

GX3104



4 CHANNEL PXI SOURCE MEASURE UNIT (SMU)

- 4 isolated, common ground SMU channels
- 4-quadrant operation: ± 20 V, ± 1 A
- 7 current ranges, $\pm 2.5 \mu\text{A}$ to ± 1 A full scale
- Up to 1A capability on one channel
- 24-bit ADC's, 18-bit DAC's
- Supplied with a full featured API and UI
- PXI hybrid slot compatible



DESCRIPTION

The GX3104 is a precision 3U PXI module that forces and senses both voltage and current over a range of ± 20 V and up to ± 1 A (channel 1) with channels 2- 4 capable of supplying up to 500 mA per channel. Total available output current from the module is 1A. The four channels are electrically isolated from the PXI power supply and share a common, isolated ground.

FEATURES

The GX3104 employs 18-bit DACs for the sourcing of voltage and current. There are 7 current ranges, ranging from $\pm 2.5 \mu\text{A}$ FS to ± 1 A FS. Measurements employ a 24 bit ADC with programmable resolution from 18 to 24 bits. Each output channel includes SMU output connections, Kelvin (sense) connections, and a driven guard connection for low level current measurements.

The board is supplied with the GXSMU library, a software package that includes a virtual instrument panel, and a Windows 32/64-bit DLL driver library 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, LabVIEW/Real-Time, C/C++, Microsoft Visual Basic®, Delphi, and Pascal. An On-Line help file and PDF User's Guide provides documentation that includes instructions for installing, using and programming the board.

A separate software package - GtLinux - provides support for Linux 32/64 operating systems.

APPLICATIONS

- Semiconductor component test and characterization
- ATE systems
- Board and system level test

SOFTWARE



GX3104



SPECIFICATIONS

HARDWARE	
I/O Connections per Channel	SMU input / output (2) Guard Kelvin (2)
Format	PXI, 3U single slot, hybrid slot compatible
SOURCE AND MEASURE SPECIFICATIONS	
Voltage Source	Range: ± 20 V FS Accuracy: 0.05% of programmed value + 2mV
Voltage Source Resolution	18 bits
Output Voltage Ripple and Noise	<20 mV p-p, 20 MHz BW, full load
Current Source Resolution	18 bits
Current Source Ranges	± 25 μ A to ± 250 mA, in decade ranges Accuracy: $\pm 0.05\%$ of programmed value + 0.05% of FS range ± 2.5 μ A range Accuracy: $\pm 0.05\%$ of programmed value + 0.4% of FS range ± 1 A range* Accuracy: $\pm 0.5\%$ of programmed value + 0.5% of FS range *Notes: -Only Channel 1 supports the 1A capability- -Channels 2-4 support up to 500 mA FS- -Maximum output current from the module cannot exceed 1A-
Isolation Voltage	± 60 VDC relative to PXI ground
Maximum Voltage Between the LO Terminal and PXI Ground	± 60 V
Absolute Maximum Voltage within a Channel	± 25 Volts
Source Noise	20 μ V RMS (0.1 Hz to 10 Hz) 25 mV RMS (20 Hz to 20 MHz)
Settling Time	10% of current range: 10 μ s typical, 20 μ s max. 90% of current range: 100 μ s typical, 300 μ s max.
Transient Response	Settles to ± 20 mV of programmed value after 80% load change, 100 μ s typical, 3 ms max.

Voltage Measurement	Range: ± 20 V Accuracy: 0.05% of measured value + 2mV at 60 reading per sec.
Current Measurement	± 25 μ A to ± 250 mA, in decades Accuracy: $\pm 0.05\%$ of measured value + 0.05% of FS range ± 2.5 μ A range Accuracy: $\pm 0.05\%$ of measured value + 0.4% of FS range ± 1 A range* Accuracy: $\pm 0.5\%$ of measured value + 0.5% of FS range *Only Channel 1 can measure ± 1 A FS *Channels 2 -4 can measure ± 500 mA FS Note: all specified current measurements accuracies are done at 60 reading per sec.
Measurement Resolution	Programmable, 18 to 24 bits
Measurement Conversion Rate	82 μ s to 2868 μ s, based on measurement resolution
ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS	
Temperature Range	Operating: 0 to +40 °C Storage: -20°C to +70 °C
Power	+12 V, 2.95 A; +5 V, 0.75 A; +3.3 V, 1.2 A Note: For high power applications, a high power chassis with 45 watts of power / cooling per slot is required
I/O Connector	DB 25 female

Note: Specifications are subject to change without notice

GX3104



ORDERING INFORMATION

GX3104	4 Channel SMU, $\pm 20V$, 250mA per Channel
GX3104-M	4 Channel SMU, $\pm 20V$, 250mA per Channel (Ruggedized & Conformally Coated)
CALIBRATION	
GX3104-CAL	GX3104 Calibration/Verification Service. Includes pre-verification data (post calibration data provided if applicable)
GX3104-CAL-3	GX3104 Calibration/Verification Service - 3 Years. Includes pre-verification data (post calibration data provided if applicable)
GX3104-CAL-5	GX3104 Calibration/Verification Service - 5 Years. Includes pre-verification data (post calibration data provided if applicable)
CalEasy-GX3104	CalEasy for the GX3104 (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
GX3104-CALCABLE	GX3104 Calibration Cable Assembly
ACCESSORY	
GX91801	25 Pin Male Mating Connector for GX1838/GX1164/GX3104/GX7404
GX91802	25 Pin Male Mating Connector for GX1838/GX1164/GX3104/GX7404 with a 3 ft Unterminated Harness
GX91803	3 feet harness for GX1838/GX1164/GX3104/GX7404, 25 pin male/female connectors on both ends

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MEASUREMENT

