# UT33A

## **Operating Manual**



### Palm Size Digital Multimeter

This Operating Manual covers information on safety and cautions. Please read the relevant information carefully and observe all the Warnings and Notes strictly.

# To avoid electric shock or personal injury, read the "Safety Information" and "Rules for Safety Operation" carefully before using the Meter.

The Model UT33A Multimeter (hereafter referred as "the Meter") is a 3 3/4 digits with steady operations, fashionable design and highly reliable hand-held measuring instrument. The Meter can measure AC/DC voltage, AC/DC Current, Resistance, Diode and Continuity. It is an ideal tool for maintenance

### **Unpacking Inspection**

Open the package case and take out the Meter. Check the following items carefully to see any missing or damaged part:

| ltem | Description                   | Qty     |
|------|-------------------------------|---------|
| 1    | English Operating Manual      | 1 piece |
| 2    | Test Lead                     | 1 pair  |
| 3    | Holster                       | 1 piece |
| 4    | 1.5V Battery (AAA)(installed) | 2 piece |

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

This Meter complies with the standards IEC61010: in pollution degree 2, overvoltage category (CAT II 250V) and double insulation. CAT. II: Local level, appliance, PORTABLE EQUIPMENT etc., with smaller transient

overvoltages than CAT, III Warning Use only comply with IEC / EN 61010-031 of CAT II 250V or more test lead. Use the Meter only as specified in this operating manual, otherwise the protection

provided by the Meter may be impaired. In this manual, a Warning identifies conditions and actions that pose hazards to the user, or may damage the Meter or the equipment under test. A Note identifies the information that user should pay attention on.

### **Rules For Safe Operation**

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

 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 connectors.

 Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity. Replace damaged test leads with identical model number or electrical specifications before using the Meter.

 Do not apply more than the rated voltage, as marked on the Meter, between the terminals or between any terminal and grounding. The rotary switch should be placed in the right position and no any

changeover of range shall be made during measurement is con prevent damage of the Meter.

When the Meter is working at an effective voltage over 60V in DC or 42V rms 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 Meter in an environment of high temperature, humidity, explosive, inflammable and strong magnetic field. The performance

of the Meter may deteriorate after dampened. 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 and current.

 Before measuring current, check the Meter's fuses and turn off power to the circuit before connecting the Meter to the circuit. Replace the battery as soon as the battery indicator "Q" appears. With a low battery, the Meter might produce false readings that can lead to electric

shock and personal injury.

Remove test leads from the Meter and turn the Meter power off before

When servicing the Meter, use only the same model number or identical

electrical specifications replacement parts.

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.

The Meter is suitable for indoor use.
Turn the Meter off when it is not in use and take out the battery when not using for a long time.

 Constantly check the battery as it may leak when it has been using for some time, replace the battery as soon as leaking appears. A leaking battery

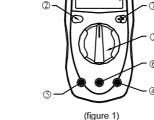
Please check whether the instrument is in good condition before use, such as test the voltage which is known and confirm the readings are accurate.

| Intern        | ational Electrical Symbols               |  |  |  |
|---------------|--|--|--|--|
| $\overline{}$ | AC or DC                                 |  |  |  |
| ~             | ➤ AC Current                             |  |  |  |
| •••           | DC Current                               |  |  |  |
| ÷             | Grounding                                |  |  |  |
|               | Double Insulated.                        |  |  |  |
|               | Deficiency of Built-In Battery           |  |  |  |
| <b>→</b>      | Diode.                                   |  |  |  |
| -             | Fuse.                                    |  |  |  |
| •1))          | Continuity Test                          |  |  |  |
| Δ             | Marning. Refer to the Operating Manual   |  |  |  |
| Œ             | Conforms to Standards of European Union. |  |  |  |

### The Meter Structure (figure 1)

- 1) LCD Display
- 2) SELECT Button
- Rotary Switch 4) COM Input Terminal
- 10A Input Terminal

Other Input Termina Display Backlight Button



Selecting for DC and AC current measurement, Continuity Test and Diode Test. The buzzer sounds when switching from one function to the other.Press this button to activate the Meter when it is under Sleep Mode.

## LCD Display (see figure 2)



## Measurement Operation

A. DC Voltage Measurement (see figure 3)

### ⚠ Warning

To avoid harms to you or damages to the Meter from electric shock, please do not attempt to measure voltages higher than 250V although reading

The DC Voltage ranges are : 400.0mV, 4.000V, 40.00V, 250V Insert the red test lead into the VΩmA terminal and the black test lead into the COM terminal.

Set the rotary switch to V range. 3. Connect the test leads across with the object being

# The measured value shows on the display.

## DCV Measurement is autoranging, the Meter has an input impedance of approx. 10M $\Omega$ . This loading effect can cause measurement errors in high impedance circuits. If the circuit impedance is less than or equal to $10k\Omega$ , the error is negligible (0.1% or less).

• When DC voltage measurement has been completed, disconnect the connection between the testing leads and the circuit under test.

B. AC Voltage Measurement (see figure 3)

## ⚠Warning To avoid harms to you or damages to the Meter from electric shock, please do not attempt to measure voltages higher than 250V although readings may

The AC voltage ranges are: 4.000V, 40.00V, 250V

Insert the red test lead into the  $V\Omega mA$  terminal and the black test lead into the COM terminal.

Set the rotary switch to V∼range.

Connect the test leads across with the object being measured.

The measured value shows on the display • DCV Measurement is autoranging, the Meter has an input impedance of approx.

10M $\Omega$ . This loading effect can cause measurement errors in high impedance circuits. If the circuit impedance is less than or equal to  $10k\Omega$ , the error is negligible When DC voltage measurement has been completed, disconnect the connection

between the testing leads and the circuit under test.

## C. DC Current Measurement (see figure 4)

## ⚠Warning

Never attempt an in-circuit current measurement where the voltage terminals and ground is greater than 60V. If the fuse burns out during measurement, the Meter may be damaged or the operator himself may be hurt. Use proper terminals, function, and range for the measurement. When the testing leads are connected to the current terminals, do not parallel

## To measure current, do the following:

1. Turn off power to the circuit. Discharge all high-voltage capacitors.

2. Insert the red test lead into the  $V\Omega mA$  or 10A terminal and the black test lead

### into the COM terminal.

- Set the rotary switch to an appropriate measurement position in Arrange. DC measurement is default or press SELECT button to select DC measurement mode.
- 4. Break the current path to be tested. Connect the red test lead to the more positive
- side of the break and the black test lead to the more negative side of the break. 5. Turn on power to the circuit. The measured value shows on the display.

## If the value of current to be measured is unknown, use the maximum measurement position (10A) and reduce the range step by step until a satisfactory reading is obtained.When current measurement has been completed,

disconnect the connection between the testing leads

## D. AC Current Measurement (see figure 4) ⚠Warning

Never attempt an in-circuit current measurement where the open-circuit voltage between the circuit and ground is greater than 250V. If the fuse burns out during measurement, the Meter may be damaged or the operator himself may be hurt. Use proper terminals function, and range for the measurement. When the testing leads are connected to the current terminals, do not parallel them across any circuit.

- 1. Turn off power to the circuit, Discharge all high-voltage capacitors,
- 2. Turn the rotary switch to suitable range, press SELECT to change from DC to AC
- 3. Insert the red test lead into the  $V\Omega mA$  or 10A terminal and the black test lead
- into the COM terminal.
- Set the rotary switch to an appropriate measurement position in A~range.
- 5. Break the current path to be tested. Connect the red test lead to the more positive
- side of the break and the black test lead to the more negative side of the break 6. Turn on power to the circuit.
- The measured value shows on the display.

## E. Resistance Measurement (see figure 5)

### ⚠ Warning To avoid damages to the Meter or to the devices under test, disconnect

circuit power and discharge all the high-voltage capacitors before measuring

The  $\Omega$  ranges are :  $400.0\Omega$ ,  $4.000k\Omega$ ,  $40.00k\Omega$  $400.0k\Omega$ ,  $4.000M\Omega$ , and  $40.00M\Omega$ ,

- 1. Insert the red test lead into the  $V\Omega$ mA terminal and the black test lead into the COM terminal.
- 2. Set the rotary switch to the  $\Omega$  range.
- 3. Connect the test leads across with the object being measured. The measured value shows on the display.

- The test leads can add  $0.1\Omega$  to  $0.3\Omega$  of error to resistance measurement. To obtain precision readings in low-resistance measurement, that is the range of  $200\Omega$  short-circuit the input terminals beforehand and record the reading obtained (called this reading as X). (X) Is the additional resistance from the test lead. Then use the equation: measured
- resistance value (Y) (X) = precision readings of resistance.

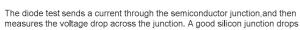
  For high-resistance measurement (>1MΩ), it is normal taking several seconds to obtain a stable reading.
- When resistance measurement has been completed, disconnect the connection between the testing leads and the circuit under test.

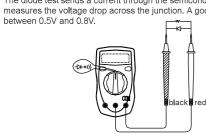
### F. Diode and Continuity Test (see figure 6) **Testing Diodes**

To avoid damages to the Meter or to the devices under test, disconnect circuit power and discharge all the high-voltage capacitors before diodes.

Use the diode test to check diodes, transistors, and other semiconductor devices

# P/N:110401105297X





To test a diode out of a circuit, connect the Meter as follows:

1. Insert the red test lead into the  $V\Omega mA$  terminal and the black test lead into the

2. Set the rotary switch to → Diode measurement is default or press **SELECT** button to select diode measurement mode. red test lead on the component's anode and place the black test lead on the

component's cathode The measured value shows on the display

• In a circuit, a good diode should still produce a forward voltage drop reading of 0.5V to 0.8V; however, the reverse voltage drop reading can vary depending on

the resistance of other pathways between the probe tips.
Connect the test leads to the proper terminals as said above to avoid error display. The LCD will display "OL" indicating open-circuit for wrong connection. The unit of diode is Volt (V), displaying the positive-connection voltage-drop value.

When diode testing has been completed, disconnect the connection between the

testing leads and the circuit under test.

**Testing for Continuity** To test for continuity, connect the Meter as below:

1. Insert the red test lead into the  $V\Omega$  mA terminal and the black test lead into the COM terminal. Set the rotary switch to + - n).
 Press SELECT button to select continuity measurement mode.

4. Connect the test leads across with the object being measured. The buzzer sounds if the resistance of a circuit under test is less than  $100\Omega$ . Sleep Mode To preserve battery life, the Meter automatically turns off if you do not turn the rotary

switch or press any button for around 15 minutes. The Meter can be activated by pressing the **SELECT** button or turning the rotary switch. **General Specifications** 

Range: Auto ranging

• Maximum Voltage between any Terminals and Grounding: 250V rms. Tused Protection for VΩmA Input Terminal: 400mA, 250V fast type, φ5x20 mm

• Maximum Display: Display: 3999. Measurement Speed: Updates 3 times / second. Temperature:

10A Terminal:10A 600V fast type fuse φ6x25

Operating: 0°C~40°C (32°F~104 °F). Storage: -10°C~50°C (14°F~122°F). • Relative Humidity: 75% @ 0°C - 30°C; 50% @ 31 - 40°C.

Altitude: Operating: 2000 m.

Storage: 10000 m.

Battery Type: Two piece of 1.5V AAA Battery. Battery Deficiency: Display: Negative reading: Display: "-

 Weight: Approx. 156g (battery included). Safety/Compliances: IEC61010, CAT II 250 V overvoltage and double

insulation standard.

**Accuracy Specifications** 

Relative humidity: <75%. A. DC Voltage Range Resolution Overload Protection Accuracy 100μV ±(0.8%+3) 400mV 1mV ±(0.8%+1) 250V DC or AC 10mV 40V

# B. AC Voltage

 Input impedance: approx. 10MΩ. • Displays effective value of sine wave (mean value response).

• Frequency response 40Hz ~ 400Hz.

C. DC Current

| Range  | Resolution | Accuracy          | Overload Protection           |
|--------|------------|-------------------|-------------------------------|
| 400μΑ  | 0.1μΑ      | ±(1%+2)           | 400mA/250V fast type          |
| 4000μΑ | 1μΑ        | _(170.2)          | fuse φ 5x20mm                 |
| 40mA   | 10μΑ       | ±(1,2%+2)         | 1                             |
| 400mA  | 100μΑ      | <u>-(1.270+2)</u> |                               |
| 4A     | 1mA        | ±(1.5%+5)         | 404 0000/5                    |
| 10A    | 10mA       | ±(1.5%+5)         | 10A 600V fast type fuse φ6x25 |

# Remark:

• At 10A Range: For continuous measurement 10 seconds and interval not less than 15 minutes.

Overload Protection Range Resolution Accuracy 400μΑ 0.1μΑ 400mA/250V fast type fuse φ 5x20mm ±(1.5%+5)  $\pm(2\%+5)$ 400mA 100μΑ

## 10A Remark:

than 15 minutes.

 Input impedance: approx. 10M Ω. Measurement voltage drop: Full range at 400mV.

Overloading: Display: "0L".

Dimensions (HxWxL): 130 x 73.5 x 35mm.

● Certification: **(€** 

# Accuracy: (a% reading + b digits), guarantee for 1 year. Operating temperature: 23°C -5°C.

## 250V 100mV Remark: Input impedance: $10M\Omega$ .

### Range Resolution Overload Protection Accuracy 4V 1mV $\pm(1.2\%+3)$ 250V DC or AC 40V 10mV 100mV

⚠Warning

 Input impedance: approx. 10MΩ. • Measurement voltage drop: Full range at 400mV. D. AC Current

 $\pm(2.5\%+5)$ 10A 600V fast type fuse  $\phi 6x25$ 10mA

E. Resistance

At 10A Range: For continuous measurement 10 seconds and interval not less

Range Resolution Accuracy Overload Protection  $400\Omega$  $0.1\Omega$ ±(1%+2) 40kΩ 10Ω 250V DC or AC 100Ω 400kΩ 1kΩ ±(1.5%+2) 10kΩ F. Diodes and Continuity Measurement

Overload Protection Range Resolution Displays approximate forw voltage drop reading 250V DC or AC Buzzer beeps at <100Ω •1) 0.1Ω

⚠Warning Do not attempt to repair or service your Meter unless you are qualified to do so and have the relevant calibration, performance test, and service information To avoid electrical shock or damage to the Meter, do not get water inside the

Periodically wipe the case with a damp cloth and mild detergent. Do not use

To clean the terminals with cotton bar with detergent, as dirt or moisture in the

This section provides basic maintenance information including battery and fuse replacement instruction.

terminals can affect readings.

Turn the Meter to OFF position when it is not in use and take out the battery when not using for a long time. Do not store the Meter in a place of humidity, high temperature, explosive inflammable and strong magnetic field.

A. General Service

abrasives or solvents

**B. Replacing the Battery**(see figure 7) To avoid false readings, which could lead to possible electric shock or personal injury, replace the battery as soon as the battery

indicator " "appears. To replace the battery: 1. Disconnect the connection between the testing leads and the circuit under test, and remove the testing leads away from the input terminals of the

2. Turn the Meter to OFF position. 3. Remove the screw from case bottom, and separate the case bottom from the case top. 4. Remove the battery from the battery compartment. Replace the battery with a new 1.5V AAA battery.

C. Replacing the Fuses (see figure 8)

6. Rejoin the case bottom and case top, and reinstall the screw.

To avoid electrical shock or arc blast, or personal injury or damage to the Meter, use specified fuses ONLY in accordance with the following procedure.

1. Disconnect the connection between the testing leads and the circuit under test. and remove the testing leads away from the input terminals of the Meter. 2. Turn the Meter to OFF position.

(figure 7)

Remove the screws from case bottom, and separate the case bottom from the case top. 4. Remove the fuse by gently prying one end loose, and then take out the fuse



follows and make sure the fuse is fixed firmly in the bracket. Fuse 1:400mA 250 V, fast type, f 5x20mm Fuse 2:10A 600V fast type f 6x25mm. Rejoin the case bottom and case top, and reinstall the screw.



Conforms to UL STD. 61010-1, 61010-2-030, 61010-2-033, Certified to CSA STD. C22.2 NO. 61010-1, 61010-2-0330, IEC STD 61010-2-033

RFV0

DATE:2015/05/28 \*\*\* END \*\*\*

This opeating manual is subject to change without notice

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National High-Tech Industrial Development Zone, Dongguan City, Guangdong Province, China



Replacement of the fuses is seldom required. Burning of a fuse always results from



Email: info@uni-trend.com

Made: Uni-Trend Technology (China) Limited Add: No 6, Gong Ye Bei 1st Road, Songshan Lake



# 说明书菲林做货要求:

| 序号       | 项                  | 目   | 内容                               |   |                     |                                |  |  |
|----------|--------------------|-----|----------------------------------|---|---------------------|--------------------------------|--|--|
| 1        | 尺                  | र्न | 展开尺寸: 380X210mm 折叠尺寸: 95X105mm   |   |                     |                                |  |  |
| 2        | 材                  | 质   | 60g书纸                            |   |                     |                                |  |  |
| 3        | 颜                  | 色   | 单黑印刷                             |   |                     |                                |  |  |
| 4        | 外观                 | 要求  | 印字完整清晰、版面整洁,无斑墨、残缺破损、毛边、装钉不齐等缺陷。 |   |                     |                                |  |  |
| 5        | 装订                 | 方式  | 按折叠线折叠                           |   |                     |                                |  |  |
| 6        | 表面                 | 处理  | 无                                |   |                     |                                |  |  |
| 7        | 修                  | 改   |                                  |   |                     |                                |  |  |
| 8        | REV. 0             |     |                                  |   |                     |                                |  |  |
| 设        | 271                |     | #2015/05/28                      |   | 33A英文说明书<br>(ETL版本) | Part NO.<br>物料编号:110401105297X |  |  |
| 审<br>APF | 审核<br>APPRO.<br>批准 |     | #P3                              | 优利德科技(中国)有限公司<br>UNI-TREND TECHNOLOGY (CHINA) LIMITED |                     |                                |  |  |