

Small Instrumentation Modules

SIM922 and SIM923 — Diode and platinum RTD temperature monitors

- **Four channels**
- **1.4 K to 475 K with silicon diodes**
- **20 K to 873 K with platinum RTDs**
- **Memory for 4 calibration curves plus standard curve**



SIM922 and SIM923 Temperature Monitors

The SIM922 Diode Temperature Monitor and the SIM923 Platinum RTD Monitor are designed to measure four sensors simultaneously. Based on the modular SIM platform, they provide high-performance and multiple-channel capability in a small footprint.

SIM922

Each of the four channels in the SIM922 has an independent, precision 10 μ A current source to provide sensor excitation. Measurement results can be displayed in kelvin or volts.

SIM923

The four channels in the SIM923 have independent, stable 1 mA current sources to provide sensor excitation. Sensor resistance is determined ratiometrically with a half-bridge circuit consisting of the sensor and an internal reference

resistor. The current to the sensor can be reversed by the user to test for any offset. Results are displayed in kelvin or ohms.

Common Features

Both the SIM922 and SIM923 employ four-wire measurement circuits ($\pm I$ excitation leads, $\pm V$ sense leads) making the measurements insensitive to series lead resistance. The four channel excitations are independently controlled and do not switch on or off when the readout is advancing between channels. Sensor excitations can be disabled to reduce power dissipation at sensitive cryogenic stages. This also accelerates readings in the remaining enabled channels. Measurements are performed at rates up to four readings per second.

A factory-standard calibration curve is built in for each model. In addition, each channel has non-volatile memory to store a 256-point custom calibration curve to convert sensor units (V or Ω) to temperature units (K).

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	SIM922	SIM923
Number of inputs	4	4
Sensor type	Silicon diode	Platinum and other RTDs
Measurement type	4-wire	4-wire
Excitation	4 constant current sources 10 $\mu\text{A} \pm 0.01\%$, $\pm 5\text{ ppm}/^\circ\text{C}$	4 constant current sources 1.0 mA $\pm 0.1\%$, $\pm 5\text{ ppm}/^\circ\text{C}$
Sensor units	Volts	Ohms
Input range	0 to 2.5 V	0 Ω to 1400 Ω (includes excitation lead resistance)
Calibration curves	1 std., 4 user-defined curves 256 points each	DIN 43760, 4 user-defined curves 256 points each
Temperature range	Sensor dependent 1.4 K to 475 K (typ.)	Sensor dependent 20 K to 873 K (typ.)
Display resolution	4 digits	4 digits
Interface resolution	1 μV	1 m Ω
Measurement resolution	1.2 μVrms	1.2 m Ω rms
Accuracy, (23 ± 1) $^\circ\text{C}$	20 $\mu\text{V} + 0.01\%$ of reading	5 m $\Omega + 0.01\%$ $\phi\text{p}\rho\epsilon\alpha\delta\text{t}\nu\gamma$
Temperature coefficient	$\pm 5\text{ ppm}/^\circ\text{C}$	$\pm 5\text{ ppm}/^\circ\text{C}$

Common Specifications

Operating temperature	0 $^\circ\text{C}$ to 40 $^\circ\text{C}$, non-condensing
Interface	Serial via SIM interface
Connectors	
Two DB9 (female)	4-wire measurement + ground (Ch 1 & 2) 4-wire measurement + ground (Ch 3 & 4)
DB15 (male)	SIM interface
Power (max.)	+5 V (250 mA), $\pm 15\text{ V}$ (50 mA)
Dimensions	1.5" \times 3.6" \times 7.0" (WHD)
Weight	1.4 lbs.
Warranty	One year parts and labor on defects in materials and workmanship



SIM922 rear panel



SIM923 rear panel

Ordering Information

SIM922	Diode temperature monitor
SIM923	Pt RTD temperature monitor