3-½

DIGITAL MULTIMETER

180 MINI SERIES

OPERATOR'S MANUAL

1. FEATURES

√ Display: 3-½ digits LCD with a max reading of 1999

√ Over range indicate: Only the "1" displayed

√ Zero adjustment: Automatic

√ Low battery: The sign "  " is displayed

√ Power: Single, standard 12-Volt battery

√ Dimension: 100mm×50mm×20mm

√ Weight: 60g(including battery)

√ Automatic negative polarity indication

2. SPECIFICATIONS

Accuracies are ±(%reading + No. of digits) at 23±5℃, less than 75%RH. Guaranteed for one year.

1) DC Voltage

Range	Accuracy	Resolution
200mV	±(0.8% +1)	100uV
2000mV		1mV
20V		10mV
200V		100mV
500V	±(1% +1)	1V

Input impedance: 1MΩ

Maximum input Voltage: 500V DC or peak AC, 15 seconds maximum of overload time.

2) DC Current

Range	Accuracy	Resolution
200uA	±(1%+2)	100nA
2000uA		1uA
20mA		10uA
200mA	±(1.2%+2)	100uA
10A	±(2%+2)	10mA

Overload protection: 0.5A/250V fuse

3) AC Voltage

Range	Accuracy	Resolution
200V	±(1.5% +10)	100mV
500V		1V

Frequency Range: 50 ~ 200KHz

Maximum input voltage: 500 rms AC

Indication: Average (rms of sine wave).

4) Resistance

Range	Accuracy	Resolution
200Ω	±(1% +3)	0.1Ω
2000Ω		1Ω
20KΩ		10Ω
200KΩ		100Ω
2000KΩ		1KΩ

Overload protection: 250V DC/AC rms, less than 10s

Open circuit voltage: less than 2.8V

5) Battery Test (1.5V, 9V)

Range	Description	Test Condition
1.5V	The working current of the battery will be displayed, so the quality of battery could be judged.	Working current is about 40mA
9V		Working current is about 24mA

6) Diode and Audible Continuity test

Range	Description	Test Condition
	Display read approx forward voltage of diode	Forward DC current approx 1mA.Reverse d DC voltage approx 2.8 Volts.
	Built-In buzzer sounds if resistance is less than approx 30Ω	Open circuit Voltage approx 2.8 Volts

7) Transistor Test

Base current approx 10uA, Vce approx 2.8V

Display range: 0 ~ 1000

3.OPERATION

1) DC Volts measurement (DCV)

a. Set the FUNCTION switch to the DCV, and select a proper range, if the Volts is unknown, set the FUNCTION switch to the highest range and work down.
b. Connect the test lead to the circuit.

2) DC current measurement (DCA)

a. Set the FUNCTION switch to the DCA, and select a proper range.
b. Connect the test lead in series to circuit.

3) AC Volts measurement (ACV)

a. Set the FUNCTION switch to ACV, and select a proper range.
b. Connect the test lead to circuit.

4) Resistance measurement (Ω)

a. Set the FUNCTION switch to OHM, and select a proper range.
b. Connect the test lead to circuit.

5) Battery Test

a. Set the FUNCTION switch to 9V or 1.5V.
b. Connect the test lead to Battery.

6) Transistor measurement (hFE)

a. Set the FUNCTION switch to hFE.
b. Determine whether the transistor is NPN or PNP and locate the Emitter, Base and Collector leads. Insert the leads into the proper holes in the socket on the front

panel.

7) Diode and Audible Continuity test

a. Set the FUNCTION switch to ⊣◀, or ⊣◀·))).
b. Connect the test lead to the Diode, circuit or resistance.

4. MAINTENANCE

Your Digital Multimeter is a precision electronic device. Do not tamper with circuitry.

To avoid damage:

a. Never connect more than 500 Volts DC/AC rms.
b. Never connect a source of voltage with Function Switch in Ω position.
c. Never operate the DMM unless the battery cover is in place and fully closed.
d. Battery replace should only be done after the test leads have been disconnected and POWER IS OFF.
e. Replace the Battery if the indicates ⊟ is display on the LCD, or the accurate is no granted.