M.C. MILLER Co.

INSTRUMENTS AND EQUIPMENT FOR THE CORROSION ENGINEER

More than 65 Years of Support to the Cathodic Protection Industry

MODEL B-3D MULTIMETER

- **Increased versatility through solid state design**
- **Smaller & 30% lighter than Model B3A2**
- **Simplified operation**
- **RFI shielded throughout**
- **Excellent visibility in bright sunlight**
- **Selectable input resistance**
- **Large liquid crystal digital display**

Model B-3D Multimeter
Cat. No.1106

GENERAL INFORMATION:

RIGHT METER: Selectable Input Resistance of 10, 25, 50,100 & 200 megohms on all ranges from 200 MV to 200 V; 20 MV ranges fixed at 1000 Ω

LEFT METER: 10 Megohms input Resistance on all ranges from 200 MV to 20 V: 20 MV range fixed at 1000 Ω

RFI REJECTION: A major design achievement was to eliminate the effects of RFI, and offer accurate, repeatable readings.

LOGIC: C-MOS LSI; crystal controlled timing.

AC REJECTION: Normal Mode 50/60/400 Hz greater than 60 dB

ZERO: Automatic

POLARITY: Automatic (negative symbol displayed, positive assumed).

DECIMAL POINT: Automatic

BATTERY LIFE: Amplifiers approx 150 hours continuous. Low battery voltage indication incorporated into display. Others batteries have life dependent upon use.

BATTERY TYPES: Only standard batteries used: D-size, Penlight & 9V.

ACCURACY: DC 1% of reading ±1 digit; AC 2% reading ±1 digit.

SPECIFICATIONS:

RIGHT METER:
Liquid Crystal Display with five DC ranges from 20 MV to 200 V and selectable input resistances of 1 to 200 Megohms 1 AC range 200 V.

SELECTABLE INPUT RESISTANCE:
RIGHT METER input resistance of 10, 25, 50, 100 & 200 megohms selectable by rotary switch,applicable to 200 MV, 2 V and 200 V ranges. High input resistance permits accurate voltage measurement if there is high resistance in the external circuit. This is an important factor in structure to earth potentials, where readings errors can be costly. The 20 MV range has a fixed input resistance of 1000 Ohms.

LEFT METER:
Liquid Crystal Display with 4 ranges from 20 MV to 20 V. Milliameter/ammeter with 4 ranges from 20 MA to 20 A (20 MV drop shunts). Three direct readings ohmmeter ranges: 20 Ohms, 2k Ohms, 2M Ohms.

DC BIAS:
A DC Bias circuit is connected in series with the RIGHT METER and can be used to balance out galvanic and earth potentials. A biasing pontential of full scale (+ or -) on any range permits direct measurements of either positive or negative changes in potential. A panel-mounted light is activated as a reminder if the DC Bias circuit is turned on.

AMMETER:
LEFT METER can serve as a milliameter /ammeter with built-in shunts to provide a wide selection of ranges.Toggle switch permits the left meter to be used as a conventional ammeter, a zero resistance ammeter, or to connect the rheostat and controls in the circuit to adjust current to a desired value for various tests. Current from a few milliamperes to about 5 amperes, supplied from either internal batteries or an external source, can be adjusted with the controls. Used for current requirement tests, soil resistivity tests, etc. A second toggle switch connects the right meter to the left hand terminals for resistance testing. The left meter can be used with batteries and controls to measure current while the right meter is being used to measure IR drop.This facilitates making “Null-Amp” type current measurements.

OHMMETER:
Three built-in ohms ranges, Used to determine when good low-resistance contacts are obtained. Circuit can also be used for checking continuity of test leads, resistance of bond wires, etc.

OVERLOAD PROTECTION:
Advanced design features virtually eliminate the chance of damage to either meter from electrical overload on all volt and millivolt ranges, even the 20 MV range. Tests indicate that the B-3D will withstand AC or DC voltages far in excess of any encountered in normal field testing. Ammeter shunts are not protected by the amplifier and are subject to the damage by current overloads.

DISPLAYS:
Liquid crystal displays are special high temperature type (18ºF to 176ºF or 14ºC to 80ºC) built to rigid M.C. Miller specifications. Large display characters (3/4”) facilitate rapid, accurate readings. Built -in annunciators to reduce errors in recordings readings: V, MV, A, MA Ω, MΩ, LoBat, AC. Excellent visibility in bright sunlight. Damaged displays can be economically replaced in the field without special tools.

SHUNTS:
Built-in multi-range ammeter shunt provide high overload capacity and a high degree of accuracy. Optional accessory external shunt can extend range of current measurements to 100 amperes, and may be used on either side.