

TD3600 Three-phase Energy Meters Verification Device



1. Summary

TD3600 is applied for the verification of new three-phase energy meters. It mainly consists of three-phase precision standard power source, verification platform, measurement and control platform, PC(optional) and verification software. TD3600 Supports simultaneous verification of **3 ~ 16** three-phase energy meters with the same voltage/current range, different meter constant.

2. Verification Items

- Test of no-load
- Starting current test
- Intrinsic error
- Meter constant
- Daily reckoning error

3. Features

3.1 Basic Features

- **Maximum output capacity:** 576 V / 120 A
- **Fundamental frequency:** 45 Hz ~ 100 Hz.
- **Accuracy:** class 0.02 or 0.05.
- **Minimum current output:** As low as 0.2 mA.
- **Auto range:** Automatic range switching and load matching.
- **Energy measurement:** Positive / negative active and reactive energy.
- **Daily reckoning error test:** Built in standard clock tester.
- **Automatic patrol inspection:** Support automatic patrol inspection.
- **Connection:** Equipped with special pressure gauge holder.
- **Communication:** DUT through RS-485 port.
- **Energy pulse:** Electric and optical pulse sampling ports.
- **Multi-position verification platform:** Optional 3,6,12,16 positions.
- **Mobile control unit:** LCD touch screen for value output.
- **Professional verification software:** Support semi-automatic or fully automatic verification of the DUT, 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.

3.2 Optional Features

- **Offering compatibility with both single-phase and three-phase:** The Potential Transformer Offer compatibility with both single-phase and three-phase. Up to 12 test positions.
- **Current Transformer:** The Current Transformer add the capability to test energy meter without keeping its voltage terminal separate from its current terminal. Up to 12 test positions.
- **Harmonic output function:** The 2nd ~ 21st @ 50 Hz / 60 Hz, harmonic content and phase are programmable.
- **Standard meter:** Class 0.05 or 0.02

4. Specifications

4.1 AC Voltage Output

Range	Resolution	Short-term Stability (% / min)		Accuracy \pm (ppm of reading + ppm of range) ^[1]		Distortion Factor (%)
		Class 0.05	Class 0.02	Class 0.05	Class 0.02	
60 V	0.1 mV	0.01	0.005	200 + 50	60 + 40	< 0.3
120 V	1 mV	0.01	0.005	200 + 50	60 + 40	< 0.3
240 V	1 mV	0.01	0.005	200 + 50	60 + 40	< 0.3
480 V	1 mV	0.01	0.005	200 + 50	60 + 40	< 0.3

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

- Output range: 6 V~576 V, 6-digits display, Load capacity: 15VA/ (phase · position)
- Symmetry: Voltage \leq 0.2%, Phase \leq 0.5°
- Protective function: Short-circuit protection, Overload protection

4.2 AC Current Output

Range	Resolution	Short-term Stability (% / min)		Accuracy \pm (ppm of reading + ppm of range)		Distortion Factor (%)
		Class 0.05	Class 0.02	Class 0.05	Class 0.02	
5 mA	10 nA	0.03	0.02	400 + 300	240 + 160	< 1
10 mA	0.1 μ A	0.02	0.01	300 + 200	120 + 80	< 0.5
20 mA	0.1 μ A	0.02	0.01	300 + 200	120 + 80	< 0.5
50 mA	0.1 μ A	0.02	0.01	200 + 50	60 + 40	< 0.5
100 mA	1 μ A	0.01	0.005	200 + 50	60 + 40	< 0.5
200 mA	1 μ A	0.01	0.005	200 + 50	60 + 40	< 0.5
500 mA	1 μ A	0.01	0.005	200 + 50	60 + 40	< 0.5
1 A	10 μ A	0.01	0.005	200 + 50	60 + 40	< 0.5
2 A	10 μ A	0.01	0.005	200 + 50	60 + 40	< 0.5
5 A	10 μ A	0.01	0.005	200 + 50	60 + 40	< 0.5

10 A	100 μ A	0.01	0.005	200 + 50	60 + 40	< 0.5
20 A	100 μ A	0.01	0.005	200 + 50	60 + 40	< 0.5
50 A	100 μ A	0.01	0.005	200 + 50	60 + 40	< 0.5
100 A	1 mA	0.01	0.005	200 + 50	60 + 40	< 0.5

- Output range: 0.2 mA~120 A, 6-digits display, Load capacity: 30VA/ (phase · position)
- Symmetry: Current $\leq 0.5\%$, Phase $\leq 0.5^\circ$
- Protective function: Open-circuit protection, Overload protection

4.3 Frequency / Phase

Accuracy		Class 0.05	Class 0.02
Frequency	Measuring Range	45 Hz~100 Hz	45 Hz~100 Hz
	Minimum Resolution	0.000 01 Hz	0.000 01 Hz
	Accuracy	$\pm 0.005\% \cdot RD$	$\pm 0.005\% \cdot RD$
Phase ($I \geq 50mA$)	Measuring Range	$0 \sim 360^\circ$	$0 \sim 360^\circ$
	Minimum Resolution	0.000 1°	0.000 1°
	Accuracy	$\pm 0.012^\circ$	$\pm 0.006^\circ$

4.4 Power / Electrical energy

Voltage range	Current range	Power factor	Accuracy \pm (% of reading)	
			Class 0.05	Class 0.02
$30 V \leq U \leq 480 V$	$50 mA \leq I \leq 120 A$	$0.5L \sim 1 \sim 0.5C$	$0.05\% \cdot RD$	$0.02\% \cdot RD$
	$10 mA \leq I < 50 mA$	1	$0.05\% \cdot RD$	$0.02\% \cdot RD$
		$0.5L \sim 1 \sim 0.5C$	$0.08\% \cdot RD$	$0.04\% \cdot RD$
	$3 mA \leq I < 10 mA$	1	$0.08\% \cdot RD$	$0.04\% \cdot RD$
		$0.5L \sim 1 \sim 0.5C$	$0.15\% \cdot RD$	$0.08\% \cdot RD$
$0.2 mA \leq I < 3 mA$	1	$0.08\% \cdot RD \times 3mA/I$	$0.04\% \cdot RD \times 3mA/I$	

- Output power stability: 0.02% / 2min (Class 0.05), 0.01% / 2min (Class 0.02)
- Power/electric energy Measuring range: The combination of AC voltage and current range
- Power factor Measuring 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 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 bounds: ± 0.05 s/d

5. General Specifications

Power supply	AC (220 \pm 22) V, (50 \pm 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				
Communication interface	RS232, RS485, LAN				
Dimensions of test bench (L*W *table H / total H, mm)	Position number	3 positions	6 positions	12 positions	16 positions
	Manual wiring	1350*800*750/1140	1950*800*750/1140	—	—
	Manual connect	1350*750*750/1395	1850*750*750/1395	1830*750*610/1765	2350*750*610/1765
Dimensions of computer desk (L*W*H, mm)	No Standard meter	1000*800*750			
	Standard meter	1500*800*750			

6. Ordering Information

TD3600 -

Class	
Code	Note
200	Class 0.02
500	Class 0.05

Position Number	
Code	Note
3	3 Positions
6	6 Positions
12	12 Positions
16	16 Positions

Special Customized	
Code	Note
None	—
C	√

Select from the Special Customized Function Selection Table

e.g.: **TD3600-500-12** represents Class 0.05, 12 positions, without special customized.

Special Customized Function Selection Table		
Tick	Optional function	Description
	Manual wiring	The default option is Crimping wiring (with meter rack) , Manual wiring is optional.
	Harmonic output	2nd~21th harmonic
	Offering compatibility with both single-phase and three-phase	Up to 12 test positions
	Current transformer	Up to 12 test positions
	Standard meter	Class 0.05 / 0.02
	Other requirements	