GX5055

DYNAMICALLY CONTROLLED, HIGH VOLTAGE DIGITAL I/O PXI CARD WITH PIN ELECTRONICS

- 50 MHz dynamic digital instrument with per pin direction control
- High performance pin electronics with per pin programmability
- Dual level drive / sense, programmable load & PMU on a per channel basis
- Wide drive / sense voltage range: -14 V to +25 V
- 32 bi-directional I/O pins, supports configurations up to 512 pins
- 512k memory per channel
- Dynamically controlled sequencer supports 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 pins per card. Each pin 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.

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 using Windows® API command 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 512 k x 32 memory, supporting drive, sense, direction, control and data valid functionality for each channel.

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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 Marvin Test Solutions 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 GX7100A chassis and a GX7400A user power supply. This configuration supports up to three GX5055 cards.

PROGRAMMING AND SOFTWARE

The board is supplied with GTDIO/DIOEasy, a software package that includes vector editing, a virtual instrument panel, and 32/64-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, LabView, C/C++, Microsoft Visual Basic®, Delphi, and Pascal. On-Line help file and PDF User's Guide provides documentation that includes instructions for installing, using and programming the board.

Optionally, DtifEasy is available for use with the GX5055. DtifEasy offers a complete LASAR post-processor and test execution environment for post-processing and execution of 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

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SPECIFICATIONS

TIMING	
Internal Test Clock	5 Hz to 50 MHz
Internal 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 the drive clock edge (0 ns delay setting)

CHANNEL I/O	
(All specifications based on pin electronic voltage rails (V_{CC} & V_{EE}) 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 Range	-14 V to +26 V, Drive Hi & Drive Lo, maximum swing is 25 V
Drive Voltage Level Range	0.5 V_{PP} (min) 25 V_{PP} (max)
Drive Voltage Accuracy	±25 mV, 25 V_{PP} drive voltage range, open circuit load
Drive Voltage Resolution	16 bits
Driver Leakage Current	±25 nA max
Output Impedance	50 , 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	0.1 to 1 V/nS, adjustable
Sense Voltage Range	-16 V to +22 V, Sense Hi & Sense Lo
Sense Voltage Threshold Accuracy	±25 mV, < 25 V_{PP} sense voltage

Pull-up, Pull-down Current Source / Sink	±24 mA, programmable on a per channel basis V commutate: -14 V to +22 V, programmable on a per channel basis
Resistive Load	Range: Hi-Z, 250 , 1 K, 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

EXTERNAL TIMMING, CONTROL AND STATUS SIGNALS	
User Clock Output	Data clock, TTL compatible, programmable delay relative to drive clock, 0 - 63.75 ns Resolution: 250 ps Jitter: 40 ps RMS
External Strobe Output	Sense data strobe, TTL compatible Programmable delay relative to internal system clock, 0 - 63.75 ns Resolution: 250 ps
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
V_{CC}	+5 V_{DC} output

PARAMETRIC MEASUREMENT UNIT (PMU)	
Number of PMUs	32, one per channel
Modes	Force voltage, measure current Force current, measure voltage
Force Voltage Range	-10 V to +15 V
Force Current Range	±25 mA FS ±200 mA FS
Accuracy	0.1% of FS Range
Measure Voltage Range	-10 V to +15 V
Measure Current Range	±25 mA FS ±200 mA FS

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Accuracy	0.1% of FS Range
ENVIRONMENTAL	
Operating Temperature	0 °C to +50 °C
Storage Temperature	-20 °C to +70 °C
Vibration	5 g @ 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 sub-D, female
I/O Module	68 position SCSI III Type
External V_{CC} / V_{EE}	15 position sub-D, male +18 V @ 6 A -14 V @ 6 A
CALIBRATION	
Calibration Interval	1 year

Note: Specifications are subject to change without notice

ORDERING INFORMATION

GX5055	High-Performance Digital I/O (6U), 32 ch. with 25 V swing, data formatting, and sequencer
SOFTWARE	
DIOEasy	Digital I/O Vector Development Software
DIOEasy-FIT	DIOEasy file import tool kit converts STIL, WGL, VCD/EVCD files to Marvin Test Solutions digital file formats for the GX529x and GX5055 digital I/O cards
DIOEasy-FIT-UG	Upgrade for DIOEasy file import tool kit
DIOEasy-FIT-S1Y	Renew DIOEasy-FIT Subscription and Support (1 Year)
DIOEasy-FIT-S2Y	Renew DIOEasy-FIT Subscription and Support (2 Years)
DIOEasy-FIT-S3Y	Renew DIOEasy-FIT Subscription and Support (3 Years)
DIOEasy-FIT-EXP6	Renew Expired DIOEasy-FIT Subscription and Support (expired 1 day to 6 months)
DIOEasy-FIT-EXP24	Renew Expired DIOEasy-FIT Subscription and Support (expired 7 to 24 months)
DIOEasy-FIT-SUP	1-year Support only for DIOEasy-FIT (no upgrades)
DIOEasy-DS	2 days DIOEasy training at Marvin Test Solutions (Irvine, CA) for 1-3 persons. Call for larger groups.
DIOEasy-DS2	On-site, 2-days DIOEasy training seminars for 1-3 persons. Call for larger groups.
ACCESSORY	
TS-900e-5G-BMC	Blind mate connectors (one pair), DC - 40 GHz, 2.92mm
GT95021	2 ft. Shielded Cable for all 5xxx/35xx (68 Pin)
GT95022	3 ft Shielded Cable for all 5xxx/35xx (68 Pin)
GT95022E	3 ft Shielded Cable for all 5xxx/35xx (68 Pin) Not Terminated One End
GT95025	Connector Interface, 68-Pin SCSI to TTI Testron 170-Pin Signal Block
GT95028	10 ft shielded cable for 5xxx/35xx products (68 Pin)
GT95031	6 ft Shielded Cable for all 5xxx/35xx (68 Pin)
GT95035E-48	Shielded Flying Lead Cable for all 5xxx/35xx (68 Pin), 48".
GX98605	6U "Wireless" Scout Adapter for GX5055 (200-Pin Scout Signal Connectors)
GT95028E	10 ft shielded cable for 5xxx/35xx products (68 Pin) not terminated one end
GT97110	3' Cable with Female DB-9 Connector for GX5055 / GX5960
GX95971	Loopback Verification Module for GX596x and GX5055

CALIBRATION	
GX5055-CAL	GX5055 Calibration/Verification Service. Includes pre-verification data (post calibration data provided if applicable)
GX5055-CAL-3	GX5055 Calibration/Verification Service - 3 Years. Includes pre-verification data (post calibration data provided if applicable)
GX5055-CAL-5	GX5055 Calibration/Verification Service - 5 Years. Includes pre-verification data (post calibration data provided if applicable)
GX5055-5960-CALKIT	Calibration cable kit for use with the GX5055 / GX5960 DIO modules & CalEasy
CalEasy-GX5055	CalEasy for the GX5055 (Single User License) with One Year Support and Subscription
CalEasy	CalEasy License for all Supported Marvin Test Solutions Products (Single User License) with One Year Support and Subscription
CalEasy-2Y	CalEasy License for all Supported Marvin Test Solutions Products (Single User License) with Two Year Support and Subscription
CalEasy-3Y	CalEasy License for all Supported Marvin Test Solutions Products (Single User License) with Three Year Support and Subscription

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