

SPECIFICATIONS

Thermoelectric power generation is a method of direct electric power generation from heat, based on the thermoelectric effect which was discovered by J. T. Seebeck, a German physicist in 1821. In the face of recent global warming, caused by carbon dioxide and depletion of fossil fuels, thermoelectric conversion devices are attracting attention because of its effective utilization of waste heat energies. LINSEIS has developed the LSR-1 system for a reliable, easy and fast characterization of thermoelectric materials from cryogenic temperatures up to +200°C.

LSR 1

Temperature range:	Basic unit: RT to 200°C* Cryo option: -160°C to +200°C*
Heating rate:	0.01 – 100 K/min
Temperature precision:	Type K thermocouple Class 1 (NiCr/NiAl)
Sample size:	Seebeck L: 8 mm to 25 mm; W: 2 mm to 25 mm; T: thin film to 2 mm Resistivity L: 18 mm to 25 mm; W: 18 mm to 25 mm; T: thin film to 2 mm
Measuring Range / Method:	
Sample holder:	Integrated PCB Board with Primary and Secondary Heater
Seebeck coefficient Static dc method:	Seebeck Coefficient measurement range: 1µV to 2.5 mV/K Temp. gradient 0.1 up to 20K Seebeck Voltage measurement: range 8 mV
Electric Resistivity Four-terminal method:	10 ⁻⁴ up to 10 ⁷ (Ωcm)
Resolution:	
Thermovoltage:	0.5 nV/K (nV = 10 ⁻⁹ V)
Electric Resistivity:	10 nOhm (nOhm = 10 ⁻⁹ Ohm)
Temperature:	0.01°C
Repeatability	
Seebeck coefficient	+/-3,5%
Electric Resistivity	+/-5%
Atmosphere	Inert, reducing, oxidizing, vacuum Low pressure helium gas, recommended
Vacuum	10E-3 mbar
Measuring time	<4 s per local data point
Power requirement	230V / 110V 50Hz / 60 Hz
Vacuum Pump	Two stage rotary pump 10E-3mbar (included)
Electrode material:	Nickel (-100°C up to 500°C) Platinum (-100°C up to 1500°C)
Thermocouples:	Type K/S/C
Accuracy:	

Atmosphere:	Inert, reducing, oxidising, vacuum Low pressure helium gas or N2, recommended
Power requirement:	230V / 110V 50Hz / 60 Hz
Vacuum dosing: Pump/Gas	optional

*hot/cold side temperatures