

XMU5238 32-Channel Source Measure Unit

32-channel PXIe SMU for synchronized four-quadrant sourcing and measurement

At a Glance

XMU5238 combines precision voltage sourcing, current sourcing and simultaneous measurement in a compact PXIe module for synchronized 32-channel device characterization and automated test.

Four-quadrant operation, 1 MS/s sampling and programmable voltage ranges through 15 V support fast current-voltage sweeps, pulsed evaluation and automated data capture.

A 78-pin D-Sub output interface, Windows and Linux support, and a VISA-based DLL simplify integration into scalable semiconductor and component test systems.





Integrated 32-Channel Source and Measure

XMU5238 integrates 32 synchronized channels of precision voltage sourcing, current sourcing and current-voltage measurement in one PXIe module. It can source and measure voltage and current simultaneously, while host software supports parameter setup, data plotting and data storage for downstream analysis.

Voltage programming and measurement ranges cover 5 V, 10 V and 15 V with resolution down to 80 μ V. Listed current ranges extend from 5 μ A to 32 mA with resolution down to 80 pA.

PXIe communication and a 78-pin D-Sub output connector support system integration. The architecture is intended for synchronized characterization of semiconductor devices, sensors, batteries and other electronic components.

Key Features

- **Four-Quadrant Operation**

Sources and sinks voltage and current across the illustrated operating envelope of ± 15 V and ± 32 mA.

- **Fast Sampling**

Sampling rate up to 1 MS/s for rapid sweeps and synchronized automated measurements.

- **Precision Voltage Ranges**

5 V, 10 V and 15 V programming and measurement ranges with resolution down to 80 μ V.

- **Sensitive Current Measurement**

Current range table spans 5 μ A to 32 mA with resolution down to 80 pA.

- **32-Channel PXIe Integration**

Compact 3U PXIe form factor with 32 synchronized source and measurement channels.

- **Output Interface**

A 78-pin D-Sub connector provides the module output interface.

- **Cross-Platform Control**

Supports Windows and Linux operating environments for flexible deployment.

- **Driver Access**

VISA-based DLL support enables integration and secondary software development.



Application Scenarios

Semiconductor Device Test

Synchronized current-voltage characterization and automated test for semiconductor components.

LED and LD Test

Voltage-current sweeps and pulsed evaluation for LEDs and laser diodes.

Sensor Characterization

Precision stimulus and response measurement for sensor development and validation.

Aerospace Electronics

Automated sourcing and measurement for aerospace electronic assemblies and devices.

Power Electronics

Four-quadrant characterization of power-electronic components within the stated voltage-current envelope.

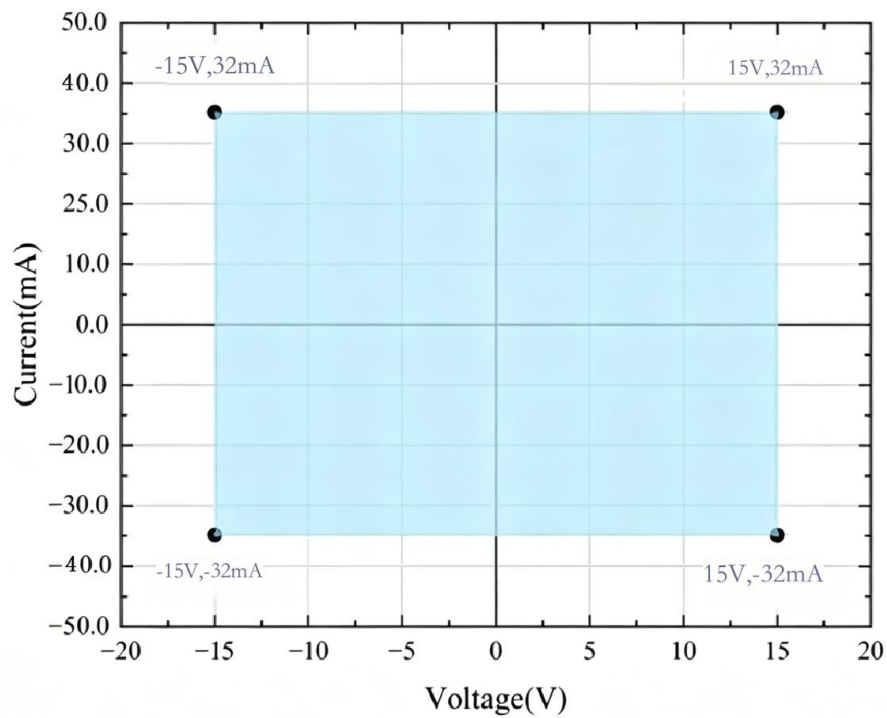
Battery Characterization

Controlled sourcing and measurement for battery and cell characteristic evaluation.

Four-Quadrant Operating Envelope

The four-quadrant diagram defines an operating envelope spanning $\pm 15\text{ V}$ and $\pm 32\text{ mA}$. This supports both sourcing and sinking behavior for current-voltage characterization.

Programming and measurement resolution, noise and accuracy for each voltage and current range are listed separately in the following tables.



General Specifications

System	
Channel Architecture	32 synchronized source-and-measure channels
Form Factor	3U
Bus Interface	PXIe
Output Connector	78-pin D-Sub
Sampling Rate	1 MS/s
Environment	
Operating Temperature	0 °C to +55 °C
Storage Temperature	-20 °C to +70 °C
Software	
Operating Systems	Windows and Linux
Driver	VISA-based DLL

Voltage Programming and Measurement

Typical noise is specified from 0.1 Hz to 10 Hz, peak-to-peak. Accuracy is specified at 23 °C ± 5 °C as $\pm(\text{percentage} + \text{offset})$.

Voltage Ranges	
5 V Range	Resolution: 80 μV ; typical noise: 80 μV ; accuracy: $\pm(0.02\% + 400 \mu\text{V})$
10 V Range	Resolution: 160 μV ; typical noise: 160 μV ; accuracy: $\pm(0.02\% + 800 \mu\text{V})$
15 V Range	Resolution: 240 μV ; typical noise: 240 μV ; accuracy: $\pm(0.02\% + 1.2 \text{ mV})$

Current Programming and Measurement

Typical noise is specified from 0.1 Hz to 10 Hz, peak-to-peak. Accuracy is specified at 23 °C ± 5 °C as $\pm(\text{percentage} + \text{offset})$.

Current Ranges	
5 μA Range	Resolution: 80 pA; typical noise: 80 pA; accuracy: $\pm(0.04\% + 400 \text{ pA})$
40 μA Range	Resolution: 640 pA; typical noise: 640 pA; accuracy: $\pm(0.04\% + 3.2 \text{ nA})$
200 μA Range	Resolution: 3.2 nA; typical noise: 3.2 nA; accuracy: $\pm(0.04\% + 16 \text{ nA})$
2 mA Range	Resolution: 32 nA; typical noise: 32 nA; accuracy: $\pm(0.04\% + 160 \text{ nA})$
32 mA Range	Resolution: 800 nA; typical noise: 800 nA; accuracy: $\pm(0.04\% + 4 \mu\text{A})$

PXle Slot Power Requirements

Slot Power	
+3.3 V Rail	4 A
+5 V Rail	0 A
+12 V Rail	5 A
-12 V Rail	0 A

Specifications are subject to change without notice.

Ordering Information

Product	
Model	XMU5238
Description	32-Channel High-Precision Source Measure Unit
Standard Interface	
Module	3U PXle
Output Connector	78-pin D-Sub

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