



# Electrical Calibrators



Metrology



Industry



Research

Tunkia Co., Ltd.

# COMPANY PROFILE

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TUNKIA is a national high-tech enterprise integrating research, development, manufacture and sales of electromagnetic measuring equipment. Since its establishment in 1998, this Company has been committed to providing accurate and professional electromagnetic measurement technology and equipment and comprehensive solutions for domestic and foreign users, as well as ensuring that measurement data is more accurate and reliable, with the purpose of providing technical support for users to improve product and service quality and control costs.

Tunkia brings together the top technology and management talents in the industry. It has successfully built a leading domestic R&D base of electromagnetic measurement equipment in Changsha Economic and Technological Development Zone, covering an area of 12,000 square meters. The company currently has more than 100 independent intellectual property rights, and successfully developed 30 series consisting of nearly 500 kinds of professional measurement equipment, and has been providing long-term technical services for tens of thousands of users at home and abroad. Among the high-end measurement equipment developed by the company, equipment of reference level (CLASS 0.01 and above) has a domestic market share of more than 80%, leading the localization and internationalization of high-end measurement equipment in China, the Company has begun to introduce firstly defined and promoted products to the world, with a view to providing a better means for electromagnetic measurement.

Since its establishment, Tunkia has been participating in national key scientific research projects for many times, and has been invited to participate in the formulation of many national standards and measurement technical regulations for the industry. It has been undertaking Chinese governmental aiding program for measurement and standard projects in the framework of Belt and Road Initiative. As a member of the Metrology Technical Committee on Electromagnetic, the Company has been participating in the IEC meeting since 2014. It has given a lot of superb performance in international comparison tests.





# HONOR & CERTIFICATION



Patent application:  
36 invention patents  
36 utility model patents  
17 design patents



Software copyright: 107 items



Certification of intellectual property management system  
ISO9001 quality management system certification  
ISO14001 Environmental Management System Certification  
Software enterprise certification  
Three-level enterprise of safety production standardization

## TD18 SERIES

### Precision Multifunction Calibrator

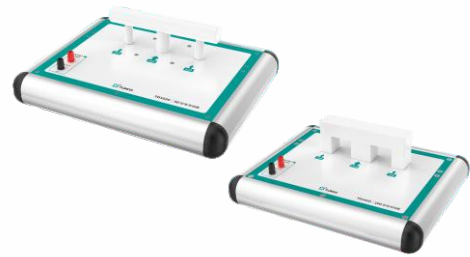
TD1880/TD1870/TD1860/  
TD1858/TD1855/TD1850



P1 ▶

## TD1020

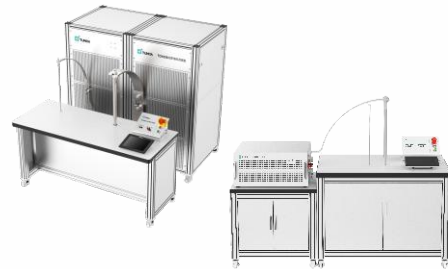
### Current Coil



P4 ▶

## TD1000/TD1050

### Calibration Apparatus for Clamp Meters



P5 ▶

## TD1500

### High-precision DC Testing System



P7 ▶


# TD18 SERIES Precision Multifunction Calibrator

Suitable for calibrating digital multimeter and other precision electrical measuring instruments

The TD18 series multifunctional calibrator is a domestically produced brand high-performance multifunctional calibrator that has been accumulated through more than 20 years of advanced technology in TUNKIA Measurement and Control Set. It adopts advanced large-scale high-speed integration. Designed with technologies such as integrated circuits, complex programmable logic arrays, and high-power integrated power amplifiers, it has the advantages of high integration, stable performance, and good reliability.

The cumulative sales of the series of products have exceeded 1000 units, and they have been established in national and provincial level measurement institutes, electric power research institutes, national defense technology and industry measurement stations, third-party professional measurement calibration institutions, and large and medium-sized enterprises. Industrial metrology testing rooms and research laboratories in higher education institutions have been widely used and have received unanimous praise.

○ Calibrate **6 ½** DMM



The TD1880 is a benchtop multifunction calibrator with a large LCD screen displaying 'U<sub>r</sub> = -000.000 00'. It features a numeric keypad, function keys, and multiple input/output ports on the right side.

○ Calibrate **5 ½** DMM



The TD1870 is a benchtop multifunction calibrator with a large LCD screen displaying 'U<sub>r</sub> = 100.000 V'. It features a numeric keypad, function keys, and multiple input/output ports on the right side.

○ Calibrate **4 ½** DMM



The TD1858 is a portable multifunction calibrator with a large LCD screen displaying '100.000 0'. The TD1860 is a benchtop multifunction calibrator with a large LCD screen displaying 'U<sub>r</sub> = 100.000 V'. Both feature numeric keypads and function keys.

○ Calibrate **3 ½** DMM



The TD1850 is a benchtop multifunction calibrator with a large LCD screen displaying '1850'. The TD1855 is a benchtop multifunction calibrator with a large LCD screen displaying 'P = 100.000 W'. Both feature numeric keypads and function keys.

# TD18 SERIES

## Precision Multifunction Calibrator

- A multifunctional calibrator with a wide range and high precision, with built-in ultra precision AC/DC voltage and current sources.
- It can output excellent electrical parameters such as DC voltage, DC current, DC power, AC voltage, AC current, AC power, phase, frequency, etc.
- It has functions such as simulating resistors, capacitors, thermocouples, thermal resistors, and pulse outputs.
- Can calibrate 6.5 digit digital multimeter and other precision electrical measuring instruments.

Function	TD1850	TD1855	TD1858	TD1860	TD1870	TD1880
DC voltage output	★	★	★	★	★	★
DC current output	★	★	★	★	★	★
DC resistor output	★	★	★	★	★	★
AC voltage output	★	★	★	★	★	★
AC current output	★	★	★	★	★	★
AC/DC power output	—	★	—	★	★	★
Pulse frequency output	★	★	★	★	★	★
DC small signal measurement	☆	☆	—	☆	—	—
Clamp coil	☆	☆	☆	☆	☆	☆
Capacitive output	—	—	—	—	—	☆
Thermal resistor output	—	—	—	—	☆	☆
Thermocouple output and measurement	—	—	☆	—	☆	☆
Calibration simulation meter	★	★	★	★	★	★
Remote control adjustment box	☆	☆	—	☆	—	—

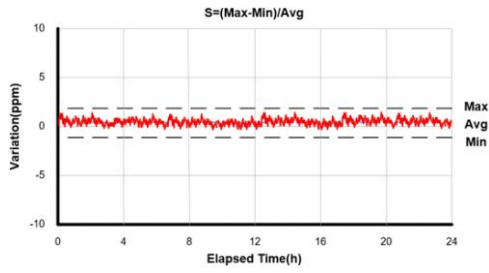
★: Including this feature ☆: Option function —: Without this feature

Parameter Overview	TD1850	TD1855	TD1858	TD1860	TD1870	TD1880
Application scope	3.5	3.5	4.5	4.5	5.5	6.5
DC voltage	1100 V, 500 ppm	1100 V, 500 ppm	+1020, -10.4 V, 110 ppm	±1100 V, 85 ppm	±1020 V, 52 ppm	±1020 V, 11 ppm
DC current	22 A/33 A, 500 ppm	22 A/33 A, 500 ppm	±10.2 A, 300 ppm	±22 A/±33 A, 150 ppm	±20.5 A, 98 ppm	±20.5 A, 87 ppm
DC resistance	220 MΩ, 500 ppm	220 MΩ, 500 ppm	220 MΩ, 500 ppm	220 MΩ, 170 ppm	1100 MΩ, 90 ppm	1100 MΩ, 35 ppm
AC voltage	1100 V, 500 ppm	1100 V, 500 ppm	1020 V, 500 ppm	1100 V, 500 ppm	1020 V, 218 ppm	1020 V, 117 ppm
AC current	22 A/33 A, 500 ppm	22 A/33 A, 500 ppm	10.4 A, 1000 ppm	22 A/33 A, 500 ppm	20.5 A, 427 ppm	20.5 A, 250 ppm
Sine wave frequency	1100 Hz, 100 ppm	1100 Hz, 100 ppm	20 kHz, 100 ppm	1500 Hz, 100 ppm	500 kHz, 50 ppm	500 kHz, 50 ppm
Color touch screen	5.6 inches	5.6 inches	4.3 inches	7.0 inches	6.4 inches	6.4 inches
weight	about 18 kg	about 19.5 kg	about 9.5 kg	about 25 kg	about 25 kg	about 24 kg
Size (excluding handles and feet)(W * D * H, unit: mm)	475*400*190	475*400*190	210*365*266	450*505*203	444*510*205	440*462*206

\*For detailed parameters of each model, please contact +86-731-84930888 for information

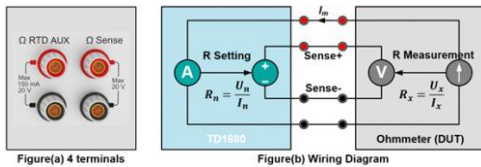


## High stability and accuracy



- TD1880: The DC voltage stability is up to 2 ppm/24h.
- TD1870: The DC voltage stability is up to 4 ppm/24h.
- TD1860: The DC voltage stability is up to 0.005%/24h, and the DC current stability is up to 0.01%/24h.

## 4-terminals Simulated DC resistance

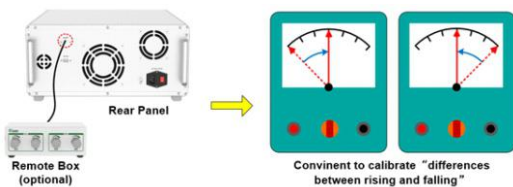


- Compared with the standard physical resistance box, the analog resistance output has the following characteristics:
  - ① Continuously adjustable, with better adjustment fineness and sensitivity
  - ② Smaller size and lighter weight
  - ③ No influence of transfer switch error, residual resistance error and contact resistance error.

- TD1880/TD1870/TD1860 have 2-terminals and 4-terminals resistance wiring mode.
- When calibrating the low value resistance, the four wire system wiring mode can effectively eliminate the measurement error caused by the resistance of the test lead and improve the measurement accuracy.

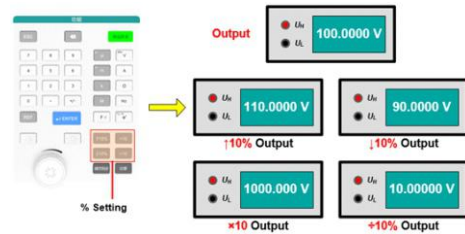
## Multiple output\adjustment methods

Remote box (optional)



- Calibration of the analog pointer meter usually needs to test scale by scale, especially "differences between rising and falling" (the change caused by the rise and fall of the calibration point).
- Remote box can realize the coarse and fine adjustment of current or voltage.

Operation button

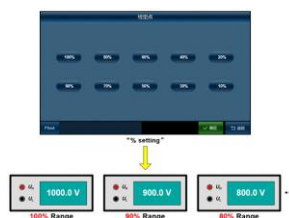


- Use the key "↑10%", "↓10%", "×10", "÷10" on the front panel, can realize the adjustment of the quantity value, and can also be used to perform the relevant test of linearity.

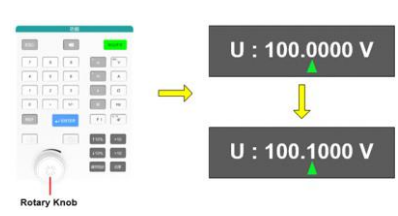
Direct output



% setting



Rotary knob

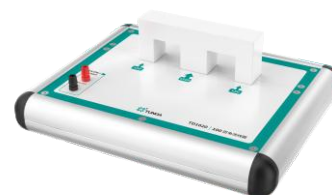


# TD1020 Current Coil



- TD1020 is a series of current coils, it is applied for calibrating clamp Ammeters combined with AC\DC current source.

Equivalent current output	1000 At / 2000 At
Max current input	22 A rms / 44 A rms
DC accuracy	0.3%
AC accuracy	0.3%@50Hz, 0.5%@400Hz
Frequency	DC, 45 Hz ~ 400 Hz

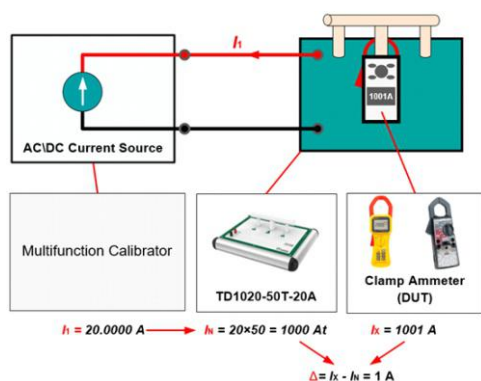


## Specifications

Model		TD1020-50T-20A	TD1020-50T-40A	TD1020-100T-20A
Turns	Middle	50	50	100
	Side	25	25	50
Max current input		22 A rms	44 A rms	22 A rms
Continuous output time		<11 A, continuous; >11 A, ≤ 30minutes.	<22 A, continuous; >22 A, ≤ 30minutes.	< 11 A, continuous; > 11 A, ≤ 30minutes.
Frequency		DC, 45 Hz ~ 400 Hz	DC, 45 Hz ~ 400 Hz	DC, 45 Hz ~ 65 Hz
Accuracy		DC: ±0.3% AC: ±0.3% @ 50 Hz, ±0.5% @ 400 Hz		

## Application

### Calibrate Clamp Ammeter



Equivalent to 1000 At / 2000 At current combined with AC\DC current source, which is applied for calibrating clamp meters.

## Ordering Information

TD1020 -   

Turn		Max Current Input	
Code	Note	Code	Note
50T	50-turn	20A	20 A
100T	100-turn	40A	40 A

e.g.:TD1020-50T-20A notes for turns of the coil are 50, and the max input current is 20 A.

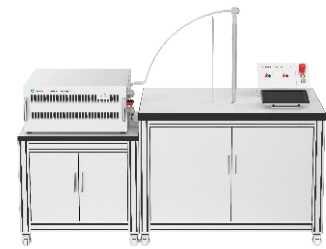


# TD1000/TD1050

## Calibration Apparatus for Clamp Meters

- TD1000/TD1050 is a calibration apparatus for clamp meters, integrates AC\DC current source, AC\DC voltage source and resistance source.

Features	TD1000	TD1050
Accuracy	class 0.05, class 0.1 available	class 0.05
DC current	20 mA ~ 22A (optional)	10 mA ~ 1050 A (2100 A is optional)
AC current output	20 mA ~ 1100 A	10 mA ~ 1020 A (2050 A is optional)
DC voltage output	20 mV ~ 1100V (optional)	20 mV ~ 1100 V (optional)
AC voltage output	1 V ~ 825 V	1 V ~ 825 V (optional)
Frequency	45 Hz ~ 65 Hz	40 Hz ~ 400 Hz
DC resistance output	10 $\Omega$ ~ 11 M $\Omega$	10 $\Omega$ ~ 110 M $\Omega$ (optional)
—	Two thickness copper rings	
—	Remote adjustment(optional)	AC/DC power output(optional)









TD1000



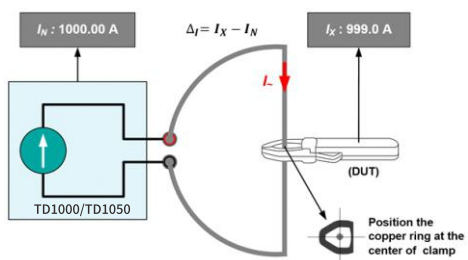
TD1050

### Application

Calibration object						
TD1000	☆	★ (AC only)	★	☆	★	—
TD1050	☆	★	☆	☆	☆	☆

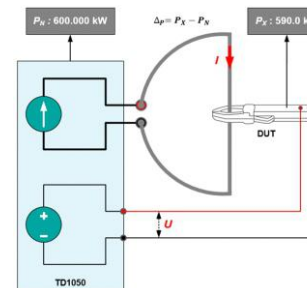
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#### Calibrate AC Clamp Meter by Single-turn Method



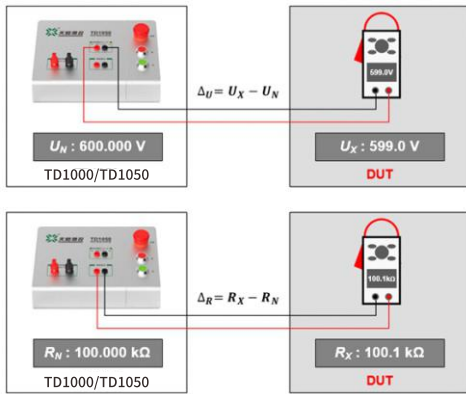
Two thickness copper rings.

#### Calibrate Clamp Power Meters (TD1050 optional)

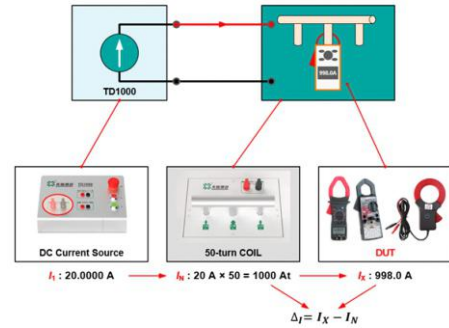


Integrates AC\DC current and voltage standard source, the U-I phase can be adjusted, which is suitable for calibrating clamp power meters.

### Calibrate Multi-function Clamp Meters (TD1000 standard/TD1050 optional)



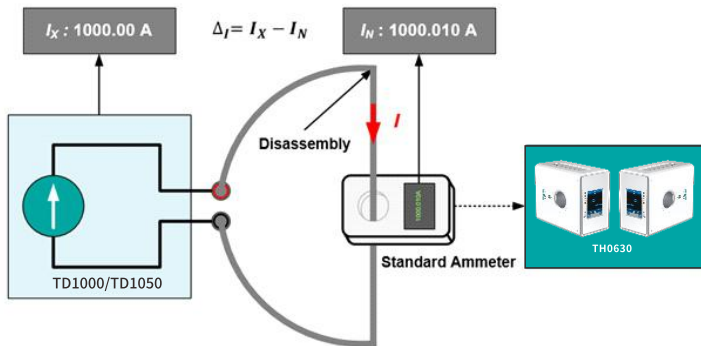
### Calibrate Clamp Power Meters (TD1000 optional)



- DCI output: 20 mA ~ 22 A; Coil: 50 t, accuracy  $\pm 0.3\%$
- Equivalent to 1000At current through input 20A current to the 50t Coil, which is suitable for calibrating DC clamp meters.

## Characteristics

### Convenient Traceability



#### TD1000

Calibrate the AC current source through accessing the standard ammeter() to the current loop.

#### TD1050

Calibrate the AC\DC current source through accessing the standard ammeter(TH0630 or TH0530) to the current loop.

Notes: TH0630 Precision Through Core AC Ammeter  
TH0530 Precision Through Core Ammeter

## Ordering information

### TD1000 - ■■

Accuracy		Function	
Code	Note	Code	Note
500	Class 0.05	Empty	AC Output
1k	Class 0.1	T	AC/DC Output

e.g.: TD1000-500 notes for class 0.05, with the function of AC Output.

### TD1050 - ■■

Max Current Range		Function	
Code	Note	Code	Note
1kA	1 kA	Empty	Current Only
2kA	2 kA	M	Multi-function

e.g.: TD1050-2kA notes for the max current range of the device is 2 kA, current output only.

# TD1500





## High-precision DC Testing System

- TD1500 is a wide range, high precision, multi-functional DC standard source precision instrument.
- It can directly output DC voltage, current, power and electric energy with high stability and high accuracy.
- The best measurement uncertainty has three specifications of Class 0.01 / Class 0.02 / Class 0.05, which is suitable for verification or calibration of various types of DC measuring instruments.
- The technical performance of the equipment is in the leading Class among similar products, and it is widely used in electric power, measurement, military industry, manufacturing, scientific research and other fields to establish DC measurement standards.



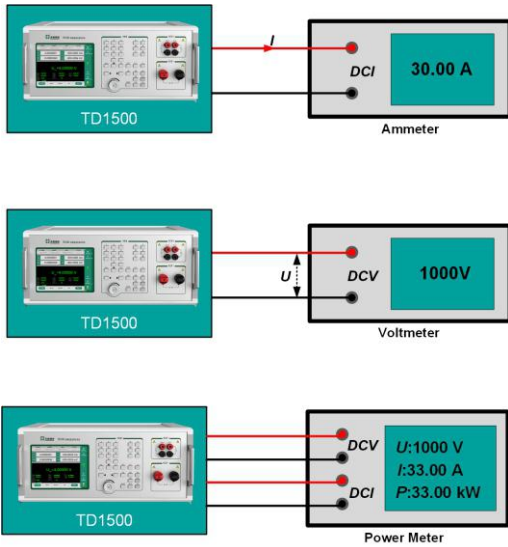
DC voltage standard source	1 mV ~ 1100 V (1150 V @ electric energy selection)
DC current standard source	1 $\mu$ A ~ 33 A / 100 A (optional)
DC Small signal voltage standard source	100 $\mu$ V ~ 4.4 V (optional)
DC small signal voltage measurement function	10 $\mu$ V ~ 4.4 V (optional)
A variety of quantity and value output mode	Standard
Special automatic test software	Optional
Support for remote control adjustment output	Optional
Verification of DC electricity meter	Functional Option
Secondary signal measurement of the transmitter	Functional Option

### Application

Calibration object				
TD1500	★	★	☆	☆

★: Including this feature ☆: Option function —: Without this feature

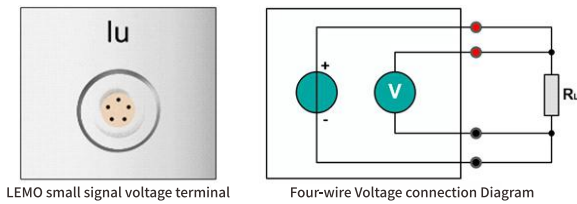
## Calibrate DC electrical measuring meter



- DC voltage standard source (DCV) output range: 1 mV ~ 1100 V (power type up to 1150 V)
- DC current standard source (DCI) output range: 1  $\mu$ A ~ 33 A / 110 A (optional)(power type up to 120 A)
- Class 0.01 specification instrument: suitable for calibrating DC voltmeter and ammeter of Class 0.05 and below, and suitable for calibrating DC power meter of Class 0.1 and below.

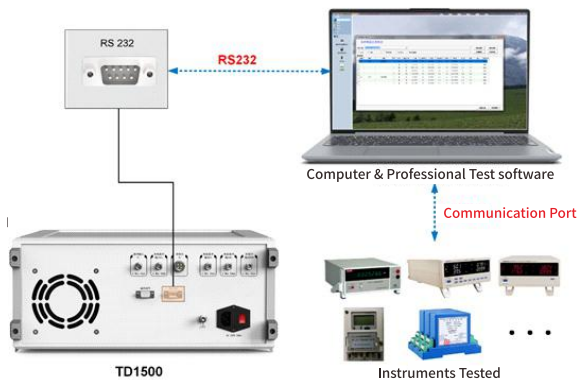
## Characteristics

### Four-wire Small Signal Voltage Source



- Four-wire small signal voltage source: can accurately output  $\pm$  (10  $\mu$ V~4.4 V) small signal voltage signal, as the current input of indirect access DC electricity meter (the shunt specification can be set, and displayed according to its primary current).
- Scheme value: using the four-wire Kelvin connection mode, and equipped with low thermal potential terminal and wire, compared with the traditional two-wire voltage source, can effectively eliminate the influence of wire resistance, contact potential and thermal potential on the measurement.

### Professional Test Software (optional)



- Support for test data recording, analysis, management, and certificate export.
- Software functions can be customized according to customer needs, and support subsequent software upgrades required by adding new procedures for testing.





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In view of the continuous updating and upgrading of products,  
in case of any change in the technical indicators here, the actual contract shall prevail.

