TD3610 Three-phase Standard Energy Meters Verification Device

1. Summary

TD3610 is applied for the verification of three-phase energy reference standard. It mainly consists of three-phase precision standard power source, class 0.01 three-phase standard watt-hour meter, measurement and control platform, PC(optional) and verification software. TD3610 can automatically complete the class 0.02 and the following class of R46 AC standard electricity meter or AC standard source verification.

2. Features

- **High accuracy:** Accuracy class 0.01, output power stability is 0.01% / 2min。
- **High reliability:** Automatic range switching. It can guarantee the measurement accuracy even when the machine is switched on and off in the limit state (500 V, 100 A).
- **Reliable quality:** Temperature coefficient ＜0.5 ppm/K.
- **Harmonic output / measurement:** The 2nd ~ 63st @ 50 Hz / 60 Hz, Harmonic content and phase are programmable.
- **Two sets of test buttons**: The device has a set of output and measurement buttons, which are independent of each other.
- **Electric energy measurement:** Equipped with single phase, three phase three wire, three phase four wire, positive phase sequence, reverse sequence (contain negative direction) and other power metering functions.

- **Comprehensive analysis function:** Waveform display, phase diagram display, Stability test, Change curve drawing, Statistical analysis of data, etc.
- **Mobile measurement and control console:** Users can read or control output value through LCD touch screen.

3. Specifications

3.1 Voltage / Current

Power	Range	Resolution	Accuracy ±(ppm of reading + ppm of range) [1]	Temperature Coefficient@ (15~30)°C ±(ppm of reading + ppm of range) /°C
AC Voltage	60 V	10 μV	30 + 20	0.25 + 0.25
	120 V	0.1 mV	30 + 20	0.25 + 0.25
	240 V	0.1 mV	30 + 20	0.25 + 0.25
	480 V	0.1 mV	30 + 20	0.25 + 0.25
AC Current	5 mA	1 nA	120 + 80	5 + 5
	10 mA	10 nA	60 + 40	3 + 3
	20 mA	10 nA	60 + 40	0.75 + 0.75
	50 mA	10 nA	30 + 20	0.25 + 0.25
	100 mA	0.1 μA	30 + 20	0.25 + 0.25
	200 mA	0.1 μA	30 + 20	0.25 + 0.25
	500 mA	0.1 μA	30 + 20	0.25 + 0.25
	1 A	1 μA	30 + 20	0.25 + 0.25
	2 A	1 μA	30 + 20	0.25 + 0.25
	5 A	1 μA	30 + 20	0.25 + 0.25
	10 A	10 μA	30 + 20	0.25 + 0.25
	20 A	10 μA	30 + 20	0.25 + 0.25
	50 A	10 μA	30 + 20	0.25 + 0.25
	100 A	0.1 mA	30 + 20	0.25 + 0.25
Note [1] : (ppm = parts per million) (e.g., 10ppm = 0.001%).				

- Voltage/ Current Output / measurement range: 6 V～576 V, 0.2 mA～120 A,7-digits display
- Symmetry: Voltage ≤ 0.2%, Current ≤ 0.5%, Phase ≤ 0.5°
- Voltage Output max burden: 45VA / (per phase)
- Current Output max burden： 90VA / (per phase)
- Protective function: Short-circuit protection, Open-circuit protection, Overload protection

3.2 Frequency / Phase

Type	Range of Regulation	Optimal Accuracy of Measurement
Frequency	45.000 00 Hz～65.000 00 Hz	50 ppm*RD
Phase	0.000 0°～359.999 9° （I ≥ 50mA）	0.003°

3.3 Power / Electrical energy

Output / Measurement	Voltage Range	Current Range	Power Factor	Accuracy ±(% of reading)
				45Hz ≤ F ≤ 65Hz
Power / Electrical energy measurement	30 V ≤ U ≤ 480 V	50 mA ≤ I ≤120 A	0.5L~1~0.5C	0.01%*RD
		10 mA ≤ I < 50 mA	1	0.01%*RD
			0.5L~1~0.5C	0.02%*RD
		3 mA ≤ I < 10 mA	1	0.02%*RD
			0.5L~1~0.5C	0.04%*RD
		0.2 mA ≤ I < 3 mA	1	0.02%*RD×3mA/I

- Output power stability: 0.01% / 2min；
- Measuring range of power/energy: Combination of AC voltage and AC current range;
- Power factor Measurement range: -1.000 00…0.000 00…1.000 00；
- Standard electric energy pulse output: High frequency pulse output port outputs 60KHz at full range, low frequency pulse output port outputs 6Hz at full range;
- Standard energy pulse input: Frequency ≤ 200 kHz, Voltage: 0...3.3 V...24 V
- Electric energy error display: Automatic, resolution is 0.0001%.

4. General Specifications

Power supply	AC (220 ± 22) V, (50 ± 2) Hz
Warm up time	30 min
Temperature performance	Storage temperature: 5°C~45°C Operating temperature: -10°C~55°C
Humidity performance	Operating humidity: < 80% @ 30°C, < 70% @ 40°C, < 40% @ 50°C Storage humidity: (20%~80%) R·H, non-condensing
Elevation	< 3000 m
Communication interface	RS232, LAN