

# GX7016



## GENASYS SWITCHING SUBSYSTEM WITH SCOUT 6U RECEIVER

- 6U PXI chassis with integrated MAC Panel SCOUT receiver
- 20 slot 6U PXI chassis supports GENASYS switching subsystem modules
- Supports over 4000 multiplexed, hybrid pin connections
- Supports up to 288 digital channels when integrated with a digital subsystem



## DESCRIPTION

A component of the GENASYS platform, the GX7016 switching subsystem offers a new level of high performance, high density switching for board and system level functional test. Based on the 6U PXI architecture, the GX7016 incorporates a modular switch matrix and multiplexer architecture which supports up to 4608 multiplexed, hybrid I/O pins. Up to 128 external resources can be connected to any of the test system's receiver I/O pins via a high performance, internal 16 wire matrix bus. For digital test capability, the GX7016's switching subsystem can be connected to a digital subsystem such as Marvin Test Solutions' GX5960 digital subsystem, providing hybrid pin capability for each multiplexed I/O pin. Up to 288 digital channels are supported by the switching subsystem.

GX7016 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 GX7016 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 GX7016'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 GX7016 is provided by a 755 watt power supply. Forced-air cooling for the chassis is provided by a four (4) 79 CFM fans mounted under the card cage - providing positive airflow per the PXI specification. This configuration provides the optimum cooling for the chassis regardless of the type or number of instruments or switch cards used. Additional cooling is provided for the system power supply. This cooling configuration, in conjunction with air plenums within the chassis, provides airflow for all module slots per the PXI specification and requires no additional rack space for inlet or outlet air.

The GX7016 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.

## CONFIGURATION

The GX7016's Slot 1 is dedicated for the remote 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, any PXI or cPCI instrument or a GENASYS switching module. Slots 16-20 accommodate a PXI or cPCI instruments without the Star Trigger or a GENASYS switching module.



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## SWITCHING SUBSYSTEM

The modular architecture of the GX7016 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 32 x 16 matrix and supports up to 32 inputs which can be connected to the GX7016's internal 16 wire bus. Up to (4) of these modules can be supported by the system. One module is supplied with the core system.

Signal routing from the internal backplane to the receiver interface is supported by the GX6256 MultiMatrix™ switch card which is an extended 6U PXI module with direct connection to the receiver interface. The module combines a 16x16 matrix with (16) 2:16 multiplexers. The result is a switch card that can support up to 256 multiplexed signals from the 16 wire bus. Additionally, a secondary bus is included, providing the ability to route (2) resources to each group of 16 I/O pins within a mux group. The GX6256 also supports the ability to select an analog or digital resource (GX5960 digital subsystem) for each of the 16 inputs/ outputs.

For higher performance analog switching applications, the GX7016 can be configured with the GX6192 HF MultiMatrix™ switch cards which combines a 16x16 matrix with (16) 1x12 multiplexers, providing a total of 192 high performance I/O pins at the receiver interface. HF resources are connected directly to the GX6192 via an external connector. In addition signals can be routed to / from the HF switch card to other switch cards in the system via the system's internal 16 wire bus.

## SOFTWARE

The GX7016 is supported by two software packages: **GxChassis** to monitor and control the chassis and **GxSW** to control and display the switching connections. 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 Inputs: 32 to 128 (4 switch cards)
GX6256 LF Switch Card	Configuration: 16 x16 matrix with 2 to 1 selector, (16) 2:16 multiplexers, 18 cards (max) Inputs: 16 internal analog bus and 16 digital Outputs: 256
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
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)
MAINFRAME SPECIFICATIONS	
Input AC Power	90 to 264 VAC, 12 A max (PFC) 47 to 63 Hz
Total Available DC Power	755 W
+5 V +3.3 V +12 V -12 V Note: Total output power cannot exceed 755 W.	60 A (max) 60 A (max) 30 A (max) 5 A (max)

Power Supply Monitoring	Monitored voltages: 3.3, 5, +12, -12, VIO value Accuracy: $\pm 2\%$ of reading
Temperature Monitoring	Per slot monitoring, 1 reading/sec/slot 4 second moving average value User selectable alarm criteria: <ul style="list-style-type: none"> <li>• Maximum slot temperature</li> <li>• Average slot temperature</li> </ul> Accuracy: $\pm 2\text{ }^{\circ}\text{C}$ Default warning and shutdown limits: $+50\text{ }^{\circ}\text{C}$ & $+70\text{ }^{\circ}\text{C}$ 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: <ul style="list-style-type: none"> <li>• Isolate a trigger line within a segment</li> <li>• Map a trigger line left to right</li> <li>• Map a trigger line right to left</li> </ul>
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. <ul style="list-style-type: none"> <li>• 10 MHz PXI clock accuracy: <math>\pm 100</math> ppm</li> <li>• External input: Rear panel (TTL compatible) or via timing slot</li> <li>• Output: Rear panel, (TTL compatible)</li> </ul>
Slots	20 PXI or cPCI Slots (19 instruments max)
Weight (core system)	61 lbs
Overall Dimensions	10U (17.5") H x 19" W x 24" D
Cooling	Four 79 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.

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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

## ORDERING INFORMATION

<b>GX7016</b>	GENASYS Switching Subsystem
<b>BOARD TYPE</b>	
<b>GX6032</b>	GENASYS Matrix Switch Interface Module, 32 x 16
<b>GX6256</b>	GENASYS LF Multiplexer / Matrix Switch Card, 256 x 16 x 16
<b>GX6192</b>	GENASYS High Frequency Multiplexer / Matrix Switch Card, 192 x 16 x 16
<b>GX6864</b>	GENASYS 75 Ohm RF Multiplexer Switch Card, (4) 2 x 16 Multiplexers