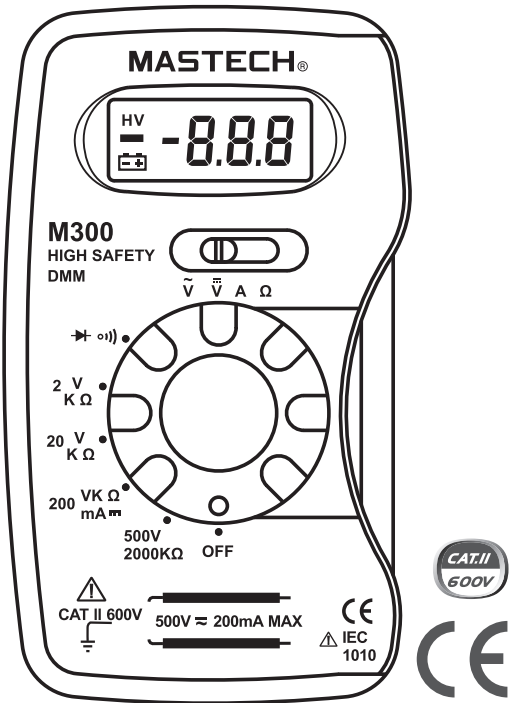
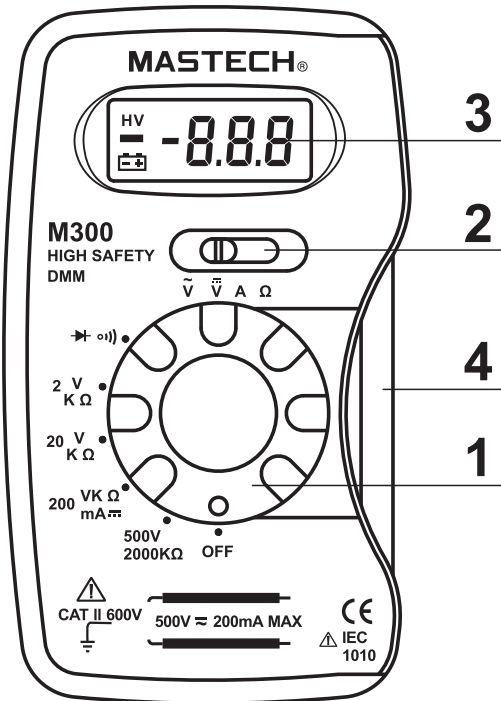


### POCKET-SIZED DIGITAL MULTIMETER OPERATOR'S INSTRUCTION MANUAL



## MASTECH®

### FRONT PANEL



01

## MASTECH®

### Safety information

This meter has been designed according to EN61010 concerning electronic measuring instruments with an overvoltage category (CAT II) 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 II 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.

02

## MASTECH®

### Maintenance

- Before opening case .always disconnect test leads from all energized circuits.
- For continuous protection against fire. Replace fuse only with ratings: FF 200mA/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 1/2digit.7segment.maximum 1999 counts.
4. Test leads  
Red test lead for positive (+) and black test lead for negative (-).

03

## MASTECH®

### 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 |
| 200V  | 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: 200 mA/600V fuse

04

## Resistance

| Range  | Resolution | Accuracy            |
|--------|------------|---------------------|
| 2kΩ    | 1Ω         | ±1.0% of rdg ±2dgts |
| 20kΩ   | 10Ω        | ±1.0% of rdg ±2dgts |
| 200kΩ  | 100Ω       | ±1.0% of rdg ±2dgts |
| 2000kΩ | 1kΩ        | ±1.0% of rdg ±2dgts |

Maximum open circuit voltage : 0.65V  
 overload protection:250V rms ac for all ranges

## Diode test

| Range | Description   |
|-------|---|
|       | Show the approx. forward voltage drop of the diode. |

Overload protection:250V rms ac

## Diode test

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

Overload protection:250V rms ac

## General characteristics

|  |                                       |
|--|---------------------------------------|
| Maximum voltage between Terminals and earth ground | CAT II 600V                           |
| Fuse protection                                    | FF 200mA/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 "HV" 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

## Audible 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 50Ω. 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: FF 200 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 |

