

XMU Multiple Channel Series

High-Precision PXIe Source Measure Units for High-Density Parallel Testing

At a Glance

The XMU Multiple Channel Series offers high-precision PXIe source measure units designed for parallel, high-density device testing. With 4 to 24 independent channels per module, they deliver simultaneous sourcing and measurement across all channels.

These modules provide sampling rates up to 1 MS/s, current sensitivity down to 10 pA, and voltage ranges up to ± 24 V, with programmable clamping, synchronous triggering, and channel cascade output support.

With highly isolated signals and a compact 3U form factor, this series is the ideal solution for semiconductor characterization, IC power supply testing, and large-scale batch verification.



XMU5201A 4-CH High-Precision SMU

The XMU5201A is a four-channel high-precision Source Measure Unit (SMU) designed in a standard PXIe bus format, specifically engineered for testing semiconductors and electronic products. Each channel integrates five essential functions into a single 3U module: a four-quadrant voltage source, a current source, an ammeter, a voltmeter, and an electronic load.

By combining the XMU5201A with a PXI controller and a customized PC-based graphical user interface, engineers can achieve highly efficient and accurate measurements across four independent channels simultaneously. Compatible with standard PXIe systems on Windows and Linux, it provides VISA-based DLL drivers for seamless custom automation.



Key Features

- **4-Channel 4-Quadrant SMU**
Four fully independent channels for simultaneous source & measure
- **High-Speed Sampling**
Up to 600 kS/s sampling rate per channel for efficient data acquisition
- **Precision Sensitivity**
Down to 10 pA current & 20 μ V voltage resolution
- **Compact Operating Range**
 ± 24 V output with up to ± 150 mA per channel
- **PXIe Compatibility**
Supports PXIe slot format & Windows/Linux
- **Advanced Development**
VISA-based DLLs for custom automation and secondary development

Application Scenarios

Semiconductor Testing

Multi-device parallel characterization, leakage current measurement, and wafer-level screening with four simultaneous channels.

LED/LD Testing

Parallel IV curve sweeping and threshold current analysis across multiple optoelectronic devices.

Aerospace Electronics

Multi-channel precision electrical characterization and batch verification of high-reliability components.

Power Electronics

Parallel efficiency evaluation and comparative testing of low-voltage power devices and modules.



XMU5201A Specifications

General Specifications				
Number of Channels		4		
Operating Temperature		0°C ~ +55°C		
Storage Temperature		-20°C ~ +70°C		
Dimensions		3U		
Bus Type		PXIe		
Voltage Programming and Measurement Accuracy and Resolution				
Range	Resolution	Noise (Typical, 0.1 Hz–10 Hz, P-P)	Accuracy (23 °C ±5 °C) ±(% of reading + offset)	Temperature Coefficient ±(% of reading + offset)/°C, 0 ~ 55°C
24 V	20 μV	20 μV	0.015%+1.2 mV	0.0005%+1 μV
Current Programming and Measurement Accuracy and Resolution				
Range	Resolution	Noise (Typical, 0.1 Hz–10 Hz, P-P)	Accuracy (23 °C ±5 °C) ±(% of reading + offset)	Temperature Coefficient ±(% of reading + offset)/°C, 0 ~ 55 °C
10 μA	10 pA	10 pA	0.03%+1.6 nA	0.002%+10 pA
100 μA	100 pA	100 pA	0.03%+16 nA	0.002%+100 pA
1 mA	1 nA	1 nA	0.03%+160 nA	0.002%+1 nA
10 mA	10 nA	10 nA	0.03%+1.6 μA	0.002%+10 nA
150 mA	150 nA	150 nA	0.03%+24 μA	0.002%+150 nA
Power Supply Requirements				
3U PXI Power Supply		+3.3V	+5V	+12V
		2A	0A	2.5A
				-12V
				0A

Product specifications are subject to change without notice. Please refer to the latest version of the product manual for the most current information.

Ordering Information

Ordering Model: XMU5201A 4-CH High-Precision SMU

XMU5201B 4-CH High-Precision SMU

The XMU5201B is a four-channel high-precision Source Measure Unit (SMU) designed in a standard PXIe bus format, specifically engineered for testing semiconductors and electronic products. Each channel integrates five essential functions into a single 3U module: a four-quadrant voltage source, a current source, an ammeter, a voltmeter, and an electronic load.

By combining the XMU5201B with a PXI controller and a customized PC-based graphical user interface, engineers can achieve highly efficient and accurate measurements across four independent channels simultaneously. Compatible with standard PXIe systems on Windows and Linux, it provides VISA-based DLL drivers for seamless custom automation.



Key Features

- **4-Channel 4-Quadrant SMU**
Four fully independent channels for simultaneous source & measure
- **High-Speed Sampling**
Up to 600 kS/s sampling rate per channel for efficient data acquisition
- **Multi-Channel Sensitivity**
Down to 100 pA current & 200 μ V voltage resolution per channel
- **Compact Operating Range**
 ± 24 V output with up to ± 150 mA per channel
- **PXIe Compatibility**
Supports PXIe slot format & Windows/Linux
- **Advanced Development**
VISA-based DLLs for custom automation and secondary development

Application Scenarios

Semiconductor Testing

Multi-device parallel characterization, leakage current measurement, and wafer-level screening with four simultaneous channels.

LED/LD Testing

Parallel IV curve sweeping and threshold current analysis across multiple optoelectronic devices.

Aerospace Electronics

Multi-channel precision electrical characterization and batch verification of high-reliability components.

Power Electronics

Parallel efficiency evaluation and comparative testing of low-voltage power devices and modules.



XMU5201B Specifications

General Specifications				
Number of Channels		4		
Operating Temperature		0°C ~ +55°C		
Storage Temperature		-20°C ~ +70°C		
Dimensions		3U		
Bus Type		PXIe		
Voltage Programming and Measurement Accuracy and Resolution				
Range	Resolution	Noise (Typical, 0.1 Hz–10 Hz, P-P)	Accuracy (23 °C ±5 °C) ±(% of reading + offset)	Temperature Coefficient ±(% of reading + offset)/°C, 0 ~ 55°C
24 V	20 μV	20 μV	0.015%+1.2 mV	0.0005%+1 μV
Current Programming and Measurement Accuracy and Resolution				
Range	Resolution	Noise (Typical, 0.1 Hz–10 Hz, P-P)	Accuracy (23 °C ±5 °C) ±(% of reading + offset)	Temperature Coefficient ±(% of reading + offset)/°C, 0 ~ 55 °C
10 μA	100 pA	100 pA	0.1%+5 nA	0.002%+10 pA
100 μA	1 nA	1 nA	0.1%+50 nA	0.002%+100 pA
1 mA	10 nA	10 nA	0.1%+0.5 μA	0.002%+1 nA
10 mA	100 nA	100 nA	0.1%+5.0 μA	0.002%+10 nA
150 mA	1.5 μA	1.5 μA	0.1%+75 μA	0.002%+150 nA
Power Supply Requirements				
3U PXI Power Supply		+3.3V	+5V	+12V
		2A	0A	2.5A
				-12V
				0A

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Ordering Information

Ordering Model: XMU5201B 4-CH High-Precision SMU

XMU5202 4-CH High-Precision SMU

The XMU5202 is a four-channel high-precision Source Measure Unit (SMU) designed in a standard PXIe bus format with hybrid slot compatibility, engineered for testing and characterization of power supply systems for digital and mixed-signal integrated circuits. Each channel supports full four-quadrant output at $\pm 11\text{ V}$ and up to $\pm 1000\text{ mA}$.

Combined with a PXI controller and PC-based GUI, it enables efficient parallel measurements with synchronous triggering, programmable voltage and current clamping, and VISA-based DLL drivers for custom automation.

Without an external power supply, the total current across all four channels must not exceed 1 A. With an external power supply, the total current limit is 3 A, with a maximum of 2 A per single channel.



Key Features

- **4-Channel 4-Quadrant SMU**
Four independent channels with simultaneous source & measure
- **High-Resolution Sourcing & Meas.**
16-bit sourcing and 18-bit measurement resolution
- **Flexible Current Ranges**
7 ranges from $\pm 5\text{ }\mu\text{A}$ to $\pm 1000\text{ mA}$ per channel
- **High-Power Output**
Up to 2 A per channel with external power input support
- **Advanced Trigger & Clamp**
Synchronous triggering with programmable voltage & current clamping
- **Hybrid PXIe Compatibility**
Supports PXI/PXIe hybrid slots & Windows/Linux

Application Scenarios

Semiconductor Testing

Parallel IC bias and characterization with programmable clamping.

LED/LD Testing

Multi-device IV characterization with programmable current limiting.

Aerospace Electronics

Synchronized multi-channel verification of high-reliability electronic assemblies.

Power Electronics

High-power device evaluation with configurable current ranges and external supply.

XMU5202 Specifications

General Specifications	
Number of Channels	4
Operating Temperature	0°C ~ +55°C
Storage Temperature	-20°C ~ +70°C
Dimensions	3U
Bus Type	PXIe
External Power Supply	Features an external ± 21 V power supply interface
Voltage Range	± 11 V
Voltage Resolution	Source: 400 μ V; Measurement: 100 μ V
Voltage Output and Measurement Accuracy (% of Reading + Offset) at 23°C $\pm 5^\circ$ C	$\pm(0.05\% + 1)$ mV
Current Clamp Error	Not exceeding $\pm 10\%$ of the current range in use
Current Source And Measure	
Current Range	± 5 μ A, ± 20 μ A, ± 200 μ A, ± 2 mA ± 20 mA, ± 200 mA, ± 1000 mA
Current Resolution	Source: 200 pA Measurement: 50 pA
Current Output and Measurement Accuracy (% of Reading + Offset) at 23°C $\pm 5^\circ$ C	± 5 μ A: $\pm(0.03\% + 2$ nA) ± 20 μ A: $\pm(0.03\% + 10$ nA) ± 200 μ A: $\pm(0.05\% + 100$ nA) ± 2 mA: $\pm(0.05\% + 1$ μ A) ± 20 mA: $\pm(0.05\% + 10$ μ A) ± 200 mA: $\pm(0.05\% + 100$ μ A) ± 1000 mA: $\pm(0.1\% + 1$ mA)

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Ordering Information

Ordering Model: XMU5202 4-CH High-Precision SMU

XMU5203 8-CH High-Precision SMU

The XMU5203 is an eight-channel high-precision Source Measure Unit (SMU) designed in a standard PXIe bus format with hybrid slot compatibility, engineered for testing and characterization of power supply systems for digital and mixed-signal integrated circuits. Each channel supports full four-quadrant output at ± 11 V and up to ± 1000 mA.

Combined with a PXI controller and PC-based GUI, it enables efficient parallel measurements with channel cascade output, programmable voltage and current clamping, and VISA-based DLL drivers for custom automation.

Without an external power supply, the total current across all four channels must not exceed 1 A. With an external power supply, the total current limit is 1.6 A, with a maximum of 1 A per single channel.



Key Features

- **8-Channel 4-Quadrant SMU**
Eight independent channels with simultaneous source & measure
- **High-Resolution Sourcing & Meas.**
16-bit sourcing and 18-bit measurement resolution
- **Flexible Current Ranges**
7 ranges from $\pm 5 \mu\text{A}$ to ± 1000 mA per channel
- **Channel Cascade Output**
Inter-channel cascade for extended voltage or current output
- **Advanced Trigger & Clamp**
Programmable voltage & current clamping with pulsed output support
- **Hybrid PXIe Compatibility**
Supports PXI/PXIe hybrid slots & Windows/Linux

Application Scenarios

Semiconductor Testing

Parallel bias and characterization of mixed-signal ICs with clamping protection.

LED/LD Testing

Multi-device IV characterization with programmable current limiting.

Aerospace Electronics

Eight-channel synchronized verification of high-reliability electronic assemblies.

Power Electronics

High-density device evaluation with cascadable channels and configurable current ranges.



XMU5203 Specifications

General Specifications	
Number of Channels	8
Operating Temperature	0°C ~ +55°C
Storage Temperature	-20°C ~ +70°C
Dimensions	3U
Bus Type	PXIe
External Power Supply	Features an external ± 21 V power supply interface
Voltage Range	± 11 V
Voltage Resolution	Source: 400 μ V; Measurement: 100 μ V
Voltage Output and Measurement Accuracy (% of Reading + Offset) at 23°C $\pm 5^\circ$ C	$\pm(0.05\% + 1)$ mV
Current Clamp Error	Not exceeding $\pm 10\%$ of the current range in use
Current Source And Measure	
Current Range	± 5 μ A, ± 20 μ A, ± 200 μ A, ± 2 mA ± 20 mA, ± 200 mA, ± 1000 mA
Current Resolution	Source: 200 pA Measurement: 50 pA
Current Output and Measurement Accuracy (% of Reading + Offset) at 23°C $\pm 5^\circ$ C	± 5 μ A: $\pm(0.03\% + 2$ nA) ± 20 μ A: $\pm(0.03\% + 10$ nA) ± 200 μ A: $\pm(0.05\% + 100$ nA) ± 2 mA: $\pm(0.05\% + 1$ μ A) ± 20 mA: $\pm(0.05\% + 10$ μ A) ± 200 mA: $\pm(0.05\% + 100$ μ A) ± 1000 mA: $\pm(0.1\% + 1$ mA)

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Ordering Information

Ordering Model: XMU5203 8-CH High-Precision SMU

XMU5238 24-CH High-Precision SMU

The XMU5238 is a 24-channel high-precision Source Measure Unit (SMU) designed in a standard PXIe bus format with PXI/PXIe hybrid slot compatibility, enabling synchronous sourcing and measurement across all 24 channels simultaneously. It is widely applied in characterizing and testing semiconductor devices, sensors, and batteries.

Combined with a PXI controller and PC-based GUI, users can rapidly configure parameters, perform measurements, and store results for analysis. VISA-based DLL drivers are provided for seamless custom automation.



Key Features

- **24-Channel 4-Quadrant SMU**

Synchronous sourcing & measurement across all 24 independent channels

- **High-Speed Sampling**

Up to 1 MS/s sampling rate for efficient multi-channel data acquisition

- **High-Precision Sensitivity**

Down to 80 pA current & 80 μ V voltage resolution per channel

- **Compact Multi-Channel Range**

± 15 V output with up to ± 50 mA per channel

- **Hybrid PXIe Compatibility**

Supports PXI/PXIe hybrid slots & Windows/Linux

- **Advanced Development**

VISA-based DLLs for custom automation and secondary development

Application Scenarios

Semiconductor Testing

High-throughput parallel characterization and wafer-level screening across 24 devices simultaneously.

LED/LD Testing

Mass parallel IV curve sweeping and binning of optoelectronic devices.

Sensor & Battery Testing

Multi-channel bias and characterization of sensors, battery cells, and electrochemical devices.

Aerospace Electronics

Large-scale batch verification of high-reliability components.

XMU5238 Specifications

General Specifications				
Number of Channels		24		
Operating Temperature		0°C ~ +55°C		
Storage Temperature		-20°C ~ +70°C		
Dimensions		3U		
Bus Type		PXIe		
Voltage Programming and Measurement Accuracy and Resolution				
Range	Resolution	Noise (Typical, 0.1 Hz–10 Hz, P-P)	Accuracy (23 °C ±5 °C) ±(% of reading + offset)	
5 V	80 μV	80 μV	0.04%+400 μV	
10 V	160 μV	160 μV	0.04%+800 μV	
15 V	240 μV	240 μV	0.04%+1.2 mV	
Current Programming and Measurement Accuracy and Resolution				
Range	Resolution	Noise (Typical, 0.1 Hz–10 Hz, P-P)	Accuracy (23 °C ±5 °C) ±(% of reading + offset)	
5 μA	80 pA	80 pA	0.04%+400 pA	
40 μA	640 pA	640 pA	0.04%+3.2 nA	
200 μA	3.2 nA	3.2 nA	0.04%+46 nA	
2 mA	32 nA	32 nA	0.04%+160 nA	
50 mA	800 nA	800 nA	0.04%+4 μA	
Power Supply Requirements				
3U PXI Power Supply	+3.3V	+5V	+12V	-12V
	4A	0A	5A	0A

Product specifications are subject to change without notice. Please refer to the latest version of the product manual for the most current information.

Ordering Information

Ordering Model: XMU5238 24-CH High-Precision SMU

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Specifications subject to change without notice. Per AS/NZS standards.

