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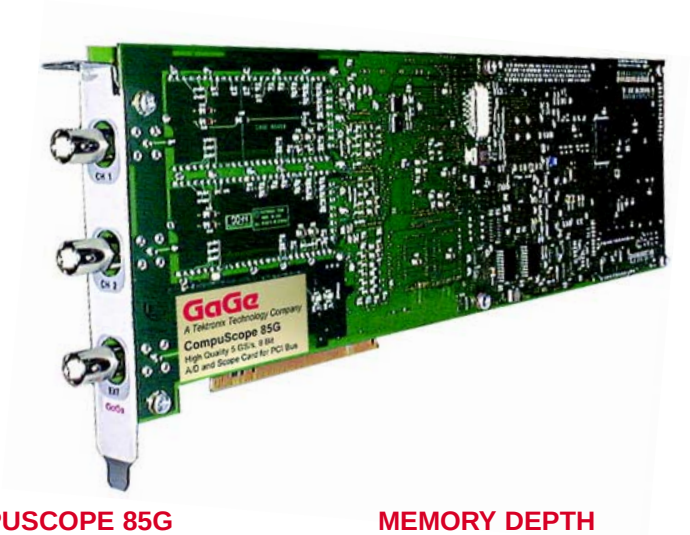
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CompuScope 85G

World's Fastest Waveform Digitizer Card for PCI Bus

CompuScope 85G is a 5 GS/s, 8 bit PCI bus based waveform digitizer card based on advanced technology from Tektronix



COMPUSCOPE 85G

CompuScope 85G is a state-of-the-art, single slot, PCI bus card capable of performing 8 bit A/D conversion at sampling rates up to 5 GS/s (Billion Samples Per Second) on two simultaneous channels with 500 MHz analog bandwidth.

Oscilloscope-like analog amplifiers provide low noise, flexible signal conditioning for a wide variety of applications.

5 GS/S SAMPLING - *BLAZING!*

The CompuScope 85G uses advanced FISO (Fast In Slow Out) technology from Tektronix to provide two simultaneous, high-quality input channels with wide analog bandwidth and blazing sample rate, all at a very reasonable price.

An on-chip clocking circuit combined with a robust calibration method ensures timebase accuracy and long-term thermal stability of sampling rates.

PROVEN FISO TECHNOLOGY

FISO technology uses a patented technique of performing analog sampling using standard semiconductor technology.

Samples are stored as electric charge in each of the 10,000 on-chip cells. The number of cells in the sampling chip determines the maximum record length a FISO based sampling system can support.

Once the analog sampling has finished, a slow speed, very accurate 9-bit A/D converter is used to convert the stored analog values into digital code.

A dedicated signal processor chip is then used to perform error correction on the digitized data before making the corrected, 8-bit data available to the user.

Hence the name: Fast In, Slow Out.

MEMORY DEPTH

Due to the FISO based nature of the CompuScope 85G, the acquisition memory is limited to 10,000 points. This memory can be used as a circular buffer for storage of pre- and post-trigger data.

It is also possible for users to select fewer than 10,000 points of acquisition for shorter records.

The data stored in the CompuScope 85G memory can be transferred to the PC memory for post-processing, display or storage to hard disk without any interface bus (no GPIB or IEEE 488 bus required).

PROGRAMMABLE, LOW NOISE INPUT AMPLIFIERS

CompuScope 85G offers completely programmable input amplifiers, including coupling, impedance, gain and offset.

Each channel is independently programmable, allowing different settings on different channels.

Use of proprietary amplifier circuitry from Tektronix has allowed Gage to provide such optimal noise performance combined with flexibility, all programmable using high level commands.

FLEXIBLE TRIGGERING

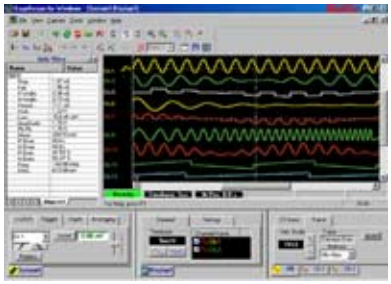
CompuScope 85G features state-of-the-art analog triggering.

Analog comparator circuitry provides triggering from the input channel, 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 very similar to traditional oscilloscopes.

GAGESCOPE SOFTWARE

CompuScope 85G is compatible with the powerful and easy-to-use GageScope Software which has become an industry standard for high speed data capture from A/D cards.



GageScope Software, which sells separately, allows the user to capture data in a Windows environment without having to write a single line of programming code.

Not only can data be captured, manipulated and shared, GageScope also allows you to e-mail signal files to your colleagues and share the data.

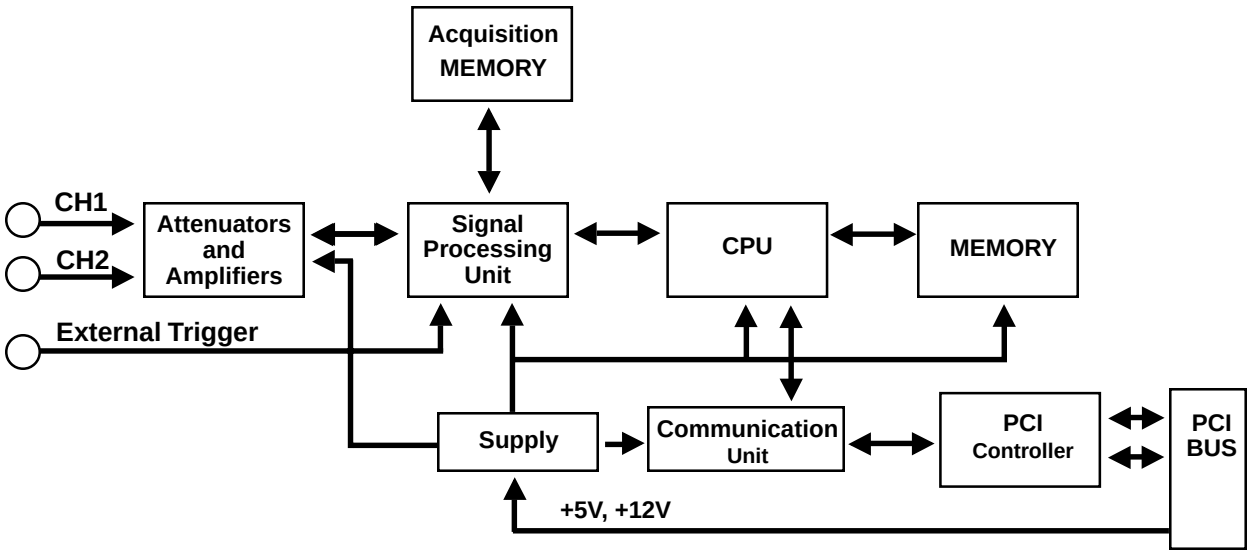
Some of the powerful features of GageScope include FFT, Averaging, Waveform Parameters, unattended transient capture, remote operation etc.

COMPUSCOPE 85G FEATURES

- 5 GS/s A/D Sampling on Two Simultaneous Channels
- 500 MHz Bandwidth
- 8 Bit Resolution
- PCI Bus Form Factor
- Based on Advanced Tektronix Technology
- Compatible with GageScope Software
- SDKs for C/C++, MATLAB, LabVIEW under Win 95/98, Win NT and Win 2000

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BLOCK DIAGRAM FOR COMPUSCOPE 85G



ADVANCED WINDOWS DRIVERS

CompuScope 85G is supported by Gage's advanced, 32 bit Windows drivers which are fully compatible with Windows NT, Windows 98, Windows 95 and Windows 2000.

With over 30 man-years of register-level programming as well as operating system related coding, these drivers are the most advanced in the industry.

Drivers are designed to operate in the kernel of the operating system, thereby providing near real-time operation even when running in non-real time operating systems such as Windows or Linux.

GageScope Software and Gage's SDKs both use these drivers to provide optimal performance.

HIGH IMMUNITY TO DIGITAL NOISE

In order to isolate the high-frequency analog circuitry from PCI bus-related digital electronics, a two-board piggyback configuration is used.

All PCI related circuitry is on the base board that plugs into the PCI slot, whereas all analog circuitry is on the piggyback.

This scheme allows maximum separation of analog and digital grounds, thereby providing high immunity to digital noise.

Both boards are multi-layer printed circuit boards. This was done to ensure proper impedance for critical signals both in the analog section as well as PCI bus section.

IDEAL FOR EMBEDDED APPLICATIONS

CompuScope 85G is an ideal solution for OEMs and other system integrators who need ultra-fast waveform digitizing with high signal integrity, all at a very reasonable price.

Integration into the user's system is eased by the high quality, robust software development kits (SDKs) offered by Gage.

Applications for such embedded use includes telecom testing, general ATE, disk drive testing, high energy physics, wireless, radar etc.

MULTI-CARD SYSTEMS

More than one CompuScope 85G cards can be housed in the same PCI chassis to yield a multi-channel sampling system.

Unlike other CompuScope models, the CompuScope 85G does not use the same physical clock signal to synchronize sampling across multiple boards.

Users can synchronize sampling across multiple cards by providing a common trigger signal to all cards.

EXTERNAL CLOCKING - NOT REQUIRED

Waveform digitizers sometimes need an external clock signal to synchronize to an external system. Such sampling is also referred to as "coherent" sampling.

CompuScope 85G does not need such an external clocking option, since it can synchronize to the external system using the external trigger signal only.

COMBINED TECHNOLOGY FROM GAGE & TEKTRONIX

CompuScope 85G A/D system is based on data conversion circuitry developed by Tektronix for their line of stand-alone digital oscilloscopes.

Decades of design experience at Tektronix and Gage have resulted in a product that makes measurements just as cleanly as an oscilloscope, but is available on the popular PCI bus.

ON-BOARD SIGNAL PROCESSING

A dedicated, DSP based signal processing ASIC is used on the CompuScope 85G to perform error correction functions on the data captured by FISO digitizers.

This error correction is necessary for maintaining signal fidelity even at the very highest bandwidths.

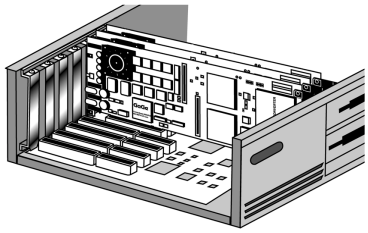
Error correction is based on the data collected during calibration. This data is stored in non-volatile memory on-board the CompuScope 85G.

NIST TRACEABLE CALIBRATION

Calibration of CompuScope 85G has been designed to be traceable to NIST standards.

This traceability provides the user with the ability to make accurate and repeatable measurements.

MULTI-CARD SYSTEMS



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

A Multiple/Independent Multi-Card system, comprising up to 8 CompuScope 85G boards, can be configured easily within one chassis.

This produces a system with as many as 16 channels in the same chassis.

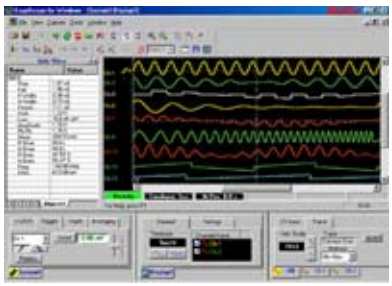
Due to its unique architecture, CompuScope 85G cannot be configured as a Master/Slave system, i.e. a system in which all CompuScope cards share the same sampling clock.

Current versions of GageScope Software can display channels from only one of these boards on the same screen.

All software development kits fully support such Multiple/Independent Multi-card systems.

GageScope Software

WORLD'S MOST POWERFUL OSCILLOSCOPE SOFTWARE



GageScope is a solutions-oriented software package allowing you to control all parameters of CompuScope cards with the click of a mouse – plus view and analyze the captured signals using the power of a Pentium processor and Microsoft Windows.

GageScope not only captures data using CompuScopes, it can also analyze the data and automatically calculate the result, which is displayed in InfoView.

An infinite number of signals and setups can be saved using GageScope. Saving signal files allows you to post-process the data from within your own software. Signal files can also be read by analysis packages such as MATLAB.

The SuperRes Mode in GageScope allows you to enhance the effective resolution well beyond 24 bits using proprietary oversampling techniques and built-in signal processing.

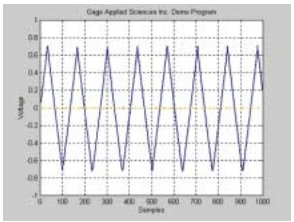
Professional Edition of GageScope includes powerful features such as:

- FFT for spectral analysis – with up to 4 Million Point FFTs possible
- Waveform Parameters – automatically measure and display Rise Time, Fall Time, Pulse Width, Frequency, Amplitude and many other parameters
- AutoSave – save transient signals to disk with time and date stamp. Save both pre- and post-trigger data. Completely unattended operation.
- Averaging – average virtually unlimited acquisitions to cancel random noise. Up to 32 bit co-adding is also available.
- Extended Math – allows auto- and cross-correlation, differentiation and integration

GageScope Software can be ordered from the factory. Please see the specification sheet on GageScope Software for more detailed information.

SOFTWARE SUPPORT

For customers who need more flexibility, Gage has Software Development Kits (SDKs) available for C/C++, MATLAB and LabVIEW under Windows 95, Windows 98, Windows NT and Windows 2000.



Each SDK includes a manual and several sample programs demonstrating the operation of CompuScope cards in various modes. The sample programs are well documented to facilitate their integration into the user application.

- SDK for C/C++ for Windows
- SDK for MATLAB for Windows
- SDK for LabVIEW for Windows

APPLICATIONS

Automated Test Equipment (ATE)

Disk Drive Testing

Non Destructive Testing

Military & Aerospace

Communications & Wireless

Electro-Optic

RADAR

Laser

High Energy Physics

Embedded Digitizer

For More Applications visit:

www.gage-applied.com/resource/appsweek.htm

ORDERING INFORMATION

Hardware

CompuScope 85G	858-101-001

GageScope Software

GageScope: Standard Edition	300-100-001
GageScope: Professional Edition	300-100-011

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.

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COMPUSCOPE 85G SPECIFICATIONS

SYSTEM REQUIREMENTS

PCI-based computer with at least one free full-length PCI slot, 64 MB RAM, 10 MB hard disk and SVGA video.

SIZE

Single-slot full-length card 13” x 3.9” x 0.8”

POWER

	Worst	Typical
5 V	25.0 Watts	22.0 Watts
12 V	12.0 Watts	10.0 Watts

A/D SAMPLING

No. of Inputs: 2

Connector: BNC

Impedance: 1 MΩ / 15 pF or 50Ω, software selectable

Coupling: AC or DC, software selectable

DC Coupled Bandwidth:

All ranges except ±20mV	DC to 500 MHz
±20mV	DC to 300 MHz

AC Coupled Bandwidth:
10 Hz when AC - 1MΩ coupled
140 KHz when AC - 50Ω coupled

Full Scale Input Voltage Ranges:

1 MΩ Input: ±20mV, ±50mV, ±100mV, ±200mV, ±500mV, ±1V, ±2V, ±5V, ±10V, ±20V

50Ω Input: ±20mV, ±50mV, ±100mV, ±200mV, ±500mV, ±1V, ±2V, ±5V

Input Protection: Diode Clamped

Resolution: 8 bits

Dual Channel Sampling Rate:
5 GS/s, 2.5 GS/s, 1GS/s, 500 MS/s, 250 MS/s, 100 MS/s, 50 MS/s, 25 MS/s, 10 MS/s, 5 MS/s, 2.5 MS/s, 1MS/s, 500 KS/s, 100 KS/s, 50 KS/s, 10 KS/s, 5 KS/s, 1 KS/s

Internal Sampling Clock Source: Crystal oscillator

Internal Sampling Clock Accuracy: ±200 ppm

Absolute Max Input: ± 30 Volts continuous, for 1 MΩ Input

± 5 Volts continuous, for 50Ω Input

DC Accuracy: ± 2 % of full scale input, derated at 0.025%/°C above 30°C

SNR: 38 dB

ACQUISITION MEMORY

Data Storage: In on-chip analog memory

Max. On-board Memory Size: 10,000 samples on each of the two channels

TRIGGERING

Source: CH A, CH B, EXT or Software

Type: Slope-and-level and Software

Trigger Level: Controlled by on-board DAC

Sensitivity: ±10 % of full scale

This implies that signal amplitude must be at least 10% of full scale to cause a trigger to occur. Smaller signals are rejected as noise.

Level Accuracy: ±5 % of full scale

Slope: Positive or Negative

Pre-Trigger: From 0 to almost 100% of record length. All captured data that is not part of post-trigger depth, is pre-trigger data

Post-Trigger Depth:
Dual Channel: 500 points minimum. Can be defined with a 100 point resolution

EXTERNAL TRIGGER

Impedance: 1 MΩ, in parallel with 20 pF

Amplitude: Absolute Max ±15 Volts

Voltage Range: ±1 V and ±5 V

Coupling: AC or DC

Bandwidth: 300 MHz

Connector: BNC

MULTI-CARD SYSTEMS

Operating Mode: Multiple/Independent

Max Cards:
Multiple/Ind: 8

OPERATING SYSTEMS

Windows 2000 : All Versions

Windows NT: Version 4, SP3 or higher

Windows 98 : All Versions

Windows 95 : All Versions

PCI BUS INTERFACE

Plug-&-Play: Fully supported

Bus Width: 32 bit

Compatibility: All PCI v2.1 compliant computers

ENVIRONMENTAL

Temperature: +5 to 50 deg Celcius (Operating)
-20 to +60 deg Celcius (non-operating)

Humidity: 20% to 80% RH (below 32 deg Celcius)

Altitude: 3,000 m (operating)
15,000 m (non-operating)

ELECTROMAGNETIC COMPATIBILITY

Meets or exceeds EN61326 Class A; FCC 47 CFR, Part 15, Subpart B, Class A.

APPLICATION SOFTWARE

Windows Based Software:

GageScope Standard Edition

GageScope Professional Edition

SOFTWARE SUPPORT

Software Development Kit for C/C++
For Windows 95/98/NT/2000
Includes Sample Programs in Visual C

Software Development Kit for MATLAB
For Windows 95/98/NT/2000

Software Development Kit for LabVIEW
For Windows 95/98/NT/2000

MATERIALS SUPPLIED

One CompuScope 85G card
One Gage Driver Disk on CD
Contains drivers for Windows 95/98/NT/2000
One Driver Installation Guide
One CompuScope 85G Hardware Manual

WARRANTY

One year parts and labor

All specifications subject to change without notice

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