



Item ref: 600.101UK & 600.102UK

## **MTB01 & MTB02** DIGITAL MULTITESTERS

### User Manual




**Please read this manual thoroughly and ensure all contents are fully understood before using the apparatus.**




## Warning

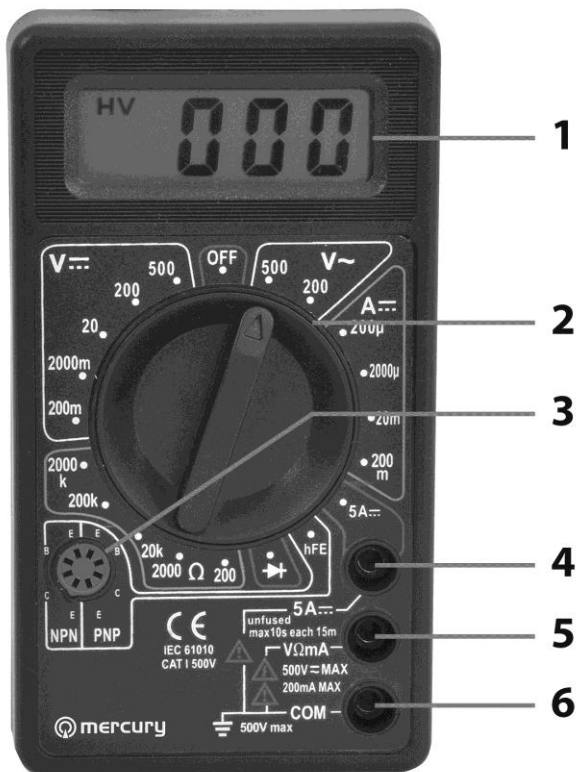
To avoid possible electric shock or personal injury, and to avoid possible damage to the tester or to the equipment under test, adhere to the following rules:

- Before using the tester inspect the case. Do not use the tester if it is damaged or the case (or part of the case) is removed. Look for cracks or missing plastic. Pay attention to the insulation around the connectors.
- Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity.
- Do not apply more than the rated voltage, as marked on the tester, between the terminals or between any terminal and grounding.
- The rotary switch should be in the right position and no changeover of range shall be made during measurement is conducted to prevent damage.
- When the tester is working at an effective voltage over 60V in DC or 30Vrms in AC, special care should be taken for there is danger of electric shock.
- Use the proper terminals, function, and range for your measurements.
- Do not use or store the tester in an environment of high temperature, humidity, explosive, flammable, damp or of a strong magnetic field. The performance of the tester may deteriorate after being exposed to any of these elements.
- When using the test leads, keep your fingers behind the finger guards.
- Disconnect circuit power and discharge all high-voltage capacitors before testing resistance, continuity, diodes or hFE.

- Replace the battery as soon as the battery indicator  appears. With a low battery, the meter may produce false readings that can lead to electric shock and personal injury.
- Remove the connection between the testing leads and the circuit being tested, and turn the meter power off before opening the meter case.
- The internal circuit of the meter shall not be altered at will to avoid damage of the meter and any accident.
- A soft cloth and mild detergent should be used to clean the surface of the tester on a regular basis. No abrasive and solvent should be used to prevent the surface of the tester from corrosion or damage.
- The tester is suitable for indoor use only.
- Turn the tester power off when it is not in use and take out the battery when not using for a long time. Check the battery regularly; replace the battery immediately if any signs of leaking appear. Battery acid will damage the tester.




## General Specifications

Max display:	LCD 3 ½ digits (1999 count) 0.5" high
Polarity:	Automatic, indicated minus, assumed plus
Measure method:	double integral A/D switch implement
Sampling speed:	2 times per second
Over-load indication:	"1" is displayed
Operating Environment:	0°C-40°C, at <80%RH
Storage Environment:	-10°C-50°C, at <85%RH
Power:	9Vdc (1 x PP3 battery supplied)
Low battery indication:	
Static electricity:	about 4mA
Dimensions:	126 x 70 x 29mm
Weight:	128g (including battery)



- 1) LCD display
- 2) Range switch
- 3) hFE socket
- 4) 10A jack
- 5) V $\Omega$ mA jack
- 6) COM jack

### Multitester comparison table

Model	DCV	ACV	DCA	$\Omega$			hFE	
MTB01	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MTB02	Yes	Yes	Yes	Yes	Yes	N/A	Yes	N/A

### Technical Specifications

Accuracies are guaranteed for 1 year, 23°C  $\pm$  5°C, less than 80% RH.

#### DC Voltage

RANGE	RESOLUTION	ACCURACY
200mV	100uV	$\pm(0.5\%$ of rdg + 3D)
2000mV	1mV	$\pm(0.8\%$ of rdg + 5D)
20V	10mV	
200V	100mV	
500V	1V	$\pm(1.0\%$ of rdg + 5D)

## AC Voltage


RANGE	RESOLUTION	ACCURACY
200V	100mV	$\pm(2.0\% \text{ of rdg} + 10D)$
500V	1V	$\pm(2.0\% \text{ of rdg} + 10D)$

RESPONSE: Average response calibrated in rms of a sine wave

FREQUENCY RANGE: 45Hz - 450Hz

OVERLOAD PROTECTION: 500Vdc or 500Vrms for all ranges

## Audible Continuity

RANGE	DESCRIPTION
	Built-in buzzer sounds if resistance is less than $30 \pm 20\Omega$

OVERLOAD PROTECTION: 15 seconds maximum 220Vrms

## DC Current

RANGE	RESOLUTION	ACCURACY
200uA	100nA	$\pm(1.8\% \text{ of rdg} + 2D)$
2000uA	1uA	
20mA	10uA	
200mA	100uA	$\pm(2.0\% \text{ of rdg} + 2D)$
5A	10mA	$\pm(2.0\% \text{ of rdg} + 10D)$

OVERLOAD PROTECTION: F0.5A/250V & F5A/240V fuse

MEASURING VOLTAGE DROP: 200mV

## Resistance

RANGE	RESOLUTION	ACCURACY
200 $\Omega$	0.1 $\Omega$	$\pm(1.0\%$ of rdg + 10D)
2000 $\Omega$	1 $\Omega$	$\pm(1.0\%$ of rdg + 4D)
20k $\Omega$	10 $\Omega$	
200k $\Omega$	100 $\Omega$	
2000k $\Omega$	1k $\Omega$	

MAXIMUM OPEN CIRCUIT VOLTAGE: 3V

OVERLOAD PROTECTION: 15 seconds maximum 220Vrms

## OPERATING INSTRUCTIONS

### DC & AC VOLTAGE MEASUREMENT

1. Connect red test lead to "V $\Omega$ mA" jack, black lead to "COM" jack.
2. Set RANGE switch to desired VOLTAGE position, if the voltage to be measured is not known beforehand, set switch to the highest range and reduce it until satisfactory reading is obtained.
3. Connect test leads to device or circuit being measured.
4. Turn on power of the device or circuit being measured voltage value will appear on Digital Display along with the voltage polarity.

### DC CURRENT MEASUREMENT


1. Red lead to "V $\Omega$ mA". Black lead to "COM" (for measurements between 200mA and 5A connect red lead to "5A" jack with fully depressed.)

2. Set RANGE switch to desired DCA position.
3. Open the circuit to be measured, and connect test leads in SERIES with the load in with current is to measure.
4. Read current value on Digital Display.
5. Additionally, "5A" function is designed for intermittent use only. Maximum contact time of the test leads with the circuit is 10 seconds, with a minimum intermission time of 15 minutes between tests.

## **RESISTANCE MEASUREMENT**

1. Red lead to "V $\Omega$ mA". Black lead to "COM".
2. Set RANGE switch to desired  $\Omega$  position.
3. If the resistance being measured is connected to a circuit, turn off power and discharge all capacitors before measurement.
4. Connect test leads to circuit being measured.
5. Read resistance value on Digital Display.

## **DIODE MEASUREMENT**

1. Red lead to "V $\Omega$ mA", Black lead to "COM".
2. Set RANGE switch to "" position.
3. Connect the red test lead to the anode of the diode to be measured and black test lead to cathode.
4. The forward voltage drop in mV will be displayed. If the diode is reversed, figure "1" will be shown.



## TRANSISTOR hFE MEASUREMENT

1. Set RANGE switch to the hFE position.
2. Determine whether the transistor is PNP or NPN type and locate the Emitter, Base and Collector leads. Insert the leads into the correct holes of the hFE Socket.
3. The meter will display the approximate hFE value at the condition of base current  $10\mu\text{A}$  and  $V_{CE2.8V}$ .

## AUDIBLE CONTINUITY TEST

1. Red lead to "V $\Omega$ mA", Black lead to "COM".
2. RANGE switch to "●)" position.
3. Connect test leads to two points of circuit to be tested. If the resistance is lower than  $30\Omega \pm 20\Omega$ , the buzzer will sound.

## BATTERY AND FUSE REPLACEMENT

Fuses rarely need replacement. They usually blow when the tester is used incorrectly.

If "🔋" appears in on the display, it indicates that the battery should be replaced.

To replace battery & fuse (F500mA/250V for mA terminal and F5A/250V for 5A terminal) remove the 2 screws in the back of the case, simply remove the old fuse or battery, and replace with a new one. Be careful to observe the correct polarity.

## ACCESSORIES

- Instruction manual
- Set of test leads (red and black)
- 9V PP3 battery

**CE EN61010-1:2010**



This product is classed as Electrical or Electronic equipment and should not be disposed with other household or commercial waste at the end of its useful life. The goods must be disposed of according to your local council guidelines.

*Errors and omissions excepted.  
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