UT892
2000V High Voltage Digital Multimeter

I. Overview
UT892 is a True RMS multimeter with large display screen, integrated with manual and auto range. The meter can be used to detect high AC/DC voltage up to 2000V and solve VFC voltage/frequency measurement. UT892 can filter carrier frequency overlapped by sine wave or various distorted voltage signals and stabilize the measured output voltage. It has over voltage and over current alarm indications. Designed according to CAT II 1000V/ CAT III 600V, this high voltage digital multimeter is an ideal tool to detect electronic, electrical, and high-voltage equipment.

II. Features
- The meter can measure ultra-high AC/DC voltage up to 2000V, making it more appropriate for the safety of the measurement in high-voltage coal mine scenes.
- Designed with built-in VFC, suitable in measurement of frequency-converted voltage or invertor voltage, allowing the meter to measure signals of distorted voltage and frequency -converted voltage accurately.
- 1m drop proof to ensure accuracy.
- Large LCD 6000-count analog-digital display, true-RMS measurement, fast ADC (3 times/s).
- False detection protection across all functions, withstanding surge voltage up to 1000V, designed with over voltage and over current alarm indications.
- Large capacitance to extend the range, the measurement response is fast compared with similar products, the response time is within 10 seconds for capacitance ≤ 60 mF.
- This product can be used to measure NCV and high-voltage frequency.
- Backlight function to enable the use in dim environment.
- Audible and visual alarm to indicate voltage up to 1500V.
- The overall power consumption of the meter is about 3.0mA, the circuit can save power automatically, the power consumption is about 5μA in sleep state, which extend the battery life to 500 hours.

III. Accessories
Open the package box and take out the product, check if the following items are missed or damaged.

User manual ---------- 1 piece
Test lead ---------- 1 pair

⚠Warning: Please read the “Rules for Safe Operation” carefully before using the meter.

IV. Rules for Safe Operation
The meter is designed in accordance with IEC/EN61010-1, 61010-2-033 Electromagnetic Radiation Protection and EN61326-1 Safety Standard, and complies with the safety standard of double insulation, over-voltage CAT III 600V, CAT II 1000V and pollution level 2. If you fail to use the meter according to relevant operation instructions, the protection provided by the meter is likely to be weakened or undermined.

1. It is strictly prohibited to use the meter without the rear cover or battery cover, otherwise, shock hazard may occur.
2. Prior to using, please check the meter so as to prevent any damage or abnormality. If you find the insulating layer of the shell is damaged obviously, the display screen cannot work, etc., or you consider that the meter cannot work well, please don’t use the meter any more.
3. keep finger within the scope of finger protection position of test lead to avoid electric shock.
4. Be careful in measuring voltage higher than DC 60V or AC 30Vrms.
5. Do not measure signal over the specified limit to avoid electric shock and damage to the meter.
6. The range switch should be placed at the corresponding measuring position.
7. It is prohibited to switch tap position during measurement.
8. Please do not change the internal wiring of the meter at random, to prevent meter damage and insecurity.
9. The damaged fuses must be replaced by new ones with same models or specifications.
10. When LCD display shows the icon “”, it is required to replace the battery in time to ensure the measurement accuracy.
11. Do not keep or use the meter in an environment with high temperature and humidity.
12. During maintenance, please clean the shell of the meter with the soft cloth soaked with neutral detergent, and do not use the abrasive and solvent.

V. Electrical Symbols

Symbols	Descriptions	Symbols	Descriptions
⧈	Double insulated	⚠	Risk of high voltage
⚠	Warning prompt	⏚	Grounding
~	AC (Alternating Current)	CE	EU standard
⎓	DC (Direct Current)		

VI. General Specifications
- The maximum voltage between input terminal (not the 2000V input terminal) and grounding is 1000Vrms.
- Display count: 6200. Over range indication: “OL”. Display updates 3 times per second.
- Range selection: Auto/Manual.
- Polarity: Display “—“ for negative polarity input.
- Data hold: Display “H”.
- Low battery: Display “”.
- Power supply: 2×1.5V AA battery (zinc-manganese)
- Operating temperature: 0°C~40°C (32°F~104°F)
  Storage temperature: -10°C~50°C (14°F~122°F)
  Relative humidity: ≤75% (0°C~30°C); ≤50% (30°C~40°C)
  Operating altitude: 0~2000m
- External dimensions: 187mm x 88 mm x 56mm
- Weight: About 350g (Batteries included)
- EMC: For RF=1V/m, overall accuracy=specified accuracy+5% of range. Not specified for RF>1V/m.

VII. Meter Structure

1	Holster
2	LCD display screen
3	Functional buttons
4	Range switch
5	LIVE input terminal
6	2000V input terminal
7	COM input terminal
8	Input terminal for other measurements
9	Hanging hook
10	Casing
11	Test lead holder
12	Kick stand

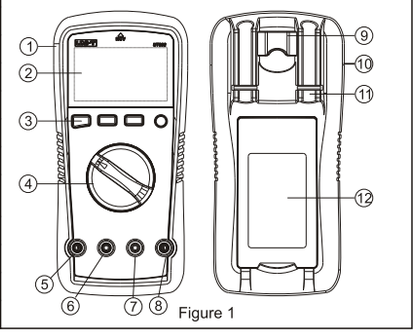


Figure 1

VIII. Functions of Buttons
* **SEL/△**: Press this button to switch between AC voltage/VFC/Hz. Long press this button to enter VFC measurement at ACV position, long press again to back to normal voltage measurement mode. At capacitance position, short press this button to enter relative measurement and to display “△” .
* **RANGE**: At voltage and resistance position, short press this button to switch to manual range, long press to back to auto range.
* **MAX/MIN**: At voltage and resistance position, short press this button to enter maximum and minimum value measurement, long press to back to auto mode.
* HOLD/☼: Short press this button to enter/exit data hold mode. When this button is pressed for ≥2 seconds, the backlight will be turned on/off. Long press this button for about 3 seconds to enable the backlight to be light-up for a long time, long press for about 2 seconds again to exit the light-up mode.

IX. Instructions for Measurement Operations
Please check the built-in AAA 1.5V batteries firstly, if the battery is low after the meter is turned on, the LCD will show “”, please replace the batteries to ensure the test accuracy. Please pay special attention to the warning sign “ ⚠ ” near the terminal of test lead, this sign “⚠” warns that the voltage or current under test shall not exceed the specified value to assure measurement safety!

1. AC/DC 2000V Voltage (Figure 2)
1) Set the range switch to 2KV position.
2) Connect the red test lead to “2000V” terminal, and black to “COM” terminal, make the two test probe tips contact the two ends of the measured voltage respectively (connect to the load in parallel).
3) Read the test result from the LCD.

Note:
- Do not measure ACV/DCV voltage over 2000Vrms. It is possible to measure higher voltage, but it may cause damage to the meter or the user! The input impedance is about 20MΩ, measuring high-impedance circuit may cause measurement error, if the impedance of circuit is less than 10KΩ, the error (0.1% or less) is negligible.
- When changing position, the LCD will display “LEAd” and the meter will make beep sounds to indicate to change the input terminal of test lead.

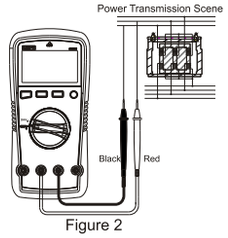


Figure 2

2. AC/DC Voltage (Figure 3)
1) Set the range switch to ACV/DCV position.
2) Connect the red test lead to “VΩ” terminal, and black to “COM” terminal, make the two test probe tips contact the two ends of the measured voltage respectively (connect to the load in parallel).
3) At ACV position, long press SEL to enter VFC voltage measurement, short press SEL to enter the measurement of frequency at 10Hz~10KHz.
4) Read the test result from the LCD.

Note:
- Do not measure ACV/DCV voltage over 1000Vrms. It is possible to measure higher voltage, but it may cause damage to the meter or the user! The input impedance is about 10MΩ, measuring high-impedance circuit may cause measurement error, if the impedance of circuit is less than 10KΩ, the error (0.1% or less) is negligible.
- Pay special attention to avoid electric shock when measuring high voltage.
- Before using the meter, a known voltage can be measured to verify if the product functions are good.

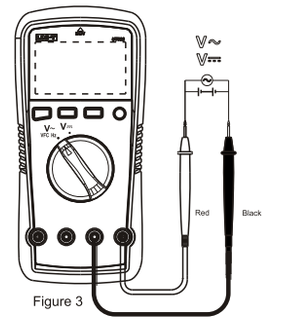


Figure 3

3. Resistance (Figure 4)
1) Set the range switch to resistance position.
2) Connect the red test lead to “VΩ” terminal, and black to “COM” terminal, make the two test probe tips contact the two ends of the measured resistance respectively (connect to the measured resistance in parallel).
3) Read the test result from the LCD.

Note:
- Before measuring resistance on line, turn off all the powers in the measured circuit and discharge all capacitors completely to ensure accurate measurement.
- If the resistance of test lead at short circuit is not less than 0.5Ω, please check the looseness for the test lead and other reasons.
- If the measured resistance is open or the resistance exceeds the maximum range, the LCD will show “OL”.
- When measuring low resistance, the test lead will cause a measurement error of 0.1Ω~0.2Ω. To obtain an accurate value: Final resistance = the measured resistance - the resistance of shorted test leads.
- It is normal to take seconds to steady the reading for the measurement of high resistance.
- Do not input voltage over 60V DC or 30V AC.

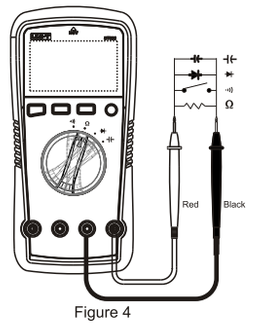


Figure 4

4. Continuity (Figure 4)
1) Set the range switch to continuity position.
2) Connect the red test lead to “VΩ” terminal, and black to “COM” terminal, make the two test probe tips contact the two measured ends respectively.
3) If the resistance between the both measured ends is ≥50Ω, the circuit is considered to be open, the buzzer will make no sound. If the resistance between the both measured ends is ≤10Ω, the continuity of the circuit is considered to be in good condition, the buzzer will make sounds continuously.

Note:
- Before measuring continuity on line, turn off all the powers in the measured circuit and discharge all capacitors completely to ensure accurate measurement.

5. Diode (Figure 4)
1) Set the range switch to diode position.
2) Connect the red test lead to “VΩ” terminal, and black to “COM” terminal, make the two test probe tips contact the two measured ends of PN junction respectively.
3) “OL” will be displayed when the measured diode is open or the polarity is reversed. The normal voltage of silicone PN junction is about 500~800mV (0.5~0.8V) generally.

Note:
- Before measuring PN junction on line, turn off all the powers in the measured circuit and discharge all capacitors completely to ensure accurate measurement.
- The test voltage range is about 3.0V/1.0mA.

6. Capacitance (Figure 4)

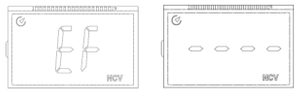
1) Set the range switch to capacitance position.
2) Connect the red test lead to “VΩ” terminal, and black to “COM” terminal, make the two test probe tips contact the two ends of measured capacitance respectively.
3) Read the test result from the LCD. When there is no input, the meter displays a fixed value (intrinsic capacitance). For small capacitance measurement, this value must be subtracted from the measured value, or you can use the REL function for doing the subtraction automatically.

Note:

- If the measured capacitor is short-circuited or the capacitance value exceeds the maximum range, “OL” will appear on the display screen.
- It is normal to take several seconds to stabilize the reading for the measurement of large capacitance.
- Discharge all capacitors completely prior to measurement, especially for capacitors with high voltage.

7. Non-Contact AC Electric Field Sensing (Figure 5)

1) To detect if there is AC voltage or electromagnetic field in the space, please set the range switch to NCV position.
2) When the front end of the meter approaches the mains power (≥40Vac/50Hz), the buzzer will make sound and the LCD will display N segment, the stronger the electric fields, the more the segments shown (4 segments at most), and the higher the frequency at which the buzzer sounds.
3) Segments to indicate the strength of the sensed electric field.



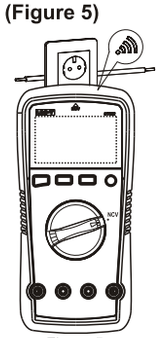


Figure 5

* The insulated conductor is the detection condition of the sensitivity, the thickness of insulation should be less than 1.5mm, it is normal that there is sensitivity deviation for different conductors and sockets.

8. Live Wire or Neutral Wire (Figure 6)

1) Set the range switch to LIVE position.
2) Connect the red test lead to “LIVE” terminal, suspend the black test lead, the red test probe contacts the socket or bare wire, distinguish live wire or neutral wire.
3) When detecting the neutral wire, “----” state will be displayed.
4) When detecting the live wire with voltage >90Vac, “LIVE” state will be displayed along with sound indication.

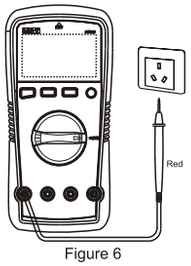


Figure 6

Note:

- To prevent the “COM” terminal from interfering the accuracy of distinguishing live wire/neutral wire, please remove the black test lead from “COM” terminal when measuring LIVE function.
- When changing position, the LCD will display “LEAd” and the meter will make beep sounds to indicate to change the input terminal of test lead.

9. Other Functions

- When the meter is turned on, full symbols will be displayed on the LCD for about 2 seconds, and then the meter will enter normal measurement state.
- If the range switch is not turned within 15 minutes during measurement, the meter will enter the “Auto-off” state to save power. In “Auto-off” state, if any button is pressed or the range switch is turned, the meter will be awakened automatically along with a buzzing sound. To disable the APO function, turn the range switch to OFF position and hold down **SEL** /△ button simultaneously.
- The buzzer will make a beep sound for about 0.25 seconds when any functional button is pressed.
- When the voltage is ≥1000V at DC/AC voltage position or is ≥1500V at 2KV position, the backlight will light up red, when the voltage is 1900V, the buzzer will make intermittent sound to indicate the range reaches its extreme limit.
- About 1 minute before the meter is powered off automatically, the buzzer will make sound for 5 times continuously, the buzzer will make a beep sound for a long time before the meter is powered off.
- Low battery detection: The voltage supplied by the battery will be detected when supplying power, if the voltage is less than 2.5V, “ ” will be displayed, but the meter can still work normally. If the voltage is less than 2.4V, “Lbt” will appear on the LCD and flash for 5 seconds along, and the buzzer will make sound for three times, then the meter will be powered off automatically.

X. Technical Specifications

Accuracy: ± (a% reading + b digit), one year warranty
Ambient temperature: 23°C±5°C (73.4°F±9°F)
Relative humidity: ≤75%

Note:

- Temperature condition of accuracy measurement: 18°C~28°C, the fluctuation range of ambient temperature stabilizes within ±1°C. If temperature is <18°C or >28°C the additional temperature coefficient error is: 0.1 x (specified accuracy)/ °C.

1. DC Voltage

Range	Resolution	Accuracy
6.000V	0.001V	± (0. 5%+3)
60.00V	0.01V	
600.0V	0.1V	
1000V	1V	± (0. 7%+5)
2000V	1V	± (0. 8%+8)

* The input impedance is about 10MΩ at range of 1000V, input measurement voltage: ±1000V, “OL” will be displayed when the maximum voltage is ≥1100V.
* The input impedance is about 20MΩ at range of 2000V, “OL” will be displayed when the maximum voltage is ≥2200V.
* Overload protection: 1000Vrms (DC/AC).
* Scope to guarantee accuracy: 1~100% of range.
* Overload protection: 1000Vrms for DC voltage position (≤1000V); 2000Vrms (AC/DC) for 2000V position.

2. AC Voltage

Range	Resolution	Accuracy
6.000V	0.001V	± (1. 0%+3)
60.00V	0.01V	
600.0V	0.1V	
1000V	1V	
2000V	1V	± (1. 5%+5)
VFC 600.0V	0.1V	±8%
10.00Hz~10.00KHz	0.01Hz/0.01kHz	± (0. 5%+2)

* The input impedance is about 10MΩ at range of 1000V, input measurement voltage: ±1000V, “OL” will be displayed when the maximum voltage is ≥1100V.
* The input impedance is about 20MΩ at range of 2000V, “OL” will be displayed when the maximum voltage is ≥2200V.
* Frequency response: 40Hz~500Hz, true-RMS of sine wave (True-RMS response)
* VFC frequency response: 40Hz~400Hz
* Scope to guarantee accuracy: 5~100% of range.
* Overload protection: 1000Vrms for DC voltage position (≤1000V); 2000Vrms (AC/DC) for 2000V position.
* ACV frequency measurement: The input amplitude is >5Vrms for frequency band <400Hz; the input amplitude is >10Vrms for frequency band >400Hz~10kHz.
* Crest factor: The crest factor is up to 3.0 when performing measurement of AC crest factor of non-sine wave in half range (3000 counts); the AC crest factor is ≤1.5 in full range (6000 counts). Add error as per the calculation below:

a) Add 3% to the accuracy for crest factor of 1.0~2.0.
b) Add 5% to the accuracy for crest factor of 2.0~2.5.
c) Add 7% to the accuracy for crest factor of 2.5~3.0.

3. Resistance

Range	Resolution	Accuracy
600.0Ω	0.1Ω	± (0. 5%+5)
6.000kΩ	0.001kΩ	
60.00kΩ	0.01kΩ	
600.0KΩ	0.1KΩ	
6.000MΩ	0.001 MΩ	
60.00MΩ	0.01MΩ	± (2. 0%+5)

* Range: Measured value = Displayed value – Resistance of shorted test lead
* Overload protection: 1000Vrms (DC/AC).
* Scope to guarantee accuracy: 1~100% of range.

4. Continuity and Diode

Range	Resolution	Accuracy
•))	0. 1Ω	Broken circuit: Resistance ≥50.0Ω, no beep Well-connected circuit: Resistance ≤10Ω, the buzzer beeps continuously
▶|	0. 001V	Open-circuit voltage: About 3V Test current: About 1.0mA For the silicon PN junction, the normal value is generally about 0.5~0.8V. There should be a “beep” sound when the forward voltage drop of diode is connected transiently.

* Overload protection: 1000Vrms (DC/AC).

5. Capacitance

Range	Resolution	Accuracy
60.00nF	0.01nF	± (3. 0%+10)
600.0nF	0.1nF	
6.000μF	0.001μF	
60.00μF	0.01μF	
600.0μF	0.1μF	
6.000mF	0.001mF	± (5. 0%+5)
60.00mF	0.01mF	± (10%)

* Overload protection: 1000Vrms (DC/AC).
* When the measured capacitance is ≤600nF, it is recommended to use REL measurement mode to ensure accuracy.
* Scope to guarantee accuracy: 5~100% of range.

XI. Maintenance and Repair

⚠Warning: Before opening the rear cover of the meter, please be sure that the power is turned off (the test leads are removed from the input terminal and disconnected with the measured circuit).

1. General Maintenance

1) Clean the meter casing with a soft cloth and mild detergent. Do not use abrasives or solvents.
2) If the meter is found abnormal, stop use and send for repair.
3) The maintenance and service must be implemented by qualified professionals or designated departments.

2. Battery Replacement (Figure 7)

When low battery symbol “ ” appears on the LCD, please replace the batteries immediately to ensure measurement accuracy. Battery specification: 2×1.5 V AA.

* Set the power switch at “OFF” position, remove the test lead from the input terminal, and take off the holster.
* Loosen the screw (as shown below) that fixes the battery cover by the screw driver, remove the battery cover, and then replace the battery. Please pay attention to the positive and negative polarity of the new battery.

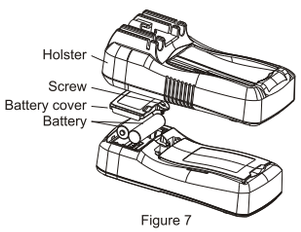


Figure 7

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