

The GaGe Oscar™ family of multi-channel digitizers features up to 4 channels in a single-slot PCI Express card with up to 100 MS/s sampling per channel, and up to 32 GB of on-board acquisition memory.

Combine several Oscar cards for up to 32 channels in a single system.

APPLICATIONS

Radar Design and Test
Disk Drive Testing
Manufacturing Test
Signal Intelligence
Lidar Systems
Communications
Non-Destructive Testing
Spectroscopy
High-Performance Imaging
Ultrasound Test

Oscar CompuScope Family

Family of Multi-channel Digitizers for the
PCI Express and PCI Bus

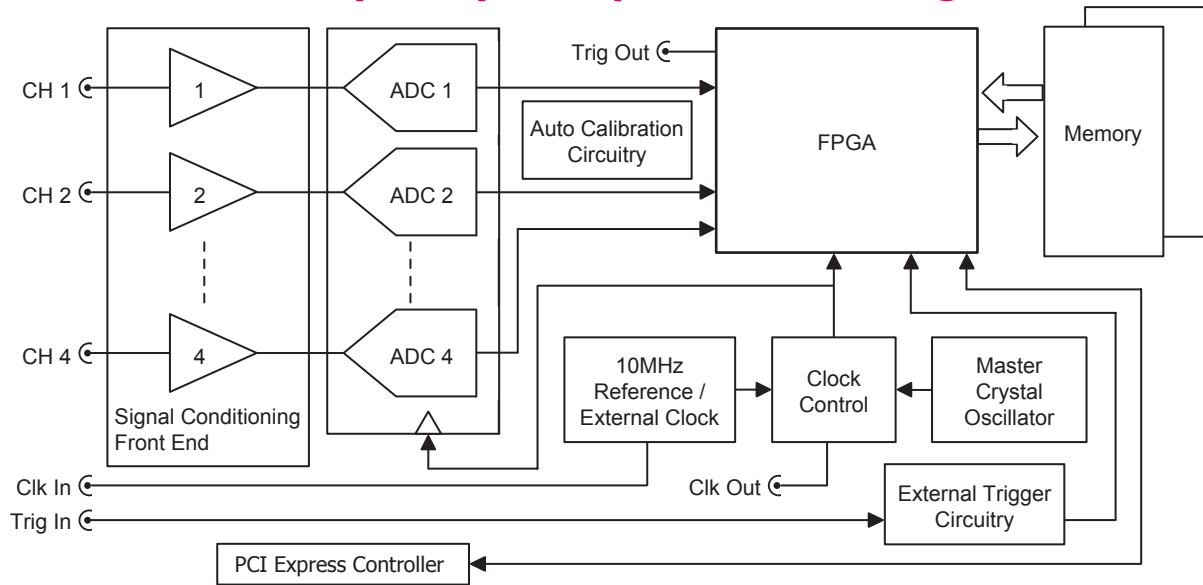


The Oscar family of digitizers provides high resolution on a PCI Express card. Oscar digitizers offer many powerful advanced features including:

FEATURES

- 2 or 4 digitizing channels
- 100 MS/s maximum sampling per channel
- 12, 14 or 16 bits vertical resolution
- 1 GS to 32 GS on-board acquisition memory
- 65 MHz bandwidth
- Full-size, single-slot PCI Express card
- Full-featured front-end, with software control over input ranges, coupling and impedances
- 8-Lane PCI Express
- Ease of integration with External or Reference Clock In and Clock Out, External Trigger In and Trigger Out
- Programming-free operation with GageScope® oscilloscope software
- Software Development Kits available for LabVIEW, MATLAB, C/C#
- Custom FPGA firmware available

Oscar CompuScope Simplified Block Diagram



A/D SAMPLING

Number of Inputs: 2 or 4
Resolution: 12, 14 or 16 bits

Absolute Max Input: $\pm 2.5\text{ V}$
 $\pm 15\text{ V}$ (50 Ω), $\pm 75\text{ V}$ (1 M Ω on all but two lowest Input Ranges, where Max is +/- 25V)

Dynamic Parameters (see Note 1):

	16-bit	14-bit	12-bit
SNR	75.7 dB	68.3 dB	60.7 dB
THD	-84.7 dB	-77.2 dB	-66.3 dB
SINAD	75.2 dB	67.8 dB	59.7 dB
ENOB (SINAD)	12.2	11.0	9.6
SFDR	86.6 dB	83.2 dB	71.0 dB

Maximum Sampling Rate Per Channel: 100, 50, 25, 10 MS/s (model dependent)

Sampling Rates: 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, 1 kS/s

Connector: SMA
Impedance: 1 M Ω or 50 Ω ; (software-selectable)
Coupling: AC or DC; (software-selectable)

AC Coupled Bandwidth(1M Ω): 10 Hz to 65 MHz

DC Coupled Bandwidth(50 Ω): DC to 65 MHz

Flatness (see Note 2): Within $\pm 0.5\text{ dB}$ of ideal response to 50 MHz

DC Accuracy (see Note 3): $\pm 0.5\%$

Input Voltage Ranges: $\pm 100\text{ mV}$, $\pm 200\text{ mV}$, $\pm 500\text{ mV}$, $\pm 1\text{ V}$, $\pm 2\text{ V}$, $\pm 5\text{ V}$, $\pm 10\text{ V}$, $\pm 20\text{ V}$, $\pm 50\text{ V}$ (3 highest ranges only available on 1 M Ω)

DC User Offset: $\pm 1 \times$ Full Range (above $\pm 5\text{ V}$ is limited to

LOW-PASS FILTER

Type: 3-pole, 1 per channel
Cut-off Frequency: 25 MHz
Operation: Individually software-selectable

ACQUISITION MEMORY

Available acquisition memory: 1 GS, 2 GS, 4 GS, 8 GS, 16 GS
Note: Memory may be shared among 1, 2 or 4 channels
Memory Architecture: Dual port
Data Streaming: Yes

ACQUISITION MEMORY

Available acquisition memory: 1 GS, 2 GS, 4 GS, 8 GS, 16 GS

TRIGGERING

Trigger Engines: 2 per channel, 1 for external trigger
Source: CH 1 to 4, EXT or Software
Input Combination: All combinations of sources logically OR'ed
Trigger Level Accuracy: Less than $\pm 2\%$ of Full Scale for channel triggering
Slope: Positive or Negative; software-selectable
Sensitivity: $\pm 2\%$ of Full Scale
This implies that signal amplitude must be at least 4% of full scale to cause a trigger to occur. Smaller signals are rejected as noise.
Post-Trigger Data: 32 points minimum. Can be defined with a 32 point resolution.

EXTERNAL TRIGGER

Impedance: 2 k Ω

Amplitude:	Absolute maximum ± 15 V
Voltage Range:	± 1 V, ± 5 V (software-selectable)
Bandwidth:	>100 MHz
Coupling:	AC or DC
Connector:	SMA

TRIGGER OUT

Impedance:	50 Ω compatible
Amplitude:	0-1.8 V
Connector:	SMA

INTERNAL CLOCK

Accuracy:	± 1 ppm (0 to 50°C ambient)
-----------	---------------------------------

EXTERNAL CLOCK

Maximum Frequency:	Maximum Oscar sample rate
Minimum Frequency:	10 MHz
Signal Level:	Minimum 1 V RMS Maximum 2 V RMS
Termination Impedance:	50 Ω
Duty Cycle:	50% $\pm 5\%$
Connector:	SMA
Coupling:	AC

EXTERNAL REFERENCE

The External Reference timebase is used to synchronize the Internal Sampling Clock

Frequency:	10 MHz ± 1000 ppm; (software-selectable)
Signal Level:	Minimum 1 V RMS Maximum 2 V RMS
Impedance:	50 Ω
Duty Cycle:	50% $\pm 5\%$
Connector:	SMA
Coupling:	AC

CLOCK OUT

Maximum Frequency:	Maximum product sample rate
Minimum Frequency:	10 MHz (from External Clock) 1 kHz (from Internal Clock)
Signal Level:	0-1.8 V
Impedance:	50 Ω compatible
Duty Cycle:	50% $\pm 10\%$
Connector:	SMA

MULTIPLE RECORD

Pre-trigger Data:	Up to virtually full record length
Record Length:	32 points minimum. Can be defined with a 32 points resolution.

TIMESTAMPING

Resolution:	One sampling interval
Counter turnover:	>48 hours continuous

CARD SIZE

Single-slot, full-length PCI Express (8 or 16 lanes)

SYSTEM REQUIREMENTS

PCI-based computer, minimum Pentium II 500 MHz, with at least one

free full-length PCI Express slot (8 or 16 lanes), 128 MB RAM, 200 MB of free hard drive space.

†POWER (IN WATTS, PER CARD)

25.0 W (typical)

†Measured on a typical 4-channel Razor card.

PCI EXPRESS BUS INTERFACE

Plug-&-Play:	Fully supported
Bus Mastering:	Fully supported
Scatter-Gather:	Fully supported
Bus Width:	8 Lanes
Bus Speed:	40 Gb (Gen2) or 20 Gb (Gen1)
Bus Throughput:	3.1 GB/s (Gen2) or 1.6 GB/s (Gen1)
Compatibility:	PCI Express 2.0 compliant (Also 1.1 at 20 Gb)

MULTI-CARD SYSTEMS

Operating Mode:	Master/Slave or multiple independent
Number of Cards:	Master/Slave: 2 to 8 cards Multiple/Independent: Limited only by backplane and power supply

OPERATING SYSTEMS

Windows Vista/ Win 7:	All Versions (32/64-bit)
Windows XP:	SP1 or higher (32/64-bit)
Windows Server:	2003, 2008

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 CLR compatible and 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.



WARRANTY

One year parts and labor
 Certificate of NIST Traceable Calibration is included.
 All specifications subject to change without notice.

ORDERING INFORMATION

Hardware & Upgrades

Oscar Family (Max Sampling Rate)	2-Channel			4-Channel		
	12-bit	14-bit	16-bit	12-bit	14-bit	16-bit
10 MS/s			CSE4420: OSC-442-000			CSE4440: OSC-444-000
25 MS/s		CSE4322: OSC-432-002	CSE4422: OSC-442-002		CSE4342: OSC-434-002	CSE4442: OSC-444-002
50 MS/s		CSE4324: OSC-432-004	CSE4424: OSC-442-004		CSE4344: OSC-434-004	CSE4444: OSC-444-004
100 MS/s	CSE4227: OSC-422-007	CSE4327: OSC-432-007	CSE4427: OSC-442-007	CSE4247: OSC-424-007	CSE4347: OSC-434-007	CSE4447: OSC-444-007

Cables

Set 1 Cable SMA to BNC	ACC-001-031	Memory Upgrade: 1 GS to 2 GS	MEM-181-201
Set 4 Cable SMA to BNC	ACC-001-033	Memory Upgrade: 1 GS to 4 GS	MEM-181-203
Master Multi-Card Upgrade	OSC-181-002	Memory Upgrade: 1 GS to 8 GS	MEM-181-205
Slave Multi-Card Upgrade	OSC-181-003	Memory Upgrade: 1 GS to 16 GS	MEM-181-207

eXpert™ Firmware Options

eXpert Signal Averaging Firmware Option	250-181-001
---	-------------

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
eXpert Data Streaming	STR-181-000

Notes to specifications:

- Dynamic parameter measurements were done by acquiring a high purity 10 MHz sine wave with an amplitude of 95% of the Input Range. These measurements were taken on the +/-500 mV Input Range using 50 Ohm termination and DC coupling and the anti-aliasing filter was applied. Dynamic parameter calculations were done from a 16 kiloSample Fourier Spectrum after applying a 7-term Blackman Harris Windowing Function to the time-domain waveform.
- Measured at 100 MS/s in the ±500 mV range with 50 Ω input impedance with an amplitude of 95% of full scale.
- Measured on ±500 mV, ±1 V, ±2 V input ranges for both 50 Ω and 1 MΩ input impedance settings.

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

Toll-Free (US 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

Updated June 15, 2011

Copyright © 2011 Gage Applied Technologies. All rights reserved.