UTE9802/9811
Digital Power Meter
User Manual

UTE9802

UTE9811

Preface

Thank you for purchasing this product. In order to use this product safely and correctly, please read this manual thoroughly, especially the safety notes.

After reading this manual, it is recommended to keep the manual at an easily accessible place, preferably close to the device, for future reference.

Copyright Information

Warranty Service

The instrument has a warranty period of one year from the date of purchase. If the instrument is damaged due to improper operation by the user during the warranty period, the maintenance fee and the costs caused by the maintenance shall be borne by the user, and the instrument shall be maintained by the company for life.

If the original purchaser sells or transfers the product to a third party within one year from the date of purchase of the product, the warranty period of one year shall be from the date of the original purchase from UNI-T or an authorized UNI-T distributor. Power cords, accessories and fuses, etc. are not included in this warranty.

If the product is proved to be defective within the warranty period, UNI-T reserves the rights to either repair the defective product without charging of parts and labor, or exchange the defected product to a working equivalent product (determined by UNI-T). Replacement parts, modules and products may be brand new, or perform at the same specifications as brand new products. All original parts, modules, or products which were defective become the property of UNI-T.

The "customer" refers to the individual or entity that is declared in the guarantee. In order to obtain the warranty service, “customer “must inform the defects within the applicable warranty period to UNI-T, and perform appropriate arrangements for the warranty service.

The customer shall be responsible for packing and shipping the defective products to the individual or entity that is declared in the guarantee. In order obtain the warranty service, customer must inform the defects within the applicable warranty period to UNI-T, and perform appropriate arrangements for the warranty service. The customer shall be responsible for packing and shipping the defective products to the designated maintenance center of UNI-T, pay the shipping cost, and provide a copy of the purchase receipt of the original purchaser. If the

products is shipped domestically to the purchase receipt of the original purchaser. If the product is shipped to the location of the UNI-T service center, UNI-T shall pay the return shipping fee. If the product is sent to any other location, the customer shall be responsible for all shipping, duties, taxes, and any other expenses.

Guarantee Limit

This warranty shall not apply to any defects, malfunction or damages caused by accidental, machine parts' wear and tear, using outside the product's specifications, improper use, and improper or lacking of maintenance. UNI-T under the provisions of this warranty has no obligation to provide the following services:

a. Any repair damage caused by the installation, repair, or maintenance of the product by non UNI-T service representatives;
b. Any damage caused by improper use or connection to an incompatible device;
c. Any damage or malfunction caused by the use of a power source not provided by UNI-T;
d. Any maintenance on altered or integrated products (if such alteration or integration leads to an increase in time or difficulty of product maintenance).

This warranty is written by UNI-T for this product and it is used to substitute any other express or implied warranties. UNI-T and its distributors do not offer any implied warranties for merchantability or applicability purposes. For violation of this guarantee, UNI-T is responsible for the repair or replacement of defective products as the only and complete remedy available to customers. Regardless of whether UNI-T and its distributors are informed that any indirect, special, incidental, or consequential damage may occur, the UNI-T and its distributors shall not be responsible for any of these damages.

Safety Instructions

To avoid possible electric shock and personal safety problem, please follow the instructions below. Uni-Trend will not be responsible for the personal safety and property damage caused by the user's failure to comply with the following terms

1. Do not use the damaged instrument. Before using, please check the outer shell whether has crack or plastic lack. Do not use the instrument in flammable and explosive gas, steam or dusty environment.

2. Only trained personnel can maintain procedure to avoid fire and personal injury; there must be personnel supervision in use, otherwise it should be turned off the instrument and its power supply.

3. Before connecting the instrument, observe all marks on the instrument to learn more about the rated value, warnings and notices.

4. The power supply of the instrument is 100-240VAC, 50/60Hz.

5. The instrument is equipped with three core power cord, only use the power cord provided by the manufacturer to avoid accidental injury; do not plug and unplug the power cord when the instrument is energizing; do not put other objects on the power cable when using it, and ensure that the power cable is away from heat source.

5. Instrument grounding：To prevent the risk of electric shock, please connect the power ground wire.

6. Do not install substitutes or perform unauthorized changes; do not use the instrument when the outer shell opened or looseness.

7. During the test, do not touch terminal blocks and test line to prevent from electric shock; do not hot plug the communication port; do not put article on the instrument to protect the instrument, especially pay attention not to let metal chips, water, oil and other liquids into the internal the interior of the instrument, otherwise, it may cause unpredictable and serious consequences.

8. Avoid exposed circuits, do not touch exposed connectors and components after the power is turned on.

9. Use the appropriate fuse, only with the fuse type and rating indicator specified for this product.

10. Do not use instruments that work abnormally; if you suspect that the product has malfunctioned, let qualified maintenance personnel to check the instrument.

11. Unplug the power cord from the power outlet if the instrument is not to be used for a long time. Please do not pull the power cord to unplug it; if the instrument need to move, please make sure the power line and other connecting line is pulled out and use the carrying handle on the side of the instrument, be gentle with it to prevent collision.

Environmental Condition

UTE9802&UTE9811 series can only use indoors and non-condensing area, the general environmental requirements shown as below table:

Environmental Condition	
Operating Environment	5℃～40℃，20%～80%RH（non-condensing）
Accuracy guaranteed temperature and humidity temperature	23℃±5℃，30%～75% R.H.
Storage temperature	-10℃～50℃，non-condensing below 80% R.H.
Operating altitude	≤2000 meter

Explanation: In order to ensure the measurement accuracy, it is recommended to start the operation after half an hour of warm-up on the machine.

Table of Contents

Chapter 1 Inspection and Installment

1.1 Out of Box Audit

Check with packing list to confirm that accessories has no loss. If there have any problem, please contact with our company.

Table 1.1 Packing List

No.	Components	Quantity	Remark
1	Digital power meter	1	UTE9802/UTE9811
2	Power cable	1	
3	RS-232 communication line	1	

Explanation：After confirming that the contents of the package are consistent and there are no problems, please keep the box and related contents properly, when the instrument should meet the encasement requirements when it return to the factory for service.

1.2 Hand Shank

The hand shank can be adjusted, hold the hand shank in both hands and then pull out two flanks to twist it, it can be adjusted to four positions shown as the following Figure:

Figure 1.2.1 Original Position (Factory Setting)

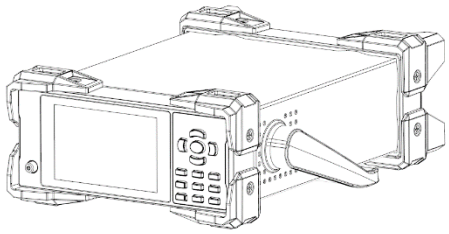


Figure 1.2.2 Testing Position

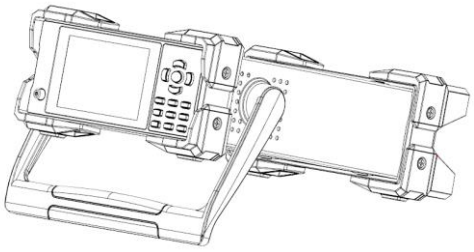


Figure 1.2.3 Remove Hand Shank

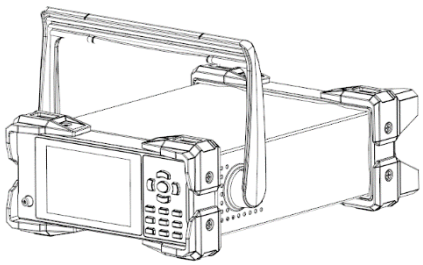


Figure 1.2.4 Lift Position

Chapter 2 Introduction of Product

2.1 Product Overview

Digital power meter is an economic and portable measuring instrument, integrating voltage, current, power, power factor and frequency as a multi-functional measuring instrument with cost-effective, which is widely used in production, testing, evaluation and scientific research and other multi-field.

UTE9802 digital power meter adopts high speed CPU for data processing, voltage and current are sampled by low temperature drift resistor or high precision transformer, so that the sampled signal is not filtered to ensure the stability and accuracy of measurement data.
UTE9802 has true RMS measurement, it can adjust to the electric parameter measurement of various occasions such as full wave, half wave (AC/DC type) and irregular waveform. This instrument can measure voltage (V), current (A), active power (W), power factor P F and frequency Hz. It has perfect functions, superior performance and simple operation.
The instrument can meet the needs of high-speed measurement in production sites, as well as laboratory and R&D measurements. It is widely used in in the fields of lighting appliances, power tools, household appliances, electric motors and electric heating appliances of production lines, laboratories and quality inspection departments Various measurement functions can also be customized according to user requirements to meet higher applications.

Characteristics of UTE9802
1.VA broken code screen display，reading intuitive, it adopts high speed A/D transformer and 32-bit MCU operation.
2. Multi-window simultaneous display of voltage, current, power, power factor/frequency. With stable measurement and fast measurement.
3. Automatic switching of voltage and current ranges to improve measurement accuracy.
4. Measurement accuracy is not affected by waveform, the instrument is high reliability and long life.
5. AC-DC type is more suitable for half-wave rectification measurement, it also can measure the AC component in DC, as well as can be suitable for measuring the DC component in AC, true value (AC + DC).
6. It equipped with RS-232 and RS-485 serial communication interface to communicate with computer or PLC.
7. It can freely set the upper and lower alarm parameters of current and power, sound and light alarm indication, and can set the delay alarm, batch detection to improve efficiency.
8.Communication address：1~32（only for MODE BUS protocol），baud rate：4800, 9600, 19200

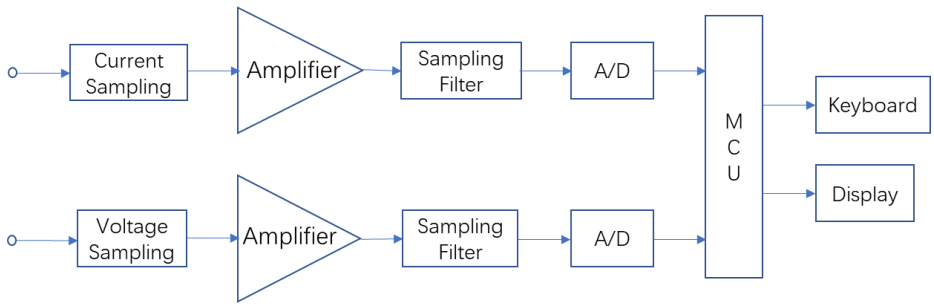
UTE9811 digital power meter adopts high speed DSP processor and PLL (phase-locked loop) for data processing, voltage and current are sampled by low temperature drift resistor or high precision transformer, so that the sampled signal is not filtered to ensure the stability and accuracy of measurement data.
UTE9811 has true RMS measurement, it can measure voltage, current, power, power factor and frequency, voltage crest ratio, and current crest ratio, with harmonic wave analysis and serial communication function.
The instrument has perfect functions, superior performance and simple operation. It can meet the needs of high-speed measurement in production sites, as well as laboratory and R&D measurements. It is widely used in in the fields of lighting appliances, power tools, household appliances, electric motors and electric heating appliances of production lines, laboratories and quality inspection departments.

Characteristics of UTE9811:

1. VA broken code screen display, reading intuitive, it adopts high speed DSP processor and PLL (phase-locked loop) operation.
2. Multi-window simultaneous display of voltage, current, power, power factor, frequency, voltage crest ratio, current crest ratio. With harmonic wave analysis, stable and fast measurement.
3. It adopts PLL simultaneous approach, the maximum of harmonic wave analysis is 50 times.
4. Automatic switching of voltage and current ranges to improve measurement accuracy.
5. The instrument is high reliability and long life.
6. It can set the current, the upper and lower limit of power, automatically determine whether the measured value exceeds the limit, and can set a delayed alarm, sound and light alarm instructions, batch detection to improve efficiency.
7. It equipped with RS-232 and RS-485 serial communication interface to communicate with computer or PLC.
8. Communication address: 1~32 (only for MODE BUS protocol), baud rate: 9600, 19200, 38400, 115200

The basic theory of digital power meter

Figure 2.1.1 Theory Explanation



As shown in the figure, the instrument consists of an analog part and a digital part. The analog part is mainly composed of sensors, multi-grade programmable amplifiers, sampling filters, A/D and other circuits. The digital part consists of microcomputer data memory, keyboard and display.

After the measured voltage signal passes through the voltage sensor, the signal is reduced to a weak signal, which is controlled by the microcomputer according to the signal size, and is amplified by the programmable multi-range, and passed through the sampling filter, the voltage signal is converted into a digital signal by the analog/digital converter A/D. The digital is transmitted to the microcomputer to calculate the voltage true rms value (URMS) and output the value to the display.

After the current signal is passed through the current sensor, the signal is converted into a weak voltage signal, like the measured voltage, which is amplified by a multi-grade programmable amplifier, sampling filter and A/D converter, the true effective value of the voltage (IRMS) is calculated in the microcomputer and output to the display.

2.2 Technical Specification

Table 2.2.1 Technical Specification

Model	UTE9802	UTE9811
Display	VA broken code display,5 digits, four windows	VA broken code display,5 digits, four windows

Display Update Rate		About 3 time per second	Normal mode：about 2 time per second Harmonic analysis mode：about 2 time per second
Measuring Object		V,A,W,PF/Hz	V,A,W,PF/Hz/THD/THD%/CF
Measuring Mode		AC DC AC+DC(T-RMS)	AC
Voltage Range		3.0V-600V(75V/150V/300V/600V)	3.0V-600V (auto range)
Accuracy of Voltage		± (0.4% reading+ 0.1 range+1 digit)	± (0.4% reading+ 0.1 range+1 digit)
Voltage Resolution		0.01V	0.01V/
Current Range		0.5mA-20.0A(500mA/2A/8A/20A)	5.0mA～20.0A (auto range)
Accuracy of Current		± (0.4% reading+ 0.1 range+1 digit)	± (0.4% reading+ 0.1 range+1 digit
Current Resolution		0.0001A /0.001A/0.01A	0.001A/0.01A
Switching Range		Auto/Manual	Auto
Power Range		0.001W～12kW	1W～12kW
Accuracy of Power		± (0.4% reading+ 0.1 range+1 digit)	± (0.4% reading+ 0.1 range+1 digit)
Power Resolution		0.001W/0.01W/0.1W/1W	0.01W/0.1W/1W
Power Factor Range		-1.000～1.000	-1.000～1.000
Accuracy of Power Factor		±(0.004 + 0.001/ reading +1 digit)	±(0.004 + 0.001/ reading +1 digit)
Frequency Range		Basic frequency 40Hz～130Hz,bandwidth：5kHz	Basic frequency:40Hz～70Hz,5kHz
Frequency		±(0.1% reading +1 digit)	±(0.1% reading +1 digit)
Auto Range	Range increasing	Measured value exceeds about 1 1 0 % rated range (C F < 2)	Measured value exceeds about 1 1 0 % rated range (C F < 2)
	Range decreasing	Measured range lower than about 3 0 % rated range (C F < 2)	Measured range lower than about 3 0 % rated range (C F < 2)
Time of Harmonic Wave		/	1～50 times
Accuracy of Harmonic Wave		/	土(0 . 3 % range+ 5 % reading)
Pre-heating Time		>30min	>30 min
Current Peak		The maximum display 22A	The maximum display 22A
Maximum of Input Allowed for Connection		Voltage 660V，current 22A	Voltage 660V，current 22A
Maximum of Input Instant Allowed		1000V,40A(1 second)	1000V,40A(1 second)
Input Impedance		Voltage over than 1MΩ，current less than 0.02Ω	Voltage over than 1MΩ，current less than 0.02Ω
Guarantee Period of Accuracy		One year	
Upper/Lower Limit		Four settings of the upper/lower limit of power and current： P Hi (Power high), P Lo(Power low), A Hi(Current high), A Lo(Current low)	

Interface	RS232（DB9;2-pin:TX、3-pin: RX、5-pin: GND） RS485（DB9;8-pin:A、9-pin:B）	
Baud Rate	4800, 9600, 19200 optional	9600, 19200, 38400, 115200 optional
Display-hold	√	
Mute	√	
Key Sound	√	
Power Supply	Input power：AC 86-265V　Frequency：50/60Hz	
Precision Environment	18℃～28℃，30%～75%RH	
Storage Temperature	-10℃～50℃，non-condensing below 80% RH	
Operating Altitude	≤2000 meter	
General Characteristic		
Color	Gray	
Weight	3.2kg	
Size	214mm×88.2mm×340mm	
Standard Accessories	Power cable x1；　RS232 data cable x1	
Optional Accessories	UTE-L10A　10A three-pronged plug convert banana head plug connection cable x1 UTE-L16C　16A connection cable with alligator clip x1 UTE-L16A　16A three-pronged plug, banana plug connection cable x1	
Standard Packing Quantity	2	
Standard Packing Size	405mmx330mmx395mm	

2.3 Front Panel

The front panel of UTE9802, as shown in Figure 2.3.1

Figure 2.3.1 UTE9802 Front Panel

Key and function on the front panel:

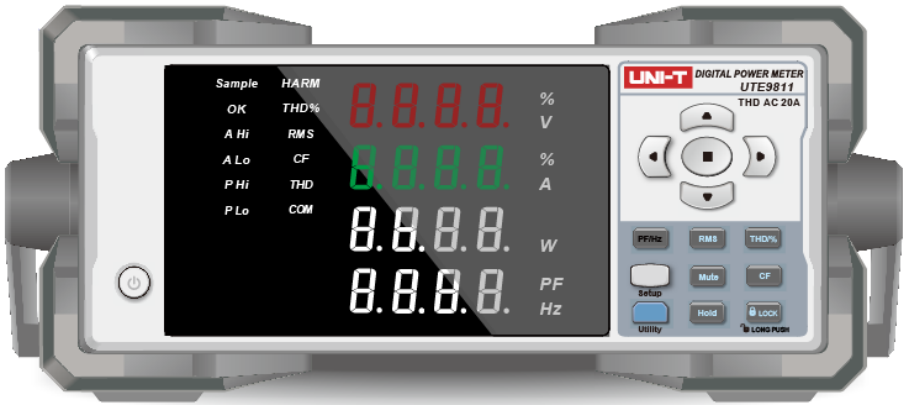
Table 2.3.1 UTE9802 Parts on Front Panel

Function	Symbol	Description
Display Window	---	Four windows, simultaneous display voltage V, current A, power W, power factor PF and frequency Hz.
ON/OFF		Turn on/off the power supply, press down to enable the instrument, and press the key to pop out to disable it.
Data Hold		Data hold key to remain the current data when enable the instrument.

PF/Hz		Switch PF, Hz
Voltage Range		Press this key to step through range and auto range, Vauto means voltage auto range, the fourth grade is automatically to be the best grade, otherwise, it to be manual range.
Current Range		Press this key to step through range and auto range, Aauto means current auto range, the fourth grade is automatically to be the best grade, otherwise, it to be manual range.
Setup		Set the upper/lower limit of current and power; alarm delay; communication address; baud rate.
Mute		The buzzer alarm can be muted when the limit is exceeded, and the mute button light is on, press again to recover the function.
Clear		Press this key and then press OK key to enter zero calibration mode. Zero clearing means clear all the current data to zero, performing the zero calibration mode.
Mode Switch		It can be select DC, AC, AC/DC measurement mode.
Lock		Press this key to lock all the keys, long press 1 second to unlock.

Front panel of UTE9811，as shown in Figure 2.3.2

Figure 2.3.2 UTE9811 Front Panel



Key and function on the front panel

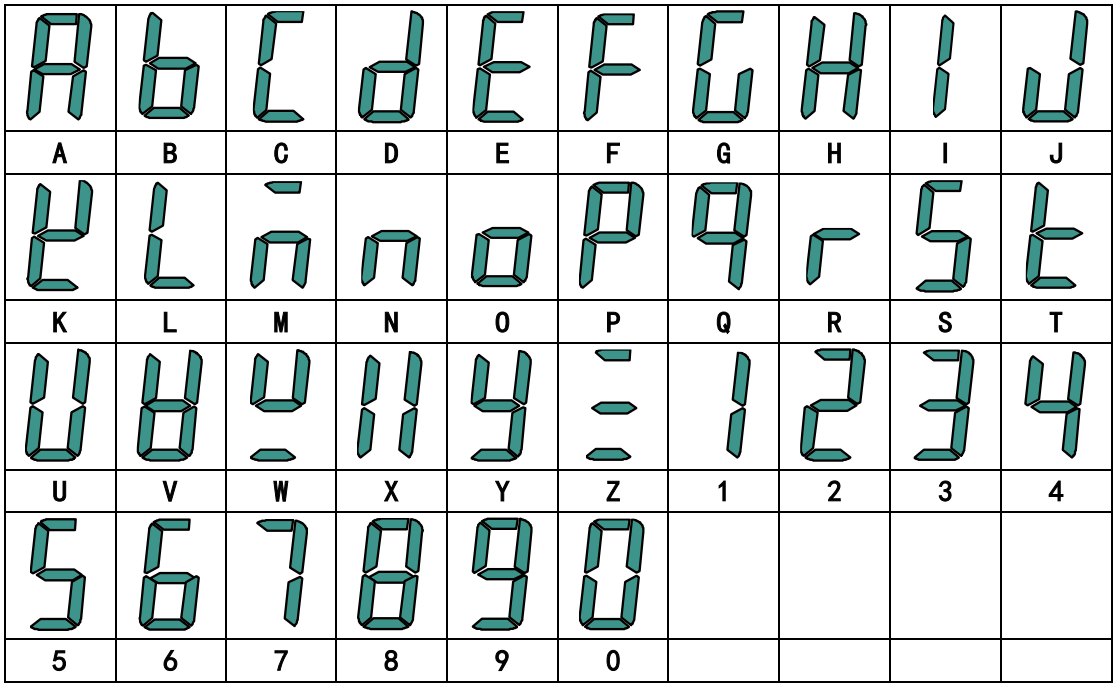
Table 2.3.2 UTE9811 Parts on Front Panel

Function	Symbol	Description
Display Window	---	Four windows，simultaneous display voltage V, current A, power W, power factor PF and frequency Hz
ON/OFF		Turn on/off the power supply, press down to enable the instrument, and press the key to pop out to disable it.
Data Hold		Data hold key to remain the current data when enable the instrument.

PF/Hz		Switch PF, Hz
RMS		Root mean square
Relative/Absolute value of Harmonic Wave		THD voltage, Total Harmonic Distortion / Relative Value of Sub-harmonic Distortion THD% voltage, Total Harmonic Distortion / Relative Value of Sub-harmonic Distortion
Setup		Set the upper/lower limit of current and power; alarm delay; communication address; baud rate.
Mute		The buzzer alarm can be muted when the limit is exceeded, and the mute button light is on, press again to recover the function.
Crest Ratio		Crest ratio of voltage/current.
Mode Switch		It can select HARM or RMS measurement mode.
Lock		Press this key to lock all the keys, long press 1 second to unlock.

2.4 Digital and Character Display

Figure 2.4.1 Digital and Character Display



2.5 Rear Panel

Figure 2.5.1 UTE9802/UTE9811 Rear Panel

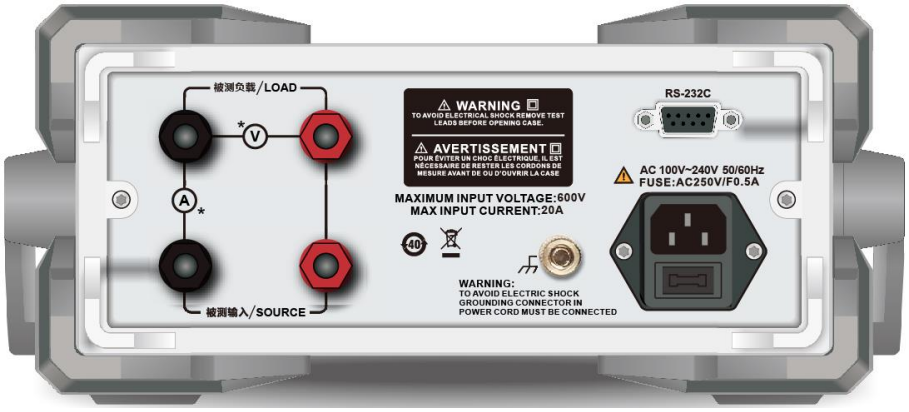


Table 2.5.1 UTE9802&UTE9811 Key and Function on Rear Panel

No.	Picture of parts	Description
1		Under test load/LOAD terminal
2		Under test input terminal /SOURCE terminal
3		Three-wire power socket and fuse
4		Waste Electrical and Electronic Equipment (WEEE) Instruction 2002/96/EC Do not dispose the product in trash bin.
5		Ground terminal for chassis and Warning: before operating the power, please make sure the instrument is well grounded.
6		This product contains certain hazardous substances and can be used safely during its environmental-friendly use period (EFUP) of 40 years, as shown in the symbol on the left. If the specified time is exceeded, the product should be recovered.
7		Warning：To prevent electric shock, be sure to turn off the power and remove the power cord and test leads before opening the cover.
8		Maximum input voltage and current The specific voltage and current to the machine panel identification shall prevail.
9		RS232 communication interface， serial communication interface between the instrument and external devices, non-SCPI communication, see Chapter 5 RS232 communication introduction for details.

Chapter 3 Operating Instruction and Measurement Display

3.1 Before Use

3.1.1 Connecting Power Cable

The operating voltage of the instrument is 220V±10%, please make sure the power supply is within the rated voltage of this instrument, and make sure the instrument is well grounded.

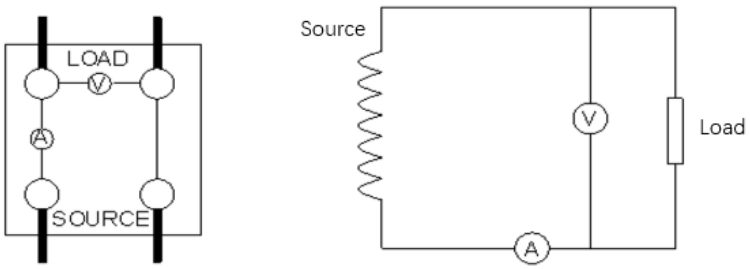
Warning: Please make sure that the power supply voltage matches the supply voltage before turning on the power supply, otherwise the instrument will be burned out.

Note: The instrument should be used under the recommended working conditions. Never use the instrument in a place where have flammable or explosive materials, it may cause safety injuries.

3.1.2 Connecting Test Circuit

Please follow Figure 3.1.1 to connect the power and load, and make sure voltage, current within the measurement range.

Figure 3.1.1 Connecting Test Circuit



Warning:

1. The load current flows along the thick wire in the above diagram, so these wires should have a large enough safe load capacity.
2. The power supply of the load and the power supply of the instrument should be turned off when wiring at the load end.

Note:

1) When measuring large current/voltage or the current includes high frequency, it should pay attention to possible mutual interference and noise problems when wiring.
2) The lead wire should as short as possible.
3) Use heavy gauge wire as can as possible when measuring current.
4) To reduce the distributed capacitance to ground, the wire and grounding wire should be as far away from the instrument housing as possible.

3.1.3 Turn ON/OFF Power

Turn on：Start self-check program when the instrument is enabled, enter the measuring state if the check result is correct.
Turn off：The upper/lower limit of current and power will be saved when the power has been turned off.
Note：After turn off the power, wait 5 seconds to turn on again, otherwise the instrument may abnormally display.

3.1.4 Measurement

Firstly, plug in the power socket on the rear panel, and use the specified voltage, the power socket should be with a ground wire. After checking the wiring is connect rightly, turn on the instrument switch located at the front panel, and the instrument will enter the measurement state. Apply power to the load and read out the required measurement value from the display on the front panel of the instrument after the load has been working stably.

Note: The instrument should be preheated for 30 minutes before entering the stable state. After cutting off the instrument power, it should wait for more than 5 seconds before powering it on again. It is strictly forbidden to switch the power on and off repeatedly within a short period of time, which will cause the instrument life to shorten and may cause instrument failure. When the measurement is finished, turn off the instrument power and unplug it to prevent possible damage to the instrument caused by lightning strikes.

3.2 Measurement Display

3.2.1 Window Display

UTE9802 and UTE9811 both have four window display, it can display different measured value at the same time, the testing range is also different, see the below table 3.2.1 for more details.

Table 3.2.1 UTE9802/UTE9811 Window Display

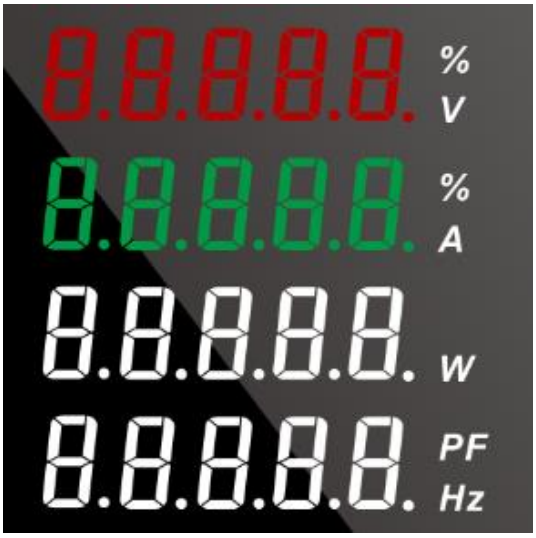
No.	Window Display	Name	Testing Range	Model
1	V	Voltage(Volt)	U: 3.0V ~ 600V	UTE9802, UTE9811
2	A/mA	Current （Ampere/milliampere）	I: 0.0005A ~ 20A	UTE9802
			I: 0.005A ~ 20A	UTE9811
3	W	Active power（Watt）	P: 0.001W ~ 12kW	UTE9802
			P: 1W ~ 12kW	UTE9811
4	PF	Power factor	PF: -1.000~1.000	UTE9802, UTE9811
	Hz	Frequency（Hertz）	Hz: 40Hz ~ 130Hz	UTE9802
			Hz: 40Hz ~ 70Hz	UTE9811

Note：
(1) If the input signal is very small, the frequency will be showed “0.00”
(2) It cannot be used beyond the measurement range indicated on the instrument.

UTE9802&UTE9811 have five parameters and four window display. Voltage V, current A, active power W will

display at the same time, power factor PF and frequency Hz will display by switching the function key. As shown in Figure 3.2.1.

Figure 3.2.1 UTE9802&UTE9811 Window Display



3.2.2 Data Hold

Press Hold key to remain the current measured data (hold state), press Hold key again, Hold indicator light will be light off and return to the common measuring state.

3.2.3 Lock

To prevent from error operating during measurement, Lock key can set other key be invalid (Lock stat). Lock indicator light will be light on when press Lock key. Press one time will not work, it should be long press for 1 second to light off the indicator light and all the key return to use state.

3.3 UTE9802 Measuring Mode

3.3.1 AC Measuring Mode

Mode selection：Press “UTILITY” key to select AC measuring mode.
Measured object：AC mode is for signal which basic frequency 45Hz～130Hz, bandwidth 5kHz, it can be accurate measuring and display the electric parameter value of AC component.

3.3.2 DC Measuring Mode

Mode selection：Press “UTILITY” key to select DC measuring mode.
Measured object：DC mode is for basic frequency which is DC signal, it can be accurate measuring and display the electric parameter value of DC component.
Note：Before using this mode, the instrument can operating zero clearing to voltage and current channel according to the actual state.

3.3.3 AC+DC Measuring Mode

Mode selection: Press "UTILITY" key to select AC+DC measuring mode.
Measured object: AC+DC mode is for basic frequency which is DC signal or basic frequency 45Hz ~ 130Hz, bandwidth 5kHz, it can be accurate measuring and display the electric parameter value of measured object (TRMS), such as the common half wave rectification.
Note: Before using this mode, the instrument can operating zero clearing to voltage and current channel according to the actual state.

3.3.4 Measuring Mode Selection

When measured object waveform is symmetrical alternating current wave, the measuring mode can select AC mode, which can eliminate the influence of the zero position. If the measured object waveform is DC and ripple is very small, the measuring mode can select DC mode, which can eliminate the influence of AC signal.
If the measured object is not the two state mentioned above or the waveform is unknown, the measuring mode be AC+DC mode, which can accurate measuring the true virtual value of measured object.

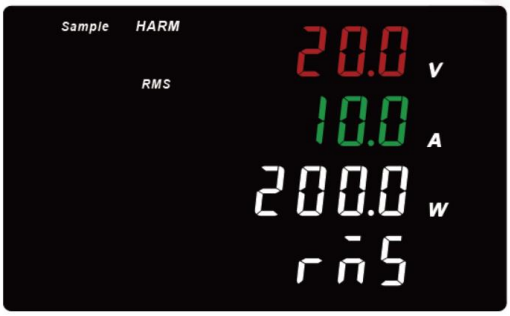
3.4 UTE9811 Measuring Mode

3.4.1 Normal Measuring Mode

The top left corner of "HARM" is not displayed for normal mode; "RMS" is the true value measurement state, which can be accurate measuring and display the value of its AC parameters; "CF" is the crest measurement state, which can be accurate measuring and display the crest ratio of voltage and current, power and frequency, power factor of the load.

3.4.2 Harmonic Wave Measuring Mode

Press "UTILITY" key, HARM will be displayed in the top left corner, select it to enter the harmonic wave analysis measurement mode, press this key again to exit the analysis mode. User can also press "THD/%" key to enter analysis mode directly in normal mode.
The display is as follows.



Press "THD/%" key to select "THD%" mode to enter the relative value of total harmonic wave measurement. Press "▲, ▼" to select the relative value of sub-harmonic wave.

Total Harmonic Wave

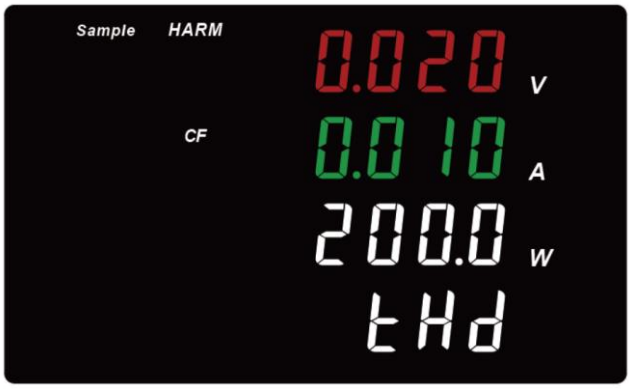
First Harmonic Wave

Press "THD/%" key to select "THD%" mode to enter the relative value of total harmonic wave measurement. Press "▲, ▼" to select the absolute value of sub-harmonic wave.

Total Harmonic Wave

First Harmonic Wave

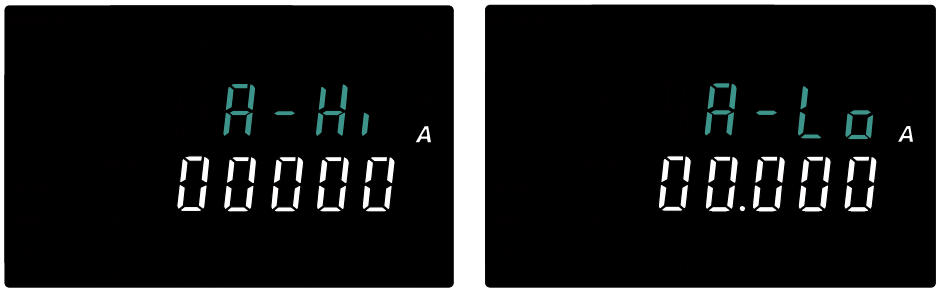
Press "CF" to enter voltage and current crest ratio measurement



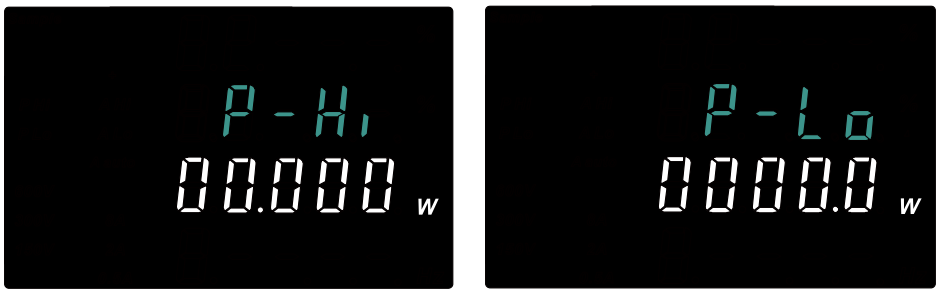
Chapter 4 SETUP Function

Press【SETUP】 to enter the setup page, and then press the direction key to enter parameter, continue to press 【SETUP】key to enter the next parameter setting.

4.1 The upper/lower limit of Current



4.2 The upper/lower limit of Power



4.3 Time Setting of Alarm Delay

4.4 Communication Address

Remark：This setting only for MODE BUS communication protocol

4.5 Baud Rate

Sorting Function

When the production is finished, it should have inspection test in in production lines. Quality inspector often need to test a large number of finished products with the same specifications to judge the quality of the batch. In order to improve the testing efficiency, a certain range can be set within the instrument, and the instrument will judge whether the product is qualified or not, improving the efficiency of reading and judgment, reducing the work press of operators and greatly improving the testing efficiency.

In order to get the correct sorting results, it is necessary to set the correct parameters of the instrument. User can set the upper/lower limit value of the current and power. If the measuring value of the measured object is greater than the upper limit of the set value, or less than the lower limit of the set value, that means the measured object is not qualified, the beeper will be sound. The upper limit value must be larger than the lower limit value, thus it will be normal alarmed. When the upper and lower limit values are the same, it does not make alarm sound. When the measured value is zero, the instrument does not make determination of the upper and lower limit of power.

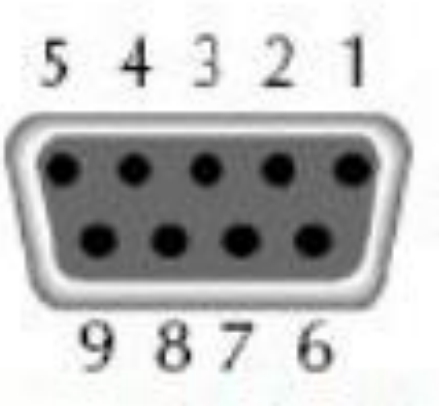
Chapter 5 RS232 Communication

5.1 Overview

UTE9802 and UTE98011 are equipped with standard RS232 communication mode, remote operation can be performed using the appropriate communication cable as needed. There is a DB9 main connector (i.e. RS232 interface) at the end of the digital power meter, as shown in Figure 5.1.1, which can be connected to the COM port of the computer using a standard RS-232 cable.

1. DB9 Serial Interface and the Definition of Pin

Figure 5.1.1 RS-232 Interface（DB9 Port）



1	NC
2	TXD（RS232）
3	RXD（RS232）
4	NC
5	GND（RS232）
6	NC
7	NC
8	A(RS485)
9	B(RS485)

2. Communication Setting

Before communication, the digital power meter should match with the following parameters of the control host

Baud rate：

UTE9802: 4800, 9600, 19200

UTE9811: 9600, 19200, 38400, 115200

Check bit：NONE (fixed value)

Data bit：8

Stop bit：1 (fixed value)

Chapter 6 Storage and Calibration

6.1 Notice Matters of Storage

6.1.1 The instrument should be stored in the environment specified in the user manual, refer to Chapter 2.2 Storage Environment Requirements. Do not store the instrument in a place with high temperature, high humidity, temperature rapid change or easy condensation. The recommended storage environment is dry and at a temperature of about 20°C.

6.1.2 Keep product' s packaging materials (cardboard boxes, padding, plastic bags, etc.) for later delivery of instruments. Using packaging materials to transport instruments can protect them from sudden temperature changes, shocks and vibrations, and protect them from damage during transportation.

6.1.3 Do not store the instrument in an environment with dust, fumes or chemical gases.

6.1.4 Avoid direct sunlight.

6.2 Trouble-shooting

No.	Problem	Solution
1	No widow display when enable the instrument	(1) make sure the power cable is well connecting. (2) make sure the supply power is within the allowed power range
2	Displayed measurement value is incorrect	(1) make sure the operating temperature and humidity within the allowed range. (2) make sure the display is away from noise interference. (3) check whether the test wire is well connecting. (4) check whether the wire is connect correctly. (5) check whether data display is in the lock state (6) reboot
3	Key function failure	(1) check whether key is stuck.
4	Communication failure	(1) check whether communication cable is well connecting, (T X / R X or A / B signal is corresponding) . (2) check whether the instrument address match with the upper computer.

Other situation refer to notice matters in each chapter.

6.3 Notice Matters of Calibration

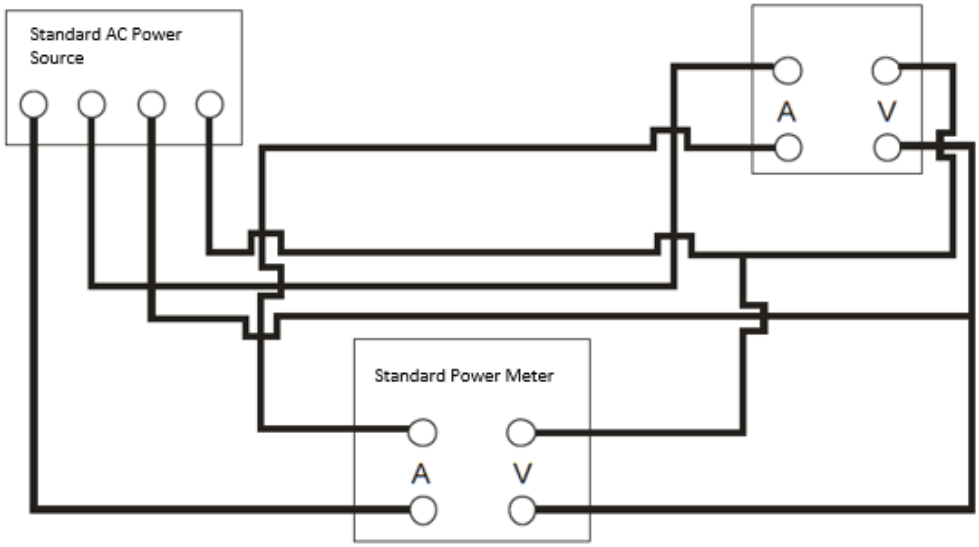
Verification and Calibration

Wire jumper connect with the measured instrument on the rear should remove. The precision of standard meter should over a grade than measured meter, standard source should be stable. All the instrument power on 15 minute to stabilize, slowly adjust the output voltage or current of the standard AC source. Observing the standard meter to reading out the required value precisely, record the data of the standard meter and measured meter after the data is stable, and calculating the measuring error value to judge whether is within the error range.

Article	Reference value or range	Reference value or range
Environment temperature ℃	23	±5
Environment humidity % RH	45～75	
Barometric pressure KPa	86～106	
AC power supply voltage V	220	±2%
AC power supply frequency Hz	50	±1%
Ac power supply waveform	sine	ß= 0.05
External electromagnetic field interference	Avoid	
Ventilation	Well-condition	
Sunlight	Avoid direct sunlight	

Note： The inspect equipment should meet the specifications of the regular metrological verification, measurement period is one year.

Figure 6.3.1 Wiring Scheme of Verification and Calibration



Chapter 7 Appendix

7.1 Optional Testing Wire

Uni-trend company provides optional testing wire, there are three model UTE-L16A, UTE-L10A,UTE-L16C, as shown in Figure 7.1.1, user can purchase one or multiple testing wires according own needs. The following Table 7.1.1 is match solution for user to reference. Please note the specifications and the maximum current and voltage in the table.

Figure 7.1.1 Testing Wire UTE-L16A, UTE-L10A, UTE-L16C

Note: The above figure is optional testing wire, not equipped with the instrument. It should purchase by your own.

Table 7.1.1 Match Solution of Testing Wire

Match Solution	Name	Component and Name	Specification of Voltage/Current	Length	Recommended Appliance
Solution 1	10A testing wire and accessories	UTE-L10A 10A three-pronged plug convert banana head connect wire	250V/10A	1.2m	Small appliances, such as fan, hairdryer, rice cooker and other appliances with a current not exceeding 10A
		UTE-L16C 16A connect wire with alligator clip	220V/16A		
Solution 2	16A testing wire and accessories	UTE-L16A 16A three-pronged convert banana head connect wire	250V/16A	1.2m	High power appliances, such as air conditioner, electric water heater and other appliances with a current not exceeding 16A
		UTE-L16C 16A connect wire with alligator clip	220V/16A		

Figure 7.1.2 Connect Scheme of Testing Wire

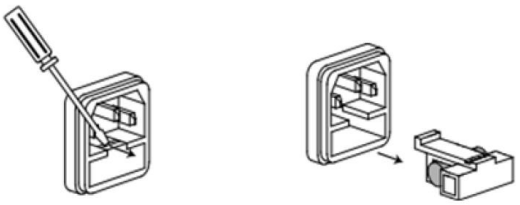
Warning：Before connect with circuit, please make sure the power is cut off to prevent from electric shock.

7.2 Specification of Fuse

This instrument has 1 spare fuse stored in the fuse box. If the fuse was burned out, replace the fuse as the follow steps：

1） Pull out the power cable, use small screwdriver to take out the fuse box, as shown in Figure 7.2.1.

Figure 7.2.1 Take Out Fuse Box



If the fuse was burned out, please replace the same specification fuse with the instrument.

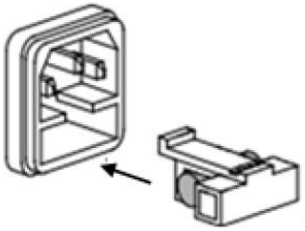
The specification fuse with the instrument, see the following table,

Table 7.2.1 Fuse Model and Specification

Model	Specification
UTE9802/UTE9811	AC250V F0.5A

3） After the replacement, please put the fuse box back , as shown in Figure 7.2.2.

Figure 7.2.2 Install Fuse Box



UNI-T
UNI-TREND TECHNOLOGY (CHINA) CO., LTD.
No. 6, Gong Ye Bei 1st Road,
Songshan Lake National High-Tech Industrial
Development Zone, Dongguan City,
Guangdong Province, China