

# POCKET-SIZED DIGITAL MULTIMETER OPERATOR'S INSTRUCTION MANUAL

## SAFETY INFORMATION

This meter has been designed according to IEC-1010 concerning electronic measuring instruments with an overvoltage category (CAT III) and pollution 2.


Follow all safety and operating instructions to ensure the meter is used safely and is kept in good condition.


With proper use and care, your digital multimeter will give you years of satisfactory service.


### DURING USE


- Never exceed the protection limit indicated in the specifications for each range of measurement.
- Never use the meter to measure voltages that might exceed 600V above earth ground in category III installations.
- Always be careful when working with voltages above 60V dc or 30V ac rms. Keep fingers behind the probe barriers while measuring.
- Do not perform resistance measurements on live circuits.
- Inspect test leads and probes for cracks, breaks or crazes in the insulation before using the meter.

### SAFETY SYMBOLS

 Important safety information .refer to the instruction manual.

 Earth ground

 Indicates compliance with requirements for double insulation.

 Fuse must be replaced with ratings specified in the manual.

### MAINTENANCE

- Before opening case .always disconnect test leads from all energized circuits.
- For continuous protection against fire. Replace fuse only with ratings: F 250mA/600V (Quick Acting)
- Never use the meter unless the back cover is in place and fastened completely.
- Do not use abrasives or solvents on the meter .to clean it use only a damp cloth and mild detergent.

### GENERAL DESCRIPTION

This compact digital multimeter is designed to measure AC and DC voltages .DC current .Resistance .Diode and to perform audible continuity checks with accuracy and easy .

Small and lightweight .with a carrying case and test leads wound on its body. This instrument will provide you years of satisfactory service.

### FRONT PANEL DESCRIPTION

1. range switch

This switch is used to select desired ranges as well as to turn on/off the meter .

2. function switch

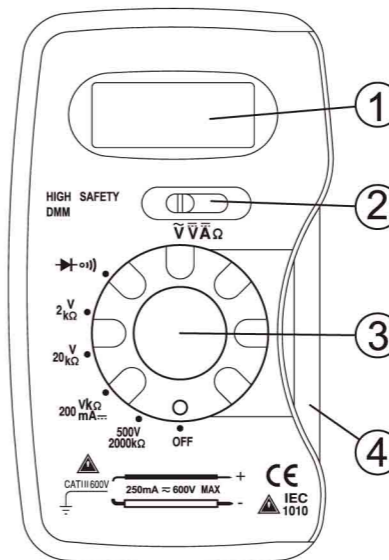
switch for selecting functions

3. LCD display

3 1/2 digit .7 segment .maximum 1999 counts

4. Test leads

Red test lead for positive (+) and black test lead for negative (-).



## SPECIFICATION

Accuracy is guaranteed for 1 year .23 °C ± 5 °C .Less than 75%RH.

### DC VOLTAGE

Range	resolution	accuracy
2v	1mv	±0.5% of rdg ±1dgt
20v	10mv	±0.8% of rdg ±1dgt
200mv	100mv	±0.8% of rdg ±1dgt
500v	1v	±0.8% of rdg ±1dgt

Overload protection: 500V dc or rms ac for all ranges

### AC VOLTAGE

Range	resolution	accuracy
200v	100mv	±1.2% of rdg ±10dgt
500v	1v	±1.2% of rdg ±10dgt

Overload protection: 500V dc or rms ac for all ranges

Frequency range: 45Hz to 450Hz

Response: average responding .calibrated in rms of a sine wave

### DC CURRENT

Range	resolution	accuracy
200mA	0.1mA	±2.0% of rdg ±2dgt

Overload protection: 250 mA/600V fuse

## RESISTANCE

Range	resolution	accuracy
2k Ω	1 Ω	±1.0% of rdg ±2dgt
20k Ω	10 Ω	±1.0% of rdg ±2dgt
200k Ω	100 Ω	±1.0% of rdg ±2dgt
2000k Ω	1k Ω	±1.0% of rdg ±2dgt

Maximum open circuit voltage : 0.65V


overload protection: 600V rms ac for all ranges

## DIODE TEST

Range description  
 Show the approx. forward voltage drop of the diode.

Overload protection: 600V rms ac

## CONTINUITY TEST

Range description  
 Built-in buzzer sounds when resistance is less than 50 Ω .

Overload protection: 600V rms ac

## GENERAL CHARACTERISTICS

Maximum voltage between Terminals and earth ground	CAT III 600V
Fuse protection	F 250 mA/600V
Power supply	12v battery .GP -23AX1
Display	LCD .1999 counts .updates 2-3/sec
Measuring method	dual-slope integration A/D converter
Over range indication	only figure "1" on the display

Polarity indication  
“-“ displayed for negative polarity

Operating temperature  
0°C to 40°C (32°F to 104°F)

Storage temperature  
-10°C to 50°C (10°F to 122°F)


Low battery indication  appears on the display

Size 120x70x18mm

Weight approx. 110g

## OPERATING INSTRUCTION

### DC voltage measurement

1. Set the function switch at V  position
2. Set the range switch at desired position. If the magnitude of voltage to be measured is unknown beforehand .set the range switch at the highest position and then reduce until satisfactory reading is obtained.
3. Connect test leads across the source or load being measured. The polarity of red lead connection will be indicated at the same time as the voltage value.
4. When the range switch is set at 500v position. “HV” sign will appear on the display to remind user of high voltage measurement. Special attention should be paid.

### AC voltage measurement


1. Set the function switch at V~ position

2. Set the range switch at desired position .measurement reading can be obtained at 2V and 20V positions, but the accuracy is not guaranteed.

3. Connect test leads across the source or load being measured and read the voltage value on the LCD display.

4. When the range switch is set at 500v position , a “H V” sign will appear on the display to remind user of high voltage measurement.

### DC current measurement


1. Set the function switch at A  position.
2. Set the range switch at 200mA position .measurement reading can be obtained at other positions. But the decimal point will be at the incorrect place.
3. Open the circuit in which the current is to be measured. And connect test leads in series with the circuit.
4. Read current value on the LCD display along with the polarity of red lead connection.

### Resistance measurement


1. Set the function switch at Ω position .(note: the polarity of red lead is positive“+”)
2. Set the range switch at desired position
3. Connect test leads across the resistor to be measured and read LCD display.
4. If the resistor was being measured is connected to a circuit .turn off power and discharges all capacitors before

applying test leads.


### Diode test

1. Set the function switch at Ω position .(note: the polarity of red lead is positive“+”)
2. Set the range switch at  position.
3. Connect the red test lead to the anode of the diode to be tested and the black lead to the cathode of the diode.
4. The approx. forward voltage drop of the diode will be displayed in mv. if the connection is reversed. Only figure “1” will be shown..

### Continuity test

1. Set the function switch at Ω position.
2. Set the range at  position.
3. Connect test leads to two points of the circuit to be tested. if the resistance is less than 50 Ω .Buzzer will sound..

### BATTERY & FUSE REPLACEMENT

If the sign  appears on the LCD display .it indicates that the battery should be replaced. Remove the screw on the back cover and open the case .replace the exhausted battery with a new one of the same type.

Fuse rarely need replacement and blow almost always as a result of operator's error. open the case and replace the blown fuse with the ratings specified: F 250 mA/600V

### WARNING

Before attempting to open the case .always be sure that test leads

have been disconnected form measurement circuits .close case and tighten screws completely before using the meter to avoid electrical shock hazard

### ACCESSORIES

Battery	12V	GP-23A	1
Carrying case			1
Operating manual			1