

50 MHz, 100MS/s, 14-Bit Differential Measurement System

TEGAM 4040A + NI 5122= Better Measurements

- 2 channels simultaneously sampled
- Differential inputs with 77 dB of CMRR
- 2mV to 100V input range
- 50MHz bandwidth
- 75 dBc SFDR and 62 dB SINAD
- Memory options from 8 to 512 MB per channel
- Edge, window, hysteresis, video, and digital triggering with 100 ps timestamping



OVERVIEW

The combination of the National Instruments 5122 and TEGAM 4040A creates the widest range measurement system possible in a 3U PXI format. The result of connecting the dual simultaneously sampled 14-bit inputs of the 5122 with the programmable differential instrumentation amplifier of the 4040A is exceptionally clean and flexible signal conversion. They are ideal for a wide range of applications in automotive, communications, scientific research, military/aerospace, and consumer electronics. Using the National Instruments Synchronization and Memory Core (SMC) architecture, you can easily synchronize to other analog and digital instruments to develop high-channel-count or mixed-signal test systems. Table 1 lists the more advantageous combinations of settings and ranges for the two cards. Refer to the individual datasheets for all possible settings.

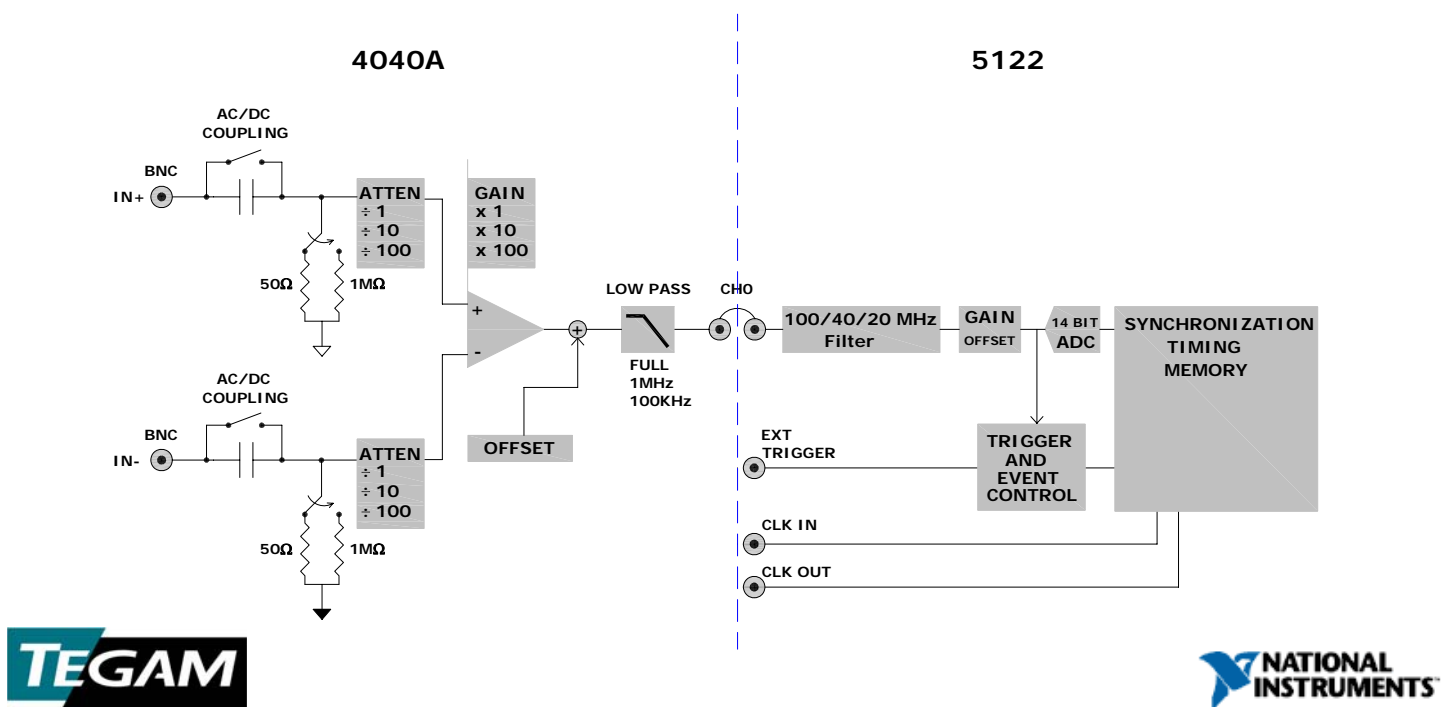


Figure 1
Combined Block Diagram

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Peak Signal Input Range	Input Attenuation	Amplifier Gain	Total Gain	Com. Mode Voltage Range a,b,c	Bandwidth, DC Coupling	NI 5122 Input Range
100 V	÷100	x1	÷100	100 V	20MHz	1 V
40 V	÷100	x1	÷100	100 V	20MHz	400 mV
40 V	÷100	x10	÷10	100 V	50MHz	4 V
10 V	÷100	x10	÷10	100 V	50MHz	1 V
10 V	÷10	x1	÷10	40 V	20MHz	1 V
1 V	÷100	x100	x1	100 V	20MHz	1 V
1 V	÷10	x10	x1	40 V	50MHz	1 V
400 mV	÷10	x100	x10	40 V	20MHz	4 V
400 mV	÷1	x10	x10	4 V	50MHz	4 V
100 mV	÷10	x100	x10	40 V	20MHz	1 V
100 mV	÷1	x10	x10	4 V	50MHz	1 V
40 mV	÷1	x100	x100	4 V	20MHz	4 V
40 mV	÷1	x10	x10	40 V	50MHz	400 mV
10 mV	÷1	x100	x100	4 V	20MHz	1 V
2 mV	÷1	x100	x100	4 V	20MHz	200 mV

a. DC Coupled, 1MΩ input
b. AC Coupled, 1MΩ input; DC + Peak AC not to exceed 100 V; Peak AC component not to exceed table
c. 10 V max into 50Ω

Table 1
Input Ranges

Combined Specifications Per Channel

These specifications are valid for 0 to 55° C for PXI, and 0 to 45° C for PCI, unless otherwise stated.

Acquisition System

Vertical resolution	14 bits
Bandwidth ₁ (-3 dB)	See Table 1
Bandwidth limit filters (software selectable)	100kHz, 1MHz, 20 MHz noise (2-pole Bessel) 40 MHz antialias(-6 dB, 6-pole Chebyshev)
Maximum sample rate	100 MS/s real-time, 2 GS/s random interleaved sampling
Onboard sample memory	8 to 512 MB per channel (4 to 256 million samples)
Pretrigger and posttrigger data points	0 to 100% of full record length
Input impedance	50 and 1 M 20 pF, software selectable
Maximum number of records for multiple-record acquisition	32,768 for 8 MB/ch, 100,000 for all other memory options
Full scale input range	50 : 2 mV -10 V 1 M : 2 mV – 100 V ±100% of full scale input range
Vertical offset ranges	±100% of full scale input range
Maximum input overload	50 : 7 V _{rms} with peaks "10 V, 1 M : peaks "42 V
Input coupling	AC, DC, GND (AC coupling on 1 M only)
AC coupling cutoff frequency (-3 dB)	10 Hz
DC Gain Accuracy	+/- 0.75%
AC Gain Accuracy	+/- 1%
Passband Ripple (DC-10 MHz)	/- 0.5dB

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Ordering Information

National Instruments

NI PXI-5122	
8 MB/channel	778756-01
32 MB/channel	778756-02
256 MB/channel	778756-03
512 MB/channel	778756-04

NI PXIe-5122	
8 MB/channel	779967-01
64 MB/channel	779967-02
256 MB/channel	779967-03

Includes NI 5122 device, NI-SCOPE, and Scope Soft Front Panel. The 32 and 256 MB/channel models also include the NI Spectral Measurements Toolkit.

Accessories

Recommended PXI switch	
NI PXI-2593	778793-01

Switchable 1/10x probe	
SP200B	763391-01

9-pin DIN to BNC for AUX I/O connector	
Aux110	189919-0R5

Related Products

- NI 5421 arbitrary waveform generators
- NI PXI-5404 clock and frequency generator
- NI PXI-655x digital waveform generator/analyzers

BUY NOW!

For complete product specifications, pricing, and accessory information, call 800-813-3693 (U.S.) or go to ni.com/digitizers.

TEGAM

50 MHz Differential Instrumentation Amplifier	4040A
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Accessories

1' SMB to BNC interconnect coax cable	CA-4-12
3' SMB to BNC interconnect coax cable	CA-4-36

BUY NOW!

For complete details, software and purchasing go to www.tegam.com/4040A or call 440-466-6100.
