

# TD1210 Verification Device for Leakage Current Tester



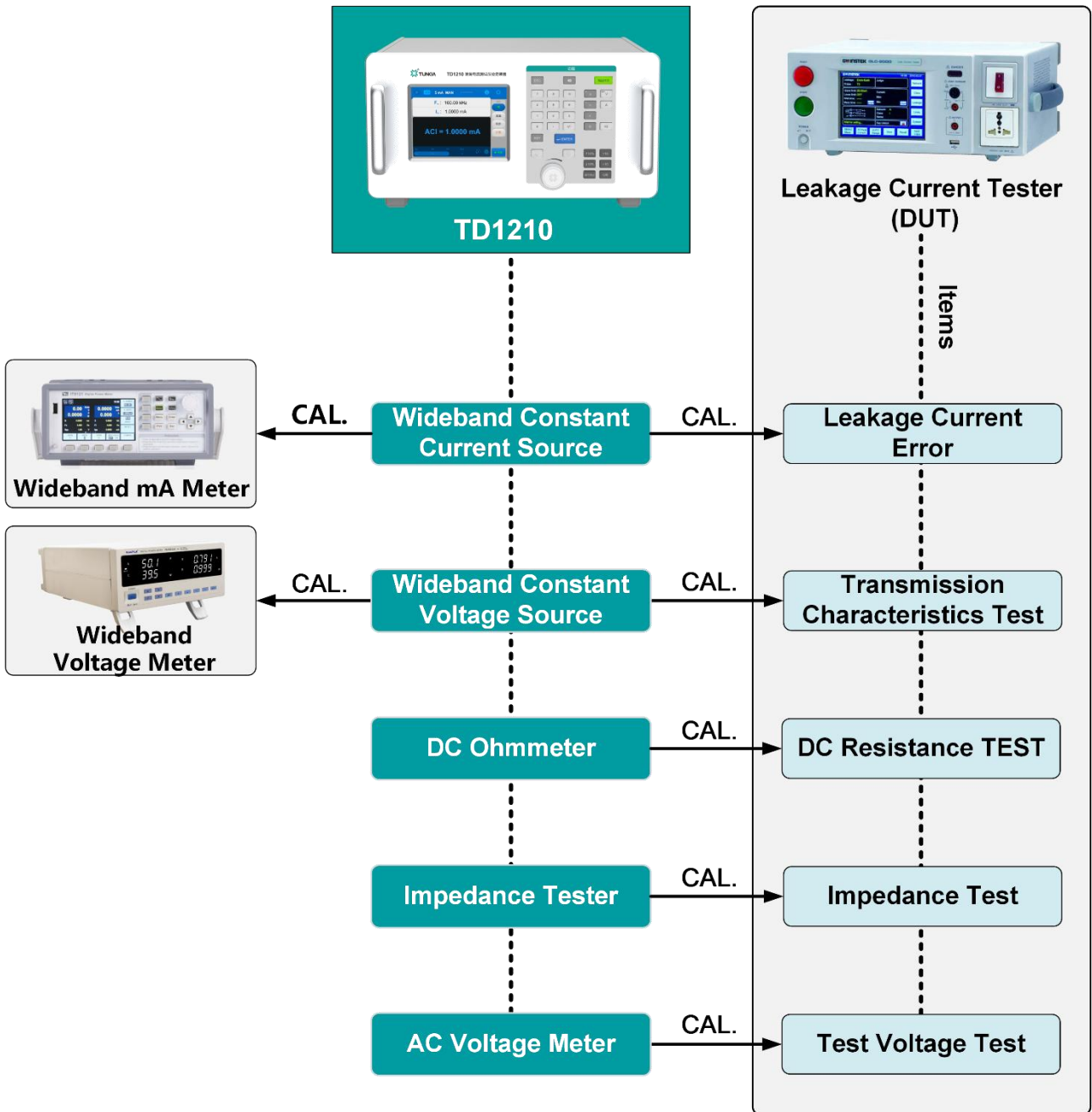
## 1. Summary

**TD1210** integrates the DC~1MHz wideband constant current standard source, constant voltage standard source, DC ohmmeter, impedance tester, AC voltage standard meter and others. It's applied for calibrating conventional leakage current meter, contact current tester, and medical leakage current tester.

## 2. Features

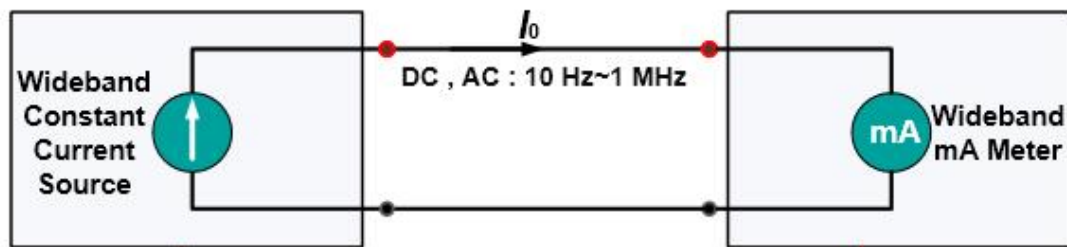
- Constant current output: 50  $\mu$ A~55 mA
- Constant voltage output: 30 mV~31 V
- Frequency: DC~1 MHz
- Sweep frequency test function for measuring network.
- ACV Measurement: 0~300 V.
- 1592 Hz small current source for time constant test.
- LCD touch screen.
- Setting output values by keys.

### 3. Application

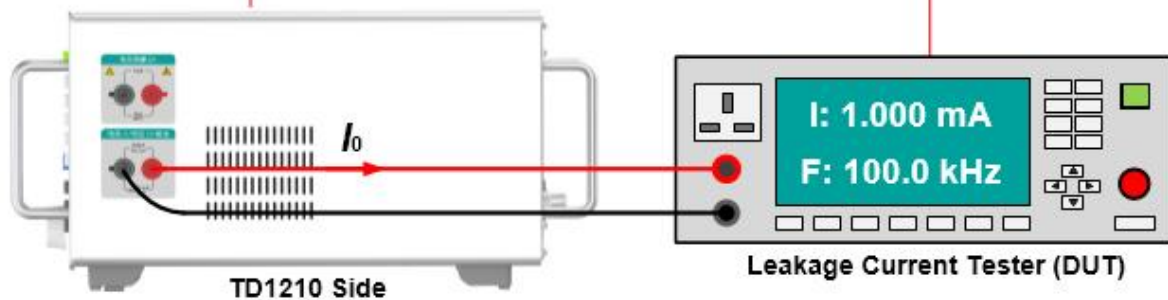


## 4. Characteristics

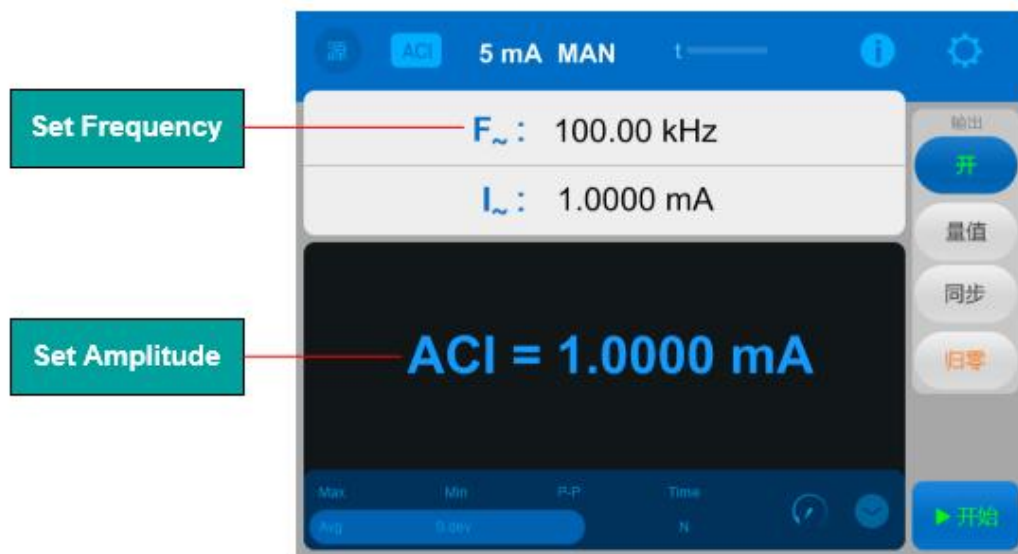
### ☆ Wideband Constant Current Source



(a) Calibrate Leakage Current Error Principle



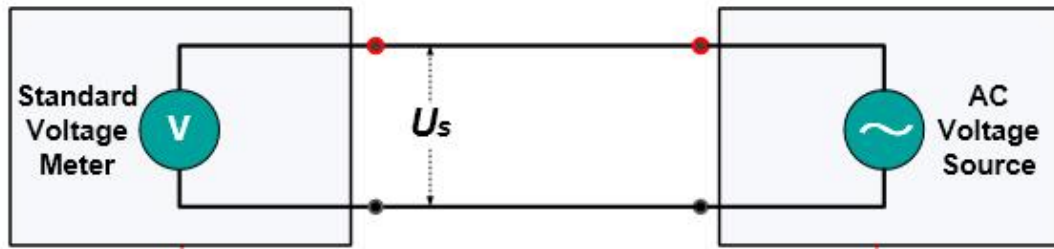
(b) Calibrate Leakage Current Error Connection



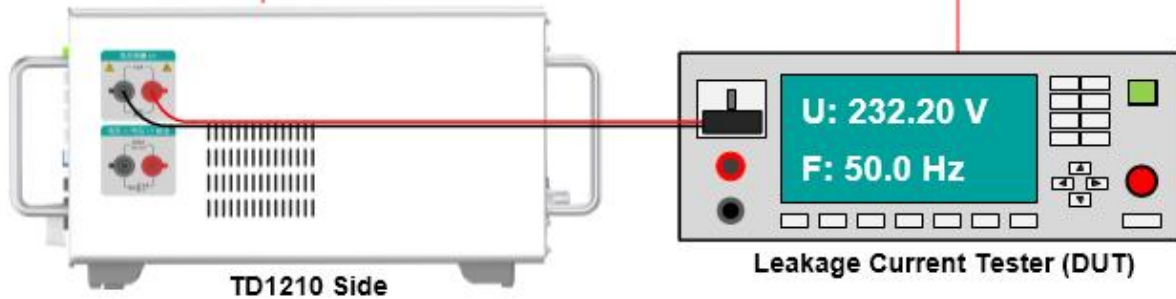
(c) TD1210 Setting Interface

- 50  $\mu\text{A}$ ~55 mA constant current source applied to calibrate the leakage current error.
- The constant current source has a wide frequency output range of DC, AC 10 Hz~1 MHz, applied to calibrate conventional or medical leakage current testers.

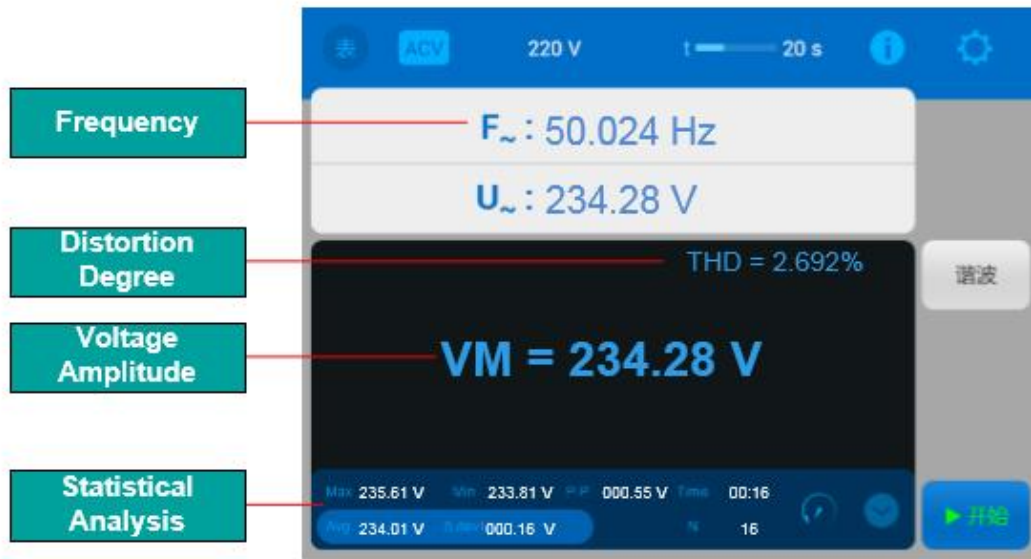
☆ Standard Voltage Meter



(a) Calibrate Test Voltage Error Principle



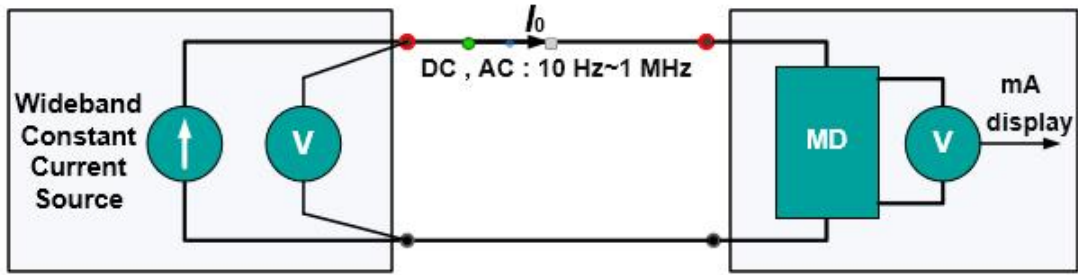
(b) Calibrate Test Voltage Error Connection



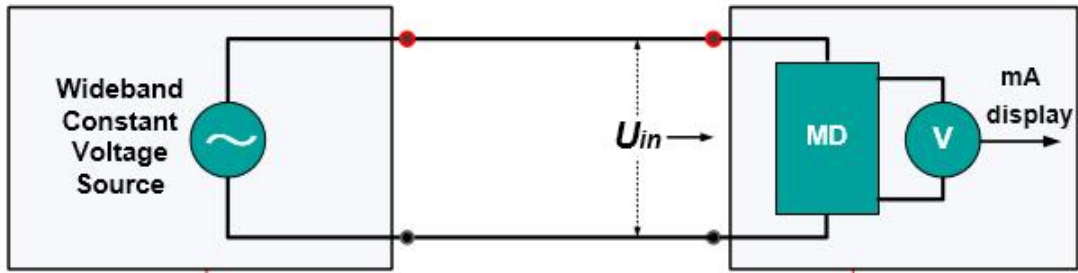
(c) TD1210 AC Voltage Test Interface

- AC standard voltmeter applied to test voltage error and distortion.
- With data statistics and analysis function, it can measure and calculate the Max, Min, P-P, Avg and S.dev for AC voltage source.

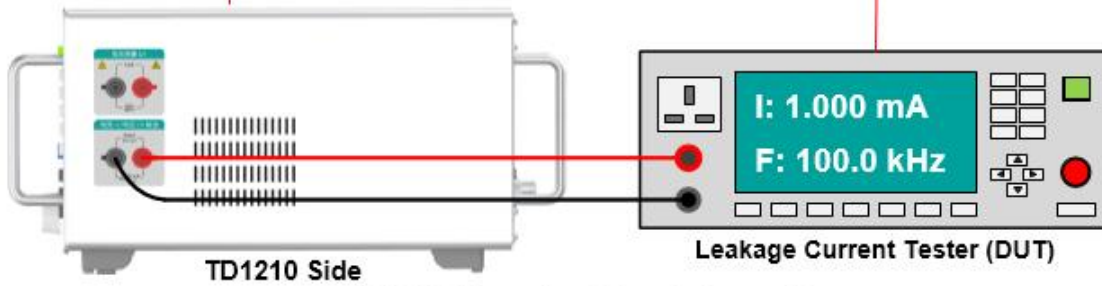
☆ Measuring Network Test



(a) DC Resistance, Input Impedance Test Principle



(b) Transmission Characteristics Test Principle



(c) DUT Measuring Network Connection

The screenshot shows the TD1210 Measuring Network Test Interface. It includes three test sections:

- DC Resistance Test:** DCR: 2037.2 Ω
- Time Constant Test:** T: 242.9
- Input Impedance Sweep Frequency:** A table showing input impedance at various frequencies.

频率(Hz)	输入阻抗(Ω)	频率(Hz)	输入阻抗(Ω)
10	2035.2	5,000	568.6
20	2034.0	10,000	544.6
50	2026.4	20,000	538.3
60	2020.6	50,000	536.0
100	1998.4	100,000	534.9
200	1895.9	200,000	532.1
500	1470.5	500,000	519.4
1,000	1010.2	1,000,000	488.4
2,000	707.6		

TD1210 Measuring Network Test Interface

- The calibration items of DUT measurement network include DC resistance test, impedance test, transmission characteristic measurement, etc.

### ☆ Multiple Output Mode



Keypad



Touch Screen Output

- **“Direct output”** mode, User can set output value by physical key or touch screen.



Rotary Knob



- **“Rotary Knob”** mode, User can setting in clockwise direction or anticlockwise direction.

★ Multiple Output Mode



% Setting



Full Range



90% Range



80% Range



70% Range



- Touch “**Calibration point**” of screen for “% setting”.

## 5. Specifications

### 5.1 Wideband Constant Current Source

Range	Resolution	Frequency ( Hz )	Accuracy $\pm(\% \text{*reading} + \text{A})^{[1]}$	Max Burden ( V )
500 $\mu\text{A}$	1 nA	DC	$0.05 + 0.25 \mu$	15
		$10 \leq F \leq 40$	$0.12 + 0.4 \mu$	10
		$40 < F \leq 1 \text{ k}$	$0.06 + 0.2 \mu$	10
		$1 \text{ k} < F \leq 10 \text{ k}$	$0.12 + 0.4 \mu$	10
		$10 \text{ k} < F \leq 100 \text{ k}$	$0.2 + 1 \mu$	10
		$100 \text{ k} < F \leq 300 \text{ k}$	$0.5 + 2.5 \mu$	10
		$300 \text{ k} < F \leq 1 \text{ M}$	$1 + 4 \mu$	10
5 mA	10 nA	DC	$0.05 + 2.5 \mu$	30
		$10 \leq F \leq 40$	$0.12 + 4 \mu$	30
		$40 < F \leq 1 \text{ k}$	$0.06 + 2 \mu$	30
		$1 \text{ k} < F \leq 10 \text{ k}$	$0.12 + 4 \mu$	30
		$10 \text{ k} < F \leq 100 \text{ k}$	$0.2 + 10 \mu$	30
		$100 \text{ k} < F \leq 300 \text{ k}$	$0.5 + 25 \mu$	30
		$300 \text{ k} < F \leq 1 \text{ M}$	$1 + 40 \mu$	30
50 mA	0.1 mA	DC	$0.05 + 25 \mu$	30
		$10 \leq F \leq 40$	$0.12 + 40 \mu$	30
		$40 < F \leq 1 \text{ k}$	$0.06 + 20 \mu$	30
		$1 \text{ k} < F \leq 10 \text{ k}$	$0.12 + 40 \mu$	30
		$10 \text{ k} < F \leq 100 \text{ k}$	$0.2 + 100 \mu$	30
		$100 \text{ k} < F \leq 300 \text{ k}$	$0.5 + 250 \mu$	30
		$300 \text{ k} < F \leq 1 \text{ M}$	$1 + 400 \mu$	30

- Output range: 50 $\mu\text{A}$  ~ 55 mA, adjustment fineness: 0.01% \* range
- Display digits: 5/6 digits available.



## 5.2 Wideband Constant Voltage Source

Range	Resolution	Frequency ( Hz )	Accuracy $\pm(\% * \text{reading} + A)^{[1]}$	Maximum burden ( mA )
0.3 V	1 $\mu$ V	DC	0.06 + 0.04	20
		$10 \leq F \leq 40$	0.12 + 0.08	20
		$40 < F \leq 1 k$	0.06 + 0.04	20
		$1 k < F \leq 10 k$	0.12 + 0.08	20
		$10 k < F \leq 100 k$	0.2 + 0.1	20
		$100 k < F \leq 300 k$	0.5 + 0.2	20
		$300 k < F \leq 1 M$	1 + 0.5	20
3 V	10 $\mu$ V	DC	0.06 + 0.04	50
		$10 \leq F \leq 40$	0.12 + 0.08	50
		$40 < F \leq 1 k$	0.06 + 0.04	50
		$1 k < F \leq 10 k$	0.12 + 0.08	50
		$10 k < F \leq 100 k$	0.2 + 0.1	50
		$100 k < F \leq 300 k$	0.5 + 0.2	50
		$300 k < F \leq 1 M$	1 + 0.5	50
30 V	0.1 mV	DC	0.06 + 0.04	50
		$10 \leq F \leq 40$	0.12 + 0.08	50
		$40 < F \leq 1 k$	0.06 + 0.04	50
		$1 k < F \leq 10 k$	0.12 + 0.08	50
		$10 k < F \leq 100 k$	0.2 + 0.1	50
		$100 k < F \leq 300 k$	0.5 + 0.2	50
		$300 k < F \leq 1 M$	1 + 0.5	50

- Output range: 30 mV ~ 31 V, adjustment fineness: 0.01% \* range;
- Display digits: 5/6 digits available.

### 5.3 Other Functions

<b>AC Voltage Measurement</b>	Range	30 V~300 V
	Accuracy	$\pm (0.06\% \cdot \text{reading} + 0.04\% \cdot \text{range})$
	THD	< 1%
<b>DC Resistance Measurement</b>	Range	100 $\Omega$ ~2.5 k $\Omega$
	Accuracy	$\pm 0.2\%$
	Test Current	5 mA
<b>Input Impedance Measurement</b>	Accuracy	$\pm 1\%$ @ 10 Hz~100kHz
		$\pm 2\%$ @ 100 kHz~1MHz
<b>Time Constant Measurement</b>	Test Frequency	1592 Hz
	Accuracy	$\pm 2 \mu\text{s}$
	Test Current	5 mA

## 6. General Specifications

<b>Power Supply</b>	AC ( 220 $\pm$ 22 ) V, ( 50 $\pm$ 2 ) Hz
<b>Temperature Performance</b>	Working temperature: 0°C~45°C; Storage temperature: -20°C~70°C
<b>Humidity Performance</b>	Working humidity: < 80% @ 30°C, < 70% @ 40°C, < 40% @ 50°C Storage humidity: (20%~80%) R·H, non-condensing
<b>Interface</b>	RS232