PRECISE
普赛斯仪表
PRECISE INSTRUMENT

PSS S Series

High Precision Source Measure Unit

6 models optional

Precision Making

PF-SXX-C001

With the continuous improvement of semiconductor manufacturing processes, testing and verification have become more and more important.

Electrical performance testing can help enterprises in fields such as batteries and optoelectronic devices, semiconductor ICs, discrete and passive devices, and material characterization to provide professional failure analysis, reliability testing, process quality evaluation, component screening, and life assessment.
Therefore, the demand for reliable, accurate, and stable measurements is increasing meanwhile.

As the first in China to independently develop and industrialize high-precision source/measurement unit SMUs, The S-series digital source meter has high precision, resolution, and accuracy, as well as a wide testing range, simplified connection, less programming, and better compatibility function

Why choose the S-series digital source meter?

Powerful Performance – Operating as a voltage source and/or current source, and synchronously measuring current and/or voltage, supporting four quadrant work. Can limit the output range of voltage or current to prevent device damage. Covering the current range of 3pA-3A and voltage range of 100μV-300V has a full range measurement accuracy of 0.03%.

More Flexible - Supports 2/4 wires measurements, More accurate measurement of low internal resistance; Integrated linear ladder scanning, logarithmic ladder scanning, customize scanning and other modes;Professional I-V characteristic and semiconductor parameter testing software.

Easy to practice –Simplified the setting of various applications such as I-V and I-t/V-t curves. GUI provides both graphical and digital display modes for measurement results

Characteristics

Wuhan Precise Instrument Co.,Ltd has been producing S series source meter for so many years.The source meter function includes high precision,large dynamic range,digital touch screen,four-quadrant operation,collect and test input&output voltage and current function.

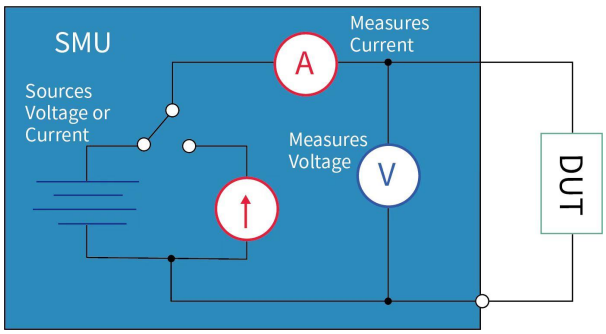
- 5 inch Touch Screen graphical operation
- Wide range Max 300V,Min 10pA,maximum test power is 30W
- Supports front and rear panels, 2/4 wires, and UARD protection
- Multiple communication methods:RS-232, GPIB, Ethernet
- Full range output and measurement accuracy can reach 0.03%
- Standard SCPI instruction set for customer secondary development
- Easy to build semiconductor electrical performance testing scenarios
- Can be used to test the electrical performance indicators of semiconductors:I、V、R

1	Home、Memu、Enter、Back button	5	Output Button
2	Power switch button	6	USB port
3	5-inch graphical user interface GUI	7	Output Port
4	Parameter Rotation button		

Multi in one high-precision SMU, extremely simplified measurement

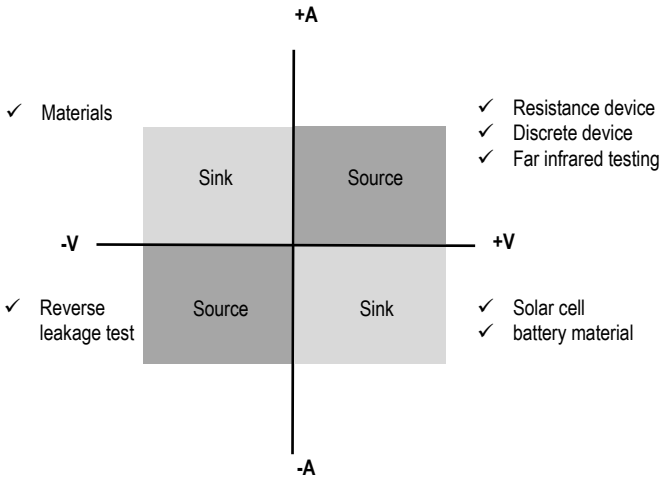
The traditional semiconductor I-V characteristic measurement method is usually complex and expensive, requiring multiple instruments to cooperate to complete the testing, which is both complex and time-consuming, and also requires a large amount of testing platform space.

The S series source meter can be used as an independent constant voltage or constant current source, voltmeter, ammeter, and ohmmeter, and can also be used as a precision electronic load, Its high-performance architecture allows it to be used as a waveform generator and an automatic current voltage (I-V) characterization system. Greatly shorten the development of testing systems,and save the “space”, Reduce the overall cost of purchasing testing systems.



Four quadrant operation, can be used as a source or load

The power quadrant refers to a quadrant diagram formed by taking the output voltage of the power supply as the X-axis and the output current as the Y-axis. The first and third quadrants, where the voltage and current are in the same direction and the source meter supplies power to other devices, are called source mode; The second and fourth quadrants refer to the reversal of voltage and current, and other devices discharge the source meter. The source meter passively absorbs the incoming current and can provide a return path for the current, which is called the sink mode.



Power envelope diagram

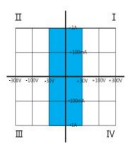
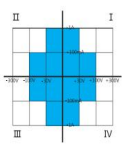
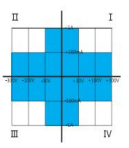
Unlike traditional matrix power supplies,S series can output high voltage, low current, or low voltage, high current according to actual needs at the same power. The source/sink limits vary depending on the selected range.

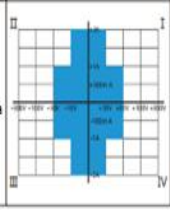
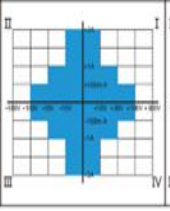
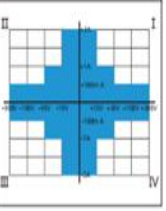
Source limit - Voltage source:

±10V（≤3A Range），±30V（≤1A Range），±300V（≤100mA Range）

Source Limit - Current Source:

±3.15A（≤10V Range），±1.05A（≤30V Range），±105mA（≤300V Range）

Model	S100	S200	S300
Max voltage range	30V	100V	300V
Working four-quadrant diagram			

Model	S100B	S200B	S300B
Max Voltage Range	30V	100V	300V
Working four-quadra diagram			

User friendly multi touch operation and connection

Trustworthy design and operability

S-series Source Meter (SMU) is based on 15 years of user experience, featuring an easy-to-use front panel design and intuitive operability. The intuitive user interface is recognized and favored by users in fields such as research and development, manufacturing and testing.

5 inch LCD touch screen

The high-resolution and responsive 5-inch touch screen makes device operation simpler and more intuitive. Users can change perform parameters, perform analysis and change curve views, just like operating a ipad. The touch screen system makes everyone an "expert user" from the first touch, whether it's a new instrument user or the most experienced user, helping to reduce learning time and costs.

USB Port

S Series have USB Port,the file function allows users to save data and screenshots to flash or USB memory for creating test reports. You can also upgrade device software through a USB port.

Standard SCPI Instruction Set

PRECISE provides users with standard SCPI instruction sets and PC control software free of charge, which can meet the testing requirements of various application scenarios.The S series digital source meter is equipped with LAN, RS232, and GPIB communication interfaces for easy system integration.

Advantages

Easily meet commonly measurement needs

Touching any icon on the screen will bring up the graphical settings screen. Follow the wizard to set up one by one before measurement, making the operation more intuitive.

Provide Easily operated application software

Sequence Scan

Customized Scan

Data Logger

- Continuous output constant voltage source test mode
- Continuous output constant current source test mode

APD Pin

Transistor

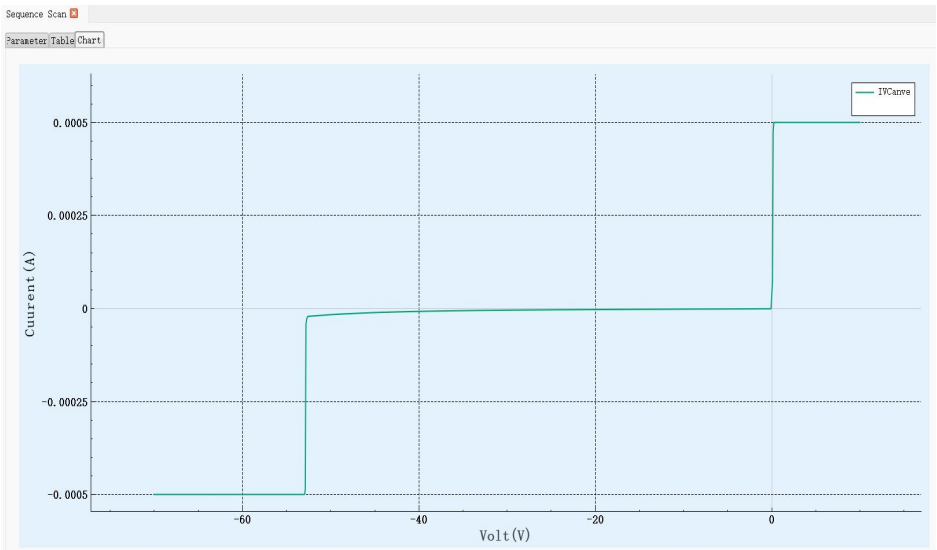
- MOSFET Test
- BJT Test

LIV

- PIN Diode Scan Test

Gummer

- Scanning dual source Meters with the same parameters



* I-V characteristic curve of diode

Various scanning modes

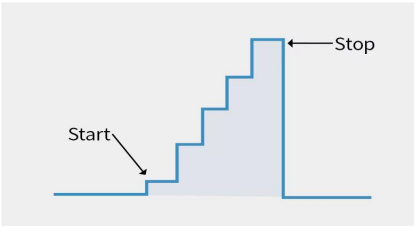
S series SMU integrates linear step scanning, logarithmic step scanning, customized scanning, and sequential scanning.By setting functional relationships and protection parameters, the system automatically runs and can effectively execute the output of any curve. In the testing that characterizes the response changing with voltage or current, it can significantly improve testing efficiency and is an ideal choice for IV, IR, and VR characteristic testing.

- Linear step scanning: Scanning with equal linear steps from the starting voltage to the ending voltage

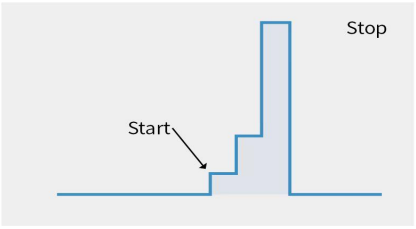
- Logarithmic step scanning: Scanning with logarithmic rate of change of unit independent variable from starting voltage to ending voltage

-Customized Scanning: This scan type allows users to customize the parameter

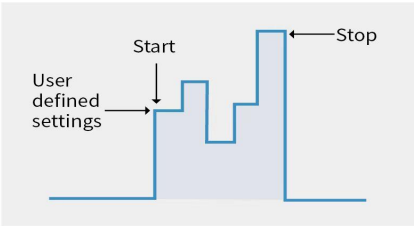
Users can generate or edit any waveform data (CSV format) using spreadsheet software or text editor.



Linear step scanning



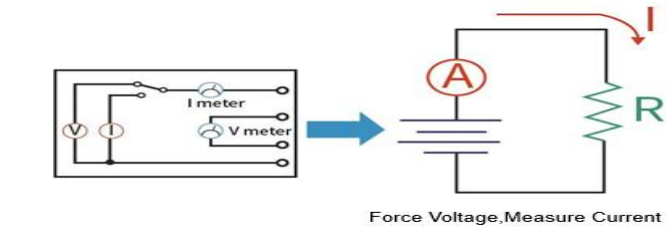
Logarithmic step scanning



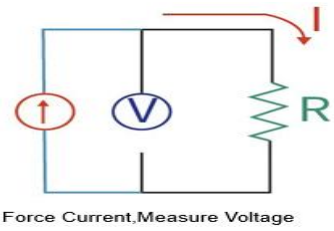
Customized Scanning

Four wire resistance measurement for more accurate low internal resistance measurement

Different testing methods and wiring can affect the accuracy of measurement results. For resistance measurement, the structure of SMU provides complete flexibility for measuring current or voltage across different DUTs. SMU provides fully programmable source values based on different ranges of resistance measurement, which is very valuable for protecting DUTs or measuring ultra-high or ultra-low resistance. The S-series supports 4-wire measurement function to solve the measurement error problem caused by inherent cable resistance when measuring small resistance



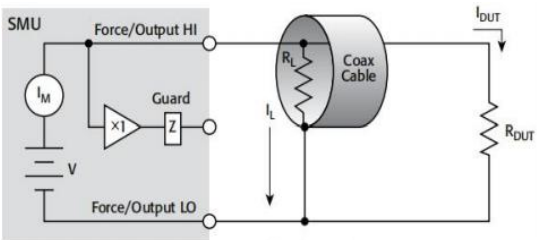
Force Voltage,Measure Current



Force Current,Measure Voltage

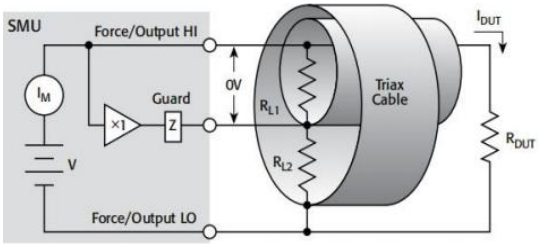
Triple coaxial cable protection circuit

When measuring low-voltage current, suggest to use triple coaxial cable.Triple coaxial cable have an additional shield, while coaxial cables do not have.This ensures lower current leakage, better R-C time constant response, and greater noise resistance.



Coaxial cable connection

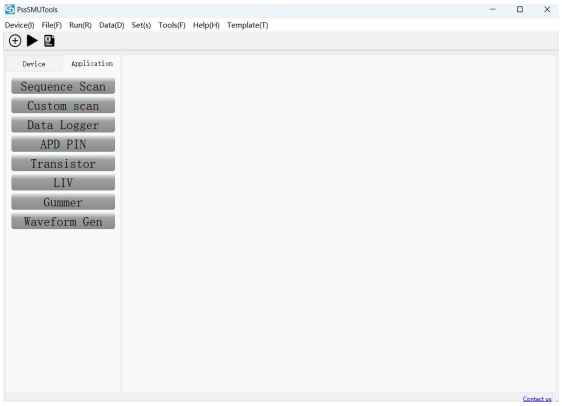
When the current level is pA or lower, the leakage current may be very significant



Triple coaxial cable connection

No leakage current: Guard technology applies Vout potential to the internal protective layer, so ΔV=0V

PssSMUTools professional test tools



Overview

The S series is equipped with PssSMUTools. This software control functions of the S Series source meter, By operating on the software, the source meter can be controlled for configuration or measurement, while the measured data and graphics can be saved.

Simple system configuration, real-time, high-speed graphing

PssSMUTools is a high-speed, high-precision real-time scanning testing software with multiple device testing modules, especially suitable for DC parameter testing of small signals. Convenient for customers to achieve fast testing and improve testing efficiency.

Standard SCPI instruction set for customer secondary development

The SCPI instruction defines a set of standard syntax and commands for controlling programmable measuring instruments.The Sseries provides a standard SCPI instruction set for free, facilitating customers' secondary development.

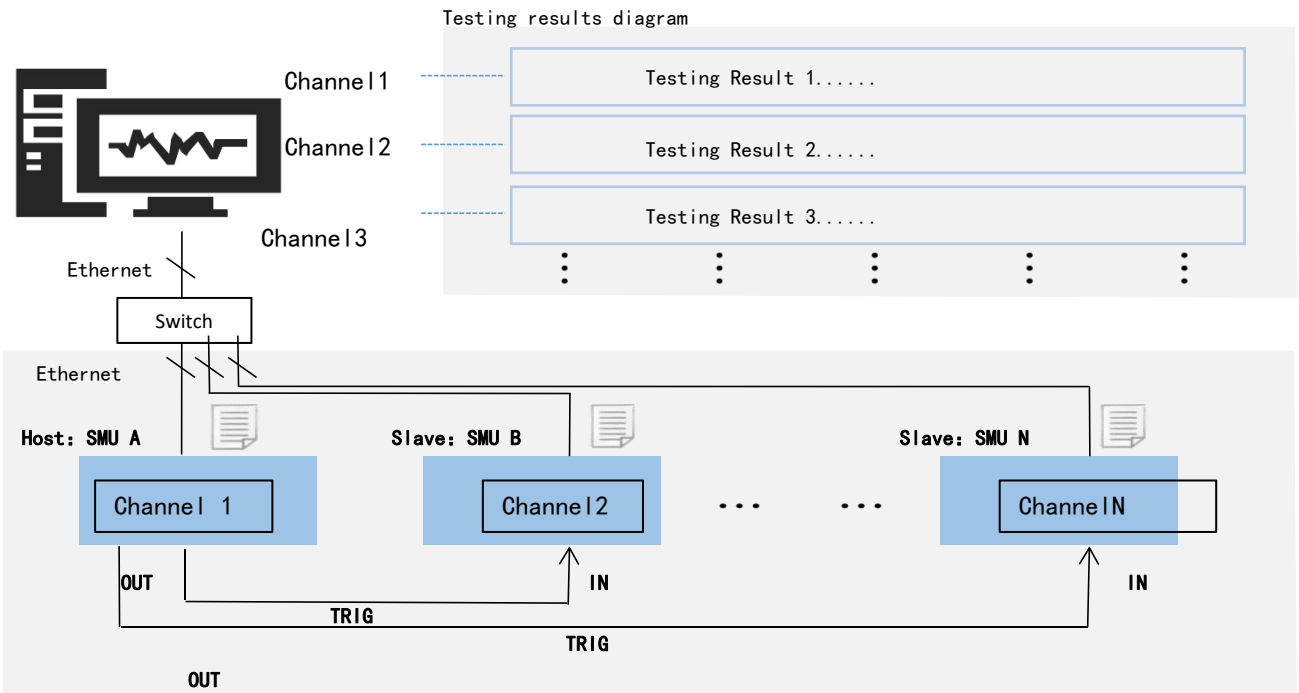
S Series Source Meter

PC Computer

Implementing multi-channel expansion through synchronous operation between master and slave devices

Connecting multiple S-series SMUs can serve as multi-channel sources/measurement units without the need for complex wiring. Through this function, synchronization between multiple source tables can be achieved by setting the relevant triggering settings for the host and slave machines.

The host can send test data from A to the slave, and after connecting a dedicated trigger signal line, synchronization of all channels can be achieved.



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Rear panel

1	Rear panel output terminal	6	Grounding post
2	GUARD connection terminal	7	TRIG signal connection terminal
3	Ground terminal	8	GPIB connection terminal
4	SN code pasting area	9	RS232 Port
5	Power interface	10	Ethernet Port

Selection Guide

Two series and six specifications allow users to flexibly choose and try, perfectly performing semiconductor electrical parameter testing tasks.。

S Series Source Meter

SB Series Source Meter

Model		S100/ S100B	S200/ S200B	S300/ S300B
Channel		1	1	1
Source/Measuremen T	Max voltage range	30V	100V	300V
	Mini voltage range	300mV		
	Max current range	1A/3A		
	Minl current range	100nA		
Accuracy		0.1% /0.03%		
Max sampling rate		1000 sampling points/s		

Industry applications

Discrete-semiconductor device

•Resistors,,diodes,ight-emitting diodes,Zener diode, PIN tube

• BJT、MOSFET、SiC、GaN etc.

• IC chips

Passive components, sensors

• Resistors, varistors, thermistors

• Photoelectric sensors, sensors

• hall sensors

Energy and efficiency characteristics

• LED/AMOLED

• Photovoltaics, solar cells, batteries

• DC-DC converters

Nanomaterials and Devices

• Graphene

• Carbon nanotubes

• Nanowire

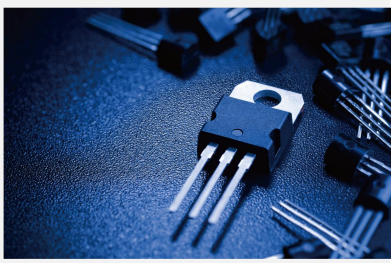
Organic Materials and Devices

• Electronic ink

• Printing electronic technology, etc

Material Property Analysis

• Resistivity, etc



learn more

Related products

P series high-precision desktop pulse source meter

The P-series pulse source meter is a high-precision, dynamic, and digital touch source meter that is newly developed based on the DC source meter, Integrating various functions such as voltage, current input and output, and measurement, the maximum output voltage can reach 300V, and the maximum pulse output current can reach 10A. It supports four quadrant operation and can be widely used in various electrical characteristic tests.

The P-series source meter is suitable for users in various industries, especially suitable for analyzing the characteristics of modern semiconductors, nano devices and materials, organic semiconductors, printed electronics technology, and other small size, low-power devices.

CS series high-precision plug-in source meter

The CS series high-precision plug-in source meter can accurately measure voltage and current while outputting the source, It has the characteristics of high channel density, independent physical isolation of channels, strong synchronous triggering function, and free combination of multiple sub cards. It has been widely used in the analysis of new semiconductor device materials, semiconductor discrete device testing, integrated circuit testing, and has the development strength of rapid batch shipment.

High precision, multi-channel, channel physical isolation, independent control of each channel, high integration, and flexible configuration:

- The CS series plug-in host adopts a custom framework,The backplane bus has a bandwidth of up to 3Gbps and supports 16 trigger buses, meeting the high-speed communication needs of multi card devices.
- Launched two host models, 1003C and 1010C, The 1003C has slots for up to 3 sub cards, and the 1010C has slots for up to 10 sub cards. The sub cards can be flexibly configured according to the functional requirements of users. Some parton cards can be configured up to 40 channels to achieve optimal cost performance.
- The product covers a wide range of voltage and current, with excellent programming and 1‰ measurement accuracy.

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