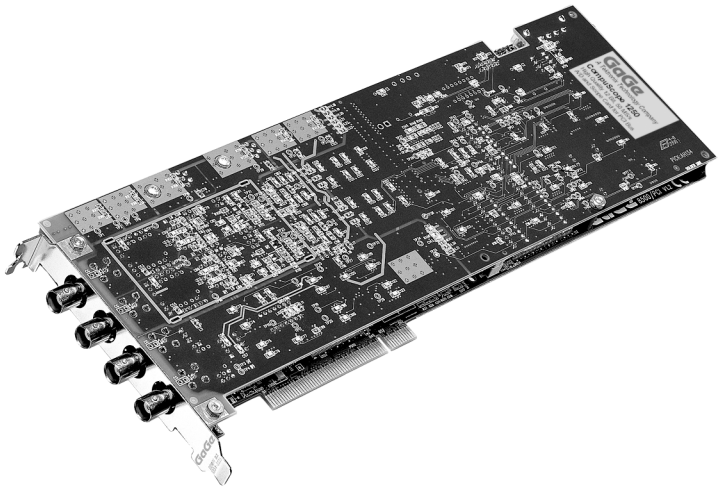
CompuScope 1250

Ultra-fast waveform digitizer card for PCI bus



Lower cost alternative for a wide range of applications requiring high accuracy.

FEATURES

- 12 bit, 50 MS/s A/D
- Up to 1 GigaSamples of on-board acquisition memory
- 60 dB signal to noise ratio
- Multi-card systems of up to 8 channels at 50 MS/s (16 channels at 25 MS/s)
- Fast data transfer rate to PC memory
- Compatible with GageScope software
- SDKs for C/C++, MATLAB, LabVIEW under Win 95/98/ME and Win NT/2000/XP

APPLICATIONS

Detection & Remote Sensing - Sonar, Lidar, Radar, Spectroscopy

Manufacturing test

Synthetic instrumentation

Wireless communications

Signal intelligence

Non-destructive testing

GaGe

www.gage-applied.com

COMPUSCOPE 1250

CompuScope 1250 samples analog signals at speeds up to 50 MS/s with 12 bit resolution and stores the data in on-board memory.

50 MS/S SAMPLING

CompuScope 1250 uses two monolithic sub-ranging A/D converters, each running at 25 MS/s, to provide a dual-channel simultaneous real-time sampling rate of 25 MS/s.

In the single-channel mode the two ADCs are clocked in a "ping-pong" mode to achieve up to 50 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 1250 is available with memory depths of 1M, 4M, 8M, 64M, 256M, 512M and 1G (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 1250 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 1250 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 1250 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 TTL signal with a maximum frequency of 50 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 1250 with this upgrade is 25 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 25 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 PC memory, 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 CS1250 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 CS1250 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

A Multi-card system, comprised of one Master and up to 7 Slave CS1250 boards, can be ordered if the user wants to capture more than two channels with a common clock and trigger. Refer to the detailed spec for available configurations for different memory models. A board-to-board interconnect is supplied with the system which carries all the signals needed for synchronization.

GageScope software can display all channels from these boards on the same screen.

ORDERING INFORMATION

Hardware & Upgrades

CompuScope 1250-1M	215-001-002
CompuScope 1250-4M	215-001-003
CompuScope 1250-8M	215-001-004
CompuScope 1250-64M	215-001-005
CompuScope 1250-256M	215-001-006
CompuScope 1250-512M	215-001-007
CompuScope 1250-1G	215-001-008
CS1250 Memory Upgrade Charge	215-181-200
External Clock Upgrade	215-181-004
X1 External Clock Upgrade	215-181-008
Master Multi-Card Upgrade	215-181-005
Slave Multi-Card Upgrade	215-181-006

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.

COMPUSCOPE 1250 SPECIFICATIONS

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:	Board Width occupies:
1M	1 full length slot
4M and 8M	2 full length slots
64M, 256M	3 full length slots
512M, 1G	3 full length slots

POWER (IN WATTS)

+5 V		
Memory	Worst	Typical
1M	12.1	11.0
4M	15.1	14.0
8M	15.1	14.0
64M	17.1	15.0
256M	19.6	17.0
512M	19.6	17.0
1G	22.1	19.0
- 5V		
	Worst	Typical
All Models	0.0	0.0
+12 V		
	Worst	Typical
All Models	6.6	6.0
-12 V		
	Worst	Typical
All Models	4.4	4.0

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) DC to 25 MHz, ±5 MHz

(AC) 10 Hz to 25 MHz, ±5 MHz

Full Scale

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

Max. Amplitude:

1 MΩ Impedance: ±15 V (continuous)

50Ω Impedance: ±5 V (continuous)

DC Accuracy relative to full scale input:

Sampling Rate

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

Single-channel: MS/s: 50, 20, 10

Dual-channel: MS/s: 25, 10, 5

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

Connector: BNC

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, 64M, 256M,512M, 1G

Maximum Memory Depth:

Single-Ch. Mode: Full on-board memory

Dual-Ch. Mode: Up to half on-board memory per channel

TRIGGERING

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

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 ±15V

Voltage Range: ±1V and ±5V

Bandwidth: 25 MHz

Coupling: AC or DC

Connector: BNC

INTERNAL CLOCK

Source: 50 MHz Clock Oscillator

Accuracy: ±50 ppm (0 to 70 deg C)

EXTERNAL CLOCK (OPTIONAL)

Max. Freq.: 50 MHz in Ext. Clock
25 MHz in X1 Ext. Clock

Min. Freq.: 10 MHz in Ext. Clock
5 MHz in X1 Ext. Clock

Signal Level: 0 to +5 Volt TTL

Impedance: 50Ω

Sampling Edge: Rising

Coupling: DC

Duty Cycle: 50% ±30% for Ext Clk
50% ±5% for X1 Ext Clk

MULTIPLE RECORD

Pre-trigger Data: None

Record Length: 128 *(256)* points min. Can be defined with a 64 *(128)* point resolution in dual *(single)* channel mode

Max # of Triggers: 65,536

MULTI-CARD SYSTEMS

Operating Mode: Master/Slave or Multiple Independent

Number of Cards in:

- Master/Slave Mode:
  - 1M models: 2, 4, 6 or 8 cards
  - 4M & 8M models: 2, 3 or 4 cards
  - 64M & higher models: 2 or 3 cards
- Multiple Ind. Mode: Limited by backplane

OPERATING SYSTEMS

Windows 95/98/ME/NT*/2000/XP

* Version 4, SP3 or higher

ELECTROMAGNETIC COMPATIBILITY

CE Compliant

EC Council Directive 89/336/EEC

EN 61326 Class A

- IEC 61000-4-2 Electrostatic Discharge (Perf.Crit.B)
- IEC 61000-4-3 RF Electromagnetic Field (Perf.Crit.A)
- IEC 61000-4-4 Electrical Fast Transient/Burst (Perf.Crit. B)
- IEC 61000-4-5 Power Surge (Perf.Crit.B)
- IEC 61000-4-6 Conducted RF (Perf.Crit.A)
- IEC 61000-4-11 Voltage Dips & Interruptions (Perf.Crit 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

All specifications subject to change without notice

Specification Last Updated: February 2003