

GX7017 SERIES



GENASYS SWITCHING / DIGITAL SUBSYSTEM WITH SCOUT 6U RECEIVER

- 6U PXI chassis with integrated MAC Panel SCOUT receiver
- 20 slot 6U PXI chassis supports GENASYS digital subsystem, PXI modules, and switching subsystem modules
- Supports multiplexed, hybrid pin & HF connections
- Supports up to 256 digital channels & 2304 hybrid pins



DESCRIPTION

A component of the GENASYS platform, the GX7017 offers the flexibility to incorporate the GENASYS switching subsystem with 3U and 6U PXI instrumentation in one compact, PXI chassis. Based on the 6U PXI architecture, the GX7017 can accommodate up to 9 GENASYS switch cards and 10 PXI modules, with 8 PXI slots supporting the GENASYS GX5960 digital subsystem. Up to 64 external resources can be connected to any of the test system's switching resources / receiver I/O pins via a high performance, internal 16 wire matrix bus.

The GX7017 chassis incorporates the [MAC Panel 6U SCOUT receiver](#). The SCOUT receiver offers a reliable and high performance method to connect the switch modules to a mass interconnect receiver, minimizing the need for cable assemblies. The SCOUT receiver is a "pull-through" design, with each switch card providing a "cable-less" connection to the receiver connectors - eliminating the need for cable harnesses and the associated reliability issues that come with cabled solutions. The result is a system interconnect design that is cost effective, reliable, and maintainable. The modular design of the SCOUT also allows for the use of a broad range of receiver connectors including high density, high current, and coaxial types. The 6U SCOUT receiver can accommodate up to 21 connector slots and over 8000 connections when fully populated.

FEATURES

The GX7017 is a 20-slot 6U PXI chassis that can accommodate up to 19 switching or instrument cards as well as a remote PXI bus interface such as the MXI-4. In addition to supporting all of the PXI-1 resources, the GX7017's PXI backplane provides an internal, high performance, 16 wire, analog bus via the backplane's P5 connectors. Each of the GENASYS switching cards connects to this internal 16 wire bus, providing the ability to route signals from an external instrument to any of the receiver's interface connections.

System power for the GX7017 includes an 800 W power supply for PXI modules and a supplemental 4.4 KW supply for the digital subsystem's VCC and VEE rails via the J5 connector located on the PXI backplane. The chassis utilizes a Smart power system which automatically adjusts the VCC and VEE voltages based on the programmed drive-high and drive-low levels of the digital instruments, minimizing power dissipation and overall cooling requirements.

To ensure adequate cooling, the GX7017's cooling system includes 8, 100 cfm fans, with four located under the card cage and four located at the rear of the chassis, providing positive airflow per the PXI specification and high capacity cooling for PXI modules. This cooling configuration, in conjunction with air plenums within the chassis, provides airflow for all module slots and requires no additional rack space for inlet or outlet air. Additional cooling with dedicated fans is provided for the system power supplies which are located at the rear of the chassis.

The GX7017 chassis supports the monitoring of slot temperatures and system power supply voltages as well providing the ability to program or map each PXI trigger line from one PCI segment to another. In addition, the user can program the temperature monitoring function for specific warning and shutdown limits. All user specific setups can be stored in non-volatile memory as a user configuration and can be used as the default setup for normal chassis operation.

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CONFIGURATION

The GX7017's Slot 1 is dedicated for the system controller. A PXI Star Trigger controller, any PXI or cPCI instrument or a GENASYS switching module can be used in slot 2. Slots 3-15 support the PXI Star Trigger, or any PXI or cPCI instrument. GENASYS switching cards can be installed in slots 2-10. Slots 11 and 12 can accommodate cPCI or PXI modules and slots 13 - 20 can accommodate the GX5960 GENASYS digital modules or PXI modules.

SWITCHING SUBSYSTEM

The modular architecture of the GX7017 allows the switching subsystem to support a wide range of configurations and capabilities. Input analog signal routing is supported by the GX6032, a matrix switch module which is located on the rear of the chassis. This module is configured as a 32 x 16 matrix and supports up to 32 inputs which can be connected to the GX7017's internal 16 wire bus. The chassis can accommodate up to (2) 32 x 16 GX6032 modules. Signal routing from the internal backplane to the receiver interface is supported by any of the GENASYS switch cards which are extended 6U PXI modules with direct connection to the receiver interface. One GX6032 module is supplied with the core system.

DIGITAL SUBSYSTEM

The GX7017 can accommodate up to (8) GX5961/GX5964 digital subsystem cards, providing a high-performance and compact functional test platform for mixed-signal test applications. The GX5960 offers real-time digital stimulus, record, or expect data modes on all I/O channels. Pattern memory depth is 256K words. 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, and Complement Surround – providing flexibility to create a variety of bus cycles and waveforms to test board and box level products.

SOFTWARE

The GX7017 is supported by three software packages: **GxChassis** to monitor and control the chassis and **GxSW** to control and display the switching connections, and **GtDio6x** to control and monitor the digital I/O subsystem including the GX5961 and GX5964 boards. The **GxChassis Virtual Panel** can be used to interactively set /display shutdown and alarm conditions based on defined temperature levels, set the PXI trigger lines and control the fan speed and monitor the power supply voltage. The **GxSW Virtual Panel** can be used to interactively connect, disconnect and display the switching connections, perform BIT, view relay usage count and more. High level switching software - **SwitchEasy** allows you to display, control and manage overall signal routing and provides end to end signal routing by having the user simply define the resource and receiver pin or UUT connections, simplifying overall application development and deployment time. Both software packages includes 32/64-bit DLL driver libraries and documentation. The virtual panel can be used to In addition, an API is supplied that supports a variety of programming tools and languages such as ATEasy, Microsoft® Visual Basic, C# and C/++, LabView and LabWindows/CVI and more.

APPLICATIONS

- GENASYS switching subsystem
- Automated system test applications
- High I/O count, mixed-signal test applications

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SPECIFICATIONS

SWITCHING SUBSYSTEM SPECIFICATIONS	
GX6032 Switch Card	Configuration: 32 x16 Max Inputs: 32 to 128 (4 switch cards)
GX6256 LF Switch Card	Configuration: 16 x16 matrix with 2 to 1 selector, (16) 2:16 multiplexers Inputs: 16 internal analog bus and 16 digital Outputs: 256 Maximum of 9 cards (2304 channels) per system
GX6192 HF Switch Card	Configuration: 16 x 16 matrix with (16) 1:12 multiplexers Inputs: 16 external analog inputs or 16 internal analog bus Outputs: 192
GX6864 RF Switch Card	Bandwidth: 500 MHz Impedance: 75 Configuration: (4) 2 x 16 multiplexers Inputs: 16 internal analog bus, 8 external
Relay Specifications	Max AC pk or DC voltage 170 V Max DC or AC pk carry current: 1A Max DC or AC pk switching current: 0.5A Max. contact rating: 10 W
Signal Bandwidth	
Input to Output (input switch card to LF switch card output)	> 20 MHz
HF Switch Card (external input to output)	> 100 MHz
I/O Connections	
GX6032 Switch Card	32 coaxial connections (Positronics BD8W8F85R70T0/AA)
GX6256 Switch Card	Receiver: Dual 200 pin connector Digital I/O: 34 pin, dual row latched header
GX6192 Switch Card	Receiver: Dual 200 pin connector Digital I/O: 34 pin, dual row latched header External I/O: 16 coaxial connections (Positronics BD8W8F85R70T0/AA)

DYNAMIC DIGITAL SUBSYSTEM	
Configuration	6U PXI format, (7) 32 channel DIO cards, (1) 16 channel DIO card, programmable drive / sense per pin, 50 MHz vector rate (max)
Number of Hybrid Channels	224
Test Modes	Dynamic or static
Data Output Formats (per channel)	Drive Hi, Drive Lo, Hi-Z Formatted Data: 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 (per channel)	Data assert / de-assert based on Phases 1-4
Timing Sets	256 Timing Set groups with 4 Phases, 4 Windows, and 4K sequence steps)
Phase Programming Range (Assert/Return)	0 ns to 64 us (using the 500 MHz master clock)
Window Programming Range (Open/Close)	0 ns to 64 us (using the 500 MHz master clock)
Phase and Window Timing Resolution	1 ns, using the 500 MHz master clock
Capture Modes (per channel)	Mask Opening edge of Window Closing edge of Window Window – data is valid for entire window duration
Drive/Expect Mode	Output: Drive Hi, Drive Lo, Hi-Z Expect: 1, 0, OK, between states, or mask Keep last Toggle last Accumulate CRC-16
Error Address Record	Record address for memory errors 1K deep error memory
Drive Level Range	-14 V to +26 V
Drive Voltage Level Range	Min: 0.5 V p-p Max: 26 V p-p
Drive Voltage Accuracy	± 25 mv, < 26 V p-p drive voltage

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Sense Level Range	-16 V to +22 V
Maximum Sense Voltage Range	26 V
Sense Voltage Resolution	16 bits
Pull-Up/Pull-Down Current Source/Sink	± 24 ma, programmable on a per channel basis V commutate: -16 to +22 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
Trigger/Clock Signals	(4) Aux signals for external triggering, clocking of digital subsystem, accessible via the receiver interface and the IIP

MAINFRAME SPECIFICATIONS

Input AC Power	120 / 208 VAC nominal, 3 phase, 5-wire wye configuration 20 A per phase, 47 to 63 Hz, Input voltage range: 100 / 170 to 155 / 264 VAC
HV Input AC Power Configuration	230 / 400 VAC nominal, 3 phase, 5-wire wye configuration 10 A per phase, 47 to 63 Hz, input voltage range: 223 / 380 to 310 / 528 VAC
Total Available DC Power	PXI voltages: 800 W Pin electronics: 4.4 KW
PXI Power	
+5 V +3.3 V +12 V -12 V Note: Total output power cannot exceed 800 W.	60 A (max) 60 A (max) 25 A (max) 5 A (max)
Pin Electronics (via P5 connector)	
VCC VEE 3.3 V	+2 V to +30 V, @ 50 A -4 V to -18 V, @ 80A 3.3 V @ 60 A
Power Supply Monitoring	Monitored voltages: 3.3, 5, +12, -12, VIO value Accuracy: ± 2% of reading

Temperature Monitoring	Per slot monitoring, 1 reading/sec/slot 4 second moving average value User selectable alarm criteria: • Maximum slot temperature • Average slot temperature Accuracy: ± 2 °C Default warning and shutdown limits: +50 °C & +70 °C Warning and shutdown limits programmable via software driver Status: Query via software driver and audible alarm for a warning limit condition
PXI Triggers	Slots: 2 - 20 Number: 8 per segment Software controlled segment mapping supports: • Isolate a trigger line within a segment • Map a trigger line left to right • Map a trigger line right to left
PXI Clock	Integrated 10 MHz PXI clock with auto-detect function. Presence of an external 10 MHz PXI clock will disable the internal clock. PXI clock is distributed to all peripheral slots. • 10 MHz PXI clock accuracy: ±100 ppm • External input: Rear panel (TTL compatible) or via timing slot • Output: Rear panel, (TTL compatible)
Slots	20 PXI or cPCI Slots (19 instruments max)
Weight (core system)	100 lbs
Overall Dimensions	10U (17.5") H x 19" W x 24" D
Cooling	Eight 100 CFM fans for system cooling. Integrated temperature monitoring via an on-board microcontroller with audible and software notification when preset temperature limits are exceeded. Fan speed control and monitoring is automatic and can be controlled / monitored via the GxChassis software.

ENVIRONMENTAL AND COMPLIANCE

Operating	0 °C to +50 °C
Storage	-20 °C to +60 °C
Relative Humidity (operating)	5% to 80% RH, non-condensing
Relative Humidity (non-operating)	5% to 95% RH, non-condensing
Altitude (operating)	Up to 2000 M
CE Compliance	EN61010-1 (pending) EN61326 (pending)

Note: Specifications are subject to change without notice



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ORDERING INFORMATION

GX7017	GENASYS Switching / Digital Subsystem with SCOUT 6U Receiver
GX7017-01	GENASYS Switching / Digital Subsystem with SCOUT 6U Receiver, HV Input Power Configuration
BOARD TYPE	
GX6032	GENASYS Matrix Switch Interface Module, 32 x16
GX6256	GENASYS LF Multiplexer / Matrix Switch Card, 256 x 16 x 16
GX6192	GENASYS High Frequency Multiplexer / Matrix Switch Card, 192 x 16 x 16
GX6864	GENASYS 75 Ohm RF Multiplexer Switch Card, (4) 2 x 16 Multiplexers
GX5961	Timing / Sync Board. Includes 16, 50MHz Digital I/O Channels
GX5964	50MHz High Performance Dynamic Digital I/O Card. 32 Channels with 256K of Memory per Channel
GX5961-I	Timing / Sync Board. Includes 16, 50MHz Digital I/O Channels and Digital Subsystem Integration
GX5964-I	50MHz High Performance Dynamic Digital I/O Card. 32 Channels with 256K of Memory per Channel and Digital Subsystem Integration
GX5964A	50MHz High Performance Dynamic Digital I/O Card. 32 Channels with 256K of Memory per Channel w/ (2) 34 pin IDC connectors
MXI-4E-C	MXI-Express Kit, Copper, PXI to PCI, with 3m Cable
MXIe1-PXI-L	Laptop (ExpressCard) to PXI Interface Card Kit, Includes a 3 Meter Cable
MXI-EXPRESS	MXI-Express Interface Kit Including PCIe Interface Card, PXI Interface Card, and a 3 Meter Cable, includes 2-port PCIe card
MXI-EXPRESS-2	Dual MXI-Express I/F Kit Including Dual-Port PCIe I/F Card, 2 PXI I/F Cards, and 2 3 Meter Cables
MXI-4E-PCI-C	MXI-Express Interface Card, PCI, Copper, (Requires One MXI-E-PXI-C & Cable)
MXI-4E-PXI-C	MXI-Express Interface Card, PXI, Copper, (Requires One MXI-E-PCI-C & Cable)
MXI-4E-PXI-C-P	MXI-Express Interface Card, PXI, Copper, for Daisy Chain Configurations (Requires One MXI-E-PXI-C & Cable)
MXI-EXPRESS-1	MXI-EXPRESS interface kit, includes single port PCIe interface card, PXI interface card, 3M cable