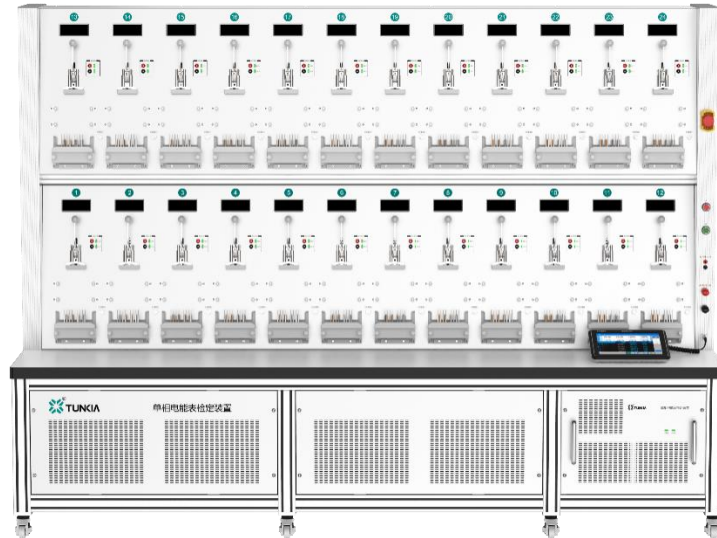


TD3550 Single-phase Energy Meters Verification Device



1. Summary

TD3550 is a new type device used to verify single-phase energy meters that meet the OIML R46 instruction. It mainly consists of single-phase precision standard power source, test bench, PC(optional) and verification software. TD3550 supports simultaneous verification of **6 ~ 24** single-phase electricity/mechanical energy meters, smart meters and IOT electricity meter, etc. with the same voltage/current range, different meter constant.

2. Features

2.1 Basic Features

- **Maximum output capacity:** 264 V / 120 A.
- **Fundamental frequency:** 45 Hz ~ 100 Hz.
- **Accuracy:** class 0.05 or 0.1.
- **Minimum current output:** As low as 1 mA.
- **Auto range:** Automatic range switching and load matching.
- **Energy measurement:** Positive / negative active and reactive energy.
- **Harmonic output:** 2nd~63st @50Hz / 60Hz, harmonic content and phase are adjustable.
- **High order harmonic test:** Built in high-order harmonic test schemes.

- **Complex waveform test:** Built in common waveform scheme, like square-wave, cusp wave, sub-harmonics and odd-harmonic, etc.
- **DC and even harmonics test:** Equipped with TD3410 half wave rectifier box.
- **Daily reckoning error test:** Built in standard clock tester.
- **Automatic patrol inspection:** Support automatic patrol inspection.
- **Connection:** Equipped with special pressure gauge holder.
- **Communication:** RS-485, pulse and photoelectric sampling port.
- **Multiple-position verification:** Optional 6,12,16,24 positions.
- **Mobile control unit:** LCD touch screen for value output.
- **Professional verification software:** Support semi-automatic or fully automatic verification of the DUT / UUT, data management and certificate export. The software has the function of single point multiple tests, the test interval can be set, and the error curve can be drawn automatically.

2.2 Optional Features

- **Voltage/ Current line power consumption test:** The voltage/ current line power consumption test can be completed by selecting the voltage power consumption test module.
- **Burden current fast change test:** The user can set the duration of ton and toff, and the total time for a single test. The current switches at zero crossing and switches off and on within one nominal frequency period. The repetition time of single test was more than 4 hours.
- **AC Voltage dips and interruptions test:** AC Voltage dips and interruptions test supporting voltage circuit power supply.
- **Standard meter:** Optional conventional class 0.5 standard meter or harmonic standard meter.
- **Harmonic energy:** Complete harmonic energy accuracy test and measurement accuracy test by selecting harmonic standard meter.

3. Verification Items

NO.	Verification Items	Completion (√standard)	Remarks
1	Observation, Mark, Power on inspection	Observation items	
2	Accuracy Test	Initial intrinsic error test	√
3		Starting current test	√
4		Test of no-load	√
5		Constant test	√
6		Combined error of energy indication value of electronic indicator display	√
7		Clock error test powered by power supply	√
8		Clock error test using standby power supply	√
9		Error consistency test	√
10		Variation requirement test	√
11		Load current rise and fall	√
12		Repeat test	√
13		Electromagnetic test	Voltage dips and interruptions
14	Resistance to other influences	Harmonics in voltage and current -5 th harmonic test	√
15		Harmonics in voltage and current -Square wave test	√
16		Harmonics in voltage and current -Cusp wave test	√
17		Sub-harmonics in the AC current circuit -Pulse train trigger waveform test	√

18		Odd harmonics in current circuit - 90° phase trigger wave test	√	
19		DC and even harmonics - half-wave rectification waveform test	√	
20		Voltage variation test	√	
21		Frequency variation test	√	
22		Fast change test of load current test	Optional- Fast change test of load current	
23		Self-heating test	√	
24		High order harmonic test	√	
25	Electrical performance test	Voltage line power consumption test	Optional – Voltage line power consumption test	
26		Current line power consumption test	Optional – Current line power consumption test	
27	IOT electricity meter	Harmonic power accuracy test	Optional - Harmonic energy	
28		Harmonic measurement accuracy test		

4. Specifications

4.1 Voltage Output

Range	Resolution	Short-term Stability (% / min)		Accuracy ±(ppm of reading + ppm of range) ^[1]		Distortion Factor (%)
		Class 0.05	Class 0.1	Class 0.05	Class 0.1	
220 V	1 mV	0.01	0.02	200 + 50	300 + 200	< 0.3

Note [1] : (ppm = parts per million) (e.g., 10ppm = 0.001%).

- Output range: 0 V ~ 264 V, 6-digits display, load capacity: 15VA/ (phase · position)
- Protective function: Short-circuit protection, Overload protection

4.2 Current Output

Range	Resolution	Short-term Stability (% / min)		Accuracy ±(ppm of reading + ppm of range)		Distortion Factor (%)
		Class 0.05	Class 0.1	Class 0.05	Class 0.1	
10 mA	0.1 μA	0.02	0.04	300 + 200	500 + 300	< 0.5
20 mA	0.1 μA	0.02	0.04	300 + 200	500 + 300	< 0.5
50 mA	0.1 μA	0.02	0.04	200 + 50	300 + 200	< 0.5
100 mA	1 μA	0.01	0.02	200 + 50	300 + 200	< 0.5
200 mA	1 μA	0.01	0.02	200 + 50	300 + 200	< 0.5
500 mA	1 μA	0.01	0.02	200 + 50	300 + 200	< 0.5
1 A	10 μA	0.01	0.02	200 + 50	300 + 200	< 0.5
2 A	10 μA	0.01	0.02	200 + 50	300 + 200	< 0.5
5 A	10 μA	0.01	0.02	200 + 50	300 + 200	< 0.5
10 A	100 μA	0.01	0.02	200 + 50	300 + 200	< 0.5
20 A	100 μA	0.01	0.02	200 + 50	300 + 200	< 0.5
50 A	100 μA	0.01	0.02	200 + 50	300 + 200	< 0.5
100 A	1 mA	0.01	0.02	200 + 50	300 + 200	< 0.5

- Output range: 1 mA ~ 120 A, 6-digits display, load capacity: 30VA/ (phase · position)
- Protective function: Open-circuit protection, Overload protection

4.3 Frequency / Phase

Accuracy		Class 0.05	Class 0.1
Frequency	Measuring Range	45 Hz~100 Hz	45 Hz~100 Hz
	Minimum Resolution	0.000 01 Hz	0.000 01 Hz
	Accuracy	±0.005%*RD	±0.005%*RD
Phase (I ≥ 50mA)	Measuring Range	0~360°	0~360°
	Minimum Resolution	0.000 1°	0.000 1°
	Accuracy	±0.012°	±0.024°

4.4 Power/ Energy

Current Range	Power Factor	Accuracy ±(% of reading)	
		Class 0.05	Class 0.1
50 mA ≤ I ≤ 120 A	0.5L~1~0.5C	0.05%*RD	0.1%*RD
10 mA ≤ I < 50 mA	1	0.05%*RD	0.1%*RD
	0.5L~1~0.5C	0.08%*RD	0.15%*RD
1 mA ≤ I < 10 mA	1	0.08%*RD	0.15%*RD
	0.5L~1~0.5C	0.15%*RD	0.3%*RD

- Stability of output power: 0.02% / 2min (Class 0.05), 0.05% / 2min (Class 0.1);
- Measuring range of P/E: Combination of AC voltage and AC current range ;
- Measuring range of power factor: -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 electric energy pulse input: frequency ≤ 200 kHz, voltage: 0...3.3 V...24 V;
- Electric energy error display: Auto, resolution is 0.0001%.

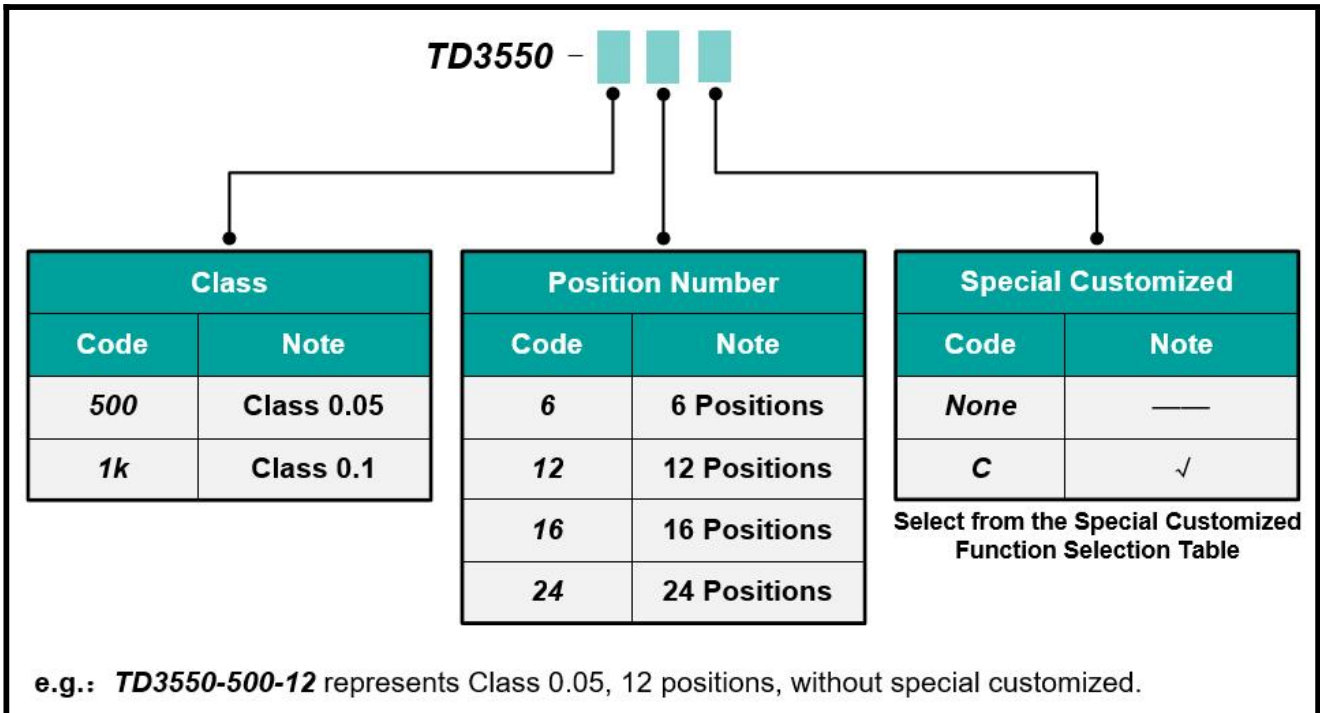
4.5 Clock

- Daily reckoning error limit: ±0.05 s/d

5. General Specifications

Power Supply	Single phase AC (220 ± 22) V, (50 ± 2) Hz				
Warm-up Time	30min				
Temperature Performance	Operating 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.				
Communication Interface	RS232, RS485, LAN				
Dimensions of Test Bench (L*W *table H / total H, mm)	Position number	6 positions	12 positions	16 positions	24 positions
	Manual wiring	1350*750*750/1415	—	—	—
	Crimp wiring	1350*750*750/1415	1240*750*600 /1782	1590*750*600 /1782	2290*750*600 /1782
Dimensions of Computer Desk (L*W*H, mm)	No standard meter	1000*800*750			
	Standard meter	1500*800*750			

6. Ordering Information



Special Customized Function Selection Table		
Tick	Option function	Description
	Manual wiring	The default option is Crimping wiring (with meter rack) , Manual wiring is optional.
	Voltage line power consumption test	Recommend one position
	Current line power consumption test	At most three position are recommended
	Load current rise and fall	After this function is selected, all positions support; Support voltage dip and short interruption at the same time.
	Standard meter	TD3100 standard meter (Class 0.05/0.1)
	Harmonic energy	TD3100-R standard meter (Class 0.05/ 0.1)