WIDE RANGE RESISTANCE METER

Model 863/6487

A microprocessor based picoammeter/voltage source that automatically calculates resistance. It is capable of measuring resistance from ohms to teraohms with better than 1% accuracy.

Features:

- **Range: 100Ω to >10^{14} Ω**
- **Adjustable V_E: 0.2mV - 505V**
- **Alternating V_E polarity capability**
- **5½-digit display**
- **Up to 1000 readings/second**
- **Excel add-in utility**
- **IEEE-488 & RS-232 interfaces**
- **Optional applications driver**

Applications:

Many applications require the precise measurement of resistance over a very wide range using various test voltages.

The Model 863/6487 is an accurate, cost-effective instrument with 8 measurement ranges and high-speed autoranging that can take measurements at speeds up to 1000 readings/second using source voltages ranging from 0.2mV to 505V. The alternating voltage polarity capability extends the measurement range to 10^{15} Ohms.

The Model 863/6487 meets the requirements of ESD-safe material specifications such as ANSI/ESDA S11.11, 11.12, 11.13, SAE J1645, ANSI/ASTM D-257, Mil PRF 81705D, NFPA 99 plus all IEC standards.

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Description:

The Model 863/6487 is a picoammeter/voltage source instrument capable of measuring current from 20fa to 20ma ($20x10^{-15}$ to $20x10^{-3}$ amps) and calculates resistance from 100 to 10^{15} Ohms. Source voltages (V_E) can be manually selected from 0.2mV to 505V. Specific voltages such as 10 and 100V can be programmed as a default. The feedback circuit design reduces voltage burden to 200mV which makes the instrument function like an ideal ammeter. This enables the instrument to make very accurate current measurements, even in circuits having very low source voltages. When measuring resistance using the Voltage/Current source method a constant voltage is placed in series with the unknown resistance and picoammeter. The voltage drop across the picoammeter is negligible so all the voltage appears across the unknown resistance. The resulting current is measured by the picoammeter and the resistance calculated using Ohm's Law (R=V/I) providing measurement accuracy better than 1%.

The Model 863/6487 features a 1-touch front panel design where functions can be configured easily with the push of a button without complicated function menus. The instrument is programmed by ETS to measure resistance using defaulted source voltages (V_E) of 10, 100 and 500V to meet current resistance standards for ESD Safe material and work areas. The 6½' (2m) triaxial cable assembly is configured for the ETS Series 800 or other Resistance/Resistivity Probes and Test Fixtures with 0.161" (4mm) banana jack inputs. A separate manual specifically for the measurement of resistance is provided.

IEEE-488 and RS-232 interfaces allow the instrument to be integrated into automated test and measurement systems. The Keithley Excel LINX add-in utility for Microsoft™ Excel enables data to be acquired directly without programming and then employ Excel's graphics, charting and analysis capability to turn the data into useable processed information.

Available as an option is an instrument driver for use with Application Development Environments such as LabView, Labwindows/CVI, Visual Basic, C/CH and Test Point.

Specifications:

Picoammeter Ranges:
2, 20, 200 namp
2, 20, 200 μamp
2, 20 mamp

Display: 12-ch. Vacuum fluorescent
Over range indication: "OVERFLOW"
Buffer: Up to 3000 readings
Warm-up: One (1) hour for rated accuracy
Source Voltage:

Range	Step Size	Accuracy	I_{max}
± 10.100V	0.2mV	0.1 % ±1 mV	27.5ma
± 50.500V	1.0mV	0.1 % ±1 mV	250 μa
±505.00 V	10 mV	0.15%±40mV	25 μa

Analog Output: 2V±2.5% full scale, inverting

Resistance Measurement:
(V/I): Function of V_E /Picoammeter accuracy
(Alt V_E): alternates between 0 & selected V_E up to ±505V for 10^9 to 10^{15} Ω

Power: 100-120/220-240VAC, 50/60 Hz (50 VA)
Dimensions: 8.4"Wx14.6"Dx3.5"H (214x369x90mm)
Weight: 10.3 lb (4.7kg)
Conformance:
EMC: EU89/336EEC; EN61326-1
Safety: EU73/723/EEC; ENN61010-1, CAT 1
CE Mark

Warranty: One (1) Year

Specifications subject to change without notice

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