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Datasheet

UTE9800+ Series Smart Digital Power Meter

1. Characteristics and Advantages

- VA broken code screen display, reading intuitive, it adopts high speed A/D transformer and 32-bit MCU operation.
- Measurement parameter of each window can be switched (only for UTE9806+).
- Multi-window simultaneous display of voltage, current, power, power factor/frequency.
- Support measure voltage crest ratio, current crest ratio (only for UTE9811+).
- Voltage, current range can switch to auto range or manual range.
- Support AC, DC, AC+DC (T-RMS) mode (only for UTE9802+).
- Support harmonic measurement, harmonic measurement adopts phase-locked loop (PLL) synchronization method. The maximum of harmonic analysis is 50 times (only for UTE9811+).
- Average function can make the reading more stable and it suitable for measuring the load or power with large variations.
- Data upgrade period can be set. User can select a faster upgrade period according to the test needs, so as to improve the test efficiency.
- Communication interface supports RS-232 and RS-485. Communication protocol supports SCPI and Modbus for communicating with computer and PLC.
- It can freely set the upper and lower limit of current and power, the digital power meter will automatic judge whether the test value is exceed. Sound and light alarm indication, it is convenient for batch detection to improve the measurement efficiency.
  (UTE9806+ is also supports set the voltage, apparent power and set and detect the upper and lower limift of power factor.)

2. Product Introduction

The smart digital power meter is an economic and portable measuring instrument. It is a multi-functional measuring instrument which integrating voltage, current, power, power factor, frequency and harmonic wave. The product is widely used in production, testing, evaluation and scientific research and multi-field.

UTE9800+ series include three models: UTE9802+, UTE9806+, and UTE9811+. It adopts high speed CPU for data processing, the sampling resistance of voltage and current are all use low temperature drift resistor, therefore, the stability and accuracy of measurement data are guaranteed.

UTE9800+ series 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), apparent power (VA), voltage peak (Vpk), current peak (Apk), power factor (PF), frequency (Hz), harmonic wave and wave crest ratio. 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.

3. Design Highlights

VA broken code screen display, data and state display directly

UTE9802+

UTE9806+

UTE9811+

Multi-window can display voltage, current, power, power factor/frequency at the same time and can display the measurement mode, scale state, alarm state directly.

AC/DC design for measuring the maximum 700V of voltage and the minimum 0.5mA of current

UTE9802+ supports AC/DC measurement mode, the measurement range of voltage is 3.0V~700V， the measurement range of current is 0.5mA~24A. It is suitable for AC/DC charging pile, power battery, home appliance test and standby power consumption test.

Low voltage and low curret measurement

UTE9806+ supports apparent power measurement mode, the measurement range of current is 0.05mA~0.5V. It is suitable for measuring overall power consumption.

Innovative harmonic processing algorithm

UTE9811+ supports harmonic measurement, it adopts phase-locked loop (PLL) synchronization method and combine with the innovative digital signal processing algorithm, which makes the

update rate of harmonic measurement data up to 0.1s, it greatly improving the test efficiency, so as the precision of harmonic measurement is higher than other similar products.

Parameter Measurement	Voltage	Harmonic Times	Unit	Fundamental frequency voltage	UTE9811+		Comparative Brand A		Comparative Brand B	
					Measured value	Error	Measured value	Error	Measured value	Error
Voltage Harmonic	30	10	V	220V	30	0	29.9	0.1	29.8	0.2
	30	25	V	220V	30.1	0.1	29.4	0.6	29.4	0.6
	30	50	V	220V	30.2	0.2	28	2	27.9	2.1

Parameter Measurement	Voltage	Harmonic Times	Unit	Fundamental frequency current	UTE9811+		Comparative Brand A		Comparative Brand B	
					Measured value	Error	Measured value	Error	Measured value	Error
Current Harmonic	1	10	A	5A	1.001	0.001	0.997	0.003	0.993	0.007
	1	25	A	5A	1.004	0.004	0.983	0.017	0.971	0.029
	1	50	A	5A	1.007	0.007	0.937	0.063	0.908	0.092

Automatic Range Measurement

UTE9800+ series are all have automatic range switch function, automatically select the suitable measurement range to make the measured results more accurate.

Multiple function of limit setting and alarm

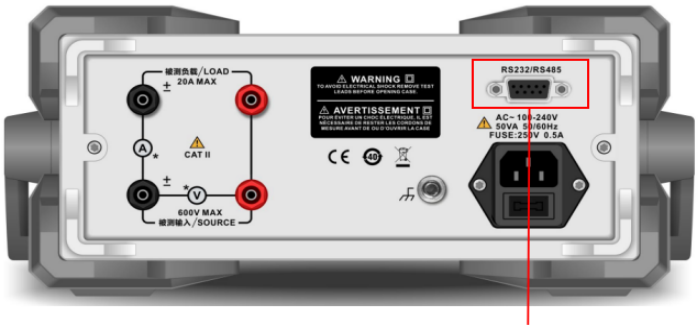
UTE9800+ series can set the upper and lower limit of current and power. It supports two alarm mode audible and visual alarm. It can be used to monitor the current and power in the home circuit (UTE9806+ also supports set the upper and lower alarm function for voltage, apparent power and power factor).

Fall-proof Design

UTE9800+ series have eight stands with silicone angle protection in front and rear. The desgin can protect the instrument's input terminal and display screen when it falls, thereby increasing the service life of the instrument.

Multiple interface and communication protocol

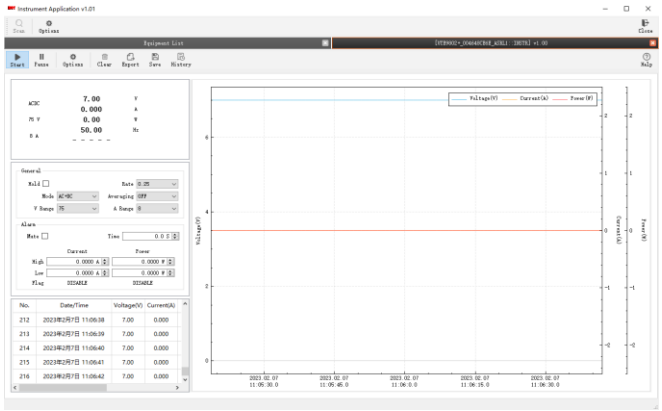
UTE9800+ series supports RS232 and RS485 communication interface and with SCP, Modbus communication command. It make sure that the instrument has good compatibility in the system integration of automatic test equipment.

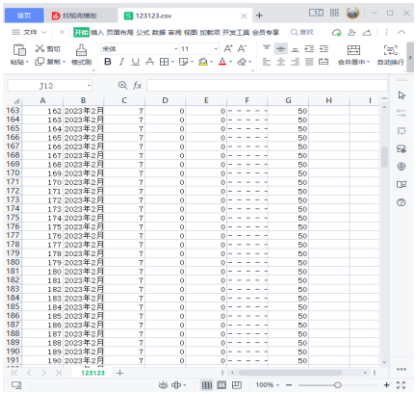


RS232/RS485 interface

Complete upper computer control software

The instrument can be remote control via the upper computer control software, it can also visually display the measurement data and the historical trend of the measurement data, and save the historical data to the computer in CSV file format for further analysis.





4. Technical Index

* f represent the frequency of input signal in the below table.

Model	UTE9802+	UTE9806+	UTE9811+
Display	VA broken code display, 5 digits, four windows		
Display Update Rate	0.1S, 0.25S, 0.5S, 1S, 2S, 5S		
Measuring Object	V,A,W,PF/HZ	V,A,W,VA,PF,V Hz / A Hz,Vpk/ Apk	V,A,W,PF/HZ/THD/CF
Measuring Mode	AC/ DC /AC+DC(T-RMS)	AC	AC
Measuring Range of Voltage	3.0V-600V	0.5V-600V	3.0V-600V
Voltage Range	75V/150V/300V/600V	60V/600V	75V/150V/300V/600V
Accuracy of Voltage (1% ~ 100% of range)	DC: ±(0.4% reading+ 0.1% range+1 character) 40Hz≤f≤66Hz: ±(0.4% reading+ 0.1% range+1 character) 66Hz < f≤400Hz: ±(0.3% reading+ 0.2% range+1 character)	40Hz≤f≤66Hz: ±(0.4% reading+ 0.1% range+1 character) 66Hz < f≤400Hz: ±(0.3% reading+ 0.2% range+1 character)	40Hz≤f≤70Hz: ±(0.4% reading+ 0.1% range+1 character)
Voltage Resolution	0.01V/0.1V		
Measuring Range of Current	0.5mA-20A	0.05mA-10A	5.0mA~20A
Current Range	500mA/2A/8A/20A	50mA/100mA/10A	200mA/1A/4A/20A
Accuracy of Current (1% ~ 100% of range)	DC: ±(0.4% reading+ 0.1% range+1 character) 40Hz≤f≤66Hz: ±(0.4% reading+ 0.1% range+1 character) 66Hz < f≤400Hz: ±(0.3% reading+ 0.2% range+1 character)	40Hz≤f≤66Hz: ±(0.4% reading+ 0.1% range+1 character) 66Hz < f≤400Hz: ±(0.3% reading+ 0.2% range+1 character)	40Hz≤f≤70Hz: ±(0.4% reading+ 0.1% range+1 character)
Current Resolution	0.1mA/1mA	0.01mA/0.1mA/1mA	1mA
Switching Range	Auto/Manual	Auto/Manual	Auto
Power Range	1W~12kW	1W~6000W	1W~12kW
Accuracy of Power (PF=1)	DC: ±(0.4% reading+ 0.1% range+1 character) 40Hz≤f≤66Hz: ±(0.4% reading+ 0.1% range+1 character) 66Hz < f≤400Hz: ±(0.3% reading+ 0.2% range+1 character)	40Hz≤f≤66Hz: ±(0.4% reading+ 0.1% range+1 character) 66Hz < f≤400Hz: ±(0.3% reading+ 0.2% range+1 character) (voltage > 10% of range, current > 1% of range.)	40Hz≤f≤70Hz: ±(0.4% reading+ 0.1% range+1 character)

Model	UTE9802+		UTE9806+	UTE9811+
Power Resolution	0.001W/0.01W/0.1W/1W		0.001W/0.01W/0.1W/1W	0.01W/0.1W/1W
Power Factor Range	-1.000~1.000		-1.000~1.000	-1.000~1.000
Accuracy of Power Factor	±(0.004 + 0.001* reading +1 character)		±0.01	±(0.004 + 0.001* reading +1 character)
Frequency Range	DC, 40Hz～400Hz（voltage > 10% of range）		40Hz～400Hz（amplitude > 10% of range）	40Hz~70Hz（voltage > 10% of range）
Accuracy of Frequency	±(0.1% reading +1 character)		±0.1% reading	±(0.1% reading +1 character)
Auto Range	Voltage Range Increasing	Urms exceeds the measuring range about 110% (CF < 2)	Urms exceeds the measuring range about 120%	Urms exceeds the measuring range about 110% (CF < 2)
	Voltage Range Decreasing	Urms is less than the lower part range about 80% (CF < 2)	Urms is less than the lower part range about 100%	Urms is less than the lower part range about 80% (CF < 2)
	Current Range Increasing	Irms exceeds the measuring range about 110% (CF < 2)	Irms exceeds the measuring range about 120%	Irms exceeds the measuring range about 110% (CF < 2)
	Current Range Decreasing	Irms is less than the lower part range about 60% (CF < 2)	Irms is less than the lower part range about 100%	Irms is less than the lower part range about 60% (CF < 2)
Pre-heating Time	>30 min		>30 min	>30 min
Current Peak	The maximum display 24A		The maximum display 12A	The maximum display 24A
Maximum of Allowed Input for Continuous	Voltage 700V，Current 24A		Voltage 720V，Current 12A	Voltage 700V，Current 24A
Maximum of Allowed Input for Instant	1000V, 40A (1 min)		1000V, 20A (1 min)	1000V, 40A (1 min)
Input Impedance	Voltage about 2 M Ω，Current is less than 0.02Ω		Voltage about 2 M Ω，Current is less than 0.02Ω	Voltage about 2 M Ω，Current is less than 0.02Ω
Upper/Lower Limit	Four settings for the upper/lower limit of power and current		Ten settings for voltage, current, active power, apparent power and power factor	Four settings for the upper/lower limit of power and current
	P Hi (Power high) P Lo(Power low) A Hi(Current high) A Lo(Current low)		Voltage/U Hi and Lo Current/I Hi and Lo Active power/P Hi and Lo Apparent power/VA Hi and Lo Power factor/PF Hi and Lo	P Hi (Power high) P Lo(Power low) A Hi(Current high) A Lo(Current low)
Average Function	√		√	√
Harmonic Analysis	/		/	1～50 times
Peak Measurement	/		voltage peak measurement, current peak measurement	/
Display Hold	√		√	√
Mute Alarm	√		√	√
Mute Key	/		√	/
Lock Key	√		√	√
Interface	RS232（DB9 ; 2-pin: TX, 3-pin: RX, 5-pin: GND）		RS232（DB9 ; 2-pin: TX, 3-pin: RX, 5-pin: GND）	RS232（DB9 ; 2-pin: TX, 3-pin: RX, 5-pin: GND）
	RS485 (DB9 ; 8-pin: A , 9-pin: B)		RS485 (DB9 ; 8-pin: A , 9-pin: B)	RS485 (DB9 ; 8-pin: A , 9-pin: B)
Baud Rate	4800，9600，19.2K，38.4K，57.6K，115.2K，default 9600. It follows communication protocol of standard SCPI and Modbus-RTU.		1200，2400，4800, 9600, 19.2K，38.4K，57.6K，115.2K，default 9600. It follows communication protocol of standard SCPI and Modbus-RTU.	4800，9600，19.2K，38.4K，57.6K，115.2K，default 9600. It follows communication protocol of standard SCPI and Modbus-RTU.
Power Source	Input power：AC 100V~240V Frequency 50/60Hz			
Precision Environment	18℃~28℃，30%~75%RH (28℃ < operating temperature < 18℃ (when in 18℃, it needs to add temperature coefficient)：reading of 0.05%/℃)			
Storage Temperature	-10℃~50℃，non-condensing below 80% RH			
Operating Altitude	≤2000 meters			
General Characteristic				
Color	Gray			
Weight	3.3kg		3.2kg	3.2kg
Size	214mm×88mm×340mm			
Standard Accessories	Specialized power cable x1；RS232 serial port line 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 convert banana head plug connection cable x1			
Standard Packing Quantity (Outer Box)	2			
Standard Packing Size	400mm*300m*325mm			
Gross Weight of Standard Packing	9kg			

5. Accessories and Optional

Model	Description	Length	Specification of Voltage/Current
UTE-L10A	10A three-pronged plug convert banana head connect wire	1.2m	250V/10A
UTE-L16A	16A three-pronged convert banana head connect wire	1.2m	250V/16A
UTE-L16C	16A connect wire with alligator clip	1.2m	250V/16A

6. Contact Us

UNI-T Technical Support Hotline: 400-876-7822

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