2023 FIRST EDITION

Catalog for Measure and Test Products

TONGHUI ELECTRONIC

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Tonghui® Since 1994

Join hands,benefit the future

1994 * Tonghui electronic was established locating in Changzhou Hi-Tech Zone.

1995 * Tonghui obtained the license of manufacturing T&M instruments from the government.

1996 * The first set of LCR Meter TH2811 was released. Tonghui entered into the impedance measurement industry.

1999 * Tonghui won the prize of "Measuring Instruments Quality Advanced Enterprise" from Jiangsu bureau of technical supervision.

* Tonghui changed the name to "Tonghui Electronic Limited company".

* Tonghui obtained the land of 6,000m^2 located in Tianshan road to build the new factory.

2001 * Tonghui moved to the new factory.

2002 * Tonghui got ISO9000: 2000 certification.

2003 * Tonghui enlarged the company size to have the land area 14000m^2 and construction area 8200m^2.

* Tonghui was assessed to be "New & Hi-tech Enterprise" by the government.

* Tonghui joined the association of China Electronic Instrument Industry.

2004 * The Automatic Component Analyzer TH2818 won the second prize of "Changzhou Science and Technology Progress Award" and the third prize of "Jiangsu Province Science and Technology Progress Award".

* Tonghui was awarded the "Top ten private-owned New & Hi-tech Enterprise in Changzhou Hi-tech District".

2006 * TH1961 6 ½ Digital Multimeter was developed and identified as "Changzhou Key Science and Technology Project".

* Tonghui was rated as "Credit Integrity Enterprise" by Changzhou Bank Association.

2007 * Tonghui won the title of "The most satisfied test instrument supplier in 2007".

2008 * Tonghui established the routine laboratory to test the mechanical, temperature, humidity, safety, power adaptability, electromagnetic compatibility and other performance indicators completely.

* Tonghui acquired CMMI software management international certification.

2009 * Tonghui was identified as "Hi-tech Enterprise of Jiangsu Province" again.

* Tonghui got the right to trading internationally.

* Tonghui brand was awarded as “Jiangsu famous-brand" by Jiangsu Quality Supervision and Management Committee.

2010 * Tonghui won the title of "2009 Customer most satisfied test instrument supplier in electronic transformer industry".

* Tonghui won the "Top 10 most influential brands” of electronic industry in the first industrial product selection.

2011 * Tonghui received the title of "Engineering Technology R&D center on Electronic Component Measurement Instrument of Changzhou City".

2012 * *Tonghui was renamed as Changzhou Tonghui Electronic Co., Ltd.

* The pulse peak voltmeter TH2141 won the "2012 Electronic Measuring Instrument Product Digital Voltmeter/Multi-meter Product Design Award".

2014 * Tonghui's subsidiary corporation, Dongguan Tongxuan Electronic Technology Limited Company and Suzhou Jingshan Science Equipment Limited Company were established.

* Tonghui was awarded as "Star Enterprise of CEF" by China electronics Fair.

* The grand 20th anniversary ceremony was held.

2015 * Tonghui was listed in the market with the stock code: 833509.

* The high frequency LCR meter TH2826 series won the second prize of "Changzhou Science and Technology Progress Award".

2016 * Tonghui was awarded by Changzhou administration for industry and commerce as "Respect the contract and Credit Integrity Enterprise".

* Tonghui's trademark was recognized as a well-known trademark of Changzhou.

2017 * Tonghui was awarded "2017 Changzhou innovation and entrepreneurship competition" the first prize.

* Tonghui was funded by the special fund of the transformation of scientific and technological achievements of Jiangsu province.

* Tonghui was elected as vice chairman of the 8th council of China Electronic Instrument Industry Association.

2019 * Tonghui was identified as "Hi-tech Enterprise of Jiangsu Province" again.

* Tonghui won the second prize of the 2019 Changzhou Innovation and Entrepreneurship Competition.

* Tonghui won the second Prize of China Machinery Industry Science and Technology Award.

2020 * Tonghui was rated as the excellent company by the government.

* Power electronic tester was recognized as a special new product in Jiangsu Province.

* The research and development of energy feedback programmable high-power DC power supply won the third prize of the 2020 Changzhou Innovation and Entrepreneurship Competition.

* The Precision Impedance Analyzer TH2839 series was identified as the major equipment and key components of Changzhou in 2020.

2021 * Tonghui is listed on the selected layer of the National Equity Exchange System on January 11, 2021.

* Won the AAA corporate credit rating in August 2021.

* In August 2021, won the Integrity Management Enterprise

* First Prize of Jiangsu Innovation and Entrepreneurship Competition

* In September 2021, the company is relocated in No. 1, Xinzhu Road, Xinbei District, Changzhou with new buildings and production lines.

CHANGZHOU TONGHUI ELECTRONIC CO.,LTD.

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■ Changzhou Tonghui Electronics Co., Ltd., founded in 1994, is a national high-tech enterprise integrating R&D, manufacturing and marketing. In September 2021, the company moved into a garden-style modern factory with 30,000 square meters land area and 30,000 square meters construction area. At present, there are more than 270 employees, 25% of which are R&D personnel. Tonghui was listed in Beijing Exchange in 2021 with the stock code 833509.

■ Since its establishment, the company has been committed to the technology and product research and development of electronic measuring instruments, especially in the field of precision impedance measurement, with nearly 30 years of accumulation of test theory, test technology and practical experience. Following the development trend of the industry, the company re-planned the development strategy of "intelligent testing, efficient testing, accurate testing, and industrial interconnection", and practiced the ingenuity of "professionalism, concentration, and concentration". Based on the in-depth understanding of the industry development prospects and the expansion of the electronic measuring instrument industry chain, the company is based on the power electronic magnetic component measuring instruments, and further develops the field of power electronic measuring instruments and complete sets of measurement system solutions, and is committed to becoming the world's leading electronic measurement instrument and integrated solution provider.

■ Tonghui currently has a product line with superior performance and rich specifications: component parameter testers, winding component testers, electrical safety test instruments, wire harness/cable testers, micro signal test instruments, power electronic test instruments, digital multimeters, data loggers, automatic power supply/battery comprehensive test systems, etc. Products are widely used in scientific research, production testing and quality management in the fields of 3C consumer electronics, 5G communications, semiconductor packaging and testing, new energy vehicles, power electronics, and household appliances. Tonghui insists on using innovative solutions to help customers solve measurement problems, improve test efficiency and product quality.

■ Looking forward to the future, Tonghui will continue to shoulder more social responsibilities with a pragmatic and steady attitude, dedicate innovation achievements and share development value with an international mind and vision. Tonghui will accurately grasp the business opportunities of the strong growth of the global electronic information industry, and realize the value of Tonghui in an all-round way.

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Component Parameter Test Instruments

Ⅰ. TH2851 Series Impedance Analyzer

Features

- Test frequency: 10Hz-130MHz
- High precision: using automatic balance bridge technology, four-terminal pair test configuration
- High stability and consistency
- High speed: the fastest test speed up to 5ms
- High resolution: 10.1-inch capacitive touch screen, resolution 1280*800
- Three test methods: point test, list scan, and graph scan
- 1601 point multi-parameter list scanning function
- Four-parameter measurement
- 4-channel graphic scanning function, each channel can display 4 curves, 16 kinds of split-screen display modes for channels and curves
- Powerful sorting: 10 grades sorting in LCR mode
- Graphic scanning mode, each curve is sorted individually
- High compatibility: Support SCPI instruction set, compatible with KEYSIGHT E4990A, E4980A, E4980AL, HP4284A

NEW

RS232	GPIB	LAN	HANDER
standard	standard	standard	standard

USB HOST	USB DEVICE	HDMI	VGA
standard	standard	standard	standard

Dimension：428mm(W)x220mm(H)x325mm(D)
Weight：14.5kg

Applications

- **Passive component**

Impedance parameter estimation and performance analysis of capacitor, inductor, magnetic core, resistor, piezoelectric devices, transformers, chip components and network components

- **Semiconductor component**

Parasitic parameter test and analysis of LED driver integrated circuit
C-VDC features of varactors
Parasitic parameter analysis of transistors or integrated circuit

- **Other components**

Impedance assessment of printed circuit boards,relays, switches, cables, batteries

- **Dielectric material**

Dielectric constant and loss angle evaluation of plastics, ceramics and other materials

- **Magnetic materials**

Magnetic permeability and loss angle assessment of ferrite, amorphous body and other magnetic materials

- **Semiconductor materials**

Dielectric constant, electrical conductivity and C-V characteristics of semiconductor materials

- **Liquid crystal cell**

Dielectric constant, elastic constant and C-V characteristics of liquid crystal cell

Specifications

Model		TH2851-015	TH2851-030	TH2851-050	TH2851-080	TH2851-130
Display		10.1 Inches TFT LCD Display 1280×RGB×800, Touch Screen				
AC Parameter		Cp/Cs, Lp/Ls, Rp/Rs, |Z|, |Y|, R, X, G, B, θ, D, Q, V_{AC}, I_{AC}				
DC Parameter		V_{DC}, I_{DC}, DCR				
Test Frequency	Range	10Hz--15MHz	10Hz--30MHz	10Hz--50MHz	10Hz--80MHz	10Hz-130MHz
	Resolution	1mHz				
	Relative frequency tolerance	≤±0.0007%				
Test Level	AC Voltage	5mV—2Vrms				
	Resolution	1mV				
	AC Current	50uA—20mArms				
	Resolution	10uA				
DC Bias	Voltage	0V-±40V				
	Resolution	1mV				
	Current	0mA-±100mA				
	Resolution	40μA				
Test terminal configuration		Four Terminal Pair				
Output impedance		25Ω / 100Ω				
Typical Test time (Speed)		Five Shift: 1(Fast)—5(Accuracy) 1: 2.5ms 2: 10ms 3: 40ms 4: 80ms 5: 400ms (Does not include the arithmetic average of the communication time, each frequency test speed will be slightly different)				

Component Parameter Test Instruments

I. TH2851 Series Impedance Analyzer

Max Accuracy		1kHz：0.08% 1MHz：0.08% 2MHz：0.5% 10MHz：1% 130MHz：5.0%
Test Range		E：1×10^{18}
Cs，Cp		-9.99999EF ～ +9.99999EF
Ls，Lp		-9.99999EH ～ +9.99999EH
D		-9.99999E ～ +9.99999E
Q		-9.99999E ～ +9.99999E
R，Rs，Rp，X，Z，R_{DC}		-9.99999EΩ ～ +9.99999EΩ
G，B，Y		-9.99999ES ～ +9.99999ES
Vdc		-9999V ～ +9999V
Idc		-9999mA ～ +9999mA
θ_r		-999999rad ～ +999999rad
θ_d		-180.0deg ～ +180.0deg
Δ%		-999999% ～ +999999%
Multi-function parameter list scan		1601 points, each point can be set to average, and each point can be sorted separately Sweep parameters: measurement parameters, test frequency, AC voltage, AC current, DC BIAS voltage, DC BIAS current
Graphic scan	parameter	Frequency，ACV，ACI，DCV，DCI
	Types	Logarithmic, linear, frequency segmentation
	Points	2-1601
	Number of channels	4
	Number of curves	4 Per Channel
	Split Screen	14（Channel and Curve）
Equivalent circuit analysis		3-element model: 4, 4-element model: 3
Sorting		10 levels of sorting in LCR mode; each curve in scan mode is sorted individually
Interface		RS232C，USB HOST，USB DEVICE，LAN，GPIB，HANDLER，VGA，HDMI
Power-on warm-up time		60 Minutes
Input Voltage		100-120VAC/198-242VAC Option, 47-63Hz
Power consumption		Max 150VA
Measurement（WxHxD）mm^3		428x220x325
Weight		14.5kg

Standard Accessories

Three core power cord
TH26010 Gold-plated short circuit board
TH26005D Test fixture
TH26047A Test fixture
TH26082A 100Ω Standard Resistance
TH26061D_P1 Calibration Kit
AR05TTS1000N

Component Parameter Test Instruments

Ⅰ. TH2839 Series Impedance Analyzer

Features

- High accuracy:Auto-balance bridge technology, 4-terminal pair
- High stability and consistency:Up to 15 test ranges
- High speed:Up to 7.7ms
- High resolution:7- inch, 800×600
- 201 Points List Sweep Function
- Multi-parameter Graphic Sweep Function
- Varactor diode automatic polarity function
- 10 bins sorting, sorting result with sound and light alarm
- Storage space: Internal: 40 groups of setting files
  USB External: 500 groups of setting files, data log files and image files
- Simultaneous testing for Ls-R_{DC}
- High compatibility: Support SCPI commands, compatible with KEYSIGHT E4980A, E4980AL, HP4284A etc.

RS232	USB HOST	USB DEVICE	HANDER	LAN
standard	standard	standard	standard	standard

GPIB	SCANNER
option	option

Dimension(mm): 400mm(W)x132mm(H)x425mm(D)
Weight : 15kg

Applications

- **Passive component**:

Impedance parameter estimation and performance analysis of capacitor, inductor, magnetic core, resistor, piezoelectric devices, transformers, chip components and network components

- **Semiconductor component**

Parasitic parameter test and analysis of LED driver integrated circuit
C-VDC features of varactors
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- **Liquid crystal cell**

Dielectric constant, elastic constant and C-V characteristics of liquid crystal cell

Specifications

Model		TH2839	TH2839A
Display		7-inch TFT LCD display 800XRGBX600	
AC Test parameters		Cp/Cs，Lp/Ls，Rp/Rs，|Z|，|Y|，R，X，G，B，θ，D，Q，Vac，Iac	
DC Test parameters		Rdc，Vdc，Idc	
Test Frequency	Range	20Hz-10MHz	20Hz — 5MHz
	Highest resolution	1mHz	
Test level	AC voltage	20Hz — 2MHz：5mV — 2Vrms 2MHz — 10MHz：5mV — 1Vrms	20Hz — 2MHz：5mV — 2Vrms 2MHz — 5MHz：5mV — 1Vrms
	Resolution	100uV	
	AC current	20Hz — 2MHz： 50uA—20mArms 2MHz — 10MHz：50uA—10mArms	20Hz — 2MHz：50uA — 20mArms 2MHz — 5MHz：50uA — 10mArms
	Resolution	1uA	
	DC Voltage	100mV — 2V	
	Resolution	100uV	
DC bias	Voltage	0V — ± 40V	
	Resolution	100uV	
	Current	0mA — ± 100mA	
	Resolution	1uA	
DC voltage source	Voltage range	-10V — 10V	
	Current range	-45mA — +45mA	
	Output impedance	100Ω	
Test terminal configuration		Four-terminal pair	
Output impedance		100Ω	
Typical measurement time (speed)		Fast: 7.7ms/time Medium: 120ms/time Slow: 230ms/time	

Component Parameter Test Instruments

Ⅰ. TH2839 Series Impedance Analyzer

Model		TH2839	TH2839A
Highest accuracy		1kHz: 0.05% 1MHz: 0.05% 2MHz: 0.1% 5MHz: 0.5% 10MHz:1.0%	1kHz: 0.05% 1MHz: 0.05% 2MHz: 0.1% 5MHz: 0.5%
Cable length		0, 1, 2	
Graph sweep	Parameters	FREQ, ACV, ACV/I, DCV/I, DC voltage source	
	Type	Logarithm, linearity	
	Sweep points	51, 101, 201, 401 or 801	
Equivalent circuit analysis		Additional purchase required	
Interface		USB HOST, USB DEVICE, LAN, HANDLER, RS232C, SCANNER, Temperature Input sensor Optional: GPIB	
Warm-up time		60 minutes	
Input voltage		Optional 100-120VAC/198-242VAC, 47-63Hz	
Power consumption		80VA	
Dimension(WxHxD)mm^3		400 x 132 x 425	
Weight		15kg	

Standard Accessories

Three core power cord
TH26010 Gold-plated short circuit board
TH26047 Test fixture
TH26005C Four-terminal test fixture
TH26011BS 4 terminal pair Kelvin test clip leads

Component Parameter Test Instruments

Ⅰ. TH2840 Series Precision LCR Meter

Features

- The test speed is as high as 1800 times/s (>10kHz), without relay action time
- Test level up to 20Vrms
- The bias voltage is built-in ±40V/±100mA/2A
- Industry-friendly user experience: Linux bottom layer, built-in help file
- 10.1 inch 1280×800 capacitive touch screen
- Approximately 100M setting file storage space in the machine, and massive U disk setting file storage capacity
- Provide host computer to support early model file format conversion to ensure compatibility

RS232	USB HOST	USB DEVICE	HANDER	LAN	EXTERNAL DCI
standard	standard	standard	standard	standard	standard

Dimension：430mm(W)x177mm(H)x265mm(D)
Weight：11kg

Applications

- **Passive component**:

Impedance parameter estimation and performance analysis of capacitor, inductor, magnetic core, resistor, piezoelectric devices, transformers, chip components and network components

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- **Liquid crystal cell**

Dielectric constant, elastic constant and C-V characteristics of liquid crystal cell

Specifications

Model		TH2840A	TH2840B
Display	Display	10.1" Touch Screen	
	Ratio	16:9	
	Resolution	1280×RGB×800	
Parameter	Test Mode	Four Parameter Selectable	
	AC	Cp/Cs，Lp/Ls，Rp/Rs，|Z|，|Y|，R，X，G，B，θ，D，Q，V_{AC}，I_{AC}	
	DC	R_{DC}，V_{DC}，I_{DC}	
Frequency	Range	20Hz-500kHz	20Hz-2MHz
	Accuracy	0.01%	
	Resolution	0.1mHz (20.0000Hz-99.9999Hz)	
		1mHz (100.000Hz-999.999Hz)	
		10mHz (1.00000kHz-9.99999kHz)	
		100mHz (10.0000kHz-99.9999kHz)	
		1Hz (100.000kHz-999.999kHz)	
		10Hz (1.00000MHz-2.00000MHz)	
AC test signal mode	Rated value (ALC OFF)	Set the voltage as the Hcur voltage when the test terminal is open	
		Set the current to be the current flowing from Hcur when the test terminal is short-circuited	
	Constant value (ALC ON)	Keep the voltage on the DUT the same as the set value	
		Keep the current on the DUT the same as the set value	

Component Parameter Test Instruments

Ⅰ. TH2840 Series Precision LCR Meter

Test Level	AC Voltage	5mVrms-20Vrms	F≤1MHz 5mVrms-20Vrms F > 1MHz 5mVrms-15Vrms
	Accuracy	±（10%×Set Value+2mV) (AC less than 2Vrms) ±（10%×Set Value+5mV）（AC > 2Vrms）	
	Resolution	1mVrms （5mVrms-0.2Vrms）	
		1mVrms （0.2Vrms-0.5Vrms）	
		1mVrms (0.5Vrms-1Vrms)	
		10mVrms (1Vrms-2Vrms)	
		10mVrms (2Vrms-5Vrms)	
		10mVrms (5Vrms-10Vrms)	
		10mVrms (10Vrms-20Vrms)	
	AC Current	50μArms-100mArms	
	Resolution(100Ω Internal Resistance)	10μArms (50μArms-2mArms)	
		10μArms (2mArms-5mArms)	
		10μArms (5mArms-10mArms)	
		100μArms (10mArms-20mArms)	
		100μArms (20mArms-50mArms)	
		100μArms (50mArms-100mArms)	
R_{DC} Test	Voltage	100mV-20V	
	Resolution	1mV (0V-1V)	
		10mV (1V-20V)	
	Current	0mA-100mA	
	Resolution	10μA (0mA-10mA)	
		100μA (10mA-100mA)	
DC Bias	Voltage	0V-±40V	
	Accuracy	AC≤2V 1%× Set Value+5mV	
		AC>2V 2%×Set Value+8mV	
	Resolution	1mV (0V-1V)	
		10mV (±1V- ±40V)	
	Current	0mA-±100mA	
	Resolution	10μA (0mA-10mA)	
		100μA (10mA-100mA)	
Built-in current source	Current	0mA-2A	
	Accuracy	I>5mA ±（2%×Set Value+2mA）	
	Resolution	1mA	
Test terminal configuration		Four Terminal Pair	
Test cable length		0m	
Output impedance		30Ω，±4%@1kHz	
		100Ω，±2%@1kHz	
computation		The absolute deviation from the nominal value Δ, the percentage deviation from the nominal value Δ%	
Equivalent way		Series, Parallel	
Calibration function		OPEN，SHORT，LOAD	
Measurement average		1-255	
Range selection		AUTO，HOLD	
Range configuration	LCR	100mΩ，1Ω，10Ω，20Ω，50Ω，100Ω，200Ω，500Ω，1kΩ，2kΩ，5kΩ，10kΩ，20kΩ，50kΩ，100kΩ	
	R_{DC}	1Ω，10Ω，20Ω，50Ω，100Ω，200Ω，500Ω，1kΩ，2kΩ，5kΩ，10kΩ，20kΩ，50kΩ，100kΩ	
Measuring time （ms）		Fast+: 0.56ms（1800 times/s） Fast: 3.3ms Middle: 90ms Slow: 220ms	
Highest accuracy		0.05%（refer to the instruction manual for details）	
Measurement display range			
Cs，Cp		0.00001pF-9.99999F	
Ls，Lp		0.00001μH-99.9999kH	
D		0.00001-9.99999	
Q		0.00001-99999.9	
R，Rs，Rp，X，Z，R_{DC}		0.001mΩ-99.9999MΩ	

Component Parameter Test Instruments

Ⅰ. TH2840 Series Precision LCR Meter

G，B，Y			0.00001μs-99.9999S
V_{DC}			±0V-±999.999V
I_{DC}			±0A-±999.999A
θ_r			-3.14159-3.14159
θ_d			-179.999°-179.999°
Δ%			±（0.000%-999.9%）
Multi-function parameter list scan	Dots Number		201 points, average times can be set for each point, and each point can be sorted separately
	Parameter		Test frequency, AC voltage, AC current, DC BIAS voltage, DC BIAS current (100mA), DC BIAS current (2A)
	Trigger mode		Sequence SEQ: After a trigger, measure at all sweep points, and /EOM/INDEX will output only once
			Step STEP: Perform a sweep point measurement each time it is triggered, and each point outputs / EOM/INDEX, but the list sweep comparator result is only output at the last /EOM
	Other features		1.Scan parameters and test parameters have multiple copy functions 2.Delay can be set for each scan point
	Comparators		Each sweep point can measure up to four test parameters, each parameter can set upper and lower limits, all test parameters are qualified, output PASS signal, otherwise output FAIL signal, no upper and lower limits are set, no judgment
Graphic scan	Scan points		51，101，201，401，801 Optional
	The results		The extreme value of each parameter and the sweep parameter value at the point where the cursor is located and the corresponding test parameter value
	Scan trajectory		1-4 test parameters can be selected arbitrarily, the scanning curve can be divided into one screen, two screens, or four screens
	Display range		Real-time automatic, locked
	Coordinate ruler		Logarithmic, linear
	Scan parameters		Frequency, AC voltage, AC current, DCV BIAS / DCI BIAS (100mA) / DCI BIAS (2A)
	Trigger mode	single	Manually trigger once, and complete a scan from the start point to the end point, and the next trigger signal starts a new scan
		continuous	Infinite loop scanning from start to end
	Results save		Graphics, files
Comparators	Bin		10Bin，PASS，FAIL
	Bin deviation setting		Deviation value, percentage deviation value, off
	Bin mode		Tolerance, continuous
	Bin count		0-99999
	Discrimination		Up to four parameter limit ranges can be set for each file. The corresponding file number is displayed within the setting range of the four test parameter results. If the maximum file number range is exceeded, FAIL is displayed. The test parameters without the upper and lower limits are automatically ignored.
	PASS/FAIL indication		Meet Bin1-10, the PASS light on the front panel is on, otherwise the FAIL light
Data cache			201 measurement results can be read in batches
Store call	Inside		About 100M non-volatile memory test setting file
	External USB		Test setting file, screenshot graph, record file
Keyboard lock			The front panel keys can be locked, other functions to be expanded
Interface	USB HOST		2 USB HOST ports, can connect mouse and keyboard at the same time, only one U disk can be used at the same time
	USB DEVICE		Universal serial bus socket, small type B (4 contact positions); compatible with USB TMC-USB488 and USB2.0, the female connector is used to connect an external controller.
	LAN		10/100M Ethernet adaptive
	HANDLER		Used for Bin signal output
	External DC BIAS control		Support TH1778A
	RS232C		Standard 9-pin, cross
	RS485		Can accept modification or external RS232 to RS485 module
Power-on warm-up time			60 Minutes
Input voltage			100-120VAC/198-242VAC Option，47-63Hz
Power consumption			More than 130VA
Size（WxHxD）mm^3			430x177x265
Weight（kg）			11kg

Component Parameter Test Instruments

Ⅰ. TH2838 Series Precision LCR Meter

Features

- High accuracy:Adopt Auto-balance bridge technology, 4-terminal pair
- High stability and consistency:Up to 15 ranges
- High speed:Up to 5.6ms
- High resolution:7- inch, 800×600
- High power:
  Signal source:Voltage up to 20Vrms(only TH2838H)
  Current up to 100mA(only TH2838H)
  DC bias:Voltage up to ± 40V(only TH2838H)
  Current up to 100mA
  Up to 120A when controlling 6 sets of TH1778 series DC Bias Current Source by external DC Bias interface
  Independent Voltage Source: ±10V programmable output (only TH2838H)
- Multi-parameter Graphic Sweep Function
- Arithmetical operation
- 10 bins sorting, sorting result with sound and light alarm
- Huge storage space:
  Internal: 40 groups of setting files, 10 groups of gif image files
  External: 500 groups of setting files through USB storage
- High compatibility: Support SCPI commands, compatible with KEYSIGHT E4980A, E4980AL, HP4284A etc.

RS232	USB HOST	USB DEVICE	HANDER	LAN	GPIB
standard	standard	standard	standard	standard	option

TH2838 Series

Dimension (mm): 400(W) x 132(H) x425(D)
Net weight : 15kg

Application

1.Passive component
Impedance parameter estimation and performance analysis of capacitor, inductor, magnetic core, resistor, piezoelectric devices, transformers, chip components and network components

2.Semiconductor component
Parasitic parameter test and analysis of LED driver integrated circuit C-VDC features of varactors Parasitic parameter analysis of transistors or integrated circuit

3.Other components
Impedance assessment of printed circuit boards, relays, switches, cables, batteries

4.Dielectric material
Dielectric constant and loss angle evaluation of plastics, ceramics and other materials

5.Magnetic materials
Magnetic permeability and loss angle assessment of ferrite, amorphous body and other magnetic materials

6.Semiconductor materials
Dielectric constant, electric conductivity and C-V characteristics of semiconductor materials Liquid crystal cell of dielectric constant, elastic constant and C-V characteristics of liquid crystal cell

Specifications

Model		TH2838	TH2838H	TH2838A
Test Signal Source				
Output impedance		100Ω, ±1% @1kHz		
Frequency	Range	20Hz-2MHz		20Hz-1MHz
	Resolution	20.0000Hz - 99.9999Hz 0.1mHz		
		100.000Hz - 999.999Hz 1mHz		
		1.00000kHz - 9.99999kHz 10mHz		
		10.0000kHz - 99.9999kHz 0.1Hz		
		100.000kHz - 999.999kHz 1Hz		
		1.00000MHz - 2.00000MHz 10Hz		

Component Parameter Test Instruments

I. TH2838 Series Precision LCR Meter

AC test signal		Rated value(ALC OFF): Set the voltage as the Hcur voltage when the test terminal is open Set the current as the Hcur current when the test terminal is short Constant value(ALC ON): Keep the voltage in DUT is the same as the set value Keep the current in DUT is the same as the set value		
AC signal	Voltage range	5mVrms -- 2Vrms	F≤1MHz 5mVrms-- 20Vrms F >1MHz 5mVrms -- 15Vrms	5mVrms -- 2Vrms
	Resolution	5mVrms -- 0.2Vrms 100μVrms		
		0.2Vrms -- 0.5Vrms 200μVrms		
		0.5Vrms -- 1Vrms 500μVrms		
		1Vrms -- 2Vrms 1mVrms		
		2Vrms -- 5Vrms 2mVrms		
		5Vrms -- 10Vrms 5mVrms		
		10Vrms -- 20Vrms 10mVrms		
	Current range	50μArms -- 20mArms	50μArms --100mArms	50μArms -- 20mArms
	Resolution	50μArms -- 2mArms 1 μArms		
		2mArms -- 5mArms 2 μArms		
		5mArms -- 10mArms 5 μArms		
		10mArms -- 20mArms 10μArms		
		20mArms -- 50mArms 20μArms		
		50mArms--100mArms 50μArms		
Rdc test	Voltage range	100mV — 2V		
	Resolution	100μV		
	Current range	0mA— 20mA		
	Resolution	1μA		
DC Bias	Voltage range	0V — ± 10V	0V — ± 40V	0V — ± 10V
	Resolution	0V -- 5V 100μV		
		5V -- 10V 1mV		
		10V -- 20V 2mV		
		20V -- 40V 5mV		
	Current range	0mA— ± 100mA		
	Resolution	0 A -- 50mA 1μA		
		50mA -- 100mA 10μA		
Voltage source	Voltage range	------	-10V -- 10V	------
	Resolution	------	1mV	------
	Current range	------	-45mA -- +45mA	------
	Output impedance	------	100Ω	------
Display				
Dimensions /typ		7-inch (diagonal)TFT LCD display		
Proportion		16:9		
Resolution		800×RGB×480		
Test function				

Component Parameter Test Instruments

I. TH2838 Series Precision LCR Meter

Test parameter		Cp-D,Cp-Q,Cp-G,Cp-Rp Cs-D,Cs-Q,Cs-Rs Lp-D, Lp-Q, Lp-G, Lp-Rp, Lp-Rdc Ls-D, Ls-Q, Ls-Rs, Ls-Rdc, Rdc R-X, Z-θd, Z-θr G-B, Y-θd, Y-θr Vdc-Idc						
Mathematics function		A(X+B)+C, X is test parameter, A, B,C is input parameter						
Equivalent circuit		Series, parallel						
Deviation measurement		Absolute deviation Δ compared with the nominal value Percentage deviation Δ% compared with the nominal value						
Calibration function		OPEN, SHORT, LOAD						
Range selection		AUTO, HOLD						
Range	LCR	100mΩ, 1Ω, 10Ω, 20Ω, 50Ω, 100Ω, 200Ω, 500Ω, 1kΩ, 2kΩ, 5kΩ, 10kΩ, 20kΩ, 50kΩ, 100kΩ, total 15 ranges						
	Rdc	1Ω, 10Ω, 20Ω, 50Ω, 100Ω, 200Ω, 500Ω, 1kΩ, 2kΩ, 5kΩ, 10kΩ, 20kΩ, 50kΩ, 100kΩ, total 15 ranges						
Trigger mode		INT, MAN, EXT, BUS						
Trigger delay		0 s -- 999 s, resolution 100us						
Test terminal configuration		Four-pair						
Test cable length		0m, 1m						
Test average		1-255 times						
Test time (ms)	Speed mode	20Hz	100Hz	1kHz	10kHz	100kHz	1MHz	2MHz
	FAST	330	100	20	7.7	5.7	5.6	5.6
	MED	380	180	110	92	89	88	88
	LONG	480	300	240	230	220	220	220
Test display range		a 1×10^{-18}; E 1×10^{18}						
Cs, Cp		±1.000000 aF -- 999.9999 EF						
Ls,Lp		±1.000000 aH -- 999.9999 EH						
D		±0.000001 -- 9.999999						
Q		±0.01 -- 99999.99						
R, Rs, Rp, X, Z, Rdc		±1.000000 aΩ -- 999.9999 EΩ						
G,B,Y		±1. 000000 aS -- 999.9999 ES						
Vdc		±1.000000 aV -- 999.9999 EV						
Idc		±1.000000 aA -- 999.9999 EA						
θ r		±1.000000 a rad -- 3.141593 rad						
θ d		±0.0001 deg -- 180.0000 deg						
Δ%		±0.0001% -- 999.9999%						
t		-99.99°C -- 1000.00°C						
Turn Ratio (extension pending)		±0.000000 -- 1000.000						
Basic test accuracy		0.05% (the details refer to the instruction)						
List sweep								
Sweep points		Up to 201 points						
Sweep Parameters		Test frequency, AC voltage, AC current, DC BIAS voltage, DC BIAS current						
Trigger mode	SEQ	Once triggered, test at the sweep points. /EOM/INDEX will be output one time.						
	STEP	Once triggered, test at one sweep point. /EOM/INDEX will be output at each point, but the list sweep comparator results only be output at the last /EOM.						

Component Parameter Test Instruments

Ⅰ. TH2838 Series Precision LCR Meter

List sweep comparator		Set one pair of lower limit and upper limit for each sweep point. Optional: judge through the first sweep parameter / judge through the second sweep parameter / not used in each limit.	
List sweep time tag		In SEQ mode, set the trigger point to 0, by defining the time, the test start time can be recorded at each measurement point.	
Graph sweep analysis			
Sweep points		51, 101, 201, 401 or 801	------
Sweep trace		Primary or secondary parameters	------
Display range		AUTO, HOLD	------
Coordinate scale		Logarithm, linearity	------
Sweep parameters		Test frequency, ACV, ACI, DCV BIAS/DCI BIAS, DC voltage source	------
Sweep result display		Maximum value/ minimum value of primary/secondary parameter, primary/secondary value of the setting point	------
Sweep graph storage		Sweep graphs can be saved to the interior FLASH, external USB storage or uploaded to the upper computer.	------
Comparator			
Bin sorting	Primary parameter	9 BIN, OUT_OF_BINS, AUX_BIN, LOW_C_REJECT	
	Secondary parameter	HIGH, IN, LOW	
Bin limit setup		Absolute value, deviation value, percentage deviation value	
Bin count		0 -- 999999	
PASS/FAIL indication		When the primary parameter is one of the 9 BINs and the secondary parameter is IN, the PASS light on the front panel is ON, or FAIL light is ON.	
Test auxiliary function			
Data buffer storage function		201 test results can be read in batches	
Storage/Calling function		100 groups of test setting files in the internal nonvolatile memory 0--99 100 groups of test setting files in the USB storage 0—99	
Keyboard lockout function		Front panel keys can be locked	
USB HOST port		Universal Serial Bus socket, A class; FAT16/FAT32 format. USB flash disk storage or barcode scanning	
USB DEVICE port		Universal Serial Bus socket, small size B class (4 contact position); Correspond to USBTMC-USB488 and USB 2.0 The female joint is used for connecting the external control unit.	
LAN		10/100BaseT Ethernet, 8pins, two selectable speed mode	
HANDLER interface		Be used for bin sorting signal output	
External DC BIAS control		Control TH1778A/TH1778AS Bias current source, at most 1 set of TH1778+5 sets of TH1778S (120A MAX)	
RS232			
GPIB (option)		24 pin D-Sub port (D-24 class), the female joint is compatible with IEEE488.1, 2 and SCPI.	

Standard Accessories

Three core power cord
TH26010 Gold-plated short circuit board
TH26011BS 4 terminal pair Kelvin test clip leads
TH26005C Four-terminal test fixture

Options

TH26108C Four-terminal-pair patch test fixture
TH26007A Magnetic ring test fixture
TH26047 Four-terminal test fixture
TH26063 Four-terminal test fixture
TH2838-GPIB GPIB Interface board
TH26008A SMD component test fixture
TH26009B SMD Kelvin test tweezers
TH26048 Four-terminal test fixture
TH26062A Four-terminal test fixture
TH26033 GPIB Control cable

Component Parameter Test Instruments

Ⅰ. TH2826/TH2826A LCR Meter

Features

- The first LCR meter with LXI standard in China.
- Test frequency:20Hz-5MHz with the resolution of 10mHz
- Test level:10mV-5V with the resolution of 1mV
- Basic accuracy:0.1%
- The highest test speed up to 200 times/s.
- 320×240 dot-matrix large graphic LCD display
- 5-digit display resolution
- 22 parameter combinations available
- 4 signal source output impedance
- 10 points list sweep function
- Built-in DC bias source
- Auto level control (ALC) function of voltage or current
- V,I test signal level monitor function
- Graphic scanning and analyzing function
- 20 groups of setting for storage/load
- Built-in comparator, 10-bins and bin counters
- Multiple communication interfaces
- 2m/4m cable length extension(Optional)
- Optional Chinese and English language operating interface

RS232	USB HOST	USB DEVICE	HANDER	LAN	GPIB
standard	standard	standard	standard	standard	option

TH2826/TH2826A

Dimension (mm): 400(W) x 132(H) x385(D)
Net weight : 9.3kg

Applications

- **Passive component**:

Impedance parameter estimation and performance analysis of capacitor, inductor, magnetic core, resistor, piezoelectric devices, transformers, chip components and network components

- **Semiconductor component**

Parasitic parameter test and analysis of LED driver integrated circuit
C-VDC features of varactors
Parasitic parameter analysis of transistors or integrated circuit

- **Other components**

Impedance assessment of printed circuit boards, relays, switches, cables, batteries

- **Dielectric material**

Dielectric constant and loss angle evaluation of plastics, ceramics and other materials

- **Magnetic materials**

Magnetic permeability and loss angle assessment of ferrite, amorphous body and other magnetic materials

- **Semiconductor materials**

Dielectric constant, electrical conductivity and C-V characteristics of semiconductor materials

- **Liquid crystal cell**

Dielectric constant, elastic constant and C-V characteristics of liquid crystal cell

Specifications

Measurement Parameters	C, L, R,Z,Y,X,B, G, D, Q, θ,DCR	
Test frequency	TH2826	20Hz–5MHz,with the resolution of 10mHz
	TH2826A	20Hz–2MHz,with the resolution of 10mHz
Test Level	f≤1MHz	10mV–5V,±(10%+10mV)
	f>1MHz	10mV–1V,±(20%+10mV)
Output impedance	10Ω, 30Ω, 50Ω, 100Ω	
Basic Accuracy	0.1%	
Display Range	L	0.0001 uH – 9.9999kH
	C	0.0001 pF – 9.9999F
	R,X,Z,DCR	0.0001 Ω – 99.999 MΩ
	Y, B, G	0.0001 nS – 99.999 S
	D	0.0001 – 9.9999
	Q	0.0001 – 99999
	θ	-179.99° – 179.99°
Measuring Speed (meas/sec)	Fast: 200(f > 30kHz),100(f > 1kHz); Med: 25, Slow: 5	
Calibration function	Open/Shot /load	
Equivalent mode	Serial,Parallel	
Ranging Mode	Auto and Hold	
Display Mode	Direct, ABS, Rel	
Trigger Mode	Internal,Manual,External,BUS	
Internal DC bias source	Voltage mode	-5V – +5V,±(10%+10mV), with the resolution of 1mV
	Current mode (internal resistance is 50Ω)	-100mA – +100mA, ±(10%+0.2mA),with the resolution of 20uA
Comparator function	10 bins and bin counters	
Display	320×240 dot-matrix LCD display	
Memory	20 groups of control settings can be saved	
Interface	USB DEVICE(USBTMC and USBCDC support), USB HOST(FAT16 and FAT32 support), LAN(LXI class C support), RS232C,HANDLER,GPIB(option)	

Standard Accessories

TH26048 4 terminal test fixture
TH26011B 4 terminal Kelvin test clip leads
TH26010 Gilded shorting plate

Options

TH26008A SMD component test fixture
TH26009B SMD test tweezers
TH10001 GPIB interface

Component Parameter Test Instruments

Ⅰ. TH2829 Series of Automatic Component Analyzer

Features

- 800×RGB×480 7-inch TFT LCD display
- Basic accuracy: 0.05%
- Test signal frequency of 1MHz, resolution of 1mHz, 5-digit frequency input
- Strongest signal source selection:
  10V/100mA programmable AC test level
  10V/100mA programmable DC bias supply
  10V/50mA standalone DC voltage source
  1A/2A interior DC bias current source (optional)
  120A external bias source (optional)
- Maximum test speed: 9ms/time
- Simultaneous display of 4 kinds of test parameters
- 201 -point list sweep function
- Continuous curve scanning/graphical analysis function
- Internal storage of 100 sets of LCRZ setting files and 10 sets of GIF image
- GIF image and CSV data files can be saved to USB storage directly
- HANDLER, USB, LAN, RS232C, GPIB (option), DCI interface

RS232	USB HOST	USB DEVICE	HANDER	LAN	GPIB
standard	standard	standard	standard	standard	option

TH2829A/TH2829C

Dimension (mm): 400(W) x 132(H) x385(D)
Net weight : 13kg

Applications

- **Passive component**:

Impedance parameter estimation and performance analysis of capacitor, inductor, magnetic core, resistor, piezoelectric devices, transformers, chip components and network components

- **Semiconductor component**

Parasitic parameter test and analysis of LED driver integrated circuit
C-VDC features of varactors
Parasitic parameter analysis of transistors or integrated circuit

- **Other components**

Impedance assessment of printed circuit boards, relays, switches, cables, batteries

- **Dielectric material**

Dielectric constant and loss angle evaluation of plastics, ceramics and other materials

- **Magnetic materials**

Magnetic permeability and loss angle assessment of ferrite, amorphous body and other magnetic materials

- **Semiconductor materials**

Dielectric constant, electrical conductivity and C-V characteristics of semiconductor materials

- **Liquid crystal cell**

Dielectric constant, elastic constant and C-V characteristics of liquid crystal cell

Specifications

Display			800×RGB×480 7-inch TFT LCD display
Frequency of test signal	TH2829A		20Hz—300kHz
	TH2829C		20Hz—1MHz
	Minimum resolution		1mHz, 5-digit frequency input
	Accuracy		0.01%
AC Level	Voltage range of test signal		5mV—10Vrms
	Minimum resolution of voltage		100μV, 3-digit input
	Accuracy	ALC ON	10% x set voltage + 2mV
		ALC OFF	6% x set voltage + 2mV
	Current range of test signal		50μA—100mA
	Minimum resolution of current		1μA, 3-digit input
	Accuracy	ALC ON	10% x set current + 20μA
		ALC OFF	6% x set voltage + 20μA
DC bias voltage source	Voltage/Current range		0V— ±10V / 0mA—±100mA
	Resolution		0.5mV / 5μA
	Voltage accuracy		1% x set voltage + 5mV
	ISO ON		Be used for the bias test of inductance and transformer
AC Source impedance		ISO ON	100Ω
		ISO OFF	30Ω，50Ω，100Ωselectable
DCR Source impedance			30Ω，50Ω，100Ωselectable
DC Independent voltage source	Voltage/current range		0V— ±10V / 0mA—±50mA
	Resolution		0.5mV / 5μA
	Voltage accuracy		1% x set voltage + 5mV
	Output resistance		100Ω
Test parameters of LCR			|Z|, |Y|, C, L, X, B, R, G, D, Q, θ, DCR, Vdc-Idc
Parameter display of test page			Two sets of main/sub parameters, the second set can be set as ON/OFF; There can be 10 pages of list sweep and 15 points per page at most; Multiple parameters continuous sweep graphical analysis.

Component Parameter Test Instruments

I. TH2829 Series of Automatic Component Analyzer

Basic accuracy	LCR test parameter	0.05%
	Calibration	Warm-up time ≥ 30 seconds; Environment temperature: 23±5ºC; Signal voltage: 0.3Vrms-1Vrms ; Zeroing: After OPEN or SHORT; Length of test cable: 0 m
Measurement time (≥10 kHz)		Fast: 9 ms / time ; Medium: 67 ms / time; Slow:187 ms / time Plus the refresh time of display character
Display range of LCR parameter	|Z|,R, X,DCR	0.00001Ω — 99.9999MΩ
	|Y|,G,B	0.00001μs — 99.9999s
	C	0.00001pF — 9.99999F
	L	0.00001μH — 99.9999kH
	D	0.00001 — 9.99999
	Q	0.00001 — 99999.9
	θ(DEG)	-179.999º — 179.999º
	θ(RAD)	-3.14159 — 3.14159
	Δ%	-999.999% — 999.999%
Equivalent circuit		Serial, Parallel
Range mode		Auto, Hold
Trigger mode		Internal, Manual, External, Bus
Average times		1-256
Calibration function		Open, short calibration with full frequency or dot frequency, Load
Math operation		Direct reading, ΔABS, Δ%
Delay time setup		0-999, minimum resolution: 100us
Comparator		10-bin sorting, BIN1-BIN9, NG, AUX
		Bin counter
		PASS/FAIL on front panel, LED indication
List sweep		·201 -point list sweep function ·List sweep of frequency, AC voltage/current, internal/external DC bias voltage/current and independent DC source voltage can be performed on each page. Each sweep point can be sorted separately.
Graphical analysis		·Graph scanning and analysis of frequency, AC level and DC bias can be performed. ·Set the sweep start point, end point and each sweep point. ·Display the maximum value, minimum value and read any of the chosen sweep point ·Scanning graphs can be stored into internal or external USB memory.
Internal nonvolatile memory		100 sets of LCRZ setting files memory, 201 times test results, 10 sets of GIF image, CSV data files
External USB memory		·GIF image, CSV data files ·LCRZ setting files memory ·Test data can be stored via USB memory directly.
Interface	1A bias current source	1A DC bias current source (optional) can be stalled
	I/O interface	HANDLER on rear panel
	SCI	USB，RS232C
	PCI	GPIB(optional)
	NI	LAN
	Memory interface	USB HOST(front panel)
General Specifications		
Operating temperature and humidity		0℃－40℃, ≤ 90%RH
Power supply	Voltage	99V－121V， 198V－242V AC
	Frequency	47Hz－63Hz
Consumption		Max. 80 VA
Dimension(W×H×D)		400mm × 132mm × 385mm
Weight		Approx.13 kg

Standard Accessoriesies

Three core power cord
TH26010 Gold-plated short circuit board
TH26011AS 4 terminal pair Kelvin test clip leads(only TH2829A)
TH26011BS 4 terminal pair Kelvin test clip leads(only TH2829C)
TH26048 Four-terminal test fixture

Component Parameter Test Instruments

I. TH2827 Series of Precision LCR Meter

Features

- 4.3-inch TFT LCD display
- Selectable Chinese and English operation interfaces
- Maximum test frequency of 1MHz, resolution of 10mHz
- Transformer parameter test function
- Maximum test speed: 13ms/time
- Automatic level control (ALC) function for V and I
- Test signal level monitor function for V and I
- Included interior DC bias source
- External DC bias source of large current
- 10-point list sweep function
- Selectable internal resistance of 30Ω, 50Ω and 100Ω
- Built-in comparator:10-bin sorting and bin counter
- Internal file storage and external USB-disk file storage
- Test data can be saved to USB-disk directly
- RS232C, USB, LAN, HANDLER, GPIB, DCI interface

RS232	USB HOST	USB DEVICE	HANDER	LAN	GPIB
standard	standard	standard	standard	standard	option

TH2827A/TH2827C

Rack mount (mm): 320(W) x 88(H) x 370(D)
Dimension (mm): 369(W) x 108(H) x408(D)
Net weight: 5kg

Applications

- **Passive component**:

Impedance parameter estimation and performance analysis of capacitor, inductor, magnetic core, resistor, piezoelectric devices, transformers, chip components and network components

- **Semiconductor component**

Parasitic parameter test and analysis of LED driver integrated circuit
C-VDC features of varactors
Parasitic parameter analysis of transistors or integrated circuit

- **Other components**

Impedance assessment of printed circuit boards, relays, switches, cables, batteries

- **Dielectric material**

Dielectric constant and loss angle evaluation of plastics, ceramics and other materials

- **Magnetic materials**

Magnetic permeability and loss angle assessment of ferrite, amorphous body and other magnetic materials

- **Semiconductor materials**

Dielectric constant, electrical conductivity and C-V characteristics of semiconductor materials

- **Liquid crystal cell**

Dielectric constant, elastic constant and C-V characteristics of liquid crystal cell

Specifications

Display			800×RGB×480 4.3-inch TFT LCD display
Frequency of test signal	TH2827A		20Hz—300kHz
	TH2827C		20Hz—1MHz
	Minimum resolution		10mHz, 4-digit frequency input
	Accuracy		0.01%
AC Level	Voltage range of test signal		5mV—2Vrms
	Minimum resolution of voltage		100μV, 3-digit input
	Accuracy	ALC ON	10% x set voltage + 2mV
		ALC OFF	6% x set voltage + 2mV
	Current range of test signal		100μA—20mA
	Minimum resolution of current		1μA, 3-digit input
	Accuracy	ALC ON	10% x set current + 20μA
		ALC OFF	6% x set voltage + 20μA
DC bias voltage source	Voltage/Current range		0V— ±5V / 0mA—±50mA
	Resolution		0.5mV / 5μA
	Voltage accuracy		1% x set voltage + 5mV
	ISO ON		Be used for the bias test of inductance and transformer
AC Source impedance		ISO ON	100Ω
		ISO OFF	30Ω，50Ω，100Ω selectable
DCR source impedance			30Ω，50Ω，100Ω selectable
Test parameters of LCR			|Z|, |Y|, C, L, X, B, R, G, D, Q, θ, DCR, Vdc-Idc
Parameter display of test page			One set of main/sub parameter, 10-point list sweep
Test parameters of transformer			DCR1(primary, 2-terminal), DCR2(secondary, 2-terminal), M (mutual inductance), N, 1/N,Phase, Lk(leakage inductance), C(primary, secondary capacitance),

Component Parameter Test Instruments

Ⅰ. TH2827 Series of Precision LCR Meter

Basic accuracy	LCR test parameter	0.05%
	N	0.1%
	Calibration	Warm-up time ≥ 30 seconds; Environment temperature: 23±5ºC; Signal voltage: 0.3Vrms-1Vrms; Zeroing: After OPEN or SHORT; Length of test cable: 0 m
Measurement time (≥10 kHz)		Fast: 13 ms / time , Medium: 67 ms / time, Slow:187 ms / time Plus the refresh time of display character
Display range of LCR parameter	|Z|,R, X, DCR	0.00001Ω — 99.9999MΩ
	|Y|,G,B	0.00001μs — 99.9999s
	C	0.00001pF — 9.99999F
	L	0.00001μH — 99.9999kH
	D	0.00001 — 9.99999
	Q	0.00001 — 99999.9
	θ(DEG)	-179.999º — 179.999º
	θ(RAD)	-3.14159 — 3.14159
	Δ%	-999.999% — 999.999%
Equivalent circuit		Serial, Parallel
Range mode		Auto, Hold
Trigger mode		Internal, Manual, External, Bus
Average times		1-255
Calibration function		Open, short calibration with full frequency or dot frequency, Load
Math operation		Direct reading, ΔABS, Δ%
Delay time setup		0-999, minimum resolution: 100us
Comparator		10-bin sorting, BIN1-BIN9, NG, AUX
		Bin counter
		PASS/FAIL on front panel, LED indication
List sweep		·201 points list sweep ·Frequency, AC voltage/current, internal/external bias voltage/ current can be swept. ·Each sweep point can be sorted separately.
Internal nonvolatile memory		40 sets of LCRZ setting files
External USB memory		GIF files, LCRZ setting files, Test data can be stored via USB memory directly.
Interface	I/O interface	HANDLER on rear panel
	SCI	USB，RS232C
	PCI	GPIB (optional)
	NI	LAN
	Memory interface	USB HOST (front panel)
General Specifications		
Operating temperature and humidity		0℃－40℃, ≤ 90%RH
Power supply	Voltage	99V-121V，198V-242V AC
	Frequency	47Hz-63Hz
Consumption		Max. 80 VA
Dimension(W×H×D)		320 mm × 88 mm × 370 mm (with no sheath) 369 mm × 108 mm × 408 mm (with sheath)
Weight		Approx. 5 kg

Standard Accessoriesies

Three core power cord
TH26010 Gold-plated short circuit board
TH26011AS 4 terminal pair Kelvin test clip leads(only TH2827A)
TH26011BS 4 terminal pair Kelvin test clip leads(only TH2827C)
TH26048 Four-terminal test fixture
TH26038 Four-terminal test fixture

Component Parameter Test Instruments

Ⅰ. TH283X Series Compact LCR Meter

Features

- Low cost, high performance, small size
- 4.3 inch TFT LCD Display
- Soft power switch
- Selectable Chinese-English operation language
- Max. 200kHz test frequency
- Max. 6 digit reading resolution
- 10mVrms-2.0Vrms programmable signal level, built-in 0 - ± 5V/50mA bias source
- DCR, 50mV-2V programmable test level, resolution 10μΩ
- Ls-Rd / Lp-Rd Function (L, Rd display simultaneously) *
- Highest test speed 13ms/time
- Selectable 30Ω/100Ω signal source impedance
- V/I monitor and auto level adjustment function
- Built-in comparator, 10 bins sorting and count function
- File storage and firmware update through U disk
- RS232, RS485, USB, HANDLER, GPIB interface

* Rd means DCR.

RS232	USB HOST	USB DEVICE	HANDER
standard	standard	standard	standard

GPIB	RS485	SCANNER
option	option	option

TH283X Series

Rack mount (mm): 215(W) x 88(H) x 335(D)
Dimension (mm): 235(W) x 105(H) x360(D)
Net weight: 3.6 kg

Applications

- Passive components:
  Evaluation of Impedance Parameters for Capacitors, Inductors, Cores, Resistors, piezoelectric devices, Transformers, Chip Components, and Network Components
- Other components:
  Impedance evaluation of printed circuit boards, relays, switches, cables, batteries, etc.

Specifications

Model		TH2830	TH2832
Basic measurement accuracy (See details in technical specification)	LCRZ	0.05%	0.05%
	DCR	0.1%	
	Calibration condition	Warm up time: ≥ 30 minutes ; Environment temperature: 23±5ºC Signal level: 1Vrms ; Corretion: after OPEN, SHORT Testing cable length: 0 m	
Test signal frequency		20Hz-100kHz , Continuous	20Hz-200kHz, Continuous
Signal source output impedance		Selectable 30Ω, 100Ω, ±1% @1kHz	
AC test signal level	Normal	10mV—2Vrms	
		Resolution: 10mV, Accuracy: 10% x setting voltage+2mV	
		100μA—20mArms	
		Resolution: 0.1mA	
	Constant level (ALC ON)	------	20mV—1Vrms
		------	Resolution: 10mV , Accuracy: 10%
		------	200μA—10mArms
		------	Resolution: 0.1mA
DCR test signal level		1V DC	50mV—2V DC
		------	Resolution: 0.5mV

Component Parameter Test Instruments

Ⅰ. TH283X Series Compact LCR Meter

DC bias voltage source		------	0V— ± 5V
		------	Resolution: 0.5mV, Accuracy: 1%
		------	0mA—± 50mA
		------	Resolution: 0.5μA
Test parameters		|Z|, |Y|, C, L, X, B, R, G, D, Q, θ, DCR	
DCR display range		0.00001 Ω – 99.9999 MΩ	
LCR parameters display range		|Z|, R, X 0.00001Ω — 99.9999MΩ |Y|, G, B 0.00001μs — 99.9999s C 0.00001pF — 9.99999F L 0.00001μH — 99.9999kH D 0.00001 — 9.99999 Q 0.00001 — 99999.9 θ(DEG) -179.999º — 179.999º θ(RAD) -3.14159 — 3.14159 Δ% -999.999% — 999.999%	
Display digits		6	6
Measurement time (≥10 kHz)		Fast: 75 meas/sec(13ms), Medium:11 meas/sec(90 ms), Slow: 2.7meas/sec(370 ms)	
Equivalent circuit		Serial, Parallel	
Range mode		Auto, Hold	
Trigger mode		Internal, Manual, External, Bus	
Average time		1–255	
Correction		Open, Short, Load	
Math operation		Direct reading, ΔABS, Δ%	
Trigger delay time setting		0 - 60.000s, 1ms steps	
Step delay time setting		0 - 60.000s, 1ms steps	
List Sweep		·10 points list sweep ·Frequency, AC voltage/current, internal/ external bias voltage/ current can be swept. ·Each sweep point can be sorted separately.	
Comparator function		10 bins, BIN1–BIN9, NG, AUX	
		Bin count function	
		PASS, FAIL LED display on front panel	
Built-in Storage		Internal 100 LCRZ instrument setting files, 201 times test results	
USB Storage		Instrument setting files , measurement result CSV files, printed screen (GIF format)	
Interface	Control interface	HANDLER	
	Communication interface	USB HOST, RS232C, RS485(option), GPIB(option)	
	Storage interface	USB DEVICE (U-disk storage)	

Standard Accessories

Three core power cord
TH26010 Gold-plated short circuit board
TH26011CS 4 terminal pair Kelvin test clip leads
TH26048A Four-terminal test fixture

Component Parameter Test Instruments

Ⅰ. TH2816P/TH2816A+/TH2816B+ Precision LCR Meter

NEW

Features

- 240×64 dot matrix graphic LCD display
- Humanized operation interface, easy to operate
- 0.02% accuracy (TH2816P), 7-digit reading
  0.05% accuracy (TH2816A+/TH2816B+), 6-digit reading
- 10mVrms - 2.0Vrms programmable test level
- Compatible with legacy bias source control
- High stability, high accuracy
- The fastest speed is about 60 times/second
- Accurate load calibration function
- 30Ω/100Ω selectable signal source output impedance
- 4-point frequency/level/list sweep function
- Direct reading, absolute deviation and relative deviation display
- 12 groups of internal instrument setting storage
- Built-in comparator: 10-bin sorting and bin counting (TH2816P/TH2816A+)
- bins sorting and bin counting (TH2816B+)
- Test level monitoring function
- Keypad lock function

RS232	USB HOST	USB DEVICE	HANDER	GPIB
standard	standard	standard	standard	option

TH2816P/TH2816A+/TH2816B+

Dimension (mm): 350(W)×122(H)×310(D)
Net weight: 6.5 kg

Applications

- Passive components:
  Evaluation of Impedance Parameters for Capacitors, Inductors, Cores, Resistors, piezoelectric devices, Transformers, Chip Components, and Network Components
- Other components:
  Impedance evaluation of printed circuit boards, relays, switches, cables, batteries, etc.

Specifications

Model		TH2816P	TH2816A+	TH2816B+
Display		240×64 dot-matrix LCD display		
Digits		7-digit resolution	6-digit resolution	6-digit resolution
Basic accuracy		0.02%	0.05%	0.05%
Test signal frequency	Range	50Hz - 200kHz	50Hz - 200kHz	50Hz - 200kHz
	Dots	12000 Dots	12000 Dots	37 Dots
Output impedance		30Ω / 100Ω		
AC Test level		10mV - 2Vrms, 10mV steps		
Test parameter		L, C, R, |Z|, D, Q, G, B, X, θd, θr, Vm, Im, △%		
Measurement display range	|Z|, R, X	0.00001Ω - 99.9999MΩ		
	G, B	0.00001μs - 99.9999s		
	C	0.00001pF - 9.99999F		
	L	0.00001μH - 99.9999kH		
	D	0.00001 - 9.99999		
	Q	0.00001 - 99999.9		
	θ(DEG)	-179.999º - 179.999º		
	θ(RAD)	-3.14159 - 3.14159		
	Δ%	-999.999% - 999.999%		

Component Parameter Test Instruments

Ⅰ. TH2816P/TH2816A+/TH2816B+ Precision LCR Meter

Measurement terminal		5 terminals	
List sweep		List sweep for up to 4 frequencies, signal levels and DC bias levels	
Graphic scanning		------	
Measuring speed		Fasr+: 16.7ms; Fast: 33ms; Med: 100ms; Slow: 667 ms	
Equivalent circuit		Series and Parallel	
Ranging mode		Auto, Hold	
Trigger mode		Internal, Manual, External and Bus	
Averaging rate		1 - 255	
Correction function		Open, Short and Load corrections	
Display Mode		Direct, ΔABS, Δ%, V/I(V/I monitor), Bin number and bin counter	
Comparator Function		10 Bins, BIN1 - BIN9, NG, AUX	4 Bins, BIN1 - BIN3, NG, AUX
		Bins counting function	
		PASS, FAIL front panel display	
Memory		12 control settings memory for store/recall	
Interface	Control	HANDLER	
	Communication	RS232C, USB HOST, USB DEVICE, GPIB(Option)	
Working temperature, humidity		0°C—40°C, less than 90%RH	
Input power	Voltage	198V—242V AC	
	Frequency	47Hz—63Hz	
	Power consumption	Max 80VA	
Size (mm)		350(W)×122(H)×310(D)	
Weight		6.5 kg	

Ordering Information

TH2816P Precision LCR Meter
TH2816A+ Precision LCR Meter
TH2816B+ Precision LCR Meter

Standard Accessories

TH26005A 4 terminal test fixture
TH26011A 4 terminal Kelvin test clip leads
TH26010 Gilded shorting plate

Options

TH26047 4 terminal test fixture
TH26048 4 terminal test fixture
TH26006 Axial component test fixture
TH26007A Core inductor test fixture
TH26008A SMD component test fixture
TH26009B SMD Kelvin test tweezers
TH26033 GPIB interface cable
TH26034 RS232C interface cable
TH10001 GPIB interface board

Component Parameter Test Instruments

Ⅰ. TH2817B+ LCR Meter

Features

- Test frequency 50Hz,60Hz,100Hz,120Hz,1kHz,10kHz,20kHz, 40kHz, 50kHz,100kHz, total 10 points
- 4.3 inch TFT liquid crystal display
- 50Hz-100kHz, 10 typical test frequencies
- 6-digit reading resolution
- Maximum test speed:12.5ms, support low frequency and high speed:TX4+3ms
- Chinese and English optional operation interface
- 10 bins sorting, test sorting is more perfect
- 100 sets of LCRZ instrument setting files, 10 measurements
- Soft power switch
- Support 110V/220V two power supply voltages
- 10-point list scanning, support multi-frequency test sorting
- Ultra-low signal source output offset (<100μV), meeting the needs of large inductor, common mode choke inductor test
- Super impact protection
- Power on state lock button;
- Empty fixture judgment
- Data logging function
- Screen capture function
- Interface function, timing, trigger delay, etc. are more complete

RS232/RS485(option)	HANDER	USB HOST	USB DEVICE
standard	standard	standard	standard

TH2817B+(TH2817B Upgraded) Support SCPI,MODBUS protocol

Rack mount (mm): 215(W) x 88(H) x 335(D)
Dimension (mm): 235(W) x 105(H) x360(D)
Weight: 3.6kg

Applications

- Passive components:

  Evaluation of Impedance Parameters for Capacitors, Inductors, Cores, Resistors, piezoelectric devices, Transformers, Chip Components, and Network Components

- Other components:

  Impedance evaluation of printed circuit boards, relays, switches, cables, batteries, etc.

Specifications

Model		TH2817B+
Basic accuracy		0.1%
Test frequency		50Hz,60Hz,100Hz,120Hz,1kHz,10kHz,20kHz,40kHz, 50kHz,100kHz, total 10 points
Test parameters		L,C,R,Z|,D,Q,X,θd,θr,Vm,Im,△%
V/I monitor		Yes
AC test signal level		0.1Vrms,0.3Vrms,1Vrms
Test terminal configuration		5-terminal
Test speed (ms/time)		Fast: 19ms;Medium:83ms;Slow: 333ms F≤120Hz Fast :4XT+3ms
Zero clearing		Open, Short, Load
List sweep		10-point list sweep Each scan point can be individually sorted, support multi-frequency combined test sorting Scanning test for frequency and AC voltage
Equivalent Circuit		Series, Parallel
Range mode		AUTO, HOLD
Trigger mode		Internal, External, Manual, Bus
Average times		1-255
Arithmetical operation		Direct reading,△ABS,△%
Delay		Trigger delay, step delay: 0—60.000s, 1ms step
General function		Series, parallel equivalent mode, calibration: open circuit, short circuit, range selection: automatic, manual, trigger mode: INT, MAN, EXT, BUS, keyboard lock function
Comparator		10 bins sorting,BIN1-BIN9,NG,AUX; Bin count function PASS, FALL front panel LED display
Memory	Nonvolatile storage	100 sets of LCRZ instrument setting files
	USB Storage	Instrument setting files , measurement result CSV files
Interface		RS232/RS485(option),HANDLER,USB HOST,USB DEVICE

Standard Accessories

Three core power cord
TH26048A 4-terminal test fixture
TH26011CS 4-terminal Kelvin test cable
TH26010 Gilded shorting plate

Component Parameter Test Instruments

Ⅰ. TH2817C+ LCR Meter

Features

- Test frequency 50Hz,60Hz,100Hz,120Hz,1kHz,10kHz,20kHz, 40kHz, 50kHz,100kHz, total 10 points
- 4.3 inch TFT liquid crystal display
- 6-digit reading resolution
- Maximum test speed:12.5ms, support low frequency and high speed:TX4+3ms
- Chinese and English optional operation interface
- 10 bins sorting, test sorting is more perfect
- 100 sets of LCRZ instrument setting files, 10 measurements
- Soft power switch
- Support 110V/220V two power supply voltages
- Range configuration 3/10 times stepping configuration to ensure stable and reliable impedance full range test
- Ls-Rdc / Lp-Rdc function
- Ultra-low signal source output offset (<100μV), meeting the needs of large inductor, common mode choke inductor test
- Super impact protection
- Power on state lock button;
- Empty fixture judgment
- Data logging function
- Screen capture function
- Interface function, timing, trigger delay, etc. are more complete

RS232/RS485(optiom)	HANDER	USB HOST	USB DEVICE
standard	standard	standard	standard

TH2817C+(TH2817C/CX Upgraded) Support SCPI,MODBUS protocol

Rack mount (mm): 215(W) x 88(H) x 335(D)
Dimension (mm): 235(W) x 105(H) x360(D)
Weight: 3.6kg

Applications

- Passive components:

  Evaluation of Impedance Parameters for Capacitors, Inductors, Cores, Resistors, piezoelectric devices, Transformers, Chip Components, and Network Components

- Other components:

  Impedance evaluation of printed circuit boards, relays, switches, cables, batteries, etc.

Specifications

Model		TH2817C+
Basic accuracy		0.1%
Test frequency		50Hz,60Hz,100Hz,120Hz,1kHz,10kHz,20kHz,40kHz, 50kHz,100kHz, total 10 points
Test parameters	LCR	L, C, R, |Z|, D, Q, X, θd, θr, Vm, Im, △%
	Transformer	M, N, 1/N, L1/L2, DCR1/DCR2, C(primary-secondary), P(phase), Lk1/Lk2(leakage inductance)
	Balance test	L, R, Z, DCR
V/I monitor		Yes
Test level	AC	0.1Vrms,0.3Vrms,1Vrms
	DC	±1V
DC bias		------
Source impedance		10Ω, 100Ω optional
Test terminal configuration		5-terminal
Test speed (ms/time)		Fast: 19ms;Medium:83ms;Slow: 333ms
Zero clearing		Open, Short, Load
List sweep		10-point list sweep
Equivalent Circuit		Series, Parallel
Range mode		AUTO, HOLD
Trigger mode		Internal, External, Manual, Bus
Average times		1-255
Arithmetical operation		Direct reading,△ABS,△%
Delay		Trigger delay, step delay: 0—60.000s, 1ms step
General function		Series, parallel equivalent mode, calibration: open circuit, short circuit, range selection: automatic, manual, trigger mode: INT, MAN, EXT, BUS, keyboard lock function
Comparator		10 bins sorting,BIN1-BIN9,NG,AUX; Bin count function PASS, FALL front panel LED display
Memory	Nonvolatile storage	100 sets of LCRZ instrument setting files
	USB Storage	Instrument setting files , measurement result CSV files
Interface		RS232/RS485(option),HANDLER,USB HOST,USB DEVICE

Standard Accessories

Three core power cord
TH26049A test fixture
TH26048A 4-terminal test fixture
TH26011CS 4-terminal Kelvin test cable
TH26010 Gilded shorting plate

Component Parameter Test Instruments

I. TH2810B+ LCR Meter

Features

- 100Hz,120Hz,1kHz,10kHz 4 typical test frequencies
- 4.3 inch TFT liquid crystal display, Chinese and English optional operation interface
- 6-digit reading resolution
- Maximum test speed:12.5ms, support low frequency and high speed:TX4+3ms
- 10 bins sorting, test sorting is more perfect
- 100 sets of LCRZ instrument setting files, 10 measurements
- Soft power switch
- Support 110V/220V two power supply voltages
- 10-point list sweep, support multi-frequency test sorting
- Ultra-low signal source output offset (<100μV), meeting the needs of large inductor, common mode choke inductor test
- Super impact protection
- Power on state lock button;
- Empty fixture judgment
- Data logging function
- Screen capture function
- Interface function, timing, trigger delay, etc. are more complete

RS232/RS485(option)	HANDER	USB HOST	USB DEVICE
standard	standard	standard	standard

TH2810B+(TH2810B Upgraded)

Support SCPI,MODBUS protocol

Rack mount (mm): 215(W) x 88(H) x 335(D)
Dimension (mm): 235(W) x 105(H) x360(D)
Weight: 3.6kg

Applications

- Passive components:

  Evaluation of Impedance Parameters for Capacitors, Inductors, Cores, Resistors, piezoelectric devices, Transformers, Chip Components, and Network Components

- Other components:

  Impedance evaluation of printed circuit boards, relays, switches, cables, batteries, etc.

Specifications

Model	TH2810B+
Basic accuracy	0.1%
Test frequency	100Hz,120Hz,1kHz,10kHz
Test parameters	L, C, R, |Z|, D, Q, X, θd, θr, Vm, Im, △%
V/I monitor	Yes
AC test signal level	0.1Vrms,0.3Vrms,1Vrms
Signal source internal resistance	10Ω, 100Ω
Test terminal configuration	5-terminal
Test speed (ms/time)	Fast: 19ms; Medium:83ms; Slow: 333ms F≤120Hz Fast :4XT+3ms
Zero clearing	Open, Short, Load
List sweep	·10-point list sweep ·Each scan point can be individually sorted, support multi-frequency combined test sorting ·Scanning test for frequency and AC voltage
Equivalent Circuit	Series, Parallel
Range mode	AUTO, HOLD
Trigger mode	Internal, External, Manual, Bus
Average times	1-255
Arithmetical operation	Direct reading, △ABS, △%
Delay	Trigger delay, step delay: 0—60.000s, 1ms step
General function	Series, parallel equivalent mode, calibration: open circuit, short circuit, range selection: automatic, manual, trigger mode: INT, MAN, EXT, BUS, keyboard lock function
Comparator	10 bins sorting,BIN1-BIN9,NG,AUX; Bin count function PASS, FALL front panel LED display
Nonvolatile storage	100 sets of LCRZ instrument setting files, 10 test results
External USB storage	Instrument setting file, CSV data file

Standard Accessories

Three core power cord
TH26048A 4-terminal test fixture
TH26011CS 4-terminal Kelvin test cable
TH26010 Gilded shorting plate

Component Parameter Test Instruments

Ⅰ. TH2810D LCR Meter

Features

- Large character LCD display with backlight
- Easy operation with strong functions
- SMT surface mount technic
- Fast measurement speed (80mS)
- Good Readout stability
- 2 signal source output impedance:30Ω, 100Ω
- 5 Bins comparator and HANDLER interface
- RS-232C interface
- Optional RS232C operation software

RS232 standard | HANDER standard

TH2810D

Dimension (mm): 310(W) x 108(H) x375(D)
Weight: 3.7kg

Applications

- Passive components:

  Evaluation of Impedance Parameters for Capacitors, Inductors, Cores, Resistors, piezoelectric devices, Transformers, Chip Components, and Network Components

- Other components:

  Impedance evaluation of printed circuit boards, relays, switches, cables, batteries, etc.

Specifications

Model		TH2810D
Measurement function		
Test Parameter		L-Q, C-D, R-Q, |Z|-Q
Basic Accuracy		0.1%
Equivalents circuit		Series, parallel
Mathematical Functions		Deviation and Percent Deviation
Rang mode		Auto, Hold
Trigger mode		Internal, Manual and External
Measurement speed		Fast: 12, Med: 5.1, Slow: 2.5 (meas/sec)
Correction Function		Open/Short multi-frequency Zeroing
Measurement Terminals		Five Terminals
Test Signal		
Test Frequency		100Hz,120Hz,1kHz,10kHz, Accuracy 0.01%
Output impedance		30Ω , 100Ω
Signal level		0.1Vrms, 0.3Vrms, 1Vrms
Measurement Display Range		
|Z|, R		0.1mΩ - 99.99MΩ
C	100Hz/120Hz	1pF - 99999μ F
	1kHz	0.1pF - 9999.9μ F
	10kHz	0.01pF - 999.99μ F
L	100Hz/120Hz	1μH - 99999H
	1kHz	0.1μH - 9999.9H
	10kHz	0.01μH - 999.99H
D		0.0001 - 9.999
Q		0.0001 - 9999
Δ%		-999.99% - 999.99%
Display		
Display Mode		Direct, Δ%, Δ ABS
Display		Large character LCD with backlight
Display digits		Primary and secondary display:5 digits
Comparator and interface		
Comparator		NG, P1, P2, P3, AUX, 5 bins and alarm selectable
Interface		RS232C, Handler

Standard Accessories

TH26001A	4 terminal test fixture
TH26004-1	4 terminal Kelvin test clip leads
TH26010	Gilded shorting plate

Component Parameter Test Instruments

Ⅰ. TH2822 Series Handheld LCR Meter

Features

- Max. Basic accuracy: 0.25%
- Maximum test signal frequency : 100kHz
- Selectable test signal level
- With DCR function
- Enhanced protection capability of input terminal impact
- 40000 counts for primary parameter, D/Q resolution 0.0001
- Typical ultra-low consumption: 25mA
- Innovatively compatible terminal configuration: 5-terminal test slot and 3-terminal rubber jack
- Intellectualized auto LCR function
- AC test speed up to 4 meas/sec (DCR: 3 meas/sec), fast automatic range switch design
- Constant 100Ω output impedance
- Percentage display and 4-tolerance comparator: 1/5/10/20%
- Battery charge in startup & shutdown
- Test terminal protection function
- Data-hold, Max./Min./Average value recording
- Real-time function configuration selection and working condition hold capacity
- Standard configuration Mini – USB communication interface and SCPI command set
- Free FastAccess PC communication software on our website
- Gorgeous dual-color cast shell

Mini USB
standard

TH2822 series

Dimension (mm): 90(W) x 190(H) x40(D)
Weight: 0.35kg

Applications

- Passive components:
  Evaluation of Impedance Parameters for Capacitors, Inductors, Cores, Resistors, piezoelectric devices, Transformers, Chip Components, and Network Components
- Other components:
  Impedance evaluation of printed circuit boards, relays, switches, cables, batteries, etc.

Brief Introduction

■ With its advanced impedance test technology, Tonghui has launched TH2822 series handheld LCR meters. This series currently possess the most powerful functions and outstanding performance in this industry comparable with bench LCR meters. Meanwhile it is the achievement of Tonghui after years of efforts and research in the passive-component testing field.

TH2822 series apply the ultra-low power consumption design and high density SMD assembly techniques and can simultaneously display primary and secondary parameters on a LCD display with backlight. The dual-color shell is gorgeously once shaped; and functions are easy to operate. The test frequency is up to 100 kHz, the readings of primary parameter 40,000 counts and the resolution of dissipation factor 0.0,001. Accurate and convenient measurements of passive-components can be achieved in different occasions for a long time. In order to meet different market demand, multiple signal level and DCR test function are increased on TH2822D/E. The test accuracy can reach 0.1%. With USB interface, TH2822 series can conveniently communicate with a PC and be remotely controlled by a PC. In order to satisfy the increasing test requirements for SMD and balance the different needs for performance and price, two types of 4-terminal Kelvin test tweezers: TH26009C and TH26029C are optional for users' choice.

Component Parameter Test Instruments

Ⅰ. TH2822 Series Handheld LCR Meter

Specifications

Model	TH2822A	TH2822C	TH2822D	TH2822E
Function				
Test Parameter	Primary parameters: L / C / R / Z Secondary parameters: D / Q / R /θ/ ESR		Primary parameters: L / C / R / Z/ DCR Secondary parameters: D / Q / R /θ/ ESR	
Equivalent Circuit	Series and Parallel			
Parameter and Equivalent Mode	Hold, Auto			
Ranging Mode	Auto			
Measurement Terminals	3-terminal, 5-terminal			
Measuring Speed	4meas/sec, 1.5meas/sec			
DCR Measuring Speed	------		3meas/sec	
Calibration Function	Open, short			
Comparator Function	1%, 5%, 10%, 20%		1%, 5%, 10%, 20%	
Input fuse	0.1A / 250V			
Interface	Mini-USB (virtual serial port)			
Test signal				
Test Frequency	100Hz, 120Hz, 1kHz, 10kHz,	100Hz, 120Hz, 1kHz, 10kHz, 100kHz	100Hz, 120Hz, 1kHz, 10kHz,	100Hz, 120Hz, 1kHz, 10kHz, 100kHz
Test Level	0.6Vrms		0.3 Vrms, 0.6 Vrms, 1 Vrms	
Output Resistance	100Ω			
Display				
Display	LCD Primary-Secondary dual display, with backlight (TH2822 not available)			
Reading	Max. Primary parameters: 40,000 digits, secondary parameters D/Q Minimum resolution: 0.0001			
Basic accuracy	0.25%		0.1%	
Measuring Range				
L	0.00μH - 1000.0H	0.000μH - 1000.0H	0.00μH - 1000.0H	0.000μH - 1000.0H
C	0.00pF - 20.000mF	0.000pF - 20.000mF	0.00pF - 20.000mF	0.000pF - 20.000mF
Z/R	0.0000Ω- 10.000MΩ			
DCR	------	------	0.0000Ω- 20.000MΩ	
ESR	0.0000Ω- 999.9Ω			
D	0.0000 - 9.999			
Q	0.0000 - 9999			
θ	0.00°- ±180.0°			
Power Requirements				
Battery model	TH2822 / A : IEC 6LR61, 9V alkaline battery TH2822C/D/E : LH-200H7C,8.4V Ni-MH 200mAH rechargeable battery			
AC power adapter	Input: 220V/50Hz, Output: 12V-15V(100Ω Load)			
Standby Currant	Max.2μA	18μA	11μA	
Battery life	16 hours (typical) , new alkaline battery, with backlight off			
Auto power off	5min, 15min, 30min, 60min, OFF available; Factory Default : 5min			
Low voltage indicator	When battery voltage drops below 6.8V, low voltage indicator turns on.			

Standard Accessories

MINI USB Communication cable
TH26028 AC power adapter
TH26004F Two-terminal Test Cable
TH26010B Gilded shorting plate
TH26027AS 4 terminal Kelvin test cable(not included in TH2822)
TH26029C SMD Kelvin test cable(not included in TH2822/A)
8.4V Rechargeable battery(not included in TH2822/A)
Alkaline battery(only for TH2822/A)

Component Parameter Test Instruments

I. TH2638 / A / B / C Precision Capacitance Meter

Features

- 4.3 inch TFT LCD display
- Selectable Chinese and English operation interface
- Max. test frequency: 1MHz
- Highest test speed: 2.3ms/time
- Basic test accuracy : ±0.07%
- Loss factor: ±0.0005
- V, I test signal level monitor function
- Low impedance measurement, signal level compensation function
- Built-in 11-bin comparator
- Internal file storage and external U disk file storage
- Test data can be directly saved in U disk
- Screen shot can be saved in U disk
- Compatible with SCPI commands
- RS232C, USB CDC, LAN, HANDLER, GPIB interfaces
- Manipulator interface and scanner interface
- Contact inspection function
- Synchronizing signal source
- Offset function in 1MHz test frequency (±1, ±2%)

RS232	USB HOST	USB DEVICE	HANDER	LAN
standard	standard	standard	standard	standard

TH2638/A

Rack mount (mm): 280(W) x 88(H) x 370(D)
Dimension (mm): 369(W) x 108(H) x 408(D)
Net weight: 5 kg

Applications

- High precision and speed testing of electrolytic capacitors (original),
- DC-Link capacitors (original),
- ceramic capacitors and film capacitors (original)
- Semiconductor, LED driver chip,
- material distributed capacitance test
- High-speed automated production line integration testing
- Other kinds of capacitors

Specifications

Model		TH2638	TH2638A	TH2638B	TH2638C
Test parameters		Cp-D, Cp-Q, Cp-Rp, Cp-G, Cs-D, Cs-Q, Cs-Rs	Cp-D, Cp-Q, Cp-Rp, Cp-G, Cs-D, Cs-Q, Cs-Rs, Cs-Rs-Ls	Cp-D, Cp-Q, Cp-Rp, Cp-G, Cs-D, Cs-Q, Cs-Rs	
Test signal					
Frequency	Permitted frequency	100Hz,120Hz, 1kHz,10kHz, 100kHz,1MHz, 1MHz±1%,1MHz±2%	100Hz,120Hz, 1kHz,10kHz, 40kHz,100kHz	100Hz,120Hz, 1kHz,10kHz	100Hz,120Hz, 1kHz
	Accuracy	±0.02%			
Level	Range	0.1V-1V			
	Resolution	0.01V			
	Accuracy	±5%			
Output mode		Continuous or synchronous			
Signal source delay	Range	0-1s			
	Resolution	0.1ms			
Signal level compensation	100/120Hz	220μF, 470μF, 1mF range			
	1kHz	22μF, 47μF, 100μF range			
Output impedance	100 Hz 120Hz	SLC OFF (≥ 220μF range) 1.5 Ω SLC ON (≥ 220μF range) 0.3 Ω 2.2μF - 100μF range 0.3 Ω 10 nF - 1μF range 10 Ω			
	1kHz	SLC OFF (≥ 22μF range) 1.5 Ω SLC ON (≥ 22μF range) 0.3 Ω 220 nF - 10μF range 0.3 Ω 100 pF - 100 nF range 10 Ω			
	10kHz/100kHz	10 Ω			
	1MHz	10 Ω	------		

Component Parameter Test Instruments

Ⅰ. TH2638 / A / B / C Precision Capacitance Meter

Test speed		5-bin test speed: 1, 2, 4, 6, 8	
Max. Test speed	100/120Hz	11ms	
	1kHz	3ms	
	10k/100kHz	2.3ms	
	1MHz	2.3ms	------
Test range mode		Auto, Hold	
Test signal frequency range	100Hz/120Hz	10 nF, 22 nF, 47 nF, 100 nF, 220 nF, 470 nF, 1μF, 2.2μF, 4.7μF, 10μF, 22μF, 47μF, 100μF, 220μF, 470μF, 1 mF	
	1k Hz	100 pF, 220 pF, 470 pF, 1 Nf, 2.2 nF, 4.7 nF, 10 nF, 22 nF, 47 nF, 100 nF, 220 nF ,470 nF, 1μF, 2.2μF, 4.7μF, 10μF, 22μF, 47μF, 100μF	
	10k Hz	100 pF, 220 pF, 470 pF, 1 nF, 2.2 nF, 4.7 nF, 10 nF, 22 nF, 47 nF, 100 nF, 220 nF, 470 nF, 1μF, 2.2μF , 4.7μF, 10μF	
	100k Hz	10 pF, 22 pF, 47 pF, 100 pF, 220 pF , 470 pF, 1 nF, 2.2 nF, 4.7 nF, 10 nF, 22 nF, 47 nF, 100 nF	
	1MHz	1 pF, 2.2 pF, 4.7 pF, 10 pF, 22 pF, 47 pF, 100 pF, 220 pF, 470 pF, 1 nF	------
Average times		1 - 256	
Trigger mode		Internal, Manual, External, Bus	Internal, Manual, External, Bus (except GPIB)
Trigger delay time	Range	0 - 1s	
	Resolution	0.1ms	
Measurement display range			
Parameters	Cs , Cp	±1.000000 aF to 999.9999 EF	
	D	±0.000001 to 9.999999	
	Q	±0.01 to 99999.99	
	Rs, Rp	±1.000000 aΩ to 999.9999 EΩ	
	G	±1.000000 aS to 999.9999 ES	
	Δ%	±0.0001 % to 999.9999 %	
Basic measurement accuracy		C:0.07%, D:0.0005	
Display mode		Floating / fixed decimal point display, ΔABS, Δ%	
List sweep		10 list sweep, sweep item: frequency , voltage	
Comparator function		11 bins: BIN1-BIN9, OUT_OF_BIN, AUX_BIN	
Interface		RS232C,LAN,USB CDC,GPIB, HANDLER,Scanner	RS232C, LAN, USB CDC, HANDLER
Internal storage		40 setting files	
External USB storage		GIF image 40 setting files test data and screen shot can be saved in the USB storage directly	
General Specifications			
Temperature, humidity, height (operating environment)		0 ℃ - 45 ℃, 15% - 85% RH (≤40℃, non-condensing), 0 - 2000m	
Power supply	voltage	90VAC - 264VAC	
	frequency	47Hz - 63Hz	
	power	Max.150VA	
Temperature, humidity, height (Storage environment)		-20 ℃ - 70 ℃, 0 - 90% RH (≤65℃, non-condensing), 0 - 4572m	

Standard Accessories

Three core power cord
TH26010 Gold-plated short circuit board
TH26011BS 4 terminal pair Kelvin test clip leads
TH26005C Four-terminal test fixture

Component Parameter Test Instruments

Ⅰ. TH2840X Series Automatic Transformer Test System

Features

- The test speed is as high as 1000 times/s (>10kHz), without relay action time
- Test level up to 20Vrms
- The bias voltage is built-in ±40V/±100mA/2A
- Up to 288 test pins (only TH2840NX)
- Industry-friendly user experience: Linux bottom layer, built-in help file
- 10.1 inch 1280×800 capacitive touch screen
- Graphical pin association setting page, so that wiring is no longer a problem
- Lk setting does not need to input the leakage inductance pin, which is more intuitive
- Enhanced balance scanning function, from 5 points to 10 points
- Range switching adopts electronic switch, fast speed, long life, no noise
- Optional LCR function
- Approximately 100M setting file storage space in the machine, and massive U disk setting file storage capacity
- Provide host computer to support early model file format conversion to ensure compatibility

RS232	LAN	HANDER	USB HOST	USB DEVICE	EXTERNAL DCI
standard	standard	standard	standard	standard	standard

TH2840X Series

Dimension：430mm(W)x177mm(H)x265mm(D) 【TH2840AX/BX】
430mm(W)x177mm(H)x405mm(D) 【TH2840NX】
Weight： 11kg【TH2840AX/BX】/17kg【TH2840NX】

Applications

- Switching transformer scanning test, comprehensive characteristics analysis.
- Network transformer scanning test, comprehensive characteristics analysis
- Discrete passive components (L, R, C) multi-channel scanning test
- Relay drive line package, contact resistance multi-channel scanning test
- Multi-channel DC resistance DCR scanning test
- Comprehensive test analysis of multiple passive components in impedance network

Specifications

Model		TH2840AX	TH2840BX	TH2840NX
Display	Display	10.1” Captive Touch Screen		
	Ratio	16:09		
	Resolution	1280×RGB×800		
Test PIN		20 PIN (By TH1806)		48 PIN (Can extend to 288PIN)
Frequency	Range	20Hz-500kHz	20Hz-2MHz	20Hz-500kHz
	Accuracy	0.01%		
	Resolution	0.1mHz (20.0000Hz-99.9999Hz)		
		1mHz (100.000Hz-999.999Hz)		
		10mHz (1.00000kHz-9.99999kHz)		
		100mHz (10.0000kHz-99.9999kHz)		
		1Hz (100.000kHz-999.999kHz)		
		10Hz (1.00000MHz-2.00000MHz)		
AC Test Signal Mode	Rated Value (ALC OFF)	Set the voltage as the Hcur voltage when the test terminal is open		
		Set the current to be the current flowing from Hcur when the test terminal is short-circuited		
	Constant Value (ALC ON)	Keep the voltage on the DUT the same as the set value		
		Keep the current on the DUT the same as the set value		

Component Parameter Test Instruments

I. TH2840X Series Automatic Transformer Test System

Test Level	Ac Voltage	5mVrms-20Vrms	F<=1MHz 5mVrms-20Vrms F>1MHz 5mVrms-15Vrms	5mVrms-20Vrms
	Accuracy	± (10%×the set value+2mV) (AC<=2Vrms)		
		±(10%×the set value+5mV)(AC ＞ 2Vrms)		
	Resolution	1mVrms (5mVrms-0.2Vrms)		
		1mVrms (0.2Vrms-0.5Vrms)		
		1mVrms (0.5Vrms-1Vrms)		
		10mVrms (1Vrms-2Vrms)		
		10mVrms (2Vrms-5Vrms)		
		10mVrms (5Vrms-10Vrms)		
		10mVrms (10Vrms-20Vrms)		
	AC Current	50μArms-100mArms		
	Resolution (100Ω Internal Resistance)	10μArms (50μArms-2mArms)		
		10μArms (2mArms-5mArms)		
		10μArms (5mArms-10mArms)		
		100μArms (10mArms-20mArms)		
		100μArms (20mArms-50mArms)		
		100μArms (50mArms-100mArms)		
RDC Test	Voltage	100mV-20V		
	Resolution	1mV (0V-1V)		
		10mV (1V-20V)		
	Current	0mA-100mA		
	Resolution	10μA (0mA-10mA)		
		100μA (10mA-100mA)		
Dc Bias *	Voltage	0V-±40V		
	Accuracy	AC<=2V 1%×the set voltage+5mV		
		AC>2V 2%×the set voltage+8mV		
	Resolution	1mV (0V - ±1V)		
		10mV (±1V - ±40V)		
	Current	0mA-±100mA		
	Resolution	10μA (0mA-10mA)		
		100μA (10mA- 100mA)		
Built-In Current Source	Current	0mA-2A		
	Accuracy	I>5mA ± (2%×the set value+2mA)		
	Resolution	1mA		
Output Impedance		30Ω, ±4%@1kHz		
		100Ω, ±2%@1kHz		
LCR Function				
Test Parameter	Method	Arbitrary selection of four parameters		
	AC	Cp/Cs, Lp/Ls, Rp/Rs, |Z|, |Y|, R, X, G, B, θ, D, Q, VAC, IAC		
	DC	RDC, VDC, IDC		
Test Terminal Configuration		Four Terminal Pair		
Test Cable Length		0m		
Computation		The absolute deviation from the nominal value Δ, the percentage deviation from the nominal value Δ%		

Component Parameter Test Instruments

Ⅰ. TH2840X Series Automatic Transformer Test System

Specifications

Equivalent Way		Series, Parallel	
Calibration Function		OPEN, SHORT, LOAD	
Average Times		1-255	
Range Selection		AUTO, HOLD	
Range Configuration	LCR	100mΩ, 1Ω, 10Ω, 20Ω, 50Ω, 100Ω, 200Ω, 500Ω, 1kΩ, 2kΩ, 5kΩ, 10kΩ, 20kΩ, 50kΩ, 100kΩ	
	RDC	1Ω, 10Ω, 20Ω, 50Ω, 100Ω, 200Ω, 500Ω, 1kΩ, 2kΩ, 5kΩ, 10kΩ, 20kΩ, 50kΩ, 100kΩ	
Test Speed (Ms)		Fast+: 1ms. Fast: 3.3ms. Middle: 90ms.	
		Slow: 220ms	
Highest Accuracy		0.05% Please refer to the manuals for the details	
Measurement Display Range			
Cs, Cp		0.00001pF-9.99999F	
Ls, Lp		0.00001μH-99.9999kH	
D		0.00001-9.99999	
Q		0.00001-99999.9	
R, Rs, Rp, X, Z, Rdc		0.001mΩ-99.9999MΩ	
G, B, Y		0.00001μs-99.9999S	
Vdc		±0V-±999.999V	
Idc		±0A-±999.999A	
Θr		-6.28318	
Θd		-179.999° -179.999°	
Δ%		± (0.000%-999.9%)	
Turns Ratio		1：0.001—1000：1	
Transformer Test			
Test Parameter		Cs/Cp, Ls/Lp, DCR, Zx, Rs/Rp, D, Q, dZ, Lk, Phase, Balance Turns-Ratio, Ns: Np=U2/U1, Np: Ns=U1/U2 Turns: Ns=Np×U2/U1, Np=Ns×U1/U2	
Test Mode	Continuous	In the single trigger mode, manually trigger once, and once test all the test parameters.	
	Step	In the single trigger mode, manually trigger once to measure one parameter. Trigger again to measure the next parameter.	
Test Speed (Ms)	Fast+	Fast: 0.56ms(>10kHz)	
	Fast	Fast: 3.3ms	
	Middle	Middle: 90ms	
	Slow	Slow: 220ms	
Bias Resource		See *	
Average Times		Each test parameter can set different average times, the average times is 0-255	
Time Delay		Each test parameter can set a different delay time	
Transformer Scanning			
Built In Scanning Board		No	One Board as standard. Could extend to six boards. ((24×2) PIN per board)
Transformer Handler	Pin Definition	NS1-NS30, GOOD, NG, TEST, TRIGGER, RESET	NS1-NS9, GOOD, NG, TEST, TRIGGER, RESET
	Output Characteristics	Optocoupler isolation, ULN2003 drive enhancement, collector output	
Model		Direct reading, percentage	

Component Parameter Test Instruments

Ⅰ. TH2840X Series Automatic Transformer Test System

Test Range		Auto, Hold	
Bias Resource		See *	
External Scanning Box		compatible to TH1901 series, TH1831 scanning box, TH1806 series	
Number Of Windings	Primary	60	
	Secondary	9	
Average Times		Each test parameter can set different average times, the average times is 0-255	
Time Delay		Each test parameter can set a different delay time	
Test Speed (Ms)	Fast	Fast: 3.3ms(>=1kHz). Fast+: 1ms(>=10kHz) (Exclude the time for the relay action)	
	Middle	Middle: 90ms	
	Slow	Slow: 220ms	
Test Lead Interface		25*2pin FRC socket	
Other Functions and Specifications			
Storage	Internal	About 100M non-volatile memory test setting file	
	U Disk	Test setting file, screenshot graph, record file	
Keyboard Lock		The front panel keys can be locked	
Interface	USB HOST	2 USB HOST ports. Mouse and keyboard could work at the same time. Only one U disk can be used at the same time.	
	USB DEVICE	Universal serial bus socket, small type B (4 contact positions); compatible with USB TMC-USB488 and USB2.0, the female connector is used to connect an external controller.	
	LAN	10/100M Ethernet adaptive, 8 Pin	
	HANDLER	Used for Bin signal output	
	External DC BIAS Control	Support TH1778A (do not support transformer scanning)	
	RS232C	Standard 9-pin, cross	
	RS485	Can accept modification or connect to RS232 to RS485 adaptor	
Power-On Warm-Up Time		60 Minutes	
Output Voltage		100-120VAC/198-242VAC Optional, 47-63Hz	
Power Consumption		More than 130VA	
Size (WxHxD) Mm		430mm(W)x177mm(H)x265mm(D)	430mm(W)x177mm(H)x405mm(D)
Weight (Kg)		11kg	17kg

Standard Accessories

Three core power cord
TH26011BS four-terminal Kelvin test cable
TH1806B manual transformer scanning test fixture (TH2840AX/BX only)
TH260158A test cable(TH2840AX/BX only)
TH1801-001 Foot Start Switch (TH2840AX/BX only)
TH2829AX-001 Foot Start Switch (TH2840NX only)

Component Parameter Test Instruments

Ⅰ. TH2829X Series Automatic Transformer Test System

Features

- 7-inch TFT LCD display with a resolution of 800×RGB×480
- Frequency up to 1MHz, resolution: 0.5mHz
- Signal level: 5mV-2Vrms, optional (2Vrms-10Vrms)
- Built-in 0-100mA/0-10V bias power supply, optional 1A/2A bias current source
- Up to 75 times / sec test speed
- Diode forward and reverse characteristic detection
- Improved high turns ratio and weakly coupled transformer test capability
- Improved DCR testing capabilities
- Single screen can accommodate all scan test results
- Time stamping system: memory file setting, calibration deviation and deduction time
- Sort the selected scanning parameters
- Self-test scanning fixture relays
- Flexible deviation deduction method
- Multiple handling ways for FAIL cases
- Single parameter test cycle to test independent windings
- Increased security: administrator and operator passwords
- Built-in statistical analysis capabilities: Cpk, Cp, Ck, etc.
- Bar-code reading function can be used to select a setting file or to manage the type of test products
- Optional PC-level instrument test setup file programming capability
- Online upgrade mode: USBHOST or RS232
- Support multiple instrument networking through LAN interface
- Backward compatible with TH2818X/TH2819X parameter setting file
- Storage: Internal: 100 groups of settings file to save
  U disk: 500 groups of configuration files, CSV format test data, GIF format images

RS232	LAN	SCANNER	USB HOST	USB DEVICE
standard	standard	standard	standard	standard

GPIB	RS485	HANDER
option	option	option

TH2829X Series
Dimension(mm): 400mm(W)x132mm(H)x385mm(D)
Weight: 13kg

Applications

- Switching transformer scanning test, comprehensive characteristics analysis.
- Network transformer scanning test, comprehensive characteristics analysis
- Discrete passive components (L, R, C) multi-channel scanning test
- Relay drive line package, contact resistance multi-channel scanning test
- Multi-channel DC resistance DCR scanning test
- Comprehensive test analysis of multiple passive components in impedance network

Specifications

Model	TH2829 LX	TH2829 AX	TH2829 AX-24	TH2829 AX-48	TH2829NX	TH2829CX
Test Pin(PIN)	20	20	24	48	72/96/120/144/168/192	20
Test frequency	20Hz — 200kHz					20Hz — 1MHz
Display	800×RGB×480 7 inch TFT LCD display					
LCR Function	option					

Transformer test parameters	Turn Ratio	Turns	Phase	L	C	Lk	Q	ACR	DCR	Balance	Pin Short	Diode P/N
LCR test parameters	|Z|, |Y|, C, L, X, B, R, G, D, Q, θ, DCR, Turn-Ratio, Phase, Lk											
Basic test accuracy	LCRZ	0.05%										
	DCR, Turn Ratio	0.1%										
Signal source output impedance	10Ω, 30Ω, 50Ω, 100Ω											
Test speed (ms/times)	13ms, 90 ms, 370 ms											
AC signal level	5mVrms — 2Vrms(transformer test, can be customized to 10Vrms), 5mVrms — 10Vrms(LCR function); 50μArms — 100mArms											
DC bias voltage source	------	0V — ± 10V; 0mA — ± 100mA										
DC bias current source	0 — ±1A option(option TH2901) / 0 — ±2A option(option TH2902)											
DC constant current source	0mA – ±120mA for diode forward characteristic test											
Diode test	forward test voltage	0 — 9.9999 V										
	Reverse test current	0 — 99.999 mA										
Comparator	10 bins, PASS/FAIL indication, file counting function											
Storage	Internal: 100 sets of configuration file; U disk: 500 sets of configuration files, CSV format test data, GIF format images											

Standard Accessories

Three core power cord
TH26016 Handler/Scanner standard 36P control cable (TH2829LX/AX/BX/CX only)
TH26011AS four-terminal Kelvin test cable (TH2829LX/AX/AX-24/AX-48/NX only)
TH26011BS four-terminal Kelvin test cable(TH2829CX/CX-24/CX-48 only)
TH26004B two-terminal test cable
TH1901B manual transformer scanning test fixture
TH1801-001 Foot Start Switch (except TH2829AX-24/AX-48)
TH2829AX-001 Foot Start Switch (TH2829AX-24/AX-48 only)

Component Parameter Test Instruments

I. TH1778A Series DC Bias Current Source

Features

- Features
- Provide 0-20A constant current output
- Support the extension to the maximum 120A constant current output
- Master/slave control mode, flexible tailorability and scalability
- Fine current stepping
- 0Hz-2MHz frequency response
- Two current output modes: single current and step scan
- Graphical operation, Chinese and English interface
- Two SCPI command modes, strong adaptability
- 5 control modes
- Directly controlled by TH2829/TH2827/TH2830/TH2838 series

TH1778A

TH1778AS

RS232 standard | SlaveLink standard

TH1778A Series

Dimension(mm): 430mm(W)x177mm(H)x473mm(D)

Weight: 18kg

Applications

- Analysis of DC Characteristics of Inductors/Reactors
- Analysis of saturation characteristics of iron core/ferrite material
- Analysis of DC Characteristics of Other Materials

Specifications

Model	TH1778A			TH1778B	TH1778AS
Display	7 “ 800*600 RGB TFT LCD				------
Operation	Entitative key + foot switch				Controlled by the host
Supporting test frequency	0Hz-2MHz				
Current Range	0-±20A			0-±20A (No Extension)	0-±20A, can extend to 120A
Current	Range	0mA-1.000A	1.000A-5.000A		5.0A-120.0A
	Step	5mA	25mA		100mA
	Sweep adjustment time	4ms-3600s	10ms-3600s		20ms-3600s
	Minimum interval of sweep adjustment step	5mA	25mA		100mA
Range	1.000A/5.000A/20.0A				20.0A
Maximum output voltage	10V				
Maximum permitted DCR	$R_{max}=V_{max}/I$ (Ω)(Calculation of Rmax, please refer to the description in user manual)				
Maximum permitted inductance value	$L_{max}=V_{max}/(di/dt)$ (mH)(Calculation of Lmax, please refer to the description in user manual)				
Range mode	Auto				
Control mode for START/STOP	START/STOP entitative key, 4 foot switches, Bus				
Max. current time for continuous loading	Keeping 2-3h, continuous output				
Function	Fault self-inspection; 99 groups of custom profile management; dual-progress bar indication; Chinese and English; soft switching of slave machine; real-time operation; SCPI command set; simple dual-display computer.				
LCR Compatible	Controlled by TH2829/TH2827/TH2830/TH2838				Controlled by the host
Interface	RS232, Slaver Link				Slaver Link

Component Parameter Test Instruments

Ⅰ. TH510 Series Semiconductor C-V Characteristic Analyzer

NEW

Features

- 10.1-inch capacitive touch screen, resolution 1280*800, Linux system
- Dual CPU architecture , the fastest test speed of 0.56ms
- Three test methods: spot test, list scan, and graphic scan (option)
- Four parasitic parameters (Ciss, Coss, Crss, Rg) are measured and displayed on the same screen
- Integrated design: LCR + high voltage source + channel switching
- Standard 2-channel test, which can test two devices or dual-chip devices at the same time, the channel is the most Up to 6 channels can be expanded, channel parameters are stored separately
- Fast charging, shortens capacitor charging time and enables fast testing
- Fast turn-on test Conduction
- Automatic delay setting
- High Bias: VGS: 0 - ±40V, VDS: 0 - 200V/1500V/3000V
- 10 bin sorting

RS232	LAN	HANDER	USB HOST	USB DEVICE	RS485
standard	standard	standard	standard	standard	option

TH510 Series

Dimension：430(W)x177(H)x265(D)
Weight ：about 16kg

Applications

■ Semiconductor components/Power components

Parasitic capacitance test and C-V characteristic analysis of diodes, triodes, MOSFETs, IGBTs, thyristors, integrated circuits, optoelectronic chips, etc.

■ Semiconductor material

Wafer dicing, C-V characteristic analysis

■ Liquid crystal material

Elastic constant analysis

Specifications

Model		TH511	TH512	TH513
Channel		2（2/4 Ch Optional）		
Display	Display	10.1-inch capacitive touchscreen		
	Ratio	16:9		
	Resolution	1280×RGB×800		
Test Parameter		C_{ISS}, C_{OSS}, C_{RSS}, R_g. Four parameter selectable arbitrarily		
Test Frequency	Range	10kHz-2MHz		
	Accuracy	0.01%		
	Resolution	10mHz	1.00000kHz-9.99999kHz	
		100mHz	10.0000kHz-99.9999kHz	
		1Hz	100.000kHz-999.999kHz	
		10Hz	1.00000MHz-2.00000MHz	
Test Level	Voltage Range	5mVrms-2Vrms		
	Accuracy	± (10% x Setting Value+2mV)		
	Resolution	1mVrms	5mVrms-1Vrms	
		10mVrms	1Vrms-2Vrms	
V_{GS}	Range	0 - ±40V		
	Accuracy	1% x Setting Voltage+8mV		
	Resolution	1mV	0V - ±10V	
		10mV	±10V - ±40V	
V_{DS}	Range	0 - ±200V	0 - ±1500V	0 - ±3000V
	Accuracy	1%×Setting Voltage + 100mV		
Output Impedance		100Ω，±2%@1kHz		
Computation		Absolute deviation Δ from nominal value, percent deviation from nominal value Δ%		
Calibration Function		OPEN, SHORT, LOAD		

Component Parameter Test Instruments

Ⅰ. TH510 Series Semiconductor C-V Characteristic Analyzer

Measure Average			1-255 times
AD Conversion Time (ms/time)			Fast+: 0.56ms (> 5kHz), Fast: 3.3ms, Middle: 90ms, Slow: 220ms.
Basic Accuracy			0.1%
C_{ISS}、C_{OSS}、C_{RSS}			0.00001pF - 9.99999F
Rg			0.001mΩ - 99.9999MΩ
Δ%			±（0.000% - 999.9%）
Multi-Function Parameter List Scan	Spots		20 spots, the average number can be set for each spot, and each spot can be sorted separately
	Parameter		Test Frequency, Vg, Vd, Channel
	Trigger Mode		Sequence SEQ: After one trigger, measure at all sweep points, /EOM/INDEX output only once.
			Step: perform a sweep point measurement per trigger, each point outputs /EOM/INDEX, but the list scan comparator result is only output at the last /EOM
Graphic Scan	Scanning Spots		Any Spot is optional, up to 1001 Spots
	Result Display		Multiple curves with the same parameter and different Vg; multiple curves with the same Vg and different parameters.
	Display Range		Real-time automatic, locked
	Coordinate ruler		Logarithmic, linear
	Parameter		Vg、Vd
	Trigger Mode	Single	Manual trigger once, complete one scan from the start spot to the end spot, and start a new scan with the next trigger signal
		Continuous	Infinite loop scan from the start spot to the end spot
	Result Storage		Graphics, files
Comparators	Bin		10Bin、PASS、FAIL
	Bin Deviation Setting		Deviation, Percent Deviation, Off
	Bin Mode		Tolerance, continuous
	Bin Count		0-99999
	Bin Judgement		A maximum of four parameter limit ranges can be set for each bin. The corresponding bin number will be displayed within the setting range of the four test parameter results. If it exceeds the set maximum bin number range, FAIL will be displayed. Test parameters without upper and lower limits will be automatically ignored.
	PASS/FAIL indication		Satisfy Bin1-10, the PASS light on the front panel is on, otherwise the FAIL light is on.
Data Storage			201 measurement results can be read in batches
Storage File	Internal		About 100M non-volatile memory test setup file
	External USB		Test setup files, screenshots, log files
Keyboard Lock			Lockable front panel buttons, other functions to be expanded
Interface	USB HOST		2 USB HOST interfaces, which can be connected to the mouse and keyboard at the same time, and only one U disk can be used at the same time
	USB DEVICE		Universal Serial Bus socket, small type B (4 contact positions); compliant with USB TMC-USB488 and USB2.0, female connector for connecting external controllers.
	LAN		10/100M Ethernet, 8 pins, two speed options
	HANDLER		Used for Bin signal output
	RS232C		Standard 9-pin, crossed
	RS485		Can receive modification or external RS232 to RS485 module
Boot Warm-up Time			60 Minutes
Power consumption			100-120VAC/198-242VAC Option, 47-63Hz
Power consumption			More than 130VA
Dimensions（WxHxD）mm			430x177x405
Weight			16kg

Micro Signal Type Tester

II. TH199X Series precision source/measure unit

NEW

Features

- 7-inch capacitive touch screen, resolution 800×480
- Linux operating system
- Four-quadrant precision power output and measurement
- Single/dual channel output and measurement
- Up to ±210V DC voltage, ±3A DC current/±10.5A pulse
- 10fA/100nV minimum measurement resolution (6 1/2 digits)
- 10fA/100nV minimum supply resolution (6 1/2 digits)
- Up to 1,000,000 dots/sec sampling rate
- Arbitrary waveform generation
- List scan function (minimum 1μs interval)
- Direct generation of I/V curves of diodes, triodes, MOS tubes and IGBTs

RS232	LAN	HANDER	USB HOST	USB DEVICE
standard	standard	standard	standard	standard

TH199X Series

Shelf volume (mm): 125x132x480
Outline volume (mm): 236x154x526
Net weight: about 6kg (single channel) / 7.5kg (dual channel)

Applications

- Semiconductor, discrete and passive component testing
  - Diodes, Laser Diodes, LEDs
  - Photodetectors, Sensors
  - Field effect transistor, triode
  - ICs (ICs, RFICs, MMICs)
  - Resistors, rheostats, thermistors, switches
- Precision electronics and green energy device testing
  - PV
  - Power semiconductor
  - Battery
  - Car
  - Medical instrument
  - Power and DC Bias Sources for Board Level Testing
- Research and Education
  - New material research
  - Nanodevice properties
  - Giant magnetoresistance
  - Organic equipment
  - Any precision I/V source or measure

Specifications

Model			TH1991C	TH1991B	TH1991A	TH1991	TH1992A	TH1992
Display								
Display			7-inch capacitive touch screen, resolution 800×480					
Key Parameters								
Channel			1	1	1	1	2	2
Max Output	Voltage		±63V	±210V	±210V	±210V	±210V	±210V
	Current	DC	±1.515A	±3.03A	±3.03A	±3.03A	±3.03A	±3.03A
		Impulse	------	------	±10.5A	±10.5A	±10.5A	±10.5A
Power Source	Max Digits	Digits	5 1/2	5 1/2	5 1/2	6 1/2	5 1/2	6 1/2
	Min Resolution	Voltage	1μV	1μV	1μV	100nV	1μV	100nV
		Current	1pA	100fA	1pA	10fA	1pA	10fA
Measurement	Max Digits	Digits	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2
	Min Resolution	Voltage	100nV	100nV	100nV	100nV	100nV	100nV
		Current	100fA	10fA	100fA	10fA	100fA	10fA
Voltage Range			200mV-60V	200mV-200V	200mV-200V	200mV-200V	200mV-200V	200mV-200V
Min Time Interval			50μs	20μs	10μs	1μs	10μs	1μs

Micro Signal Type Tester

II. TH199X Series precision source/measure unit

Voltage Source (Accuracy: Reading % + Bias, Noise: peak-to-peak (0.1Hz-10Hz))								
Range	±200mV	Programming Resolution	1μV	1μV	1μV	100nV	1μV	100nV
		Accuracy	±(0.015% + 225μV)					
		Nosie	≤10μV					
		Max Voltage	±210 mV					
	±2V	Programming Resolution	10μV	10μV	10μV	1μV	10μV	1μV
		Accuracy	±(0.02% + 350μV)					
		Nosie	≤20μV					
		Max Voltage	±2.1V					
	±20V	Programming Resolution	100μV	100μV	100μV	10μV	100μV	10μV
		Accuracy	±(0.015% + 5mV)					
		Nosie	≤200μV					
		Max Voltage	±21V					
	±200V	Programming Resolution	1mV	1mV	1mV	100μV	1mV	100μV
		Accuracy	±(0.015% + 50mV)					
		Nosie	≤2mV					
		Max Voltage	±210V					
Voltage Mesaurement (Accuracy: Reding %+ Bias)								
Range	±200mV	Measurement Resolution	100nV					
		Accuracy	±(0.015% + 225μV)					
	±2V	Measurement Resolution	1μV					
		Accuracy	±(0.02% + 350μV)					
	±20V	Measurement Resolution	10μV					
		Accuracy	±(0.015% + 5mV)					
	±200V	Measurement Resolution	100μV					
		Accuracy	±(0.015% + 50mV)					
Current Source (Accuracy: Reading % + Bias, Noise: peak-to-peak (0.1Hz-10Hz))								
Range	±10nA	Programming Resolution	1pA	100fA	1pA	10fA	1pA	10fA
		Accuracy	±(0.10% + 50pA)					
	±100nA	Programming Resolution	1pA	1pA	1pA	100fA	1pA	100fA
		Accuracy	±(0.06% + 100pA)					
	±1μA	Programming Resolution	10pA	10pA	10pA	1pA	10pA	1pA
		Accuracy	±(0.025% + 500pA)					
	±10μA	Programming Resolution	100pA	100pA	100pA	10pA	100pA	10pA
		Accuracy	±(0.025% + 1.5nA)					
	±100μA	Programming Resolution	1nA	1nA	1nA	100pA	1nA	100pA
		Accuracy	±(0.02% + 25nA)					
	±1mA	Programming Resolution	10nA	10nA	10nA	1nA	10nA	1nA
		Accuracy	±(0.02% + 200nA)					
	±10mA	Programming Resolution	100nA	100nA	100nA	10nA	100nA	10nA
		Accuracy	±(0.02% + 2.5μA)					
	±100mA	Programming Resolution	1μA	1μA	1μA	100nA	1μA	100nA
		Accuracy	±(0.02% + 20μA)					
	±1A	Programming Resolution	10μA	10μA	10μA	1μA	10μA	1μA
		Accuracy	±(0.03% + 1.5mA)					
	±1.5A	Programming Resolution	10μA	10μA	10μA	1μA	10μA	1μA
		Accuracy	±(0.05% + 3.5mA)					
	±3A	Programming Resolution	100μA	100μA	100μA	10μA	100μA	10μA
		Accuracy	±(0.4% + 7mA)					
	±10A (Impulse)	Programming Resolution	100μA	100μA	100μA	10μA	100μA	10μA
		Accuracy	±(0.4% + 25mA)					

Current Measurement				
Range	±10 nA	Measurement Resolution		10fA
		Accuracy		±(0.10 % + 50 pA)
	±100nA	Measurement Resolution		100fA
		Accuracy		±(0.06% + 100pA)
	±1 μA	Measurement Resolution		1pA
		Accuracy		±(0.025% + 500pA)
	±10 μA	Measurement Resolution		10pA
		Accuracy		±(0.025% + 1.5nA)
	±100 μA	Measurement Resolution		100pA
		Accuracy		±(0.02% + 25nA)
	±1mA	Measurement Resolution		1nA
		Accuracy		±(0.02% + 200nA)
	±10mA	Measurement Resolution		10nA
		Accuracy		±(0.02% + 2.5 μA)
	±100mA	Measurement Resolution		100nA
		Accuracy		±(0.02% + 20 μA)
	±1A	Measurement Resolution		1 μA
		Accuracy		±(0.03% + 1.5mA)
	±1.5A	Measurement Resolution		1 μA
		Accuracy		±(0.05% + 3.5mA)
	±3A	Measurement Resolution		10 μA
		Accuracy		±(0.4% + 7mA)
	±10A	Measurement Resolution		10 μA
		Accuracy		±(0.4% + 25mA)
Pulse source (pulse width refers to the time from 10% rising edge to 90% falling edge, base level: pulse low level, peak level: pulse high level)				
Minimum programmable pulse width				50 μs
Pulse width programming resolution				1 μs
Max Voltage of DC or Impulse	210V	Max Peak Current		0.105A
		Max Base Current		0.105A
		Impulse Width		50 μs - 99999.9s
		Max Duty Cycle		99.9999%
	21V	Max Peak Current		1.515A
		Max Base Current		1.515A
		Impulse Width		50 μs - 99999.9s
		Max Duty Cycle		99.9999%
	6V	Max Peak Current		3.03A
		Max Base Current		3.03A
		Impulse Width		50 μs - 99999.9s
		Max Duty Cycle		99.9999%
Impulse Only	200V	Max Peak Current		1.515A
		Max Base Current		50mA
		Impulse Width		50 μs - 2.5ms
		Max Duty Cycle		2.5%
	180V	Max Peak Current		1.05A
		Max Base Current		50mA
		Impulse Width		50 μs - 10ms
		Max Duty Cycle		2.5%
	6V	Max Peak Current		10.5A
		Max Base Current		0.5A
		Impulse Width		50 μs - 1ms
		Max Duty Cycle		2.5%

Resistance Measurement (Auto resistance measurement mode, 4-wire, 2V range)			
Range	2 Ω	Resolution	1 μ Ω
		Test Current	1 A
		Current Range	1 A
		Total Tolerance	0.2% + 0.00035 Ω
	20 Ω	Resolution	10 μ Ω
		Test Current	100mA
		Current Range	100mA
		Total Tolerance	0.06% + 0.0035 Ω
	200 Ω	Resolution	100 μ Ω
		Test Current	10mA
		Current Range	10mA
		Total Tolerance	0.065% + 0.035 Ω
	2k Ω	Resolution	1m Ω
		Test Current	1mA
		Current Range	1mA
		Total Tolerance	0.06% + 0.35 Ω
	20k Ω	Resolution	10m Ω
		Test Current	100 μ A
		Current Range	100 μ A
		Total Tolerance	0.065% + 3.5 Ω
	200k Ω	Resolution	100m Ω
		Test Current	10 μ A
		Current Range	10 μ A
		Total Tolerance	0.06% + 35 Ω
	2M Ω	Resolution	1 Ω
		Test Current	1 μ A
		Current Range	1 μ A
		Total Tolerance	0.095% + 350 Ω
	20M Ω	Resolution	10 Ω
		Test Current	100nA
		Current Range	100nA
		Total Tolerance	0.18% + 3.5k Ω
	200M Ω	Resolution	10 Ω
		Test Current	10nA
		Current Range	10nA
		Total Tolerance	1.08% + 35k Ω
Interface			RS232C、USB HOST、USB DEVICE、LAN、HANDLER
Environment and Temperature			
Operation temperature and humidity range			23° C±5° C
Storage temperature and humidity range			23° C±5° C
Accuracy guarantees temperature and humidity			23° C±5° C
Preheat time			60 Minutes
Ambient temperature change			30% to 80%RH
Calibration cycle			One year
General Parameter			
Power Supply			90 V to 264 V, 47 Hz to 63 Hz, 250 VA maximum
Power			31.8W
Shelf Size			125mmx132mmx480mm
Dimensions			236mmx154mmx526mm
Weight			About 6kg (Single Channel) / 7.5kg (Dual Channel)

Micro Signal Type Tester

II. TH2690 Series fA meter/pA meter/Electrometer/High Resistance Meter

Features

- 5.0 inch capacitive touch screen
- 6½ Digit measurement resolution
- Four measurement modes: high resistance meter, voltmeter, ammeter, electrometer independent current and voltage measurement
- Built-in voltage source: ±1000V, resolution: 700μV
- Current range: 20pA-20mA, current resolution up to 0.1fA (10^{-16}A), the internal resistance voltage drop in the lowest current range <20μV
- The measurement resistance is as high as 10PΩ (10^{16}Ω), and the charge measurement is as low as 2nC. The input impedance is >200TΩ
- Support voltage measurement up to 20V, temperature and humidity measurement
- Time domain view, capture transient signal effects and select specified measurement data to support data recording
- With dedicated shielding test box

Application

- material science

Biomaterials, ceramics, rubber, films, dielectric materials, electrochemical materials, ferroelectric materials, graphene, metals, organic materials, nanomaterials, polymers, semiconductors, etc.

- Electronic Component

Types of transistors such as capacitors, resistors, diodes, sensors, TFT and CNT, photoelectric devices, solar cells, etc.

- Electronic/non-electronic system

Ion beam, electron beam, sensor system, particle measurement, embedded precision instrument, etc.

Specifications

Model	fA meter/ Electrometer/ High Resistance Meter	pA meter/ Insulation Resistance Meter	fA meter	pA meter
	TH2690	TH2690A	TH2691	TH2691A
Measurement resolution	6½ Digit			
Current measurement	1fA - 20mA	0.01pA - 20mA	0.1fA - 20mA	0.01pA - 20mA
Minimum range	20pA	2nA	20pA	2nA
Resistance measurement	10PΩ	10TΩ	-------	------
Voltage measurement	1μV - 20V	1μV - 20V	------	------
Input resistance	>200TΩ	>200TΩ	------	------
Charge measurement	1fC - 2μC	-------	------	------
Temperature measurement	√	√	------	------
Humidity measurement	√	√	------	------
power source	±1000V	±1000V	------	------
Minimum resolution	700μV	700μV	------	------

Current measurement accuracy

Range	Display resolution	Accuracy ± (% + deviation)
20pA	1fA	1%+5fA
200pA	1fA	0.5%+5fA
2nA	1fA	0.2%+50fA
20nA	10fA	0.2%+3pA
200nA	100fA	0.2%+5pA
2μA	1pA	0.1%+50pA
20μA	10pA	0.05%+500pA
200μA	100pA	0.05%+5nA
2mA	1nA	0.05%+50nA
20mA	10nA	0.05%+500nA

RS232 standard | LAN standard | HANDLER standard | USB HOST standard

USB DEVICE standard | GPIB standard | INTERLOCK standard

Rack mount（mm）:215(W)×88(H)×412(D)
Dimension （mm）:235(W)×111(H)×440(D)

Weight:3.5kg

Resistance measurement accuracy

Range	Display resolution	Voltage Source	Current Range	Accuracy ± (% + deviation)
1MΩ	1Ω	20V	200μA	0.135%+1Ω
10MΩ	10Ω	20V	20μA	0.135%+10Ω
100MΩ	100Ω	20V	2μA	0.185%+100Ω
1GΩ	1kΩ	20V	200nA	0.285%+1kΩ
10GΩ	10kΩ	20V	20nA	0.285%+10kΩ
100GΩ	100kΩ	20V	2nA	0.41%+100kΩ
1TΩ	1MΩ	200V	2nA	0.45%+1MΩ
10TΩ	10MΩ	200V	200pA	0.625%+10MΩ
100TΩ	100MΩ	200V	20pA	0.75%+100MΩ

Voltage measurement accuracy

Range	Display resolution	Accuracy ± (% + deviation)
2V	1μV	0.05%+40μV
20V	10μV	0.05%+400μV

Charge measurement accuracy

Range	Display resolution	Accuracy ± (% + deviation)
2nC	1fC	0.5%+50fC
20nC	10fC	0.5%+500fC
200nC	100fC	0.5%+5pC
2μC	1pC	0.5%+50pC

Voltage source accuracy

Range	Display resolution	Accuracy ± (% + deviation)	Output Current
20V	700μV	0.05%+2mV	±20mA
1000V	35mV	0.05%+100mV	±1mA

Standard Accessories

Three-core power cord
TH26058B Triax to Alligator Cable
TH26058C Plug
USB Cable
TH90003D High Voltage Test Cable (For TH2690/A only)
TH90003E High Voltage Test Cable (For TH2690/A only)
TH2690_THS Temperature and Humidity Sensor (For TH2690/A only)

Micro Signal Type Tester

II. TH2518 Series Resistance/ Temperature Scanner

Features

- 4.3 inch 24-color touch LCD screen with 480 × 272 resolution
- Chinese and English optional operation interface
- Up to 90-channel resistance/temperature scan tests
- Support 6 units for free insertion and removal, simultaneous measurement between test units
- Maximum test speed can reach 600 times / sec
- Maximum resistance accuracy: 0.05%, minimum resolution: 10uΩ
- Basic temperature accuracy: 0.2 °C
- The adopted test end of the scan test channel is programmable
- Compatible with scanning and stand-alone measurement modes
- Temperature measurement can support PT100, PT500 and analog voltage three temperature sampling methods
- Temperature compensation function (TC)
- One-click screen capture function
- Data logging function
- Automatic upgrade of instrument operating software via USB HOST
- Comparison sort results of channel, board and machine-level can be output
- Handler interface for online operations

RS232	USB HOST	USB DEVICE	HANDLER	LAN
standard	standard	standard	standard	standard

Foot switch
option

Dimension(mm):280(W)×88(H)×440(D) Weight:7.5kg

Application

- Components

Resistor, inductor, transformer, motor, relay, circuit solder joint, capacitor riveting point

- Cables, connectors

Strand wire, connectors, switches

- Material

Heat-sensitive materials (fuses, sensor for thermistors), conductive materials such as metal foil

- New energy

Electric vehicle battery pack connecting bridge, battery connection resistor

Specifications

Model	TH2518	TH2518A
Measuring parameters	DC resistance, temperature	DC resistance
Resistance test range	10μΩ — 200kΩ	
Basic resistance test accuracy	0.05%	
Resistance range	Auto and manual (200mΩ, 2Ω, 20Ω, 200Ω, 2kΩ, 20kΩ, 200kΩ)	
Temperature sensor type	PT500 platinum resistance, PT100 platinum resistance, analog voltage input Temperature test range	------
Temperature test range	PT100,PT500:-10℃ — 99.9℃，Analog:0V — 2V	------
Temperature test accuracy	PT100, PT500:0.3%*measured value ±0.5℃，Analog:±1%Rd ± 3mV	------
Measurement mode	Stand-alone, scanning	
Scanning channels	15 channels/boards, and up to 6 boards and 90 channels can be inserted. The board channel is for scanning test, and it is synchronous test between the test boards.	
Test terminal selection of test channel	Arbitrary configuration between channels (programmable)	
Test current	≤100mA	
Measurement speed	ingle board: 100 times / sec, 40 times / sec, 2 times / sec, 6 boards: 600 times / sec, 240 times / sec, 12 times / sec	
Temperature compensation	√	------
Display results	Simultaneous display the test results of 16 channels and support page turning	
Short-circuit clear correction	Support full-scale short-circuit clearing for all channels	
Comparators	Comparison boundaries are set separately for each test channel	
Limit mode	ABSDev，ABS，%	
Trigger mode	Auto trigger, manual trigger, bus trigger, Handler trigger, foot switch trigger	
Test terminal	Four-terminal test	
Storage	30 sets of instrument parameters	

Standard Accessories

Three-core power line
TH26050S Four-terminal test cable
PT500 temperature sensor (only for TH2518)
40-core flat cable

Micro Signal Type Tester

II. TH2515 DC Resistance Meter

Features

- Maximum accuracy: 0.01%
- Temperature accuracy: 0.1℃
- Minimum resolution: 0.1uΩ (resistance)
- Low-resistance test mode can effectively protect DUT
- Multiple measurement combinations of R, LPR, T
- 24 bits, 4.3-inch and 4-wire touch LCD screen
- LCD resolution: 480×272
- Temperature compensation(TC)
- Temperature conversion(Δt)
- Maximum sampling rate: 100samps/sec
- Offset voltage compensation (OVC)
- Customer self-correction(0 ADJ)
- Simultaneously output compare results of 10 bins (OVER, PASS and BEEP)
- Statistics function: CpK, Cp
- 30 groups of parameter files can be saved and loaded
- Screen information can be stored on U-disk
- Data save function brings convenience for saving measurement result
- Automatically update operation software through USB HOST
- Operation languages: Chinese and English
- Intelligent detection for test state error
- Flexible and convenient file operation system
- Handler interface realizes on-line operation.
- Interfaces such as RS232, USB HOST, USB Device and LAN are available and GPIB is optional.
- Compatible with LXI C standard Specifications

RS232	USB HOST	USB DEVICE	HANDLER	LAN	GPIB
standard	standard	standard	standard	standard	option

TH2515

Rack mount（mm）:215(W)×88(H)×335(D)
Dimension （mm）:235(W)×105(H)×360(D)
Weight:3.6kg

Application

- Components

Resistor, inductor, transformer, motor, relay, circuit solder joint, capacitor riveting point

- Cables, connectors

Strand wire, connectors, switches

- Material

Heat-sensitive materials (fuses, sensor for thermistors), conductive materials such as metal foil

- New energy

Electric vehicle battery pack connecting bridge, battery connection resistor

Brief Introduction

- On the basis of rich experience in impedance test and wide market research, now Tonghui launches a new touch screen meter---TH2515 DC Resistance meter. TH2515, with elegant appearance, easy operation and excellent performance, is comparable to the most advanced products in the market.

TH2515 adopts 32 bits CPU and high density SMD technology. 24 bits, 4.3-inch and touch LCD screen brings ease for your eyes and convenience to your operation. For the contact influence of the thermoelectricity on DUT, its elimination is achieved. The maximum 0.01% accuracy and minimum 0.1 μΩ resolution shore up its leading role in testing relay contact resistance, interconnecting resistance, conductor resistance, PCB resistance and welding-hole resistance. Temperature compensation and conversion functions make your tests be free from the effect of the environment temperature. The offset voltage compensation has effectively eliminated the electromotive force of the DUT and its contact potential difference. Automation on production lines can be greatly improved by the realization of ultra-high test speed and the signal output of 10 compare results through HANDLER interface.

Providing 1 optional interface---GPIB and 4 standard ones---RS232C, USB HOST, USB Device and LAN, TH2515 is able to make data communication with PC and further realizes remote control.

Specifications

Model	TH2515		
Display			
Display	24-bit, 400 X 272 and touch TFT LCD screen		
Reading digits	5 ½ digits		
Resistance measurement			
Measurement range	0.1μΩ --110MΩ		
Resistance range	Current	Resolution	*Accuracy±(ppm of Rd + ppm of Fs)
20 mΩ	1A	0.1μΩ	2500+10
200mΩ		1μΩ	2500+10
200mΩ	100mA	1μΩ	3500+10
2Ω	100mA	10μΩ	350+10
Model	TH2515		

Micro Signal Type Tester

II. TH2515 DC Resistance Meter

20Ω	10mA	100μΩ	250+10
200Ω		1mΩ	100+10
2kΩ	1mA	10mΩ	100+10
20kΩ	100μA	100mΩ	100+5
100/200kΩ		1Ω	100+30
1/2MΩ	10μA	10Ω	200+10
10MΩ	1μA	100Ω	1000+60
100MΩ	100nA	1kΩ	8000+600

Measurement function		
Resistance measurement time		FAST: 7ms; MED: 22ms; SLOW1: 102ms; SLOW2: 402ms Above data is correct when DISPLAY is OFF; When DISPLY is ON, 20ms should be added.
Temperature measurement time		100 ± 10ms
Test terminal		4-terminal
Average setup		1-255
Zero clearing		√
Range switch		AUTO and Manual
Trigger mode		Internal, Manual, External, BUS
Power frequency selection		√ (avoid the interference of the power noise)
Setting data storage		30 groups
Low voltage measurement		Open voltage≤ 60mV Effective range: 2Ω, 20Ω, 200Ω, 2kΩ
Thermal electromotive force elimination		√
Statistics function		AVG, MAX, MIN, OSD(Overall standard deviation), SSD(Sample standard deviation), Process capacity index (Cp, CpK)
Measurement error detection		√ (Detect the measurement cable has been connected correctly or not.)
Multipole connector		√ (Noise abatement function of high-resistance is optional)
Beep state		Comparator, Bin compare, Button
Key lock		√
Temperature measurement		
Temperature measurement1		-10.0℃--99.9℃ Sensor：PT500
Temperature measurement2		Analog input：0V--2V Display：-99.9℃ -- 999.9℃
Temperature compensation		(Convert the resistance measurement value to that one measured under preset temperature)
Temperature		(Temperature rising is gained from resistance test values before and after warming)
Compare Judge		
Comparator	Signal output	HI/IN/LO
	Beep	Beep mode：OFF，IN，HI/LO
	Limit setup mode	Absolute value high/low limit, Percentage high/low limit +nominal value
Sorting		10 bins, absolute value/ percentage
External trigger delay time		AUTO: dependent on range, low voltage mode ON/OFF, OVC (offset voltage compensation) ON/OFF MANUAL: 0.000--9.999s
External input trigger		Rising/Falling edge
Interface		
Interface		USB DEVICE，USB HOST，RS232C，HANDLER，GPIB（OPTION）
General specification		
Working condition		Temperature:0℃ - 40℃，Humidity:≤ 80%RH
Storage condition		Temperature:-10℃-50℃,Humidity: ≤90%RH
Accuracy guarantee condition		Temperature:18℃ - 28℃，Humidity:≤ 80%RH
Power	Voltage	99V—242V
	Frequency	47.5Hz—63Hz
Consumption		30 VA
Dimension		215mm×87mm×335mm（net size） 235mm×105mm×360mm（with foam sheath）
Weight		Approx. 3.6kg

*: the accuracy is guaranteed under certain environmental and test conditions:temperature of 18℃-28℃,humidity is ≤ 80%RH,test speed is SLOW2 and OVC function is ON(see details in Manual).

Standard Accessories

Three core power cord　TH26050S　Four-terminal test cable　PT500 temperature sensor

Micro Signal Type Tester

II. TH2516 DC Resistance Meter

Features

- Maximum resistance accuracy: 0.05%
- Temperature accuracy: 0.2℃
- Minimum resolution: 1uΩ
- Low-resistance test mode can effectively protect DUT
- Multiple measurement combinations of R, LPR, T
- 24 bits, 4.3-inch and 4-wire touch LCD screen
- LCD resolution: 480×272
- Temperature compensation(TC)
- Temperature conversion(Δt)
- Maximum sample rate: 50samps/sec
- Offset voltage compensation (OVC)
- Customer self-correction(0 ADJ)
- Simultaneously output compare results of 3 bins (OVER, PASS and BEEP)
- Statistics function: CpK, Cp
- 30 groups of parameter files can be saved and loaded
- Screen information can be stored on U-disk
- Data save function brings convenience for saving measurement result
- Automatically update operation software through USB HOST
- Operation languages: Chinese and English
- Flexible and convenient file operation system
- Handler interface realizes on-line operation
- Achieve data communication with PC and remote control through interfaces such as RS232, USB HOST, USB Device

RS232	USB HOST	USB DEVICE	HANDLER
standard	standard	standard	standard

TH2516 Series

Rack mount（mm）:215(W)×88(H)×335(D)
Dimension （mm）:235(W)×105(H)×360(D)
Weight:3.6kg

Application

- Components

Resistor, inductor, transformer, motor, relay, circuit solder joint, capacitor riveting point

- Cables, connectors

Strand wire, connectors, switches

- Material

Heat-sensitive materials (fuses, sensor for thermistors), conductive materials such as metal foil

- New energy

Electric vehicle battery pack connecting bridge, battery connection resistor

Brief Introduction

- On the basis of rich experience in impedance test and wide market research, now Tonghui launches the new DC impedance measurement instrument with touch and LCD screen ---TH2516 DC Resistance meter. TH2516, with elegant appearance, easy operation and excellent performance, is comparable to the most advanced products in the market.

TH2516 adopts 32 bits CPU and high density SMD technology. 24 bits, 4.3-inch and touch LCD screen brings ease for your eyes and convenience to your operation. The maximum 0.05% accuracy and minimum 1 μΩ resolution shore up its leading role in testing relay contact resistance, interconnecting resistance, conductor resistance, PCB resistance and welding-hole resistance. Temperature compensation and conversion functions make your tests be free from the effect of the environment temperature. The offset voltage compensation has effectively eliminated the electromotive force of the DUT and its contact potential difference. For the contact influence of the thermoelectricity on DUT, its elimination is achieved. Automation on production lines can be greatly improved by the realization of ultra-high test speed and the signal output of 3 compare results through HANDLER interface.

Specifications

Model	TH2516			TH2516A			TH2516B		
Display									
Display	24-bit, 480 X 272 and touch TFT LCD screen								
Reading digits	4½ digits								
Resistance measurement									
Measurement range	1μΩ --2MΩ			10μΩ –200kΩ			1μΩ –20kΩ		
Resistance range	Current	Resolution	Accuracy Rd%+digits	Current	Resolution	*Accuracy Rd%+digits	Current	Resolution	*Accuracy Rd%+digits
20 mΩ	1A	1μΩ	0.100+3	------			1A	1μΩ	0.100+3
200mΩ	100mA	10μΩ	0.05+2	100mA	10μΩ	0.05+2	100mA	10μΩ	0.1+2
2Ω		100μΩ			100μΩ			100μΩ	
20Ω	10mA	1mΩ		10mA	1mΩ		10mA	1mΩ	
200Ω	1mA	10mΩ		1mA	10mΩ		1mA	10mΩ	
2kΩ	100μA	100mΩ		100μA	100mΩ		100μA	100mΩ	
20kΩ		1Ω			1Ω			1Ω	
200kΩ	10μA	10Ω		10μA	10Ω		------		
2MΩ	1μA	100Ω	0.2+2	------			------		

Micro Signal Type Tester

II. TH2516 DC Resistance Meter

Measurement function				
Resistance measurement time		FAST:10ms; MED:25ms; SLOW1:115ms; SLOW2:455ms Above data is correct when DISPLAY is OFF; when DISPLAY is ON, 20ms should be added.		
Temperature measurement time		100 ± 10ms	------	
Test terminal		4-terminal		
Average setup		1--255		
Zero clearing		√		
Range switch		Auto, Manual		
Trigger mode		Internal, Manual, External, BUS		
Power frequency selection		√ (avoid the interface of the power noise)		
Setting data storage		30 groups		
Low voltage measurement		Open voltage: ≤ 40mV Effective range: 2Ω, 20Ω, 200Ω, 2kΩ		
Thermal electromotive force elimination		√		------
Statistics function		AVG, MAX, MIN, OSD (Overall standard deviation), SSD (Sample standard deviation), Process capacity index (Cp, cpk)		
Beep state		Comparator, Button		
Key lock		√		
Temperature measurement				
Temperature measurement1		-10.0℃--99.9℃ Sensor: PT500	------	------
Temperature measurement2		Analog input: 0V--2V Display: -99.9℃-- 999.9℃	------	------
Temperature compensation		√ (convert the resistance measurement value to that one measured under preset temperature)	------	------
Temperature switch		√ (temperature rising is gained from resistance test values before and after warming)	------	------
Compare Judge				
Comparator	Signal output	HI/IN/LO		
	Beep	Beep mode: OFF, IN, HI/LO		
	Limit setup mode	Absolute value high/low limit, Percentage high/low limit +nominal value		
Sorting		3 bins, absolute value/percentage		
External trigger delay time		Auto: dependent on range, low voltage mode ON/OFF, OVC (offset voltage compensation) ON/OFF Manual: 0.000--9.999s		
External input trigger		Rising/Failing edge		
Interface				
Interface		USB DEVICE, USB HOST, RS232C, HANDLER		
General specification				
Working condition		Temperature:0℃ - 40℃，Humidity:≤ 80%RH		
Storage condition		Temperature:-10℃ - 50℃，Humidity:≤ 90%RH		
Accuracy guarantee condition		Temperature:18℃ - 28℃，Humidity:≤ 80%RH		
Power	Voltage	99V—121V,198V—242V		
	Frequency	47.5Hz—63Hz		
Consumption		30 VA		
Dimension		215mm×89mm×360mm (net size) 235mm×104mm×360mm (with foam sheath)		
Weight		Approx.3.6kg		

*: the accuracy is guaranteed under certain environmental and test conditions:temperature of 18℃-28℃,humidity is ≤ 80%RH,test speed is SLOW2 (see details in Manual).

Standard Accessories

Three core power cord　　TH26050S　Four-terminal test cable　　PT500 temperature sensor (only for TH2516)

Micro Signal Type Tester

II. TH2684/TH2684A High Precision IR Tester

Features

- 320×240 dot-matrix LCD
- Powerful charging function
- High speed measurement:100meas/sec
- High measurement accuracy:±2% (< 1TΩ)
- Contact detection function for capacitive components
- Measurement range:TH2684 : 10kΩ to 50TΩ
  TH2684A: 10kΩ to 100TΩ
- Ultra-low leakage current test: minimum current is 10pA, accuracy: 2% ±2pA
- Measurement voltage:
  TH2684: 10V – 500V, dual-output
  TH2684A:10V–1000V,single-output
- Dual outputs (precharge voltage output and test voltage output) can be set.
- The precharge voltage output can be set to follow the test voltage output and can be finely adjusted on test voltage. Also the precharge voltage can be set to work in independent mode.
- When the test current is less than 10nA, the internal input impedance can be selected between 10kΩ and 1MΩ to ensure rapid and accurate test.
- TH2684 charge current:2mA , 25mA, 200mA selectable
  TH2684A charge current:2mA , 25mA , 100mA selectable
- 7 current ranges, manual or auto range mode
- 4-bin comparison function
- Programmable sequence test mode
- R-T and I-T Curve test and display mode
- Auto store setup parameters
- Screen hardcopy to be saved as BMP file to a U disk
- Automatically upgrade firmware by a U disk
- Selectable Chinese and English operation interfaces
- Achieve automatic test system by Handler interface
- Achieve remote control by RS232C and USB Device interface
- Support scanning interface for mass tests

Application

- Ultra-High Value Resistors
- Insulation resistance and leakage current of capacitors
- Various dielectric insulating materials, equipment, wires and cables
- Insulation testing from safety regulations
- Work as high voltage DC power supply

RS232	USB HOST	USB DEVICE	HANDLER	SCANNER	GPIB
standard	standard	standard	standard	standard	option

TH2684/A

Dimension(mm):400(W)×130(H)×430(D)
Weight:14kg / 10kg

Brief Introduction

TH2684/TH2684A High Precision IR Tester is an intelligent measurement instrument that is used for rapid measurements on IR properties of electronic parts and components, dielectric materials, equipments, cables, etc. Large LCD and user friendly menu provide you easier operation.

This instrument is especially designed for capacitor IR test TH2684/TH2684A can achieve rapid measurements through following methods:

❶ Selectable internal input impedance: If the current is greater than 10nA, only 10kΩ input impedance can be used; if the current is below 10nA, you can choose 10kΩ or 1MΩ impedance to test.

❷ With the built-in dual voltage output, TH2684 can charge large capacitors. By dual voltage output, TH2684 is able to output a precharge voltage up to 500V, 200mA. In voltage follow mode, precharge voltage follow with the test voltage output and can be finely adjusted. Above features ensure the perfect charge of capacitive materials.

❸ TH2684A can output a voltage of 1000V, 100mA to fully charge the capacitive material.

In addition, user can program the sequence measurement steps (up to 18 steps) on TH2684/TH2684A. For instance, charge, wait, test, and discharge steps can be programmed. Each step can last up to 100s.

TH2684/TH2684A has a unique contact detection function. For capacitive material such as capacitors and cables, contact detection function can detect the contact of components under test. Moreover, this detection function will not increase any test time.

TH2684 equips with interfaces of RS232, USB DEVICE, SCANNING and Handler. Handler interface provide convenience for automatic test system; SCANNING interface is useful for mass measurement of components. User can use a scanner to speed measurement of components.

Micro Signal Type Tester

II. TH2684/TH2684A High Precision IR Tester

Specifications

Model	TH2684	TH2684A
Resistance test		
Range	10 kΩ to 50TΩ	10 kΩ to 100TΩ
Accuracy	Test current > 100pA: 2% Test current ≤ 100 pA: 2% ± Vtest/2pA	
Current test		
range	Range 1 :100uA – 1mA ; Internal Input impedance 10 kΩ	
	Range 2 :10uA – 100uA ; Internal Input impedance 10 kΩ	
	Range 3 :1uA – 10uA ; Internal Input impedance 10 kΩ	
	Range 4 :100nA – 1uA ; Internal Input impedance 10 kΩ	
	Range 5 :10nA – 100nA ; Internal Input impedance 10 kΩ	
	Range 6 :1nA – 10nA ; Internal Input impedance 10 kΩ or 1MΩ (selectable)	
	Range 7 :10pA – 1nA ; Internal Input impedance 10 kΩ or 1MΩ (selectable)	
Accuracy	2% ± 2pA	
Measurement voltage		
Range	10 to 500V, 1V resolution	10 to 1000V, 1V resolution
Accuracy	2% of readout,or ± 1V	
Source resistance	200Ω	
Current limit	2,25,or 200mA	2, 25 , or 100mA
Voltage Output	Manually turn on or off on front panel, or controlled by built-in timer, or by remote control.	
Timing	Programmable charge time: 0 to 1000s	
Measurement delay	0 to 1000s programmable	
Discharge resistance	2kΩ	
Discharge time	t = 0.03 x Cx (in μF), when Vtest falls to 1% of the test level.	
Measurement speed		
Trig mode	Single measurement: < 100ms(exclude charge time) Average up to 100 measurements:<100 + (N-1) x 100 ms (exclude charge)	
Continuous mode	Direct readout: 100ms – 10000ms depending on average number	
Comparator	4 bins:(3 bins for PASS,1 bin for FAIL)	
Range mode	Auto, Hold	
Average times	1 to100	
Memory	20 sets of setup values can be stored.	

General Specifications

Operating temperature and humidity	10°C - 40°C, ≤90%RH
Power supply	90 to 130 V AC(60Hz) or 198 to 260V AC(50HZ)
Power consumption	TH2684 : 250W TH2684A: 150W

Standard Accessories

TH26004B 2-terminal test clip leads

Options

TH26002 IR test fixture

Micro Signal Type Tester

II. TH2683A/B Insulation Resistance Meter

Features

- Test voltage range: 1-1000V(TH2683A)
  1-500V(TH2683B)
- Insulation resistance test range: 100KΩ-10TΩ
- Insulation resistance, leakage current dual display
- 24-bits, 4.3-inch and 4-wire touch LCD screen
- LCD resolution: 480*272
- Zero clearing function
- Contact detection function for capacitive components
- Fast test: 30ms
- Programmable sequence test mode
- 6 ranges, manual or auto range mode
- 4-bin comparison function: 3 bins for PASS, 1 bin for FAIL
- 20 setup files can be stored in the internal memory, support U-disk
- Measurement data can be stored on U-disk
- Automatically upgrade firmware by a disk
- Selectable Chinese and English operation interfaces
- Handler interface realizes on-line operation
- Achieve remote control by RS232C and USB Device interface
- Footswitch trigger function

RS232	USB HOST	USB DEVICE	HANDLER
standard	standard	standard	standard

TH2683A/B

Rack mount（mm）:215(W)×88(H)×335(D)
Dimension （mm）:235(W)×105(H)×360(D)
Weight:3.6kg

Application

- Ultra-High Value Resistors
- Insulation resistance and leakage current of capacitors
- Various dielectric insulating materials, equipment, wires and cables
- Insulation testing from safety regulations

Specifications

Model	TH2683A	TH2683B
Resistance test		
Test range	100kΩ-10TΩ	100kΩ-5TΩ
Test accuracy	I>10nA :±2% I≤10nA :±5%	
Current test		
Test range	Range 1: 100uA - 1mA, internal input impedance 10kΩ	
	Range 2: 10uA - 100uA, internal input impedance 10kΩ	
	Range 3: 1uA - 10uA, internal input impedance 10kΩ	
	Range 4: 100nA - 1uA, internal input impedance 10kΩ	
	Range 5: 10nA - 100nA, internal input impedance 1MΩ	
	Range 6: 1nA - 10nA, internal input impedance 1MΩ	
Test accuracy	2%±3pA	
Test voltage		
Range	1V-1000V	1V-500V
Accuracy	Voltage≥10V: 1%±1V Voltage<10V: 10%±0.1V	
Current limit	10mA	
ON/OFF	Manually turn on or off it on front panel, or controlled by built-in timer, or by remote control	
Charge time	0-999s programmable	
Measurement delay	0-999s programmable	
Measurement speed	Fast: single measurement time≤30ms； Slow: single measurement time≤60ms	
Comparator function	4 bins: 3 bins for PASS, 1 bin for FAIL	
Range mode	Auto, Hold	
Memory	Internal memory and external USB disk	

Standard Accessories

TH26004B 2-terminal test clip leads

Micro Signal Type Tester

II. TH1953/TH1963 Digit Multimeter

Features

- 4.3-inch LCD color display, Chinese and English menu
- 6 1/2 bit 1199999 digits reading (TH1963/TH1963A)
- 5 1/2 digit 119999 digits reading (TH1953)
- Test speed up to 1000 / s
- Small size, front and rear input terminal, easy to shelve (TH1963 only)
- Histogram, bar graph, trend chart display
- AC low frequency signal can be tested down to 3Hz
- Capacitance test function
- Up to 5V diode test voltage
- Stores data up to 10,000
- Fast Chinese and English help

Application

- Production line workbench
- Maintenance workbench
- Teaching laboratory
- Automated test equipment

RS232	LAN	USB HOST	USB DEVICE	GPIB OR HANDLER
standard	standard	standard	standard	option

TH1963

Rack mount (mm): 215(W) x 88(H) x 300(D)
Dimension (mm): 235(W) x 105(H) x 320(D)
Net weight: 2.7 kg

Specifications

Model	TH1963			TH1963A		TH1953	
Display	4.3-inch LCD color display						
Display digits	1199999 digits reading					119999 digits reading	
Measurement parameters	DC voltage, AC voltage, DC current, AC current, DC resistance, capacitance, frequency, breakover, diode, temperature						
Display mode	Direct reading, histogram, bar graph, trend chart						
Measurement speed	Up to 1000 times / s						
Math function	Reset function, Min / Max / Average / Standard deviation, dB, dBm						
Common features	Range	Trigger mode		Reading-hold	Limit measurement		
	Auto / Manual	LOCAL: AUTO / SINGLE / EXT REMOTE: IMMEDIATE / BUS / EXT		Yes	HI, Lo and IN (PASS), with sound beep		
Technical Index	Uncertainty: ± (% of reading +% of range), T_{CAL}=25°C						

Parameters	Range / Test Range	Frequency	Highest annual accuracy T_{CAL} ± 5°C			Highest temperature coefficient/°C
			TH1963	TH1963A	TH1953	
DC voltage	100.0000 mV - 1000.000V（TH1963/A） 100.000 mV - 1000.00V（TH1953）		0.0035 +0.0005	0.0075 +0.0005	0.010+ 0.004	0.0005 + 0.0001
True RMS AC voltage	100.000mV - 750.000V	3 - 5Hz	1.00 + 0.03	1.00 + 0.03	1.00 + 0.03	0.100 + 0.003
		5 - 10Hz	0.35 + 0.03	0.38 + 0.03	0.38 + 0.03	0.035 + 0.003
		10Hz - 20kHz	0.06 + 0.03	0.09 + 0.03	0.09 + 0.03	0.005 + 0.003
		20 - 50kHz	0.12 + 0.05	0.15 + 0.05	0.15 + 0.05	0.011 + 0.005
		50 - 100kHz	0.60 + 0.08	0.63 + 0.08	0.63+ 0.08	0.060 + 0.008
		100 - 300kHz	4.00 + 0.50	4.00 + 0.50	4.00 + 0.50	0.200 + 0.020
DC Resistance	10Ω-100MΩ,Test current:10mA - 500nA		0.010 + 0.001	0.014 + 0.001	0.030 + 0.004	0.0006 + 0.0001
DC current	100μA - 10mA		0.050 + 0.006	0.050 + 0.005	0.050 + 0.008	0.0020 + 0.0005
	100mA		0.050 + 0.004	0.050 + 0.004	0.050+0.004	0.0020 + 0.0005
	1A		0.100 + 0.004	0.100 + 0.004	0.100 + 0.004	0.0050 + 0.0010
	3A		0.200 + 0.020	0.200 + 0.020	0.200 + 0.020	0.0050 + 0.0020
	10A		0.120 + 0.010	0.120 + 0.010	0.250 + 0.004	0.0050 + 0.0010
AC current	100μA - 100mA	3kHz - 5kHz	1.00 + 0.04	0.10 + 0.04	0.10 + 0.04	0.100 + 0.006
		5kHz - 10kHz	0.10 + 0.04	0.10 + 0.04	0.10 + 0.04	0.030 + 0.006
	1A	3kHz - 5kHz	0.10 + 0.04	0.10 + 0.04	0.10 + 0.04	0.015 + 0.006
		5kHz - 10kHz	0.10 + 0.04	0.10 + 0.04	0.10 + 0.04	0.030 + 0.006
	3A	3Hz - 5kHz	0.23 + 0.04	0.23 + 0.04	0.23 + 0.04	0.100 + 0.006
		5kHz - 10kHz	0.23 + 0.04	0.23 + 0.04	0.23 + 0.04	0.030 + 0.006
	10A	3Hz - 5kHz	0.15 + 0.04	0.15 + 0.04	0.15 + 0.04	0.100 + 0.006
		5kHz - 10kHz	0.15 + 0.04	0.15 + 0.04	0.15 + 0.04	0.030 + 0.006
Frequency	3Hz - 10Hz		0.100	0.100	0.100	0.0002
	10Hz - 100Hz		0.030	0.030	0.030	0.0002
	100Hz - 1kHz		0.010	0.012	0.012	0.0002
	100Hz - 300kHz		0.010	0.012	0.012	0.0002
	Square wave		0.010	0.012	0.012	0.0002
Diode	5V,Test current:1mA		0.010 + 0.030		0.1 + 0.02	0.0010 + 0.0020
Breakover	1kΩ,Test current:1mA		0.010 + 0.030		0.1 + 0.02	0.0010 + 0.0020
Capacitance	1.0000nF		1.0 + 0.5			0.02
	10.000nF - 1.0000mF		0.5 + 0.1			0.02
	10.000mF		1.0 + 0.5			0.02
Temperature	PT100 (DIN/ IEC 751)		± 0.05°C			
	5 kΩ Thermistor		± 0.10°C			

Standard Accessories

3 cord power line
TH26017 USB Cable
TH26036 1 pair of test lead (red and black)

Micro Signal Type Tester

II. TH1941/TH1942 Digit Multimeter

Features

- 21,000/51,000-count display
- Large-screen dual-display VFD with high brightness
- True RMS AC voltage and current measurements, bandwidth up to 100kHz
- Measurement functions, including DCV/ACV, DCI/ACI, Ω, frequency/period, diode,Continuity, dBm,dB, etc.
- Parameters,such as AC+DC, AC+Hz, Readout+dB, Readout+dBm ,displayed synchronously
- Measurement speed up to 25 meas/sec
- DCV accuracy up to 0.02%, resolution up to10μV
- Measured value displayed in the form of percentage
- Relative mode (REL) to eliminate residual reading
- Calibration without opening the case
- Limit function (HI/IN/LO) for fast sorting
- Equipped RS232C communication interface providing convenient system communication

RS232	USB DEVICE	GPIB
standard	standard	option

TH1941/TH1942

Rack mount (mm): 215(W) x 88(H) x 300(D)
Dimension (mm) : 235(W) x 105(H) x 320(D)
Net weight: 2.7 kg

Brief Introduction

■TH1941 4 1/2-digit true-RMS digital multimeter and TH1942 50,000-count digital multimeter are voltage,current,resistance tester with multi functions and low cost. The instrument can stably perform measurement at high speed as several times as competitive instruments in this class. It provides excellent performance, such as maximum reading of 21,000/51,000 counts, maximum DC voltage accuracy of 0.02%, and low cost to give you a best choice.

Having VFD dual-display with high brightness, TH1941/TH1942 can synchronously display measurement parameters, such as AC/DC voltage or current, AC voltage/current and frequency to improve measurement efficiency and display results clearly.

The instrument is equipped with SMD component inside to reduce density and physical size.

The instrument comes standard with RS232C communication interface and common communication software is optional to meet the need of communication with computer, data analysis and statistics, and building up automatic test system. The instrument accepts SCPI command to ensure compatibility of communication software.

Ordering Information

TH1941 4 1/2 Digit Multimeter
TH1942 50000 count Digit Multimeter

Standard Accessories

TH26036 1 pair of test lead (red and black)
3 cord power line(According to different regions)

Options

TH26034 RS232C interface connection cable
TH12025 RS232C communication software
TH12024 Accuracy calibration software

Measurement Functions

Measurement Parameters	DC/AC Voltage,DC/AC Current,Resistance, Frequency,Period,Continuity,Diode
Math function	%,dB,dBm,REL
Range	Auto,Manual
Display	VFD,dual display
Reading mode	Single display:all measurement parameters Dual display: ACV+DCV, ACI+DCI, ACV+Hz, ACI+Hz, Readout+dB/dBm, Readout+Max/Min
Trigger mode	INT/MAN/BUS
Reading hold	TO find out the best stable reading for each data block of the given reading number according to given accuracy
Comparator	To judge HI,IN,LO and display,with ALARM at HI/LO(selectable)
Interface	RS232C(only TH1942),supporting SCPI command

General Specifications

Working temperature & humidity		0°C-40°C, ≤90%RH
Power supply	Voltage	198V-242VAC,99V-121VAC
	Frequency	47.5Hz-63Hz
Power consumption		≤ 10 VA
Dimensions (W×H×D)		277mmx115mmx340mm
Weight		Approx. 2.2 kg

Micro Signal Type Tester

II. TH1941/TH1942 Digit Multimeter

Measurement condition

Calibration cycle: one year
Operation Humidity:18°C−28°C , ≤90%RH;
When resistor range is 10M and 100M, ≤70%RH
Warming up time: 30 min
Accuracy is expressed as: +/- (% of reading + % of range)
Temperature coefficient: 0°C--18°C & 28°C--40°C,+0.1%×accuracy /°C
Following is the specification at slow mode, others please refer the operation manual .

Model		TH1941				TH1942			
Speed (counts/second)		Slow	Middle	Fast		Slow	Middle	Fast	
DCV,DCI		5	10	25		5	10	25	
ACV,ACI		5	10	25		5	10	25	
Ω		5	10	25		5	10	25	
AC+DC		1.2	1.4	1.5		1.2	1.4	1.5	
Freq		1	2	3.9		1	2	3.9	
DC voltage		Max. reading	Resolution	Accuracy	Input impedance	Max. reading	Resolution	Accuracy	Input impedance
Range	200mV/500mV	210.00	10μV	0.03+0.04	10MΩ	510.00	10μV	0.02+0.016	10MΩ
	2V/5V	2.1000	100μV	0.03+0.02	11.1MΩ	5.1000	100μV	0.02+0.008	11.1MΩ
	20V/50V	21.000	1mV	0.03+0.02	10.1MΩ	51.000	1mV	0.02+0.008	10.1MΩ
	200V/500V	210.00	10mV	0.03+0.02	10MΩ	510.00	10mV	0.02+0.008	10MΩ
	1000V	1200.00	100mV	0.03+0.02	10MΩ	1200.00	100mV	0.02+0.008	10MΩ
DC current		Max. reading	Resolution	Accuracy	Load voltage/ shunt resistance	Max. reading	Resolution	Accuracy	voltage /shunt
Range	2mA/5mA	2.1000	0.1μA	0.08+0.025	<0.3V/100Ω	5.1000	0.1μA	0.05+0.010	<0.6V/100Ω
	20mAV/50mA	21.000	1μA	0.08+0.020	<0.04V / 1Ω	51.000	1μA	0.05+0.008	<0.06V / 1Ω
	200mA/500mA	210.00	10μA	0.08+0.020	<0.3V / 1Ω	510.00	10μA	0.05+0.008	<0.6V / 1Ω
	2A/5A	2.1000	100μA	0.3+0.025	<0.05V / 10mΩ	5.1000	100μA	0.25+0.010	<0.1V / 10mΩ
	20A	20.000	1mA	0.3+0.025	<0.6V / 10mΩ	20.000	1mA	0.25+0.010	<0.6V / 10mΩ
AC voltage		200mV	2V	20V	200V	750V	500mV	5V	50V	500V	750V
Resolution		10μV	100μV	1mV	10mV	100mV	10μV	100μV	1mV	10mV	100mV
Accuracy	20~50 Hz	1.0+0.2			------		1.0+0.08			------	
	50~20 kHz	0.5+0.15	0.4+0.05		0.8+0.075		0.5+0.06	0.35+0.02		0.50+0.03	
	20k~50 kHz	1.8+0.25	1.5+0.10				1.5+0.1	1.00+0.04			
	50k~100 kHz	3.0+0.75	3.0+0.25				3.0+0.3	3.0+0.1			
AC current		2mA	20mA	200mA	2A	20A	5mA	50mA	500mA	5A	20A
Resolution		0.1μA	1μA	10μA	100μA	1mA	0.1μA	1μA	10μA	100μA	1mA
Accuracy	20~50 Hz	1.50+0.5			2.00+0.5		1.50+0.16			2.00+0.16	
	50~2 kHz	0.5+0.3			0.5+0.3		0.5+0.08			0.5+0.1	
	2k~20 kHz	2+0.5	2+0.38		------		2+0.16	2+0.12		------	
Load voltage/shunt resistance		Same as DC current					Same as DC current				
Resistance		Max. reading	Resolution	Test current	Accuracy		Max. reading	Resolution	Test current	Accuracy	
Range	200Ω/500Ω	210.00	10mΩ	0.5 mA	0.10+0.05		510.00	10mΩ	0.5 mA	0.10+0.010	
	2 kΩ/5 kΩ	2.1000	100mΩ	0.45 mA	0.10+0.025		5.1000	100mΩ	0.45 mA	0.10+0.008	
	20 kΩ/50 kΩ	21.000	1Ω	45μA	0.10+0.025		51.000	1Ω	45μA	0.10+0.008	
	200 kΩ/500 kΩ	210.00	10 Ω	4.5μA	0.10+0.025		510.00	10 Ω	4.5μA	0.10+0.008	
	2MΩ/5 MΩ	2.1000	100 Ω	450nA	0.15+0.025		5.1000	100 Ω	450nA	0.15+0.008	
	20MΩ/50 MΩ	21.000	1kΩ	45nA	0.30+0.05		51.000	1kΩ	45nA	0.30+0.010	
Frequency		Max. reading	Resolution	Accuracy	Sensitivity		Max. reading	Resolution	Accuracy	Sensitivity	
Range	5~10Hz	9.9999	0.0001Hz	0.05+0.02	200mV rms		9.9999	0.0001Hz	0.05+0.02	200mV rms	
	10~100Hz	99.999	0.001Hz	0.01+0.02	300mV rms		99.999	0.001Hz	0.01+0.02	300mV rms	
	100~100kHz	999.99	0.1Hz	0.01+0.008	300mV rms		999.99	0.1Hz	0.01+0.008	300mV rms	
	100k~1MHz	9999.9	10Hz	0.01+0.008	500mV rms		9999.9	10Hz	0.01+0.008	500mV rms	

Micro Signal Type Tester

II. TH2523 Battery Tester

Features

- Multiple test functions
  - 4-terminal test, the test can't be influenced by impedance of test leads.
  - Contact inspection, to inspect the contact of test leads in testing
  - Deviation deduction (rel) and reference operation, eliminate the influence of base to test result.
- Feature of battery tester
  - Basic impedance accuracy: 0.1%
  - Basic voltage accuracy: 0.1%
  - Min. resolution of impedance:1uΩ
  - Min. resolution of voltage:100uV
  - Max. test speed 50 times/s
  - 1kHz AC constant current source test
- R, V, L, Z, θ test
- 24 bit color 4.3 inch LCD display
- LCD resolution 480×272
- Direct and Δ% display
- V, I test signal level monitor function
- Graphic scanning and analysis
- 10 bin compare, High limit, low limit, pass and alarm function
- Statistics, like CpK, Cp.etc
- 100 groups of file for storage and load
- Information in screen stored in U disk.
- Automatic update through USB HOST
- Chinese-English operation system selectable
- Foot switch trigger function

RS232	USB HOST	USB DEVICE	HANDLER	GPIB
standard	standard	standard	standard	option

TH2523/A

Rack mount（mm）:215(W)×88(H)×335(D)
Dimension （mm）:235(W)×105(H)×360(D)
Weight:3.6kg

Application

- Fast test for button battery and battery pack .etc.
- For cell phone, home appliances, electric vehicle and bike .etc.
- For high voltage battery test
- For early battery R&D test
- Contact resistance test
- Degradation and lifetime - evaluation of battery
- UPS on-line test
- ESR test of super capactitor

Specifications

Model		TH2523	TH2523A
Display	Displayer	4.3 inch 480x272 24 bit color TFT display	
	Displayed digit	R: slow 5 digits, Max. displayed digit 35000; fast, Max. displayed digit 3500 V: slow 5 digit, Max. displayed digit 35000; fast, Max. displayed digit 3500	
Parameter		R,V,R-V,Z-θ°,Z-θr, L-Q,L-R,R-X,R-Q	
Basic accuracy		R:0.1%, V:0.05%	
Test signal source	Frequency	1kHz ±0.2Hz sine waveform	
	Constance current	100mA/10mA/1mA/100uA/10uA	
Display range	R/ Z/ X	1uΩ—3.5kΩ	
	DC V	100uV—65V	100uV—350V
	L	0.2nH-1H	
	Q	0.001—9999.9	
	θd(deg)	-179.99—179.99	
	θd(rad)	-3.1416—3.1416	
Mathematics		Direct, ΔABS, Δ%	
Range	AC R	30mΩ/300mΩ/3Ω/30Ω/300Ω/3kΩ	
	DC V	6V/60V	30V/300V
Max. input voltage		65V	350V
Test speed(time/s)		FAST: 50 times/s ； MED: 10 times/s SLOW1: 5 times/s； SLOW2: 3 times/s	
Comparator		10 bins	
Range mode		Auto, hold	
Trigger mode		Internal, manual, external, bus	
Operation mode		Test leads contact inspection; DUT I/V monitor; REL; short "0" ; 1-255 average; delay setting; graphic analysis and scanning; USB storage; Max.100 groups of file save/load; Statistics of Max.30000 of data	
General specification			
Operating environment	Temperature	0℃ -40℃	
	Humidity	≤90%RH	
Power supply	Voltage	100V-120V , 198V-242V	
	Frequency	47Hz - 63Hz	
Power consumption		Max.15AV	

Micro Signal Type Tester

II. TH2689/TH2689A Capacitor Leakage Current/IR Meter

Features

- Capacitance leakage test function
- Insulation resistance test function
- Aluminum foil pressure and rise time test function
- Precise low current charge function(0.5mA±0.05mA)
- Large current (500mA)improves the charge speed of low voltage large capacitance.
  Continuously adjust Test voltage(TH2689 1.0V~800V/ TH2689 1.0V~500V) and real-time monitor the output voltage
- Test range from 0.001uA—20.00mA, 4 digit display
- Open correction(null) to eliminate the remaining base number
- Built-in digit counter
- Comparator function to realize the sorting of PASS/FAIL
- 10 groups of status for save and load
- Standard RS232 interface, Handler interface, optional GPIB interface
- Large LCD (240×64 dot-matrix)display
- Humanized operation interface

RS232	HANDLER	GPIB
standard	standard	option

TH2689/A

Dimension （mm）:350(W)×122(H)×425(D)
Weight:7.7kg

Application

- Electrolytic capacitor leakage current test
- Ceramic Capacitor Insulation Test
- Film capacitor insulation test
- Surge diode, Zener diode, neon lamp, etc. operating voltage confirmation and leakage current test
- Work as high voltage low power DC power supply

Specifications

Parameter	LC, IR, Tr, Vt
Range	AUTO, HOLD
Trigger mode	INT/MAN/EXT/BUS
Sorting	High，Low，Pass with beeper alarm
Setting storage	10 groups of status can be saved and loaded
Communication interface	RS232 GPIB(optional) SCPI command program supportable
Performance parameter: (condition, working temperature: 0°C—40°C, humidity : 90%RH,warmup time≥20 min)	
LC/IR test	
Test voltage	TH2689 : 1.0V — 800V； TH2689A: 1.0V — 500V Accuracy : ±(0.5% set value+0.2V)
Charge current	test voltage ≤100V,0.5mA—500mA; test voltage > 100V,0.5mA—Imax, Imax=50W/test voltage Accuracy: ±(3% set value+0.05mA)
Test range	LC: 0.001uA — 20.00mA IR: 0.01kΩ — 99.99GΩ
Basic accuracy	LC: ±(0.3%+0.05uA)
Charge time upper limit	0 — 999s manual
Test time	FAST: 40ms MED : 60ms SLOW: 120ms Test condition: range is locked, trigger mode is EXT and the external trigger voltage displays the closing state
Limit setting	LC: 0 — 999.999mA； IR: 0 — 999.999GΩ
Sorting	Pass, Fail
W.V. test	
Vf Rated involucra voltage	TH2689 : 1.0V — 800V； TH2689A: 1.0V — 500V
Charge current	0.5mA — Imax Imax = 65W/Vf Accuracy: ± (3% set value+0.05mA)
Charge time upper limit	5s — 600s manual
Pressure time	30s — 600s manual

Standard Accessories

TH26003 2 terminal test fixture
TH26004D 3 terminals test clip leads

Power Electric Tester

III. TH6200 Series DC Power Supply

Features

- Fresh and simple system settings with Chinese and English operation interfaces
- High resolution: 24-bit color 4.3-inch TFTLCD, resolution: 480 x 272
- Linear design and double range output
- High precision and high stability, low ripple and low noise
- 1/2 2U super mini size and output and sampling terminal on the front and rear panel
- Powerful programming ability
  100 groups of setting state memory saving and calling10 trigger files, 100 test sequences per file, loop output of programming
- Timing output: time (0.1-99999.9s)
- Use rotary knob and numeric keyboard to set the voltage,current and output time
- Panel function button with backlight display
- Remote measurement function, compensation for line voltage drop
- Output control switch
- Copy screen function
- Over voltage, over current protection
- Intelligent temperature control fan
- Support standard SCPI communication protocol
- Software monitoring via computer
  Upgrade instrument firmware via USB flash

RS232	USB HOST	USB DEVICE	GPIB
standard	standard	standard	option

TH6200 Series

Rack mount (mm): 215(W) x 88(H) x 396(D)
Dimension (mm): 236(W) x 111(H) x426(D)
Net weight: 8.1 kg

Application

- R & D and design verification common test
- Production line table routine testing and maintenance
- Automated device integration testing
- Solar photovoltaic simulation test
- New power car simulation test
- Teaching laboratory

Specifications

Model			TH6201		TH6202		TH6203		TH6212		TH6213	
Rated output (0℃-40℃)	Channel/Range		Range1	Range2	Range1	Range2	Range1	Range2	Range1	Range2	Range1	Range2
	Voltage		0-20V	0-8V	0-32V	0-15V	0-72V	0-32V	0-32V	0-15V	0-72V	0-32V
	Current		0-5A	0-10A	0-3A	0-6A	0-1.5A	0-3A	0-6A	0-12A	0-3A	0-6A
	Power		100W	80W	96W	90W	108W	96W	192W	180W	216W	192W
Load regulation ± (% Output + Bias)	Voltage		≤0.01% + 4mV		≤0.01% + 3mV		≤0.01% + 3mV		≤0.01% + 6mV		≤0.01% + 5mV	
	Current		≤0.01% + 2mA						≤0.01% + 5mA		≤0.01% + 4mA	
Power regulation ± (% Output + Bias)	Voltage		≤0.01% + 4mV		≤0.01% + 3mV		≤0.01% + 3mV		≤0.01% + 6mV		≤0.01% + 5mV	
	Current		≤0.01% + 2mA						≤0.01% + 5mA		≤0.01% + 4mA	
Programming resolution	Voltage		1mV									
	Current		0.1mA									
Read-back value resolution	Voltage		1mV									
	Current		0.1mA									
Year accuracy (25℃± 5℃) ± (% Reading + Bias)	Programming	Voltage	≤0.04% + 8mV									
		Current	≤0.1% + 5mA									
	Read-back	Voltage	≤0.04% + 8mV									
		Current	≤0.1% + 5mA									
Ripple and Noise (20Hz-20MHz)	Normal mode voltage		≤3mVp-p/1mVrms		≤4mVp-p/1mVrms		≤3mVp-p/1mVrms		≤4mVp-p/1mVrms			
	Normal mode current		<9mArms		<7mArms		<6mArms		<10mArms		<8mArms	
	Common mode current		<1.5μArms									
Transient response			<50uS (the time required for the output returns within 75mV when the output current changes from full scale to half or from half to full scale)						<50uS (the time required for the output returns within 120mV when the output current changes from full scale to half or from half to full scale)		<50uS (the time required for the output returns within 75mV when the output current changes from full scale to half or from half to full scale)	
Rise time (10% — 90%)			<90ms						<120ms		<180ms	
Fall time (90% — 10%)			<150ms		<200ms		<250ms		<350ms		<250ms	
Series and parallel set value accuracy	Voltage		------									
	Current		------									
Timer			0.1 ~ 99999.9 seconds									
Memory			10 groups of trigger output, 100 steps for each group,100 sets of setting memory									

Standard Accessories

YT3007 Test Cable(only TH6203)
YT3008 Test Cable

Power Electric Tester

III. TH6300 Series DC Power Supply

Features

- 480x272 pixels, 24-bit color, 4.3-inch color TFT LCD screen for setting test conditions and display of testing results, etc.
- Digital keyboard and knob operation, simple and fast
- High accuracy, high resolution, low ripple and low noise
- Support shutdown data saving and boot data loading
- Support voltage test function
- Support data saving and callback
- List setting and step output
- Intelligent fan control to save energy and reduce noise
- Software control and detection via computer
- Interface: RS232, USB, GPIB (optional)

RS232	USB HOST	USB DEVICE	GPIB
standard	standard	standard	option

TH6300 Series

Rack mount (mm): 215(W) x 88(H) x 412(D)
Dimension (mm): 235(W) x 111(H) x440(D)
Net weight: 8.1kg

Application

- R & D and design verification common test
- Production line table routine testing and maintenance
- Automated device integration testing
- Solar photovoltaic simulation test
- New power car simulation test
- Teaching laboratory

Specifications

Modle		TH6301	TH6302	TH6303	TH6304	TH6312	TH6313	TH6314	TH6323	TH6324
Rated output	Voltage	20V	30V	60V	120V	30V	60V	120V	60V	120V
	Current	30A	20A	10A	5A	30A	15A	6A	25A	10A
	Power	200W	200W	200W	200W	360W	360W	360W	600W	600W
Load regulations≤	Voltage	0.01%+20mV	0.01%+20mV	≤0.01%+5mV	≤0.01%+5mV	0.01%+20mV	≤0.01%+8mV	≤0.01%+8mV	≤0.01%+15mV	0.01%+15mV
	Current	0.01%+20mA	0.01%+ 15mA	≤0.01%+4mA	≤0.01%+4mA	0.01%+20mA	≤0.01%+6mA	≤0.01%+6mA	≤0.01%+10mA	0.01%+10mA
Power regulations≤	Voltage	0.01%+20mV	0.01%+ 20mV	≤0.01%+5mV	≤0.01%+5mV	0.01%+20mV	≤0.01%+8mV	≤0.01%+8mV	≤0.01%+15mV	0.01%+15mV
	Current	0.01%+20mA	0.01%+ 15mA	≤0.01%+4mA	≤0.01%+4mA	0.01%+20mA	≤0.01%+6mA	≤0.01%+6mA	≤0.01%+10mA	0.01%+10mA
Set value resolution	Voltage	1mV(< 100V), 10mV(> 100V)								
	Current	0.1mA(< 10A), 1mA(> 10A)								
Read-back resolution	Voltage	1mV(< 100V), 10mV(> 100V)								
	Current	0.1mA(< 10A), 1mA(> 10A)								
Year set accuracy (25°C±5°C)≤	Voltage	0.05%+10mV	0.05%+10mV	0.05%+10mV	0.05%+15mV	0.05%+10mV	0.05%+10mV	0.03%+15mV	0.05%+10mV	0.05%+15mV
	Current	0.1%+30mA	0.1%+20mA	0.1%+10mA	0.1%+20mA	0.1%+30mA	0.1%+15mA	0.1%+20mA	0.1%+25mA	0.1%+25mA
Year read-back accuracy (25°C±5°C)≤	Voltage	0.05%+10mV	0.05%+10mV	0.05%+10mV	0.05%+15mV	0.05%+10mV	0.05%+10mV	0.03%+15mV	0.05%+10mV	0.05%+15mV
	Current	0.1%+30mA	0.1%+20mA	0.1%+10mA	0.1%+20mA	0.1%+30mA	0.1%+15mA	0.1%+20mA	0.1%+25mA	0.1%+25mA
Ripple and Noise (20Hz20MHz)≤	Differential mode voltage	15mVpp	15mVpp	15mVp-p	20mVp-p	15mVpp	15mVp-p	20mVpp	20mVp-p	25mVp-p
	Differential mode current	10mArms	10mArms	8mArms	10mArms	12mArms	10mArms	12mArms	13mArms	15mArms
Rise time≤	10%-90%	100ms	100ms	150ms	150ms	100ms	150ms	150ms	150ms	150ms
Fall time≤	90%-10%	2s	2s	2s	3.5s	2s	2s	3.5s	2s	3.5s
Memory		10 sets of trigger output, 100 steps per group, 100 groups of set memory								
Output		Support front and rear panel output, the maximum output current of front terminal is 10A								

Standard Accessories

YT3008 Test Cable

Power Electric Tester

III. TH6400 Series DC Power Supply

Features

- Fresh and simple system settings with Chinese and English operation interfaces
- High resolution: 24-bit color 4.3-inch TFTLCD, resolution: 480 x 272
- Linear design and triple channel output
- High precision and high stability, low ripple and low noise
- 1/2 2U super mini size and output and sampling terminal on the front and rear panel
- Programmable output of voltage and current
- Timing output: time (0.1-99999.9s)
- Three-channel independent adjustment
- Simultaneously display of voltage, current, power and timing output time for three-channel
- Support series, parallel or synchronous output between channels
- Use rotary knob and numeric keyboard to set the voltage, current and output time
- Remote measurement function, compensation for line voltage drop
- Output control switch
- Fully isolated circuit and support positive and negative reverse connection
- Copy screen function
- Over voltage protection
- Intelligent temperature control fan
- Support standard SCPI communication protocol
- Upgrade instrument firmware via USB flash
- Software monitoring via computer

RS232	USB HOST	USB DEVICE	GPIB
standard	standard	standard	option

(TH6402A only USB HOST)

TH6402

Rack mount (mm): 215(W) x 88(H) x 457(D)
Dimension (mm): 235(W) x 105(H) x487(D)
Net weight: 13kg

Application

- R & D and design verification common test
- Production line table routine testing and maintenance
- Automated device integration testing
- Solar photovoltaic simulation test
- New power car simulation test
- Teaching laboratory

Specifications

Model			TH6402A			TH6402			TH6412			TH6413		
Rated output (0℃-40℃)	Channel/Range		Range1	Range2	Range3	Range1	Range2	Range3	Range1	Range2	Range3	Range1	Range2	Range3
	Voltage		0-30V		0-5V	0-30V		0-6V	0-30V		0-6V	0-60V		0-6V
	Current		0-3A		0-3A	0-3A		0-5A	0-6A		0-5A	0-3A		0-5A
	Power		90W		15W	90W		30W	180W		30W	180W		30W
Load regulation ± (% Output + Bias)	Voltage		≤0.01% + 3 mV			≤0.01% + 3 mV								
	Current		≤0.1% + 3 mA			≤0.01% + 3 mA								
Power regulation ± (% Output + Bias)	Voltage		≤0.01% + 3 mV			≤0.01% + 3 mV								
	Current		≤0.1% + 3 mA			≤0.01% + 3 mA								
Programming resolution	Voltage		10mV			1mV								
	Current		1mA			0.1mA								
Read-back value resolution	Voltage		10mV			1mV								
	Current		1mA			0.1mA								
Year accuracy (25℃± 5℃) ± (% Reading + Bias)	Programming	Voltage	≤0.05% + 20 mV			≤0.03% + 10 mV								
		Current	≤0.2%+5mA			≤0.1%+5mA		≤0.1%+8mA				≤0.1%+5mA		≤0.1%+8mA
	Read-back	Voltage	≤0.05% + 20 mV			≤0.03% + 10 mV								
		Current	≤0.2%+5mA			≤0.1%+5mA		≤0.1%+8mA				≤0.1%+5mA		≤0.1%+8mA
Ripple and Noise (20Hz-20MHz)	Normal mode voltage		≤1mVrms/ 3mVp-p					≤1mVrms / 4mVp-p						
	Normal mode current		≤3mArms					≤5mArms				≤4mArms		≤5mArms
	Common mode current		------											
Series and parallel set value accuracy	Voltage		≤0.02% + 5 mV									≤0.02% + 10mV		
	Current		≤0.1% + 20mA						≤0.1% + 30mA					
Timer			0.1 ~ 99999.9 seconds											
Memory			40 groups of settings files / channels											

Standard Accessories

YT3007 Test Cable
YT3008 Test Cable

Power Electric Tester

III. TH6402B Quadruple Programmable DC Power Supply

Features

- Fresh and simple system settings with Chinese and English operation interfaces
- High resolution: 24-bit color 4.3-inch TFTLCD, resolution: 480 x 272
- Linear design and four channel output
- High precision and high stability, low ripple and low noise
- 1/2 2U super mini size and output and sampling terminal on the front and rear panel (The channel only supports front panel output)
- Programmable output of voltage and current
- Timing output: time (0.1-99999.9s)
- Four-channel independent adjustment
- Simultaneously display of voltage, current, power and timing output time for four-channel
- Support series, parallel or synchronous output between channels
- Use rotary knob and numeric keyboard to set the voltage, current and output time
- Remote measurement function, compensation for line voltage drop
- Output control switch
- Fully isolated circuit and support positive and negative reverse connection
- Copy screen function
- Over voltage protection
- Intelligent temperature control fan
- Support standard SCPI communication protocol
- Upgrade instrument firmware via USB HOST
- Software monitoring via computer

RS232	USB HOST	USB DEVICE	GPIB
standard	standard	standard	option

TH6402B

Rack mount (mm): 215(W) x 88(H) x 473(D)
Dimension (mm): 235(W) x 111(H) x501(D)
Net weight: 12kg

Application

- R & D and design verification common test
- Production line table routine testing and maintenance
- Automated device integration testing
- Solar photovoltaic simulation test
- New power car simulation test
- Teaching laboratory

Specifications

Model			TH6402B			
Rated output (0℃- 40℃)	Channel/Range		Channel1	Channel2	Channel3	Channel4
	Voltage		0-30V		0-10V	0-5V
	Current		0-3A		0-3A	0-1A
	Power		90W		30W	5W
Load regulation ± (% Output + Bias)	Voltage		≤0.01% + 3 mV			
	Current		≤0.01% + 3 mA			
Power regulation ± (% Output + Bias)	Voltage		≤0.01% + 3 mV			
	Current		≤0.01% + 3 mA			
Programming resolution	Voltage		1mV			
	Current		0.1mA			
Read-back value resolution	Voltage		1mV			
	Current		0.1mA			
Year accuracy (25℃± 5℃) ± (% Reading + Bias)	Programming	Voltage	≤0.1% + 20 mV			
		Current	≤0.2%+5mA			
	Read-back	Voltage	≤0.1% + 20 mV			
		Current	≤0.2%+5mA			
Ripple and Noise (20Hz-20MHz)	Normal mode voltage		≤1mVrms/ 3mVp-p			
	Normal mode current		≤3mArms			
Series and parallel set value accuracy	Voltage		≤0.02% + 10 mV			
	Current		≤0.2% + 20 mA			
Timer			0.1 ~ 99999.9 seconds			
Memory			40 groups of settings files / channels			

Standard Accessories

YT3007 Test Cable
YT3008 Test Cable

Power Electric Tester

III. TH6500 Series DC Power Supply

Features

- 24-bit color 4.3-inch color LCD display
- LCD resolution 480*272
- Numeric keypad operation
- Low ripple and low noise
- Intelligent fan control to save energy and reduce noise
- Software monitoring via computer
- Editable voltage and current output waveform with time (resolution 1ms) (LBT mode)
- The power output can be turned on and off by an external signal
- The knob can be used to coarsely adjust and fine tune the voltage and current values.
- High accuracy and resolution: 0.1mV/0.01mA
- Timing output time can be set (0.01-9999.99S)
- Screen information can be stored in the USB flash drive
- Chinese and English user interface
- Flexible and convenient file operating system
- Built-in 5 1/2 digital milliohm meter
- Automatic upgrade of instrument operating software via USB HOST
- Handler interface for online operations
- RS232, USB HOST, USB Device, GPIB can easily realize the data communication with PC and remote control of the instrument
- Comes with hardware OVP, OCP protection (OCP is software protection)
- Front panel and rear panel with output and sampling terminals, voltage and resistance measuring terminal
- Support standard SCPI and MODBUS communication protocols

RS232	USB HOST	USB DEVICE	GPIB
standard	standard	standard	option

TH6513

Rack mount (mm): 215(W) x 88(H) x 412(D)
Dimension (mm): 235(W) x 111(H) x440(D)
Net weight: 8.1kg

Application

- R & D and design verification common test
- Production line table routine testing and maintenance
- Automated device integration testing
- Solar photovoltaic simulation test
- New power car simulation test
- Teaching laboratory

Specifications

Modle		TH6501	TH6502	TH6503	TH6511	TH6512	TH6513
Rated output	Voltage	0-20V	0-32V	0-72V	0-20V	0-32V	0-72V
	Current	0-5A	0-3A	0-1.5A	0-10A	0-6A	0-3A
	Power	100W	96W	108W	200W	192W	216W
Load regulation	Voltage	≤0.01%+2mV					
	Current	≤0.05%+1.5mA					
Power regulation	Voltage	≤0.01%+1mV					
	Current	≤0.05%+1mA					
Set value resolution	Voltage	1mV					
	Current	0.1mA					
Read-back resolution	Voltage	0.1mV					
	Current	0.01mA					
Year set accuracy (25℃±5℃)	Voltage	≤0.03%+3mV					
	Current	≤0.05%+2mA					
Year read-back accuracy(25℃±5℃)	Voltage	≤0.02%+3mV					
	Current	≤0.05%+2mA			≤0.05%+2.5mA		
Ripple and Noise (20Hz-20MHz)	Differential mode voltage	≤3mVp-p and 1mVrms			≤4mVp-p and 1mVrms		
	Differential mode current	<3mArms			<4mArms		
Dynamic recovery time (50%-100% LOAD) Restore to time within 75mv		<200us					
Rise time	10%-90%	<20ms					
Fall time	90%-10%	<200ms	<250ms	<150ms	<200ms	<250ms	<150ms
Overvoltage protection	Range (Typical)	1-19V	1-31V	1-71V	1-19V	1-31V	1-71V
	Accuracy (typical)	± (set value *0.5%+0.5V)					
	Response time (typical)	<10ms					
DVM(DC)	Display value accuracy	±0.02%+10mv					
	Display resolution	0.1mv					
	Input differential mode voltage range	0-40Vpk					
	Input common mode voltage range	0-30Vpk					

Standard Accessories

YT3007 Test Cable(only TH6502/TH6503/TH6513)
YT3008 Test Cable(only TH6501/TH6511/TH6512)

Power Electric Tester

III. TH6700 Series Programmable Switch DC Power Supply

Features

- Wide range, and constant power output
- High efficiency and high power density
- Programmable internal resistance, designed for battery output simulation
- Constant current (CC) priority mode, prevent overshoot for LED power supply
- Master-slave series and parallel operation
- 24-bit 4.3-inch color LCD display
- Numeric keyboard operation
- Voltage and current adjustment with knob
- Timed output (0-3600.0s)
- programmable voltage or current rising time
- RS232, USB HOST, USB DEVICE, LAN, and analog control interface

TH6700

Rack mount (mm): 215(W) x 132(H) x 420(D) Net weight : 7.5kg
Dimension (mm): 215(W) x 146(H) x420(D)

RS232	LAN	Analog Control Interface	USB HOST	USB DEVICE
standard	standard	standard	standard	standard

Application

- R & D and design verification common test
- Clean energy, solar cells, electric vehicles
- Production line table routine testing and maintenance
- Automated device integration testing
- Solar photovoltaic simulation test
- Teaching laboratory
- LED test

Brief Introduction

■ TH6700 series is a single channel output, wide range programmable switch mode DC power supply, with three output powers of 360W, 720W, and 1080W. Users are able to realize 2 master-slave in series or 3 master-slave in parallel connection, to achieve the requirements of higher voltage and higher current output.

TH6700 series is designed with adjustable slope function that allows users to set the rise time and fall time of current and voltage output. When testing lighting devices and large capacitors, inrush current will be generated as soon as the output is turned on, which severely shortens the lifetime of the tested parts. In this case, the slope function ensures the voltage transmission is smooth and slow at the switching moment which prevents the tested parts from being damaged.

TH6700 series CV/CC priority mode protects the tested parts well. The traditional power supply in CV mode will instantly bring a large surge current to the capacitive load while turning on the output. TH6700 series power supply can run in CC mode at the start of output, which avoids sudden peak current and protects the device from being damaged by surge current.

TH6700 series can simulate battery output with its programmable internal resistor. For instance, a battery supplies power to a device, the applied voltage drops as it passes through the battery's internal resistance. With TH6700 series power supply, the internal resistance can be simulated by setting values, thus causing the output voltage to drop.

TH6700 series provides OVP, OCP, and OTP protection function. Once the output voltage or current exceeds the preset value, the output will be immediately shut down. Once the temperature inside the machine exceeds a certain temperature, the output will be shut down as well.

TH6700 series can be connected to 2 or 4-terminal measurement from the rear panel. The 4-terminal measurement has the remote compensation function, which compensates the pressure drop from the power supply to the parts to be tested.

TH6700 series is equipped with abundant interfaces, such as USB HOST, USB DEVICE, LAN, RS232, and analog control interface. The CV/CC mode controlled by external voltage and external resistance is implemented through analog control interface. In series or in parallel operation is realized through analog control interface. It also supports external voltage or external resistance to control the instrument output.

Specifications

Parameter		TH6711	TH6712	TH6713	TH6721	TH6722	TH6723	TH6731	TH6732	TH6733	TH6741	TH6742	TH6743
Rated Output	Rated Power	360W	720W	1080W	360W	720W	1080W	360W	720W	1080W	360W	720W	1080W
	Max Power	Rated output *105%											
	Rated Voltage	0-30V	0-30V	0-30V	0-80V	0-80V	0-80V	0-250V			0-800V		
	Max Voltage	31.5V			84V			262.5V			840V		
	Rated Current	0-33A	0-66A	0-100A	0-12.5A	0-25A	0-37.5A	4.2A	8.4A	12.6A	1.32A	2.64A	3.96A
	Max Current	36A	72A	108A	13.5A	27A	40.5A	4.5A	9A	13.5A	1.44A	2.88A	4.32A
Setting	Voltage Range	0-31.5V			0-84V			0-262.5V			0-840V		
	Current Range	0-36A	0-72A	0-108A	0-13.5A	0-27A	0-40.5A	0-4.5A	0-9A	0-13.5A	0-1.44A	0-2.884A	0-4.32A
Load Regulation	Voltage	≤20mV			≤45mV			≤130mV			≤405mV		
	Current	≤41mA	≤77mA	≤113mA	≤18.5mA	≤32mA	≤45.5mA	≤9.5mA	≤14mA	≤18.5mA	≤6.44mA	≤7.88mA	≤9.32mA
Line Regulation	Voltage	≤18mV			≤43mV			≤128mV			≤403mV		
	Current	≤41mA	≤77mA	≤113mA	≤18.5mA	≤32mA	≤45.5mA	≤9.5mA	≤14mA	≤18.5mA	≤6.44mA	≤7.88mA	≤9.32mA
Set Value Resolution	Voltage	10mV						100mV					
	Current	10mA	10mA	100mA	10mA	10mA	10mA	1mA	1mA	10mA	1mA	1mA	1mA
Readback Value Resolution	Voltage	10mV						100mV					
	Current	10mA	10mA	100mA	10mA	10mA	10mA	1mA	1mA	10mA	1mA	1mA	1mA
Set Value Accuracy (25℃±5℃)	Voltage (>0.1V)	≤0.1%+10mV						≤0.1%+200mV			≤0.1%+400mV		
	Current (>0.1A)	≤0.1%+30mA	≤0.1%+60mA	≤0.1%+100mA	≤0.1%+20mA	≤0.1%+40mA	≤0.1%+50mA	≤0.1%+5mA	≤0.1%+10mA	≤0.1%+20mA	≤0.1%+2mA	≤0.1%+4mA	≤0.1%+6mA
Readback Value Accuracy (25℃±5℃)	Voltage (>0.1V)	≤0.1%+20mV						≤0.1%+200mV			≤0.1%+400mV		
	Current (>0.1A)	≤0.1%+40mA	≤0.1%+70mA	≤0.1%+100mA	≤0.1%+20mA	≤0.1%+40mA	≤0.1%+50mA	≤0.1%+5mA	≤0.1%+10mA	≤0.1%+20mA	≤0.1%+2mA	≤0.1%+4mA	≤0.1%+6mA
"Ripple and Noise (20Hz-2MHz)"	Differential Mode Voltage	≤60mVp-p and 7mVrms	≤80mVp-p and 11mVrms	≤100mVp-p and 14mVrms	≤60mVp-p and 7mVrms	≤80mVp-p and 11mVrms	≤100mVp-p and 14mVrms	≤80mVp-p and 15mVrms	≤100mVp-p and 15mVrms	≤120mVp-p and 15mVrms	≤150mVp-p and 30mVrms	≤200mVp-p and 30mVrms	≤200mVp-p and 30mVrms
	Differential Mode Current	≤72mArms	≤144mArms	≤216mArms	≤27mArms	≤54mArms	≤81mArms	≤10mArms	≤20mArms	≤30mArms	≤5mArms	≤10mArms	≤15mArms

Power Electric Tester

III. TH6700 Series Programmable Switch DC Power Supply

Specifications

"Dynamic Recovery Time (50%-100% Load) Load Frequency =100Hz"		Recover to 0.1% + 10mV: ≤2ms						≤2ms						
Rise Time (Full Load)	10%-90%	≤50ms						≤100ms			≤150ms			
Rise Time (No Load)	10%-90%	≤50ms						≤100ms			≤150ms			
Drop Time (Full Load)	90%-10%	≤50ms						≤150ms			≤300ms			
Drop Time (No Load)	90%-10%	≤500ms						≤1200ms			≤2000ms			
Timer	Setting Range	0-9999999 (Hour, Minute, Second)						0-9999999 (Hour, Minute, Second)						
Start Delay	Setting Range	0-99.99s						0-99.99s						
Stop Delay	Setting Range	0-99.99s						0-99.99s						
Slope Setting	Voltage Rise	0.01-60V/s			0.1-160V/s			0.1-500V/s			1-1600V/s			
	Voltage Drop	0.01-60V/s			0.1-160V/s			0.1-500V/s			1-1600V/s			
	Current Rise	0.01-72A/s	0.1-144A/s	0.1-216A/s	0.01-27A/s	0.01-54A/s	0.01-81A/s	0.001-9A/s	0.01-18A/s	0.01-27A/s	0.001-2.88A/s	0.001-5.76A/s	0.001-8.64A/s	
	Current Drop	0.01-72A/s	0.1-144A/s	0.1-216A/s	0.01-27A/s	0.01-54A/s	0.01-81A/s	0.001-9A/s	0.01-18A/s	0.01-27A/s	0.001-2.88A/s	0.001-5.76A/s	0.001-8.64A/s	
Analog Internal Resistance	Setting Range	0-0.833Ω	0-0.417Ω	0-0.278Ω	0-5.926Ω	0-2.963Ω	0-1.975Ω	0-55.55Ω	0-27.77Ω	0-18.51Ω	0-555.5Ω	0-277.8Ω	0-185.1Ω	
"External Voltage Control (25℃±5℃)"	CV Accuracy	Rated Output Voltage±0.5%						Rated Output Voltage±0.5%						
	CC Accuracy	Rated Output Current±1%						Rated Output Current±1%						
"External resistance control (25℃±5℃)"	CV Accuracy	Rated Output Voltage±1.5%						Rated Output Voltage±1.5%						
	CC Accuracy	Rated Output Current±1.5%						Rated Output Current±1.5%						
Power Factor	100VAC (Full Load)	0.99						0.99			0.99			
	200VAC (Full Load)	0.97						0.97			0.97			
Efficient	100VAC (Full Load)	75%			76%			77%			78%			
	200VAC (Full Load)	77%			78%			79%			80%			
Master-Slave Control	Master-Slave Parallel	3 Sets including the mater tester						3 Sets including the mater tester						
	Master-Slave Series	2 Sets including the mater tester						Not Available						
Protection	OVP	3-33V	3-33V	3-33V	8-88V	8-88V	8-88V	20-275V			20-880V			
	Accuracy	N/A						±2% Rated Output Voltage						
	OCP	3.6-37.8A	5-75.6A	5-113.4A	1.35-14.18A	2.7-28.35A	4.05-42.53A	0.45-4.72A	0.9-9.45A	1.35-14.17A	0.144-1.512A	0.288-3.024A	0.432-4.536A	
	Accuracy	N/A						±2% Rated Output Current						
	OTP	Internal Temperature Rise Determines						Internal Temperature Rise Determines						
Size and Weight	Overall Size (mm)	215(W)×146(H)×420(D)												
	Shelf Size (mm)	215(W)×132(H)×420(D)												
	Net Weight	3kg	5.3kg	7.5kg	3kg	5.3kg	7.5kg	3kg	5.3kg	7.5kg	3kg	5.3kg	7.5kg	
Power Supply		88-265VAC，50/60HZ						88-265VAC，50/60Hz						

"Note: Power regulation rate (88-132VAC or 170-265VAC, constant load).
Load regulation rate (no load - full load, constant input voltage).
Rise time (10%-90% of rated output voltage, with rated resistive load)
Drop time (90%-10% of rated output voltage, with rated resistive load)
Dynamic recovery time (when the load changes from 50% to 100% of the rated output current, the time for the output voltage to recover within the range of 0.1%+10mV of the rated outpu"

Power Electric Tester

III. TH6900 Series Programmable DC Power Supply

Features

- The output range is 3 times of the equal power "rectangular" power supply
- High frequency LLC multi-resonant inverter, the efficiency of the whole machine is as high as 93%
- Active PFC, power factor up to 0.99
- High resolution, high precision; low ripple, low noise
- ≤2ms fast transient response
- The rising edge and falling edge speed of the output are adjustable
- Power supply constant voltage (CV), constant current (CC), constant power (CP) mode
- The master-slave mode supports parallel connection, active current sharing, and parallel connection of up to 10 units of the same type
- OVP, OCP, OPP, OTP, input undervoltage protection, SENSE terminal reverse connection protection
- Built-in function generator
- Equipped with discharge circuit (Uout< 10V within 1s)
- Separate control of power output through external analog interface
- High-brightness color LCD display
- Flexible and powerful sequence test function
- Support SCPI command language
- Interface: RS232, USB HOST,
  Optional (RS485, CAN, GPIB, LAN, analog control interface)

TH6900

Rack mount (mm): 482(W) x 88(H) x 455(D)
Net weight : 13.5kg

RS232 standard | USB HOST standard

Application

- General testing for R&D and design verification
- New energy solar cells, new power vehicles, electric bicycles
- Routine test and maintenance of production line workbench
- Automated device integration testing
- Solar photovoltaic simulation test
- Teaching laboratory
- LED test

Brief Introduction

TH6900 series is a programmable switching DC power supply with a wide range of output. There are 21 models of 750W, 1500W and 3000W available. The instrument supports up to 10 master-slave units of the same model in parallel to meet higher output current and output power requirements.

TH6900 series supports sequence test function, allowing users to set a series of voltage, current, power, and automatically output according to the set rules, to better meet the user's application of automatic test and burn-in test. The instrument can store 50 sequences, each sequence contains 22 steps, the function of each step can be set independently, a total of 12 independent functions, including loop control, slope mode output and other rich control functions.

This instrument can output sine wave, square wave, triangle wave, trapezoidal wave, etc. according to the set parameters such as voltage and current. Based on these waveforms, users can form a sequence output. The sequence can be set up to ten steps, and each step can be set to any A waveform and the duration of the waveform, which is convenient for users to test products. In addition, the TH6900 power supply has a solar cell array simulation function. In addition to CC, CV, EN50530 and other modes output through the host computer software, the single machine also has a built-in model for simulating the output curve of the solar cell array.

This series of power supplies also have adjustable rising and falling edge speeds. In all modes (source CV, CC, CP), the rise and fall time can be set, and the setting range is 0.01S~999.99S.

Specifications

Parameter	Model	TH6940-60	TH6980-30	TH69200-12.5	TH69360-7.5	TH69500-5	TH69750-3	TH691000-2.5
Rated Output	Voltage	40V	80V	200V	360V	500V	750V	1000V
	Current	60A	30A	12.5A	7.5A	5A	3A	2.5A
	Power	750W						
	Efficient	≤92%	≤92%	≤92%	≤93%	≤93%	≤93%	≤93%
Load Regulation Rate	Voltage	<=0.05%FS (0-100% Load Regulation Rate)						
	Current	<=0.15%FS (0-100%ΔUDC Load Regulation Rate)						
Line Regulation Rate	Voltage	<=0.02%FS (±10%ΔUAC Input)						
	Current	<=0.05%FS (±10%ΔUAC Input)						
Set Value Resolution	Voltage	10mV	10mV	10mV	10mV	10mV	10mV	10mV
	Current	10mA	10mA	10mA	1mA	1mA	1mA	1mA
Readback Value Resolution	Voltage	10mV	10mV	10mV	10mV	10mV	10mV	10mV
	Current	10mA	10mA	10mA	1mA	1mA	1mA	1mA
Set Value Accuracy (25℃±5℃)	Voltage	≤±(0.05%+0.04%FS)						
	Current	≤±(0.15%+0.1%FS)						
	Power	≤±0.8%FS						
Readback Value Accuracy (25℃±5℃)	Voltage	≤±(0.05%+0.04%FS)						
	Current	≤±(0.15%+0.1%FS)						
	Power	≤±0.8%FS						
"Ripple and Noise (20Hz-2MHz)"	RMS (20Hz-300kHz)	10mVrms	10mVrms	20mVrms	40mVrms	50mVrms	75mVrms	100mVrms
	P-P (20Hz-2MHz)	75mVpp	100mVpp	175mVpp	250mVpp	325mVpp	500mVpp	650mVpp
Rise Time (No Load)	10%-100%	≤2ms						
Rise Time (Full Load)	10%-90%	≤30ms						
Protection		OTP, OVP, OCP, OPP, PF						

Power Electric Tester

III. TH6900 Series Programmable DC Power Supply

Isolated Withstand Voltage		1000VDC (Output to Ground)
Master-Slave Control		Connect up to 10 products (via shared bus) with true master-slave operation
Storage		10 groups of working modes; 50 sequences, 20 steps per group
Analog Interface	Specification	Built-in 15-pin D-Sub female connector, electrically isolated
	Signal Range	0-5V or 0-10V (Switchable)
	U/I/P Accuracy	0-10V: <=0.2%FS 0-5V: <=0.4%FS
Communication Interface	Standard	RS232, USB HOST
	Optional	RS485, CAN, GPIB, LAN
Power Supply	Phase	1ph+N+PE
	Voltage	220VAC±10%
	Frequency	45-66Hz
	Power Factor	≥0.99
Working Environment		Indoor type; Working temperature: 0~50℃, Humidity: <80%, no condensation, Storage temperature: -20~70℃, Altitude: <2000m
Size W×H×D(mm)		482mm×88mm×455mm (W×H×D) Standard Frame, 2U High.
Weight		9.6kg

Parameter	Model	TH6935-100	TH6980-60	TH69200-25	TH69360-15	TH69500-10	TH69750-6	TH691000-5
Rated Output	Voltage	35V	80V	200V	360V	500V	750V	1000V
	Current	100A	60A	25A	15A	10A	6A	5A
	Power	1500W						
	Efficient	≤92%	≤92%	≤92%	≤93%	≤93%	≤93%	≤93%
Load Regulation Rate	Voltage	<=0.05%FS (0-100% Load Regulation Rate)						
	Current	<=0.15%FS (0-100%ΔUDC Load Regulation Rate)						
Line Regulation Rate	Voltage	<=0.02%FS (±10%ΔUAC Input)						
	Current	<=0.05%FS (±10%ΔUAC Input)						
Set Value Resolution	Voltage	10mV	10mV	10mV	10mV	10mV	10mV	10mV
	Current	10mA	10mA	10mA	10mA	10mA	1mA	1mA
Readback Value Resolution	Voltage	10mV	10mV	10mV	10mV	10mV	10mV	10mV
	Current	10mA	10mA	10mA	10mA	10mA	1mA	1mA
Set Value Accuracy (25℃±5℃)	Voltage	≤±(0.05%+0.04%FS)						
	Current	≤±(0.15%+0.1%FS)						
	Power	≤±0.8%FS						
Readback Value Accuracy (25℃±5℃)	Voltage	≤±(0.05%+0.04%FS)						
	Current	≤±(0.15%+0.1%FS)						
	Power	≤±0.8%FS						
"Ripple and Noise (20Hz-2MHz)"	RMS (20Hz-300kHz)	10mVrms	10mVrms	20mVrms	40mVrms	50mVrms	75mVrms	100mVrms
	P-P (20Hz-2MHz)	75mVpp	100mVpp	175mVpp	250mVpp	325mVpp	500mVpp	650mVpp
Rise Time (No Load)	10%-100%	≤2ms						
Rise Time (Full Load)	10%-90%	≤30ms						
Protection		OTP，OVP，OCP，OPP，PF						
Isolated Withstand Voltage		1000VDC (Output to Ground)						
Master-Slave Control		Connect up to 10 products (via shared bus) with true master-slave operation						
Storage		10 groups of working modes; 50 sequences, 20 steps per group						
Analog Interface	Specification	Built-in 15-pin D-Sub female connector, electrically isolated						
	Signal Range	0-5V or 0-10V (Switchable)						
	U/I/P Accuracy	0-10V: <=0.2%FS 0-5V: <=0.4%FS						
Communication Interface	Standard	RS232, USB HOST						
	Optional	RS485, CAN, GPIB, LAN						
Power Supply	Phase	1ph+N+PE						
	Voltage	220VAC±10%						
	Frequency	45-66Hz						
	Power Factor	≥0.99						
Working Environment		Indoor type; Working temperature: 0~50℃, Humidity: <80%, no condensation, Storage temperature: -20~70℃, Altitude: <2000m						
Size W×H×D(mm)		482mm×88mm×455mm (W×H×D) Standard Frame, 2U High.						
Weight		10.8kg						

Power Electric Tester

III. TH6900 Series Programmable DC Power Supply

Parameter	Model	TH6935-200	TH6980-120	TH69200-50	TH69360-30	TH69500-20	TH69750-12	TH691000-10
Rated Output	Voltage	35V	80V	200V	360V	500V	750V	1000V
	Current	200A	120A	50A	30A	20A	12A	10A
	Power	3000W						
	Efficient	≤92%	≤92%	≤92%	≤93%	≤93%	≤93%	≤93%
Load Regulation Rate	Voltage	<=0.05%FS (0-100% Load Regulation Rate)						
	Current	<=0.15%FS (0-100%ΔUDC Load Regulation Rate)						
Line Regulation Rate	Voltage	<=0.02%FS (±10%ΔUAC Input)						
	Current	<=0.05%FS (±10%ΔUAC Input)						
Set Value Resolution	Voltage	10mV	10mV	10mV	10mV	10mV	10mV	10mV
	Current	10mA	10mA	10mA	10mA	10mA	10mA	10mA
Readback Value Resolution	Voltage	10mV	10mV	10mV	10mV	10mV	10mV	10mV
	Current	10mA	10mA	10mA	10mA	10mA	10mA	10mA
Set Value Accuracy (25℃±5℃)	Voltage	≤±(0.05%+0.04%FS)						
	Current	≤±(0.15%+0.1%FS)						
	Power	≤±0.8%FS						
Readback Value Accuracy (25℃±5℃)	Voltage	≤±(0.05%+0.04%FS)						
	Current	≤±(0.15%+0.1%FS)						
	Power	≤±0.8%FS						
"Ripple and Noise (20Hz-2MHz)"	RMS (20Hz-300kHz)	10mVrms	10mVrms	20mVrms	40mVrms	50mVrms	75mVrms	100mVrms
	P-P (20Hz-2MHz)	75mVpp	100mVpp	175mVpp	250mVpp	325mVpp	500mVpp	650mVpp
Rise Time (No Load)	10%-100%	≤2ms						
Rise Time (Full Load)	10%-90%	≤30ms						
Protection		OTP, OVP, OCP, OPP, PF						
Isolated Withstand Voltage		1000VDC (Output to Ground)						
Master-Slave Control		Connect up to 10 products (via shared bus) with true master-slave operation						
Storage		10 groups of working modes; 50 sequences, 20 steps per group						
Analog Interface	Specification	Built-in 15-pin D-Sub female connector, electrically isolated						
	Signal Range	0-5V or 0-10V (Switchable)						
	U/I/P Accuracy	0-10V: <=0.2%FS 0-5V: <=0.4%FS						
Communication Interface	Standard	RS232, USB HOST						
	Optional	RS485, CAN, GPIB, LAN						
Power Supply	Phase	1ph+N+PE						
	Voltage	220VAC±10%						
	Frequency	45-66Hz						
	Power Factor	≥0.99						
Working Environment		Indoor type; Working temperature: 0~50℃, Humidity: <80%, no condensation, Storage temperature: -20~70℃, Altitude: <2000m						
Size W×H×D(mm)		482mm×88mm×455mm (W×H×D) Standard Frame, 2U High.						
Weight		13.5kg						

Power Electric Tester

III. TH7100 Series Programmable AC Power Supply

Features

- 24-bit color 4.3-inch 480 × 272 color LCD screen, Chinese and English interfaces
- Linear output design
- Flexible and convenient operation: numeric keypad, coarse and fine adjustment knob
- Manual / program control mode output function, timing output function, dimming mode output function, surge and notch function
- Front panel output function
- Boot hold function
- Store setting parameters and test results
- Support USB to upgrade the instrument firmware
- Multiple protection modes: set the current protection (HI-A)
  Overvoltage Protection (OVP), Low Voltage Protection (LVP)
  Overcurrent protection (OCP), over power protection (OPP)
  Over temperature protection (OTP)
- Two-gear temperature to control fan speed
- Remote input and output functions:
  Remote input: input control of 7 groups of memory
  Remote output: PASS, FAIL, PROCESSING, internal output switch
- Memory capacity:
  Manual: 50 groups
  Program control: 50 groups, 9 steps / group

RS232	REMOTE	USB HOST	USB DEVICE	GPIB
standard	standard	standard	standard	option

TH7110
Dimension(mm): 430(W)×88(H)×600(D)
Weight: 40kg

Application

- Motors and transformers
- Electronic production design
- Lighting
- Aerospace military
- Network communication
- Audio and video equipment
- Monitoring equipment
- Power specifications simulation of different countries
- Electromagnetic compatibility equipment

Specifications

Model		TH7105		TH7110		TH7120
Output parameters						
Rated power		500W		1000W		2000W
Output voltage		0～300V				
Output frequency		45.0Hz～500Hz				
Maximum current (RMS)	0-150V	4.2A		8.4A		16.8A
	0-300V	2.1A		4.2A		8.4A
Maximum current (Peak)	0-150V	16.8A		33.6A		67.2A
	0-300V	8.4A		16.8A		33.6A
Total harmonic distortion (THD		at 45.0 ~ 500Hz, ≤ 0.5% (resistive load)				
Common parameters	Phase	1Ø/2W				
	Crest factor	≥4				
	Linearity adjustment rate	0.1%±10%				
	Load regulation	0.5%(resistive load)				
	Response time	<100uS				
Setting parameters						
Voltage		0 ~ 300V	Resolution	0.1V	Accuracy	±0.5%+2 digits
Frequency		45.0Hz ~ 500Hz		<100Hz: 0.1Hz ; ≥100Hz: 1Hz		±0.02%
Initial / final phase angle		0 ~ 359°		1°		±1°(45 ~ 65Hz)
Measurement parameters						
Voltage		0 ~ 300V	Resolution	0.1V	Accuracy	±0.5%+2 digits
Frequency		45.0Hz ~ 500Hz		<100Hz: 0.1Hz ; ≥100Hz: 1Hz		±0.1Hz
Current	0-150V	0.000 ~ 4.200A		0.000 ~ 8.400A		0.000 ~ 16.800A
	0-300V	0.000 ~ 2.100A		0.000 ~ 4.200A		0.000 ~ 8.400A
	Resolution	0.001A				
	Accuracy	±0.5%+5 digits				
Peak current	0-150V	0.00 ~ 12.6A		0.00 ~ 25.2A		0.00 ~ 50.4A
	0-300V	0.00 ~ 6.3A		0.00 ~ 12.6A		0.00 ~ 25.2A
	Resolution	0.01A				
	Accuracy	±5%+2 digits				
Power	Range	0 ~ 500W		0 ~ 1000W		0 ~ 2000W
	Resolution	0.1W				0.1W(0 ~ 1000W);1W(1000 ~ 2000W)
	Accuracy	±0.6%+5 digits				
Power factor		0.001-1.000	Resolution	0.001	Accuracy	±2%+2 digits

Power Electric Tester

III. TH8200 Series Programmable DC Electronic Load

Features

- Constant current (CC), constant resistance (CR), constant power (CV), constant power (CP) operation mode
- Current remote control monitoring function, external trigger function
- 1mV/10μA high resolution, ripple measurement function
- Dynamic current/voltage test, up to 50K dynamic frequency
- Voltage and current measurement can achieve high precision while testing speed up to 100KHz
- Programmable soft start function
- CR-LED test, arbitrary I-V characteristics, battery test, dynamic scan test, load effect, list function and many other advanced functions
- Overvoltage (programmable), low voltage, over current (programmable), overpower (programmable), overheating, anti-reverse protection, etc.
- Remote voltage compensation input test function
- Short circuit function simulation
- The adoption of the Linux operating system makes the number of internal parameter file storages essentially unrestricted
- Perfect U disk function (parameter file storage and loading, interface screenshot, system firmware upgrade)
- Setting parameters support power-off memory function
- Intelligent temperature control fan
- RS232 (standard), USB (standard), Ethernet (standard), WIFI (optional)
- Matching with upper-computer software to achieve remote operation and monitoring matching

RS232	USB HOST	USB DEVICE	HANDLER	LAN
standard	standard	standard	standard	standard

Dimension(mm): 215mm(W)x143mm(H)x525mm(D)[TH8201/TH8202/A]
Dimension(mm): 430mm(W)x143mm(H)x525mm(D)[TH8203/TH8204]
Weight: 7.8kg[TH8201] / 9.1kg[TH8202] / 8.7kg[TH8202A]

Application

- Power
  Chargers, switching power supply, communication power, LED drivers, cell phone batteries, portable power source
- New energy
  Solar cells, new power cars, electric bicycles
- Electronic power components
  Fuse / Connector / Relay / Sensor
- Automated equipment integration testing

Specifications

Model		TH8201	TH8202	TH8202A	TH8202B	TH8203	TH8203A	TH8204	TH8204A	TH8204B	TH8205
Input power		175W	350W	350W	500W	700W	700W	1000W	1000W	1200W	2000W
Input voltage		150V									
Input current		0-40A	0-80A	0-40A	0-60A	0-160A	0-/80A	0-200A	0-100A	0-160A	0-200A
Static mode		Constant current (CC), constant resistance (CR), constant voltage (CV), constant power (CP)									
Minimum operating voltage		1.5V@0.4A	1.5V@0.8A	1.5V@0.4A	1.5V@0.8A	1.5V@1.6A	1.5V@0.8A	1.5V@2A	1.5V@1A	1.5V@1.6A	1.5V@2A
		1.5V@4A	1.5V@8A	1.5V@4A	1.5V@8A	1.5V@16A	1.5V@8A	1.5V@20A	1.5V@10A	1.5V@16A	1.5V@20A
		1.5V@40A	1.5V@80A	1.5V@40A	1.5V@80A	1.5V@160A	1.5V@80A	1.5V@200A	1.5V@100A	1.5V@160A	1.5V@200A
Constant voltage (CV)	Range	0-15V									
	Resolution	1mV									
	Range	0-150V									
	Resolution	10mV									
	Precision	0.05%+0.05%FS									
Constant current (CC)	Range	0-400mA	0-800mA	0-400mA	0-800mA	0-1.6A	0-0.8A	0-2A	0-1A	0-1.6A	0-2A
	Resolution	0.01mA	0.02mA	0.01mA	0.02mA	0.04mA	0.02mA	0.06mA	0.03mA	0.04mA	0.05mA
	Range	0-4A	0-8A	0-4A	0-8A	0-16A	0-8A	0-20A	0-10A	0-16A	0-20A
	Resolution	0.1mA	0.2mA	0.1mA	0.2mA	0.4mA	0.2mA	0.6mA	0.3mA	0.4mA	0.5mA
	Range	0-40A	0-80A	0-40A	0-80A	0-160A	0-80A	0-200A	0-100A	0-160A	0-200A
	Resolution	1mA	2mA	1mA	2mA	4mA	2mA	6mA	3mA	4mA	5mA
	Precision	0.1%+0.1%FS.									
Constant resistance (CR)	Range	0.04Ω-40Ω	0.02Ω-20Ω	0.04Ω-40Ω	0.02Ω-20Ω	0.018Ω-18Ω	0.036Ω-36Ω	0.015Ω-15Ω	0.03Ω-30Ω	0.018Ω-18Ω	0.015Ω-15Ω
	Range	0.4Ω-400Ω	0.2Ω-200Ω	0.4Ω-400Ω	0.2Ω-200Ω	0.072Ω-72Ω	0.144Ω-144Ω	0.06Ω-60Ω	0.12Ω-120Ω	0.072Ω-72Ω	0.06Ω-60Ω
	Range	4.0Ω-4000Ω	2.0Ω-2000Ω	4.0Ω-4000Ω	2.0Ω-2000Ω	1.8Ω-3000Ω	3.6Ω-3000Ω	1.5Ω-3000Ω	3Ω-3000Ω	1.8Ω-3000Ω	1.5Ω-3000Ω
	Resolution										
	Precision	Vin/Rset*0.2%+0.2%FS									
Constant power (CP)	Range	0-1.75W	0-3.5W	0-3.5W	0-5W	0-7W	0-7W	0-10W	0-10W	0-12W	0-20W
	Resolution	0.175mW	0.35mW	0.35mW	0.5mW	0.7mW	0.7mW	1mW	1mW	1.2mW	2mW
	Range	0-17.5W	0-35W	0-35W	0-50W	0-70W	0-70W	0-100W	0-100W	0-120W	0-200W
	Resolution	1.75mW	3.5mW	3.5mW	5mW	7mW	7mW	10mW	10mW	12mW	20mW
	Range	0-175W	0-350W	0-350W	0-500W	0-700W	0-700W	0-1000W	0-1000W	0-1200W	0-2000W
	Resolution	17.5mW	35mW	35mW	50mW	70mW	70mW	100mW	100mW	120mW	200mW
	Precision	0.3%+0.3%FS									
Dimensions and weight											
Dimensions (mm)		215*129*479mm				430*129*479mm				430*129*479mm	
Weight(kg)		7.8kg	9.1kg	8.7kg	9.1kg	15.6kg	15.3kg	17.6kg	17.3kg	17.6kg	20kg

Power Electric Tester

III. TH8200 Series Programmable DC Electronic Load

Model		TH8212	TH8214	TH8215
Input power		500W	800W	1200W
Input voltage		10-800V		
Input current		0-15A	0-30A	60A
Static mode		Constant current (CC), constant resistance (CR), constant voltage (CV), constant power (CP)		
Minimum operating voltage		10V@0.15A	10V@0.3A	10V@0.6A
		10V@1.5A	10V@3A	10V@6A
		10V@15A	10V@30A	10V@60A
Constant voltage (CV)	Range	0-80V		
	Resolution	5mV		
	Range	0-800V		
	Resolution	50mV		
	Precision	0.05%+0.05%FS		
Constant current (CC)	Range	0-0.15A	0-0.3A	0-0.6A
	Resolution	0.01mA	0.01mA	0.02mA
	Range	0-0.15A	0-3A	0-6A
	Resolution	0.1mA	0.1mA	0.2mA
	Range	0-15A	0-30A	0-60A
	Resolution	1mA	1mA	2mA
	Precision	0.1%+0.1%FS		
Constant resistance (CR)	Range	0.3Ω-3kΩ	0.2Ω-2kΩ	0.15Ω-1.5kΩ
	Range	1.2Ω-12kΩ	0.8Ω-8kΩ	0.6Ω-6kΩ
	Range	30Ω-60kΩ	20Ω-40kΩ	15Ω-60kΩ
	Resolution			
	Precision	Vin/Rset*0.2%+0.2%FS		
Constant power (CP)	Range	0-5W	0-8W	0-12W
	Resolution	0.5mW	0.8mW	1.2mW
	Range	0-50W	0-80W	0-120W
	Resolution	5mW	8mW	12mW
	Range	0-50W	0-800W	0-1200W
	Resolution	50mW	80mW	120mW
	Precision	0.3%+0.3%FS		
Protection function: over power protection (OPP), over current protection (OCP), over voltage protection (OVP), over temperature protection (OTP), reverse voltage alarm (REV), under voltage protection (UVP)				
Short circuit function				
Interface: network port LAN, Handler port, USB Host, USB Device, parallel interface				
Power supply and safety				
Power supply		110/220VAC		
Power frequency		50/60Hz		
Safety certificate		CE		
Environment and temperature				
Operating temperature		0-40°C		
Storage temperature		-20-80°C		
Dimensions and weight				
Dimensions (mm)		215*129*479mm		
Weight (kg)		7.8kg--215*129*479mm	9.1kg--430*129*479mm	8.7kg-430*129*479mm

Standard Accessories

YT3008 Test Cable

Power Electric Tester

III. TH8300 Series Programmable DC Electronic Load

Features

- 5-module/2-module frame
- Unit maximum power 2500W, maximum current 400A
- Module maximum power 500W, maximum current 80A, and maximum voltage 600V
- High resolution: 0.1mV/10μA
- Up to 50kHz dynamic frequency
- Up to 500kHz sampling speed
- 12 advanced test functions
- Modular design, support each module to operate independently
- Modular 40 files storge
- One single machine can support up to five modules in parallel and support up to ten channels
- Connect via CAN interface, support up to four complete machines online
- 24-bit 2.8-inch color LCD display
- Chinese and English operation interface
- Smart fan system
- Support power-on hold function
- Support timing function
- Electrical isolation, external input and output
- Support over current protection (OCP), over voltage protection(OVP), over power protection (OPP), over temperature protection(OTP), reverse polarity protection (REV), low voltage protection (LVP)

TH8300

NEW

TH8310

RS232	USB HOST	USB DEVICE	GPIB	LAN	CAN	SYSTEM I/O
standard	standard	standard	standard	standard	standard	standard

Dimension(mm)：477mm(W)x177mm(H)x590mm(D) Weight: 15kg
Dimension(mm)：142mm(W)x85.5mm(H)x550mm(D) Weight: 4.2kg

Application

- Power supply

Chargers, switching power supplies, communication power supplies, LED drivers, mobile phone batteries, power banks, etc.

- New energy

Solar cells, new power cars, electric bicycles

- Electronic power components

Fuse/connector/relay/sensor

- Automation equipment integration test

Specifications

Main machine		TH8300 Frame					TH8310 Frame			
Supported modules		5					2			
Interface		RS232, USB HOST, USB DEVICE, LAN, GPIB, SYSTEM I/O, CAN								
Storage		40 groups (50 groups of status memory)								
Power supply		90-130VAC or 175-253VAC (47-63Hz)								
Power consumption		Less than 300VA								
Temperature and environment	Operating temperature	0 degrees Celsius - 40 degrees Celsius								
	Operating humidity	10%-90% (non-condensing)								
	Storage temperature	-20 degrees Celsius -70 degrees Celsius								
	Altitude	Less than 2000m								
	Pollution degree	Pollution degree 2								
	Security Level	Safety Category II								
Size and Weight	Frame Size	480mm×177mm×590mm					260mm×177mm×590mm			
	Frame Weight	15kg					11kg			
Module Model		TH8301-80-20	TH8301A-80-20	TH8302-80-40	TH8303-80-60	TH8304-80-80	TH8305-80-80	TH8302-600-10	TH8303-600-15	TH8305-600-30
Input Power		100W×2	200W×2	200W×1	300W×1	400W×1	500W×1	200W×1	300W×1	500W×1
Input Voltage		0-80V						0-600V		
Input Current		0-20A	0-20A	0-40A	0-60A	0-80A	0-80A	0-10A	0-15A	0-30A
Minimum operating voltage		0.5V@0.2A	0.5V@0.2A	0.5V@0.4A	0.5V@0.6A	0.4V@0.8A	0.4V@0.8A	2V@0.1A	2V@0.15A	2V@0.3A
		0.5V@2A	0.5V@2A	0.5V@4A	0.4V@8A	0.4V@8A	2V@1A	2V@1.5A	2V@3A	2V@3A
		0.5V@20A	0.5V@20A	0.5V@40A	0.4V@80A	0.4V@80A	2V@10A	2V@15A	2V@30A	2V@30A
Standard Mode		Constant current (CC), constant resistance (CR), constant voltage (CV), constant power (CP)								
Constant voltage (CV)	Range/Resolution	6V/0.1mV, 16V/1mV, 80V/1mV						80V/1mV, 150V/10mV, 600V/10mV		
	Accuracy	0.05%+0.1%FS								

Power Electric Tester

III. TH8300 Series Programmable DC Electronic Load

Constant current (CC)	Range	0-0.2A	0-0.2A	0-0.4A	0-0.6A	0-0.8A	0-0.8A	0-0.1A	0-0.15A	0-0.3A
	Resolution	0.01mA	0.01mA	0.01mA	0.01mA	0.01mA	0.01mA	0.005mA	0.005mA	0.005mA
	Range	0-2A	0-2A	0-4A	0-6A	0-8A	0-8A	0-1A	0-1.5A	0-3A
	Resolution	0.1mA	0.1mA	0.1mA	0.1mA	0.1mA	0.1mA	0.05mA	0.05mA	0.05mA
	Range	0-20A	0-20A	0-40A	0-60A	0-80A	0-80A	0-10A	0-15A	0-30A
	Resolution	1mA	1mA	1mA	1mA	1mA	1mA	0.5mA	0.5mA	0.5mA
	Accuracy	0.1%+0.1%FS								
Constant resistance (CR)	Range	0.04-80Ω (100W/6V)	0.04-80Ω (100W/6V)	0.02-40Ω (200W/6V)	0.015-30Ω (300W/6V)	0.01-20Ω (400W/6V)	0.01-20Ω (400W/6V)	0.2-400Ω (200W/80V)	0.133-270Ω (300W/80V)	0.133-270Ω (500W/80V)
		1.44-2.9kΩ (100W/16V)	1.44-2.9kΩ (100W/16V)	0.8-1.5kΩ (200W/16V)	0.3-600Ω (300W/16V)	0.36-720Ω (400W/16V)	0.36-720Ω (400W/16V)	3-6kΩ (200W/150V)	1.92-4kΩ (300W/10V)	1.92-4kΩ (500W/150V)
		5.76-12kΩ (100W/80V)	5.76-12kΩ (100W/80V)	3-6kΩ (200W/80V)	1.5-3kΩ (300W/80V)	1.45-2.9kΩ (400W/80V)	1.45-2.9kΩ (400W/80V)	300-300kΩ (200W/600V)	208-200kΩ (300W/600V)	208-200kΩ (500W/600V)
	Resolution	0.1Ω								
	Accuracy	1%								
Constant power (CP)	Range	0-2W	0-4W	0-4W	0-6W	0-8W	0-10W	0-4W	0-6W	0-10W
	Resolution	1mW	2mW	2mW	3mW	4mW	5mW	2mW	3mW	5mW
	Range	0-10w	0-20w	0-20w	0-30w	0-40w	0-50w	0-20W	0-30w	0-50w
	Resolution	10mW	20mW	20mW	30mW	40mW	50mW	20mW	30mW	50mW
	Range	0-100w	0-200w	0-200w	0-300w	0-400w	0-500w	0-200W	0-300w	0-500w
	Resolution	100mW	200mW	200mW	300mW	400mW	500mW	200mW	300mW	500mW
	Accuracy	1%								
Advanced mode		Dynamic test, dynamic frequency scan, CR-LED test, battery test, time test, MPPT test, OCPT test, OVPT test, OPPT test, sine wave test, list test, automatic test								
Dynamic mode-constant current mode										
Minimum working voltage		1.5V						3V		
Frequency	Range	100Hz-50kHz/0.01Hz-1kHz								
	Accuracy	1μs/1ms+100ppm								
	Duty cycle	1-99% (Minimum rise time controlled)								
Slope	Range	0.04A/ms-0.02A/μs	0.04A/ms-0.02A/μs	0.08A/ms-0.04A/μs	0.12A/ms-0.06A/μs	0.16A/ms-0.08A/μs	0.16A/ms-0.08A/μs	0.02A/ms-0.01A/μs	0.03A/ms-0.015A/μs	0.06A/ms-0.03A/μs
	Resolution	0.01mA/μs						0.005mA/μs		
	Range	0.4A/ms-0.2A/μs	0.4A/ms-0.2A/μs	0.8A/ms-0.4A/μs	1.2A/ms-0.6A/μs	1.6A/ms-0.8A/μs	1.6A/ms-0.8A/μs	0.2A/ms-0.1A/μs	0.3A/ms-0.15A/μs	0.6A/ms-0.3A/μs
	Resolution	0.1mA/μs						0.05mA/μs		
	Range	4A/ms- 2A/μs	4A/ms- 2A/μs	8A/ms- 4A/μs	12A/ms- 6A/μs	16A/ms-8A/μs	16A/ms-8A/μs	2A/ms-1A/μs	3A/ms-1.5A/μs	6A/ms- 3A/μs
	Resolution	1mA/μs						0.5mA/μs		
	Accuracy	10%±20μs								
	Minimum rise time	10μs								
Measurement (read back)										
Voltage	Range/Resolution	0-6V/0. 2mV						0-80V/1.5mV		
	Accuracy	0.025%+0.01%FS								
	Range/Resolution	0-16V/0.3mV						0-150V2.7mV		
	Accuracy	0.025%+0.01%FS								
	Range/Resolution	0-80V/1.4mV						0-600V/10.7mV		
	Accuracy	0.01%+0.025%FS								
Current	Range	0-0.2A	0-0.2A	0-0.4A	0-0.6A	0-0.8A	0-0.8A	0-0.1A	0-0.15A	0-0.3A
	Resolution	0.004mA	0.004mA	0.008mA	0.012mA	0.016mA	0.016mA	0.002mA	0.003mA	0.003mA
	Range	0-2A	0-2A	0-4A	0-6A	0-8A	0-8A	0-1A	0-1.5A	0-3A
	Resolution	0.04mA	0.04mA	0.08mA	0.12mA	0.16mA	0.16mA	0.02mA	0.03mA	0.03mA
	Range	0-20A	0-20A	0-40A	0-60A	0-80A	0-80A	0-10A	0-15A	0-30A
	Resolution	0.4mA	0.4mA	0.8mA	1.2mA	1.6mA	1.6mA	0.2mA	0.3mA	0.3mA
	Accuracy	0.05%+0.05%FS								
Power	Range	0-16W	0-30W	0-30W	0-30W	0-60W	0-60W	0-60W	0-90W	0-180W
		0-30W	0-60W	0-60W	0-60W	0-60W	0-60W	0-200W	0-300W	0-500W
		0-100W	0-200W	0-200W	0-300W	0-400W	0-500W	0-200W	0-300W	0-500W
	Accuracy	0. 1%+0.1%FS								
Protection function		Over voltage protection (OVP) Over current protection (OCP) Over power protection (OPP) Over temperature protection (OTP)								
Short circuit function										
Constant current (CC)		Set to 100% of rated current								
Constant voltage (CV)		0V								
Constant resistance (CR)		60kΩ(6V); 150kΩ(16V); 700kΩ(80V)								

Power Electric Tester

III. TH8400 Series Programmable DC Electronic Load

Features

- High resolution:1mV/0.1mA
- Up to 25kHz dynamic frequency
- Up to 500kHz sampling speed
- Low ripple and low noise
- Voltage/current ripple, peak, peak-valley measurement
- Voltage/current waveform display
- 11 kinds of operation and measurement functions
- 4.3-inch 24-color 480X272 TFT LCD screen, Chinese and English interface
- Numeric keyboard and knob operation
- Screen copy function
- Remote compensation function
- Intelligent fan control
- Protection mode: over voltage, over current, over power
- Support U disk file storage and loading, program upgrade
- Software control and detection through computer
- Equipped with HANDLER interface for automatic matching
- SCPI command protocol

RS232	USB HOST	USB DEVICE	I-MONITOR
standard	standard	standard	standard

Shelf dimension(mm):215(W)×88(H)×390(D)
Exterior dimension(mm):236(W)×111(H)×454(D)

Weight:3kg(TH8401/TH8411), 4.8kg(TH8402A/TH8402/TH8412)

Application

- Power supply

Chargers, switching power supplies, communication power supplies, LED drivers, mobile phone batteries, power banks, etc.

- New energy

Solar cells, new power cars, electric bicycles

- Electronic power components

Fuse/connector/relay/sensor

- Automation equipment integration test

Specifications

Model			TH8401		TH8402A		TH8402		TH8411		TH8412	
Rated value	Power		175W		350W		350W		175W		350W	
	Voltage		150V		150V		150V		500V		500V	
	Current		30A		30A		60A		15A		30A	
	Minimum operating voltage		1.5V@30A		1.2V@30A		1.5V@60A		1.8V@15A		3V@30A	
	Minimum rise time		20μs									
Static mode			CC mode(constant current mode) CR mode(constant resistance mode) CV mode(constant voltage mode) CP mode(constant power mode)									
Voltage	Range		0-15V	0-150V	0-15V	0-150V	0-15V	0-150V	0-50V	0-500V	0-50V	0-500V
	Setting	Resolution	1mV	10mV	1mV	10mV	1mV	10mV	1mV	10mV	1mV	10mV
		Accuracy	0.05%+0.05%FS									
	Resistance	Resolution	1mV	10mV	1mV	10mV	1mV	10mV	1mV	10mV	1mV	10mV
		Accuracy	0.08%+0.05%FS									
Current	Range		0-3A	0-30A	0-3A	0-30A	0-6A	0-60A	0-1.5A	0-15A	0-3A	0-30A
	Setting	Resolution	0.1mA	1mA	0.1mA	1mA	0.1mA	1mA	0.1mA	1mA	0.1mA	1mA
		Accuracy	0.05%+0.05%FS									
	Measurement	Resolution	0.1mA	1mA	0.1mA	1mA	0.1mA	1mA	0.1mA	1mA	0.1mA	1mA
		Accuracy	0.08%+0.05%FS									
Resistance	Range		0.05Ω-50kΩ		0.05Ω-50kΩ		0.05Ω-50kΩ		0.05Ω-50kΩ		0.05Ω-50kΩ	
	Resolution		0.05Ω									
	Accuracy		1%									
Power	Range		0-175W		0-350W		0-350W		0-175W		0-350W	
	Resolution		10mW		10mW		10mW		10mW		10mW	
	Accuracy		0.5%+0.1%FS									
Dynamic mode												
Dynamic mode	Range		20 μs - 60S									
	Resolution		2 μs									
	Accuracy		1μs+100ppm									
	Rise rate		0.6A/ms-1.5A/μs		0.6A/ms-1.5A/μs		1.2A/ms-3A/μs		0.3A/ms-0.75A/μs		0.6A/ms-1.5A/μs	
Measurement												
Ripple	Range		0-15V	0-150V	0-15V	0-150V	0-15V	0-150V	0-50V	0-500V	0-50V	0-500V
	Bandwidth		250kHz									
	Accuracy		0.1%									
Protection function			Over voltage protection (OVP) Over current protection (OCP) Over power protection (OPP)									
Storage			Internal: 40 groups									
Specification												
Volume (W*H*D)			Shelf dimension(mm):215(W)×88(H)×390(D), Exterior dimension(mm):236(W)×111(H)×454(D)									
Weight			3kg		4.8kg		4.8kg		3kg		4.8kg	
Power			Supply voltage: 220V(1±10%), Supply frequency: 50Hz/60Hz(1±5%), Power consumption: <50VA									
Temperature and humidity			0℃～40℃, humidity: < 90%RH									

Standard Accessories

YT3008 Test Cable(TH8403 / TH8404 / TH8405 none)

Power Electric Tester

III. TH3300 Series Digital Power Meter

Features

- 24-bit color 4.3-inch 480 x 272 color LCD screen, English and Chinese interface
- PLL (phase-locked loop) technology, faster measurement speed
- AC and DC test
- Wide current measurement range
- Input signal waveform display: Voltage and current can be displayed simultaneously or separately
- Higher measurement accuracy and faster data update rate
- Rich display mode:
  Traditional four-window display
  Full parameter full screen display
- Higher frequency test range and wider frequency response
- Multiple harmonic analysis display modes: List mode,Histogram
- Data Record Function

RS232	USB HOST	USB DEVICE	HANDLER	RS485
standard	standard	standard	standard	option

Rack mount (mm):215mm(W)x88mm(H)x335mm(D)
Dimension (mm):235mm(W)x105mm(H)x360mm(D)
Net weight: 3.6kg

Application

- Appliances
  TV, refrigerator, air conditioner, washing machines, vacuum cleaners, water heaters and other power efficiency testing
- Industry
  Electric machinery, motor, transformer, charger, power and other power test
- Lighting
  Lighting appliances, LED lamps and other power test
- New energy
  Photovoltaic modules, electric vehicles, wind power and other power test

Specifications

Model		TH3311	TH3312	TH3321	TH3331
Display		4.3-inch color TFT display			
Connection mode		Single phase			
Basic features	AC	☑	☑	☑	☑
	DC	☑	☑	☑	☑
	Precise	☑	☑	☑	☑
	Micro current	☐	☐	☑	☐
	Wide current	☐	☐	☐	☑
	Harmonic Analysis	☐	☑	☑	☑
	Power test	☑	☑	☑	☑
Display mode	Data	☑	☑	☑	☑
	Oscillogram	☑	☑	☑	☑
	Harmonic histogram	☐	☑	☑	☑
Basic accuracy		0.15% reading + 0.2% range +1 digit			
Voltage	Range	5V-75V/150V/300V/600V			
	Resolution	0.01V			
Current	Range	10mA/30mA/100mA/400mA/1.5A/5A/20A		1mA/3mA/10mA/40mA/150mA/500 mA/2A	10mA/30mA/100mA/400mA /1A/3A/10A/40A
	Minimum resolution	1mA		1uA	1mA
Power	Range	0.01W-12kW		0.01mW-1.2kW,6-class energy efficiency	0.01W-24kW
	Minimum resolution	0.01W		0.001mW	0.01W
Frequency	Range	Fundamental frequency range： DC/45Hz-400Hz， Bandwidth： 21kHz， filter 5kHz Minimum resolution			
	Minimum resolution	0.01Hz			
Power factor	Range	0.001-1.000			
	Minimum resolution	0.001			
Harmonic Analysis		------	± (5% of reading + 0.3% of range)		
Power integral	Range	0-99999kWh			
	Resolution	0.001Wh			
	Accuracy	± (0.2% of reading + 0.3% of range)			
Power timing	Range	0-9999:59:59			
	Resolution	1s			
	Accuracy	±0.05%			
Measurement speed		3 times / sec DC: 3 times / sec, harmonic function on: 2 times / sec			
Lock function		Data lock			
Range mode		AUTO / MAN			
Input impedance		≥ 1MΩ (all voltage profiles)			
Comparator		limit sound, light alarm			
Output		Relay output			
Communication Interface		RS232C/RS485，USB DEVICE，USB HOST，HANDLER			
Storage		USB waveforms, set files			

Power Electric Tester

III. TH3400 series multi-channel digital power meter

Features

- Channel combination: optional 3/4 channels
- AC and DC test
- High stability and consistency: adopt phase-locked loop frequency multiplication synchronization control and power synchronization setting
- High resolution display: 7-inch 800×600 resolution touch screen, support mouse operation
- Display screenshot function
- Broadband input: 45Hz-420Hz, suitable for most power systems on the market
- Embedded system: equipped with embedded operating system, human-computer interaction is more flexible and friendly
- Comparison function: provide comparison output of 8 comparison channels, and the output mode is programmable
- Harmonic analysis: controllable analysis parameters, providing list display and bar graph display
- Waveform display: input signal waveform/integrated power waveform
- Vector display: vector display of input signal
- Flexible energy integration control: provide continuous time control and manual control the running and stopping of energy integration
- File storage: relatively powerful file system, compatible with most U disks
- Protocol: SCPI instruction set and MODBUS instruction analysis

RS232	USB HOST	USB DEVICE	LAN	RS485
standard	standard	standard	standard	option

Shelf volume：215mm(W)x132mm(H)x441mm(D)
Dimensions：236mm(W)x154mm(H)x475.5mm(D)
Net weight：8.1kg

Application

- Power supply: AC power supply, DC power supply, linear power supply, switching power supply, inverter
- New energy: solar batteries, new power cars, electric bicycles
- Test and analysis of electrical parameters of electrical equipment such as household appliances, industrial electrical appliances, and various electronic loads
- Automation equipment integration test

Specifications

Model		TH3421			TH3422	
Number of channels		4			4	
Display		7 inch (800x480) color TFT resistive touch screen				
Wiring mode		One-phase two-wire (1P2W)	One-phase three-wire (1P3W)	Three-phase three-wire (3P3W)	Three-phase four-wire (3P4W)	Three-voltage three-current (3V3A)
Basic features	AC	☑			☑	
	DC	☑			☑	
	Precision type	☑			☑	
	Micro current	☐			☑	
	Harmonic analysis	☑			☑	
	Electric energy test	☑			☑	
Display mode	Data	☑			☑	
	Integration data	☑			☑	
	Waveform graph	☑			☑	
	Vector analysis	☑			☑	
	Histogram	☑			☑	
Basic accuracy		0.15% reading + 0.2% range + 1digit				
Voltage	Range	5V-75V/150V/300V/600V（Input impedance：3MΩ）				
	Resolution	0.01V				
Current	Range	10mA/30mA/100mA/400mA（Input impedance：200mΩ）			1mA/3mA/10mA/40mA（Input impedance：2Ω）	
		1.5A/5A/20A（Input impedance：4mΩ）			150mA/500mA/2A（nput impedance：40mΩ）	
	Minimum resolution	10μA			1μA	
Power	Range	5mW-12kW			0.5mW-1.2kW	
	Minimum resolution	0.01mW			0.001mW	
Frequency	Range	Fundamental Frequency range：DC/45Hz-420Hz，Bandwidth：21kHz，filter 5kHz Minimum resolution				
	Minimum resolution	0.01Hz				
Power factor	Range	-1.000-1.000				
	Minimum resolution	0.001				
Harmonic analysis		± (5% reading + 0.3% range)				
Energy integration	Range	0-99999kWh				
	Resolution	0.001Wh				
	Accuracy	±(0.2% reading + 0.3% range)				
Energy timing	Range	0-9999：59：59				
	Resolution	1s				
	Accuracy	±0.05%				
Measuring speed		about 7 times/s, harmonic/waveform function is ON: 4 times/s				
Lock function		Data lock				
Range method		Auto/Manual				
Input impedance		≥3MΩ(Voltage input)				
Comparator		Over-limit sound and light alarm				
Output		8 channel programmable relay output				
Communication interface		RS232C/RS485，USB DEVICE，USB HOST，LAN，HANDLER，WIFI(support RTL8192 and MT7601 drive network card)				
Storage		USB waveforms, setting files				

Power Electric Tester

III. TH343X TH344X series multi-channel digital power meter

Features

- Channel: 1/3/4
- AC/DC: Support AC and DC input test
- Soft start: using soft power switch design
- High-resolution display: 7 inches, 800×600 resolution, capacitive touch screen, support mouse operation
- Provide screenshot operation
- Broadband input: 0.1Hz-100kHz, suitable for most power systems on the market
- Embedded system: equipped with embedded operating system, the human-computer interaction is more flexible and friendly
- Comparison function: Provides 8 comparison channels for comparison output, and the output mode is programmable
- Harmonic analysis: analysis parameters are controllable, and list display and bar graph display are provided
- Waveform display: Provides basic input signal waveform display function and integrated power waveform display
- Vector display: Provide a vector display of the input signal
- Flexible energy integral control: provide continuous time control and manual control of energy integral run and stop operations
- File storage: a relatively powerful file system, compatible with most U disks (FAT format)
- Abundant interfaces: USB HOST, USB DEVICE, LAN, HANDLER, RS232/RS485 (choose one of two)
- Communication protocol: support SCPI command set and ModBus command parsing

RS232	USB HOST	USB DEVICE	LAN	RS485
standard	standard	standard	standard	option

Shelf volume：215mm(W)x132mm(H)x441mm(D)
Dimensions：236mm(W)x154mm(H)x475.5mm(D)
Net weight：8.1kg

Application

- Motors, transformers
- Electronic production design
- Lighting
- Aerospace and military industry
- Network communication
- Audio and video equipment
- Monitoring equipment
- Source class device
  Test and analysis of electrical parameters of AC power supply, DC power supply, linear power supply, switching power supply, and inverter and other source output equipment
- Load equipment
  Test and analysis of electrical parameters of various types of household appliances, industrial appliances, various electronic loads and other electrical equipment

Specifications

Model		TH3431	TH3433	TH3434	TH3441	TH3443	TH3444
Number Of Channels		1	3	4	1	3	4
Display		7-Inch (800x480) Color TFT Resistive Touch Screen					
Wiring Mode		One-Phase Two-Wire (1P2W)	One-Phase Two-Wire (1P2W)		One-Phase Two-Wire (1P2W)	One-Phase Two-Wire (1P2W)	
			One-Phase Three-Wire (1P3W)			One-Phase Three-Wire (1P3W)	
			Three-Phase Three-Wire (3P3W)			Three-Phase Three-Wire (3P3W)	
			Three-Phase Four-Wire (3P4W)			Three-Phase Four-Wire (3P4W)	
			Three-Voltage Three- Current (3V3A)			Three-Voltage Three- Current (3V3A)	
Basic Features	AC	Y			Y		
	DC	Y			Y		
	Precision Type	Y			Y		
	Micro Current	Y					
	Harmonic Analysis	Y			Y		
	Electric Energy Test	Y			Y		
Display Mode	Data	Y			Y		
	Integration Data	Y			Y		
	Waveform Graph	Y			Y		
	Vector Analysis	Y			Y		
	Histogram	Y			Y		
Basic Accuracy (One Year)							
Voltage	Basic Accuracy	0.15% Reading + 0.2% Range					
	Resolution	0.001V					
Current	Basic Accuracy	± (0.15% Reading + 0.1% Range)					
	Resolution	0.1mA			1mA		
Frequency Range		Voltage/Current Accuracy					
DC		± (0.1% Reading +0.2% Range)					
0.1Hz ≤ Freq < 45Hz		± (0.1% Reading +0.2% Range)					
45Hz ≤ Freq < 66Hz		± (0.1% Reading +0.1% Range)					
66Hz ≤ Freq < 1khz		± (0.1% Reading +0.2% Range)					

Power Electric Tester

III. TH343X TH344X series multi-channel digital power meter

Specifications

1khz ≤ Freq < 10khz		± ((0.07*Freq) % Reading +0.3% Range)	
10khz ≤ Freq ≤ 100khz		± (0.5% Reading +0.5% Range) ± [0.04*(Freq - 10k)] % Reading	
Input			
Voltage	Scope	1V - 600V	
	Range	15V/30V/60V/150V/300V/600V	
	Minimum Resolution	0.001V	
	Input Impedance	2MΩ	
	Allowed Max Input	1000V (1S) 700V(Continuous)	
Current	Scope	0.01mA - 2A	0.1mA - 20A
	Range	0.5mA/1mA/2mA/5mA/10mA/20mA	5mA/10mA/20mA/50mA/100mA/200mA
	Input Impedance	4Ω	400mΩ
	Range	0.05A/0.1A/0.2A/0.5A/1A/2A	0.5A/1A/2A/5A/10A/20A
	Input Impedance	40mΩ	4mΩ
	Minimum Resolution	0.1uA	1uA
	Allowed Max Input	3A(1S) 2A(Continuous)	30A(1S) 20A(Continuous)
Power	Range	0.01mW - 1.2kW	0.1mW - 12kW
	Minimum Resolution	0.001mW	0.01mW
Frequency	Range	Fundamental Frequency Range: DC/0.1Hz - 100kHz, Filter 500Hz	
	Minimum Resolution	0.01Hz	
Power Factor	Range	- 1.000 - 1.000	
	Minimum Resolution	0.001	
Harmonic Analysis	Range	10Hz-1.2kHz	
	Accuracy	± (5% Reading +0.3% Range)	
Energy Integration	Range	0 - 99999kWh	
	Resolution	0.001Wh	
	Accuracy	± (0.2% Reading +0.3% Range)	
Energy Timing	Range	0 - 9999：59：59	
	Resolution	1s	
	Accuracy	± 0.05%	
Update Rate		Optional 0.1s/0.25s/0.5s/1s/2s/10s/20s	
Lock Function		Data Lock	
Range Method		Auto/Manual	
Input Impedance		≥ 2MΩ (Voltage Input)	
Comparator		Over-Limit Sound And Light Alarm	
Output		8 Channel Programmable Relay Output	
Measurement Assistance Function			
Data Buffer Storage Function		The Test Results Are Stored In A U Disk, And Statistical Analysis Can Be Performed On The PC Side	
Save/Load Function		The Saving Of Setting Data Is Divided Into Measurement Parameter Setting And System Parameter Setting	
Keyboard Lock Function		Front Panel Keys And Touch Screen Operations Can Be Locked To Effectively Prevent Misoperation	
Communication Interface	Serial Communication	RS232C/RS485 Optional	
	USB HOST	Universal Serial Bus Socket, Type A; FAT16/FAT32 Format. U Disk Storage Or Designated Wireless Network Card (WIFI Supports RTL8192 And MT7601) And Other Equipment Support	
	USB DEVICE	Universal Serial Bus Socket, Small Type B (4 Contact Positions); Compatible With USBTMC - USB488 And USB2.0, Female Connector For Connecting External Controllers. Optional CDC Mode Or TMC Mode.	
	LAN	10/100baset Ethernet, 8 Pins, Stable Communication.	
	HANDLER	8 Channel Programmable Relay Output	
Storage		USB Waveform, Setting File	
Power Supply		AC220V± 10%, 50/60Hz± 5%, Soft Power Switch	
Size W*H*D	Working Size	236mm*154mm*475.5mm	
	Shelf Size	215mm*132mm*441mm	
Weight		8.1kg	

Safety Tester/Hipot Tester

Ⅳ. TH9110/A Hipot Tester

Features

- High power: AC 5kV / 100mA / 500VA output
- High security:
  High-voltage floating output design, in line with the safety requirements of EU standards EN50191 (only TH9110)
  Electric shock protection function
- High resolution: 7 inch 800 × 480 dots, TFT-LCD display
- Brand-new operation interface, Chinese and English menu
- ARC detection function
- Contact check function (OSC)
- Breakdown voltage test function
- One-key screen capture function
- One-key recording function
- Rear panel output function to facilitate automated production line testing
- Storage: 100 files, up to 50 steps per file

RS232	USB HOST	USB DEVICE	HANDLER	LAN	GPIB
standard	standard	standard	standard	standard	option

TH9110/A

Dimension(mm): 430(W)×132(H)×500(D)
Weight: 21kg

Application

- Winding devices
  Transformers, generators/motors and other products needing high-power withstand voltage test and analysis, such as different types of motor stator, rotor and other high parasitic capacitance products
- Electronic components
  Capacitors, coils, cores, choke coils, filters and so on
- Electrical products
  Household appliances, information products, audio-visual equipment, electric heating appliances, lighting equipment
- Non-electrical products
  Withstand voltage and insulation resistance test for wire, non-woven fabric, insulation materials and so on
- New energy automobile
- Automated test system
- Medical equipment

Specifications

Model		TH9110	TH9110A
Withstand voltage test			
Output voltage	AC	0.05 - 5kV Load Variance：1% Accuracy：1% Resolution： 2V	
	DC	0.05 - 6kV Load Variance：1% Accuracy：1% Resolution： 2V	
Current test range	AC	0.001mA - 120mA(Voltage≤4kV)；0.001mA - 100mA(Voltage>4kV) Accuracy：1% Resolution：1μA	
	DC	0.0001mA - 25mA Accuracy：1% Resolution：0.1 μA	
Output power		500VA	
Insulation resistance test			
Output Voltage		DC : 0.05 - 5kV Resolution：2V Accuracy：1% of set value + 0.1% full scale	
Resistance test range		1MΩ-50.0GΩ Resolution：0.1MΩ	
Discharge function		Automatic discharge after the end of the test	
ARC detection	AC	1mA - 20mA	
	DC	1mA - 10mA	
Contact check function		OSC open and short：600Hz, 0.1s	
Security features			
High voltage floating output		Leakage current <3 mA	------
Electric shock protection		0.5mA ±0.25mA	
Other protection		Start protection, panel operation password protection	
Alarm indication		PASS: short tone, green light; FAIL: long tone, red light	
Memory		100 groups, 50 steps per group	
General parameters			
Voltage rise time		0.1s — 999.9s	
Test time setting(AC/DC)		0.3s — 999s	
Voltage fall time		0.1s — 999.9s	
Waiting time (IR)		0.2s — 999.9s	
Time accuracy		±(1%+0.1s)	

Standard Accessories

TH90018 Withstand Voltage Test Cable(only TH9110)
TH90015 Withstand Voltage Test Cable(only TH9110A)

Safety Tester/Hipot Tester

Ⅳ. TH9120A/D Hipot Tester

Features

- High voltage: AC 10kV, DC 12kV
- Breakdown voltage test: AC can reach 10kV, DC can reach 12kV; Component voltage stepping (10V) and Normal stepping (divided according to test steps)
- High resolution: 7 inch 800 × 480 dots, TFT-LCD display
- Chinese and English menu operation interface
- ARC detection function
- OSC check function
- One-click screen capture function
- Rear panel output function for automatic test of production line
- Storage: 100 files, up to 50 steps per file
- Pin detection
- Insulation resistance can reach 50G

NEW

RS232	USB HOST	USB DEVICE	HANDLER	LAN	GPIB
standard	standard	standard	standard	standard	option

Dimension(mm):430mm(W)x132mm(H)x500mm(D)
Weight: 21kg

Application

- High withstand voltage test

High-voltage optocouplers, high-voltage relays, high-voltage switches and other high-insulation devices

- Electronic components

Capacitors, coils, cores, chokes, filters, etc.

- Electrical products

Household appliances, information products, audio-visual equipment, electric heating appliances, lighting equipment

- Non-electrical products

Withstand voltage and insulation resistance test of wire, non-woven fabric, insulating material, etc.

- New energy vehicles
- Automatic test system

Specifications

Model			TH9120A	TH9120D
Test mode			AC/OSC	DC/IR
Withstand voltage test				
Output voltage	AC	Voltage range	0.05-10.0kV	------
		Voltage waveform	50/60Hz ±0.1% Sine wave	------
		Output power	200VA(10.0kV 20mA)	------
	DC	Voltage range	------	0.05-12.0kV
		Output power	------	120VA(12.0kV 10mA)
Load change rate			±(1% set value + 10V) (rated power)	
Voltage resolution			2V	
Voltage accuracy			±(1% set value + 0.1% full scale)	
Current test range	AC	Current range	0.001mA-20mA	------
		Current resolution	0.001mA	------
		Current accuracy	0.100mA-2.999mA ±(1% reading + 0.5% full scale)	------
			3.00mA-20.00 mA ±(1.5% reading + 0.5% full scale)	------
	DC	Current range	------	0.0001mA-10mA
		Current resolution	------	0.1uA
		Current accuracy	------	±(1% reading + 0.5% full scale)
Maximum short circuit current			40mA (AC test only)	------
Fast discharge function			------	Automatic discharge after test (DCW)
Insulation resistance test				
Output voltage			------	DC:0.05-5.0kV
Voltage resolution			------	2V
Voltage accuracy			------	±(1% set value + 0.5% full scale)
Resistance test range			------	0.1MΩ– 50.0GΩ

Safety Tester/Hipot Tester

IV. TH9120A/D Hipot Tester

Resistance test accuracy	Voltage≥0.5kV	------	1MΩ–1GΩ ± (3% reading + 0.1% full scale)
			1GΩ–10GΩ ± (7% reading + 2% full scale)
			10GΩ–50GΩ ± (10% reading + 1% full scale)
	Voltage<500V	------	0.1MΩ–1GΩ ± (5% reading + 2% full scale)
Arc detection			
Program setting	AC	1.0mA-20.0mA	------
	DC	------	1.0mA-10.0mA
OSC open and short detection			
Sampling standard capacitance range		0.001—40nF	------
Open circuit judgment range		10%—100%	------
Short circuit judgment range		100%—500%	------
Time setting			
Test time		0.3—999s, 0 means continuous test	
Rise time		0.1—999s, 0 means OFF	
Fall time		0.1—999s, 0 means OFF	
Waiting time		0.1—999s, 0 means OFF (DC withstand voltage only)	
Safety protection function			
Shock protection		0.5mA ± 0.25mA Optional: ON or OFF	
Start protection (Interlock)		When the pin is connected with low terminal, high voltage output is allowed.	
Panel operation protection		Key lock, password	
Alarm indication		PASS: short sound, green light; FAIL: long sound, red light	
Storage and interface			
Internal memory		100 files can be stored and 50 steps can be edited in each file	
Standard interface		RS232，USB DEVICE，USB HOST，LAN，HANDLER	
Optional interface		GPIB	
Ambient temperature and humidity			
Parameter comparison temperature		18℃～28℃，Humidity: 30%～70%RH	
Normal working temperature		0℃～45℃，Humidity: 20%～90%RH	
Storage environment temperature		-10℃～55℃，Humidity:< 80%RH	
General specification			
Power supply		100V～240VAC，47Hz～63Hz	
Power		No load:< 100W Rated power:300W	
Volume		430mm（W）x 132mm（H）x 500mm（D）	
Weight		21kg	

Standard Accessories

TH90003R/B Withstand Voltage Test Cable
TH90015 Withstand Voltage Test Cable

Safety Tester/Hipot Tester

Ⅳ. TH9320-S4/TH9320-S8 Hipot Tester

Features

- Output voltage: AC:5kV/20mA; DC:6kV/10mA
- Test voltage of insulation resistance:0.10kV-1.00kV
  Test range of insulation resistance: 1MΩ-1000MΩ
- 480×272 dot-matrix, TFT-LCD display
- Provide 4 channels (-S4), 8 channels (-S8) scan interface
- Rapidly discharging and arc detection
- Randomly set voltage rising time and testing time in 999.9 seconds; Freely set waiting time for insulation resistance
- Hold 20 testing steps; 4 testing modes selectable
- Brand new operation interface and concise interface operation design
- Lock keyboard

TH9320-S8

TH9320-S4

RS232	USB HOST	USB DEVICE	HANDLER	PLC
standard	standard	standard	standard	standard

Dimension(mm):280mm(W)x138mm(H)x428mm(D)
Weight: 18kg

Brief Introduction

■ TH9320-S series AC/DC withstanding voltage/insulation resistance tester is an economical and intelligent safety tester with the characteristics of small size, light weight, pleasing appearance and easy operation. TH9320-S series can be widely used in the safety tests of household appliances, transformer, electrical equipments and components.

Specifications

Model		TH9320-S4	TH9320-S8
Withstanding voltage test			
Output voltage	AC	0.05 —5.00kV ± (2% reading+5digits) , (50Hz，60Hz optional)	
	DC	0.05 —6.00kV ± (2% reading+5digits)	
	Voltage adjustment rate	≤ (1% - 5V)（rated power）	
Current test range	AC	0.000mA – 20.00mA ±(2% reading+2digits)	
	DC	0uA –10.00mA ±(2% reading+2digits)	
	Discharge function	Discharge after test ends（DCW）	
Insulation resistance test			
Output voltage		0.10kV – 1.00kV ±(2%reading+2V)	
Resistance test range		1MΩ– 9999MΩ	
Resistance test accuracy	500V-1000V	1MΩ– 1000MΩ ±(5%reading+2digits) ;1000MΩ–9999MΩ ±(10%reading+2digits)	
	100V-500V	1MΩ– 1000MΩ ±(10%reading+2digits)	
Discharge function		Discharge after test ends	
Arc detection			
Measurement range	AC	1 – 9 levels （factory default 5） （20mA，18mA，16mA，14mA，12mA，10mA，7.7mA，5.5mA，2.8mA respectively）	
	DC	1 – 9 levels	
General specification			
Memory		5 groups	
Voltage rising time		0.1s – 999.9s	
Test time setting（AC/DC）		0.2s – 999.9s	
Waiting time（IR）		0.2s – 999.9s	
Time Accuracy		±(1%+0.1s)	
Scan interface		4 channels	8 channels

Standard Accessories

TH90003R Withstand Voltage Test Cable X 9 (only TH9320-S8)
TH90003R Withstand Voltage Test Cable X 5 (only TH9320-S4)
TH90003C Withstand Voltage Test Cable

Safety Tester/Hipot Tester

Ⅳ. TH9310/TH9320 Series Hipot Tester

Features

- TH9310 series: AC:5kV/10mA; DC:6kV/5mA AC/ DC withstanding voltage/insulation resistance tester
  TH9320 series: AC:5kV/20mA; DC6kV/10mA AC/ DC withstanding voltage/insulation resistance tester
- TH9310/20：AC/ DC withstanding voltage/insulation resistance tester
  TH9310B: AC withstanding voltage tester
- 480×272 dot-matrix, TFT-LCD display
- Rapidly discharging and arc detection
- Randomly set voltage rising time and testing time in 999.9 seconds; Freely set waiting time for insulation resistance
- Hold 5 testing steps; 4 testing modes selectable
- Brand new operation interface and concise interface operation design
- Lock keyboard
- PLC interface

RS232	USB HOST	USB DEVICE	HANDLER	SIGNAL	PLC
standard	standard	standard	standard	standard	standard

TH9310/TH9320 Series

Dimension(mm):280mm(W)x88mm(H)x428mm(D)
Weight: 11kg (only TH9310 series), 12.311kg (only TH9320 series)

Brief Introduction

- TH9310/20 series withstanding voltage/insulation resistance tester is an economical and intelligent safety tester with the characteristics of small size, light weight, pleasing appearance and easy operation. TH9310/20 series can be widely used in the safety tests of household appliances, transformer, electrical equipments and components.

Specifications

Model		TH9310/20	TH9310B
Withstanding voltage test			
Output voltage	AC	0.05 —5.00kV ± (2% reading+5digits) , (50Hz，60Hz optional)	
	DC	0.05 —6.00kV ± (2% reading+5digits)	------
	Voltage adjustment rate	≤ (1% - 5V)（rated power）	
Current test range	AC	TH9310：0.000mA – 10.00mA ±(2% reading+2digits) TH9320：0.000mA – 20.00mA ±(2% reading+2digits)	
	DC	TH9310：0uA – 5.00mA ±(2% reading+2digits) TH9320：0uA –10.00mA ±(2% reading+2digits)	------
	Discharge function	Discharge after test ends（DCW）	
Insulation resistance test			
Output voltage		0.10kV – 1.00kV ±(2%reading+2V)	------
Resistance test range		1MΩ– 9999MΩ	------
Resistance test accuracy	500V-1000V	1MΩ– 1000MΩ ±(5%reading+2digits) 1000MΩ–9999MΩ ±(10%reading+2digits)	------
	100V-500V	1MΩ– 1000MΩ ±(10%reading+2digits)	------
Discharge function		Discharge after test ends	------
Arc detection			
Measurement range		Corresponding current 1mA-20mA	------
General specification			
Memory		5 groups	
Voltage rising time		0.1s – 999.9s	
Test time setting（AC/DC）		0.2s – 999.9s	
Waiting time（IR）		0.2s – 999.9s	------
Time Accuracy		±(1%+0.1s)	
Dimension（W×H×D）		280mm×89mm×428mm/10kg	
Interface			
Standard		HANDLER, RS232, USBDRV(PC interface), USBHOST(USB port)	

Standard Accessories

TH90003R Withstand Voltage Test Cable
TH90003C Withstand Voltage Test Cable

Safety Tester/Hipot Tester

IV. TH9010/A Parallel 8-channel/4-channel Hipot Tester

Features

- 7-inch 800×480 dot-matrix, TFT-LCD display
- Chinese and English operation interface and concise interfacet operation design
- 8-channel withstand voltage parallel output and test efficiency increased eight times
- Parallel 8-channels and each channel is non-interfering
- Each channel can be extended by a four-channel scanner
- Support 4 four-channel scanner at most and one instrument can be extended to 128 channels
- Four-channel scanner supports contact check function
- Single output power: AC:5kV/10mA; DC:6kV/5mA
- Insulation resistance test voltage: 0.10kV -1.00kV
- Enhanced security: electric shock protection
- Rapid discharge and arc detection function
- Arbitrarily set voltage rising time and test time in 999.9 seconds; freely set waiting time for insulation resistance
- Key-Lock Function
- Display the PASS/FAIL result of each channel independently and the total result simultaneously
- Store 100 test files and each file can hold at most 20 testing steps

RS232	USB HOST	USB DEVICE	HANDLER	GPIB
standard	standard	standard	standard	option

TH9010

Dimension(mm): 430(W)×177(H)×630(D)
Weight: 40kg

TH90101 8-unit four-channel scan expander
TH90101A 4-unit four-channel scan expander

Application

- Automated test system
- Household appliances
- Transformers, motors
- Electrical equipment
- Lighting industry
- New energy vehicles
- Electronic components
- Medical equipment

Specifications

Model		TH9010	TH9010A
Number of units		8 separate channel	4 separate channel
Withstanding voltage test			
Output voltage	AC	0.10kV — 5.00kV ±2%	
	DC	0.10kV — 6.00kV ±2%	
Current test Range	AC	0mA — 10.00mA ±(2% readings + 5 digits)	
	DC	0uA — 5.00mA ±(2% readings + 5 digits)	
	Rapid discharge function	Discharge after test ends (DCW)	
Insulation resistance test			
Output voltage		0.10kV — 1.00kV ±2%	
Resistance test range		0.1MΩ — 10.0GΩ	
Resistance test accuracy		0.10MΩ — 999MΩ ±10% 1.00GΩ — 10.0GΩ ±20%	
Discharge function		Discharge after test ends	
Arc detection			
Test range	Corresponding current	1mA — 20mA	
General specification			
Voltage rising time		0.1s — 999.9s	
Test time setting (AC/DC)		0.2s — 999.9s	
Voltage fall time		0.1s — 999.9s	
Waiting time (IR)		0.2s — 999.9s	
Time accuracy		±(1%+0.1s)	
Memory		Store 100 test files and each file can hold at most 20 testing steps	
Interface			
Standard		HANDLER, RS232, USB DRV, USB HOST	

Safety Tester/Hipot Tester

IV. TH2883S8-5/TH2883S4-5 Impulse Winding Tester

RS232	USB HOST	USB DEVICE	HANDLER	LAN
standard	standard	standard	standard	standard

TH2883S8-5/TH2883S4-5

Dimension(mm):400mm(W)x132mm(H)x420mm(D)

Weight: 15kg

Features

- Impulse voltage of 100V~5000V
- Two models of 4-channel and 8-channel4 for selection
- Each channel can be programmed and controlled as high-terminal, low-terminal and OFF
- 20 test procedures can be added at most
- 65k color 7" TFT wide display screen
- Up to 200Msps waveform sampling rate
- Maximum measuring speed: 6meas/sec
- Storage depth of 6k Bytes
- High bandwidth analog acquisition circuit
- High-fidelity corona extraction algorithm (patent technology)
- Four waveform comparison methods
- Automatic storage of instrument parameters
- Measurements on voltage, time and frequency
- Amplification, stretch and movement of the waveform for accurate display
- Multi-sample average, average processing of 32 standard waveforms
- Destructive testing for your correct choose of voltage
- Use demagnetized impulse to ensure the conformity of tested waveforms
- Login of different user right for easy management
- 20 groups of instrument files can be stored and automatically loaded
- Screen information can be stored in USB disk (COPY key)
- System firmware can be automatically upgraded through USB-disk
- Selectable Chinese and English operation interfaces
- Four selectable display interface effects
- Foot control interface for easy measurements
- Handler interface to realize on-line operation
- RS232C, USB Device and LAN interface to realize remote control

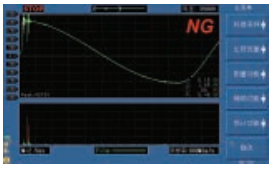
Brief Introduction

■ TH2883 series products are newly developed impulse winding testers by Tonghui. This product line makes Tonghui as the first provider of impulse winding tester from low voltage of 30V to high voltage of 10kV, single channel to multichannel (Max.:8 channels) in this industry. The instrument adopts popular 32 bit CPU and high density SMD technology, 65k color 7-inch TFT wide display screen, bringing ease for your eyes and convenience to your operation. The impulse voltage of100V~5000V, maximum 8 channel sweep test, maximum 20 test procedures, sampling rate of 200Msps, memory depth of 6k bytes makes your test accurately.The usage of standard sample average, application of demagnetized impulse, high bandwidth analog acquisition circuit, technology of high-fidelity corona extraction as well as the opening of non-destructive test reflect the design philosophy "customer-oriented, share the future technology with you" of Tonghui.

According to the output number of channels, TH2883 series is consist of 2 models:TH2883S8-5 and TH2883S4-5. TH2883S8-5 is the ideal product for measurements of multiphase coils. The 8 channel of TH2883S8-5 can be programmed and configured as voltage high-terminal, voltage low-terminal and OFF. Any combination of the configuration condition of the 8 channels and maximum 20 test procedures can be achieved. Also, it can test the coils successively in 8 channels. TH2883S4-5 is provided with 4 channels. It is especially developed on the basis of the 8 channels of TH2883S8-5 for customers who need less sweep channels. USB Host, RS232C, USB Device and LAN interface are provided in TH2883 series products for your quick save of the waveforms and remote control of the instrument.

Corona extraction function

With high-fidelity corona extraction algorithm (patent technology) and high bandwidth analog acquisition circuit,TH2883 series products can fully recover the corona waveform of high-frequency and makes you know more about the insulating property of products.



TH2883S8-5 is provided with 8 channels from CH1-CH8,TH2883S4-5 is provided with 4 channels from CH1-CH4. These channels are installed on the rear panel for convenient use, as shown in the figure:

Safety Tester/Hipot Tester

Ⅳ. TH2883S8-5/TH2883S4-5 Impulse Winding Tester

Specifications

Model		TH2883S8-5	TH2883S4-5
Impulse voltage		100V-5000V 10V steps	
Voltage accuracy		±(5% set value +15V)	
Readback accuracy		±(5% actual value +15V)	
Channels		8	4
Inductance test range		≥10uH	
Impulse energy		Max.: 0.25 Joule	
Test speed		6 times/second (single channel, single step)	
Pulses applied		Max.: 32	
Input Impedance		5MΩ	
Display		800x480 dots, 65k color TFT; Waveform Display Range: 600x256	
Waveform Acquisition		Sampling rate: Max. 200Msps, 8 levels adjustable Resolution: 8 Bits Memory Depth: 6k Bytes Average: 1 to 32	
Comparison Methods		Comparison with Standard Waveform: ● Area Size Comparison ● Differential Area Comparison ● Corona Discharge Comparison ● Differential Phase Comparison	
Waveform Measurement		Voltage/Frequency/Time	
Trigger Mode		Manual/External/Bus/Internal	
Detection Output		Pass/Fail display/LED/ Alarm	
Measurement Statistics		Statistics for measurement results	
Memory		20 groups of standard waveform data and instrument setup can be stored in internal non-volatile memory. USB flash memory can be used as external memory.	
Interface		Handler, RS232C, USB Device, USB Host, LAN	
Power supply			
Power supply		110V/220V ±10% 50Hz/60Hz ±5%	
Power consumption		≤200VA	
General conditions			
Working environment	Temperature	0℃ - 40℃	
	Humidity	≤75% R.H.	
Safety and electromagnetic compatibility		IEC61010-1:2001,IEC61326-2-1:2005	

Standard Accessories

Three core power cord
TH2881-001 Foot Switch
TH2883-01 High voltage test cable
TH90003R High voltage test cable x 8 (only for TH2883S8-5)
TH90003R High voltage test cable x 4 (only for TH2883S4-5)

Safety Tester/Hipot Tester

Ⅳ. TH2883 Series Impulse Winding Tester

RS232	USB HOST	USB DEVICE	HANDLER	LAN
standard	standard	standard	standard	standard

TH2883 Series

Dimension(mm):400mm(W)x132mm(H)x420mm(D)

Weight: 15kg

Features

- Impulse voltage of 30V~10kV
- Minimum inductance value of winding that can be tested: 1uH
- 65k color 7" TFT wide display screen
- Up to 200Msps waveform sampling rate
- Maximum measuring speed: 6meas/sec
- Storage depth of 6k Bytes
- High bandwidth analog acquisition circuit
- High-fidelity corona extraction algorithm (patent technology)
- Four waveform comparison methods
- Automatic storage of instrument parameters
- Measurements on voltage, time and frequency
- Amplification, stretch and movement of the waveform for accurate display
- Multi-sample average, average processing of 32 standard waveforms
- Destructive testing for your correct choose of voltage
- Use demagnetized impulse to ensure the conformity of tested waveforms
- Login of different user right for easy management
- 20 groups of instrument files can be stored and automatically loaded
- Screen information can be stored in USB disk (COPY key)
- System firmware can be automatically upgraded through USB-disk
- Selectable Chinese and English operation interfaces
- Four selectable display interface effects
- Foot control interface for easy measurements
- Handler interface to realize on-line operation
- RS232C, USB Device and LAN interface to realize remote control

Brief Introduction

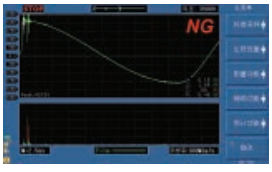
■ TH2883 series products are newly developed impulse winding testers by Tonghui. This product line makes Tonghui as the first provider of impulse winding tester from low voltage of 30V to high voltage of 10kV, single channel to multichannel (Max.:8 channels) in this industry. The instrument adopts popular 32 bit CPU and high density SMD technology, 65k color 7-inch TFT wide display screen, bringing ease for your eyes and convenience to your operation. The minimum impulse voltage of 30V, maximum impulse voltage output of 10kV, winding test of 1uH inductance value, sampling rate of 200Msps, memory depth of 6k bytes makes your test accurately. The usage of standard sample average, application of demagnetized impulse, high bandwidth analog acquisition circuit, technology of high-fidelity corona extraction as well as the opening of non-destructive test reflect the design philosophy "customer-oriented, share the future technology with you" of Tonghui.

According to the output voltage, TH2883 series is consist of 3 models:TH2883-1, TH2883-5 and TH2883-10. With minimum impulse voltage of 30V and maximum impulse voltage of 1200V, TH2883-1 low inductance impulse winding tester can test windings of 1uH low inductance value. The instrument is the ideal test product for inductance coils used by switching power supply. With impulse voltage of 100V~5000V, TH2883-5 is a standard product for testing all kinds of coils. With maximum impulse output voltage of 10kV, TH2883-10 is appropriate for interturn test of higher insulation and voltage resistance.

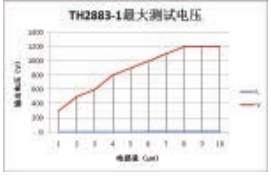
Standard-equipped USB Host, RS232C, USB Device and LAN interface of TH2883 series product are convenient for your fast storage of graphs and remote control.

Corona extraction function

With high-fidelity corona extraction algorithm (patent technology) and high bandwidth analog acquisition circuit,TH2883 series products can fully recover the corona waveform of high-frequency and makes you know more about the insulating property of products.



The maximum output test voltage of TH2883-1 is related to the load inductance value, as shown in the follow:



Safety Tester/Hipot Tester

Ⅳ. TH2883 Series Impulse Winding Tester

Specifications

Model		TH2883-1	TH2883-5	TH2883-10
Impulse voltage		30V-1200V 5V steps	100V-5000V 10V steps	500V-10kV 20V steps
Voltage accuracy		±(5% set value +5V)	±(5% set value +15V)	±(5% set value +25V)
Readback accuracy		±(5% actual value +5V)	±(5% actual value +15V)	±(5% actual value +25V)
Channels		1		
Inductance test range		≥1uH	≥10uH	≥20uH
Impulse energy		Max.: 0.02 Joule	Max.: 0.25 Joule	Max.: 0.5 Joule
Test speed		6 times/second	6 times/second	3 times/second (when 10kV impulse voltage is output)
Pulses applied		Max.: 32		
Input Impedance		5MΩ		
Display		800x480 dots, 65k color TFT; Waveform Display Range: 600x256		
Waveform Acquisition		Sampling rate: Max. 200Msps, 8 levels adjustable Resolution: 8 Bits Memory Depth: 6k Bytes Average: 1 to 32		
Comparison Methods		Comparison with Standard Waveform: ● Area Size Comparison ● Differential Area Comparison ● Corona Discharge Comparison ● Differential Phase Comparison		
Waveform Measurement		Voltage/Frequency/Time		
Trigger Mode		Manual/External/Bus/Internal		
Detection Output		OK/NG display/LED/ Alarm		
Measurement Statistics		Statistics for measurement results		
Memory		20 groups of standard waveform data and instrument setup can be stored in internal non-volatile memory. USB flash memory can be used as external memory.		
Interface		Handler, RS232C, USB Device, USB Host, LAN		
Power supply				
Power supply		110V/220V ±10% 50Hz/60Hz ±5%		
Power consumption		≤200VA		
General conditions				
Working environment	Temperature	0℃ - 40℃		
	Humidity	≤75% R.H.		
Safety and electromagnetic compatibility		IEC61010-1:2001,IEC61326-2-1:2005		

Standard Accessories

Three core power cord　　TH2881-001 Foot Switch　　TH2883-01 High Voltage Test Cable

Safety Tester/Hipot Tester

IV. TH2882A Series Impulse Winding Tester

Features

- Low inductance impulse test: down to 10μH
- Low energy test without damaging the coil
- Fast detection of winding insulation at a speed of 5.5 meas/sec
- 4 kinds of waveform comparison methods
- Up to 40 MSPS sampling rate
- 320×240 dot-matrix graphic LCD display
- Chinese and English operation languages
- Fridndly user's interface and easy operation
- Multi-trigger mode programmable
- Voltage, Time and Frequency measuring function
- Direct display of comparison result
- Keyboard lock and password protection function
- Handler, RS-232C, and GPIB(optional) interfaces
- 500 groups of waveforms can be stored in USB disk (optional)
- Multi-channel scan control interface: SCANNER (optional)

RS232	USB HOST	HANDLER	GPIB
standard	standard	standard	option

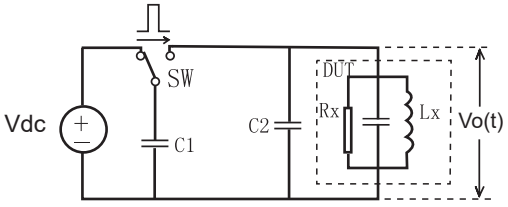
TH2882 Series

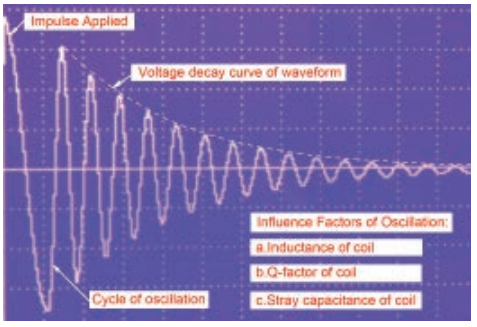
Dimension(mm):400mm(W)x132mm(H)x420mm(D)
Weight: 7.6kg(TH2882A) ,8.4kg(TH2882AS)

Brief Introduction

- Due to the influence of coil wire material,magnetic material,framework and manufacture technics etc ., coil products (such as transformers, motors, etc.) may have defects of low insulation between coil layers,circles and leads. TH2882A series impulse winding tester,adopting high-speed sampling technique, is a new generation analysis test instrument for insulation performace of coil products.

When testing, TH2882A compares the standard waveform stored in the instrument with current measuring waveform. TH2882A gives the PASS or FAIL comparison result according to Area,Differential Area, Corona Discharge, Differential Phase etc. With strong function, precision test method, flexible operation and various interfaces, TH2882A can provide test solution for most coil winding products.





The Decay curve of winding voltage

Theory of Impulse Test of Coil-winding

- The impulse winding tester tests the electrical characteristics of coil winding without damaging the DUT. The prerequisite conditions for quality of a coil can be detected at just a glance. The detection is carried out when the same electric impulse by capacitor discharge is applied to the standard and the DUT. The voltage decay waveform is generated in response to the impulse, related to the Q-factor and inductance of the coil. In this sense, the tester can detect turn & layer short, the differences in the number of turns and the material of the core. If high impulse voltage is applied, the poor insulation will appear as a corona or layer discharge.

Safety Tester/Hipot Tester

Ⅳ. TH2882A Series Impulse Winding Tester

Specifications

Output Impulse Voltage	TH2882A-3	300V-3000V, 50V Steps, ±5% of set value±15V
	TH2882A-5/TH2882AS-5	500V-5000V, 100V Steps, ±5% of set value± 25V
Voltage Control Mode	Normal	Voltage programmable at the measurement terminals when terminals opened
	Constant	Maintaining selected voltage across the winding independent of changes of the winding impedance
Impulse Energy (1K Ω Resistive Load)	TH2882A-3	≤ Max. 90 milli-Joules
	TH2882A-5/TH2882AS-5	≤ Max. 250 milli-Joules
Inductance Range	TH2882A-3	≥ 10 More than 10μH
	TH2882A-5	≥ 20 More than 20μH
	TH2882AS-5	≥ 200 More than 200μH
Display	Screen Mode	320x240 dots LCD
	Waveform Display Dots	240x200 dots
	Display Information	Setting parameter , Standard & measuring waveform, Measurement & comparison result
Waveform Sampling	Sampling rate	40MSPS/25ns, 20MSPS/50ns, 10MSPS/100ns, 5MSPS/200ns,2.5MSPS/400ns, 1.25MSPS/800ns, 625kSPS/1.6μs, 312kSPS/3.2μs,
	Resolution	8 digits
	Sampling length	960 Bytes
Input impedance		10MΩ (Resistive voltage divider)
Measuring speed	5.5 times/sec (Waveform display OFF, PASS/FAIL ON)	
	3.3 times/sec (Waveform display ON, PASS/FAIL ON)	
Average Rate		1 to 99 ,Programmable
Waveform Measurement		Voltage, Time, Frequency
Trigger Mode		Internal/Manual (Foot)/External/ BUS
Comparison Mode		Area size comparison Differential area comparison Corona discharge Differential phase comparison
Area Size Repetition accuracy		±1%
Differential Area Repetition Accuracy		±1%
Detection Output		PASS/FAIL display , Alarm
Alarm Volume		Long high, Long low, Single low, Double low, Off
Memory		60 groups of standard waveform data can be stored in internal non-volatile memory 500 groups in USB flash memory (optional)

General Specifications

Operating Temperature and Humidity		0°C~40°C, ≤90%RH
Power Requirements	Voltage	99V - 121V AC,198V - 242V AC
	Frequency	47.5Hz~63Hz
Power Consumption		≤ 40VA

Standard Accessories

TH2881-001 Foot Switch
TH2883-01 High-Voltage Test Cable(only TH2882A-3/-5)
TH2882AS-01 Test Cable(only TH2882AS-5)

Options

TH10001 GPIB Interface Board
TH26026 USB Disk
TH12021 TH2882 RS232C Control Software

Safety Tester/Hipot Tester

IV. TH9410A/TH9411A Ground Bond Tester

NEW

Features

- Test current: 1.00-45.00A
- Grounding resistance range: 0-600mΩ
- Four-terminal test mode to ensure test accuracy
- The internal power amplifier circuit drives the current output, which is not affected by the power supply and load
- The output holes on the front and rear panels are designed to facilitate the integration of standard chassis
- 480×272 dots, TFT-LCD display
- 999.9 seconds test time, which is greater than common 60S test requirements
- Keyboard lock function to prevent misoperation
- Safety lock function to prevent the instrument from accidentally opening the test state
- Store 20 test files, each with 20 test steps

RS232	USB HOST	USB DEVICE	HANDLER
standard	standard	standard	standard

Dimension (mm): 280(W) x 88(H) x 428(D)
Net weight: 14 kg

Application

- Automated test system
- Household appliances
- Transformer, motor
- Electrical equipment
- Electric heating appliances
- Lighting industry
- New energy vehicles
- Electronic components
- Medical equipment

Specifications

Model			TH9410A			TH9411A	
Output	Current	Scop	1A-45A			1A-32A	
		Range	1.00A-5.00A	5.01A-30A	30.01A- 45A	1.00A-5.00A	5.01A-32A
		Accuracy	±(2% Reading + 3 Digit)				
		Setting Resolution	0.01A				
		Readback Resolution	0.01A				
	Output Voltage		8Vmax		6Vmax	8Vmax	
	Frequency		50 / 60Hz：± 0.1%SET				
Resistance	Test Range		0-600mΩ (Rmax <=6 / Iset (Iset: Setting Current)), The max Resistance could be 600mΩ when the current is less than 10A.				
	Accuracy		± (2% Reading + 2 Digit)				
	Resolution		1 mΩ	0.1 mΩ	0.1 mΩ	1 mΩ	0.1 mΩ
	Setting	Upper Limit	0-600mΩ				
		Lower Limit	0-600mΩ (Less than Upper Limit)				
		Resolution	1mΩ				
	Bias	Range	0 - 100 mΩ				
		Resolution	0.1mΩ				
		Accuracy	± (2% Setting + 2 Digit)				
Test Time		Range	0, 0.5 - 999.9s (0 = Continuous)				
		Resolution	0.1s				
		Accuracy	± (0.1% + 0.05s)				
Input Power		Voltage	110V, 220V				
		Frequency	47.5-63Hz				
		Power Consumption	<=900VA			<= 800VA	

Safety Tester/Hipot Tester

Ⅳ. TH9403 Ground Bond Tester

Features

- Constant current linear amplifier output
- Front panel software calibration, high accuracy
- No RS232, standard PLC interface
- Keyboard lock function
- H9403 and TH9301 are connected to form a two-in-one withstand voltage grounding, Three-in-one withstand voltage insulation grounding tester, convenient and flexible

TH9403

Dimension (mm): 280(W) x 88(H) x 372(D)
Net weight: 10 kg

Brief Introduction

- TH9403 grounding resistance tester is used to measure the internal grounding resistance of electrical equipment. It reflects the (contact) resistance between the exposed conductive parts of the electrical equipment and the total grounding terminal of the electrical equipment. In order to eliminate the influence of contact resistance on the test, the grounding resistance tester adopts a four-segment measurement method, that is, a current is added between the exposed conductive part of the measured electric and the total ground terminal, and then the voltage at both ends is measured to calculate the resistance value. This product meets GB4706.1-2005, GB9706.1-2007 and other domestic and foreign safety standards, and meets the requirements of JJG984-2004 safety measurement verification regulations.

Application

- Automated test system
- Household appliances
- Transformer, motor
- Electrical equipment
- Electric heating appliances
- Lighting industry
- New energy vehicles
- Electronic components
- Medical equipment

Specifications

Model	TH9403
Output Current	3-30A ±（2%+2counts）
Output Voltage	6V
Ground Resistance Range	0-510mΩ 10A; 0-120mΩ 10A-30A ±（2%+2counts）
Testing Time	0.1-999.9s
LCD Monitor	16x2 Line Backlit LCD Display
Calibration Mthod	Software Calibration
Memory Device	Can memorize Current, Resistance, Time and other settings
Size and Weight	275mmx100mm340mm/10kg

Cable/Harness Tester

Ⅳ. TH8601/A Cable/Harness Tester

Features

- 7” TFT LCD truecolor display screen, 16-bit , 800X480 resolution
- Cotex_M3 processor core
- Selectable Chinese and English operation interface
- AC: test frequency of 50Hz-300kHz, accuracy of 0.02%
- DC: test range of 0V-5V and accuracy of 10%
- Maximum 128 pin for sweeping and testing
- Insulation resistance of more than 10G
- Selectable RS232, RS485, GPIB, USB, LAN and Handler interfaces
- USB interface can be used for storage of setup files and test data as well as upgrade of the program

RS232	USB HOST	USB DEVICE	HANDLER	LAN	GPIB	RS485
standard	standard	standard	standard	standard	option	option

TH8601/A

Dimension(mm)：425mm(W)x177mm(H)x355mm(D)

Weight：7.5kg

Application

- Communication and IT

telephone lines, network cables, multi-strand cables, mobile phone screen cables, TYPE-C data cables, USB data cables, laptop screen cables, HDMI cables, VGA cables, IDE hard disk cables, SATA hard disks Connection line etc.

- Automotive Electronics

ECU cable, automotive wiring harness, navigation cable, navigation screen cable, car electronic product cable, audio and video cable

- Electronic Industry

Flat wire, flat wire, connector, power cord, multiplexer, RS232 connection line,GPIB cable, USB extension cable, multi-core socket

- Components

Passive components: capacitors, inductors, resistors, diodes, capacitor polarity, voltage drop

- Safety test

AC withstand voltage, DC withstand voltage, insulation insulation

Specifications

Parameters	Range		Specific Index
Test Pin	TH8601		128 Pin
	TH8601A		64 Pin
Test signal source	Sine signal source: 50Hz-300kHz, Programmable capacitance component test 1Vrms		frequency: 0.02%, 1Vrms, Voltage 10%
	Programmable DC signal source:5Vdc MAX		10%
	Programmable DC current source:1-20mA		10%
	Programmable DC high voltage source:1mA Max	5V-100V	10%±1 digit
		100Vdc-1000Vdc	5%±1 digit
	Programmable AC high voltage source:10mA Max	50V-100Vac	10%±1 digit
		100Vac-750Vac	5%±1 digit
	Channel plate on-off scanning signal source:5Vdc		
Test speed	Transient open and short circuit (128 points) sample standard:10ms		indicates the time of sweeping 64 NET O/S at a time
	Basic value of testspeed:100ms		Indicates the measurement time of single passive component or the total measurement time of one cable
Capacitance measurement	Range: 0.1pF-300pF (sample 10pFmin)		10%±3 digit
	Range: 300pF-1000μF		5%±3 digit
Resistance measurement	10mohm-1Mohm		5%±1 digit
Cond. /Interval cond.	10mohm-50ohm		5%±5 digit
Open and short circuit	1kohm-50kohm		10%±1 digit
Diode Testing	0-10V		10%±1 digit
Insulation resistance	1Mohm-100Mohm		5%±5 digit
	100Mohm-1000Mohm		10%±5 digit
DC leakage current	1μA-1000μA		5%±2 digit
AC leakage current	0.01mA-5mA		10%±5 digit

Standard Accessories

TH26036-R Probe
TH26060 Transfer Fixture
TH8601-32 Test Cable

Cable/Harness Tester

Ⅳ. TH8602 Series Cable/Harness Tester

Features

- Test Pin: 64-256 pin, four-terminal test
- Conductance, Transient open and short circuit, Hipot, IR, Component test.
- (Patent) High and low voltage separation technology, insulation impedance > 100GΩ
- Built-in 10A independent DC current source for pressure dropping test
- 7" TFT LCD TrueColor display screen, 16-bit, 800X480 resolution
- Firmware update through U disk
- Selectable Chinese and English operation interface
- (Patent) 4 high-pressure test modes: a pair of other, dichotomy, automatic test, grounding test.
- Excellent and reliable ARC detection function
- Testing resistance, capacitance, diode and other components using four-terminal testing technology
- The module equipped with independent read-write chip detects whether the chip in the wire is working normally
- Support for connector testing
- Support multi-file testing, providing flexible solutions for complex wires
- Handler supports up to 40 outputs
- Communication command provides two instruction systems: SCPI
- Provide instrument self-inspection function, check instrument fault on line

RS232	USB HOST	USB DEVICE	HANDLER	LAN	GPIB	RS485
standard	standard	standard	standard	standard	option	option

Dimension(mm)：425mm(W)x177mm(H)x355mm(D)

Weight：7.5kg

Application

■ Communication and IT

telephone lines, network cables, multi-strand cables, mobile phone screen cables, TYPE-C data cables, USB data cables, laptop screen cables, HDMI cables, VGA cables, IDE hard disk cables, SATA hard disks Connection line etc.

■ Automotive Electronics

ECU cable, automotive wiring harness, navigation cable, navigation screen cable, car electronic product cable, audio and video cable

■ Electronic Industry

Flat wire, flat wire, connector, power cord, multiplexer, RS232 connection line,GPIB cable, USB extension cable, multi-core socket

■ Components

Passive components: capacitors, inductors, resistors, diodes, capacitor polarity, voltage drop

■ Safety test

AC withstand voltage, DC withstand voltage, insulation insulation

Specifications

Specification			TH8602-1	TH8602B	TH8602C	TH8602-2	TH8602-3	TH8602-4
Test Pin			64			128	192	256
Test Signal Source	AC	Frequency	50Hz-100kHz，Accuracy 0.02%					
		Range	0-1Vrms,Accuracy 10%					
	DC	Voltage	0-5V，Accuracy 10%±1 Digit					
		Current	1-20mA，Accuracy 10%±1 Digit					
	Channel board open-off scan signal source		5Vdc					
Capacitance Measurement			1uF-1000μF，Accuracy：10%±1 Digit					
DCR			10mΩ-1MΩ，Accuracy：2%±1 Digit					
Cond./Interval cond.			10mΩ-50Ω					
Open and Short Circuit			1kΩ-50kΩ，Accuracy：10%±1 Digit					
Diode Testing			0-10V，Accuracy：10%±1 Digit					
DC withstand voltage	Voltage		5V-1500V，Accuracy：10%±1 Digit				5V-1000V，Accuracy：10%±1Digit	
	Current		1uA-5mA，Accuracy：10%±5 Digit				1uA-5mA，Accuracy：10%±5 Digit	
AC withstand voltage	Voltage		50V-1000V，Accuracy：10%±1 Digit				50V-750V，Accuracy：10%±1 Digit	
	Current		0.01mA-5mA，Accuracy：10%±5 Digit				0.01mA-5mA，Accuracy：10%±5 Digit	
Insulation Resistance	Voltage		5V-1500V，Accuracy：10%±1 Digit				5V-1000V，Accuracy：10%±1 Digit	
	Resistance		1MΩ-1GΩ，Accuracy：10%±5 Digit				1MΩ-1GΩ，Accuracy：10%±5 Digit	
TYPE-C Cable Test	EMARK chip content read and write check		------	√	√	------	------	------
	5A independent constant source		------	------	√	------	------	------
	5A20V pressure drop test		------	------	√	------	------	------
Test Speed			Instant breakpoint：4ms					
			Instantaneous circuit：5μs-2ms					

Standard Accessories

TH26060D Probe

TH26060B Transfer Fixture

TH8601-32 Test Cable

Cable/Harness Tester

IV. TH8603-4 Cable/Harness Tester

NEW

RS232	USB HOST	USB DEVICE	HANDLER	LAN	GPIB	RS485
standard	standard	standard	standard	standard	option	option

Dimension(mm)：425mm(W)x177mm(H)x355mm(D)
Weight：7.5kg

Features

- 7-inch TFTLCD true color display, 800X480 resolution, 16-bit color.
- Internal storage space 3M
- Support U disk to store test files
- One-click screen capture function, pictures are automatically stored to U disk
- The program can be upgraded online via U disk
- Chinese and English optional operation interface
- Maximum provides 512 (two-wire)/256 (four-wire) channels, divided into 8 slots A, B, C, D, E, F, G, H
- (Patent) Provides 750VAC and 1000VDC high voltage test functions, adopts high and low voltage separation technology, makes its own insulation resistance up to 100G or more, and has a wider test range
- (Patent) Provide 4 kinds of high voltage test methods: one pair of other, dichotomy, automatic test, ground test 4 methods
- Provide excellent and reliable arc detection function
- Testing resistance, capacitance, diode and other components, using four-terminal test technology, higher test accuracy; using voltage and current separation parallel sampling technology, sampling data faster
- Support Typec related wire test, provide a complete test plan, and add the function of one-key setting of components.
- An independent DC constant current source is set inside, which can provide a maximum of 10A constant current source for measuring the voltage drop of the line
- An independent read-write chip module is built in to check whether the chip in the wire is normal
- Support connector test, provide multi-product test function, and signal output of each product.
- Support multi-file testing, providing more and more flexible testing solutions for complex wires.
- HANDLER interface, supports 16 outputs, all options are relay driven, and the user can freely define the signal and level of each channel
- Communication command provides SCPI command system
- Provide instrument self-check function and maintenance function, and can perform online troubleshooting of instrument faults

Application

- Communication and IT

telephone lines, network cables, multi-strand cables, mobile phone screen cables, TYPE-C data cables, USB data cables, laptop screen cables, HDMI cables, VGA cables, IDE hard disk cables, SATA hard disks Connection line etc.

- Automotive Electronics

ECU cable, automotive wiring harness, navigation cable, navigation screen cable, car electronic product cable, audio and video cable

- Electronic Industry

Flat wire, flat wire, connector, power cord, multiplexer, RS232 connection line,GPIB cable, USB extension cable, multi-core socket

- Components

Passive components: capacitors, inductors, resistors, diodes, capacitor polarity, voltage drop

- Safety test

AC withstand voltage, DC withstand voltage, insulation insulation

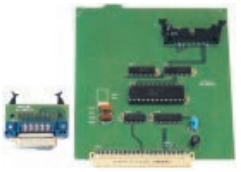
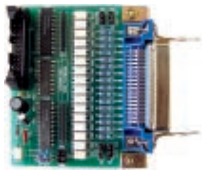
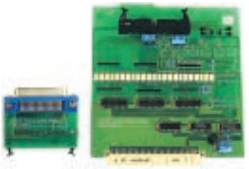
Standard Accessories

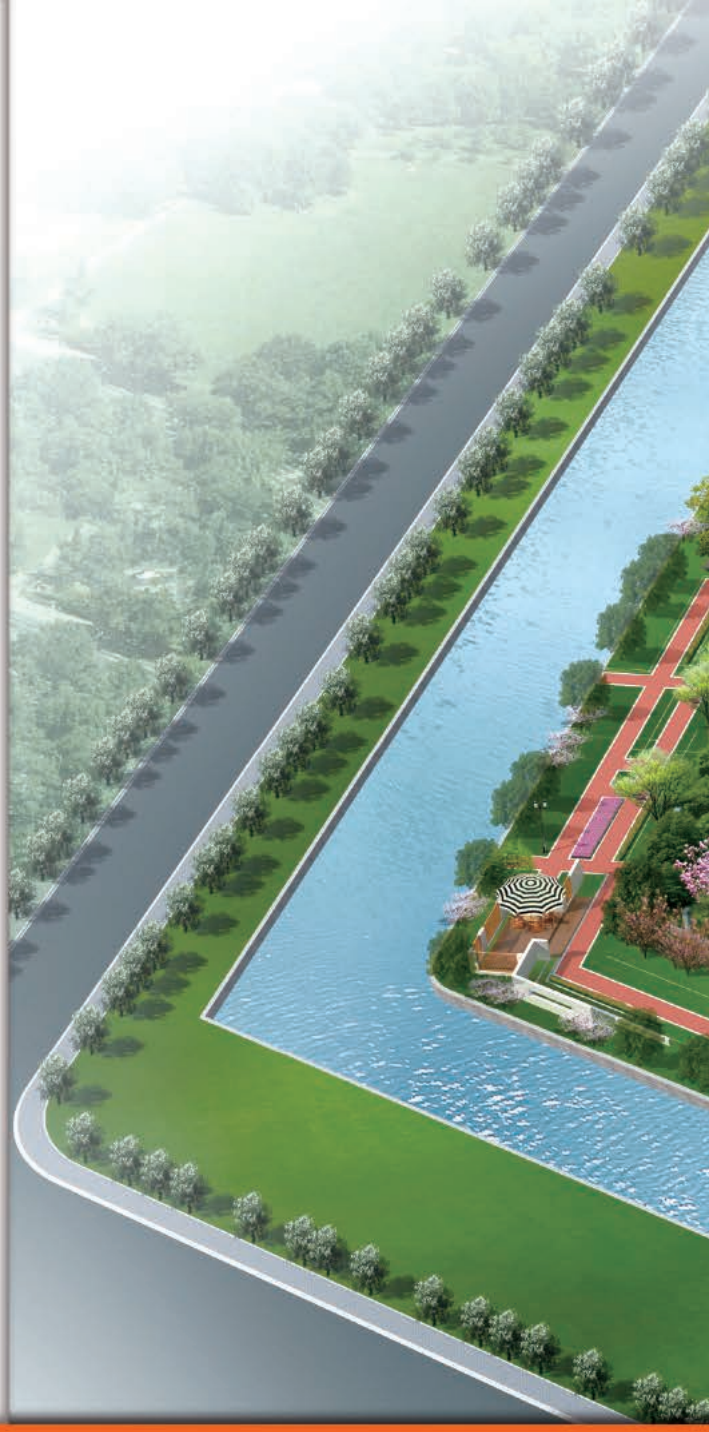
Three-core power cord
TH26060D Probe
TH26060B Transfer Fixture
TH8601-32 Test Cable

Specifications

Specification			TH8603-4
Test Pin			512
Test Signal Source	AC	Frequency	50Hz-100kHz, Accuracy 0.02%
		Range	0-1Vrms, Accuracy 10%
	DC	Voltage	0-5V, Accuracy 10%± 1 Digit
		Current	1-15mA, Accuracy 10%±1 Digit
	Channel board open-off scan signal source		5Vdc
Capacitance Measurement			1nF-1000μF, Accuracy: 10%±1 Digit
DCR			10mΩ-1MΩ, Accuracy: 2%±1 Digit
Cond./Interval cond.			0.1Ω-950Ω
Open and Short Circuit			1kΩ-50kΩ, Accuracy: 10%±1 Digit
Diode Testing			0-10V, Accuracy: 10%±1 Digit
DC withstand voltage	Voltage		5V-1000V, Accuracy 5V-100V, 10%±1 Digit, 100V-1000V, 5%±1 Digit
	Current		1uA-1000uA, Accuracy: 10%±5 Digit
AC withstand voltage	Voltage		50V-750V, Accuracy 50V-100V, 10%±1 Digit, 100V-750V, 5%±1 Digit
	Current		0.01mA-5mA, Accuracy: 10%±5 Digit
Insulation Resistance	Voltage		5V-1000V, Accuracy: 10%±1 Digit
	Resistance		1MΩ-1GΩ, Accuracy: 10%±5 Digit
Test Speed Basic Test Speed: 100ms			Momentary Short Circuit: 20ms(512 Dots) Basic Test Speed: 100ms

 TH26001A	 TH26003	 TH26004S-1	 TH26004A	 TH26004B
 TH26004C	 TH26004D	 TH26004F	 TH26004E-1	 TH26005A
 TH26005B	 TH26006	 TH26007A	 TH26008A	 TH26009A
 TH26009B	 TH26009C	 TH26010	 TH26011AS	 TH26011BS
 TH26011CS	 TH26013	 TH26018	 TH26019	 TH26023
 TH26027	 TH26027AS	 TH26028	 TH26029	 TH26029B
 TH26029C	 TH26033	 TH26034	 TH2883-01	 TH2882AS-01

 TH26036	 TH26038	 TH26047	 TH26048	 TH26048A
 TH26050S	 TH26052	 TH26053	 TH26065	 PT500
 TH1901A	 TH1901B	 TH1801-EXT1A(2.54)	 TH1801-EXT2A	 TH1801-EXT3A(5.0/5.0)
 TH1801-EXT4	 TH1801-EXT8A(3.3/3.3)	 TH1801-EXT9A(4.0/4.0)	 TH1801-EXT11A(5.0/5.0)	 TH1801-001
 TH1802A	 TH1902A	 TH2881-001	 TH10001	 TH10002
 TH10101A	 TH10201	 TH10202	 TH19001 TH19002	 TH5100-IL
 TH90003	 TH90004	 TH1778-01	 TH1778-02	 TH1778-03



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