

# DIGITAL MULTIMETER OPERATING MANUAL

## I. INTRODUCTION:

### 1. SWITCH

Our DMM adopt rotational switch which situated at the middle of the front cases. It is used for the selection of FUNCTION, RANGE AND POWER **ON-OFF**. In order to save energy, please turn the switch to "**OFF**" position when not in use.

### 2. DISPLAY

3 1/2, 12mm height LCD display.

### 3. "COM" jack

Common jack

### 4. "VΩ mA" jack

Voltage, resistance, not more 200mA. Current and battery input test jack, 50Hz square wave output jack.

### 5. "2A" jack

For the input of less than 2A current.

## II. FEATURES:

Display: 3 1/2 LCD with maximum. Display 1999.

Polarity: Auto polarization.

Overrange: Maximum display "1"

Working environment: Temp. 0 – 40°C relative

Humidity: <75%

Storing environment: -15 ~ 50°C

Battery: 9V IEC 1604 NEDA 6F 22

High voltage symbol: DC 1000V or AC 750V. Range will show high voltage symbol "HV"

Low voltage indication: Left side of LCD will show  or BAT symbol.

Size: 150mm x 70mm x 24mm

Weight: 150g include battery.

## III. TECHNICAL SPECIFICATION:

Accuracy:  $\pm a\%$  reading  $\pm$  NO. of digits

Guaranteed for 1 year.

Environmental temperature: 23°C  $\pm$  5°C

Relative humidity: <75%

1. DC voltage:

RANGE	RESOLUTION	ACCURACY
200mV	100uV	± 0.5% of rdg ± 2 digits
2V	1mV	
20V	10mV	
200V	100mV	
1000V	1V	± 0.8% of rdg ± 2 digits

Input impedance: 1MΩ. on all ranges

Overload protection: DC or AC peak value of 1000V

2. DC Current:

RANGE	RESOLUTION	ACCURACY
200uA	100nA	± 1% of rdg ± 2 digits
2000uA	1uA	
20mA	10uA	
200mA	100uA	± 1.2% of rdg ± 2 digits
10A	10mA	± 2% of rdg ± 2 digits

Overload protection: 0.2A/250V fused 10A. Range not fused.

3. AC Voltage:

RANGE	RESOLUTION	ACCURACY
200V	100mV	± 1.2% of rdg ± 10 digits
750V	1V	

Frequency range: 45Hz to 400Hz.

Overload protection: AC 750V rms

Indication: Average value (rms of sine wave).

4. Resistance:

RANGE	RESOLUTION	ACCURACY
200Ω	0.1Ω	± 0.8% of rdg ± 2 digits
2000Ω	1Ω	
20kΩ	10Ω	
200kΩ	100Ω	
2000kΩ	1kΩ	± 1% of rdg ± 2 digits

Overload protection: 250V DC or AC rms. Less than 10 sec.

Open circuit voltage: Approx 2.8V.

5. Transistor hFE

Vce approximately 2.8V, Ib approximately 10uA, display show approximately hFE 0 – 1000.

6. Diode and Audible Continuity:

Diode: Testing voltage approx 2.4V, current 1.5mA, indicate forward diode approx value.

Buzzer: Sounds when measure less than  $70\Omega \pm 20\Omega$

7. Square Wave Output:

Output square wave 50Hz, output voltage approx 3V p-p.

8. Battery Test:

RANGE	CURRENT CONSUMED
1.5V	50mA
9V	5mA

**IV. OPERATING INSTRUCTION:**

1. DC Voltage Measurement V- (DCV):

1.1 Connect RED test lead to "V $\Omega$ mA" jack, BLOCK test lead to "COM" jack.

1.2 Set the FUNCTION switch to the desired V- (DCV) position. If not sure, set to the highest range.

1.3 Connect the test leads across the source or load under measurement.

2. DC Current Measurement A- (DCA):

2.1 Connect the RED test lead to "V $\Omega$ mA" jack when the current is less than 200mA and to "10A" jack when the current is larger than 200mA.

Connect the BLACK test lead to the "COM" jack.

2.2 Set the JUNCTION switch to the desired DCA position.

2.3 Connect the test leads across the source or load under measurement.

3. AC Voltage Measurement V~ (ACV):

3.1 Connect the RED test lead to "V $\Omega$ mA" jack and BLACK test lead to "COM" jack.

3.2 Set the FUNCTION switch to the desired ACV position.

3.3 Connect the test leads across the source or load under measurement.

4. Resistance Measurement ( $\Omega$ ):

4.1 Connect the RED test lead to "V $\Omega$ mA" jack and BLACK test lead to "COM" jack.

4.2 Set the FUNCTION switch to the  $\Omega$  position.

4.3 Connect the test leads across the resistor under measurement.

4.4 When measuring the resistance, the power should be turned off and in short circuit status by connecting the two test leads.

5. Transistor hFE Measurement:

6.1 Set the FUNCTION switch to hFE position

6.2 Insert the E B C. of the PNP or NPN transistor to the proper jack in the socket on the front

panel.

#### 6. Diode and Audible Continuity Measurement:

7.1 Connect RED test lead to the “VΩmA” jack and BLACK test lead to the “COM” jack.

7.2 Set the FUNCTION switch to the   position and connect the RED test lead to the ANODE of diode and BLACK to CATHODE. The display will then show the approx. forward voltage of this diode. If connect the test leads on the other way round, the display will show an over range status “1”.

7.3 Buzzer sounds if the resistance between the two probes less then approximately 70Ω.

#### 7. 50Hz Square Wave Output:

8.1 Connect RED test lead to the “VΩmA” jack and BLACK test lead to the “COM” jack.

8.2 Turn the FUNCTION switch to  position and the RED and BLACK test leads being the output jack.

Attention:

1. This function being the output message so don't used for measuring voltage.
2. The circuit being protected by short circuit device.
3. The voltage cannot exceed 40V p-p.

#### 8. Battery Test:

8.1 Connect RED test lead to the “VΩmA” jack and BLACK test lead to the “COM” jack.

8.2 Turn the FUNCTION switch to the BATT position. Connect the test lead across the battery under measurement. The display will show the voltage of the battery.

### V. BATTERY AND FUSE REPLACEMENT:

When the voltage of the battery is low, the symbol  or BATT will appear on the display. Then the battery should be replaced. You should check the  fuse 0.2A 250V fast when no measurement could be taken for current using mA range.

### VI. CLEANING:

Before cleaning, ensure to remove the test leads, and turn off the switch.

Do not drop water inside the case, never immerse in any liquid.

\*(Specifications are subject to change without notice.)\*