

Digital Multimeter User Manual

Read this manual thoroughly before use

INTRODUCTION

A compact digital test meter in a robust plastic case featuring a flip up lid for added screen protection and convenient storage of the test leads. Small and light enough to fit in a pocket it makes an ideal test tool for basic circuit testing whilst on the move. The meter has a compact 3 1/2-digit digital display screen and measures , DC and AC voltage, DC current, resistance, diode and continuity tests with an audible warning. The meter also features a polarity and low battery indication.

FEATURES

1. Compact unit to fit in your pocket
2. Large LCD display screen
3. Flip up lid for added screen protection
4. Complete with fitted test leads
5. Conforms to EN 61010-1 CAT II safety requirements
6. Measure- AC and DC Voltage, DC Current, Resistance, Diode and Continuity

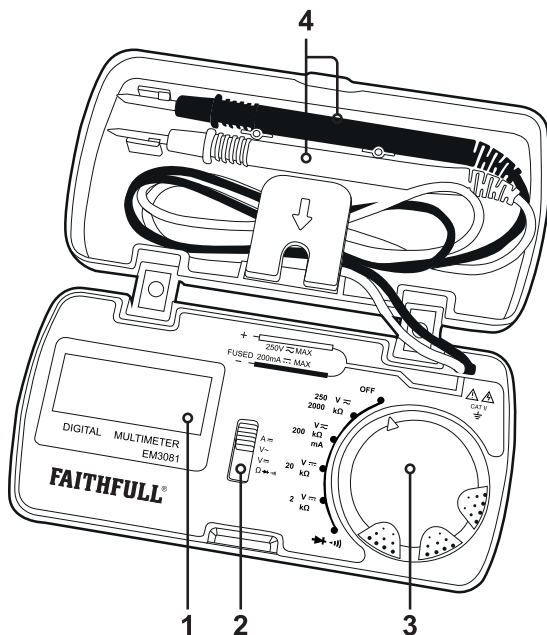
IMPORTANT SAFETY INFORMATION

It is essential that you read and understand the instructions contained in this manual before using the multimeter for the first time. Failure to follow these instructions could result in an electrical shock or possible damage to the meter or to the equipment under test. This manual should be stored safely for future reference.

The multimeter has been designed according to IEC 61010 concerning electronic measuring instruments with a measurement category (CAT II 250V) and Pollution degree 2.

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.

DIAGRAM



1. Display

3 1/2 Digital LCD with a maximum reading of 1999

2. Function Switch

Used to select desired function

3. Range Switch

Used to select desired range as well as to turn on or off the meter. Set this switch to the "OFF" position when the meter is not in use.

4. Test Probes

General Specifications



Display max reading:	1999
Negative polarity indication:	"-" symbol automatically
Overrange indication:	"1" shown on display
Sampling Rate:	~2 to 3 times per second
Battery:	1.5V button cell, LR44 x2
Low battery indication:	"E" shown on display
Operation environment:	0°C to 40°C
Storage temperature:	-10°C to 50°C
Size / weight:	114 x 56 x 23mm / 101g

ACCURACY

Accuracy is specified for a period of up to one year after calibration and at 18°C - 28°C, with relative humidity up to 75%. Accuracy specifications take the form of: \pm [(% of Reading) + (Number of Least Significant Digits)]

CAUTION PRIOR TO USE

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

Disconnect circuit power and discharge all capacitors before carrying out a resistance, diode or continuity test.

Use the appropriate function for the measurement you wish to make. Before measuring current, check the meter's fuse and turn off the power to the circuit before connecting the meter to the circuit.

Before moving the function switch or rotating the range switch, disconnect the test leads from the circuit under test.

NOTE:

When making connections, connect the Black test lead before you connect the Red test lead. When you disconnect test leads, disconnect the Red test lead first.

DC VOLTAGE

Range	Resolution	Accuracy
2V	0.001V	\pm (0.1% + 5)
20V	0.01V	
200V	0.1V	
250V	1V	

Input impedance: 1M Ω

Max. allowable input voltage: 250V DC

AC VOLTAGE

Range	Resolution	Accuracy
200V	0.1V	\pm (1.2% + 10)
250V	1V	

Input impedance: About 500k Ω

Frequency range: 40Hz to 400Hz

Max. allowable input voltage: 250V AC RMS

Response: Average, calibrated in RMS of sine wave

DC CURRENT

Range	Resolution	Accuracy
200mA	0.1mA	\pm (1.2% + 5)

Overload protection:

250mA / 250V Fast fuse

RESISTANCE

Range	Resolution	Accuracy
2k Ω	0.001k Ω	$\pm (1.2\% + 5)$
20k Ω	0.01k Ω	
200k Ω	0.1k Ω	
2000k Ω	1k Ω	

Max. open circuit voltage:
About 0.4V

Overload protection:
250V AC/DC RMS

DIODE AND CONTINUITY

Range	Description	Remark
	The display shows the approx. forward voltage drop of the diode.	Open circuit voltage: About 2.5V Max. test current: 1mA
	The built-in buzzer will sound if the resistance is less than approx. 30 Ω . The buzzer may or may not sound if the resistance is between 30 Ω and 100 Ω . The buzzer will not sound if the resistance is more than 100 Ω .	Open circuit voltage: About 2.5V

Overload protection: 250V AC/DC RMS

MEASURING DC VOLTAGE

- Set the function switch to "V=" position.
- Set the range switch to desired range position. If the magnitude of the voltage to be measured is not known beforehand, set the range switch to the highest range first and then reduce it until satisfactory resolution is obtained.
- Connect the test leads across the source or circuit to be tested.
- Read the reading on the display. The polarity of the Red test lead connection will be indicated as well.

MEASURING AC VOLTAGE

- Set the function switch to "V~" position.
- Set the range switch to "250V=" or "200=" range position. If the magnitude of the voltage to be measured is not known beforehand, set the range switch to the highest range first and then reduce it until satisfactory resolution is obtained.
- Connect the test leads across the source or circuit to be tested.
- Read the reading on the display.

NOTE:

To avoid electric shock to you or damage to the meter, do not measure a voltage higher than 250V.

MEASURING DC CURRENT

- Set the function switch to "A=" position.
- Set the range switch to "200mA" range position.
- Turn off power to the circuit to be tested. Then discharge all capacitors.
- Break the circuit path to be tested, then connect the test leads in series with the circuit.
- Turn on power to the circuit, then read the reading on the display. The polarity of the Red test lead connection will be indicated as well.

MEASURING RESISTANCE

- Set the function switch to " Ω " position.
- Set the range switch to desired resistance measuring range position.
- Connect the test leads across the object to be measured.
- Read the reading on the display.

NOTE:

For measurements $>1M\Omega$, the meter may take a few seconds to stabilize reading. This is normal for high resistance measurements. When the test leads are in open circuit state, "1" will be displayed as an overrange indication.

NOTE:

Before test, disconnect all power to the circuit to be tested and discharge all capacitors thoroughly.

DIODE TEST

- Set the function switch to " Ω " position.
- Set the range switch to " Ω " position.
- 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 display shows the approximate forward voltage drop of the diode. If the connection is reversed, "1" will be shown on the display.

CONTINUITY TEST

- Set the function switch to " Ω " position.
- Set the range switch to " Ω " position.
- Connect the test leads across the circuit to be tested.
- If the resistance is less than approx. 30 Ω , the built in buzzer will sound.

NOTE:

Before test, disconnect all power to the circuit to be tested and discharge all capacitors thoroughly.

MAINTENANCE

Except for replacing battery and fuse, never attempt to repair or service the meter unless you are qualified to do so and have the relevant calibration, performance test, and service instructions.

BATTERY & FUSE REPLACEMENT

When the "" appears on the display, the button cells are low and must be replaced immediately. To replace the button cells, remove the screws on the back cover then remove back cover. Replace the exhausted button cells with new ones of the same type (1.5V button cell, LR44 or equivalent). Make sure that the polarity connections are correct. Reinstall the back cover and the screws.

The fuse rarely needs replacing and is blown as a result of the operator's error. To replace fuse, use the method mentioned above to remove the back cover, replace the blown fuse with a new one of the same ratings. Reinstall the back cover and its screws.

The meter uses one fuse: 250mA / 250V - Fast $\varnothing 5 \times 20$ mm

Periodically wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents.

WARNING:

Remove all test leads from the circuit under test before opening the back cover

WARNING

- 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 operates abnormally. Protection may be impaired. When in doubt, have the meter serviced.
- Do not operate the meter where exposed gas, vapor or dust is present.
- Do not apply more than the rated voltage as marked on the meter, between the probes or between any probe and earth ground.
- Before use, verify the meter's operation by measuring a known voltage.
- When measuring current, turn off circuit power before connecting the meter in the circuit. Remember to place the meter in series with the circuit.
- When servicing the meter, use only specified replacement parts.
- Use caution when working with voltage above 30V AC RMS, 42V peak, or 60V DC. Such voltages pose a shock hazard.
- When using the probes, keep your fingers behind the finger guards.
- When making connections, connect the Black test lead before you connect the Red test lead. When you disconnect the test leads, disconnect the Red lead first.
- Remove the test leads from the circuit under test before you open the back cover.
- Do not operate the meter with the back cover removed or loosened.
- To avoid false readings, which could lead to possible electric shock or personal injury, replace the button cells as soon as the low battery indicator appears.

- To avoid electric shock, do not touch any naked conductor with your hand or skin, and do not ground yourself while using the meter.
- When a probe is connected to dangerous live potential, it is to be noted that this voltage can occur at the other probe.
- CAT II measurement category II is for measurements performed on circuits directly connected to low voltage installation. (Examples are measurements on house hold appliances, portable tools and similar equipments). Do not use the meter for measurements within measurement categories III and IV.

ELECTRICAL SYMBOLS

- ~ Alternating Current.
- ⚠ Caution, risk of electric shock.
- ◻ The equipment is protected throughout by double insulation or reinforced insulation.
- ⚠ Caution, risk of danger. Refer to the instructions sheet before use.
- CE Conforms to European Union directives.
- ⋯ Direct current
- ⌚ Both direct and alternating current
- ⚠ Caution, risk of electric shock
- ≡ Earth (ground) terminal
- ⊞ Fuse

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 inappropriate or misuse of this product.
3. The contents of this manual cannot be used as the reason to use the meter for any other special application.

Every Faithfull electrical product is guaranteed for a period of one year, subject to the same exceptions as mentioned above. In the case of electrical products used for hire, the guarantee period is restricted to three months.

DISPOSAL OF THIS ARTICLE

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 this product in the household waste bin, but check with your local council for recycling facilities in your area.



FAITHFULL TOOLS

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