Palm Size Digital Multimeter

UT132A/B/C/D

Operating Manual

Palm Size Digital Multimeter

1. Overview

UT132 series multimeter is a hand-held 3 1/2digital display digital multimeters with advanced design, multiple entire functions, novel figurations and reliable performance. This meter is fully capable to measure voltage both AC and DC, DC current, resistance, capacitance, inductance, temperature and forward voltage drop of diode, transistor, hFE,continuity test and square wave output etc. Please use multi-purpose socket to measure SMT as well. This operating manual covers information on safety and cautions to fulfill CE mark standard. Please read the relevant information carefully and observe all the warnings and notes strictly.

⚠ **Warning: To avoid electric shock or personal injury, read the " Safety Information " and " Rules for Safe Operation " carefully before using the Meter.**

2.Unpacking Inspection

Open the package case and take out the meter. Checking the below Items carefully to see any missing or damaged part.

Item	Description	Qty
1.	English Operating Manual	1 piece
2.	Test Lead	1 set
3.	K Type Temperature Probe (Nichrome−Nickel Aluminum)Thermocouple For UT132C only	1 piece
4.	Multi-Purpose Socket	1 piece

In the event you find any missing or damage, please contact your dealer immediately.

3 .Safety Information

This meter complies with the standard IEC/EN61010-1, in pollution degree 2, overvoltage category (CAT III 250V) and double insulation.
Use the meter only as specified in this operating manual, otherwise the protection provided by the meter may be impaired.

1. Before using the meter inspect the case. Do not use the meter 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 connections.
2. Inspect the test leads for damaged insulation or exposed metal. Replace damaged test leads with identical model number or electrical specifications before using the meter
3. Replace the battery as soon as the battery indicator "🔋" Appears. With a low battery, the meter might produce false readings that can lead to electric shock and personal injury.
4. When measurement is on / off against the correct testing position.
5. Do not apply more that the rated voltage, as marked on the meter in order to avoid possible electric shock or personal injury and avoid possible damage to the meter.
6. Do not change the measuring range during the testing as it causes to damage the meter.
7. When each measurement has been completed, disconnect between the test leads and the circuit under test connection, then turn the meter power off and remove the test leads away form the input terminals of the meter. It is a vital for the high current measurement.
8. When the meter working at an effective voltage over 60V in DC and 30Vrms in AC, special care should be taken.
9. Do not use or store the meter in an environment of high temperature and humidity. The performance of the meter may deteriorate after dampened.
10. The internal circuit of the meter shall not be altered at will to avoid damage of the meter and any accident Soft cloth and mild detergent should be used to clean the surface of the meter when servicing. No abrasive and solvent should be used to prevent the surface of the meter from corrosion, damage and accident.

4.International Electrical Symbols

🔋	Deficiency of Built in Battery
⏚	Grounding
⚠	Warning: Refer to the Operating Manual
~	AC (Alternating Current)
⎓	DC (Direct Current)
⧈	Double Insulated
CE	Conforms to Standards of European Union

5. Overall Specification

1. Maximum voltage between any terminals and grounding. Refer to different range input protection voltage.
2. 10A terminal: Set (CE) 10A H 250V Fast Type Ceramic Fuse Φ6x25mm
3. mA terminal: Set (CE) 1 A H 250V Fast Type Ceramic Fuse Φ6x25mm
4. Operating temperature: 0℃~40℃ 32℉~104℉.
   Relative Humidity: 0℃~30℃ below ≤75%,
   30℃~40℃below ≤50%
   Storing temperature:-10℃~50℃ (14℉~122℉)
5. Electromagnetism.
   Under 1V/m emission: Best Total Accuracy= Specific Accuracy + Measurement 5%, Over 1V/m emission do not have any specific index.
6. Elevation: 0~2000m
7. Battery in meter: 9V 6F22 or NEDA 1604 or 006P.
8. Deficiency of Built in Battery: LCD display" 🔋 " sign.
9. Product size: 72mm×137mm×35mm
10. Net Weight: About 200g(battery include)
11. Safety Standard.
    IEC/EN 61010-1: CAT|||250V, Pollution Degree 2
12. Conform: CE

6. The Meter Structure(see diagram 1)

1.LCD Display
2.Power Button
3.Rotary Switch
4.Input Terminals
5.HOLD Button

Diagram 1

7. Measurement Operation

First check on 9V battery, then turn rotary switch to the measuring position. If the low battery, "🔋" sign will be displayed on LCD panel. Nearly to " ⚠ " sign on the meter front panel terminal input which alarm not exceed the testing voltage and current input value limitation.

1.DC or AC Voltage Measurement(See Diagram 2)

1) Turn rotary switch to V~ or V⎓ voltage measurement.
2) Insert the red test lead into the "V" terminal and the black test lead into the "COM" terminal, Connect the test leads across with the object being measured. The measured value shows on the display AC Voltage measurement shows on True root mean square value stability period.
3) In each range, the meter has an input impedance of 10MΩ. V~Input impedance is about 4.5MΩ, This loading effect can cause measurement errors in high impedance circuits. If the circuit impedance is less than or equal to 10kΩ, the error is negligible (0.1% or less).

⚠ **Warning:**

- **To avoid possibly damages to the meter, please do not attempt to input higher than 250V.**
- **To avoid electrical shock, please pay attention during the high voltage measurement.**

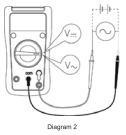


Diagram 2

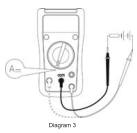


Diagram 3

2. DC Current Measurement (see diagram 3)

1) Turn rotary switch to " A⎓ " current measurement.
2) Insert the red test lead into the " mA" or"10A" terminal, and the black test lead into the "COM" terminal. Connect the test leads across with the object being measured. The measured value shows on the display.

⚠ **Warning:**

- **Pre-requisites: Turn off power to the circuit before the connection between the test leads across with the object being measured.**
- **Selecting the correct terminal input and turn the rotary switch to select the measuring function. In case of no any idea on the value input of the current, just simply test from the high value to low one.**
- **Fuses are located on mA and10A terminal input. Never attempt the test lead connect to any circuits especially on the power supply terminal and may be hurt.**
- **For the safety purpose, less than 10 seconds is for each measurement duration and keep 15 minutes duration for next measurement during the current measurement over 5A.**

3. Resistance Measurement (see diagram 4)

1) Turn rotary switch to "Ω" ohm measurement.
2) Insert the red test lead into the "Ω" terminal and the black test lead into the "COM" terminal. Connect the test leads across with the object being measured. The measured value shows on the display.

⚠ **Warning:**

- **The LCD displays "1" indicating open-circuit for the tested resistor or the resistor value is higher than the maximum range of the meter.**
- **To maintain the resistance measurement accuracy, discount circuit power and discharge all the high voltage capacitors during the measuring resistance.**
- **The test leads cause 0.1Ω~0.2Ω resistance variation during the measurement, In order to obtain precision readings in low-resistance measurement. Need to make the short circuit on the test leads and mark the measurement value which show on LCD display. Then deduct this variation value on the measurement value which come the meter, Measurement Value Obtained from LCD display – Variation value on test leads = The actual measuring value.**
- **If Ω reading with shortened test leads is not less than or equal to 0.5Ω, check for loose test leads, incorrect function selection or others**
- **For high-resistance measurement greater than 1MΩ, it is normal to take several seconds to obtain a stable reading with short test leads for measurement.**
- **Do not input higher than DC 60V and AC 30V voltage to prevent any damage and accident.**

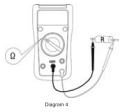


Diagram 4

Diagram 5

4. Diodes Measurement (see diagram 5)

1) Turn rotary switch to " ⊣⊢ •ıı) " .
2) Insert the red test lead into the" ⊣⊢ " terminal and the black test lead into the "COM" terminal. Red test lead is "+" Black test lead is "-".
3) In a circuit, a good diode should still produce a forward voltage drop reading of 500~800mV. However, the reverse voltage drop reading can vary depending on the resistance of other pathways between the probe tips.

⚠ **Warning:**

- **The LCD displays "1" indicating open-circuit for the tested diodes or the testing the diodes with polarity.**
- **To maintain the diodes measurement accuracy disconnect circuit power and discharge all the high voltage capacitors during the measuring resistance.**
- **The open circuit for diodes is 2.3V.**
- **Do not input higher than DC 60V and AC 30V voltage to prevent any damage and accident.**

Diagram 6

5. Continuity Measurement (Except UT132A) see diagram 6

1) Turn rotary switch to" ⊣⊢ •ıı) ".
2) Insert the red test lead into the" •ıı) " terminal and the black test lead into the "COM" terminal. If between both terminals show resistance >70Ω, it is a short-circuit,no buzzer, but if between both terminals show resistances≤10Ω, it is a good connection with continually buzzer. Resistance value on tested circuit display on LCD (Unit is Ω)

⚠ **Warning:**

- **To maintain the diodes measurement accuracy disconnect circuit power and discharge all the high voltage capacitors during the measuring resistance.**
- **For the continuity testing, the open circuit for voltage is 2.3V.**
- **Do not input higher than DC 60V and AC 30V voltage to prevent any damage and accident.**

6. Transistor hFE measurement(see diagram 7)

1) Turn rotary switch to "hFE".
2) Put the multiple purpose socket into the terminal.

3) Check the transistor is either PNP or NPN, assembles or SMT, then connect the transistor to be measured to the corresponding jacks.
4) LCD display hFE reference value. The testing requirement: basic current 10μA,Vce for 2.3V.

⚠ **Warning:**
- **To avoid damages to the Meter or to the devices under test, do not input any current over 60V DC or 30V AC.**
- **Take off the multi-purpose socket after the measurement.**

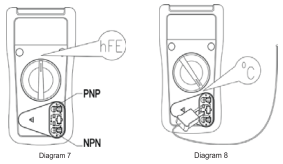


Diagram 7

Diagram 8

7.Temperature Measurement (For UT132C only),see diagram 8.
1) Turn rotary switch to" ℃ ".
2) Put the multiple purpose socket into the correct terminal.
3) K-Type point contact temperature probe can only be used in the measurement below 230℃, if you want to measure over 230℃, you need to separately buy another temperature probe
4) The LCD displays "1" indicating point contact temperature probe which take off. When short circuit between. terminal and COM terminal, the meter show the value of room temperature.

⚠ **Warning:**
- **Maintain clean the point contact temperature probe and do not let the probe contact point to have any serious influence.**
- **Take off and well keep the point contact temperature after the measurement.**

8.Square Wave Signal Output Testing(For UT132A only) see diagram 9
1) Turn rotary switch to"⎍⎍ ".
2) " ⎍⎍ " terminal and COM terminal are square wave output terminal.
3) Square-wave signal is more useful, may take the simple supply oscillator repair for audio equipment and so on. The frequency approximately is 50Hz, the resistance output approximately for 1kΩ, the scope approximately is 3V.

⚠ **Warning:**
- **Do not input higher than DC 60V and AC 30V voltage to prevent any damage and accident.**

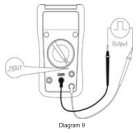


Diagram 9

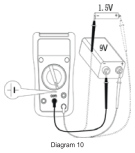


Diagram 10

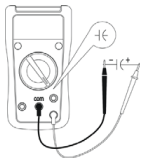
9. Battery Test (For UT132B only) see diagram 10
1) Turn rotary switch to 1.5V or 9V.
2) Insert the red test lead into the" ⊣⊢ " terminal and the black test lead into the "COM" terminal. Red test lead is "+", Black test lead is "-". It is used for battery test Connect the test leads across with the battery being measured ensuring the polarity is correct. The measured value shows on the display, which is the voltage between the cathode and anode of the battery.
4) 1.5V usage ≤1.5V dry cell battery test, resistance load is approximately for 15Ω; 9V is only suitable for ≤15V dry cell battery test, resistance load is approximately for 1kΩ.

⚠ **Warning:**
- **Refuse to keep a long time connection battery in the measuring process, it avoids to loss the battery energy, to reduce battery's life.**
- **Refuses to use in over the specification of the battery or the current test, in order to avoid damages the measuring appliance and endangers the personal safety!**

10. Capacitance Measurement (For UT132D only)see diagram 11
1) Turn rotary switch to"F".
2) " ⊣⊢ " terminal and COM terminal are for capacitance terminal input.
3) The LCD displays "1" indicating overload on either short circuit or capacitance default value.

⚠ **Warning:**
- **To avoid damages to the Meter or the devices under test, disconnect circuit power and discharge all the high-voltage capacitors before measuring capacitance.**

Diagram 11



8.Accuracy Specifications

Accuracy: ±(a% reading + b digits),guarantee for 1 year
Operating temperature: 23℃±5℃
Relative Humidity: <75%

1.DC Voltage

Range	Resolution	Accuracy
200mV	0.1mV	±(0.5% Reading + 2 Digits)
2000mV	1mV	
20V	0.01V	
200V	0.1V	
250V	1V	±(0.8% Reading + 2 Digits)

Input impedance: all range 10MΩ
Maximum input voltage: 250V DC.

2. AC Voltage

Range	Resolution	Accuracy
200V	0.1V	±(1.2 Reading %+3 Digits)
250V	1V	

Input impedance: about 4.5MΩ;
Frequency:45Hz~400Hz
Display: effective value of sine wave(average value) each measurement is applicable from 5% of range as reference.
Maximum input voltage: 250V AC.

3. DC Current

Range	Resolution	Accuracy			
		UT132A	UT132B	UT132C	UT132D
2000μA	1μA	±(1% Reading + 2 Digits)			
20mA	0.01mA	±(1% Reading + 2 Digits)		----------	
200mA	0.1mA	±(1.2% Reading + 2 Digits)			
10A	0.01A	±(2% Reading + 5 Digits)			

Overload Protection:
mA range: F2 fuse φ6×25mm, F 1A H 250V (CE)
10A range: F1 fuse φ6×25mm, F 10A H 250V (CE)

⚠ **Warning:**
When ≤5A Continuous measurement is allowed.
When > 5A Continuous measurement less than 10 seconds at an interval more than 15 minutes.

4. Resistance

Range	Resolution	Accuracy			
		UT132A	UT132B	UT132C	UT132D
200Ω	0.1Ω	±(0.8% Reading + 5 Digits)			
2000Ω	1Ω				
20kΩ	0.01kΩ				
200kΩ	0.1kΩ				
2000kΩ	1kΩ	±(0.8% Reading + 5 Digits)			-------
20MΩ	0.01MΩ	±(1% Reading + 5 Digits)			

Overload Protection: 250V AC or DC

5. Capacitance(For UT132D only)

Range	Resolution	Accuracy
20nF	10pF	±(4% Reading + 3 Digits)
2μF	1nF	
200μF*	100nF	±(5% Reading + 5 Digits)

Overload Protection: 250V AC or DC
* Measuring Value= Reading Value- Open Circuit Value(should be<20 digits)

6. Temperature Measurement(For UT132C only)

Range	Resolution	Accuracy
-40~-20℃	1℃	-(8% Reading +5)
>-20~0℃		±4
>0~100℃		±(1.0% Reading+3)
>100~1000℃		±(2.5% Reading+2)

Overload Protection: 250V DC or AC.
Enclosed point contact K type thermocouple can only be used on less than 230℃ temperature measuremen.

7. Battery Test(For UT132B only)

Range	Resolution	Accuracy
1.5V	1mV	±(1.0% Reading + 2 Digits)
9V	10mV	

Overload Protection: 250V DC or AC.
1.5V range: resistance load is about 15Ω.
9V range: resistance load is about 1kΩ.

8. Square Wave Output (For UT132A only)

Range	Meaning
⎍⎍	About 50Hz square wave signal output as the simple signal and resistance output is about 1kΩ.

Overload Protection: 250V DC or AC .

9. Diode, Transistor .

Function	Range	Resolution	Remark
Diode	⊣⊢	1mV	Display positive voltage decline
Transistor	hFE	1β	

Continuity Test(For UT132B,UT132C,UT132D only)

Function	Range	Resolution	Remark
Continuity Test	·ω·	1Ω	<10Ω Buzzer beep Continuously

Overload Protection: 250V DC or AC.

9. Maintenance And Service

⚠ **Warning: Make sure the test leads take off the terminal and the circuit as well as power off the meter if want to open the meter cover.**

1. General Service and Maintenance
- Periodically wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents.
- Any abnormal on the meter, stop use the meter and return to service center.
- When need to have calibration on the meter, please allow certified engineer or specific service center for the service maintenance.

2. Replacing the battery and fuse,see diagram 12

⚠ **Warning**
LCD display " " sign indicating battery will be run out and need to replace a new battery, if fail to do that. It causes the variance of the measuring result.
Battery Specification: 9V 6F22 or NEDA 1604 or 006P


Diagram 12

Operating Steps:
(1) Turn the power in " off " situation, then remove the test lead out of the meter.
(2) Use screwdriver to take off the screw on the battery cover. Then you can take off old battery for replacing.
(3) User screwdriver to take off two pieces of screws, then you can replacing the burned fuse(s) as replacement.
Fuse specification: F1 Fuse φ6×25mm, F 10A H 250V
F2 Fuse φ6×25mm, F 1A H 250V

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