



description

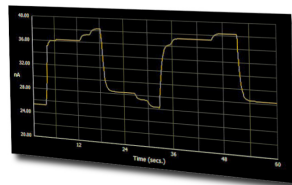
The 9103 is a versatile, general-purpose picoammeter designed to accurately measure DC current from the nA to mA range. The easy-to-read user interface is designed to provide optimal control and quick access to all functions. Features such as an ASCII programming language and data recording/graphing are standard.

applications

- Electron & ion beam current measurements
- Mass spectrometer current measurements
- Photodiode current & leakage measurements
- Beam and particle monitoring
- Spectrometer measurements
- Data logging current comparisons



benefits



USB Interface: Windows® software included

Data Recording: Sample data can be recorded and saved

Data Graphing: Real-time graphing with polarity options

Programmable: ASCII command interface

Sync: Multiple 9103's can be synchronized using RBD's Actual software to create a multichannel current data logger

Bias (Optional): Increases accuracy of electron or ion beam current measurements by reducing secondary electron emission

specifications

Resolution & Accuracy per Range

Range	Resolution	Accuracy / Offset	(18° – 28°C, 0 - 70% RH)*
2 nA	100 fA	0.5 ± %	+500 fA
20 nA	1 pA	0.5 ± %	+3 pA
200 nA	10 pA	0.4 ± %	+20 pA
2 µA	100 pA	0.4 ± %	+200 pA
20 µA	1 nA	0.4 ± %	+2 nA
200 µA	10 nA	0.4 ± %	+20 nA
2 mA	100 nA	0.4 ± %	+200 nA

*Temperature Coefficient: 0°–18°C & 28°–50°C. For each °C, add 0.1 × (% rdg + offset) to accuracy spec.

specifications

General:

USB Interface	160 mW power consumption
2 nA Min. DAC Resolution	0.1 pA
2 mA Min. DAC Resolution	100 nA
Range	2 nA to 2 mA with 100 fA resolution
Input Protection	± 2.000 V per range
Recorder Output Voltage	2 nA to 2 mA with 100 fA resolution
Voltage Burden	If the current is in the range of measurement of the instrument, the voltage drop should be less than $\pm 26 \mu\text{V} + (3.2 * I)$, where I is the current flowing into the instrument, 3.2 is the resistance of the fuse, and $\pm 26 \mu\text{V}$ is the offset voltage spec. of the op-amp. The current measurement circuit uses an op-amp to convert current to voltage; the op-amp inputs are referenced to the ground circuit of the current source. If the current goes outside the range of measurement of the instrument, the voltage is clamped to $\pm 1\text{V}$ by a low-leakage diode clamp circuit using two diodes in parallel w/ one diode connected anode to ground, cathode to the current measurement node, and the second diode connected cathode to ground, anode to the current measurement node.
Warm-up	1 hour to rated accuracy
Environment	Operating 0° C to 50 ° C
Mechanical Dimensions	55H x 170W x 165L (mm) 2.11H x 6.68W x 6.30L (inches)
Net. Weight	0.816 kg / 1.5 lbs
Connections	Input: Isolated BNC (two or three-lug TRIAX inputs available on request). Analog Output: Banana jacks
Bias Options	No Bias; Internal ($\pm 90 \text{ V DC}$); External (BNC)
Safety	Conforms to USB Power Specification - for use by qualified personnel who are trained in the use of test and measurement instrumentation
Accessories Included	Instructions manual, low noise BNC cable, USB power cable, USB driver, installation instructions, Actual software

All specifications are subject to change without notice.

