UNI-T

UT56

Operating Manual

Standard Digital Multimeter

Introduction

Digital Multimeter UT56 (hereafter referred to as "the Meter") is 20000-count hand-held instruments featuring stable performance, versatile functions, high degree of reliability&accuracy. It is designed with large-scale integrated circuits, dual integral A/D converter as well as overloaded protection. The series can measure AC/DC voltage, AC/DC current, resistance, capacitance, frequency, transistor, diode and continuity, making the series a perfect tool for users.

Unpacking Inspection

Unpack the carton and take out the Meter. Check the following accessories for any missing or damaged component. Please contact your dealership immediately if any missing or damaged component is found.

Operating Manual------1pc
Test Leads ----------1 pair
Holster(Optional)

Safety Information

UT56 is designed and manufactured in compliance with: IEC1010-1, CAT Ⅰ 1000V, CAT Ⅱ 600V and CAT Ⅲ 300V, Double Insulation and Pollution Degree.

⚠ Warnings

Use the meter as specified in the manual, otherwise the protection offered by the Meter may be impaired.

- Do not use the Meter with back cover opened, it may cause electric shock.
- Set to a proper range for your measurement.
- Check the test leads for any damaged insulation or broken wires.
- Insert red and black test leads into proper input terminals and ensure good contact between them.
- Do not input signal beyond the rated values of the Meter, otherwise it may cause electric shock or damage to the Meter.
- Please use replacement parts with the same model or similar electrical specifications.
- To avoid electric shock, Do not apply any voltage above 1000V between COM and grounding.
- Please take caution when working voltage go above 60VDC or 30VAC RMS.
- To ensure the accuracy, please replace the batteries as soon as " 🔋 " appears.
- Shut off the power timely after the measurements complete. Take out the batteries if not used for a long time.
- Do not use the Meter in places exposed to high temperature, high moisture. The performance of the Meter may be compromised if moisture-affected.
- To prevent damage to the Meter or personal injury, do not alter internal wiring randomly.

International Electrical Symbols

🔋	Low Battery	⏚	Earth Ground
⚠	Caution	▣	Double Insulated
~	AC	⊣⊢	Diode
⎓	DC	•))	Buzzer
⎓	Fuse		
ϟ	Dangerous Voltages		

Your Meter's Features

- **32 ranges.**
- **Liquid Crystal Display, digits height is 21mm .**
- **Overload display "1".**
- **Maximum display "19999"**
- **DATA-Hold function.**
- **Full range overload protection.**
- **Auto-Power Off .**
- **Temperature:**
  Operating:0°C to 40°C (32 °F to 104 °F).
  Storing:-10°C to 50°C (14 °F to 122 °F).
- **Altitude:**
  Operating: 2000m
  Storing: 10000m
- **Relative Humidity:**
  Max. relative humidity 80% for temperature up to 31°Cdecreasing linearly to 50% relative humidity at 40°C.
- **Low Battery display 🔋.**
- **Battery type:9V zinc, NEDA 1604 or 6F22 or 006P**
- **Strap for easy carry.**
- **Tilt stand design, three observation angles, is in favor of display.**
- **Dimension: 190mm x 88mm x 34mm.**
- **Weight:**
  Meter only (excluding test leads) about 270g .
  Meter + holster + tilt stand about 550g.

Specifications

Accuracy is specified for one year after calibration, at operating temperatures 23°C +/- 5°C, with relative humidity at <75%.Accuracy specifications take the form of: +/- (a% readings + n digits)

Direct Current Voltage (DC Voltage)

Range	Resolution	Accuracy
200mV	10μV	± (0.05% +3)
2V	100μV	± (0.1% +3)
20V	1mV	
200V	10mV	
1000V	100mV	± (0.15% +5)

⚠ ***Input impedance:*** 10MΩ for all ranges.
Overload protection: 250VDC or AC RMS for 200mV range. 750VRMS or 1000Vp-p for other ranges.

Alternate Current Voltage (AC Voltage)

Range	Resolution	Accuracy
		40/400Hz
2V	100μV	± (0.5% +10)
20V	1mV	± (0.6% +10)
200V	10mV	
750V	100mV	± (0.8% +15)

⚠ ***Input impedance:*** 2MΩ for all ranges.
Frequency: 40Hz-400Hz.
Overload protection: 250VDC or AC RMS for 200mV range. 750VRMS or 1000Vp-p for other ranges.
Display: Average Value (RMS of Sine Wave).

Direct Current Current (DC Current)

Range	Resolution	Accuracy
2mA	0.1A	± (0.5% +5)
20mA	1A	
200mA	10A	± (0.8% +5)
20A	1A	± (2% +10)

⚠ Overload protection: Below 200mA with 0.3 A/250V Fused. No fuse protection on 20A.
Max current input: 20A (>10A: measurement time <15seconds)
Measuring voltage drop: 200mV for full ranges.

Alternate Current Current (AC Current)

Range	Resolution	Accuracy
2mA	0.1A	± (0.8% +10)
20mA	1A	
200mA	10A	± (1.2% +10)
20A	1A	± (2.5% +10)

Frequency: 40Hz-400Hz.
⚠ Overload protection: Below 200mA with0.3A/ 250V Fused. No fuse protection on 20A.
Max current input:20A (>10A: measurement time <15seconds)
Measuring voltage drop: 200mV for full ranges.
Display: Average value(RMS of Sine Wave).

Resistance

Range	Resolution	Accuracy
200Ω	0.01Ω	±(0.5% +10)
2KΩ	0.1Ω	±(0.3% +3)
20KΩ	1Ω	±(0.3% +1)
200KΩ	10Ω	
2MΩ	100Ω	
20MΩ	1KΩ	±(0.5% +1)
200MΩ	10KΩ	±[5.0%(-1000) +10]

⚠ Overload protection: 250VDC or AC RMS for all ranges.

Caution:

1) At 200MΩ range, test lead is short circuit, the LCD display 1000 digits, subtract the 1000 digits from the measured reading during measuring.
2) At 200Ω range, short the test lead first to display the resistance value of the test leads. subtract that resistance value from the measured reading to obtain the being measured object's correct value .

Capacitance

Range	Resolution	Accuracy
2nF	0.1pF	± (4% +20)
20nF	1pF	
200nF	10pF	
2μF	0.1nF	
20μF	1nF	

Testing Signals: About 400Hz, 40mVrms.

Frequency

Range	Resolution	Accuracy
20kHz	1Hz	± (1.5% +5)

⚠ Input sensitivity: <200mVrms, Max. input 30Vrms.
Overload protection: 250Vrms.

Diode and Continuity Beeper

Range	Remark	Measuring Condition
⊣⊢	Display Diode Forward Voltage Value, unit is "V"	Forward DC Current abt 1mA, Backward DC Voltage about 3.0V
•))	Beeper sounds when Resistance < 50Ω. Display the nearest value, unit is "kΩ"	Voltage at open Circuit about 3.0V

Overload protection: 250V DC or AC RMS.

Transistor hFE test

Range	Remark	Measuring Condition
hFE	Can Measure NPN and PNP type Transistor, Display ranges: 0-1000 β	Basic polarity current about 10μA,Vce about 3.0V

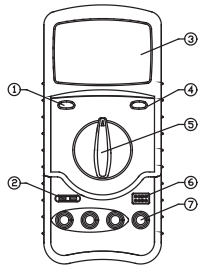
Making Measurements

Caution:

(1) If there is no display or"" is shown on the LCD when the Meter is switched on, replace the battery as soon as possible.

(2) Never exceed the maximum input voltage or current limits shown besides the input jacks "⚠", otherwise the Meter will be damaged and this is dangerous to life.

(3) Turn the rotary switch to proper range before operating.



① On/Off Switch
② Capacitance jack
③ Liquid Crystal Display
④ Date Hold Switch
⑤ Rotary switch
⑥ Transistor jack
⑦ Input jack

Measuring DC Voltage

1. Connect the black test lead to "**COM**" jack and red test lead to" **V** " jack.
2. Set the rotary switch to "**V ⎓**".
3. Connect the test leads across with the object to be measured. LCD appears the measured value and also the polarity of the red test leads.

⚠Caution

1) If magnitude of the voltage is unknown, always start with the highest range and reduce until satisfactory reading is obtained.
2) If "**1**" is shown on the LCD, which means the Meter is overloaded, then set to a higher measurement range.
3) "⚠" means never exceed the maximum input limit 1000V, otherwise internal circuit of the Meter will be damaged.
4) Take extra care of to avoid electric shock when measuring high voltage.

Measuring AC Voltage

1. Connect the black test lead to "**COM**" jack and red test lead to "**V**"jack.
2. Set the rotary switch to " **V ~**"
3. Connect the test leads across with the object to be measured.

⚠Caution

1) Refer to "**DC Voltage Caution**" 1, 2, 4.
2) "⚠"means never exceed the maximum input limit 750V, otherwise internal circuit of the Meter will be damaged.

Measuring DC Current

1. Connect the black test lead to"**COM**" jack . When measuring below 200mA, connect the red test lead to "**mA**" jack. When measuring 20A or below, connect the red test lead to " 20A" jack.
2. Set the rotary switch to "A⎓" .
3. Connect the test leads in series with the object to be measured, the LCD display the measuring value and polarity of red test lead.

⚠Caution

1) If magnitude of the current is unknown, always start with the highest range and reduce until satisfactory reading is obtained.
2) If "**1** "is shown on the LCD, which means the Meter is overloaded, then set to a higher measurement range.
3) "⚠" means the maximum input current is 200 mA, overload will cause the burn of fuse. 20A range does not have fuse protection

Measuring AC Current

1. Connect the black test lead to "**COM**" jack. When measuring below 200mA, connect the red test lead to **"mA"** jack. When measuring 20A or below, connect the red test lead to "**20A**" jack.
2. Set the rotary switch to" **A~**" .
3. Connect the test leads in series with the object to be measured.

⚠Caution

1) Please refer to "**DC Current Caution**" 1, 2, 3.

Measuring Resistance

1. Connect the black test lead to"**COM**" jack and red test lead"Ω"jack.
2. Set rotary switch to"Ω" .
3. Connect the test leads across with the object to be measured.

⚠Caution

1) If "**1**"is shown on the LCD, which means the Meter is overloaded, then set a higher measuring range. If resistance is above 1MΩ, the reading will only be steady after few seconds which is normal for measuring high value of resistance.
2) "**1**"is displayed when no input(e.g. open circuit).
3) Make sure all objects, circuit and components to be measured are without voltage and discharge all high-voltage capacitors.
4) At 200MΩ range, test lead is short circuit, it has 1000 digits which need to be subtracted from the reading when making measurement. For example, when measuring 100MΩ, it displays 110.00, 1000 digits need to be deducted (means 110.00-10.00=100.00MΩ).

Measuring Capacitance

Before measuring capacitance, remember it takes time for zeroing when changing ranges. Floating reading do not effect accuracy.

⚠Caution

1) To avoid damage to the Meter or the equipment under testing, disconnect circuit powers and discharge capacitors before measuring capacitance.
2) Connect capacitor to the capacitance jack.
3) Stabilizing reading takes some time when measuring high capacitance.

Unit : 1pF=10^{-6}μF, 1nF = 10^{-3}μF

Measuring Frequency

1. Connect red test lead to "**Hz**" jack and black test lead to"**COM**" jack.
2. Set the rotary switch to"**kHz**".
3. Connect the test leads across with the object being measured. LCD appears the frequency value.

⚠Caution

When measuring above 30Vrms, accuracy could not be guaranteed and Take extra care since the voltage are becoming very dangerous at this moment.

Measuring Diode and Continuity beeper

1. Set the black test lead to"**COM**" jack and red test lead to "**VΩ**" jack (Red test lead polarity is "+"), Set the rotary switch to ⊣⊢•))
2. Connect the test lead across with the object being measured.The reading is the approximate value of forward voltage drop for the diode.
3. Connect the test lead to two ends of the object being measured, the beeper sounds if the resistant value between the two ends is below 50Ω .

Measuring Transistor hFE

1. Set rotary switch to **hFE** .
2. Identify NPN or PNP type, connect objects to the correspondent transistor jack.
3. LCD appears the hFE nearest value.
4. Measuring condition: Ib≈10μA, Vce≈ 3.0V.

Auto-Power Off function

1. Meter equips with auto-power off function. It will be in a sleep condition when it has worked for 30 minutes. Power will be automatically cut off.
2. Press the on/off switch two times to power up again.

Maintenance

The Meter is a highly precise electrical testing instrument, do not attempt to change the circuit of your Meter on your own. Take a note of the following few points.

1. Do not connect to DC Voltage above 1000V or AC RMS above 750V.
2. Do not input voltage when the rotary switch is in **"Current Range" "Ω" "⊣⊢•))"**.
3. Do not operate the Meter if battery is not inside or bottom cabinet is not securely screwed.
4. Disconnect the test leads and power off the Meter before replacing the Battery and Fuses.

Using Holster

Three different ways to use holster:

1. Set holster parallel on the table, do not open the tilt stand (see diagram 1)
2. Set holster in a small angle on the table, tilt it up by the first part of tilt stand (see diagram 2)
3. Set holster in a large angle on the table, tilt it up by all two parts of tilt stand (see diagram 3).

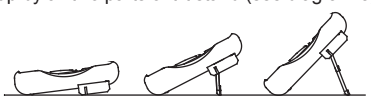
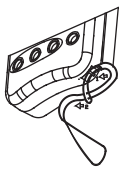


figure1 figure2 figure3

Using Strap

1. Put the front end of the strap through the round metal of the Meter, see part 1 of the below diagram.
2. Put the bottom end of the strap through the front part and tide it up, see part 2 of the below diagram.



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