

# TD3310 Three-phase Multifunction Standard Meter



## 1. Summary

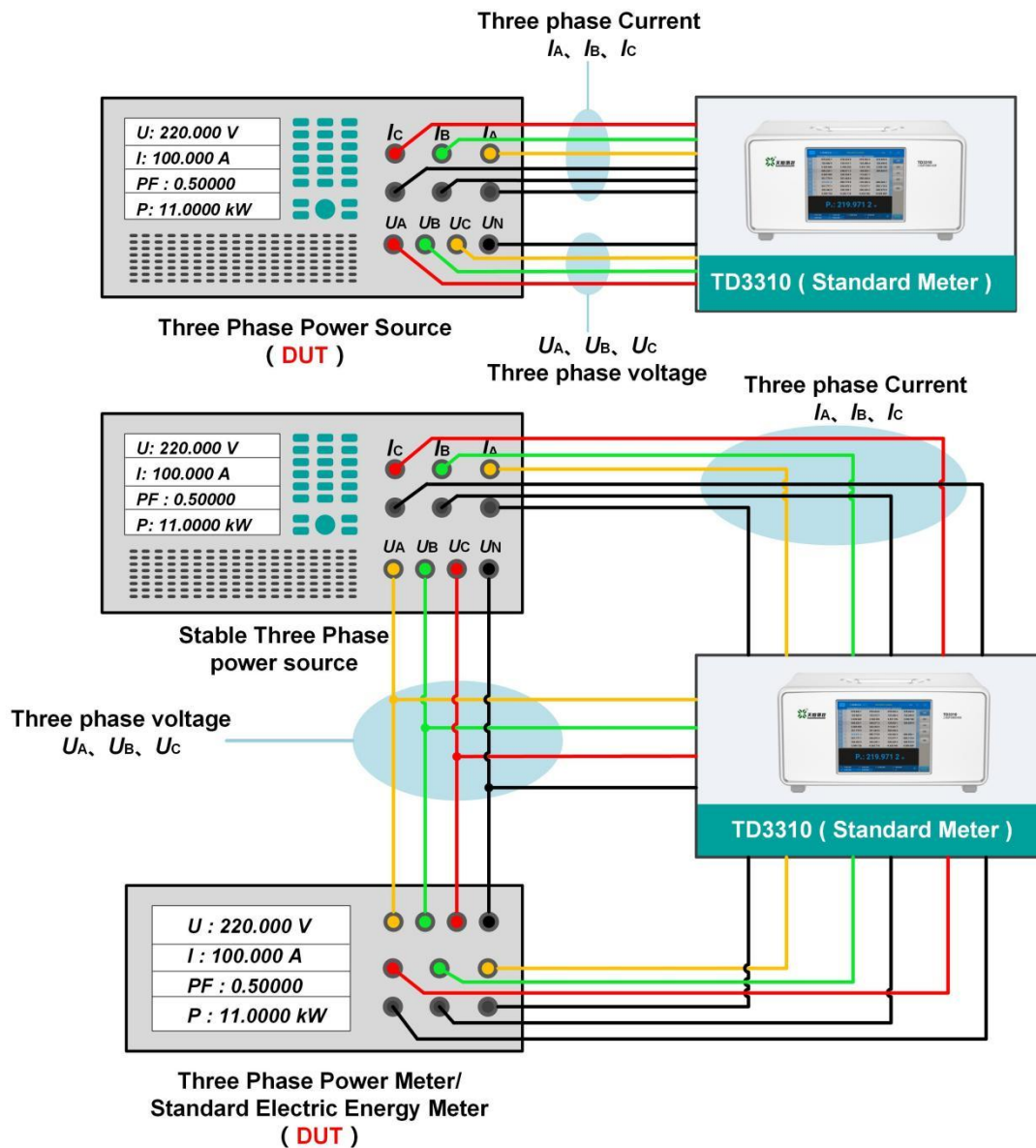
**TD3310** is a high-precision three-phase standard instrument, which can simultaneously measure multiple electrical charges in the loop such as: voltage, current, frequency, phase, harmonics, active power/energy, reactive power/energy, apparent power, power factor, etc. in the three-phase Y-shaped/V-shaped wiring mode.

## 2. Features

- Power/energy accuracy up to class **0.01**.
- Voltage measurement: 6 V~528 V (wider range can be customized).
- Current measurement: 0.2 mA~120 A.
- Fundamental frequency: 45 Hz~65 Hz (optional 400Hz).
- Phase measurement uncertainty is typically 0.003°.
- Voltage and current support fully automatic range shifting.
- Voltage and current support 2~127th harmonic measurement.
- Support comprehensive statistical analysis of the measured electricity.
- Standard energy pulse input/output function.
- USB, RS232, and LAN interfaces.
- LCD touch screen.

### 3. Applications

#### ☆ Calibrate Single Three Phase Power Source /Meter



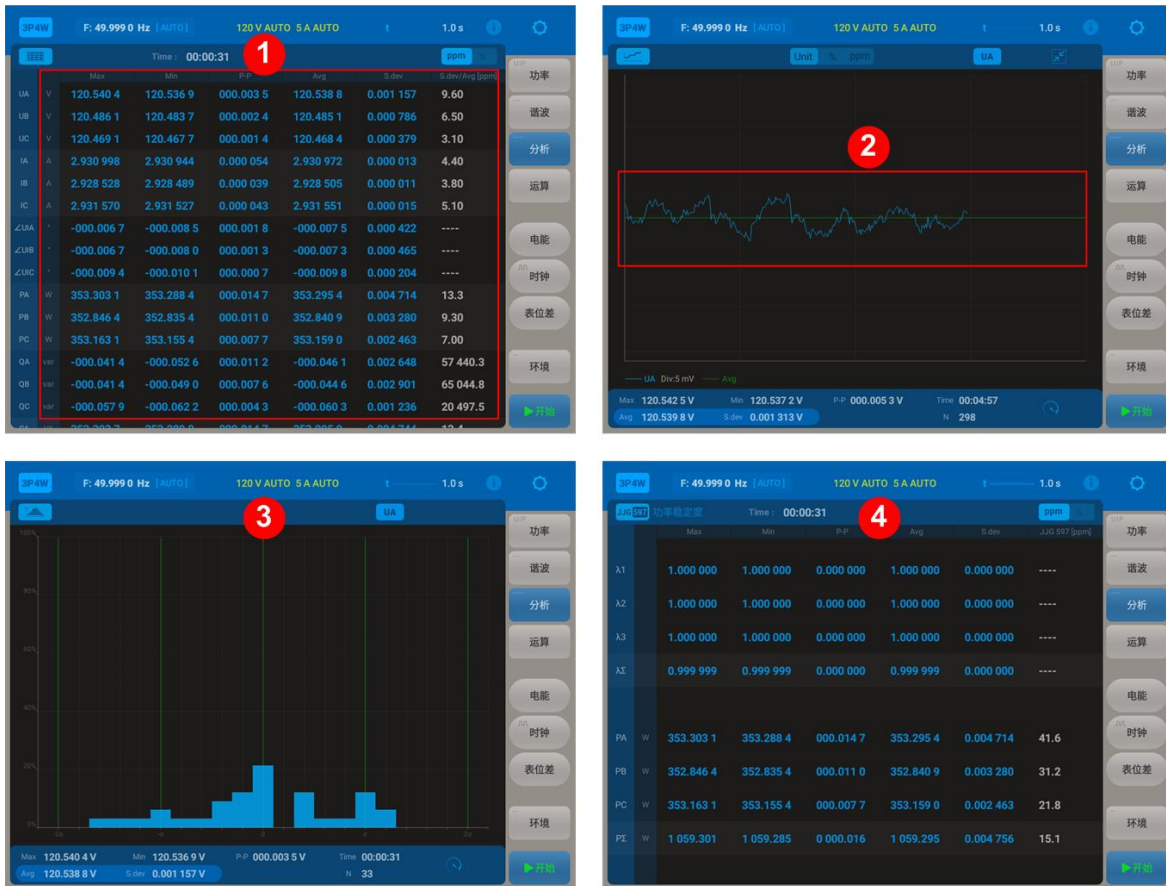
- The TD3310 three-phase power/energy has an optimal measurement uncertainty of class **0.01**.
- Suitable for calibrating single/three-phase power sources with class 0.02 and below, power meters/standard energy meters (with stable power sources).
- Suitable for calibrating single/three-phase voltage standard sources and voltage standard meters of class 0.02 and below (with stable voltage sources).
- Suitable for calibrating single/three-phase current standard sources and current standard meters of class 0.02 and below (with stable current sources).

## ☆Comprehensive Analysis of AC Power



S/N	Function
1	The measuring channel has the function of oscilloscope, which can display the waveform of the measured power in real time.
2	Accurately measure the phase between the voltage and current of each phase, and visually display it through the form of phasor diagram.
3	Two types of harmonic distortion, THD/T (harmonic relative to full wave) and THD/F (harmonic relative to fundamental wave), are calculated.
4	The amplitude (RMS), content (%) and phase of the 2nd ~ 127th harmonic wave of each phase voltage or current can be analyzed in real time. ; It is used to check whether the harmonic content and phase of complex waveform output of R46 device meet the requirements of the regulation.
5	The spectrum of each harmonic is visually displayed in the form of a bar chart (the fundamental wave is 100%).

## ☆ Data Statistical Analysis Function



S/N	Function
1	<b>Statistical analysis of data:</b> calculate the maximum value (Max), minimum value (Min), peak-peak value (P-P), average value (Avg), standard variance (S.dev), etc.
2	<b>Power stability test:</b> In the test cycle, real-time plot the curve of power change with time.
3	<b>Normal distribution histogram:</b> Displays the distribution of the collected power within a test period.
4	<b>Power stability test:</b> According to the algorithm of JJG 597-2005 "Verification Regulation of AC Watt-hour Meter Verification Device", the output power stability of the inspected electric energy device can be calculated automatically.

## 4. Specifications

### 4.1 Three-phase voltage measurement

Range	Resolution	Measurement uncertainty ( k = 2 ) ( ppm*RD + ppm*RG ) <sup>[1]</sup>	Temperature coefficient @ (15~30)°C (ppm*RD+ppm*RG) /°C
60 V	10 μV	30 + 20	0.25 + 0.25
120 V	0.1mV	30 + 20	0.25 + 0.25
240 V	0.1mV	30 + 20	0.25 + 0.25
480 V	0.1mV	30 + 20	0.25 + 0.25

Note [1]: RD is the reading value, RG is the range value, the same below.

- Measuring range: 6 V~528 V (wider range can be customized), 7-digit display, manual/automatic range shifting

### 4.2 Three-phase current measurement

Range	Resolution	Measurement uncertainty at different frequencies (Hz) (k = 2). ( ppm*RD + ppm*RG )			Temperature coefficient @ (15~30)°C (ppm*RD+ppm*RG) /°C
		45 ≤ F ≤ 65	65 < F ≤ 200	200 < F ≤ 400	
5 mA	1 nA	120 + 80	240 + 160	480 + 320	5 + 5
10 mA	10 nA	60 + 40	120 + 80	240 + 160	3 + 3
20 mA	10 nA	60 + 40	120 + 80	240 + 160	0.75 + 0.75
50 mA	10 nA	30 + 20	60 + 40	120 + 80	0.25 + 0.25
100 mA	0.1 μA	30 + 20	60 + 40	120 + 80	0.25 + 0.25
200 mA	0.1 μA	30 + 20	60 + 40	120 + 80	0.25 + 0.25
500 mA	0.1 μA	30 + 20	60 + 40	120 + 80	0.25 + 0.25
1 A	1 μA	30 + 20	60 + 40	120 + 80	0.25 + 0.25
2 A	1 μA	30 + 20	60 + 40	120 + 80	0.25 + 0.25
5 A	1 μA	30 + 20	60 + 40	120 + 80	0.25 + 0.25
10 A	10 μA	30 + 20	60 + 40	120 + 80	0.25 + 0.25
20 A	10 μA	30 + 20	60 + 40	120 + 80	0.25 + 0.25
50 A	10 μA	30 + 20	60 + 40	120 + 80	0.25 + 0.25

100 A	100 $\mu$ A	30 + 20	60 + 40	120 + 80	0.25 + 0.25
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- Measuring range: 0.2 mA~120 A, 7-digit display, manual/automatic range shifting

#### 4.3 Frequency/phase measurement

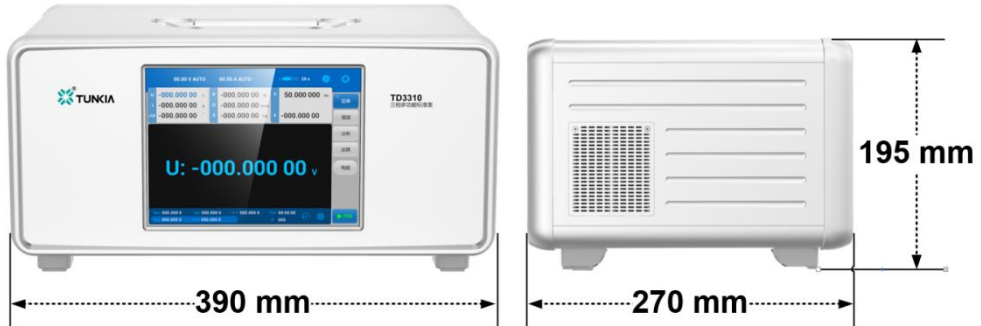
Measurement type		TD3310	TD3310-R	
Frequency	Measuring range	45 Hz~65 Hz	45 Hz~400 Hz	
	Minimum resolution	0.000 01 Hz	0.000 01 Hz	
	Measurement uncertainty (k=2)	0.005%*RD	0.005%*RD	
Phase	Measuring range	0~360°(I $\geq$ 50mA)	0~360°(I $\geq$ 50mA)	
	Minimum resolution	0.000 1°	0.000 1°	
	Measurement uncertainty (k=2)	45 Hz $\leq$ F $\leq$ 65 Hz	0.003°	0.003°
		65 Hz < F $\leq$ 200 Hz	---	0.01°
200 Hz < F $\leq$ 400 Hz		---	0.02°	

#### 4.4 Power / Energy Measurement

Voltage range	Current range	Factor	Measurement uncertainty at different frequencies (Hz) (k=2)		
			45 $\leq$ F $\leq$ 65	65 < F $\leq$ 200	200 < F $\leq$ 400
30 V $\leq$ U $\leq$ 480 V	50 mA $\leq$ I $\leq$ 120 A	0.5L~1~0.5C	0.01%*RD	0.02%*RD	0.04%*RD
	10 mA $\leq$ I < 50 mA	1	0.01%*RD	0.03%*RD	0.08%*RD
		0.5L~1~0.5C	0.02%*RD		
	3 mA $\leq$ I < 10 mA	1	0.02%*RD	-	-
		0.5L~1~0.5C	0.04%*RD	-	-
0.2 mA $\leq$ I < 3 mA	1	0.02%*RD $\times$ 3mA/I	-	-	

- Power/energy measurement range: a combination of AC voltage range and AC current range
- Power factor measurement range: -1.000 000... 0.000 000... 1.000 000
- Standard energy pulse output: 60 kHz for high-frequency full-scale values and 6 Hz for low-frequency full-scale values
- Standard energy pulse input: frequency $\leq$  200 kHz, voltage: 0... 3.3 V... 24 V

## 5. General Specifications

Power supply	AC ( 220 ± 22 ) V, ( 50 ± 2 ) Hz
Maximum power consumption	60 VA
Warm-up time	30 minutes
Temperature performance	Working temperature: 5°C~45°C; Storage temperature: -10 °C ~ 55 °C
Humidity performance	Operating humidity: < 80% @ 30°C, < 70% @ 40°C, < 40% @ 50°C Storage humidity: (20%~80%) R· H, no condensation
altitude	< 3000 m
Quality	Approx. 9.1 kg
Communication interface	RS232、USB、LAN
Size	390 mm(W) × 271 mm(D) × 195 mm(H)
	

## 6. Ordering Information

<b>TD3310</b> - <span style="background-color: #00a68f; color: white; padding: 2px 5px;"> </span>	<b>Fundamental Frequency</b>	
	Code	Note
	Empty	45 Hz~65 Hz
	R	45 Hz~400 Hz

E.g. TD3310-R means that the fundamental frequency is 45 Hz~400 Hz.