GaGe

GaGe's faceless connected instrument (FCiX™) family provides 8, 14 or 16-bit ethernet (LAN) based digitizing solution with 2, 4 or 8 channels, 25 MS/s to 4 GS/s maximum sampling rate and 2 GB of on-board acquisition memory. GaGe's FCiX solution can stand alone or mount into an existing configuration and is fully accessible via a Web browser.

APPLICATIONS

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

FCi𝒳

8, 14 and 16-Bit Family of Portable Digitizing Solutions

The FCiX family advances proven technologies from GaGe to provide a portable 8, 14 or 16-bit, high channel density, digitizing solution.

FEATURES

- 2, 4, or 8 Digitizing Channels
- 25 MS/s to 4 GS/s Maximum Sampling Rate
- 8, 14 or 16 bits Vertical Resolution
- 2 GB of Onboard Acquisition Memory
- 20 MHz to 1.5 GHz Bandwidth
- Ethernet (LAN) Connectivity
- Programming-Free Operation with GageScope® Oscilloscope Software
- Software Development Kits available for LabVIEW, MATLAB, C/C#

FCi-X Simplified Block Diagram
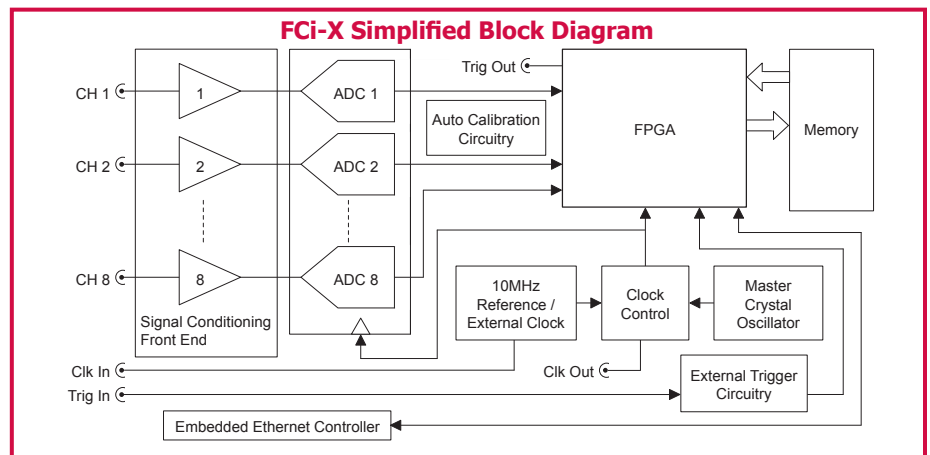
FCiX Cobra/CobraMax
8-Bit, 2 Channels, Portable Digitizing Solution

A/D SAMPLING

	FCI-COB-022	FCI-COB-024
Inputs	2	2
Resolution	8 Bit	8 Bit
Max. Sampling Rate	1 CH @ 2 GS/s	1 CH @ 4 GS/s
	2 CH @ 1 GS/s	2 CH @ 2 GS/s
Analog Bandwidth	500 MHz	1.5 GHz
SNR	46.0 dB	47.2 dB
THD	-60.0 dB	-59.3 dB
SINAD	46.0 dB	47.0 dB
ENOB	7.4 Bits	7.6 Bits
SFDR	60.0 dB	56.5 dB
Flatness	100 MHz	800 MHz

Note: Dynamic Parameters measured at maximum sample rate with 10 MHz frequency with an amplitude of 95% of full scale and no onboard filtering.

Acquisition Memory:	2 GB
Connector:	Ethernet (LAN)
Impedance:	50 Ω
Coupling:	AC or DC; (software-selectable)
DC Accuracy:	±1% on all input ranges
Input Voltage Ranges:	±50 mV, ±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V
DC User Offset:	±100% span on all input ranges, except ±20% span on ±5 V, with 1% accuracy
Absolute Max Input:	6 V RMS on all input ranges, except 8.5 V RMS on ±5 V input range

LOW-PASS FILTER
Type:	3-pole, 1 per channel
Cut-off Frequency:	200 MHz
Operation:	Individually software-selectable

TRIGGERING
Trigger Engines:	2 per channel, 1 for external trigger
Source:	CH 1 or 2, EXT or manual
Input Combination:	All combinations of sources logically OR'ed
Trigger Level Accuracy:	Internal ±2% of Full Scale, External ±10% of Full Scale
Slope:	Positive or Negative; software-selectable
Sensitivity:	±5% of Full Scale

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

TRIGGER OUT
Impedance:	50 Ω compatible
Amplitude:	0-1.5 V into 50 Ω load
Connector:	SMA

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

CLOCK IN
Signal Level:	Minimum 200 mV RMS
	Maximum 500 mV RMS
Termination Impedance:	50 Ω
Coupling:	AC
Duty Cycle:	50% ±5%
Clock In Modes:	Sampling clock in and 10 MHz reference clock in
Maximum Frequency:	1 GHz for FCI-COB-022, 2 GHz for FCI-COB-024
Minimum Frequency:	200 MHz
10 MHz Ref. Mode Frequency:	10 MHz ±50 ppm

CLOCK OUT
Modes:	Sampling clock out and 10 MHz reference clock out
Signal Level:	±300 mV into 50 Ω load
Signal Output Termination:	50 Ω compatible
Max. Signal Frequency:	1 GHz for FCI-COB-022, 2 GHz for FCI-COB-024
Min. Signal Frequency:	200 MHz (Using External Clock) 5 kHz (Using Internal Sampling)
Signal Duty Cycle:	50% ±5%

MULTIPLE RECORD
Pre-trigger Data:	Up to almost full on-board memory
Record Length:	64 points minimum. May be increased with 64 points resolution.

TIMESTAMPING
Resolution:	One sampling interval
Counter turnover:	>24 hours continuous

FCi𝒳 Octopus
14-Bit, 8 Channels, Portable Digitizing Solution

A/D SAMPLING

	FCI-OCT-001
Inputs	8
Resolution	14 Bit
Max. Sampling Rate	125 MS/s
Analog Bandwidth	>100 MHz
SNR	68 dB
SINAD	67.4 dB
ENOB	11.0 Bits
SFDR	80 dB
Flatness	7 MHz

Note: Dynamic parameters measured at 125 MS/s in the ±500 mV range with 50 Ω input impedance using a 10 MHz sine wave with an amplitude of 95% of full scale and the on-board filtering capability.

Acquisition Memory:	2 GB
Connector:	Ethernet (LAN)
Impedance:	1 M Ω or 50 Ω; (software-selectable)
Coupling:	AC or DC; (software-selectable)
DC Accuracy:	±0.5 % (Measured on ±500 mV, ±1 V, ±2 V input ranges for both 50 Ω and 1 M Ω input impedance settings.)
Input Voltage Ranges:	±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V, ±10 V (±10 V is only available in 1 M Ω)
DC Offset	± 1xFull Range (above ±5 V is limited to ±2.5 V)

LOW-PASS FILTER
Type:	3-pole, 1 per channel
Cut-off Frequency:	24 MHz
Operation:	Individually software-selectable

TRIGGERING
Trigger Engines:	2 per channel, 1 for external trigger
Source:	CH 1 to 8, EXT or Software
Input Combination:	All combinations of sources logically OR'ed
Trigger Level Accuracy:	Less than ±2% of Full Scale for channel triggering
Slope:	Positive or Negative; software-selectable
Sensitivity:	±2% of Full Scale
Post-Trigger Data:	128 points minimum.

Can be defined with a 64 point resolution.

Maximum Record Length:	Maximum memory depth

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:	0-2.5 V
Connector:	SMA

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

CLOCK IN
|	
Signal Level:	Minimum 1 V RMS Maximum 2 V RMS
Termination Impedance:	50 Ω
Coupling:	AC
Sampling Edge:	Rising
Duty Cycle:	50% ±5%
Maximum Frequency:	Maximum product sample rate
Minimum Frequency:	2 MHz

CLOCK OUT
Maximum Frequency:	Maximum product sample rate
Minimum Frequency:	2 MHz (from External Clock) 1 kHz (from Internal Clock)
Signal Level:	0-2.5 V
Impedance:	50 Ω compatible
Duty Cycle:	50% ±10%
Connector:	SMB

MULTIPLE RECORD
Pre-trigger Data:	Up to virtually full record length
Record Length:	128 points minimum. Can be defined with a 64 points resolution.

TIMESTAMPING
Resolution:	One sampling interval
Counter turnover:	>24 hours continuous
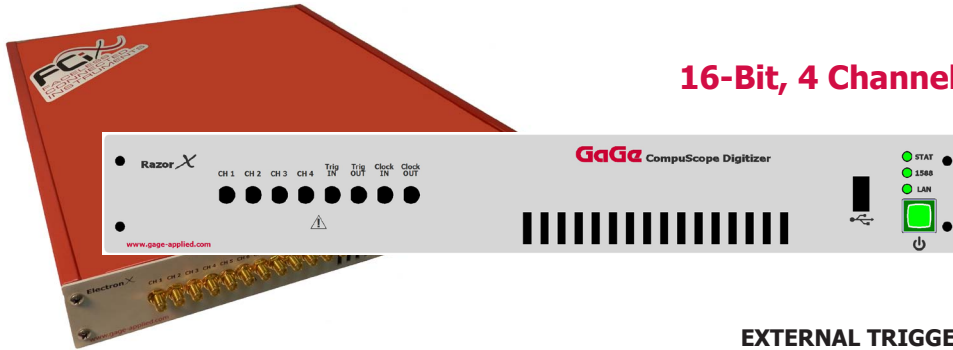
FCi𝑋 Razor
16-Bit, 4 Channels, Portable Digitizing Solution

A/D SAMPLING

	FCI-RAZ-041	FCI-RAZ-042
Inputs	4	4
Resolution	16 Bit	16 Bit
Max. Sampling Rate	100 MS/s	200 MS/s
Analog Bandwidth	65 MHz	135 MHz
SNR	75.72 dB	73.03 dB
THD	-84.72 dB	-80.96
SINAD	75.24 dB	72.43 dB
ENOB	12.21 Bits	11.74 Bits
SFDR	86.61 dB	86.61 dB
Flatness	57.4 MHz	111.6 MHz

Note: Dynamic Parameters measured with 10 MHz frequency and 25 MHz low-pass filters activated, ±500 mV input range, and 50 W

Acquisition Memory:	2 GB
Connector:	Ethernet (LAN)
Impedance:	1 M Ω or 50 Ω; (software-selectable)
Coupling:	AC or DC; (software-selectable)
DC Accuracy:	±0.3 %xFull Range (at 50 Ω)
Input Voltage Ranges:	±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V, ±10 V , ±20 V, ±50 V (3 highest ranges only available on 1 M Ω)
DC User Offset	± 1xFull Range (software-selectable)
Absolute Max Input:	±15 V (50 Ω), ±75 V (1 M Ω on all but two lowest Input Ranges, where Max is +/- 25V)

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

TRIGGERING
Trigger Engines:	2 per channel, 1 for external trigger
Source:	Any input channel, EXT or software
Input Combination:	All combinations of sources logically OR'ed
Trigger Level Accuracy:	Less than ±2% of Full Scale for channel triggering
Slope:	Positive or Negative; software-selectable
Sensitivity:	±2% of Full Scale

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 (software-selectable)
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)

CLOCK IN
Signal Level:	Minimum 0.3 V RMS
	Maximum 1.5 V RMS
Termination Impedance:	50 Ω
Coupling:	AC
Duty Cycle:	50% ± 5%
Clock In Modes:	Sampling clock in and 10 MHz reference clock in
Maximum Frequency:	Maximum product sample rate
Minimum Frequency:	10 MHz
10 MHz Ref. Mode Frequency:	10 MHz ±10 kHz

CLOCK OUT
Modes:	Sampling clock out and 10 MHz reference clock out
Signal Level:	0-1.8 V
Signal Output Termination:	50 Ω compatible
Max. Signal Frequency:	Maximum Razor model sample rate
Min. Signal Frequency:	10 MHz (Using External Clock)
	1 kHz (Using Internal Sampling)
Signal Duty Cycle:	50%

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:	>24 hours continuous

POWER

Source:	Universal input external power supply
Input:	100-240V AC 47-63 Hz 1.9A
Output:	80 Watts @ 12V

DIMENSION

Size:	1.72 in x 12.54 in x 14.38 in
	(43.66mm x 318.53mm x 265.25mm)
Weight:	5.5 lbs (2.5 kg)

CONNECTIVITY

LAN: Standard LAN   (VXI-11* compliant), 10/100/1000BaseTx Sockets
(service at port 4243)
* VXI-11 allows discovery of the instrument over a TCP/IP network.

OPERATING SYSTEMS & BROWSERS

Windows 8 / 7 / Vista:	All Versions (32/64-bit)
Windows Server:	2012 / 2008 / 2003
Windows XP:	SP3
Browsers:	IE 9 or higher / Current versions of Chrome, FireFox, Safari

WARRANTY

Standard two years parts and labor.

ORDERING INFORMATION

Hardware

FCiX Part #	# of Input Channels	Resolution	Max. Sample Rate	Analog Bandwidth
FCI-COB-022	2	8-Bit	1 CH @ 2 GS/s, 2 CH @ 1 GS/s	500 MHz
FCI-COB-024	2	8-Bit	1 CH @ 4 GS/s, 2 CH @ 2 GS/s	1.5 GHz
FCI-OCT-001	8	14-Bit	125 MS/s per Channel	>100 MHz
FCI-RAZ-041	4	16-Bit	100 MS/s per Channel	65 MHz
FCI-RAZ-042	4	16-Bit	200 MS/s per Channel	135 MHz

GageScope® Software

Windows-based application software for programming-free operation. Lite Edition 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. Refer to GageScope data sheet for additional information.

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

*C/C# SDK is CLR compatible and is compatible with LabWindows/CVI 7.0+ compiler.

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GaGe is a product brand of DynamicSignals LLC, and ISO 9001:2008 Certified Company

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