

TA3000 Power Measurement Standard



1. Summary

TA3000 is a high-precision wideband AC parametric measurement standard that simultaneously measures multiple amounts of electricity in an AC loop such as: Voltage, Current, Frequency, Phase, Harmonics, Active Power/ Electrical Energy, Reactive Power/Energy, Apparent Power, Power Factor, etc.

2. Features

- Power/Energy Measurement Uncertainty: Class **0.01**.
- Voltage Measurement Range: 1 V~600 V.
- Current Measurement Range: 10mA~120 A.
- Fundamental Frequency Range: 45 Hz~1 kHz.
- Phase Measurement Uncertainty is typically 0.003°.
- Voltage and Current support fully automatic range shifting.
- Voltage and Current support 2~127th harmonic measurement.
- Standard Energy Pulse input/output function.
- USB, RS232 and LAN interfaces.
- LCD touch screen.

3. Specifications

3.1 AC Voltage 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 < 80	80 ≤ F < 200	200 ≤ F < 400	400 ≤ F < 1k	
12 V	10 μV	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5
60 V	10 μV	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5
120 V	0.1 mV	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5
240 V	0.1 mV	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5
600 V	0.1 mV	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5

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

- Measuring range: 1 V~600 V, 7-digit display, manual/automatic range shifting

3.2 AC 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<80	80≤F<200	200≤F<400	400≤F<1000	
100 mA	0.1 μA	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5
200 mA	0.1 μA	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5
500 mA	0.1 μA	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5
1 A	1 μA	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5
2 A	1 μA	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5
5 A	1 μA	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5
10 A	10 μA	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5
20 A	10 μA	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5
50 A	10 μA	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5
100 A	100 μA	30 + 20	90 + 60	150 + 100	450 + 300	1 + 0.5

- Measuring range: 10 mA~120 A, 7-digit display, manual/automatic range shifting

3.3 Frequency/Phase Measurement

Frequency	Measuring Range	4 0.00000 Hz~1000.000 Hz	
	Minimum Resolution	0.000 01 Hz	
	Measurement Uncertainty (k=2)	0.005%*RD	
Phase	Measuring Range	0.0000° ~ 359.9999°	
	Minimum Resolution	0.0001°	
	Measurement Uncertainty (k=2)	45 Hz ≤ F < 80 Hz	0.005°
		80 Hz ≤ F < 200 Hz	0.015°
		200 Hz ≤ F < 400 Hz	0.03°
400 Hz ≤ F < 1 kHz		0.08°	

3.4 Power / Energy Measurement

The amount of Power being measured	Measurement Uncertainty at different frequencies (Hz) (k=2).			
	45≤F<80	80 ≤ F<200	200 ≤ F < 400	400 ≤ F ≤ 1000
Active Power/Energy: cosφ ≥0.8 or Reactive Power/Energy: SINφ ≥0.8 or Apparent Power/Energy	0.01%*RD	0.03%*RD	0.05%*RD	0.15%*RD
Active Power/Energy: cosφ <0.8 or Reactive Power/Energy: SINφ <0.8	0.01%*FS ^[2]	0.03%*FS	0.05%*FS	0.15%*FS

Note [2]: FS = voltage range value × current range value

- Power/energy measurement range: a combination of AC voltage range and AC current range
- Power factor measurement range: -1.000000... 0.000000... 1.000000
- 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 ≤ 200 kHz, voltage: 0... 3.3 V... 24 V

4. General specifications

- Power Supply: AC (220 ± 22) V, (50 ± 2) Hz
- Working Environment: 5°C~40°C, (20%~85%) R·H, no condensation
- Storage Environment: -10 °C ~ 50 °C, < 95% R·H, no condensation
- Communication Interface: RS232, USB, LAN