TD1250 Verification Device for Earth Continuity Testers

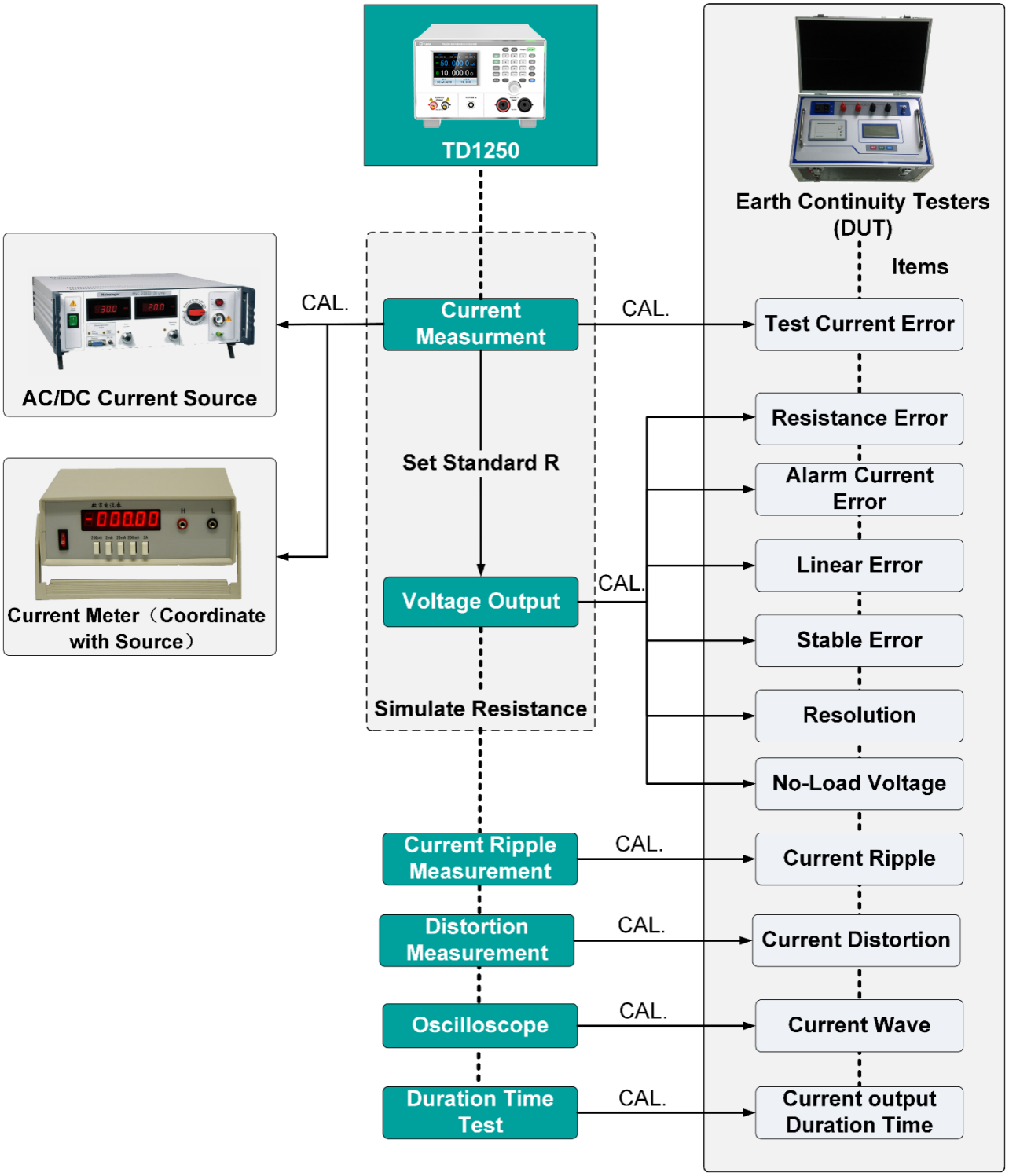
1. Summary

The TD1250 is an instrument that can accurately simulate AC and DC standard resistances. It is suitable for calibrating grounding resistance testers and other AC and DC low-resistance instruments. It also serves as an excellent AC and DC ammeter. The instrument can perform various testing tasks, including maximum allowable error, alarm setting error, and test current setting error, in accordance with the relevant standards.

2. Features

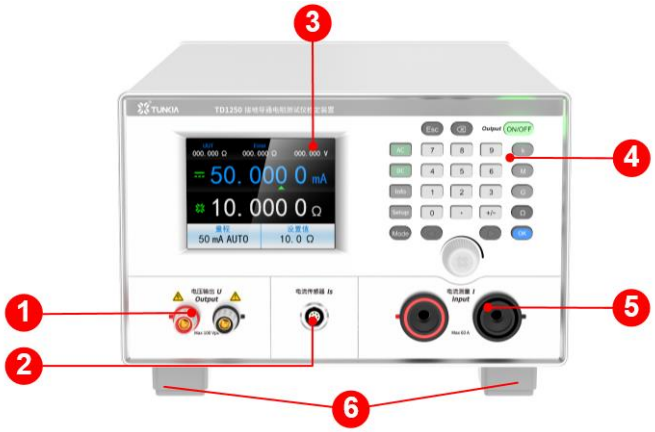
- Accuracy Class: 0.02, 0.05, 0.1
- AC and DC resistance simulation: 10 μΩ to 600 Ω
- AC and DC current measurement: 0.5 A to 60 A
- Direct setting of required resistance values via buttons, ensuring high calibration efficiency
- Features data statistics and analysis, stability testing, current overshoot, and duration testing functions
- Equipped with a color LCD screen that displays voltage, current, resistance, and other values simultaneously
- Excellent protection and high reliability, with a self-calibration function
- Dedicated software with current ripple or harmonic analysis functions

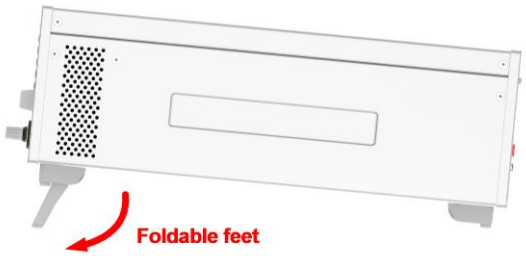
3. Application



4. Appearance

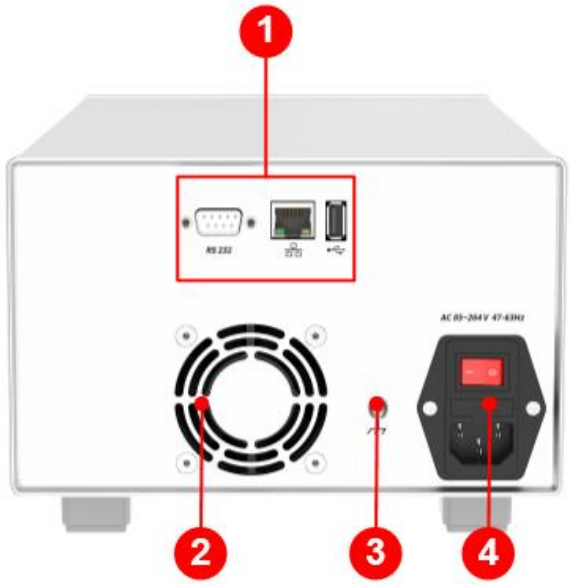
☆ Front Panel





S/N	Function
1	Voltage output terminal, can achieve a maximum voltage output of 100 Vpk.
2	Current measurement terminal, a single wiring can achieve a wider range of AC and DC current measurement expansion.
3	Large-size LCD touch color screen, intuitive display of multiple electrical parameters and waveforms, touch operation for better operation.
4	Button and knob operation panel, convenient for users to set resistance calibration values, making measurement work more convenient.
5	Current measurement terminal, a single wiring can achieve a wide range of 0.5 A ~ 60 A AC and DC current measurement.
6	Foldable feet, the instrument can be raised to a certain angle to obtain the best operation and reading angle.

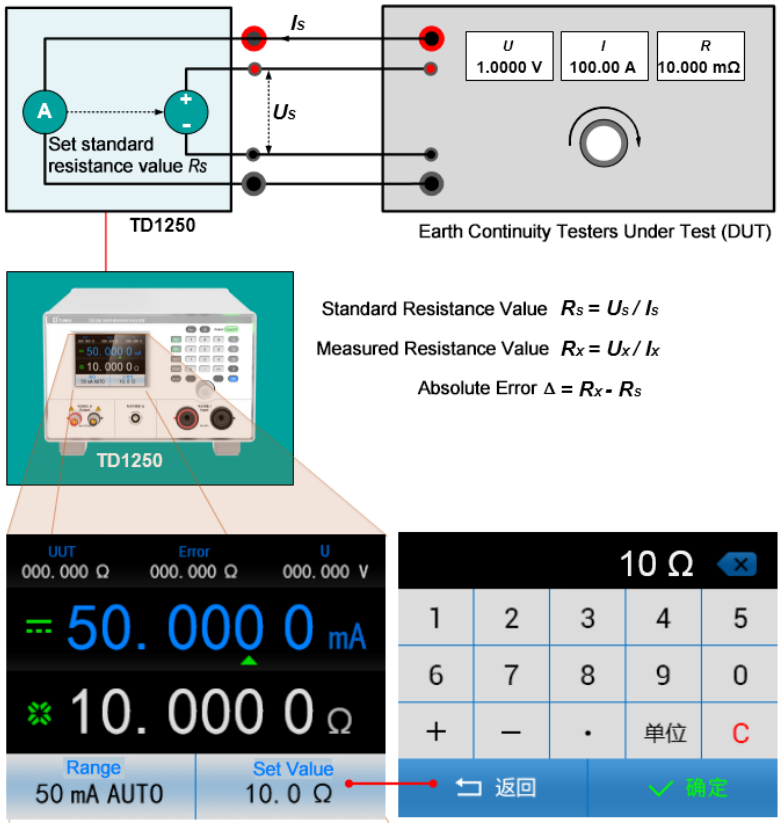
☆ Rear Panel



S/N	Function
1	Rich communication interfaces: including RS232, USB, LAN, which is convenient for users to build a fully automatic test system.
2	High-power cooling fan: good cooling system ensures long-term stable operation of the instrument.
3	Casing ground: Before using the equipment, make sure that the casing ground is reliably grounded.
4	Power interface: AC 220V power input interface with switch and fuse.

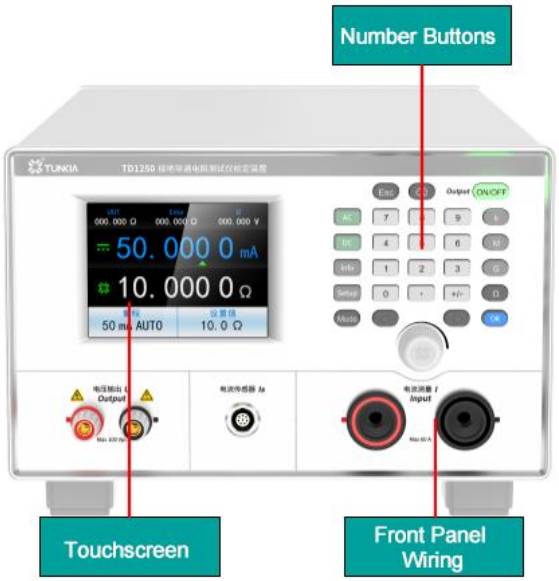
5. Characteristics

☆ Analog Resistance Output



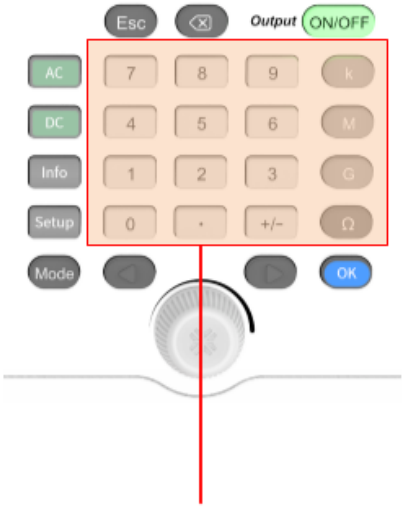
- Uses a four-wire connection method, effectively eliminating measurement errors caused by the resistance of the test leads, ensuring higher measurement accuracy.
- Compared to physical resistance boxes, the standard simulation output offers the following advantages:
  - ① Continuous resistance adjustment with finer tuning and better sensitivity.
  - ② No switch error, residual resistance error, contact resistance error, or other influences, ensuring accurate and reliable measurement data.
  - ③ Physical resistors may change resistance under overload conditions, potentially leading to resistor damage. This device has overload current and shock resistance capabilities and has undergone electrostatic protection and electromagnetic compatibility tests, ensuring excellent protection and high reliability.
- The device has a self-calibration function to ensure long-term accuracy and stability of measurements.

☆ Easy Operation



- Large LCD screen: Full-color display with high brightness and clear image quality, supporting touch operation. It offers comprehensive functions that are simple and quick to use.
- Buttons: Allows for precise output settings, rotary knob adjustments, and step adjustment, making the operation convenient and fast.
- Front panel wiring: Allows users to easily replace current and voltage test leads while testing instruments.
- Solution advantage: This combination of operation methods effectively enhances convenience, making it suitable for a wide range of application scenarios.

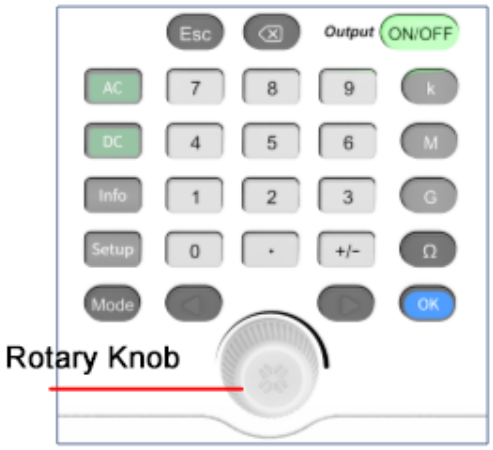
☆ Multiple Output Methods

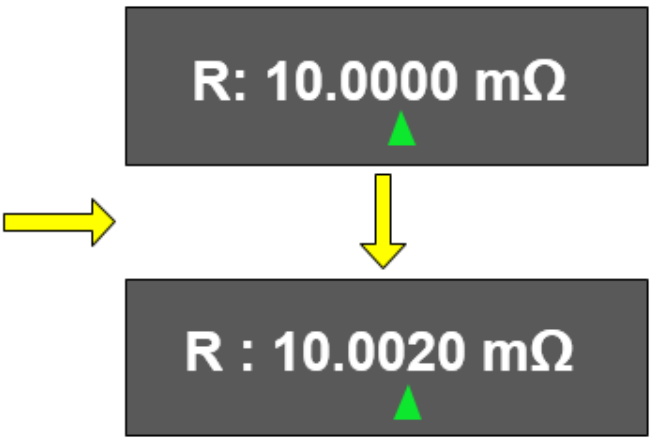


Number Buttons

Touchscreen Output

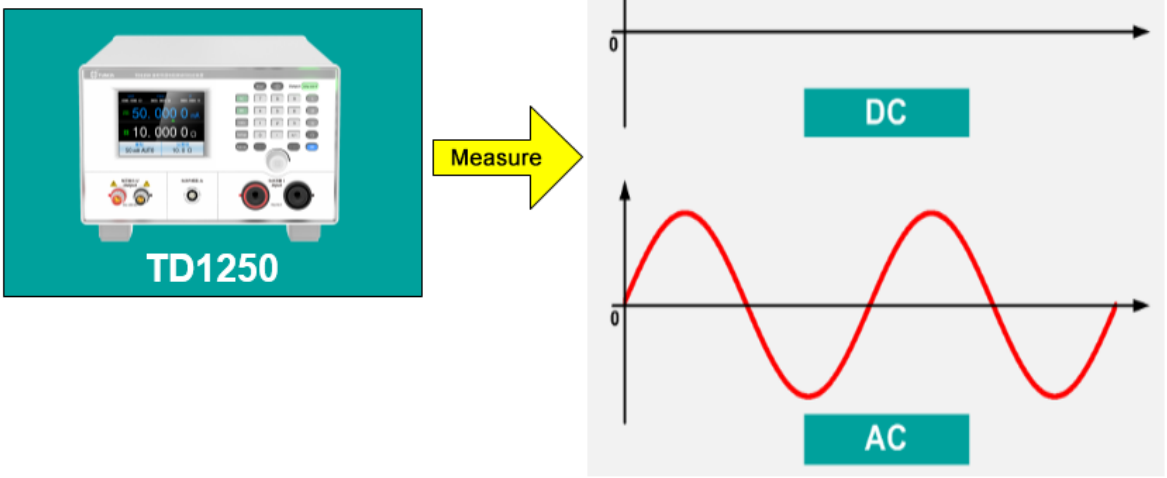
- The instrument features a "direct output" mode, allowing users to set the desired output value directly via the digital keypad or by tapping the touchscreen. The instrument will automatically switch to the optimal range for output, making operation very convenient.





- Rotary knob allows users to increase or decrease the output value by rotating it clockwise or counterclockwise.

☆ AC&DC Comprehensive Measurement



- The instrument supports DC and AC measurement modes, with an AC frequency range of 45 Hz to 65 Hz.
- When measuring current, it can simultaneously measure distortion and ripple. The maximum measurement bandwidth for DC ripple is 1 kHz, and for AC, it supports measurement of the 2nd to 32nd harmonics.
- **Solution advantages:** The rich measurement modes allow for the determination of errors in various DC current sources, AC current sources, DC low resistance meters, and AC low resistance meters. It also enables effective evaluation of the signal quality of DC or AC source outputs, reducing initial investment while significantly improving testing efficiency.

6. Specification

6.1 DCI Measurement

Range	Resolution	Measurement Uncertainty (k=2)(%*RD + mA) [1]		
		Class 0.1	Class 0.05	Class 0.02
1 A	10 μA	0.05 + 1.5	0.02 + 1.0	0.01 + 0.5
2 A	10 μA	0.05 + 1.5	0.02 + 1.0	0.01 + 0.5
5 A	10 μA	0.05 + 1.5	0.02 + 1.0	0.01 + 0.5
10 A	100 μA	0.05 + 1.5	0.02 + 1.0	0.01 + 0.5
20 A	100 μA	0.05 + 2.5	0.02 + 2.0	0.01 + 1.0
50 A	100 μA	0.05 + 5.0	0.02 + 3.0	0.01 + 2.0
Note: [1]: RD is the reading value				

- Measurement range: 0.5 A ~ 60 A;
- Ripple measurement frequency band: 1 Hz ~ 1 kHz, measurement uncertainty (k = 2): 0.02% * RG, effective value

6.2 ACI Measurement

Range	Resolution	Measurement Uncertainty (k=2)(%*RD + mA) [1]		
		Class 0.1	Class 0.05	Class 0.02
1 A	10 μA	0.10 + 3.0	0.05 + 2.0	0.02 + 1.0
2 A	10 μA	0.10 + 3.0	0.05 + 2.0	0.02 + 1.0
5 A	10 μA	0.10 + 3.0	0.05 + 2.0	0.02 + 1.0
10 A	100 μA	0.10 + 3.0	0.05 + 2.0	0.02 + 1.0
20 A	100 μA	0.10 + 5.0	0.05 + 3.0	0.02 + 2.0
50 A	100 μA	0.10 + 10	0.05 + 5.0	0.02 + 5.0
Note: [1]: RD is the reading value				

- Measurement range: 0.5 A ~ 60 A
- AC frequency: 45 Hz ~ 65 Hz, accuracy: ± 0.01 Hz, harmonic measurement: 2nd ~ 32nd

6.3 DC Resistance Simulation

Working Current	Setting Range	Adjust Fineness	Measurement Uncertainty (k=2, A%*RD+R_0) [1]		
			Class 0.1	Class 0.05	Class 0.02
50 A	10 μΩ ≤ R ≤ 12 mΩ	20 nΩ	1000 + 200 nΩ	500 + 120 nΩ	200 + 60 nΩ
	12 mΩ < R ≤ 120 mΩ	200 nΩ	1000	500	200
	120 mΩ < R ≤ 1.2 Ω	2 μΩ	1000	500	200
20 A	30 μΩ ≤ R ≤ 30 mΩ	100 nΩ	1000 + 0.5 μΩ	500 + 0.3 μΩ	200 + 0.15 μΩ
	30 mΩ < R ≤300 mΩ	1 μΩ	1000	500	200
	300 mΩ < R ≤ 3 Ω	10 μΩ	1000	500	200
10 A	50 μΩ ≤ R ≤ 60 mΩ	100 nΩ	1000 +1 μΩ	500 + 0.6 μΩ	200 + 0.3 μΩ
	60 mΩ < R ≤ 600 mΩ	1 μΩ	1000	500	200
	600 mΩ < R ≤6 Ω	10 μΩ	1000	500	200
5 A	100 μΩ ≤ R ≤ 120 mΩ	200 nΩ	1000 + 2 μΩ	500 + 1.2 μΩ	200 + 0.6 μΩ
	120 mΩ < R ≤ 1.2 Ω	2 μΩ	1000	500	200
	1.2 Ω < R ≤ 12 Ω	20 μΩ	1000	500	200
2 A	300 μΩ ≤ R ≤ 300 mΩ	1 μΩ	1000 + 5 μΩ	500 + 3 μΩ	200+ 1.5 μΩ
	300 mΩ < R ≤ 3 Ω	10 μΩ	1000	500	200
	3 Ω < R ≤ 30 Ω	100 μΩ	1000	500	200
1 A	500 μΩ ≤ R ≤ 600 mΩ	1 μΩ	1000 + 10 μΩ	500 + 6 μΩ	200 + 3 μΩ
	600 mΩ < R ≤ 6 Ω	10 μΩ	1000	500	200
	6 Ω < R ≤ 60 Ω	100 μΩ	1000	500	200
Note[1]: RD is the reading value, RG is the range value.					

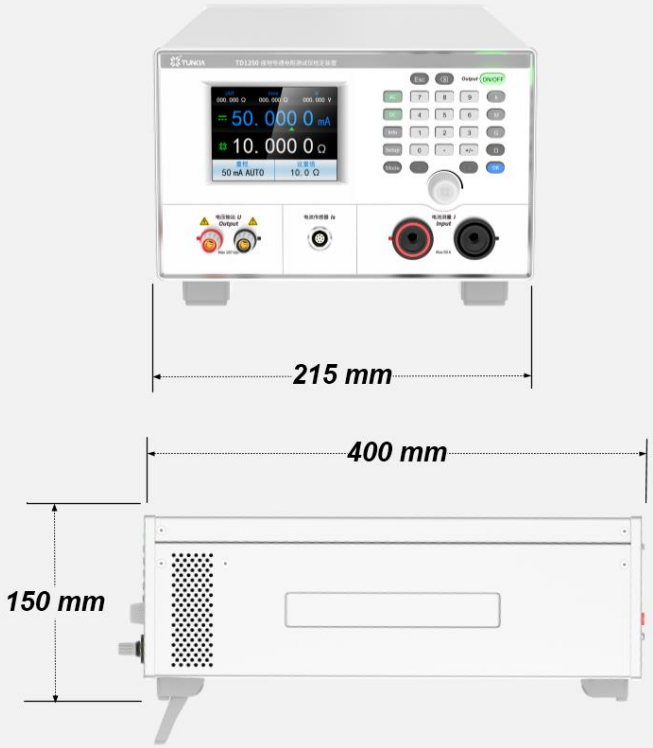
- Resistance simulation range: 10 μΩ～60 Ω
- Display digits: 6 decimal digits, resistance value can be set by digital buttons.

6.4 AC Resistance Simulation

Current Range	Setting Range Of Resistance Value R	Adjust Fineness	Measurement Uncertainty (k=2, ppm*RD + R_0) [1]		
			Class 0.1	Class 0.05	Class 0.02
50 A [2]	10 μΩ ≤ R ≤ 12 mΩ	20 nΩ	2000 + 5 μΩ	1000 + 2 μΩ	500 + 1 μΩ
	12 mΩ < R ≤ 120 mΩ	200 nΩ	2000	1000	500
	120 mΩ < R ≤ 1.2 Ω	2 μΩ	2000	1000	500
20 A	30 μΩ ≤ R ≤ 30 mΩ	100 nΩ	2000 + 10 μΩ	1000 + 4 μΩ	500 + 2 μΩ
	30 mΩ < R ≤300 mΩ	1 μΩ	2000	1000	500
	300 mΩ < R ≤ 3 Ω	10 μΩ	2000	1000	500
10 A	50 μΩ ≤ R ≤ 60 mΩ	100 nΩ	2000 +20 μΩ	1000 + 10 μΩ	500 + 5 μΩ
	60 mΩ < R ≤ 600 mΩ	1 μΩ	2000	1000	500
	600 mΩ < R ≤6 Ω	10 μΩ	2000	1000	500
5 A	100 μΩ ≤ R ≤ 120 mΩ	200 nΩ	2000 + 50 μΩ	1000 + 20 μΩ	500 + 10 μΩ
	120 mΩ < R ≤ 1.2 Ω	2 μΩ	2000	1000	500
	1.2 Ω < R ≤ 12 Ω	20 μΩ	2000	1000	500
2 A	300 μΩ ≤ R ≤ 300 mΩ	1 μΩ	2000 + 100 μΩ	1000 + 40 μΩ	500 + 20 μΩ
	300 mΩ < R ≤ 3 Ω	10 μΩ	2000	1000	500
	3 Ω < R ≤ 30 Ω	100 μΩ	1000	1000	500
1 A	500 μΩ ≤ R ≤ 600 mΩ	1 μΩ	2000 + 200 μΩ	1000 + 100 μΩ	500 + 50 μΩ
	600 mΩ < R ≤ 6 Ω	10 μΩ	2000	1000	500
	6 Ω < R ≤ 60 Ω	100 μΩ	2000	1000	500
Note[1]: RD is the reading value, RG is the range value.					

- Resistance simulation range: 10 μΩ～60 Ω
- Display digits: 6 decimal digits, resistance value is set by digital keys.
- AC frequency: 45 Hz～65 Hz, accuracy: ± 0.01 Hz

7. General Specification

Power Supply	AC (220 ± 22)V, (50 ± 2) Hz
Warm-Up Time	≥ 30 min
Maximum Power Consumption	100 VA
Temperature Performance	Working temperature: 5 ° C～45 ° C; Storage temperature: -20 ° C～70° C
Humidity Performance	Working humidity: (40%~80%) R·H, no condensation Storage humidity: < 80% R·H, no condensation
Communication Interface	RS 232
Weight	Approx. 7.9 kg
Dimension	215 mm (width) X 400 mm (depth) X 15 mm (height) (excluding handles and feet)
	

8. Ordering Information

TD1250 – [ ]

Accuracy Class	
Code	Note
1 k	Class 0.1
500	Class 0.05
200	Class 0.02

E.g.: TD1250-500 means the accuracy is Class 0.05.