WASITES

Instruction manual

AC and DC electric parameter measuring instrument

WT802

Foshan Huazhike Electronic Technology Co. , Ltd.

Introduction

Thank you for choosing our products. To ensure that users can use this product correctly, please read the product manual carefully before use. Check the packing list of this instruction sheet to confirm the products and accessories. If not, please contact our company or agent.

Points to note

1. This manual is to be used in conjunction with the instrument, and is subject to change without prior notice. 2. The contents of this manual have been confirmed to be correct, and the user has used the simplest way to express the user's understandability of the manual. If you find any error or unclear explanation, please contact our company or agent. Version: V1.0

Warning

For your personal safety and the correct use of this instrument, please comply with the requirements of this manual for operation and measurement, and pay strict attention to the following safety requirements. 1. Power supply and earthing protection, this product work power supply for AC86-265V power supply, before opening the power supply should ensure that the power supply and the rated voltage match, and ensure that the power supply has been connected to protect the earth wire, in order to prevent electric shock, the instrument shell has been connected to the power outlet Earth Terminal. 2. Please do not operate in an explosive environment, in order to avoid explosion caused personal injury. 3. Please do not open the case of the instrument, the instrument has a high voltage in some places to prevent electric shock. Four. It is not allowed to plug or unplug the terminals in case of electric shock. 5. If it is because of the equipment damage caused by the violation of the safety regulations, the company will not assume responsibility for the task.

1. Overview

The electric parameter tester adopts high-speed CPU for data processing, voltage adopts low-temperature drift resistance and current adopts high-precision four-wire resistance sampling, so the sampling signal is not filtered, the stability and accuracy of the measured data are ensured. With true RMS measurement, can adapt to full-wave, half-wave (AC/DC Type) , irregular waveform and other occasions electrical parameters measurement. The instrument can measure voltage (V) , current (a) , active power (W) , power factor PF, frequency Hz and other parameters. With perfect function, superior performance and simple operation, the instrument can meet the needs of high-speed measurement on the production site, as well as laboratory and R & D measurement. Widely used in lighting appliances, power tools, household appliances, motors, electric appliances and other fields of production lines, laboratories, quality inspection departments. According to the real demand can also customize a variety of measurement functions to meet the higher application.

The AC/DC electric parameter measuring instrument has the following characteristics:

1.Digital display, intuitive reading, using high-speed ADC and 32-bit MCU operation.

2.Multi-window display voltage, current, power, power factor/frequency, stable and fast measurement.

3.The range of voltage and current can be changed automatically to improve the measuring precision.

4.The measurement accuracy is not affected by the waveform, high reliability, long life.

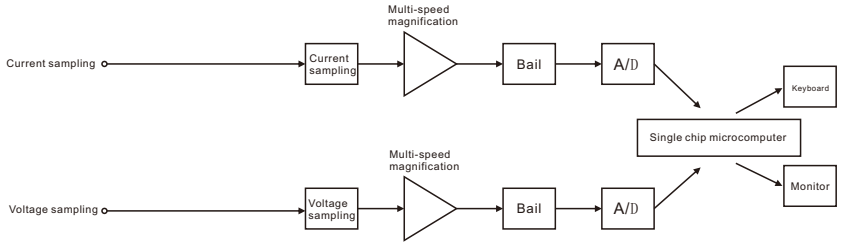
5.AC-DC type is more suitable for the measurement of half-wave rectifier, can also measure the AC component of DC, can also be suitable for measuring the DC component of AC，Value（AC+DC）。

6.With RS-232, RS485(optional) serial communication interface, easy to communicate with the computer or PLC..

7.Can freely set the upper and lower limit alarm parameters of voltage, current, power, power factor, sound and light alarm indication, and can set delay alarm, batch detection to improve efficiency.

8.Addresses: 1-254, baud rate: 4800/9600,19200

2. Basic principles



Basic block diagram

As shown, the instrument consists of an analog part and a digital part. The analog part is mainly composed of sensor, multi-stage programmable amplifier, sample-and-hold, a/D circuit and so on. The digital part consists of a microcomputer data memory, keyboard and monitor. After the measured voltage signal passes through the voltage sensor, the signal is reduced to a weak signal. According to the signal size, the microcomputer is controlled to carry out program-controlled multi-range amplification, and through a sample-and-hold device, an analog-to-digital converter (ADC) converts the voltage signal into a digital signal and transmits the digital signal to the microcomputer, calculates the true effective voltage (URMS) and outputs the digital value to the display. After the measured current signal passes through the current sensor, the signal is converted into a weak voltage signal, which, like the measured voltage, is amplified, sampled and held, and converted into a/D by multi-stage program control, calculate the true effective voltage (IRMS) in the microcomputer and output the value to the display.

3. Technical specifications

Indicators \ Models	WT802
Voltage measurement range AC/DC	3～600V(75V/150V/300V600V)(Manual/automatic measuring range)
Current measurement rangeAC/DC	0.5mA-20A(500mA/2A/8A/20A)(Manual/automatic measuring range)
Power measurement range AC/DC	0.001～12000W
Power factor measurement range	-1.000～1.000
Frequency measurement range	Kibo 40～130Hz,Bandwidth 5KHz
Input impedance	Voltage greater than 5MR, current less than 0.02 R
Continuous maximum allowed input	Voltage 700V, current 24A
The maximum input is allowed instantaneously	1000V,40A(Time1S)
Automatic range upgrade	The measured value exceeds about 110% of the rated range(CF<3)
Automatic range down gear	The measured value is below about 30% of the rated range(CF<3)
Sorting alarm function	With voltage, current, power, power factor set upper and lower limit alarm function, alarm delay.

3.1. Basic error

Project	Accuracy	Resolution
Voltage	±(0.3%Readings+0.1%Range+1Word)	0.1
Current		0.1mA/0.001A
Power		0.001
Power factor	±(0.001/Readings+0.004+1Word)	0.001
Frequency	±(0.1%Readings+1Word)	0.1

3. 2. General technical specifications

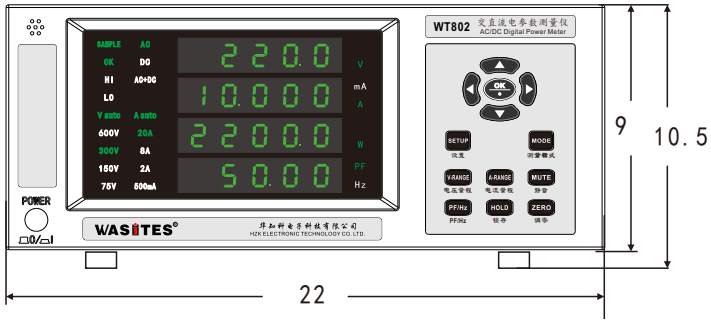
Warm-up time	≥30Minutes
Environment	5～40℃,20%～80%RH(No Dew)
Insulation	The insulation resistance between the signal input terminal, the housing and the power input terminal is greater than 10MΩ
Withstand pressure	1 minute withstand voltage AC2000V between signal input terminal and shell, signal input terminal and power input terminal, 1 minute withstand voltage DC2200V between shell and power input terminal
Operating voltage	86-265V±%10,50Hz/60Hz
Power consumption	≈3W
Size of chassis	252mmx116mmx385.5mm (WxHxD)
NET weight	≈4.0kg

3.3.Communication settings

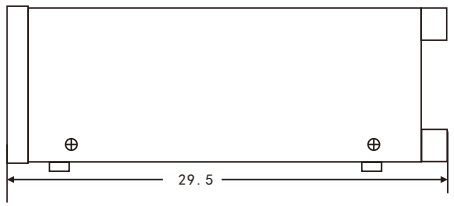
Communication interface	RS232 (DB9; 2Feet:TX、3Feet:RX、5Feet:GND) RS485 (DB9; 8Feet:A、9Feet:B)(Matching)
Address	1-254
Baud rate	4800、9600、19200

4. Panel description

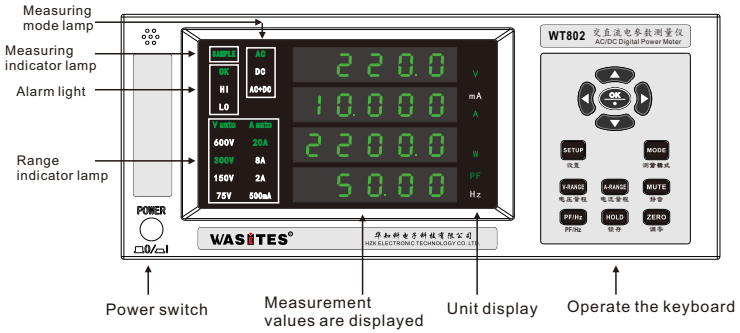
4. 1. Front and dimensions(CM)



Side



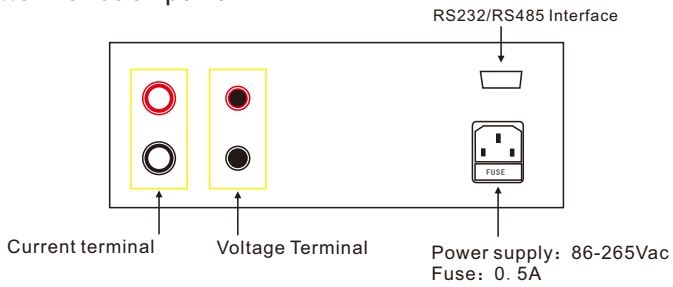
4. 2. Description



Key	Lights	Description
Set+Key		Set voltage, current, power, power factor alarm value, alarm delay, communication address and baud rate, alarm sound setting.
MODE	AC、DC、AD+DC	Select DC, AC, AC and DC measurement mode
V-RANGE	Vauto 600V、300V 150V、75V	Press this key to cycle to switch the range and automatic range, there is a display for automatic range Vauto, four-shift automatic selection of the best gear, or manual range.
A-RANGE	Aauto 20A、8A 2A、500mA	Press this key to cycle to switch the range and automatic range, Aauto display for automatic range, four-gear automatically select the best gear, or manual range.
MUTE	OK	When the measurement value is beyond the limit, press this key to prevent the current alarm beeping sound, again when there is an alarm to sound again, can be set in the menu settings never alarm sound.
PF/Hz	PF、Hz	SwitchPF,Hz
HOLD	SAMPLE	Lock display value, SAMPLE indicator no longer flashing, press again to unlock
ZERO		Press this key, then press OK key, that is to enter the zero state, zero refers to the current voltage and current channel zero value, reset zero.

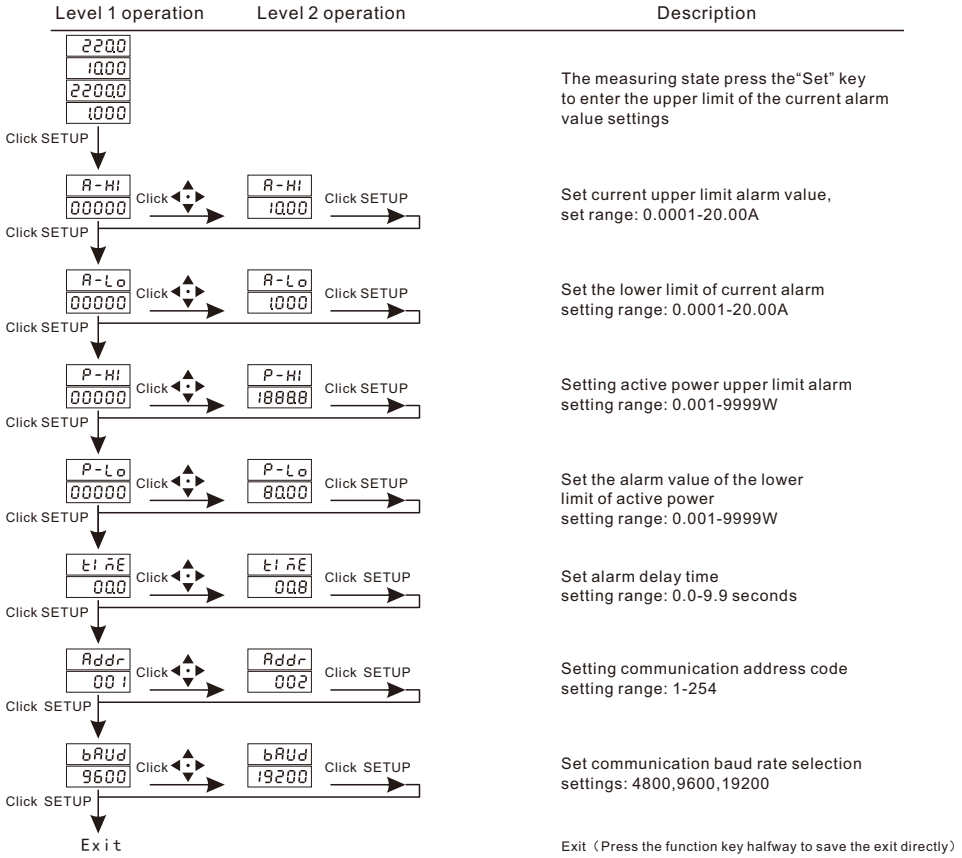
	Key	Description
The menu sets the button instructions	**SETUP**	Enter setup and setup confirmation
	^	Increase in value
	v	The value decreases
	<	The cursor moves to the left
	>	The cursor moves to the right
	ok/.	Decimal Point Displacement; zero is the confirmation key.

4. 3. Pattern of back panel



Components	Functional description
Current terminal	Current measuring terminal
Voltage Terminal	Voltage measuring terminal
RS232/RS485 Interface	RS232（DB9；2:TX、3:RX、5:GND） RS485(DB9;8:A,9:B)(Option)
Power supply	Power supply：86-265Vac Fuse：0. 5A

5. Operation Instructions



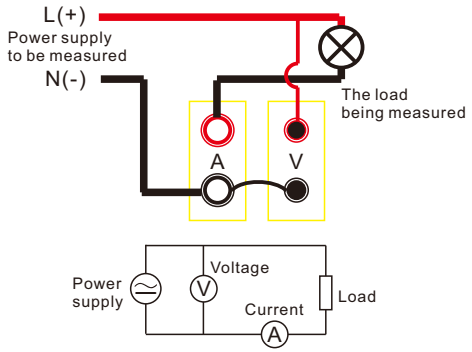
6. Operation Instructions

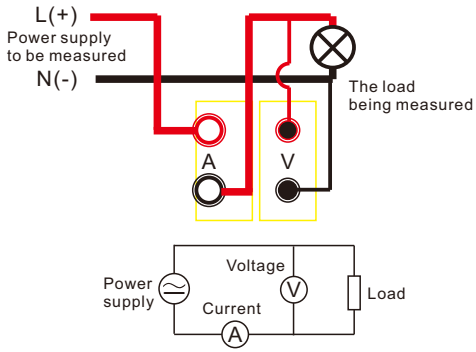
Measure wiring according to the following diagram wiring

Choose enough connecting wire according to the load current (the load current flows along the thick wire in the figure above) to avoid too much resistance of the wire, causing additional measurement error, and possibly causing the wire to heat up, dangerous. The wire should be as short as possible and should be as far away from the instrument enclosure as possible.

In wiring, should let the wire and terminal contact between good, contact surface as large as possible, and should tighten the terminal. Do not detach the wire from the terminal or make the wire contact with the instrument behind, so as to avoid danger.

In the measured voltage or current has high-frequency components, or measuring large current, wiring should be aware of possible interference and noise, affect the measurement accuracy.
In order to ensure the stability and accuracy of measuring current, it is necessary to add voltage signal at the voltage end.





7. Turn on the measurement

First plug in the power outlet on the back panel of the instrument, and use the specified instrument power supply voltage, the power outlet should be with ground wire. After checking the wiring is correct, turn on the instrument switch located in the front panel of the instrument, the instrument into a measuring state. Power on the load, and so on after the load is stable, the instrument can be read from the front panel of the display on the required measurement values. Note: the instrument should be preheated for 30 minutes before putting into a stable state. After cutting off the power supply of the instrument, it should wait more than 10 seconds before turning on the power again. It is strictly forbidden to switch the power supply repeatedly in a short period of time. This will shorten the life of the instrument, and may cause instrument failure. When the measurement is finished, turn off the power, and unplug the plug to prevent possible lightning damage to the instrument.

8.AC/DC/AC+DC Measurement mode

8.1.AC Measurement mode

Mode selection: press the“Mode” key to select AC measurement MODE

The measuring object: for the signal whose basic frequency is 45HZ ~ 130Hz and bandwidth is 5KHz, this mode can measure and display the electrical parameters of AC component accurately.

8.2.DC Measurement mode

Mode selection: press the“Mode” key to select DC measurement MODE

Object of measurement: for DC signal with fundamental frequency, select this mode can accurately measure and display the value of DC component electrical parameters

Note: before using this mode. According to the actual situation, the instrument voltage and current channels can be zero

8.3.AC+DC Measurement mode

Mode selection: press the“MODE” key to select AC+DC Measurement mode

Measuring object: for the signal whose basic frequency is DC or 45 hz-130 Hz and the bandwidth is 5 khz, select this mode to measure and display the electric parameter value of the measured signal accurately (true effective value) , such as the common half wave rectifier signal.

Note: before using this mode, according to the actual situation, the instrument voltage and current channels can be zero

8.4.Selection of measurement mode

When the waveform of the measured object is symmetrical AC waveform, AC measurement mode can be chosen to eliminate the influence of the zero position of the instrument.

When the waveform of the measured object is DC and the ripple is very small, the DC measurement mode can be chosen to eliminate the influence of the external AC signal,

AC + DC mode can be used when the waveform of the measured object is neither symmetrical AC waveform nor pure DC waveform, or when the waveform of the measured object is unknown. The true effective value of the measured object can be accurately measured at this time.

8.5.Automatic Range

Voltage and current shift conditions: measuring values above about 110% of the rated range to upgrade, below about 30% of the rated range to downshift measurement. When the peak factor is greater than 3, the shift conditions will change. Therefore, even if the measurements are the same, the ranges may be different. For routine use, the instrument automatically selects the range of the last shutdown when it is turned on. Pay attention when measuring high values, pay attention to select the appropriate gear.

When the input value is greater than 120% of the range, the overrange processing is displayed, and“OL” is displayed at the corresponding position.

9. Sorting function

During the inspection of finished products on the production line, it is necessary 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 in the instrument to judge whether the product is qualified or not, which eliminates the operator's reading and judgment, reduces the operator's work and greatly improves the testing efficiency, this is the sorting function of the instrument. In order to get the correct sorting results, it is necessary to set the correct parameters of the instrument. (see menu operation diagram for detailed settings) can set the current, power over the upper limit and lower limit values, if the test value of the corresponding items to be tested is greater than the upper limit of the set value, or less than the set value of the lower limit, it means that the measured parts are not qualified, the buzzer also made a sound. The upper limit must be larger than the lower limit to normal alarm, when the upper limit and lower limit value is the same, side does not participate in alarm. When the measured value is zero, the instrument does not judge the upper and lower limits of power. When the measured power factor shows a negative value, it means that the current and the voltage are connected in the opposite direction, then the signal input should be cut off and the two terminals of the voltage or current terminal on the rear panel should be interchanged (voltage and current can not be changed at the same time) , the measured value of power factor is positive.

10. Common trouble shooting

Common failure and handling

Serial number	Phenomenon	Measures
1	After boot, the instrument window does not display	1.Make sure the instrument power cord is connected properly. 2. Make sure the power supply is within the allowed range.
2	The displayed measurements are not accurate	1. Ensure that the working environment temperature and humidity within the allowable range. 2. Make sure the display is not disturbed by noise. 3. Check that the test line is connected properly. 4.Check that the wiring is set correctly. 5.The data shows whether it is in a latched state. 6. Reboot.
3	Key Operation Invalid	1.Check if any other buttons are stuck.
4	Communication failure	1.Check if the communication line is connected properly, (whether the TX/RX or A/B signal corresponds) . 2. Check if the address and communication mode of the instrument correspond to the host computer.

Other details can be found in each chapter.

11. Calibration and calibration

The jumper between the terminals on the back of the tested instrument should be removed. The accuracy of the standard meter should be one grade higher than that of the tested meter, and the standard source should have sufficient stability.

After all the instruments and equipment are powered up for 15 minutes, slowly adjust the voltage or current output of the standard AC source, watch the standard meter read to the desired value, after the data is stabilized, record the data of the standard meter and the examined meter, and calculate the base value, judge whether it conforms to the error range.

Verification conditions

Project	A reference value or range	A reference value or range
Ambient temperature℃	25	±5
Ambient humidity%RH	45～75	
Atmospheric pressure KPa	86～106	
AC supply voltage V	220	±2%
AC supply voltage Hz	50	±1%
AC power supply waveform	Sine wave	ß=0.05
External electromagnetic field interference	Should be avoided	
Ventilation	Good	
The sun shines	Avoid the sun	

Note: The inspection equipment used should conform to the specifications for periodic measurement and verification.

Packing list

Equipment	1PCS
Power Cord	1PCS
Instructions	1PCS
Certificate/Warranty card	1PCS

Warranty

The warranty period is 1 year from the date of purchase. If the instrument is damaged due to user's improper operation during the warranty period, the maintenance cost and the cost caused by the maintenance shall be borne by the user. Without the company's written consent, the user can not open the instrument shell, which will affect the instrument warranty. The instrument maintenance should be carried out by the professional and technical personnel authorized by our company. Please don't change the internal parts of the instrument without authorization. If the user blindly maintenance, replacement of instrument components caused by instrument damage, does not fall within the scope of warranty, the user should bear the cost of maintenance. The company has the right to improve the appearance and function of the manual and instrument without prior notice.

WASiTES

Foshan Huazhike Electronic Technology Co. , Ltd.

For Sales Service, please contact your local distributor