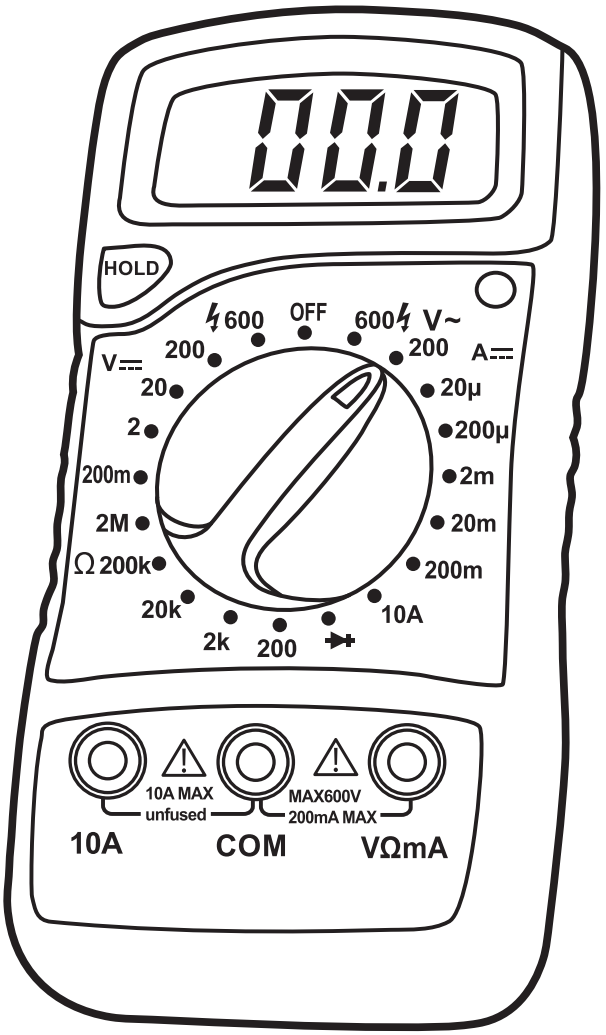
FAI DETMULTI

FAITHFULL®

QUALITY TOOLS

# Digital Multimeter




## Instruction Manual

Read this instruction manual thoroughly before use and retain for future reference.

## Warranty

This instrument is guaranteed to be free from defects in material and workmanship for a period of one year. The guarantee does not cover product failure due to misuse, negligence or fair wear and tear. In the case of electrical products used for hire, the guarantee period is restricted to three months. This guarantee does not cover expendable items such as batteries or fuses.

## Safety Information

This digital multimeter has been designed according to IEC-1010 concerning electronic measuring instruments with a measurement category II (CAT II 600V) and pollution degree 2.

## Electrical Symbols

~ AC (Alternating Current)
⎓ DC (Direct Current)
⚠ Important safety information. Refer to Manual.
⚠ Dangerous voltage may be present.
⏚ Earth ground
Fuse
CE Conforms to European Union directives
⧈ The equipment is protected throughout by double or reinforced insulation

## ⚠ Warning

**To avoid possible electric shock or personal injury, follow these guidelines:**

- Do not use the meter if it is damaged. Before you use the meter, inspect the case. Pay particular attention to the insulation surrounding the connectors.
- Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity.
- Replace damaged test leads before you use the meter.
- Do not use the meter if it appears to operate in unusual manner as its safety features may be impaired. If in doubt, have the meter serviced.
- Do not operate the meter around explosive gas, vapour or dust.
- Do not apply more than the rated voltage, as marked on the meter, between terminals or between any terminal and earth ground.
- Before use, verify the meter's operation by measuring a known voltage.
- Do not operate this meter in a manner not specified by the manufacturer as the protection provided by the equipment may be impaired.

- When servicing the meter, use only specified replacement parts.
- Use with caution when working above 30V ac rms, 42V peak, or 60V dc. Such voltages pose a shock hazard. USE EXTREME CAUTION when working with high voltages.
- When using the probes, keep your fingers behind the finger guards on the probes.
- Connect the common test lead before you connect the live test lead. When you disconnect test leads, disconnect the live test lead first.
- Remove the test leads from the meter before you open the case or the cover.
- Do not operate the meter with the back cover or portions of the case removed or loosened.
- To avoid false readings, which could lead to possible electric shock or personal injury, replace the batteries as soon as the low battery indicator (  ) appears.
- CAUTION - When an input terminal is connected to a dangerous live source it is to be noted that a shock potential equivalent to the live source is present at all other terminals. USE EXTREME CAUTION when working with high voltages.
- When measuring a current, turn off the circuit power before connecting the meter in the circuit. Remember to place the meter in series with the circuit.

- **CAT II** - Measurement Category II is for measurements performed on circuits directly connected to low voltage installation. (Examples are measurements on household appliances, portable tools and similar equipment.)

  Do not use the meter for measurements within Measurement Categories III and IV.

## ⚠ Caution

**To avoid possible damage to the meter or to the equipment under test, follow these guidelines:**

- Disconnect circuit power and discharge all high-voltage capacitors before testing resistance, continuity, diodes, or capacitance.
- Use the correct terminals, function, and range for your measurements.
- Before measuring current, check the meter's fuse and turn the power OFF to the circuit before connecting the meter to the circuit.
- Before rotating the range switch to change functions, disconnect test leads from the circuit under test.
- Remove test leads from the meter before opening the meter case.

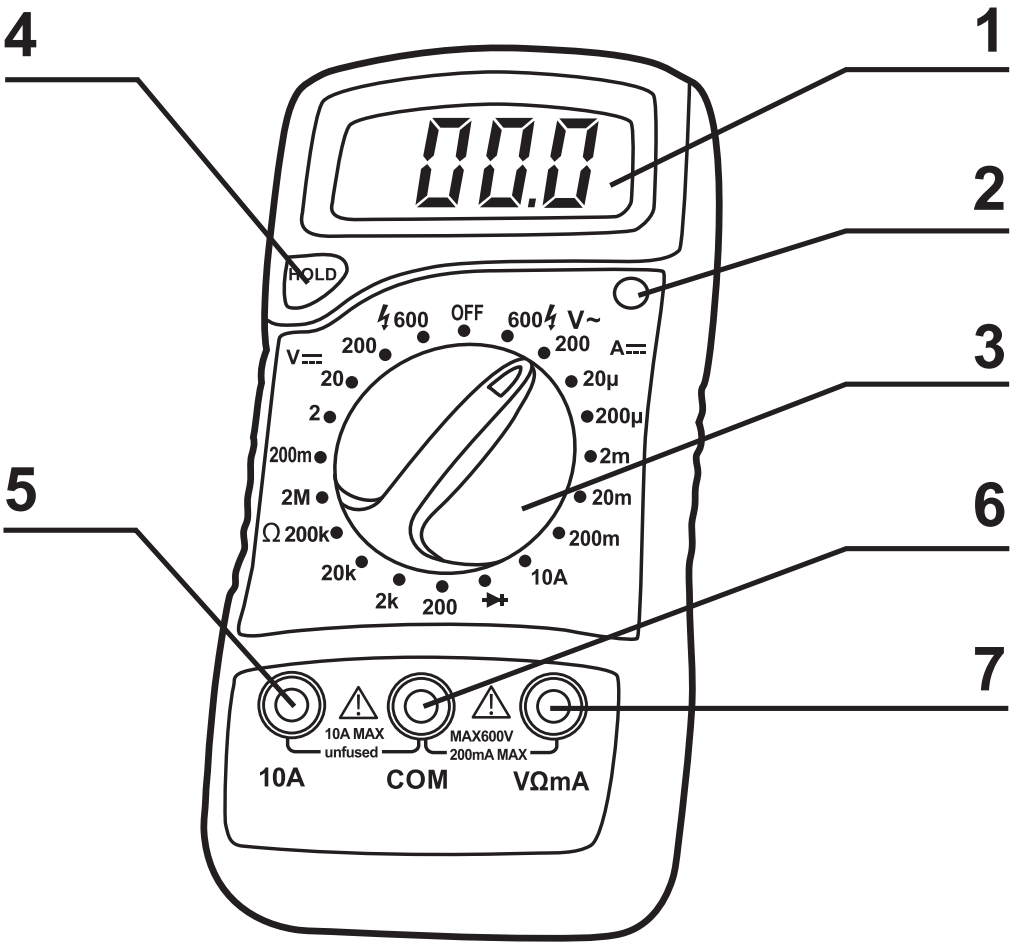
## Maintenance

- Before opening the case, always disconnect the test leads from all live circuits.
- To continue protection against fire, replace fuse only with the specified voltage and current ratings: F250mA/250V (Fast Blown) Φ 5 x 20
- Periodically wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents.

## Introduction

FAI DETMULTI is a handheld 3½-digit LCD digital multimeter with the advantages of precision reading and stable performance, and can be used for the measurement of DC voltage, AC voltage, DC current, resistance, diode and continuity.

# Front Panel




1. **Display** 3½ digit, 7 segment, 15mm high LCD.

2. **Back light switch** Press to illuminate the LED display, auto switch off after approximately 7 seconds.

3. **Rotary switch** Used to turn the meter on and off and select the required function and ranges.

4. **Hold button** When this button is pushed, the display will keep the last reading and the "**H**" symbol will appear in the LCD until the button is pushed again.

5. **“10A” jack** Plug in connector for Red test lead when performing 10A measurement.

6. **“COM” jack** Plug in connector for Black (negative) test lead.

7. **“VΩmA” jack** Plug in connector for Red (positive) test lead for voltage, resistance and current (except 10A) measurements.

## General Specifications

- Display: 3½-digit LCD, Max reading 1999
- Measuring method: Dual-slope integration A/D converter
- Automatic polarity indication, " **-** " displayed for negative polarity
- Automatic over-range indication with figure "1" displayed.
- Auto power-off
- Operating temperature: 0°C~40°C (32°F~104°F)
- Storage temperature: -10°C~50°C (14°F~122°F)
- Low battery indication: Symbol "  " displayed on the upper left side of the LCD.
- Dimensions: 138 x 69 x 31mm
- Weight: approx. 170g (including battery)

# Specifications

Accuracy is specified for a period of 1 year after calibration and at 18°C ~ 28°C with relative humidity up to 75%

Accuracy specifications take the form of:
±[(% of Reading)+(Number of Least Significant Digits)]

## DC VOLTAGE

| RANGE | RESOLUTION | ACCURACY |
|---|---|---|
| 200mV | 100μV | ±(0.8%+5) |
| 2V | 1mV | |
| 20V | 10mV | |
| 200V | 100mV | |
| 600V | 1V | ±(1.0%+5) |

Input impedance 1MΩ

## AC VOLTAGE

| RANGE | RESOLUTION | ACCURACY |
|---|---|---|
| 200V | 100mV | ±(1.2%+10) |
| 600V | 1V | |

Input impedance: about 500KΩ
Response: average, calibrated in RMS of sine wave.
Frequency Response:40 - 400Hz

## DC CURRENT

| RANGE | RESOLUTION | ACCURACY |
|---|---|---|
| 20μA | 0.01μA | ±(1.0%+5) |
| 200μA | 0.1μA | |
| 2mA | 1μA | |
| 20mA | 10μA | |
| 200mA | 100μA | ±(1.2%+5) |
| 10A | 10mA | ±(2.0%+5) |

Max. input current: 10A (Can not last for more than 10 seconds)

## RESISTANCE

| RANGE | RESOLUTION | ACCURACY |
|---|---|---|
| 200Ω | 0.1Ω | ±(1.2%+5) |
| 2kΩ | 1Ω | ±(1.0%+5) |
| 20kΩ | 10Ω | |
| 200kΩ | 100Ω | |
| 2MΩ | 1kΩ | ±(1.2%+5) |

Maximum open circuit voltage: 3.2V

## DIODE & AUDIBLE CONTINUITY

| RANGE | DESCRIPTION |
|---|---|
|  | The approx. forward voltage drop of the diode will be displayed on the LCD. |
|  | If the resistance under measurement is less than about 50Ω, the built-in buzzer will sound |

# Operating Instructions

## DC Voltage Measurement

1. Connect the Red test lead to the "V Ω mA" jack and the Black test lead to the "COM" jack.
2. Set the Function/Range switch to the desired V⎓ range. If the voltage to be measured is not known beforehand, set the range switch to the highest range and then turn it down range by range until satisfactory resolution is obtained.
3. Connect the test leads to the source or circuit to be measured.
4. Read the voltage value displayed on the LCD along with the polarity of the Red test lead.

## DC Current Measurement

1. Connect the Black test lead to the "COM" jack and the Red test lead to the "V Ω mA" jack. (If the current to be measured is between 200mA and 10A, remove the Red test lead to the 10A jack instead.)
   (For "10A" jack, the max. permitted test duration is 10 seconds, interval is 15 minutes.)

2. Set the Function/Range switch to the desired A⎓ range. If the current to be measured is not known beforehand, set the range switch to the highest range and then turn it down range by range until satisfactory resolution is obtained.
3. Open the circuit in which the current is to be measured, and connect the test leads in series with the circuit.
4. Read the current value displayed on the LCD along with the polarity of the Red test lead.

## AC Voltage Measurement

1. Connect the Red test lead to the "V Ω mA" jack and the Black test lead to the "COM" jack.
2. Set the Function/Range switch to the desired V~ range. If the voltage to be measured is not known beforehand, set the range switch to the highest range and then turn it down range by range until satisfactory resolution is obtained.
3. Connect the test leads to the source or load to be measured.
4. Read the voltage value displayed on the LCD.

## Resistance Measurement

1. Connect the Red test lead to the "V Ω mA" jack and the Black test lead to the "COM" jack.
2. Set the Function/Range switch to the desired Ω range.
3. Connect the test leads to the resistor to be measured and read the value displayed on the LCD.

### Note

While measuring resistance about 1MΩ and above, the meter may take a few seconds to stabilize. This is normal for high resistance readings.

## Diode Test

1. Connect the Red test lead to the "V Ω mA" jack and the Black test lead to the "COM" jack. (The polarity of the red test lead is positive "+".)
2. Set the rotary switch to "▶|" range.
3. Connect the Red test lead to the anode of the diode to be tested and the Black test lead to the cathode of the diode. The approximate forward voltage drop of the diode will be displayed on the LCD. If the connection is reversed, only figure "1" will be shown.

## Audible Continuity Test

1. Connect the Red test lead to the "V Ω mA" jack and the Black test lead to the "COM" jack.
2. Set the Function/Range switch to " •)) " range.
3. Connect the test leads to the two terminals of the circuit to be tested. If the resistance is less than about 50Ω, the built-in buzzer will sound.

## Test Signal Output

1. Set the Function/Range switch to the " ⎍ " range.
2. A test signal (50Hz, about 2.5Vp-p) is output between "VΩmA" and "COM" jack. When the test signal is connected to a circuit, an additional blocking capacitor should be used.

# Battery & Fuse Replacement

If "  " appears on the LCD, it indicates that the battery should be replaced. To replace the battery, open the case and remove the depleted battery, replace with a new one of the same type (9V battery, 6F22 or equivalent), then close the case. Depleted batteries should be disposed of at your local recycling facility.

The fuse rarely needs to be replaced and is blown generally as a result of the operator's error. To replace the fuse, open the case, replace the blown fuse with a new one of the same rating, then close the case.

The meter uses one fuse: 259mA/250V,
Fast Φ 5x20mm

## Accessories

Manual: 1 copy

Test Lead: 1 pair

## Functions

OHM, DCA, ACV, DCV, , Backlight, , 

## Note

1. This manual is subject to change without notice.
2. Faithfull tools take no responsibility for any personal injury, loss or damage caused by the impropriate or misuse of this product.
3. The contents of this manual can not be used as the reason to use the meter for any other special application.

## DISPOSAL OF THIS PRODUCT

Dear Customer,
If you at some point intend to dispose of this article, then please keep in mind that many of its components consist of valuable materials, which can be recycled.

Please do not dispose of it in the rubbish bin, but check with your local council for recycling facilities in your area.