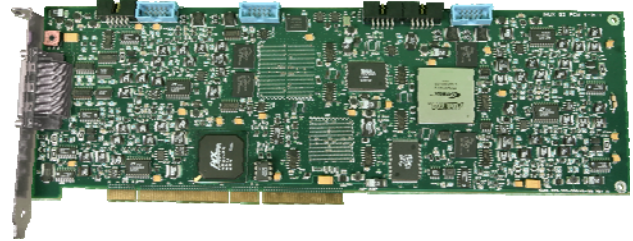


Analog Input/Output, 4-Channel, 60 Msp

G2-ANL-410-01-xx

Features

- **4-Channel Analog Input and Output with IRIG Time Code Reader/Generator**
- **Occupies Single PCI Card Slot**
- **Operation to 60 Million Samples/Second/Channel**
- **Supports IRIG 106 Chapter 10 Formats**
- **Accepts and Reproduces IRIG A, B, and G Time Codes**
- **Includes Both Standard Anti-Aliasing Filters and Data Reconstruction Filters**



Introduction

The G2 Analog Input/Output board combines Analog-to-Digital and Digital-to-Analog conversion onto a single PCI slot. The analog output with microsecond reconstruction fidelity is combined with an embedded IRIG Time module to provide high-speed operation with highly-precise time tagging support.

Allows 4, 8, 10, 12 Bit Encoding

The analog encoding and decoding capabilities of IMUX G2 allows selection of 4, 8, 10, and 12-bit encoding. When combined with the maximum speed of the card, support for analog signals from voice to second IF is supported.

Filtering

Both the input/encoding and output/decoding processes are equipped with operator controlled filtering in order to control aliasing. These filters can be optionally deselected in order to provide operators with the feature set necessary to optimize their installation.

Time Code Input/Output Functions

IRIG time code inputs are translated to digital time setups with a nanosecond resolution every 100 nanoseconds. Time stamps are provided for each data transfer in either Packed or Unpacked modes via direct memory addressing (DMA) block transfers over the PCI bus.

Data Reproduction

A variable rate, on-board numerically controlled oscillator (NCO) resides on the card. It is slaved to the data reproduction and can faithfully reproduce analog data to within one microsecond interchannel time skew, relative to other recorded channels.

By occupying a single PCI bus card slot, the PCI Analog/Digital and Digital/Analog Record/Reproduce board provides remarkable flexibility for the system's integrator while not compromising performance.

Analog-to-Digital Input	Number channels	Four independent data channels
	Programmability	Each analog input channel independently programmed
	Levels	Software selectable (all channels independent) Single ended: ± 2 , ± 1 , ± 0.4 , ± 0.2 , ± 0.1 volts
	Level Types	Bi-polar by function, single ended as wired
	Resolution	Software selectable (all channels independent) Packed: 4, 8 Unpacked: 4, 8, 10, and 12-bit
	Impedance	Software selectable (all channels independent) Single ended: 50 ohm, 75 ohm, or 10 Kohm
	Operating Range	Software selectable (all channels independent) Minimum: 10 ksp Maximum: 60 Msps
	Numbering	Software selectable (all channels independent) Offset binary or 2's complement
	Circuit Protection	Fuse protected each channel, independent
Processing	Anti-Aliasing	Software selectable (all channels independent) 26 MHz, 6 MHz, 1 MHz, 100 kHz, 10 kHz, 1 kHz, or bypass
	Installed	Four Butterworth filters (6-pole) are installed to provide 1K, 100K, 1M, and 10 MHz low pass filters on the output in order to control sampling perturbations
Digital-to-Analog Output	Number channels	Four independent data channels
	Programmability	Each analog output channel independently programmed
	Linearity	Integral linearity error (INL) ± 1.6 LSB (max) Differential nonlinearity error (DNL) ± 1.0 LSB (max)
	DAC spec	Settling time 11 ns (typical) Integral linearity error (INL) ± 1.48 LSB (max) Differential nonlinearity error (DNL) ± 1.17 LSB (max)
	Level Accuracy	± 4 LSB counts at 12 bits DC
	Time Data Resolution	± 100 ns
	Levels	Software selectable (all channels independent) Single ended: ± 2 , ± 1 , ± 0.4 , ± 0.2 , ± 0.1 volts
	Level Types	Bi-polar by function, single ended as wired
	Resolution	Software selectable (all channels independent) Packed: 4, 8 Unpacked: 4, 8, 10, and 12-bit
	Impedance	Software Selectable (all channels independent) Single Ended: 50 ohm, 75 ohm, or 10 Kohm

Digital-to-Analog Output (Cont'd)	Operating Range	Software selectable (all channels independent) Minimum: 10 ksp/s Maximum: 60 Msps
	Short Circuit Protection	110 mA continuous, 1A fuse
	DAC Low Pass Filter Selection	Software selectable (all channels independent) 26 MHz, 6 MHz, 1 MHz, 100 kHz, 10 kHz, 1 kHz, no filter
	Level Accuracy	+/- 4 LSB counts at 12 bits DC
	Interchannel Skew	Less than 1 microsecond
	Modes	Software selectable (system level setting) Loophrough of input signal (record time only) or play back from file
Input Signal - IRIG Time	Number of Channels	One independent time channel
	Programmability	Time input channel programmed independently
	Time Input Source	External or internal, programmable
	Level	Signal level 0.5 to 10V peak-to-peak from mark; 3-1 nominal (mark-to-space relationship); external
	Impedance	10 Kohm
	Code	IRIG A, B, G modulated carrier input.
	Internal Time	On-board timer seeded from any source internal to computer; e.g., computer clock, GPS receiver, etc.
Output Signal – IRIG Time	Number of Channels	One independent time channel
	Programmability	Time output channel programmed independently
	Time Code Rate	IRIG A, B, G modulated carrier
	Level	7V peak-to-peak typical into 10-Kohm load (on mark)
Isolation	Channel to Channel	>60 dB
	Input to Output	>60 dB
External 10 MHz Reference	Frequency	10 MHz
	Source	Internal or external, programmable
	Signal Type	Single-ended sine wave
	Levels	1 to 8 peak-to-peak
	DC Offset	<10% of peak-to-peak level centered around ground
	Input Impedance	50 ohm, 75 ohm, or 10 Kohm (programmable)
	SNR	≥ 50 dB
	Internal Clock Accuracy	Factory tuned to <1 ppm Drift over lifetime of 2 ppm

Interboard Time Bus	Level	
	Max Daisy Chain Delay	
PCI Bus Throughput	Max Record throughput	640 Mbps per board, 480 Mbps per channel
	Max Playback throughput	640 Mbps per board, 480 Mbps per channel
Electrical and Environmental	Power Consumption	24 watts max
	Form Factor	Full-length PCI card
	Connectors	PCI-2.3 compliant edge connector for data bus
		10-pin header for timing bus
		DB37 for data I/O on PCI panel.
	Operating Temperature	32 °F to 140 °F (0 °C to 60 °C)
	Storage Temperature	14 °F to 185 °F (-10 °C 85 °C)
Operating Altitude	0 to 10,000 feet (0 to 3,000 meters)	
Storage Altitude	-1,000 to 20,000 feet (-300 to 6,200 meters)	
Ordering Code	G2-ANL-410-xx	Analog Input/Output, 4-Channel, 60 Msps, 4 to 12-bit, Diff

Specifications change w/o notice. Contact the factory for current information.