

# GX5150 SERIES

## HIGH SPEED DIGITAL I/O

- 32 input or output pins
- Up to 128 Mb per pin
- Conditional Jump and Pause commands
- Can be combined with the GT50-DIO
- Test rates up to 100 MHz
- 6U PXI board



## DESCRIPTION

The GX5150 Series are high speed, 6U PXI, sequenced digital I/O instruments. The GX5150 master controller has 32 bits of I/O channels that supports test rates of up to 100 MHz and a vector depth of up to 128 Mb per pin. The GX5151 slave offers the same timing characteristics and multiple I/O level configurations when used in conjunction with the GX5150. The GX5150 can control up to 15 GX5151 boards using the same timing and sequencer.

## FEATURES

The GX5150 accommodates between two and nine memory SIMMs. One SIMM is used by the sequencer and the other eight by the I/O pins. Each SIMM provides 256 Kb, 1 Mb, 2 Mb or 4 Mb per pin, for a maximum of 32 Mb. The GX5150 architecture enables the user to stack the memory to reconfigure the board as a 16 pin I/O with 64 Mb depth or as 8 pin I/O providing a maximum of 128 Mb behind each pin.

The GX5150's sequencer, which resides in the ninth SIMM, enables a conditional or unconditional JUMP to two predefined addresses and PAUSE commands. The sequencer commands can be applied every eighth step.

Clock and Strobe signals originate on the timing module and are distributed to the slave GX5151 via a ribbon cable. These signals can be provided externally for full synchronization with external events.

The Trigger signal initiates the execution of vector capturing (or

vector stimuli). The multiple software and hardware trigger sources provide flexibility in synchronizing the GX5151 with real world events.

The Timing Module provides clocks, strobes, and additional timing signals to control the timing of the GX5150. The Timing Module Level Adapter (TMLA) is a daughter board that mounts on the Timing Module to change the levels according to the selected I/O module (TTL, PECL, ECL, LVDS, or programmable levels). The default TMLA is TTL.

In addition, the GX5150 offers a variety of I/O modules. The I/O modules are daughter boards that mount directly onto the GX5150 board. Available I/O modules include TTL, PECL, ECL, Programmable Levels, Frequency Doubler, and LVDS.

## SOFTWARE

The GX5150 Series is supplied with a virtual instrument panel, which includes the 32-bit DLL driver libraries and documentation. The virtual panel can be used to interactively adjust and control the instrument from a window that displays the current instrument settings and measurements.

In addition, various interface files provide access to the library for programming tools and languages such as ATEasy, Microsoft® and Borland® C/C++, Microsoft Visual Basic®, Borland Delphi, LabVIEW, and more.

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## APPLICATIONS

- Automatic Test Equipment (ATE)
- Semiconductors
- Displays
- Printers
- Disk drives
- ASICs
- A/D and D/A
- T3 signals
- Non-standard frame capturing
- Gang testing of boundary scan devices
- Emulation and simulation

## SPECIFICATIONS

TIMING MODULE	MIN	MAX
<b>INTERNAL TEST CLOCK</b>		
FREQ. RANGE	5 Hz	50 MHz
RESOLUTION	The greater of 1 Hz or 0.01%	
<b>INTERNAL B CLOCK</b>		
FREQUENCY RANGE	1 MHz	100 MHz
RESOLUTION	The greater of 1 Hz or 0.2%	
<b>EXTERNAL CLOCK</b>		
DIRECT	0 Hz	50 MHz
REF FOR PROG.	1 MHz	60 MHz
PULSE WIDTH	10 ns	
INPUT LEVEL		
LOW	-0.1 V	0.8 V
HIGH	2.0 V	5.1 V
<b>EXTERNAL EVENTS</b>		
<b>SETUP TIME</b>		
FOR TRIGGERING	1 Clk cycle	2 Clk cycles
FOR CONDITIONS	2 Clk cycles	3 Clk cycles
<b>INPUT/OUTPUT</b>		
CHANNELS PER MODULE	3 programmable configurations: 8-bit, 16-bit, and 32-bit I/O	
<b>I/O MEMORY</b>		
W/1 MB SIMMS	1 Mb	8 Mb
W/2 MB SIMMS	2 Mb	16 Mb
W/4 MB SIMMS	4 Mb	32 Mb

PHYSICAL		
TEMPERATURE OPERATING STORAGE	0° C to 50° C	
	-20° C to 70° C	
SUPPLY CURRENT	MIN	MAX
@ 5 V <sub>DC</sub>	200 mA	500 mA
@ 12 V <sub>DC</sub>	50 mA	100 mA
WEIGHT	100 g	
SIZE	6U PXI	
PXI SLOT TYPE	Double Slot (GX5150); Single Slot (GX5151)	
PC INTERFACE	Windows 95/NT Plug and Play or Legacy (Selectable)	

## ORDERING INFORMATION

GX5150	6U PXI High Speed Digital I/O Master
GX5151	6U PXI High Speed Digital I/O Slave
GX5910	TTL I/O module
GX5920	Frequency Doubler I/O module
GX5930	Programmable levels I/O Module
GX5940	PECL I/O Module
GX5960	LVDS I/O Module
GX5970	Differential TTL I/O Module
GT5006	256 Kb Memory SIMM for GX5150
GT5001	1 Mb Memory SIMM for GX5150
GT5002	2 Mb Memory SIMM for GX5150
GT5004	4 Mb Memory SIMM for GX5150
GT95014	Connector interface for GX5xxx/GX5732, SCSI to 100 Mil Grid, Single ended
GT95015	Connector interface for GX515x, SCSI to 100 Mil Grid, Differential
GT95020	Connector I/F for GX515x, SCSI to 100 Mil Grid, Single ended (both 64 & 14-pin)
GT95021	2' shielded cable for GX5xxx/GX5732 (68-pin)
GT95022	3' shielded cable for GX5xxx/GX5732 (68-pin)
GT95028	10' shielded cable for GX5xxx/GX5732 (68-pin)

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## PIN ASSIGNMENT

68-PIN UUT I/O DATA CONNECTOR, J2			
IO0+	1	35	IO0-
IO1+	2	36	IO1-
IO2+	3	37	IO2-
IO3+	4	38	IO3-
IO4+	5	39	IO4-
IO5+	6	40	IO5-
IO6+	7	41	IO6-
IO7+	8	42	IO7-
IO8+	9	43	IO8-
IO9+	10	44	IO9-
IO10+	11	45	IO10-
IO11+	12	46	IO11-
IO12+	13	47	IO12-
IO13+	14	48	IO13-
IO14+	15	49	IO14-
IO15+	16	50	IO15-
IO16+	17	51	IO16-
IO17+	18	52	IO17-
IO18+	19	53	IO18-
IO19+	20	54	IO19-
IO20+	21	55	IO20-
IO21+	22	56	IO21-
IO22+	23	57	IO22-
IO23+	24	58	IO23-
IO24+	25	59	IO24-
IO25+	26	60	IO25-
IO26+	27	61	IO26-
IO27+	28	62	IO27-
IO28+	29	63	IO28-
IO29+	30	64	IO29-
IO30+	31	65	IO30-
IO31+	32	66	IO31-
VTHI	33	67	VTHI1
VTLO	34	68	VTLO1

Note: For non-differential I/O modules, all IOx- (negated) lines are grounded.

68-PIN UUT CONTROL CONNECTOR, J1			
GND	1	35	GND
N/C	2	36	N/C
N/C	3	37	N/C
N/C	4	38	N/C
N/C	5	39	N/C
GND	6	40	GND
N/C	7	41	N/C
N/C	8	42	N/C
N/C	9	43	N/C
N/C	10	44	N/C
GND	11	45	GND
N/C	12	46	N/C
N/C	13	47	N/C
SCLK	14	48	GND
SSYNCCC	15	49	GND
SDOUT	16	50	GND
SDIN	17	51	GND
GND	18	52	GND
OEN0	19	53	GND
OEN1	20	54	GND
OEN2	21	55	GND
OEN3	22	56	GND
GND	23	57	GND
XOE0	24	58	GND
XOE1	25	59	GND
XOE2	26	60	GND
XOE3	27	61	GND
GND	28	62	GND
JA	29	63	GND
N/C	30	64	GND
5V	31	65	GND
5V	32	66	GND
VTHI	33	67	VTHI
VTLO	34	68	VTLO

Notes: JA-Jump to a pre-defined address A Input. A low on this line will cause a jump to that address.  
OEN0-OEN3-IOM generated Output Enables. A low on these lines specifies the I/O group currently enabled.  
SCLK, SDOUT, SDIN, SSYNCC-should not be connected at any time.  
XOE0-XOE3-External Output Enable input controls for each I/O group. A low on these lines will force the specific group to disable its output drivers.

68-PIN TO UUT TIMING CONNECTOR, J1			
EXT0	1	35	GND
EXT1	2	36	GND
EXT2	3	37	GND
EXT3	4	38	GND
EXT4	5	39	GND
EXT5	6	40	GND
EXT6	7	41	GND
EXT7	8	42	GND
EXT8	9	43	GND
EXT9	10	44	GND
EXT10	11	45	GND
EXT11	12	46	GND
EXT12	13	47	GND
EXT13	14	48	GND
EXT14	15	49	GND
EXT15	16	50	GND
GND	17	51	GND
ORUN	18	52	GND
GND	19	53	GND
BCLK	20	54	GND
GND	21	55	GND
OCLK	22	56	GND
GND	23	57	GND
OSTB	24	58	GND
GND	25	59	GND
XTRIG	26	60	GND
XPAUSE	27	61	GND
XCEN	28	62	GND
XSTBEN	29	63	GND
GND	30	64	GND
XCLK	31	65	GND
XSTB <sup>(1)</sup>	32	66	GND
NC <sup>(1)</sup>	33	67	NC/VCC <sup>(3)</sup>
NC <sup>(2)</sup>	34	68	NC <sup>(2)</sup>

Note: OCLK-Clock Output is not valid when using External Clock Enable (XCEN) with External Clock Input (XCLK).

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DIGITAL I/O