

TH0500 Precision Current Transformer



1. Summary

TH0500 Precision Current Transformers based on the principle of the current comparator, it can produce an output current or voltage that varies directly with the input current from 0.1A to 20 kA. By the connection of a reference shunt burden on the output terminal when outputting an current or directly measuring the voltage when outputting an voltage the primary current can be deduced from the measured voltage .

2. Features

- Supports two current access modes, through core and direct connected type respectively.
 - Direct connected type with the input current of 0.1 A...200 A
 - Through core type with the input current of 500 A...20 kA
- Secondary output signal is optional for current (I / I) or voltage (I/ V)
 - I/I: Optimum uncertainty of 0.2ppm
 - I/V: Optimum uncertainty of 10 ppm
- Optional digital display function, support for digital signal output

3. Applications

- Establish DC / AC current precision measurement system
- Calibrate the DC / AC current source or ammeter
- Calibrate the DC current ratio standard (current comparator)
- Calibrate the DC current transformer / sensor
- Calibrate the DC current I/V transformers

☆ Flexible current access and signal output mode



Figure (a) Schematic diagram of direct connection



Figure (b) Schematic diagram of through-core connection

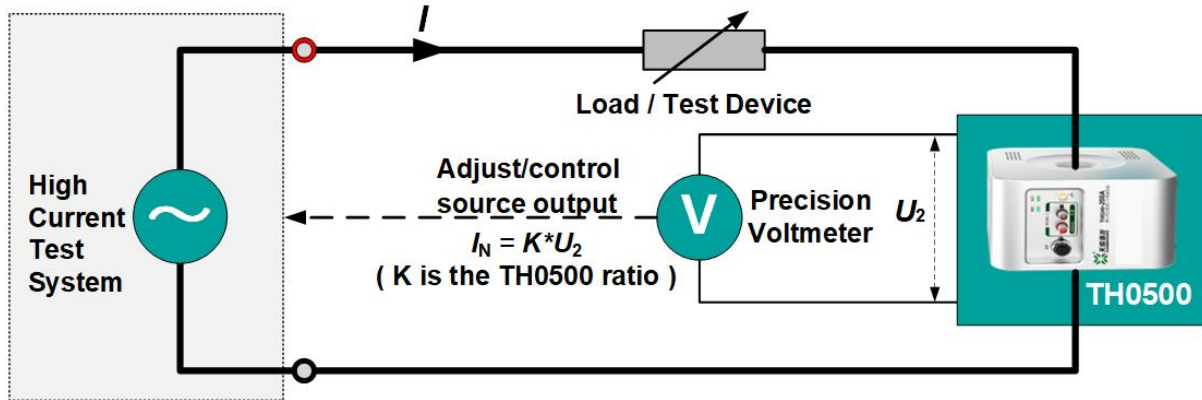
- Current input is optional! direct connected type with the input current of 0.1 A... 200 A.
- through core type with the input current of 500 A... 20 kA.

The secondary output can be selected as a voltage type or a current type:

- **Voltage output (I/V):** nominal output 10 V。
- **Current output (I/I):** nominal output 0.1 A ... 5 A selected 。

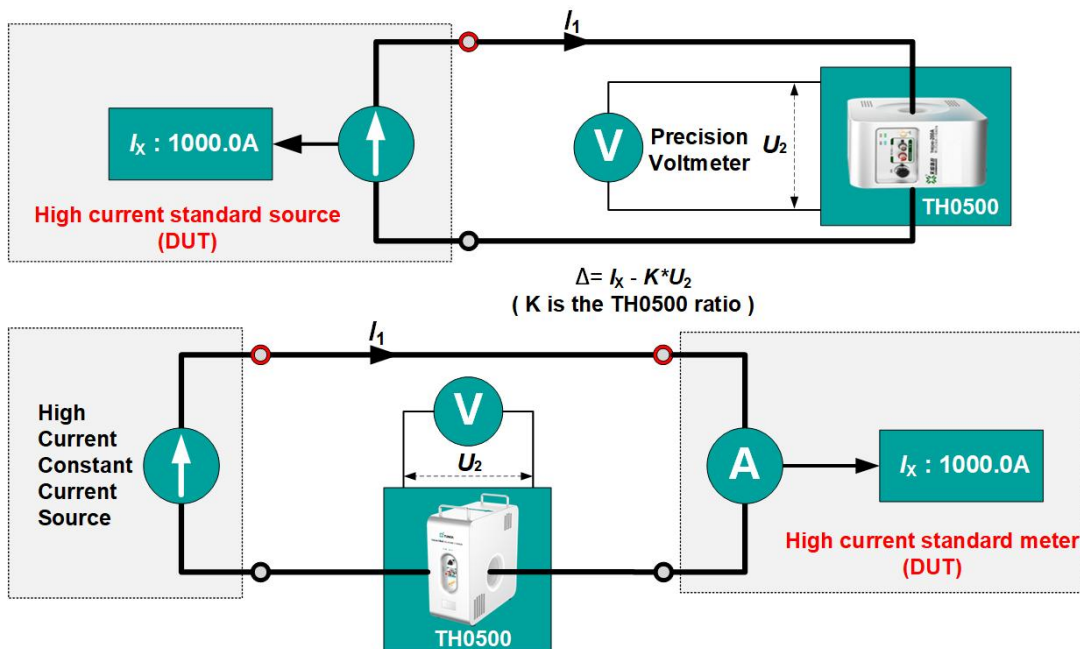
3.1 Application of type I/V TH0500

☆ Establish current precision measurement system



- Form a current measurement system with TH0500, precision voltmeter and high stability current source.
- Implement the measurement of a large current, or provide a DC / AC current signal

☆ Calibrate High Current Source / meter



- Another typical application of the type I / V transform is paired with a precision voltmeter to calibrate the AC high current standard source / meter.

☆ Calibrate I/V conversion standards

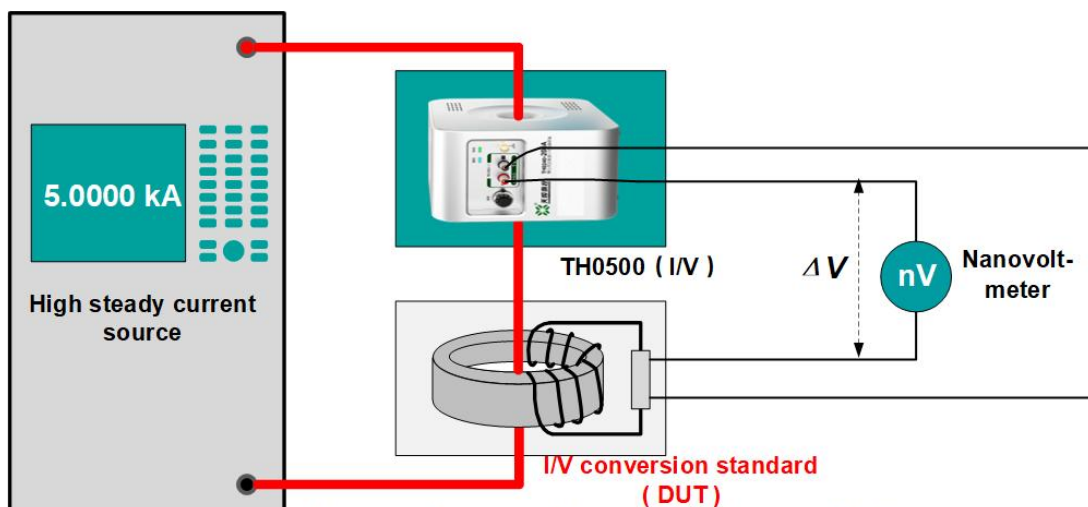


Figure (a) Schematic diagram of calibration of high current conversion standard (same proportion) by difference method

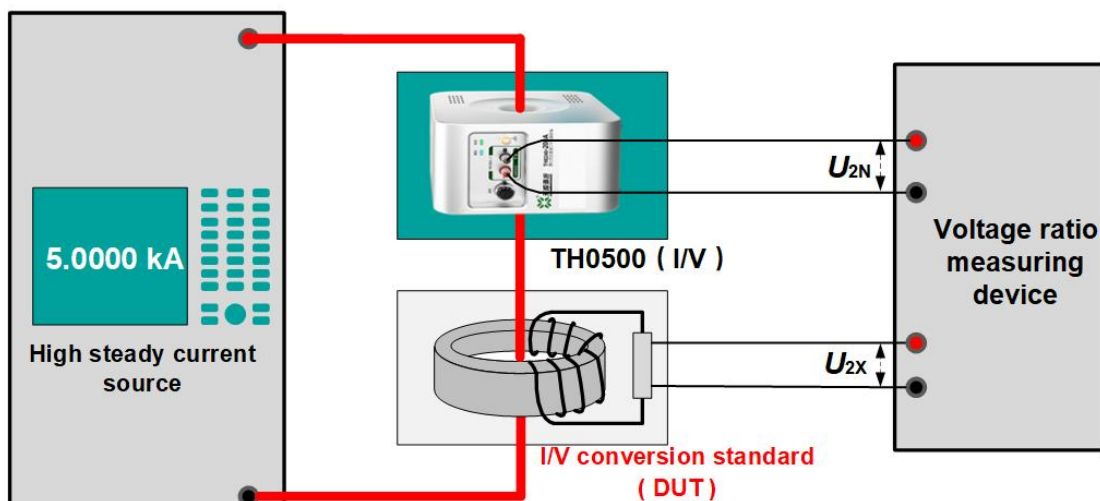


Figure (b) Schematic diagram of voltage ratio method to calibrate high current conversion standard (not the same proportion)

- Using the I/V type TH0500, you can calibrate the DC shunt, current transducer and other I / V transform devices in the following two methods.
- **Calibration by difference method:** The selected TH0500 is in the same proportion as the tested I/V, and a micro voltmeter such as a nanovoltmeter is used for calibration
- **Calibration by voltage ratio method:** The selected TH0500 is not proportional to the tested I / V and is calibrated using a voltage ratio measurement device. (Note: For the calibration of type I / I conversion standard such as current comparator and DC current transformer, type I / I TH0500 is recommended as the standard; the secondary series standard resistance being tested I / I is also used as described in the method above figure.)

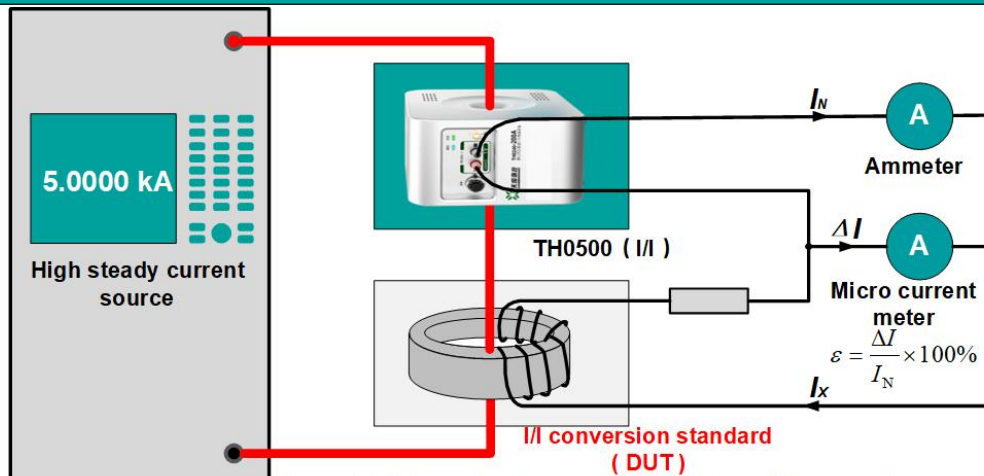
3.2 Application of Type I/I TH0500
☆ Calibrate I/I conversion standards


Figure (a) Schematic diagram of calibration of I/I conversion standard (same proportion) by difference method

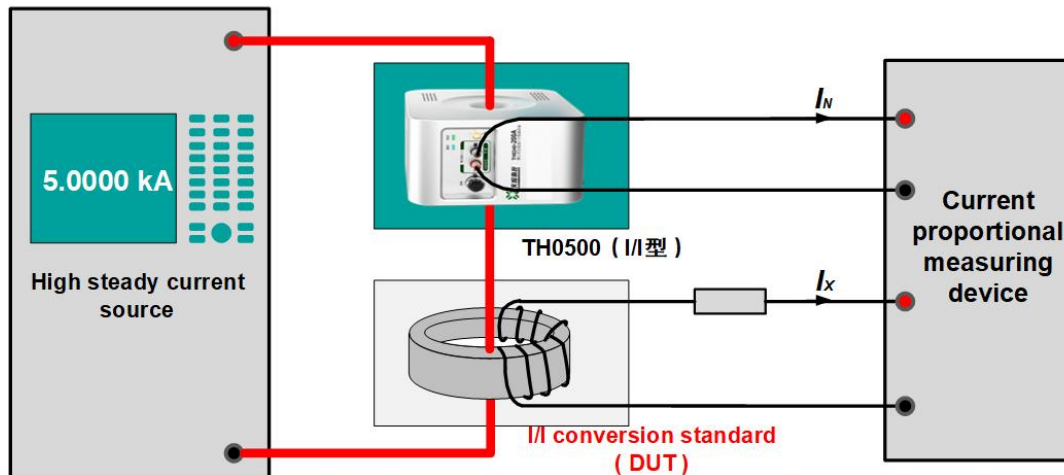
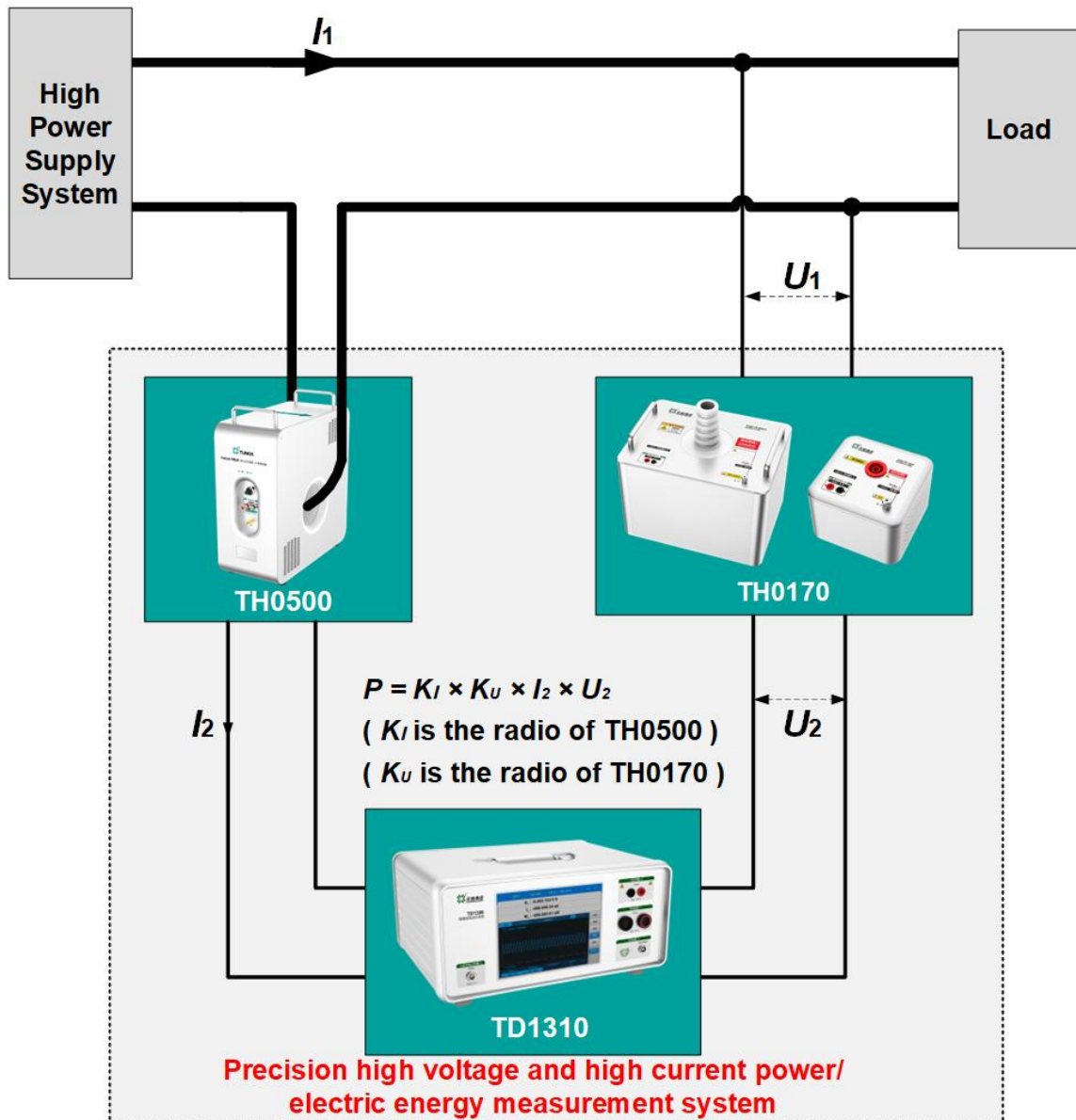


Figure (b) Schematic diagram of current ratio method to calibrate high current conversion standard (not the same proportion)

- I/I type TH0500 can be used to calibrate DC current comparator, current transformer and other I/I conversion equipment according to the following two methods.
- **Calibration by difference method:** the selected TH0500 is in the same proportion as the tested I/I μ A micro ammeter for calibration.
- **Calibration by current ratio method:** TH0500 selected is not in the same proportion as the tested I/I, and the current ratio measuring device is used for calibration

☆ Establish high voltage and high current power/electric energy precision measurement system



- TH0500 can be used with high-voltage V/V conversion equipment (typically TH0170 precision DC voltage divider) and standard power/energy meter (typically TD1310 AC/DC standard meter) to form a high-voltage high current power/energy precision measurement system.
- It is used to measure the output power of high-power power supply, the efficiency of conversion equipment, calibrate high-power power source, power meter and other equipment

4. Specifications

4.1 Direct Connected I/I Conversion Standard

Model	Primary Test Current (A)	Secondary Output Current (A)	Transformation Ratio	Accuracy (± μA / A, full range)	
				DC	AC@53Hz
TH0500-I-D-01A-01A-2	0.1	0.1	1:1	2	150
TH0500-I-D-02A-01A-2	0.2	0.1	2:1	2	150
TH0500-I-D-05A-01A-2	0.5	0.1	5:1	2	150
TH0500-I-D-1A-01A-2	1	0.1	10:1	2	150
TH0500-I-D-2A-01A-2	2	0.1	20:1	2	150
TH0500-I-D-5A-01A-2	5	0.1	50:1	2	150
TH0500-I-D-10A-01A-2	10	0.1	100:1	2	150
TH0500-I-D-20A-01A-2	20	0.1	200:1	2	150
TH0500-I-D-50A-01A-2	50	0.1	500:1	2	150
TH0500-I-D-100A-01A-2	100	0.1	1000:1	2	150
TH0500-I-D-200A-01A-2	200	0.1	2000:1	2	150

- Measurement range: ± (0~120%) * FS; Measuring frequency: DC~5 kHz (3dB signal bandwidth ≥ 100 kHz)

4.2 Through Core I/I Conversion Standard

Model	Primary Test Current (A)	Secondary Output Current (A)	Transformation Ratio	Accuracy (± μA / A, full range)	
				DC	AC@53Hz
TH0500-I-T-500A-01A-5	500	0.1	5000:1	5	150
TH0500-I-T-1kA-02A-5	1 k	0.2	5000:1	5	150
TH0500-I-T-2kA-05A-5	2 k	0.5	4000:1	5	150
TH0500-I-T-5kA-1A-5	5 k	1	5000:1	5	150
TH0500-I-T-10kA-2A-10	10 k	2	5000:1	10	150
TH0500-I-T-20kA-5A-20	20 k	5	4000:1	20	150

- Measurement range: ± (0~120%) * FS; Measuring frequency: DC~5 kHz (3dB signal bandwidth ≥ 100 kHz)

Note: The secondary nominal output current can be customized according to customer requirements.

4.3 Direct connected I/V conversion standard

Model	Primary Test Current (A)	Secondary Output Voltage (V)	Accuracy ($\pm 1 \times 10^{-6}$, full range)	
			DC	AC@53Hz
TH0500-U-D-01A-10V-10	0.1	10	10	200
TH0500-U-D-02A-10V-10	0.2	10	10	200
TH0500-U-D-05A-10V-10	0.5	10	10	200
TH0500-U-D-1A -10V-10	1	10	10	200
TH0500-U-D-2A-10V-10	2	10	10	200
TH0500-U-D-5A-10V-10	5	10	10	200
TH0500-U-D-10A-10V-10	10	10	10	200
TH0500-U-D-20-10V-10	20	10	10	200
TH0500-U-D-50A-10V-10	50	10	10	200
TH0500-U-D-100-10V-10	100	10	10	200
TH0500-U-D-200A-10V-10	200	10	10	200
TH0500-U-D-01A-10V-20	0.1	10	20	200
TH0500-U-D-02A-10V-20	0.2	10	20	200
TH0500-U-D-05A-10V-20	0.5	10	20	200
TH0500-U-D-1A-10V-20	1	10	20	200
TH0500-U-D-2A-10V-20	2	10	20	200
TH0500-U-D-5A-10V-20	5	10	20	200
TH0500-U-D-10A-10V-20	10	10	20	200
TH0500-U-D-20A-10V-20	20	10	20	200
TH0500-U-D-50A-10V-20	50	10	20	200
TH0500-U-D-100A-10V-20	100	10	20	200
TH0500-U-D-200A-10V-20	200	10	20	200
TH0500-U-D-01A-10V-50	0.1	10	50	200
TH0500-U-D-02A-10V-50	0.2	10	50	200
TH0500-U-D-05A-10V-50	0.5	10	50	200

TH0500-U-D-1A-10V-50	1	10	50	200
TH0500-U-D-2A-10V-50	2	10	50	200
TH0500-U-D-5A-10V-50	5	10	50	200
TH0500-U-D-10A-10V-50	10	10	50	200
TH0500-U-D-20A-10V-50	20	10	50	200
TH0500-U-D-50A-10V-50	50	10	50	200
TH0500-U-D-100A-10V-50	100	10	50	200
TH0500-U-D-200A-10V-50	200	10	50	200

- Measurement range: $\pm (0\sim 120\%) * FS$; Measuring frequency: DC~5 kHz (3dB signal bandwidth ≥ 100 kHz)

4.4 Through Core I/V Conversion Standard

Model	Primary Test Current (A)	Secondary Output Voltage (V)	Accuracy ($\pm 1 \times 10^{-6}$, full range)	
			DC	AC@53Hz
TH0500-U-T-500A-10V-10	500	10	10	200
TH0500-U-T-1kA-10V-10	1 k	10	10	200
TH0500-U-T-2kA-10V-10	2 k	10	10	200
TH0500-U-T-5kA-10V-10	5 k	10	10	200
TH0500-U-T-500A-10V-20	500	10	20	200
TH0500-U-T-1kA-10V-20	1 k	10	20	200
TH0500-U-T-2kA-10V-20	2 k	10	20	200
TH0500-U-T-5kA-10V-20	5 k	10	20	200
TH0500-U-T-10kA-10V-20	10 k	10	20	200
TH0500-U-T-500A-10V-50	500	10	50	200
TH0500-U-T-1kA-10V-50	1 k	10	50	200
TH0500-U-T-2kA-10V-50	2 k	10	50	200
TH0500-U-T-5kA-10V-50	5 k	10	50	200
TH0500-U-T-10kA-10V-50	10 k	10	50	200

TH0500-U-T-20kA-10V-50	20 k	10	50	200
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- Measurement range: $\pm (0\sim 120\%) * FS$; Measuring frequency: DC~5 kHz (3dB signal bandwidth ≥ 100 kHz)

5. General Specifications

Power Supply	AC: 195 V ~ 242 V / 47 Hz ~ 63 Hz Lithium battery (built-in)
Temperature Performance	Working temperature: 0 °C ~45 °C; Storage temperature: -10 °C ~ 55 °C;
Humidity Performance	Working humidity: 50% R·H, non-condensing; Storage humidity: (15% ~ 80%) R·H, non-condensing。

6. Ordering Information

