Component & Device Parameter Test Instruments

Ⅰ. TH2848 Series Impedance Analyzer

Features

- High resolution: 10.1 inches, resolution 1280*800,capacitive touch screen
- High precision: automatic balanced bridge technology, four-end pair test configuration
- High stability and consistency: 15 range configurations
- High power: Signal level: 20VAC /100mAAC Built-in DC bias: ±40VDC /100mADC
- High speed: dual CPU architecture, the fastest test speed up to 400 times / s (2.5ms)
- Convenient operation: Linux operating base, touch operation, embedded help
- Three types of tests: spot test, list scan, and graphic scan
- Four-parameter measurement
- One-click recording, one-click screenshot
- 201-point multi-parameter list scanning function
- Graphic scanning function, 4 tracks at will, support 1/2/4 split screen
- Piezoelectric conductivity circle test, dielectric constant test
- Powerful sorting: LCR mode: 10levels of sorting Graphical analysis mode: support curvecondition sorting
- High compatibility: supports SCPI/MODBUS command set. Compatible with KEYSIGHT E4980A, E4980AL, HP4284A
- Independent 24V cylinder control

RS232	GPIB	LAN	HANDER
standard	standard	standard	standard
USB HOST	USB DEVICE	RS485	External DCI
standard	standard	standard	standard

TH2848 Series

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

Applications

- **Passive components**

Evaluation of impedance parameters and performance analysis of capacitors, inductors, cores, resistors, piezoelectric devices, transformers, chip assemblies, crystals, and network components.

- **Semiconductor component**

Parasitic parameter testing and analysis of LED driver integrated circuits; C-VDC characterization of varactor diodes; parasitic parameter analysis of transistors or integrated circuits

- **Other components**

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

- **Medium Material**

Evaluation of dielectric constants and loss angles of plastics, ceramics and other materials.

- **Magnetic material**

Evaluation of permeability and loss angle of ferrites, amorphous and other magnetic materials

- **Semiconductor materials**

Dielectric constant, electrical conductivity and C-V properties ofsemiconductor materials

- **Liquid crystal materials**

C-V characteristics such as dielectric constant and elasticity constantof liquid crystal units

- **Piezoelectric materials and devices**

Piezo Ceramic Filters, Piezo Ceramic Trap, Piezo Ceramic Discriminator, Piezo Ceramic Transformer, High Power Ultrasonic Generator, Transducer (Oscillator), Surface acoustic wave devices, electroacoustic devices, etc. can be tested such as static capacitance, loss, resonance frequency, anti-resonance frequency, mechanical coupling coefficient and other parameters.

Specifications

Product Model		TH2848-02L	TH2848-02	TH2848-05	TH2848-10
Display	Monitor	10.1-inch (diagonal) capacitive touch screen			
	Scale	16:9			
	Resolution	1280×RGB×800			
Measured Parameters	Methods	Four parameters can be selected arbitrarily			
	AC	Cp,Cs,Lp,Ls,Rp,Rs,|Z|,|Y|,R,X,G,B,θ,D,Q,V_{AC},I_{AC},			
	DC	R_{DC}			
	Piezoelectricity	Ct,Dt,Fs,Fp,Fp-Fs,Zmin,Zmax,F1,F2,F2-F1,Gmax,C0,C1,R1,L,Kp,Keff,Kt,K31,K33,Qm,ε,εr			
	Dielectric	Cp,D,ε,|ε|,εr',εr'',tanδ,Q			

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Ⅰ. TH2848 Series Impedance Analyzer

Test Frequency	Range	4Hz-2MHz	4Hz-2MHz	4Hz-5MHz	4Hz-10MHz
	Accuracy	0.01%			
	Resolution	0.1mHz	4.0000Hz-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-9.99999MHz		
AC Test Signal Mode	Rating Value (ALC OFF)	The set voltage is the Hcur voltage when the test terminal is open-circuit			
		The set current is the current 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			
Test Tevel	Voltage Range	0Vrms - 2Vrms	0mVrms-20Vrms	F≤1MHz	
			0mVrms-15Vrms	1MHz<F≤2MHz	
			0mVrms-2Vrms	2MHz<F≤5MHz	
			0mVrms-1Vrms	5MHz<F≤10MHz	
	Accuracy	±（10%×set value+2mV）（AC≤2Vrms） ±（10%×set value+5mV）（AC > 2Vrms）			
	Resolution	0.1mVrms	0mVrms-0.2Vrms		
		0.2mVrms	0.2Vrms-0.5Vrms		
		0.5mVrms	0.5Vrms-1Vrms		
		1mVrms	1Vrms-10Vrms		
		10mVrms	10Vrms-20Vrms		
	Current Range	0mArms-20mArms	0mArms-100mArms		
	Resolution (100Ω Internal Resistance)	1μArms	0Arms-2mArms		
		2μArms	2mArms-5mArms		
		5μArms	5mArms-10mArms		
		10μArms	10mArms-100mArms		
R_{DC} Test	Voltage Range	100mV-1V			
	Resolution	100μV			
DC Bias	Voltage Range	0V-±10V	0V-±40V		
	Accuracy	1%×set voltage+5mV	AC≤2V		
		2%×set voltage+8mV	AC>2V		
	Resolution	0.1mV	0V - ±5V		
		1mV	±5V - ±40V		
	Current Range	0mA - ±100mA			
	Resolution	1μA	0mA-50mA		
		10μA	50mA-100mA		
Voltage Source	Voltage Range	-10V - 10V			
	Resolution	1mV			
	Current Range	-45mA - +45mA			
	OutputImpedance	100Ω			
Cylinder Control	Switching control				
	Turn on	Turns on within the set time from 0-60s			
	Turn off	Turns off within the set time from 0-60s			
Test Side Configuration		Four-terminal pair			
Test Cable Length		0m,1m			

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Output Impedance		100Ω，±1%@1kHz
Mathematical Operation		Absolute deviation Δ from nominal value, percentage deviation Δ% from nominal value
Equivalence Mode		Series, parallel
Calibration Function		OPEN,SHORT,LOAD
Measured Average		1-255 times
Range Selection		AUTO,HOLD
Trigger Mode		Continuous, single
Trigger Delay		0-60s
Specific Function		One-click screenshot, one-click record, embedded help system
Range Configurat	LCR	100mΩ,1Ω,10Ω,20Ω,50Ω,100Ω,200Ω,500Ω,1kΩ,2kΩ,5kΩ,10kΩ,20kΩ,50kΩ,100kΩ
	R_{DC}	10Ω,20Ω,50Ω,100Ω,200Ω,500Ω,1kΩ,2kΩ,5kΩ,10kΩ,20kΩ,50kΩ,100kΩ
Measuring Time (ms/time) {Frequency ≥ 100kHz}		Fast: 2.5ms Medium: 90ms Slow: 220ms
Maximum Accuracy		0.05%（refer to specifications）
Measurement Display Range		a 1×10^{-18}； E 1×10^{18}
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
G,B,Y		0.00001μs - 99.9999S
V_{DC}		±0V - ±999.9999V
I_{DC}		±0A - ±999.9999A
θ_r		-3.14159 - 3.14159
θ_d		-179.999° - 179.999°
Δ%		±（0.000% - 999.9%）
Multifunction Parameter list Scanning	Points	201 points, average can be set for each point, each point can be sorted individually
	Parameters	Test frequency, AC voltage, AC current, DC BIAS voltage, DC BIAS current, with dielectric constant test function based on the parameter of each point in this list
	Trigger Mode	Sequential SEQ: When triggered once, measurements are taken at all scan points, /EOM/INDEX is output only once
		Step STEP: performs one scan point measurement per trigger, outputs /EOM/INDEX for each point, but list scan comparator result is only output at the last /EOM
	Other Features	1.Multiple copy functions for both scanning and test parameters 2.Time delay can be set for each scanning point
	Dielectric Constant	Dielectric Material Testing Solutions
	Comparator	Each scanning point can measure up to four test parameters, each parameter can be set upper and lower limits, all test parameters are qualified to output PASS signal, otherwise output FAIL signal, no judgment if no upper and lower limits are set.

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Graphic Scanning	Scanning Points		Points 51, 101, 201, 401, 801 are optional
	Results Display		Extreme values for each parameter and the scanned parameter value at the point where the cursor is located with the corresponding test parameter value
	Piezoelectric Testing		Piezoelectric device and piezoelectric material testing solutions, integrated piezoelectric admittance circle function
	Scanning Track		1-4 test parameters can be selected arbitrarily, and the scanning curve can be divided into one screen, two screens and four screens.
	Display Range		Real-time automatic, locked
	Coordinate Scale		Logarithmic, linear
	Scanning Parameters		Frequency, AC Voltage, AC Current, DCV BIAS/DCI BIAS
	Trigger Method	Single	Trigger manually once, one scan from start to finish is completed, the next trigger signal starts a new scan
		Sequential	Infinite loop scanning from start to finish
	Results Saving		Graphics, documentation
comparator	Bin Staging		10Bin,PASS,FAIL
	Bin Deviation Setting		Deviation value, Percent deviation value, Off
	Bin Mode		Tolerance, Continuous
	Bin Count		0-99999
	BIN Judgement		Up to four parameters can be set for the limit range. If the results of the four test parameters fall within the set range, the corresponding BIN number is displayed. If it exceeds the maximum BIN number range set, it displays FAIL. Test parameters without upper and lower limits set will be automatically ignored for BIN judgement.
	PASS/FAIL Indication		If it meets Bin1-10 criteria, the PASS light on the front panel lights up; otherwise, the FAIL light is illuminated.
Data Cache			201 measurement results can be batch-read.
store call	Internal		The instrument has 8GB of built-in storage space, after removing the system occupancy, the user can use about 6GB of space.
	External USB		Test setup files, screenshot graphics, record files
Keyboard Lock			Lockable front panel keys
Interfaces	USB HOST		2 USB HOST ports, can be connected to the mouse, keyboard, U disk can only be used one at a time
	USB DEVICE		Universal Serial Bus socket, small Class B (4 contact positions); compliant with USB TMC-USB 488 and USB2.0, female connector is used to connect an external controller.
	LAN		10/100M Ethernet, 8-pin, two speeds adaptive
	HANDLER		For Bin Staging Signal Output
	GPIB		Standard
	RS232C		Standard 9-pin, Crossed
	RS485		Standard
Power-on warm-up time			60 minutes.
Input Voltage			100-120VAC/198-242VAC selectable，47-63Hz
Power Supply Power			Not less than 130VA
Dimensions（WxHxD）mm			430x177x265
Weights			11kg