

GX5055

6U PXI HIGH PERFORMANCE DYNAMIC DIGITAL I/O

- Cycle based, dynamic digital instrument with integral timing generator
- High performance pin electronics with per channel programmability
- Per channel parametric measurement unit (PMU)
- Dual level drive / sense, and programmable load on a per channel basis
- Adjustable slew rate from .1 to 1 V/ns
- Wide drive / sense voltage range: -10 V to +15 V
- Supports 6 data formats
- 50 MHz vector rate
- 32 bi-directional I/O channels (up to 16 cards may be interconnected for a total of 512 channels)
- 10 MB of on-board memory
- External and programmable internal clock rates from 5 Hz to 50 MHz
- Dynamically controlled sequencer uses opcodes and conditional logic for branching, looping, and subroutines



DESCRIPTION

The GX5055 represents a new level of performance and capabilities for PXI-based digital instrumentation. Based on the proven architecture of the GX5050, the GX5055 offers high performance pin electronics and an enhanced timing generator in a compact, 6U PXI form factor. Each card can function as a stand-alone digital subsystem or if required, multiple cards can be interconnected, providing a single domain and supporting up to 512 bi-directional channels. Each digital channel can be individually programmed for a drive hi, drive lo, sense hi, sense lo, and a load value (with commutation voltage level) – offering the user complete flexibility when creating test programs and fixtures for multiple UUTs. In addition, each channel offers a parametric measurement unit (PMU) providing users with the capability to measure each UUT node's DC characteristics.

FEATURES

The GX5055 offers real-time digital stimulus and capture with 32 channels per card. Each channel can be configured as an input or output on a per cycle basis. Six drive data formats are supported: NR, R1, R0, RZ, RC, CC – providing flexibility to create a variety of bus cycles and waveforms to test board and box level products.

All pin electronic resources are independent on a per channel basis – offering the user complete flexibility when programming drive / sense levels, source / sink currents, slew rate, or PMU functions. This feature makes the GX5055 ideal for addressing not only board level but also component test / characterization applications.

PARAMETRIC MEASUREMENT UNIT (PMU)

Each digital channel of the GX5055 includes a PMU for measuring a UUT's DC characteristics. The PMU can operate in the force voltage / measure current or force current / measure voltage mode.

Algorithmic Sequencer Technology (AST)

An innovative, state-of-the-art algorithmic sequencer allows users to create loops and branches to manipulate the output vectors. All of the sequencer commands are available and may be programmed using the Graphical Vector Editor, Windows® API commands, or via a script language. The sequencer allows the user to generate test vectors indefinitely at maximum test rates. Internal and external trigger and pause commands are available in several modes.

On-Board Memory

The GX5055 includes 5 banks of 512k x 32 memory, supporting drive, sense, direction, control and data valid functionality for each channel.

Compatibility

The GX5055 operates in any 6U PXI chassis that supports an air flow rate of 20 cfm/slot. Power for the pin electronics requires the use of external power supplies or the GX5055 can be used with a Geotest GX7005A PXI chassis which is designed for the GX5055 and includes the necessary pin electronics power supplies. Optionally, for low voltage applications, the GX5055 can be used with a Geotest GX7100AR-HP1 chassis and a Geotest GX7400A user power supply. This configuration supports up to three GX5055 cards.

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SOFTWARE

The GX5055 is supplied with DIOEasy which supports digital vector editing and display, a virtual instrument panel, and 32-bit DLL driver libraries and documentation. The virtual panel can be used to interactively program and control the instrument from a window that displays the instrument's current settings and status. In addition, interface files are provided to support access to programming tools and languages such as ATEasy, Microsoft® and Borland® C/C++, Microsoft Visual Basic®, Borland Delphi, and Pascal.

Optionally, DtifEasy is available for use the GX5055. DtifEasy offers a complete LASAR post-processor and test execution environment for post-processing and executing LASAR generated .tap files.

APPLICATIONS

- Automatic Test Equipment (ATE)
- High-speed functional digital test
- Vector capture
- Hybrid and digital device test
- Memory testing
- LRU and SRU test

SPECIFICATIONS

TIMING	
INTERNAL TEST CLOCK	5 Hz to 50 MHz
TEST CLOCK TIMEBASE	PXI 10 MHz clock
TEST CLOCK FREQUENCY RESOLUTION	1 Hz or 0.01% of the programmed test clock frequency (whichever is greater)
PROGRAMMABLE DATA SENSE STROBE	0 to 63.75 ns, relative to drive clock edge (0 ns delay setting)
CHANNEL I/O SPECIFICATIONS (ALL SPECIFICATIONS BASED ON PIN ELECTRONIC VOLTAGE RAILS (VCC AND VEE) OF +18 V AND -14 V)	
NUMBER OF I/O CHANNELS	32 per card
CHANNEL DIRECTION CONTROL	Input or Output per step, per channel
NUMBER OF DRIVE AND SENSE VOLTAGE REFERENCES	32 Drive Hi / Drive Lo 32 Sense Hi / Sense Lo
DRIVE VOLTAGE LEVEL	Drive Hi: -9 to +15V Drive Lo: -10 to +11 V
DRIVE VOLTAGE LEVEL RANGE	Min: 0.5 V p-p Max: 25 V p-p
DRIVE VOLTAGE ACCURACY	+/- 25 mV, 25 V p-p drive voltage range, open circuit load
DRIVE VOLTAGE RESOLUTION	16 bits
DRIVER LEAKAGE CURRENT	+/- 25 nA max

OUTPUT IMPEDANCE	50 ohms, typical
DRIVE CURRENT	200 mA per channel 1.6 A per board, max
SHORT CIRCUIT PROTECTION	Programmable current level with automatic disable, per channel basis
SLEW RATE	.1 to 1 V/ns, adjustable, programmable on a per channel basis
CHANNEL SKEW	160 ps, typical between the same card 320 ps max., after calibration, for all channels (Drive and sense)
DATA FORMATS	No return, Return to 1, Return to 0, Return to Hi-Z, Return to complement, Surround by complement; selectable on a per channel basis
DRIVE DATA TIMING	Data assert on rising edge of test clock Data de-assert on falling edge of test clock (for formatted data)
SENSE VOLTAGE RANGE	Sense Hi: -10 to +11 V Sense Lo: -10 to +11 V
SENSE VOLTAGE THRESHOLD ACCURACY	+/- 25 mV, < 25 V p-p sense voltage
SENSE VOLTAGE RESOLUTION	16 bits
INPUT LEAKAGE CURRENT	+/- 15 nA, max
MINIMUM DATA SENSE PULSE WIDTH	4 ns, typical
DATA SENSE TIMING	Acquire data relative to ext strobe output clock edge
PULL-UP / PULL-DOWN CURRENT SOURCE/ SINK	+/- 24 ma, programmable on a per channel basis V commutate: -10 to +11 V, programmable on a per channel basis
PULL-UP / PULL-DOWN CURRENT SOURCE / SINK ACCURACY	+/- 250 uA
PULL-UP / PULL-DOWN CURRENT SOURCE / SINK RESOLUTION	16 bits
VOLTAGE COMMUTATION ACCURACY	+/- 25 mV, 25 V range
VOLTAGE COMMUTATION RESOLUTION	16 bits
RESISTIVE LOAD	Range: Hi-Z, 250 ohm, 1 K ohm, programmable on a per channel basis
MEMORY	512 Kb per channel
SEQUENCER AND TRIGGER FUNCTIONS	
COMMANDS	No Op, Set Reg., Jump, Loop, Call Subroutine, Return, Pause, Halt
TRIGGERING	Software generated trigger External Input trigger override
PAUSE	Software generated pause External Input pause override Sequencer Pause command

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EXTERNAL TIMING, CONTROL AND STATUS SIGNALS	
USER CLOCK OUTPUT	Data clock, TTL compatible; programmable delay relative to drive clock, 0 – 63.75 ns, 250 ps resolution Jitter: 40 ps RMS
EXTERNAL STROBE OUTPUT	Sense data strobe, TTL compatible Programmable delay relative to internal system clock, 0 – 63.75 ns, 250 ps of resolution
EXTERNAL TEST CLOCK	0 to 50 MHz, TTL compatible input
PAUSE INPUT	External pause override, TTL compatible
TRIGGER INPUT	External trigger override, TTL compatible
RUN STATUS OUTPUT	Run indicator status, TTL compatible
VCC	+5 VDC output
PARAMETRIC MEASUREMENT UNIT (PMU)	
NUMBER OF PARAMETRIC MEASUREMENT UNITS	32, one per channel
MODES	Force voltage, measure current Force current, measure voltage
FORCE VOLTAGE RANGE	-10 volts to +15 volts
FORCE VOLTAGE ACCURACY	+/- 25 mV, 25 volt range
FORCE VOLTAGE AND CURRENT RESOLUTION	16 bits
FORCE CURRENT RANGE	+/- 30 mA FS +/- 200 mA FS
FORCE CURRENT ACCURACY	+/- 100 uA, 30 mA range +/- 8 mA, 200 mA range
MEASURE VOLTAGE RANGE	-10 to +15 V
MEASURE VOLTAGE & CURRENT RESOLUTION	16 bits
MEASURE VOLTAGE ACCURACY	+/- 15mV, -9 to +13 volt range
MEASURE CURRENT RANGE	+/- 30 ma FS +/- 200 ma FS
MEASURE CURRENT ACCURACY	+/- 100 ua (30 ma range) +/- 6 ma (200 ma range)
ENVIRONMENTAL	
OPERATING TEMPERATURE	0 to 50° C
STORAGE TEMPERATURE	-20° C to +70° C
VIBRATION	5 g at 500 Hz
SHOCK	10 g for 6 ms ½ sine
PHYSICAL DIMENSIONS	
SIZE	6U PXI, single slot
WEIGHT	1.2 lbs (520 g)

CONNECTIONS	
EXTERNAL CONTROL & STATUS	9 position D-sub, female
I/O MODULE	68 position SCSI III Type
EXTERNAL VCC / VEE	15 position D-sub, male +18 V @ 6 A -14 V @ 6 A

Note: Specifications are subject to change without notice.

ORDERING INFORMATION

GX5055	50 MHz, high performance dynamic digital I/O Master/ Slave PXI card. 32 channels with 512 K of memory per channel. Includes DIOEasy and Data I/O cable
ACCESSORIES	
GT8XXX	DtIfEasy - Includes LASAR conversion tool, probe and ATEasy Test Executive and Application Development Environment
GT97110	3' power cable with DB-9, female connector
GT95014	Connector Interface for GX5055, SCSI to 100 Mil Grid, Single Ended
GT95020	Connector I/F for GX5055, SCSI to 100 Mil Grid, Single Ended (both 68 & 14 pin)
GT95021	2' shielded cable for GX5055 (68 Pin)
GT95022	3' shielded cable for GX5055 (68 Pin)
GT95028	10' shielded cable for GX5055 (68 Pin)
GT95031	6' shielded cable for GX5055 (68 Pin)

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