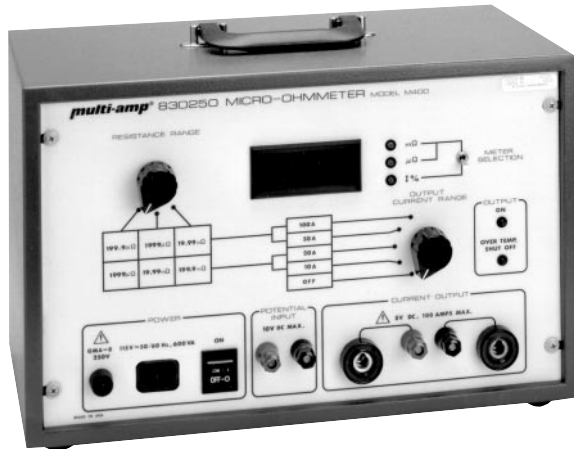


M-400

100 Ampere Digital Micro-Ohmmeter



- 100-ampere dc regulated output
- No batteries required
- Digital readout
- 0.1 $\mu\Omega$ resolution
- Four-terminal measurement
- Four selectable test currents

DESCRIPTION

The M-400 100 Ampere Digital Micro-Ohmmeter is designed to measure the resistance of contacts on busbars and breakers. The measurement is made at a high current, typically 100 amperes, using a ratiometric circuit.

This line-powered instrument employs a current regulating circuit to stabilize the test current against line voltage fluctuations and changes in the resistance of the test loop.

The use of line voltage as a power source eliminates the need to charge and maintain a heavy battery pack.

Model M-400 is compact because of its short time rating on the high-current output ranges. The meter reads directly in micro-ohms or milliohms. A three-position switch is provided so the operator can select the optimum resolution and measuring range.

APPLICATIONS

Used for low-resistance measurements with dc on switch contacts, breaker contacts, busbars, joints, SF₆ switchgear, splices, fuses and rail bonds.

PRINCIPLE OF OPERATION

Model M-400 uses a silicon-controlled rectifier as a control element to adjust and maintain the test current at a selected value. The current is then rectified, filtered and applied to a known internal shunt and to the external resistance to be measured.

In this circuit, the voltage drop across the unknown resistance is compared to the voltage drop across a known shunt. The result is displayed on a digital meter. A true four-terminal measurement is used.

A four-terminal connection is used on both the shunt and the unknown resistance to be measured. Both the test current and the ranging switch determine the range of the instrument.

FEATURES AND BENEFITS

- 100 ampere dc regulated output
- No batteries required
- Digital readout
- True four-terminal measurement
- Direct reading

SPECIFICATIONS

Input

Power (specify one)

120 V \pm 10%, 50/60 Hz, 600 VA

OR

240 V \pm 10%, 50/60 Hz, 600 VA

Resolution

3-1/2 digits, 0.1 m Ω on most sensitive range

Measuring Current

10 to 100 A dc in four steps (10, 20, 50, 100 A)

Output

Resistance Ranges

Test Current	Measuring Ranges			
	Amperes	Low	Medium	High
100, 50	199.9 $\mu\Omega$	1999 $\mu\Omega$	19.99 $\mu\Omega$	
20, 10	1999 $\mu\Omega$	19.99 $\mu\Omega$	199.9 $\mu\Omega$	

Accuracy

$\pm 1\%$ of reading, +2 digits on 50 and 100 ampere ranges
 $\pm 2\%$ of reading, +5 digits on 10 and 20 ampere ranges

Measuring Duty Cycle

100 A: 2 min on, 15 min off
50 A: 5 min on, 15 min off
10 to 20 A: continuous

Open-Circuit Measuring Voltage

8 Vdc

Instrumentation

3-1/2-digit LED display indicating resistance or the percent test current, LEDs to indicate the selected range, and that the output is on and over temperature

Operating Temperature

14 to 104° F (-10 to +40° C)

Dimensions

Instrument

11 H x 16 W x 10 D in.
 280 H x 406 W x 254 D mm

Transport Case

Model M-400 comes in a rugged, foam-lined transport case
 13 H x 21 W x 21 D in.
 330 H x 533 W x 533 D mm

Weight

Instrument: 44 lb (20 kg)
Shipping, with 30 ft (10 m) leads: 80 lb (36 kg)



Cat. No. 242011-7 Duplex Helical Current and Potential Hand Spikes. These optional helical hand spikes have pyramid-pointed prods backed by stout springs and helical guides that rotate the prods when pressure is applied to the handles. This feature ensures good contact and allows operation at precise angles. Maximum allowable test current is 20 A.

Termination	Maximum Test Current	Length	Cat. No.
High Current Pair 1.75 in. (45 mm) hippo clip Potential Pair 1 in. (25 mm) battery clip	100 A (10 m)	30 ft	830253
High Current Pair 3 in. (76 mm) C-clamp Potential Pair 1 in. (25 mm) battery clip	100 A (10 m)	30 ft	830255
High Current Pair 1.75 in. (45 mm) C-clamp Potential Pair 1 in. (25 mm) battery clip	100 A (15 m)	45 ft	830258
Helical Hand Spikes with Spring Points	20 A	7 ft (2 m)	242011-7
		18 ft (5.5 m)	242011-18
		30 ft (9 m)	242011-30

ORDERING INFORMATION

Item (Qty)	Cat. No.
120 V, 50/60 Hz Micro-Ohmmeter	830250
120 V, 50/60 Hz Micro-Ohmmeter	830250-1
Included Accessories	
Line cord (1)	17032
Transport case(1)	MC996
Instruction manual	AVTM830250
Optional Accessories	
Test leads	See chart above
Field test shunt, 0.01 Ω , current rating 10 A for 10 Amp range only	249003
Field test shunt, 0.001 Ω , current rating 100 A	249004
Field test shunt, 0.0001 Ω , current rating 500 A	249005
Certificate of Calibration, NIST	CERT-NIST