BT51
Low Resistance Ohmmeter

- **High test current**
- **Four terminal measurement**
- **Two measuring ranges—2000 mΩ and 20.00 mΩ**
- **Maximum resolution of 0.01 mΩ**
- **Protected against inadvertent connection to the mains supply**

DESCRIPTION

The BT51 Low Resistance Ohmmeter is able to make measurements by passing a current through the conductor under test and also monitoring the voltage across it. The test current is limited by a simple current limiting circuit and is measured by monitoring the voltage across a resistor. The test current is maintained at a nominal 2 A, and as the measurement is ratiometric, the reading is unaffected by any current variations.

The instrument has a 3-1/2 digit LED display to facilitate use in low light levels. Two LEDs on the front panel indicate battery condition and whether test current is flowing when a measurement is being made. A neon lamp indicates the presence of a dangerous voltage if the test spikes are accidentally placed across a live circuit. This warning takes place whether or not the instrument has been switched on.

The BT51 is protected up to 240 V ac by a relay circuit that keeps the instrument in a safe mode isolated from the mains supply. This safeguard is effective whether or not the instrument has been switched on.

Operation of the instrument is simple since there is only one range switch to set. Power is supplied by internal rechargeable cells and the charger unit is incorporated into the case. Duplex hand spike test leads are supplied and other types of leads are available.

The instrument is built into a robust, portable case that is weatherproof and shockproof and has a hinged, detachable lid.

APPLICATIONS

The BT51 is a stable, accurate, reliable, low resistance ohmmeter equally suited to precision laboratory applications and applications in the field. Typical applications include:

- Commissioning and maintenance of substation equipment, where measurements can be made on busbar joints, switch and circuit breaker contact resistance, fuse resistance, cold lap welded joints in aluminium earthing strip and earth bonding.
- Maintenance of overhead transmission lines where “hot” joints can be tested before and after their remaking or recompression .
- Bond testing aircraft frames including the bonding of electronic dischargers and fuel tanks.
- Testing earth bonds in mines.
- Rail bond testing where a rail is used as part of a communication system or for power transmission.
- Testing the integrity of lightning conductors.
- Electronic equipment where measurements can be made on resistors, track resistance of printed circuit boards (quality control of plating thickness), resistance of plated-through holes on printed circuit boards, contact resistance of relays, resistance of shunts, thick film circuits, etc.
- Domestic and industrial wiring installations where ring main continuity and circuit protective conductor continuity can be measured and the integrity of earth bonding checked in compliance with the l6th Edition IEE Wiring Regulations.

Megger

BT51
LOW RESISTANCE OHMMETER

PRINCIPLE OF OPERATION

The BT51 uses the four-terminal method of measurement. The main advantage of this method is that the resistance of the test leads is not included in the measurement. This is an important factor when the value of the measured resistance is very low.

Good connections to the item whose resistance is being measured are very important. Test leads for the instrument may take the form of duplex hand spikes, which enable connections to such things as busbars and aircraft frames to be made easily. Crocodile-type clip leads are used where a more rigid connection is necessary (i.e., when varying contact resistance tends to introduce errors). Sometimes the current connections are made with crocodile clips and the potential connections with spikes. This may be the case, for example, where multiple measurements have to be made.

FEATURES AND BENEFITS

- High test current – 2 ac (i.e., for aircraft bond testing)
- Four terminal measurement
- Two measuring ranges (2000 mΩ and 20.00 mΩ) and maximum resolution of 0.01 mΩ
- 3-1/2 digit LED display, which is helpful in a poorly lit environment
- Protection against 240 V ac and warning lights for added safety
- Robust, shockproof, weatherproof, portable case
- Can use very long test leads

SPECIFICATIONS

Ranges
2000 mΩ, resolution 1 mΩ
20.00 mΩ, resolution 0.01 mΩ

Test Current
2 A nominal with up to 2 Ω across the C terminals

Accuracy (32° to 122° F)
±1% of reading ±2 digits

Display
3-1/2 digit LED

Temperature
Operation: 32° to 122° F (0° to +50° C)
Storage: -4° to 122° F (-20° to +50° C)

Protection
Relay protection for up to 240 V mains supply applied from C1/Pl to C2/P2

100 mA (T) fuse, 20 x 5 mm, ceramic (for charging circuit)

Power Supply
4 Ah capacity NiCad rechargeable cells with internal charging unit

Normal charging time of 10 hours on 240 V, 50 Hz mains supply

Safety
The instrument meets the requirements for IEC 10101-1 (1992), EN61010-1 (1993)

The instrument is intended for use with non powered circuits only

EMC
In Accordance with IEC61326 including Amendment No. 1

Dimensions
9.6 H x 13.5 W x 6.25 D in.
245 H x 344 W x 158 D mm

Weight
10 lbs (4.5 kg)

ORDERING INFORMATION

Item	Cat. No.
Low Resistance Ohmmeter	BT51
Included Accessories	
Supply lead for battery charger	EV2454-860
Duplex handspikes with 8 ft (2.5 m) leads	EV6111-022
Operating manual	EV6172-763

Optional Accessories	Cat. No.
Test leads with duplex hand spikes	
20 ft (6 m)	EV6111-023
30 ft (9 m)	EV6111-024
Four terminal lead et with clip connector	EV6110-220
Test lead with single hand spikes, 6 ft (1.8 m)	EV6130-516
Leather accessory pouch	EV6430-193

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Part Number - AVTBBT51 3/03