mercury

Item ref: 600.107UK

MTN02

Digital Network Multimeter

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 these following rules:

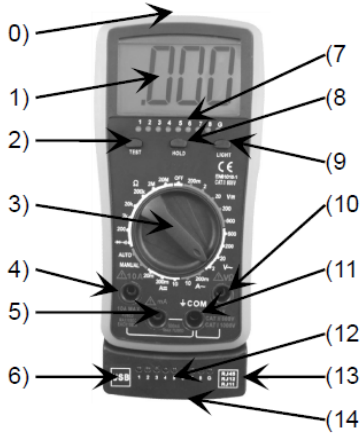
- Before using the tester inspect the case. Do not use the tester if it is damaged or the case (or part of the case) is removed. Look for cracks or missing plastic. Pay attention to the insulation around the connectors.
- Inspect the test leads for damaged insulation or exposed metal. Check the test 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 while 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.F

- 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 (1999 count) 1.25 inch
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:	0ºC-40ºC, at <75%RH
Storage Environment:	-10ºC-50ºC, at <85%RH
Power:	9Vdc (1 x PP3 battery supplied)
Low battery indication:	" "
Dimensions:	190 x 85 x 35mm
Weight:	322g (including battery)

Overview



0) RJ45(RJ11,RJ12), USB jack
1) Display
3 1/2 digits LCD, with a max. reading of 1999
2) "TEST" Button
3) Function Rotary Switch
This switch can be used to select desired function and range.
4) "10A" Jack
Plug-in connector for the red test lead for Current (200mA ~ 10A) measurements
5) "mA" Jack
Plug-in connector for the red test lead for Current (<200mA) measurements

6) USB jack
7) Cable test LED light
8) “HOLD” button
9) “LIGHT” button
   To turn on the backlight, press this button.
   The backlight will turns off automatically about 10 seconds later after you turn on it.
10) “VΩ” Jack
    Plug-in connector for the red test lead for DCV , ACV and Ω measurements.
11) “COM” Jack
    Plug-in connector for black (negative) test lead.
12) Cable test long-distance LED light
13) RJ45(RJ11,RJ12) jack
14) Cable test remote unit

Technical Specifications

Accuracies are guaranteed for 1 year, 23ºC ± 5ºC, less than 70% RH.

DC Voltage

RANGE	RESOLUTION	ACCURACY
200mV	0.1mV	±(0.8% of rdg + 5D)
2V	1mV	±(0.5% of rdg + 2D)
20V	10mV	
200V	100mV	
600V	1V	±(1.0% of rdg + 5D)

Input Impedance: 10MΩ
Overload Protection: 600V DC/AC rms
Max. Input voltage: 600V DC

AC Voltage

RANGE	RESOLUTION	ACCURACY
2V	1mV	±(1.2% of rdg + 3D)
20V	10mV	
200V	100mv	
600V	1V	±(1.2% of rdg + 8D)

Input Impedance: 10M**Ω**
Frequency Range: 40Hz ~ 400Hz
Overload Protection: 600V DC/AC rms
Response: Average, calibrated in rms of sine wave
Max. Input voltage: 600V AC rms

DC Current

RANGE	RESOLUTION	ACCURACY
20mA	10uA	±(0.8% of rdg + 5D)
200mA	100uA	
10A	10mA	±(1.5% of rdg + 3D)

Overload Protection:
20mA and 200mA ranges: F0.5A/250V fuse
10A ranges: unfused
Max. Input Current:
"mA" jack: 200mA
"10A" jack: 10A (measurements>5A duration<10 secs interval>15 mins)
Voltage Drop: 200mV

AC Current

RANGE	RESOLUTION	ACCURACY
200mA	100uA	±(1.0% of rdg + 5D)
10A	10mA	±(1.5% of rdg + 7D)

Overload Protection:
200mA ranges: F0.5A/250V fuse
10A ranges: unfused
Max Input Current:
"mA" jack: 200mA
"10A" jack: 10A (measurements>5A duration<10 secs interval>15 mins)
Voltage Drop: 200mV
Frequency Range: 40Hz ~ 400Hz
Response: Average, calibrated in rms of sine wave

Resistance

RANGE	RESOLUTION	ACCURACY
200Ω	0.1Ω	±(1.5% of rdg + 3D)
2KΩ	1Ω	±(1.5% of rdg + 3D)
20kΩ	10Ω	
200kΩ	100Ω	
2MΩ	1kΩ	±(1.5% of rdg + 3D)
20MΩ	10kΩ	±(1.5% of rdg + 3D)

Open Circuit Voltage: about 0.25V
Overload Protection: 250V DC/AC rms

Diode and Continuity

RANGE	INTRODUCTION	REMARK
	The approx. forward voltage drop will be displayed	Open circuit Voltage: about 1.5V
	The built-in buzzer will sound if the resistance is less than about 30+20Ω	Open circuit Voltage: about 1.5V

Over-load protect: 250V DC/AC rms

OPERATING INSTRUCTIONS

VOLTAGE MEASUREMENT

1. Connect red test lead to "VΩ" 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.

Please note:

- In small range, the meter may display an unstable reading when the test leads have not been connected to the load to be measured. It is normal and will not affect the measurements.
- When the meter shows the over range symbol "1", a higher range must be selected.
- To avoid damage to the meter, don't measure a voltage which exceeds 600Vdc (for DC voltage measurement) or 600Vac (for AC voltage measurement).

CURRENT MEASUREMENT

1. For reading less than 200mA connect red lead to "mA" and black lead to "COM" (for measurements between 200mA and 10A, connect red lead to "10A") ensure jacks are fully depressed.

2. Set the range switch to desired AC or DC position. If the current magnitude to be measured is not known beforehand, set the ranges switch to the highest range position and then reduce it range by range until satisfactory resolution is obtained.
3. Open the circuit to be measured and connect test leads in SERIES with the load in with current is to measure.
4. Current reading will be displayed on LCD, for DC current measurement, the polarity of the red probe will also be indicated.
   Please note:
   When the display shows the over range symbol "1", a higher range must be selected.

RESISTANCE MEASUREMENT

1. Connect red lead to "VΩ", black lead to "COM".
2. Set the range switch to desired Ω range.
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.

Please note:

- For resistance measurements >1MΩ, the meter may take a few seconds to stabilize reading. This is normal for high-resistance measurement.
- When the input is not connected, i.e. at open circuit, the symbol "1" will be displayed as an over range indicator.
- Before measuring in-circuit resistance ensure that the circuit under test has all power removed and all

capacitors are fully discharged.

CONTINUITY TEST

1. Connect the BLACK test lead to the "COM" jack and the RED to the "VΩ" jack (Note: The polarity of the red test lead is positive "+").
2. Set the range switch to •)) range
3. Connect the test leads across the load to be measured.
4. If the circuit resistance is lower than about 30±20Ω, the built-in buzzer will sound.

DIODE MEASUREMENT

1. Connect red lead to "VΩmA", 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 meter will show the approximate forward voltage of the diode. If the connections are reversed, "1" will be shown on the display.

CABLE TESTER

This network cable tester can be used to scan and judge the continuation property of double-twisted cable. Both automated and manual operations are available.

Main performance:

1. Test unshielded or shielded network cable, telephone lines and USB cables.

2. Check continuity and configuration of lead with unshielded and shielded modular plugs.
3. Test the following faults: open circuits, shorts, miswire and reversals.
4. Check the shield layer (SHIELD).
5. The main and remote units can be operated by a single person.

Fault Descriptions:
OPEN: If one or more wire is open circuit, the LED's on the main and remote units will go out.
SHORT: When the network cable has a short circuit, the LED's of main unit will light in turns and the LED's of the remote unit will have two or more lights out.
MISWIRE & REVERSAL: The LED's of the main unit will illuminate in sequence, but the LED's of the remote unit will not.

Operation:
1. Automatic mode:
    a. Connect the two terminals of the cable to the main and remote units.
    b. Turn the switch to AUTO mode. If everything is wired correctly, the LED's on both units will illuminate in sequence.
2. Manual mode:
    a. Connect the two terminals of the cable to the main and remote units
    b. Turn the switch to MANUAL mode and press the "TEST" button. Each press tests each cable individually in sequence.

c. Using Manual mode holds the test result making it easier to locate the error position.

Note: When testing RJ11 cables the LED lights displayed on the main and remote units are opposite.

Function Descriptions:
The below table indicates a correctly wired mode for RJ45, RJ12, RJ11 and USB cable applications.

MODE	1	2	3	4	5	6	7	8	G
RJ45	√	√	√	√	√	√	√	√	
RJ12		√	√	√	√	√	√		
RJ11			√	√	√	√			
USB	√	√	√	√					√

BATTERY AND FUSE REPLACEMENT

1) Battery and fuse replacement should only be done after the test leads have been disconnected and power is off.
2) Loosen the 2 screws under the prop stand with a suitable screwdriver and remove the case cover.
3) The meter is powered by a single 9V PP3 battery. Snap the battery connector leads to the terminals of a new battery and reinsert the battery into the housing. Ensure the battery leads will not be pinched when you replace the cover.
4) The meter is protected by fuse:
   A) mA: F0.5A/250V Fast, Breaking capacity is 10KA, dimensions are 20 x 5mmØ.

Replace the case cover and reinstall the screws. Never operate the meter unless the case cover is fully closed and secured.

ACCESSORIES

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

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.

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