

LR Series LR2000 Milliohmmeter

A Precision Low Resistance Meter

USES:

- Production Testing of Contact Resistance of Switches, Relays, Connectors, Cables, and Other Low Resistance Devices
- Testing of Low Value Resistors, Fuses, Squibs, and Heating Elements
- Winding Resistance of Motors, Transformers, Solenoids, and Ballasts
- Conductivity Evaluation in Product Design
- Incoming Inspection and Quality Assurance Testing

FEATURES:

- $1\mu\Omega$ - $2M\Omega$ Measurement Range
- $1\mu A$ - 1A Constant Current
- 0.05% Basic Measurement Accuracy
- Measurement Speed to 15/second
- Graphical LCD Display
- Four Terminal Kelvin Connection
- Automatic Zeroing
- Automatic Hi/Lo Comparator Limits
- Pass/Fail Sorting (8 Bins)
- Voltage Limiting for Dry Contact Testing
- Signal Reverse & Pulsed Current Modes
- Keypad Lockout
- Programmable Delay Times
- RS-232 Interface Standard
- IEEE & Handler Interfaces, Optional
- Temperature Compensation Interface, Optional

Introduction

The LR2000 Milliohmmeter with its LCD display and menu-type front panel programming assures that low resistance measurements on switches, relays, cables, and other devices can be made quickly and easily. With a basic accuracy of 0.05% the instrument offers a wide measurement range from $1\mu\Omega$ to $2M\Omega$. For remote operation and production applications the unit comes standard with an RS-232 interface, plus IEEE-488 and handler interfaces are available as options. For measurement integrity, contact to the test device is made via a 4-terminal Kelvin connection that incorporates an automatic zeroing function to compensate for lead errors.

Description

Wide Measurement Range: Eight measurement ranges from $20m\Omega$ to $2M\Omega$ with constant current between 1A and $1\mu A$. For "dry" contact measurements (those contacts whose resistance can be altered by excessive voltage potential) the LR2000 can be limited to 20mV on selected measurement ranges.

Test Signal: Besides the standard DC test signal, the LR2000 provides a signal reversal mode for eliminating thermal EMF's, and pulsed current mode for minimizing errors caused by device heating.

Precision Measurements: With a basic measurement accuracy of 0.05% the instrument can provide consistent, reliable test results.

Measurement Rate: Three measure modes of 15, 6 and 1.5 measurements per second with varying degrees of accuracy.

Pass/Fail Testing: The LR2000 has a programmable Hi/Lo comparator function in absolute value or %, as well as 8 sorting bins for categorization of components.

Zeroing: An automatic zeroing functions reduces the effects of lead resistance through the front panel 4-terminal Kelvin connection.

Interfaces: For remote control, or adaptation to a production type environment, the LR2000 includes an RS-232 interface. An optional IEEE-488 and Handler interface is also available.

Temperature Compensation: Optional interface for automatic thermal compensation measurements from $0^{\circ}C$ - $100^{\circ}C$ with PT100 TC probe. Temperature can be displayed in $^{\circ}C$ or $^{\circ}F$.

For more detailed information on specifications, pricing and special purchase, rent and lease options, contact us at:



LR2000 Milliohmmeter

Resistance Range:

<u>Range F.S.</u>	<u>Resolution</u>	<u>Accuracy</u>	<u>Test I (Typical)</u>
20mΩ	1μΩ	±(0.1% of rdg + .006mΩ)	1A
200mΩ	10μΩ	±(0.05% of rdg + .06mΩ)	100mA
2Ω	100μΩ	±(0.05% of rdg + .6mΩ)	10mA
20Ω	1mΩ	±(0.05% of rdg + 6mΩ)	1mA
200Ω	10mΩ	±(0.05% of rdg + 40mΩ)	1mA
2kΩ	100mΩ	±(0.05% of rdg + .2Ω)	1mA
20kΩ	1Ω	±(0.1% of rdg + 2Ω)	100μA
200kΩ	10Ω	±(0.2% of rdg + 20Ω)	10μA
2MΩ	100Ω	±(0.4% of rdg + 200Ω)	1μA

Test Signal:	Modes: DC+, DC-, Pulse+, Pulse-, Pulse+/- and STBY Dry Circuit: Open Circuit Voltage <20mV for 200mΩ, 2Ω and 20Ω ranges	Temperature Compensation:	Optional Interface for Auto Thermal Compensation: 0°-100°C with pt100 probe Temp Display: °C or °F Temp Range: 0°C to 100°C Temp Accuracy: ±(0.3% of rdg+0.8°C) Additional Resistance Error: 0°C - 39.9°C: ±0.3% 40°C - 100°C: ±0.6% Test Terminal: pt100 probe
Measurement Rate:	Fast: 15 measurements/second Medium: 6 measurements/second Slow: 1.5 measurements/second	Dimensions:	(w x h x d): 12.5 x 4.0 x 13.5in (312.5 x 100.0 x 337.5mm)
Measurement Mode:	Continuous or Trigger	Weight:	10.85 lbs. (5kg) net, 15.2 lbs. (7kg) ship
Trigger:	Internal Manual External (IEEE or Handler)	Environmental:	Specifications: +15°C to +35°C, 75% RH Operating: 10°C to +40°C Storage: 0°C to +50°C Humidity: 10 - 90% RH Pollution Degree 2 Installation Category II
Delay Times:	Trigger Delay: 5 - 1000ms Measurement Delay: 0 - 100s	Power:	• 90 - 125V AC • 190 - 250V AC • 48 - 62 Hz • 80W max
Ranging:	Automatic or Hold Range		
Zeroing:	Short circuit compensation		
Averaging:	1 - 10		
Comparator:	Hi/Lo Limits (Value or %)		
Binning:	Hi/Lo Limits (8 bins in %)		
Indication:	Audible Alarm programmable: HI LO or OFF for Pass or Fail Result		
Display:	240 by 64 dot matrix LCD display		
Setup Storage:	Auto recall on power-up		
Lock:	Keypad Lockout		
Test Terminals:	Front: 4 Sheathed Banana & 1 GND		
Interfaces (Standard):	RS-232		
Interfaces (Optional):	IEEE-488 & Handler, Temp Compensation, IEEE-488 & Handler		

Ordering Information

LR2000	LR2000 Milliohmmeter	Optional Accessories:	
<u>P/N</u>	<u>Description</u>	<u>P/N</u>	<u>Description</u>
Includes:		CAL	Before & After Calibration Data
150713	LR2000 Instruction Manual	LR2000-50	Kelvin Clip Lead Set (std. with unit)
LR2000-50	Lead Set: 4 Banana Connectors to 2 Kelvin Clips	LR2000-WZD	LR2000 Virtual Front Panel Wizard
4200-0300	AC Power Cord	630157	LR-2000 RS-232 Cable (9 pin)
520026	Power Line Fuse (1.0A 250V, SB)	700171	IEEE-488 & Handler Interfaces
520138	Power Line Fuse (0.5A 250V, SB)	700250	Temperature Compensation Probe
	Calibration Certificate Traceable to NIST	700251	Temperature Compensation, IEEE-488 & Handler Interfaces

For more detailed information on specifications, pricing and special purchase, rent and lease options, contact us at: