



INSTRUMENT USE SHEET

KEITHLEY 4200-SCC PRECISION ELECTRONIC MEASUREMENT SYSTEM

General Information

Instrument: Precision Electronic Measurement System
Manufacturer: Keithley 4200-SCC

Location:

- Tower Building
- Via Valleggio 11, Como, Italy
- 3rd Floor – U.N.O. Laboratory

Person in Charge:

Prof. Romualdo SANTORO

romualdo.santoro@uninsubria.it

Phone: +39 031 2386383

Authorized Users

Prof. Romualdo Santoro

Training Required: Yes*

*The instrument is intended for independent operation. The practical training consists of individual instruction, the duration of which will be determined by the instrument supervisor.

Internal users can access the ticketing system through the University intranet (University credentials required):

<https://intranet.uninsubria.it/areadocumenti/ticket-strumenti-criett-utenti-interni>

External users can consult the pricing schedule at: www.uninsubria.it/criett



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"The scientific support from CRIETT Centre of the University of Insubria (instrument code: XXX) is greatly acknowledged."

Instrument Code: MAC26

Access Policy

1. Direct Access (Self-Service)

Who: Research groups or users who regularly use the instrument and have received specific training.

Access

Mode:

Trained users may independently access and operate the instrument after making an online reservation.

2. Occasional/Temporary Users

Occasional or temporary users may access the instrument only under the supervision of the Instrument Supervisor or an Authorized User.

Description and Features

The **Keithley 4200-SCC** is a high-precision electronic measurement system primarily designed for the characterization of semiconductor devices and advanced materials. It is a modular platform widely used for ultra-high-accuracy electrical measurements.

General Purpose

The Keithley 4200-SCC is designed to perform complex electrical characterization of devices such as:

- Transistors (MOSFETs, BJTs, TFTs)
- Diodes and power devices

- Semiconductor materials and nanostructures
- Memory devices and emerging technologies (RRAM, OLEDs, etc.)

Main Electrical Measurements

1. I-V (Current-Voltage) Measurements

The system enables highly accurate characterization of electronic devices by providing:

- Current measurements from **fA (femtoamperes)** up to **A (amperes)**
- High-resolution voltage sourcing
- Leakage current, breakdown voltage, and threshold voltage analysis

2. C-V (Capacitance-Voltage) Measurements

Using dedicated measurement modules, the system supports:

- Semiconductor doping profile characterization
- MOS oxide and interface analysis
- RF and high-frequency device characterization

3. Pulsed I-V Measurements

These measurements:

- Minimize self-heating effects
- Are particularly suitable for power devices and advanced materials
- Enable dynamic and fast transient analysis

Automation and Advanced Testing

The system is designed for fully automated measurements and supports:

- Scripting through dedicated programming languages (e.g., Test Script Processor)
- Automated test sequences
- Integrated data acquisition and analysis

- Compatibility with wafer probers and probing systems

Precision Features

One of the key strengths of the Keithley 4200-SCC is its ultra-low-noise measurement capability, including:

- Sub-picoampere current resolution
- Shielding and guarding techniques
- Offset and leakage current compensation
- Thermal stability for long-term measurements

⚠ Safety Instructions

In case of any doubts, malfunction, or abnormal instrument behavior, contact the Instrument Supervisor immediately.

Operating Notes

- Instrument reservation through the internal management system is mandatory.
- Self-service operation is permitted only for trained and registered (authorized) users.
- Any malfunction or operational issue must be reported promptly to CRIETT personnel.

Materials and Accessories Provided by CRIETT

Please contact the Instrument Supervisor.

Materials and Accessories to Be Provided by the User

Please contact the Instrument Supervisor.