

PX1001A PXIe Precision I/V Measurement Solution Package

Start your precision measurement quickly



Overview

Precision sourcing and measurement are essential in R&D and manufacturing for various applications. The Keysight PXIe precision source/measure units (SMUs) such as the M9601A, M9602A, M9603A, M9614A and M9615A meet broad requirements in emerging applications such as VCSEL optical devices, semiconductor reliability testing and integrated circuit (IC) tests.

The Keysight PX1001A PXIe Precision I/V Measurement Solution Package offers flexibility and extensibility for precision current-voltage (IV) measurements. It bundles a M9010A PXIe chassis, and a M9038A PXIe embedded controller with PXIe SMU modules. The package bundles some standard cables with the PXIe SMU module as well. The Keysight PX0109A Quick I/V Measurement Software is also available for the package.

The PX1001A allows you to select the types and number of modules for SMUs appropriately based on your application requirement. It also makes it easy to quickly setup and perform IV measurements and to display the measurement data in tables and graphs without the need to program for device/circuit measurements requiring more than two SMU channels for characterization/verification/test.

Key Features

Model number		M9601A	M9602A	M9603A	M9614A	M9615A
Maximum number of modules		4	8		8	
Number of channels per module		1	1		5	
Output range	Max. voltage	210 V	60 V		30 V	
	Max. current (DC)	315 mA	3.5 A		500 mA	
	Max. current (Pulse)	315 mA	10.5 A		500 mA	
Min. resolution	Voltage	0.5 μ V	6 μ V		6 μ V	
	Current	10 fA	1 pA	100 fA	100 pA	10 pA
Dynamic measurement	Min. pulse width	20 μ s	10 μ s		100 μ s	
	Max. Slew rate	1.5 V/ μ s	3.5 V/ μ s		0.15 V/ μ s	
	Max. Sampling rate	1.25 MSa/s	15 MSa/s		500 kSa/s	
Seamless current measurement ranging		No	Yes		Yes	
Number of slots		2	1		1	

Hardware Elements

M9010A PXIe Chassis: 10-slot, 3U, 24GB/s

www.keysight.com/find/m9010a

The Keysight M9010A PXIe 10-slot Gen 3 chassis delivers flexibility, compatibility, and performance in a smaller form-factor ideal for bench-top applications. With 8 PXIe hybrid slots, it gives the system designer flexibility to mix and match the number and location of PXIe and hybrid-compatible modules. The maximum performance, PCIe® switch fabric can operate up to Gen 3 providing up to 24 GB/s of system data bandwidth. The new cooling design provides exceptional per-slot cooling while at the same time producing much less fan noise than the typical PXI chassis. It is also designed for easy maintenance and has features for combining multiple chassis together or integrating with other non-PXI instrumentation.

This solution package bundles two Y1212A PXI slot blockers for the chassis as well.



M9038A PXIe High Performance Embedded Controller

www.keysight.com/find/m9038a

The Keysight Technologies, Inc. M9038A is a high-performance, four-slot PXIe embedded PC controller with Windows 10 operating system designed for high-performance and complex, multi-chassis systems. It is well-suited for secure environments due to its front-panel, removable solid-state drive (SSD).

The embedded controller is built upon an Intel 6-Core i7-9850HE processor with 12 threads and is an excellent choice for complex applications requiring high computing power.

This solution package specifies M32 (32 GB memory) and W16 (Windows 10 IoT Enterprise LTSC (64-bit) options for the M9038A. It bundles Y1262A DisplayPort cable, a keyboard, and an optical mouse as well.



M9601A PXIe Precision Source/Measure Unit, 1.25 MSa/s, 10 fA, 210 V, 315 mA

www.keysight.com/find/m9601a

The Keysight M9601A is a PXIe precision source/measure unit (SMU) with the capability to source and measure both voltage and current. It covers currents from 10 fA to 315 mA, and voltages from 500 nV to 210 V, and has the capability to make precise measurements from DC to pulsed down to 20 μ s pulse width with the sampling rate up to 1.25 MSa/s. That makes the M9601A ideal for a wide variety of current versus voltage (IV) measurement tasks that require both high resolution and accuracy. You now can accurately perform characterization, parametric/reliability tests of semiconductors, active/passive components, and general electronic devices.

This solution package bundles two PX0102A Low Noise Triaxial Cables and one PX0103A Triaxial to SMB Cable per a M9601A module as well, which enables Triaxial connection at the device interface.



M9602/03A PXIe Precision Source/Measure Unit, 15 MSa/s, 1 pA/100 fA, 60 V, 3.5 A DC/10.5 A pulse

www.keysight.com/find/m9602a

www.keysight.com/find/m9603a

The Keysight M9602A and M9603A are PXIe precision source/measure units (SMUs) featuring best-in-their-class narrow pulse width as narrow as 10 μ s, a fast sampling rate of up to 15 MSa/s and a wide output range. They enable dynamic or pulsed measurements for broad emerging applications such as vertical cavity surface emitting laser (VCSEL) optical devices, integrated circuit (IC) testing across a wide output range of up to 60 V/3.5 A DC/10.5 A pulse, and high resolution up to 6 μ V/100 fA. In addition, its low noise performance of as low as 400 fArms at 1 power line cycle (PLC) enables measurements with shorter aperture times and its seamless current measurement ranging function eliminates range change time, which improves test throughput.

This solution package bundles two PX0105A Low Inductance BNC Cables, one PX0108A BNC to SMB Cable, and two N1254A-106 Adapters (Triax (m) Common connected to BNC (f) Common) per a M9602A or M9603A module as well, which enables BNC connection at the device interface.



M9614/15A PXIe 5-Channel Precision Source / Measure Units, 500 kSa/s, 100 pA/10 pA, 30 V, 500 mA

www.keysight.com/find/m9614a

www.keysight.com/find/m9615a

The Keysight M9614A and M9615A are PXIe five-channel precision source / measure units (SMUs). They support accurate measurement up to 30 V / 500 mA with resolution down to 6 μ V / 10 pA. While a PXIe SMU improves channel density compared with a benchtop SMU, the M9614A and M9615A enable higher channel density in the same footprint. They also provide a wider output range than a conventional PXIe four-channel SMU at a lower cost per channel.



Pulsed and sampling capabilities allow the M9614A and M9615A to perform a variety of measurements, from DC to pulsed measurements, with pulse width down to 100 μ s at a sampling rate of 500 kSa/s. Their seamless current measurement ranging function reduces test duration by eliminating the time it takes to change the range and expands the dynamic range to cover four measurement ranges. These capabilities make the M9614A and M9615A suitable for applications that require high channel density, such as semiconductor reliability testing and IC tests.

This solution package bundles no cable per a M9614A or M9615A. Please prepare an appropriate one separately.

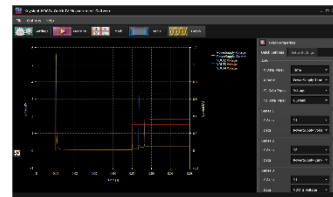
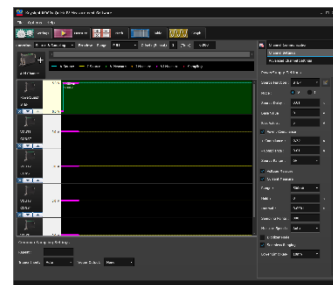
Available Software

PX0109A Quick I/V Measurement Software For PXIe Precision SMU

www.keysight.com/find/px0109a

The Keysight PX0109A Quick I/V Measurement Software has powerful measurement capabilities to control the PXIe precision SMUs. It supports a variety of functions such as a sweep measurement, a sampling measurement, graphical display functions and the ability to save test results into CSV files, which makes it easy to quickly setup and perform IV measurements and to display the measurement data in tables and graphs without the need to program. It is licensed based and the licenses are sold as node-locked, floating, transportable and USB portable.

The PX0109A also allows you to control up to ten SMU channels so that you can measure devices/circuits requiring more than two SMU channels for characterization/verification/test. In addition, the PX0109A has the capability to make not only primary sweep measurements but also measurements where a second terminal is swept, making it easy to generate a variety of IV curves.



Specification

The PX1001A is a solution package that bundles PXIe components such as the chassis, controller, and SMU modules. Its specifications are based on the specifications of the individual components included in the package. Please refer to their datasheet for the specifications in detail.

Model	Link To Datasheet
M9010A	PXIe Chassis: 10-slot, 3U, 24GB/s
M9038A	PXIe High Performance Embedded Controller
M9601A	PXIe Precision SMU, 1.25 MSa/s, 10 fA, 210 V, 315 mA
M9602A/M9603A	PXIe Precision SMU, 15 MSa/s, 1 pA/100 fA, 60 V, 3.5 A DC/10.5 A pulse
M9614A/M9615A	PXIe 5-Channel Precision SMU, 500 kSa/s, 100 pA/10 pA, 30 V, 500 mA

Related Literatures

Model	Link
M9601A	Product Fact Sheet Configuration Guide
M9602A/M9603A	Product Fact Sheet Configuration Guide
M9614A/M9615A	Product Fact Sheet Configuration Guide

Ordering Information

Model	Description
PX1001A	PXIe Precision I/V Measurement Solution Package
PX1001A-300	PXIe Chassis, M9010A, 10-slot, 3U, 24GB/s bundling Y1212A (2 qty.)
PX1001A-310	PXIe Embedded Controller, M9038A bundling a keyboard, mouse, Y1262A (1 qty.)
PX1001A-015	1.5 m Cable Length (for cables bundled with SMU)
PX1001A-030	3 m Cable Length (for cables bundled with SMU)
M9601A	PXIe Precision SMU, 1.25 MSa/s, 10 fA, 210 V, 315 mA
M9602A	bundling PX0102A (2 qty.), PX0103A (1 qty.)
M9603A	PXIe SMU, 15 MSa/s, 1 pA, 60 V, 3.5 A DC/10.5 A pulse
M9614A	bundling PX0105A (2 qty.), PX0108A (1 qty.), N1254A-106 (2 qty.)
M9615A	PXIe Precision SMU, 15 MSa/s, 100fA, 60 V, 3.5 A DC/10.5 A pulse

Accessories (For PXIe Chassis/Controller)

Model	Description
Y1212A	Slot blocker kit: 5 single-slot
Y1213A	PXI EMC filler panel kit: 5 single-slot
Y1217A	PXI chassis rack rail kit
Y1271A	M9010A rack mount kit
Y1260A	GPIB cable
Y1261A	Display Port to DVI adapter

Accessories (For PXIe Source/Measure Unit Modules)

Model	Description
PX0101A-001	BNC-to-ferrule terminal cable, 1.5 m
PX0101A-002	BNC-to-ferrule terminal cable, 3 m
PX0102A-001	Low Noise Triaxial Cable, 1.5 m
PX0102A-002	Low Noise Triaxial Cable, 3 m
PX0103A-001	Triaxial to SMB Cable, 1.5 m
PX0103A-002	Triaxial to SMB Cable, 3 m
PX0104A-001	High Current Triaxial Cable, 4 A, 1.5 m
PX0104A-002	High Current Triaxial Cable, 4 A, 3 m
PX0105A-001	Low Inductance BNC Cable, 1.5 m
PX0105A-002	Low Inductance BNC Cable, 3 m
PX0106A	Dsub25 to 5 SMB Adapter for M9614/15
PX0107A	Low Noise Filter Adapter for M9614/15
PX0108A-001	BNC-to-SMB cable, 1.5 m
PX0108A-002	BNC-to-SMB cable, 3 m

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