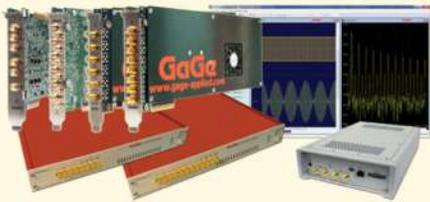


GaGe is a worldwide industry leader in high speed data acquisition solutions featuring a portfolio of the highest performance digitizers, PC oscilloscope software, powerful SDKs for custom application development, and turnkey integrated PC-based measurement systems.



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

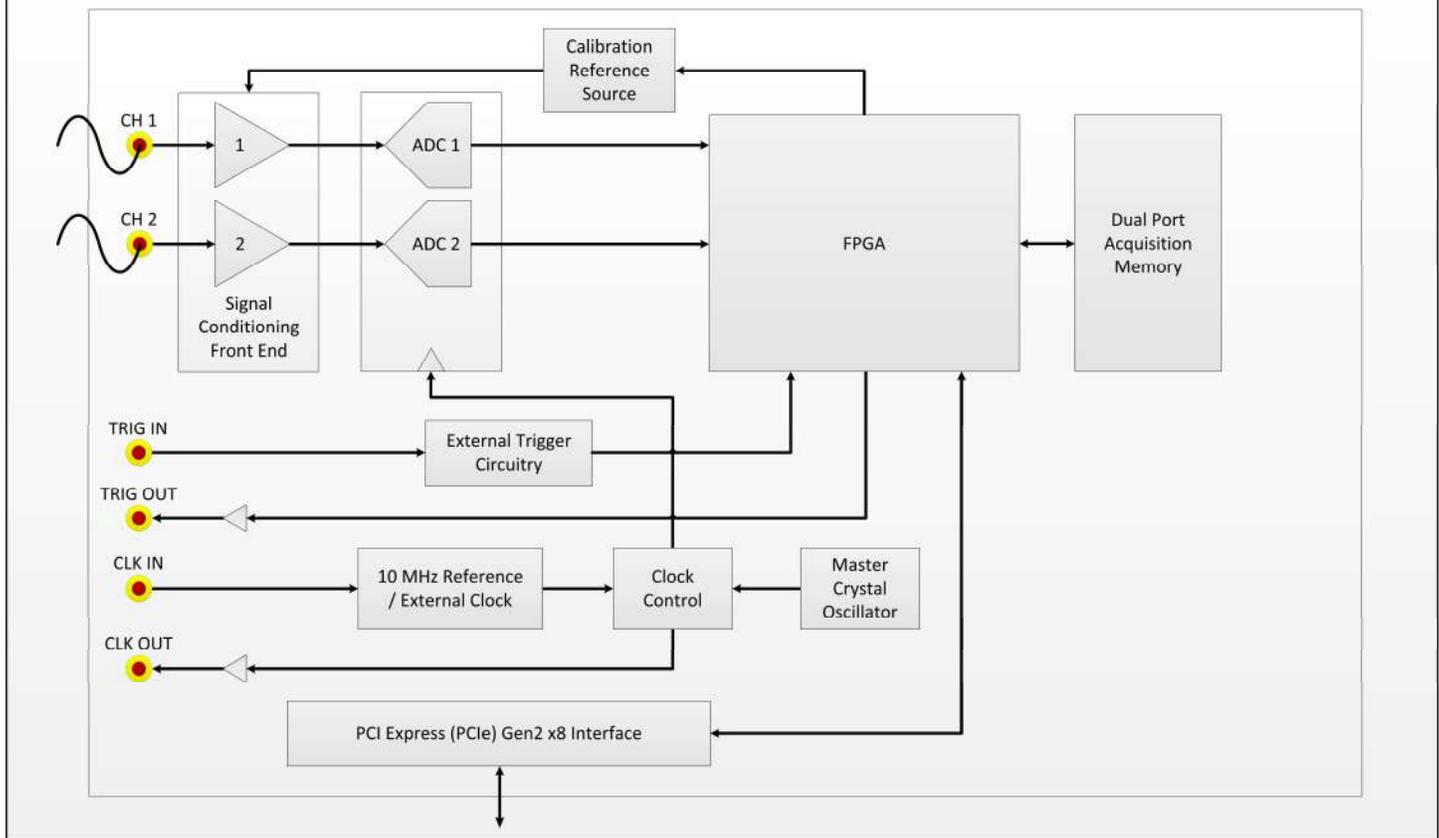
Cobra Express CompuScope 1-2 CH, 2 GS/s, 8-Bit, PCIe Gen2 Digitizer



FEATURES

- 2 or 1 Digitizing Input Channels with 8-Bit Vertical A/D Resolution
- 2 GS/s, 1 GS/s, or 500 MS/s Maximum Sampling Rates
- 20 Software Selectable A/D Sampling Rates from 2 kS/s to 2 GS/s
- 500 MHz 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 External or Reference Clock In & 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

Cobra Express CompuScope Simplified Block Diagram



MAIN SPECIFICATIONS

Model #	: <u>CSE21G8</u>	<u>CSE22G8</u>
# of Input Channels	: 2	2
Vertical A/D Resolution	: 8-bit	8-bit
Max. Rate per Channel	: 1-CH @ 1 GS/s 2-CH @ 500 MS/s	1-CH @ 2 GS/s 2-CH @ 1 GS/s

DYNAMIC PARAMETER PERFORMANCE

ENOB	: 7.4 Bits	Dynamic parameter measurements are done by acquiring a high purity 10 MHz sine wave with amplitude of 95% of the input range sampling at 1 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.
SNR	: 46 dB	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.
THD	: -60 dB	
SINAD	: 46 dB	
SFDR	: 60 dB	

A/D SAMPLING

Rates per Channel, Model dependent (software selectable)	: 2 GS/s, 1 GS/s, 500 MS/s, 250 MS/s, 125 MS/s, 100 MS/s, 50 MS/s, 25 MS/s, 10 MS/s, 5 MS/s, 2 MS/s, 1 MS/s, 500 kS/s, 200 kS/s, 100 kS/s, 50 kS/s, 20 kS/s, 10 kS/s, 5 kS/s, 2 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 500 MHz AC (50 Ω) = 20 kHz to 500 MHz
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 100 MHz.
DC Accuracy	: $\pm 1\%$ on all input ranges
DC User Offset	: $\pm 100\%$ on all input ranges, except ± 5 V that is $\pm 20\%$
Absolute Max. Input	: 6 V RMS on all input ranges, except ± 5 V 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	: $\pm 5\%$ 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: $\pm 2\%$ of Full Scale External: $\pm 10\%$ 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

CLOCK IN

Connector	: SMA
Signal Level	: Minimum 200 mV RMS, Maximum 500 mV RMS
Impedance	: 50 Ω
Coupling	: AC
Duty Cycle	: 50% $\pm 5\%$
Input Modes	: External Clock or 10 MHz Reference Clock
External Clock Mode Rates	: Minimum 200 MHz to Maximum 1 GHz
External Reference Clock Mode Rate	: 10 MHz ± 50 ppm; the external reference time base is used to synchronize the internal sampling clock.

CLOCK OUT

Connector	: SMA
Signal Level	: ± 300 mV
Impedance	: 50 Ω
Output Modes	: Maximum Sampling Clock Frequency or 10 MHz Reference Clock
Max. Frequency	: 1 GHz
Min. Frequency	: 10 MHz from External Clock, 200 MHz from Internal Clock

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	: 33.8 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
CSE21G8	8-bit	2	1-CH: 1 GS/s 2-CH: 500 MS/s	2 GS (2 GB)	CBE-021-000
CSE22G8	8-bit	2	1-CH: 2 GS/s 2-CH: 1 GS/s	2 GS (2 GB)	CBE-022-000

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	CBE-181-012
Slave Multi-Card Upgrade	CBE-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

Copyright © 2017 DynamicSignals LLC. All rights reserved.

900 N. State St.
Lockport, IL 60441-2200

Toll-Free (USA and Canada):

Phone: 1-800-567-4243

Fax: 1-800-780-8411

Direct:

Phone: 1-514-633-7447

Fax: 1-514-633-0770

Email:

prodinfo@gage-applied.com

To find your local sales representative or distributor or to learn more about GaGe products visit:

www.gage-applied.com