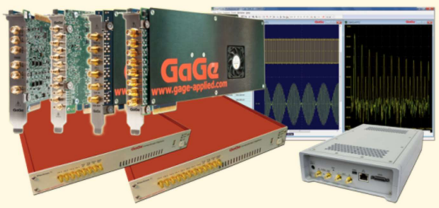
GaGe is a worldwide industry leader in high speed data acquisition solutions featuring a portfolio of the highest performance digitizers, PC oscilloscope software, powerful SDKs for custom application development, and turnkey integrated PC-based measurement systems.



CobraMax Express CompuScope
1-2 CH, 4 GS/s, 8-Bit, PCIe Gen2 Digitizer

APPLICATIONS

RADAR Design and Test

Signals Intelligence (SIGINT)

Ultrasonic Non-Destructive Testing

LIDAR Systems

Communications

Spectroscopy

High-Performance Imaging

Time of Flight

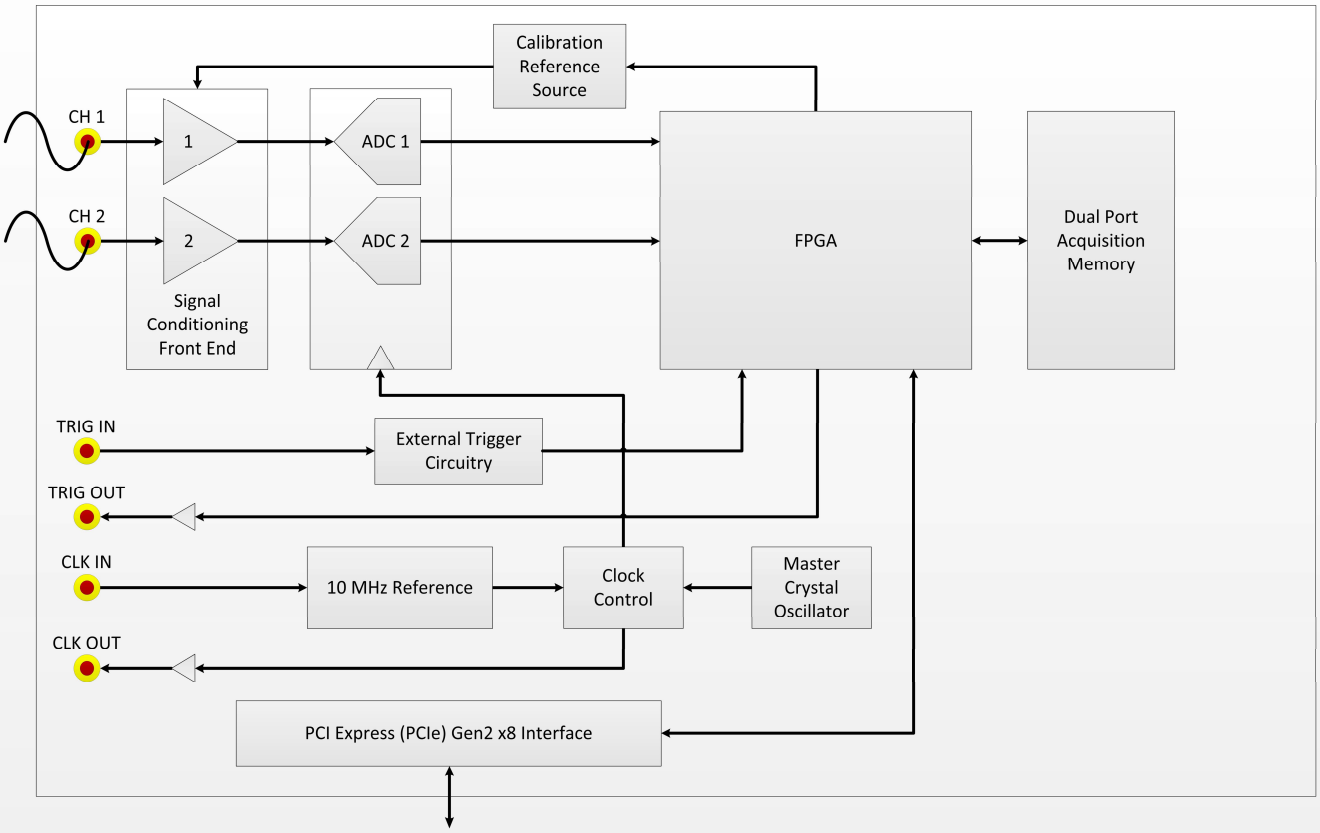
Life Sciences

Particle Physics

FEATURES

- 2 or 1 Digitizing Input Channels with 8-Bit Vertical A/D Resolution
- 4 GS/s or 2 GS/s Maximum Sampling Rates
- 19 Software Selectable A/D Sampling Rates from 5 kS/s to 4 GS/s
- 1.5 GHz Analog Input Bandwidth
- 2 GS (2 GB) Onboard Memory Standard, Expandable up to 16 GS (16 GB)
- Dual Port Memory with Sustained PCIe Data Streaming at 2 GB/s
- Full-Featured Front-End with AC/DC Coupling and 50 Ω Inputs
- Software Control of Input Voltage Ranges and Coupling
- Ease of Integration with Reference Clock In & Reference Clock Out
- External Trigger In & Trigger Out with Advanced Triggering Operations
- Synchronized Multi-Card Systems up to 8 Cards for 16 Channels
- Full-Height Full-Length PCI Express (PCIe) Generation 2.0 x8 Card
- Programming-Free Operation with GaGeScope PC Oscilloscope Software
- Software Development Kits Available for C/C#, LabVIEW and MATLAB
- Windows 10/8/7 and Linux Operating Systems Supported

CobraMax Express CompuScope Simplified Block Diagram



MAIN SPECIFICATIONS

Model #	:	CSE14G8	CSE24G8
# of Input Channels	:	1	2
Vertical A/D Resolution	:	8-bit	8-bit
Max. Rate per Channel	:	4 GS/s	1-CH @ 4 GS/s 2-CH @ 2 GS/s

DYNAMIC PARAMETER PERFORMANCE

ENOB	:	7.6 Bits
SNR	:	47.2 dB
THD	:	-59.3 dB
SINAD	:	47.0 dB
SFDR	:	56.5 dB

Dynamic parameter measurements are done by acquiring a high purity 10 MHz sine wave with amplitude of 95% of the input range sampling at 2 GS/s. These measurements were taken on the ±500 mV input range using 50 Ω termination and DC coupling and with applied anti-aliasing filter. Dynamic parameter calculations are done from a 16 kiloSample Fourier Spectrum after applying a 7-term Blackman Harris Windowing Function to the time-domain waveform.

A/D SAMPLING

Rates per Channel, Model dependent (software selectable)	:	4 GS/s, 2 GS/s, 1 GS/s, 500 MS/s, 250 MS/s, 125 MS/s, 50 MS/s, 25 MS/s, 10 MS/s, 5 MS/s, 2.5 MS/s, 1 MS/s, 500 kS/s, 250 kS/s, 100 kS/s, 50 kS/s, 25 kS/s, 10 kS/s, 5 kS/s
Rate Accuracy	:	±1 part-per-million (0° to 50° C ambient)

ACQUISITION MEMORY

Acquisition memory size is shared and equally divided among all active input channels (1 or 2).

Standard Size	:	2 GS (2 GB)
Optional Sizes	:	16 GS (16 GB)
Architecture	:	Dual Port
Data Streaming	:	Yes

ANALOG INPUT CHANNELS

Connectors	:	SMA
Impedance	:	50 Ω
Coupling	:	DC or AC (software selectable)
Analog Bandwidth	:	DC (50 Ω) = DC to 1.5 GHz AC (50 Ω) = 20 kHz to 1.5 GHz
Voltage Ranges	:	±50 mV, ±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V (software selectable)
Flatness	:	Within ±0.5 dB of ideal response to 800 MHz.
DC Accuracy	:	±1% on all input ranges
DC User Offset	:	±100 % on all input ranges, except ±5V that is ±20 %
Absolute Max. Input	:	6 V RMS on all input ranges, except ±5V that is 8.5V RMS

LOW-PASS FILTER

Type	:	3-pole, 1 per Channel
Cut-Off Frequency	:	200 MHz
Operation	:	Individually Software Selectable

TRIGGERING

Engines	:	2 per Channel, 1 for External Trigger
Source	:	Any Input Channel, External Trigger or Software
Input Combination	:	All Combinations of Sources Logically OR'ed
Slope	:	Positive or Negative (software selectable)
Sensitivity	:	±5% of Full Scale Input Range of Trigger Source. This implies that signal amplitude must be at least 5% of full scale to cause a trigger to occur. Smaller signals are rejected as noise.
Accuracy	:	Internal: ±2% of Full Scale External: ±10% of Full Scale
Post-Trigger Data	:	64 points minimum. Can be defined with 64 point resolution.

EXTERNAL TRIGGER

Connector	:	SMA
Impedance	:	2k Ω or 50 Ω
Coupling	:	AC or DC
Bandwidth	:	>300 MHz
Voltage Range	:	±1 V, ±5 V (software selectable)
Amplitude	:	Absolute Maximum 6 V RMS

TRIGGER OUT

Connector	:	SMA
Impedance	:	50 Ω
Amplitude	:	0 – 1.5 V

EXTERNAL REFERENCE CLOCK IN

Connector	:	SMA
Signal Level	:	Minimum 200 mV RMS, Maximum 500 mV RMS
Impedance	:	50 Ω
External Reference Clock Mode Rate	:	10 MHz ±50 ppm; the external reference time base is used to synchronize the internal sampling clock.

EXTERNAL REFERENCE CLOCK OUT

Connector	:	SMA
Signal Level	:	±300 mV
Impedance	:	50 Ω
Output Modes	:	10 MHz Reference Clock
Frequency	:	10 MHz

MULTIPLE RECORD

Pre-Trigger Data	:	Up to almost full on-board memory
Record Length	:	64 points minimum. Can be defined with 64 point resolution.

TIME-STAMPING

Timing Resolution	:	One Sample Clock Cycle
Counter Turnover	:	>24 Hours Continuous

MULTI-CARD SYSTEMS

Master/Slave Mode	:	Provides synchronized triggering and sampling on all channels for all cards to create larger multi-channel systems.
Independent Mode	:	Each card operates independently within the system.
Number of Cards	:	2 to 8 Cards for up to 16 Channels Total

DIMENSIONS

Size	:	Single Slot, Full Height, Full Length

POWER CONSUMPTION

Power	:	34.8 Watts (typical)

PC SYSTEM REQUIREMENTS

PCI Express (PCIe) Slot	:	1 Free Full-Height Full-Length PCIe Gen1, Gen2 or Gen3, x8 or x16 Slot
Operating System	:	Windows 10/8/7 (32-bit/64-bit), Linux – Requires SDK for C/C#

ORDERING INFORMATION

Hardware

Model Number	A/D Resolution	# of Channels	Max. Sampling Rate per Channel	Memory Size	Order Part Number
CSE14G8	8-bit	1	4 GS/s	2 GS (2 GB)	CXE-014-000
CSE24G8	8-bit	2	1-CH: 4 GS/s 2-CH: 2 GS/s	2 GS (2 GB)	CXE-024-000

Memory Upgrades

Memory Upgrade: 2 GS (2 GB) to 4 GS (4 GB)	MEM-181-101
Memory Upgrade: 2 GS (2 GB) to 8 GS (8 GB)	MEM-181-103
Memory Upgrade: 2 GS (2 GB) to 16 GS (16 GB)	MEM-181-105

Cable Accessories

Set 1 Cable SMA to BNC	ACC-001-031
Set 4 Cable SMA to BNC	ACC-001-033

Master/Slave Upgrades

Master Multi-Card Upgrade	CXE-181-012
Slave Multi-Card Upgrade	CXE-181-013

eXpert FPGA Firmware Options

eXpert PCIe Data Streaming	STR-181-000
eXpert Signal Averaging	250-181-001

GaGeScope Software

GaGeScope: Lite Edition	Included
GaGeScope: Standard Edition	300-100-351
GaGeScope: Professional Edition	300-100-354

Software Development Kits (SDKs)

GaGe SDK Pack (includes C/C#, MATLAB, LabVIEW SDKs)	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

WARRANTY

Standard two years parts and labor.

Unless otherwise specified, all dynamic performance specs have been qualified on engineering boards. All specifications subject to change without notice.

Data Sheet Revision 0 – 09/27/2017
GaGe is a product brand of DynamicSignals LLC, an ISO 9001:2008 Certified Company

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