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


Introduction

UT56 is one type of UNI-T brand new UT50 series Multimeters with 4 1/2 digits, which has steady function and is a highly reliable hand-held measuring instrument. The Meter uses large scale of integrated circuit with double integrated A/D converter as its core and has full range overload protection. The Meter can measure DC current, AC current, DC Voltage, AC Voltage, Resistance, Capacitance, Diode, Transistor, Frequency and Continuity Beeper, which is an ideal measuring tool for users.


Safety Rules

- 1 Use the Meter only as specified in this manual, otherwise the protection provided by the Meter may be impaired.
- 1 Do not operate the Meter before the cabinet has been closed and screwed safely as terminal can carry voltage.
- 1 Make sure before each measurement the Meter is set to the suitable range.
- 1 Before using the Meter, please inspect the cabinet and test leads for damaged insulation or exposed metal.
- 1 Connect the red and black test lead to the correct measuring input jack properly.
- 1 Do not input values over the maximum range of each measurement to avoid damages of the Meter.
- 1 Do not turn the rotary function switch during Voltage and Current measurement, otherwise the Meter could be destroyed .
- 1 Make sure to use new fuses with proper rating in stead of bad fuses.
- 1 To avoid electric shock or damages, do not apply more than 1000V between the"COM" terminals and "⚡" earth ground.
- 1 Use caution when working with Voltages above 60V (DC) or 30Vrms (AC). These Voltages pose shock hazard.

- 1 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.
- 1 Turn off the Meter once finished measuring. Fetch out the battery, when the meter will not be used for long period.
- 1 Do not operate the Meter under adverse environmental condition including high temperature and especially humid area as the Meter's function may be effected after moisturizing.
- 1 To avoid damages and dangerous, do not change the circuit on your own.
- 1 Periodically wipe the cabinet with a damp cloth and mid detergent. Do not use abrasives or solvents.
- 1 Dispose the used battery proper.
- 1 International Electrical Symbols.

	Low Battery		Earth Ground
	Safety Rules		Double Insulated
	AC		Diode
	DC		Buzzer
	Fuse		
	Dangerous Voltages		

A. Your Meters Feature

- 32 ranges.
- Liquid Crystal Display, digit's 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°C decreasing 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.

B. 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)

B-1 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: All ranges are 10MΩ.
Overload protection: 200mV is 250VDC or AC RMS. All other ranges are 750Vrms or 1000Vp-p.

B-2 Alternate Current Voltage (AC Voltage)

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

⚠ Input impedance: All ranges are 2MΩ .
Frequency: 40Hz-400Hz.
Overload protection: 200mV is 250VDC or AC RMS. All other ranges are 750Vrms or 1000Vp-p.
 Display: Average Value (RMS of Sine Wave).

B-3 Direct Current Current (DC Current)

Range	Resolution	Accuracy
2mA	0.1 μ V	\pm (0.5% +5)
20mA	1 μ V	
200mA	10 μ V	\pm (0.8% +5)
20A	1mV	\pm (2% +10)

⚠ Overload protection: Below 200mA with 0.3 A/250V Fused. No fuse protection on 20A.

Max current input: 20A (above 10A for 15 seconds maximum).

Measuring voltage drop: Full ranges are 200mV.

B-4 Alternate Current Current (AC Current)

Range	Resolution	Accuracy
2mA	0.1 μ V	\pm (0.8% +10)
20mA	1 μ V	
200mA	10 μ V	\pm (1.2% +10)
20A	1mV	\pm (2.5% +10)

⚠ Overload protection: Below 200mA with 0.3A/ 250V Fused. No fuse protection on 20A.

Max current input:20A (above 10A for 15seconds maximum).

Measuring voltage drop: Full ranges are 200mV

Display: Average value(RMS of Sine Wave).

B-5 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: All ranges are 250VDC or AC RMS.

Caution:

- 1) At 200MΩ range, test lead is short circuit, the LCD display 1000 digits, deduct 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. Deduct that resistance value from the measured reading to obtain the being measured object correct value .

B-6 Capacitance

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

Testing Signals: About 400Hz, 40mVrms.

2-7 Frequency

Range	Resolution	Accuracy
20kHz	1Hz	$\pm (1.5\% +5)$

⚠ Input sensitivity: <200mVrms, Max. input scope 30Vrms.

Overload protection: 250Vrms.

2-8 Diode and Continuity Beeper

Range	Remark	Measuring Condition
→ ←	Display Diode Forward Voltage Value, unit is "V"	Forward DC Current abt 1mA, Backward DC Voltage abt3.0V
• •	Beeper sounds when Resistance < 50Ω. Display the nearest value, unit is "kΩ"	Voltage at open Circuit abt 3.0V



Overload protection: 250V DC or AC RMS.

B-9 Transistor hFE test

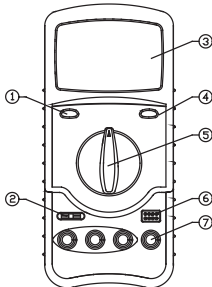
Range	Remark	Measuring Condition
hFE	Can Measure NPN and PNP type Transistor, Display ranges: 0-1000 β	Basic polarity current abt 10μA, Vce abt 3.0V

C. Making Measurements

Caution:

- (1) If there is no display or “” is shown on the LCD when the Meter is switched on, replace the battery ASAP.
- (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 | |



C-1 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 $\overline{\text{---}}$ ”.
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 the measuring range to higher.
- 3) “” means never exceed the maximum input limit 1000V, otherwise internal circuit of the Meter will be damaged.
- 4) Take extra care of voltage leakage when measuring high voltage.

C-2 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.

C-3 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 $\overline{\dots}$** ” .
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 the measuring range to higher.
- 3) “ **Δ** ” means the maximum input current is 200 mA, overload will cause the burn of fuse. 20A range does not have fuse protection

C-4 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.

C-5 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 $1M\Omega$, 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 $200M\Omega$ range, test lead is short circuit, it has 1000 digits which need to be deducted from the reading when making measurement. For example, when measuring $100M\Omega$, it displays 110.00, 1000 digits need to be deducted (means $110.00 - 10.00 = 100.00M\Omega$).

C-6 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 of 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 : $1\text{pF}=10^{-6}\mu\text{F}$, $1\text{nF} = 10^{-3}\mu\text{F}$


C-7 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 of safety as voltage brings dangerous electricity by that time.

C-8 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 diode forward voltage drop nearest value.
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 .

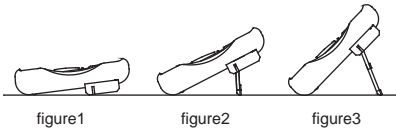
C-9 Measuring Transistor hFE

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: $I_b \approx 10\mu\text{A}$, $V_{ce} \approx 3.0\text{V}$.

F. Using Holster

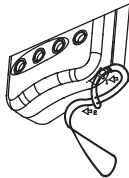
Three different ways to use holster:

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).



G. 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 tie it up, see part 2 of the below diagram.



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Model UT56: OPERATING MANUAL

~ END ~

* The manual is subject to changes without separate notice. *

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