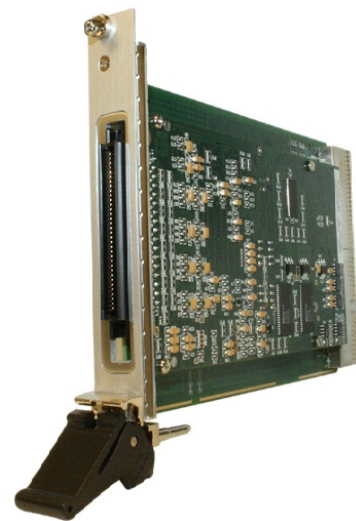


# GX3232 SERIES

## 16-BIT MULTI-FUNCTION WITH A/D, D/A AND DIGITAL I/O CHANNELS CPCI CARDS

- 32 single-ended or 16 differential, 16-bit, scanned analog inputs
- 300 kS per second aggregate analog input sampling rate
- 4 analog outputs, 300 kS per second analog output clocking rate per channel
- 16-bit, bi-directional digital port with two auxiliary I/O lines



## DESCRIPTION

The GX3232 is a multi-channel 16-bit, analog input and output cPCI module, supporting 32 single-ended or 16 differential input channels and four analog output channels. The inputs can be software configured for differential or single-end operation and are sequentially scanned with a maximum aggregate scan rate of 300 kS/s. Three input ranges are software-selectable:  $\pm 10$  V,  $\pm 5$  V or  $\pm 2.5$  V. Optionally, the GX3232 is available with a high voltage input configuration and supports three ranges:  $\pm 60$  V,  $\pm 30$  V and  $\pm 15$  V. The high voltage configuration supports 16 single-ended or 8 differential input channels for high voltage and 16 single-ended or 8 differential inputs for low voltage measurement. Four analog output channels provide software-selectable output ranges of  $\pm 2.5$  V,  $\pm 5$  V or  $\pm 10$  V. The outputs can be updated either synchronously or asynchronously and support waveform generation. Each output can be clocked at rates up to 300 kS/s. A 16-bit digital I/O port is also provided, which supports 16 bidirectional data lines. Note that when used with a TS-700 system only 8 of these digital I/O lines are available at the test system's receiver interface.

## FEATURES

The GX3232's input channels are sampled sequentially at a maximum aggregate rate of 300 KS/s. Sampled data is accessed via the PCI bus and a 32 K-sample FIFO buffer.

Scanned channels can be set for 2, 4, 8, 16, or 32 channels per scan with the sample clock being generated by one of two internal rate generators which employ 16-bit programmable dividers. The four output channels can be clocked at rates up to 300 KS/s and like the input channels, offer programmable

ranges. Each output channel includes a dedicated 16-bit D/A converter with output data being clocked from a 32 K sample FIFO buffer, which interfaces to the PCI bus.

Output clocking is generated by one of two internal rate generators which employ 16-bit programmable dividers. Sync input and sync output lines are also provided for synchronizing the input and output signals to an external event. These signals are not accessible at the TS-700's receiver interface.

The module supports an auto-calibration routine which applies any required offset and gain correction values for all input and output channels. Additionally, a self-test input switching network routes output channels or calibration reference signals to the analog inputs - verifying module integrity and functionality.

## SOFTWARE

The GX3232 is supplied with a virtual instrument panel, which includes a 32-bit DLL driver library and documentation. The virtual panel can be used to interactively adjust and control the instrument from a window that displays the instrument's current settings and measurements.

## APPLICATIONS

- Automotive testing
- High-performance baseband testing
- Medical device and module test
- ATE systems

# GX3232 SERIES

## SPECIFICATIONS

ANALOG INPUTS	
Input Channels	32 single-ended or 16 differential (software configurable) 16 single-ended or 8 differential (60 V input option), the remaining 16 inputs are available for low voltage measurement
Input Voltage Ranges	$\pm 10$ V, $\pm 5$ V, $\pm 2.5$ V FS $\pm 60$ V, $\pm 30$ V, $\pm 15$ V FS (60 V input option)
Input Impedance	2 M $\Omega$ , differential 1 M $\Omega$ to ground, single-ended 180 K $\Omega$ $\pm$ 20 K $\Omega$ to ground, single-ended for 60 V input option
Bias Current	80 nA (max)
Common Mode Rejection	60 dB typical, DC - 60 Hz, differential input mode. 30 dB for 60 V input option
Common Mode Range	$\pm 10$ V, differential input configuration $\pm 60$ V, 60 V input option
Overvoltage Protection	$\pm 30$ V with power applied, $\pm 15$ V with power removed $\pm 70$ V (60 V input option)
Full Scale DC Accuracy	$\pm 4.2$ mV, 10 V range $\pm 2.8$ mV, 5 V range $\pm 2.0$ mV, 2.5 V range $\pm 6\%$ of range, 60 V, 30 V & 15 V ranges
Crosstalk Rejection	80 dB, DC - 10 kHz
Integral Nonlinearity	$\pm 0.003\%$ of FSR (max)
Differential Nonlinearity	$\pm 0.0015\%$ of FSR (max)
A TO D CONVERTER	
Resolution	16 bits
Maximum Conversion Rate	300 kS/s
Channels per Scan	2, 4, 8, 16, or 32 per scan
Maximum Scan Rate	75 kS/s in multiple channel mode 150 kS/s in 2 channel mode 300 kS/s in single-channel mode
Minimum Scan Rate	400 scans per second (single-rate generator) 0.0075 scans per second (two-rate generators)
Scanning Modes	Single scan, Continuous scan, Selftest, Multiple channel, Single channel, Two channel
Clock Source	24 MHz oscillator, two 16 dividers (independent or cascable)
Memory	32 K sample FIFO

ANALOG OUTPUT CHANNELS	
Configuration	Four single-ended
Output Range	$\pm 10$ V, $\pm 5$ V, $\pm 2.5$ V FS (software configurable)
Output Impedance	1 $\Omega$ (max)
Output Current	$\pm 3$ mA (max)
Full Scale DC Accuracy	$\pm 3.0$ mV, 10 V range $\pm 2.2$ mV, 5 V range $\pm 1.7$ mV, 2.5 V range (no load)
Settling Time	8 $\mu$ s to on LSB, typical with 50% full scale step
Integral Nonlinearity	$\pm 0.004\%$ of FSR (max)
Differential Nonlinearity	$\pm 0.0015\%$ of FSR (max)
D TO A CONVERTER	
Resolution	16 bits
Sampling Rate	400 S/s to 300 kS/s using internal-rate generator DC to 300 kS/s with hardware or software sync
Clock Source	Internal (programmable), software, external sync
Internal Clock	3 to 1 MHz sample rate, 24 bit divider from master clock frequency
Clocking Modes	Continuous, triggered burst
Memory	32 K sample FIFO
DIGITAL INPUT/OUTPUT	
Configuration	16 TTL I/O lines organized as two bytes, configurable as inputs or outputs
Output Drive	8 mA, source or sink
Control	Register read/write
GENERAL	
Mating I/O Connector	68 pin, dual-ribbon socket Robinson Nugent P50E-068-S-TG or equivalent
Current Consumption	+5 V @ 1.4 A (max)
Size	3U, single slot
Temperature Operating	0 $^{\circ}$ C to +70 $^{\circ}$ C
Storage	-40 $^{\circ}$ C to +85 $^{\circ}$ C
Humidity (Non-Condensing)	0% to 95% (operating)

Note: Specifications are subject to change without notice

# GX3232 SERIES

## ORDERING INFORMATION

<b>GX3232</b>	16-Bit Multi-Function Card: 16 Diff/32 Single Ended A/D Channels (300KS/S), 4 D/A Channels, 16 Digital I/O Channels
<b>GX3232-60V</b>	16-Bit Multi-Function Card: 8 Diff/16 Single Ended A/D Channels (300KS/S), 4 D/A Channels, 16 Digital I/O Channels, 60V Inputs
<b>ACCESSORY</b>	
<b>GT97111</b>	18 inch cable assembly, 68 pin IDC connector on both ends

Note: The GX3232 Series is supplied by a 3rd party and resold by Marvin Test Solutions.

# **GX3232** SERIES

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MEASUREMENT