

MAINTENANCE

Note fuse replacement should only be done if test leads have been disconnected and POWER is OFF.

9-VOLT BATTERY REPLACEMENT

Note the condition of the 9-volt battery using the procedure described above, if the battery needs to be replaced, open the back cover, remove the spent battery and replace it with a battery of the same type.

FUSE REPLACEMENT

Should the fuse need replacement, use only 200mA fuses identical in physical size to the original.

OPERATOR'S INSTRUCTION MANUAL Model CTB9830

GENERAL

This instrument is a pocket-sized 3-1/2 digit multimeter for measuring DC and AC voltage, DC current, resistance and diodes. It also provides transistor measurement and audible continuity test functions. Full range overload protection and low battery voltage indication are provided. It is an ideal instruments for use in the field, laboratory, workshop, hobby or home.

GENERAL FEATURES

- 1) 3-1/2 LCD display provided. Max indication: 1999
- 2) Indication of polarity: automatic "-" polar display
- 3) Automatic over range indication with the "1" displayed.
- 4) Service temperature: 0°C - 40°C
- 5) Storage temperature: -15°C - 50°C
- 6) Power supply: 9V battery
- 7) Low battery indication appears on the display
- 8) Data holder

SPECIFICATIONS

Accuracies are \pm (% reading + No. of digits)

Reference condition: Ambient temperature: 18°C - 28°C, Relative humidity: <75%
Guaranteed for 1 year

1.) DC Voltage

RANGE	ACCURACY	RESOLUTION
200mV	$\pm 0.5\%$ of rdg ± 2 digit	100 μ V
2V		1mV
20V		10mV
200V		100mV
600V	$\pm 0.8\%$ of rdg ± 2 digit	1V

Input impedance: 1M ohm on all ranges

Overload protection: 600V or peak AC on all ranges

2. AC Voltage

RANGE	ACCURACY	RESOLUTION
200V	$\pm 1.2\%$ of rdg ± 10 digit	100mV
600V		1V

Frequency range: 45Hz to 400Hz

Overload protection: 600V DC or peak AC on all ranges

Indication: Average (rms of sine wave)

3. DC Current

RANGE	ACCURACY	RESOLUTION
200µA	±1.0% of rdg ± 2 digit	100nA
2mA		1µA
20mA		10µA
200mA	±1.2% of rdg ±2 digit	100µA
10A	±2.0% of rdg ±2 digit	10mA

Overload protection: .02A/250V fuse, (10A range not fused.)

4. Resistance:

RANGE	ACCURACY	RESOLUTION
200 ohm	±0.8% of rdg ± 2 digit	0.1 ohm
2K ohm		1 ohm
20K ohm		10 ohm
200K ohm		100 ohm
2M ohm	±1.0% of rdg ±2 digit	1K ohm

Open voltage: less than 2.8V

Overload protection: 10 seconds maximum 250V rms on all ranges.

5. Transistor hFE Quota Measuring

Capable of test of hFE quota of Type NPN or Type PNP transistors.

Range of display: 0 - 1000. Base current: 10µA, Vce approximately 2.8V

6. Diode forward voltage drop & continuous conduction measuring

Range	Description
	Display of diode - resembling forward condition voltage
	Inside buzzer shall alarm if resistance below 70Ω ± 20Ω

METHOD OF MEASUREMENT

1. DCV, ACV MEASUREMENT
 1. Set the Function-Range switch at the required position
 2. Connect black test lead to "COM" terminal and red test lead to "VΩmA" input terminal.
 3. Connect test leads to measuring point and read the display.
2. DC AMPS MEASUREMENT
 1. Connect black test lead to "COM" terminal and red test lead to "VΩmA" terminal for a maximum of 200mA. For a maximum of 10A, move the red test lead to the "10A" terminal.
 2. Set the Function-Range switch at the required position.
 3. Connect test leads to measuring points and read the display value.
3. RESISTANCE MEASUREMENT
 1. Connect black test lead to "COM" terminal and red test lead to "VΩmA" input terminal.
 2. Set the Function-Range switch to the Ω range.
 3. Connect the test leads across the resistance under measurement and read the display value.
4. DIODE MEASUREMENT
 1. Set the Function-Range Switch at the "→" position.
 2. Connect the black test lead to "COM" terminal and red test lead to "VΩmA" input terminal
5. TRANSISTOR hFE TEST
 1. Set the Function - Range switch to the "hFE" position
 2. Make sure the transistor is "NPN" or "PNP" type
 3. Insert the transistor into the E.B.C. connector
 4. Display reading is approx. transistor hFE value
6. SQUARE WAVE O/P
 1. Range switch to position
 2. Connect the red lead to "VΩmA", black lead to "COM" jack. The output voltage is 4Vp-p.