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Data Sheet

August 13, 2026

STANFORD RESEARCH SYSTEMS

Stanford Research SIM921

Stanford Research Systems SIM921 AC Resistance Bridge The SRS SIM921 is a precision 4-wire AC resistance bridge for cryogenic thermometry. Excitation power can be below 100 aW so NTC sensors may be read below 50 mK with negligible self-heating. Resistance spans 1 mOhm to 100 MOhm with sinusoidal excitation from 3 uV to 30 mV (10 mA max) at 2 Hz to 60 Hz. Dual-phase demodulators report resistance and phase. Constant-voltage or constant-current excitation, autorange, and a linearized +/-10 V analog output support millikelvin control loops with a SIM960 PID. The SRS SIM921 is a precision 4-wire AC resistance bridge for cryogenic thermometry. Excitation power can be below 100 aW so NTC sensors may be read below 50 mK with negligible self-heating. Resistance spans 1 mOhm to 100 MOhm with sinusoidal excitation from 3 uV to 30 mV (10 mA max) at 2 Hz to 60 Hz. Dual-phase demodulators report resistance and phase. Constant-voltage or constant-current excitation, autorange, and a linearized +/-10 V analog output support millikelvin control loops with a SIM960 PID. Millikelvin thermometry on germanium, Cernox, RuOx, carbon-glass, and rhodium-iron sensors; superconducting-transition characterization in constant-current mode; phase-shift diagnosis of lead reactance; SIM900 cryogenic racks.



MODEL

Stanford Research Systems SIM921

CALIBRATION

Available on request

CONDITION

Used

STATUS

In stock

RFQ / SKU

SIM921

LISTING

<https://aumictechlabs.com/products/sim921-2/>

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 · 811210 · 541380

This unit

The Stanford Research Systems SIM921 is a precision AC resistance bridge module engineered for cryogenic thermometry with ultra-low excitation power. Operating as a 4-wire bridge with a single input channel, it measures resistances from 1 mΩ to 100 MΩ across a variable excitation frequency range of 2 Hz to 60 Hz. The instrument delivers excitation power below 100 aW, enabling accurate thermistor measurements at temperatures below 50 mK with negligible self-heating errors. The SIM921 features a 32-bit demodulator with user-selectable time constants from 0.3 s to 300 s and a reading rate of 2 updates/s. Measurement accuracy within the 2 Ω to 200 kΩ range is $\pm(0.05\% \text{ of reading} + 0.05\% \text{ of range})$, with input impedance exceeding 10 GΩ. Internal reference resistors span 1 Ω to 10 MΩ, supplemented by two expanded scales at 200 mΩ and 20 mΩ implemented via additional gain stages. Maximum permissible lead resistance is 100 Ω plus 25% of range. The module supports both constant current and constant voltage excitation modes. Constant voltage operation reduces power dissipation in NTC thermistors as temperature decreases - essential for cryogenic applications. A linearized DC analog output provides voltage proportional to resistance or temperature with user-adjustable scale and offset parameters.

Technical Specifications

Measurement type: 4-wire AC bridge
Resistance range: 1 mΩ to 100 MΩ
Excitation frequency: 2 Hz to 60 Hz (variable)
Excitation power: 10 GΩ (typical)
Maximum lead resistance: 100 Ω + 25% of range

Key Features

- Constant current and constant voltage excitation modes
- Linearized DC analog output with user-controlled scale and offset
- Support for up to four user-calibration curves (ohm to kelvin) with 200 data points each
- Double-wide SIM module format for SIM900 Mainframe integration
- Remote operation and data querying via computer interface

Compatibility & Integration

The SIM921 operates with NTC sensors (germanium, Carbon-Glass, carbon-composition, Cernox, ruthenium oxide) and PTC sensors (rhodium-iron RTD, platinum RTD). Integration with the SIM900 Mainframe provides power, serial communications, and clock synchronization. For closed-loop temperature control, the module pairs with the SIM960 Analog PID Controller.

Features & description

From manufacturer datasheet

Features

- 4-wire AC ratiometric bridge with internal autocal
- Time constants 0.3 s to 300 s; 2 updates/s; 32-bit demodulator
- Four user ohm-to-kelvin curves of 200 points each
- 5.5-digit statically driven LED (low noise)
- Analog output scale and offset programmable in V/K or V/ohm
- Powered by SIM900 or user +/-15 V and +5 V

SIM921 Characteristics / Specifications

PARAMETER	VALUE
Model	SIM921
Manufacturer	Stanford Research Systems
Instrument Type	AC Resistance Bridge
Family	SIM Small Instrumentation Modules
Alias	SIM921; SRS SIM921
Measurement Type	4-wire AC bridge
Number of Inputs	1
Resistance Range	1 mOhm to 100 MOhm
Time Constant	0.3 s to 300 s
Reading Rate	2 updates per second
Demodulator Resolution	32 bit
Accuracy Mid Ranges	+/- (0.05 % reading + 0.05 % range) at excitation of at least 30 uV and 3 nA (2 ohm to 200 kOhm)
Accuracy Wide Ranges	+/- (0.15 % reading + 0.15 % range) at excitation of at least 300 pA (200 mOhm to 2 MOhm)
Stability With Autocal	+/-0.001 % of reading perCStability Without Autocal: +/-0.02 % of reading perCMaximum Lead Resistance: 100 ohm + 25 % of range
Input Impedance	greater than 10 GOhm typical
Source Type	sinusoid, constant current or constant voltage
Source Frequency	2 Hz to 60 Hz
Excitation Voltage Range	3 uV to 30 mV
Maximum Excitation Current	10 mA
Maximum DC Current Error	less than 3 uV per range
Temperature Units	K, mK
Low Temperature	50 mK, sensor dependent
Sensor Calibration Curves	4 curves of 200 points each
Analog Output Range	+/-10 VDC

PARAMETER	VALUE
Analog Output Resolution	300 μ V
Analog Output Accuracy	1 mV
Operating Temperature	0 C to 40 C, non-condensing
Sensor Connector	DB9 female
SIM Connector	DB15 male
Analog Output Connector	BNC front
Power	SIM900 mainframe or user +/-15 V and +5 V
Dimensions	3.0 in x 3.6 in x 7.0 in (WHD)
Weight	2.3 lbs
Display	5.5-digit LED
Example Twenty kOhm at 100 μ V	10 nA rms excitation (catalog example)
Noise Example Two Ohm at 10 mA	4.3 μ Ohm rms typical (3 s TC, 50 % FS, room-temperature resistor)
Noise Example Twenty mOhm at 100 mA	44 μ Ohm rms typical (same conditions) Notes Specs from SRS SIM921 product page and SIM921c catalog. Resolution versus range/excitation is tabulated in the OEM datasheet; values above are verified table endpoints plus the 20 kOhm example. Confirm excitation, frequency (often 15 Hz or 12.5 Hz line subharmonic), and uploaded cal curve.

General Specifications & Supplementary Characteristics

PARAMETER	VALUE
Operating temperature	0 C to 40 C, non-condensing
Operating Temperature	0 C to 40 C, non-condensing
Sensor Connector	DB9 female
SIM Connector	DB15 male
Analog Output Connector	BNC front
Power	SIM900 mainframe or user +/-15 V and +5 V
Dimensions	3.0 in x 3.6 in x 7.0 in (WHD)
Weight	2.3 lbs
Display	5.5-digit LED
Example Twenty kOhm at 100 uV	10 nA rms excitation (catalog example)
Noise Example Two Ohm at 10 mA	4.3 uOhm rms typical (3 s TC, 50 % FS, room-temperature resistor)
Noise Example Twenty mOhm at 100 mA	44 uOhm rms typical (same conditions) Notes Specs from SRS SIM921 product page and SIM921c catalog. Resolution versus range/excitation is tabulated in the OEM datasheet; values above are verified table endpoints plus the 20 kOhm example. Confirm excitation, frequency (often 15 Hz or 12.5 Hz line subharmonic), and uploaded cal curve.

Full OEM specifications

Complete technical content extracted from the manufacturer datasheet. Sparse OEM tables are reconstructed as tables below; other text is preserved as paragraphs.

Specifications	
Technical Specifications	
PARAMETER	VALUE
Model	SIM921
Manufacturer	Stanford Research Systems
Instrument Type	AC Resistance Bridge
Family	SIM Small Instrumentation Modules
Alias	SIM921; SRS SIM921
Measurement Type	4-wire AC bridge
Number of Inputs	1
Resistance Range	1 mOhm to 100 MOhm
Time Constant	0.3 s to 300 s
Reading Rate	2 updates per second
Demodulator Resolution	32 bit
Accuracy Mid Ranges	+/- (0.05 % reading + 0.05 % range) at excitation of at least 30 uV and 3 nA (2 ohm to 200 kOhm)
Accuracy Wide Ranges	+/- (0.15 % reading + 0.15 % range) at excitation of at least 300 pA (200 mOhm to 2 MOhm)
Stability With Autocal	+/-0.001 % of reading per C
Stability Without Autocal	+/-0.02 % of reading per C
Maximum Lead Resistance	100 ohm + 25 % of range
Input Impedance	greater than 10 GOhm typical
Source Type	sinusoid, constant current or constant voltage
Source Frequency	2 Hz to 60 Hz
Excitation Voltage Range	3 uV to 30 mV
Maximum Excitation Current	10 mA
Maximum DC Current Error	less than 3 uV per range
Temperature Units	K, mK
Low Temperature	50 mK, sensor dependent
Sensor Calibration Curves	4 curves of 200 points each

PARAMETER	VALUE
Analog Output Range	+/-10 VDC
Analog Output Resolution	300 uV
Analog Output Accuracy	1 mV
Operating Temperature	0 C to 40 C, non-condensing
Sensor Connector	DB9 female
SIM Connector	DB15 male
Analog Output Connector	BNC front
Power	SIM900 mainframe or user +/-15 V and +5 V
Dimensions	3.0 in x 3.6 in x 7.0 in (WHD)
Weight	2.3 lbs
Display	5.5-digit LED
Example Twenty kOhm at 100 uV	10 nA rms excitation (catalog example)
Noise Example Two Ohm at 10 mA	4.3 uOhm rms typical (3 s TC, 50 % FS, room-temperature resistor)
Noise Example Twenty mOhm at 100 mA	44 uOhm rms typical (same conditions)

Specifications

PARAMETER	VALUE
Model	SIM921
Manufacturer	Stanford Research Systems
Instrument Type	AC Resistance Bridge
Family	SIM Small Instrumentation Modules
Alias	SIM921; SRS SIM921
Measurement Type	4-wire AC bridge
Number of Inputs	1
Resistance Range	1 mOhm to 100 MOhm
Time Constant	0.3 s to 300 s
Reading Rate	2 updates per second
Demodulator Resolution	32 bit
Accuracy Mid Ranges	+/- (0.05 % reading + 0.05 % range) at excitation of at least 30 uV and 3 nA (2 ohm to 200 kOhm)
Accuracy Wide Ranges	+/- (0.15 % reading + 0.15 % range) at excitation of at least 300 pA (200 mOhm to 2 MOhm)
Stability With Autocal	+/-0.001 % of reading perCStability Without Autocal: +/-0.02 % of reading perCMaximum Lead Resistance: 100 ohm + 25 % of range

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Notes

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Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

Request a quote: sales@aumictech.com · +1 (484) 841-9341

Aumictech

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Technical content from manufacturer specifications. Unit photo/stock from Aumictech listing when available. Specifications subject to OEM documentation and unit condition.