Enjoy Its Convenience and Performance

Excellent configuration, such as 0.25% of basic measurement accuracy ,0.0001 of D/Q resolution, 4 meas/s of measurement speed, percentage display and 4-tolerance comparator, 5-terminal test technology and Intelligent L/C/R function, constant output impedance by 100Ω, Data hold and Max/Min/Average recording, is comparable with a bench meter. Gorgeous dual-color cast shell, ultra-low consumption by 25mA typical current, standard Mini-USB interface and free FastAccess communication software on our website make your test convenient and enjoyable.

Surprise for Test ——

TH2822 Series Handheld LCR Meter

Changzhou Tonghui Electronic Co., Ltd. **Tel: 00-86-519-85195566** **EMAIL: SALES@TONGHUI.COM .CN**

For more information on: **Http://www.tonghui.com.cn**

Tonghui®

SHARE THE FUTURE TECHNOLOGY

TH2822 Series Handheld LCR Meters

Perfect Combination of Outstanding Performance and Convenience

■ 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 0.0001. Accurate and convenient measurements of passive-components can be achieved in different occasions for a long time.

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.

Features

- Basic measurement accuracy: 0.25%
- Gorgeous dual-color cast shell
- Maximum test signal frequency: 100kHz（TH2822C）
- 40,000 counts for primary parameter, D/Q resolution 0.0001
- Typical ultra-low consumption : 25mA
  Battery capacity: TH2822/TH2822A, continuously used for 16hours
  TH2822C rechargeable batteries are optional
- Innovatively compatible terminal configuration : 5-terminal test slot and 3-terminal banana jack
- Intelligent Auto LCR function
- Measurement speed up to 4 meas/sec, fast automatic range switch design
- Constant output impedance: 100 Ohm
- Percentage display and 4-tolerance comparator: 1%, 5%, 10%, 20% (20% not available for TH2822)
- Automatic OPEN/SHORT correction detection
- Data Hold, Max/Min/ Average recording
- Utility function configuration and current setup recovery after power-off
- Standard Mini-USB interface, SCPI compatible
- Firmware update through Mini-USB interface
- Free FastAccess communication software on our website

TH2822 Series Handheld LCR Meters

4-tolerance mode:1%, 5%, 10%, 20%

Selectable Auto Power Off for energy-saving when battery power supply

Indicator of insufficient power supply; with charging function available, it can indicate the charging state when connecting to an external power supply.

Auto LCR function for non-expert's test; Easy to classify and identify the mixed SMD elements.

4-terminal testing slot for high accuracy measure and several types of 4-terminal testing tweezers for different testing occasions

2-terminal testing jack; by standard banana plugs-crocodile clips, simple measurement can be made.

Secondary parameter display and D/Q resolution by 0.0001

Primary parameter display, readings up to 40000

Auto remote data sending function and returning for local control; Turn on the white backlight under the poor light condition; with battery supplying power, backlight automatically reduces its luminance and turn off automatically after delay to save energy.

Utility menu and functions of configuring keypad tone, auto power-off and storage for parameters

Auto open/short clearing function makes operation simple.

Fast/Slow measuring speed selectable

Shielding protection terminal can provide better measurement for high-frequency mini-signal (such as small capacitance and small inductance).

Instrument Accessories and Options

Mini-USB Communication Cable

TH26028
AC Adapter

TH26004F
Banana plugs - crocodile clip test leads

TH26010B
Short plate

TH26029C
SMD 4-terminal Kelvin test tweezers

TH26027A
4-terminal Kelvin clip test leads

TH26009C
SMD4-terminal Kelvin test tweezers

TH2822 Series Handheld LCR Meters

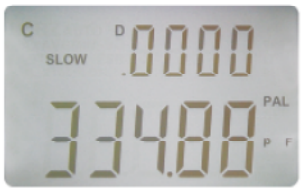
Small size for easy carrying: Measure LCR components anytime and anywhere

With its convenience of handheld measurement, TH2822 series can perform the measurement of basic LCR parameters easier and faster and simultaneously meet the requirements of fast and convenient measurements in many occasions such as: field maintenance, fixed or non-fixed quality check on production line, warehouse in-and-out checkout of electronic components, real-time sampling or batch inspection and especially for outdoor measurements. Its excellent price versus performance ratio against bench meters makes it possible for most related technicians to equip with.

Excellent Performance: Comparable test functions and performance with a bench meter

TH2822 series is the achievement after decades of technical accumulation in impedance test field. The measurement frequency is up to 100kHz(TH2822C); the basic measurement accuracy is 0.25%; 40,000 counts for primary display is the highest in the identical handheld LCR meter; D/Q counts

resolution for secondary parameter is 0.0001, which can be applied to the accurate dissipation factor measurement and makes it possible for the handheld LCR meter to measure low dissipation and ESR capacitors such as metalized, mica, NPO(COG) ceramic capacitors. TH2822 supports up to 4 meas/sec of fast test speed comparable with the bench meter.



Constant output impedance: No worry for inconformity of component test results

For traditional handheld LCR meters and even some bench LCR meters, output impedance of signal source changes with different range. When measuring some level sensitive components, different LCR meters may give different results, for instance, impedance values of inductive components vary with test current; capacitance of ceramic capacitor with high Q factor changes with test voltage. So the change of output impedance will cause the inconformity of testing results. Most bench LCR Meter adopt 100Ohm signal source internal resistance, TH2822 series first achieves the use of 100 Ohm constant source internal resistance on handheld LCR meters. Whereupon, the test results of common or level sensitive components are reliable and comparable.

Flexible Terminal Configuration: low-cost and high-accuracy terminal configurations available

TH2822 series applies 5-terminal and 3-terminal configurations. Low-cost banana plugs and crocodile clips can be used for simple 3-terminal test and 5-terminal slots, 5-terminal testing cables and SMD 5-terminal tweezers can be used for high-accuracy measurement.

TH2822 Series Handheld LCR Meters

Ultra-low Dissipation: Longest battery life in this industry

You may be often annoyed by changing batteries; TH2822 series' low dissipation capability provides you double battery life over other handheld LCR meters. With its advanced low consumption design, TH2822 series has the lowest dissipation in similar meters under 22mA working current (1 kHz, 100 Ohm load). The low consumption design makes the work-hour of the battery last for 16 hours. In the case of power-off or external power, the standby current of the battery is unbelievable 2μA(Limited to non-rechargeable model).

Multiple-Power Configuration: Flexible power-supply for your easy use

TH2822 series provides you with external dc power port. When TH2822 series is used in a regular occasion where an ac power socket is available, the standard +12V power adapter can be used. And when the power adapter is at work, the internal alkaline battery enters a standby state with a power consumption of 2μA (Limited to non-rechargeable model).

Auto LCR Function: Easy use for non-expert

There are various test parameters and equivalent circuit modes in TH2822 series, which is extraordinarily suitable for professional measurement. Nevertheless, most non-experts can be difficult to identify inductor, resistor and capacitor in that most RC-components are almost identical in appearance. By using Auto LCR Function, users can identify tested components easily and obtain measurement results immediately. All you need do is to press the key of LCR AUTO, then according to the properties of tested components, the meter will automatically select appropriate test parameter combination and equivalent modes. For operators, it is quite valuable to inspect and classify various mixed components before feeding the components or warehousing.

USB Communication: Fast mobile data acquisition

Mini-USB interface is the standard interface of TH2822 series. Like cell phones and other digital products, TH2822 series can rapidly be connected to desktop or portable computer through USB interface and set up acquisition platform of testing data anytime and anywhere. Automatic sending function of testing data and even interactive control by SCPI are available on TH2822 series. On our website (www.tonghui.com.cn), you can download FastAccess PC communication software freely. When connected to PC, TH2822 series is simulated as a serial equipment. To realize device control, data acquisition and statistic analysis, all you need to do is to know how to use a PC serial port.

Specifications

Function		
Measurement Parameters		Primary Parameters: L / C / R / Z Secondary Parameters: D / Q / θ / ESR
Equivalent Circuits		Serial, Parallel
Auto LCR Function		Manual, Auto
Ranging Mode		Auto
Test Terminals		3-terminal, 5-terminal
Measurement Speed		4 meas/sec(Fast)，1.5 meas/sec(Slow)
Correction		Short, Open
Tolerance Mode	TH2822	1%，5%，10%
	TH2822A/TH2822C	1%，5%，10%，20%
Input protection fuse		0.1A / 250V
Interface		Mini-USB(virtual serial port)
Test Signal		
Signal Frequency	TH2822	100Hz, 120Hz, 1kHz （120Hz actual frequency 120.048Hz, be the same as below）
	TH2822A	100Hz, 120Hz, 1kHz, 10kHz
	TH2822C	100Hz. 120Hz. 1kHz. 10kHz. 100kHz
Test Signal Level		0.6Vrms
Output Impedance		100Ω
Display		
Display		LCD primary-secondary dual display
Backlight（not for TH2822）		Battery supply：when backlight is on， luminance is reduced by half 15s later and automatically turned off 30s later. Powered by adapter ： backlight on until manually turned off
Readings		Max. counts of Primary Parameter: 40,000； D / Q / θ Min. resolution of secondary parameter: 0.0001
Basic Accuracy		0.25% （as shown in the table below）
Power Supply		
Battery Model	TH2822/TH2822A	IEC 6LR61， 9V Alkaline battery
	TH2822C	LH-200H7C，8.4V Ni-MH 200mAH rechargeable battery
AC Adapter		Input：220V(1±10%)，50Hz(1±5%)；Output：12V-15V DC
Operating Current		Max. :28 mA, Typical: 25mA(1kHz,100Ω load)
Standby（Power off）Current		Max: 2 μA (Limited to non-rechargeable model)
Battery Life	TH2822/TH2822A	16 hours (Typical) based on backlight off and new alkaline
	TH2822C	6 hours (Typical) based on backlight off and new fully charged Ni-MH battery
Charge Time and Current（TH2822C）		Continuous charging time:Max. 80 min. Charging current: Max. 42mA
Auto Power off（valid for battery powered）		5min, 15min, 30min, 60min, OFF available； factory default :5min
Low Voltage indicator		When battery voltage drops below 6.8V, Low Voltage Indicator turns on
General		
Operation Condition	Temperature	0°C -- 40°C
	Relative Humidity	≤ 90% R.H.
Weight		350g
Dimensions (HxWxD)		190mm x 90mm x 41mm
Safety and EMC compliance		IEC 61010-1:2001; IEC 61326-2-1:2005

Accuracy

Based after 10 minutes of warm up time and operation at 23 °C ± 5 °C, <75% R.H
Temperature coefficient: 0.1× specified accuracy/°C (0°C --18°C or 28°C -- 40°C)
Accuracy Indication: ±（%reading+ number of least significant digits）;
Confirmation based after correction of Short/ Open
Accuracy is expressed by test parameter plus subscript e and measurement value test parameter plus subscript x; Subscript 's' is the serial equivalent mode and subscript 'p' is parallel equivalent mode.
Values outside of range in below table are not specified accuracy.

TH2822 Series Handheld LCR Meters

	Range		Display Range	Accuracy Ze	Accuracy Rse	Accuracy Rpe	Accuracy θe
Impedance Resistance	100Hz -- 10kHz Min. Resolution 0.1mΩ	10MΩ	4.000MΩ--10.000MΩ	3.00%+5digits	$X_\chi \times \Phi_e$ Rse is the absolute error $\Phi_e=\theta_e \times \frac{\pi}{180}$ $X_\chi=2\pi f L_\chi$ 或 $X_\chi=1/2\pi f C_\chi$ Note: ESR and Rs is the different displays of the identical parameter both presenting Equivalent Resistance of Serial Connection"	$\pm\frac{R_{PX} \times \Phi_e}{D_\chi \mu \Phi_e}$ Rpe is the absolute error $\Phi_e=\theta_e \times \frac{\pi}{180}$	±1.75°
		4MΩ	400.0kΩ--3.9999 MΩ	1.25%+3digits			±0.75°
		400kΩ	40.00kΩ--399.99 kΩ	0.35%+2digits			±0.25°
		40kΩ	4.000kΩ--39.999 kΩ	0.25%+2digits			±0.15°
		4kΩ	400.0Ω--3.9999 kΩ	0.25%+2digits			±0.15°
		400Ω	40.00Ω--399.99Ω	0.25%+2digits			±0.15°
		40Ω	4.000Ω--39.999Ω	0.35%+2digits			±0.25°
		4Ω	0.4000Ω--3.9999Ω	1.00%+3digits			±0.60°
	100kHz Min. Resolution 0.1mΩ	10MΩ	4.000MΩ--10.000MΩ	8.00%+20digits			±4.60°
		4MΩ	400.0kΩ--3.9999 MΩ	3.00%+10digits			±1.75°
		400kΩ	40.00kΩ--399.99 kΩ	1.20%+5digits			±0.69°
		40kΩ	4.000kΩ--39.999 kΩ	0.80%+2digits			±0.46°
		4kΩ	400.0Ω--3.9999 kΩ	0.50%+2digits			±0.30°
		400Ω	40.00Ω--399.99Ω	0.50%+2digits			±0.30°
		40Ω	4.000Ω--39.999Ω	0.80%+5digits			±0.46°
		4Ω	0.4000Ω--3.9999Ω	2.50%+10digits			±1.43°

	Range		Display Range	Le	De (D<0.5)	Recommended Equivalent Circuit
Inductance	100Hz/120Hz Min. Resolution 1μH	1000H	400.0H--1000.0H	0.80%+3digits	0.0080	parallel
		400H	40.00H--399.99H	0.35%+2digits	0.0035	parallel
		40H	4.000H--39.999H	0.35%+2digits	0.0035	parallel
		4H	400.0mH--3.9999H	0.25%+2digits	0.0025	-----
		400mH	40.00mH--399.99mH	0.30%+2digits	0.0030	serial
		40mH	4.000mH--39.999mH	0.45%+2digits	0.0045	serial
		4mH	0uH--3.999mH	1.40%+3digits	------	serial
	1kHz Min. Resolution	100H	40.00H--100.00H	0.80%+3digits	0.0080	parallel
		40H	4.000H--39.999H	0.35%+2digits	0.0035	parallel
		4H	400.0mH--3.9999H	0.35%+2digits	0.0035	parallel
		400mH	40.00mH--399.99mH	0.25%+2digits	0.0025	------
		40mH	4.000mH--39.999mH	0.30%+2digits	0.0030	serial
		4mH	400.0uH--3.9999mH	0.45%+2digits	0.0045	serial
		400μH	0.0uH--399.9μH	1.40%+3digits	------	serial
	10kHz Min. Resolution	1000mH	400.0mH--999.99mH	0.80%+3digits	0.0080	parallel
		400mH	40.00mH--399.99mH	0.35%+2digits	0.0035	parallel
		40mH	4.000mH--39.999mH	0.25%+2digits	0.0025	------
		4mH	400.0uH--3.9999mH	0.30%+2digits	0.0030	serial
		400μH	40.00uH--399.99μH	0.45%+2digits	0.0045	serial
		40μH	0.00uH--39.99μH	1.40%+3digits	------	serial
	100kHz Min. Resolution	100mH	40.00mH--399.99mH	1.20%+5digits	0.0120	parallel
		40mH	4.000mH--39.999mH	0.80%+2digits	0.0080	parallel
		4mH	400.0uH--3.9999mH	0.50%+2digits	0.0050	-----
		400μH	40.00uH--399.99μH	0.50%+2digits	0.0050	serial
		40μH	4.000uH--39.999μH	0.80%+5digits	0.0080	serial
		4μH	0.000uH--3.999μH	2.50%+10digits	------	serial

Quality factor is Q; Accuracy is Qe; For $Q_x \times D_e \leq 1$, $Q_e=\frac{Q_x^{\,2} \times D_e}{1 \mp Q_x \times D_e}$

	Range		Display Range	Ce	De (D<0.5)	Recommended Equivalent Circuit
Capacitance	100Hz/120Hz Min. Resolution 1pF	20mF	4.000mF--20.000mF	5.00%+5digits	±0.0500	serial
		4mF	400.0μF--3.9999mF	1.00%+3digits	±0.0100	serial
		400μF	40.00μF--399.99μF	0.35%+2digits	±0.0035	serial
		40μF	4.000μF--39.999μF	0.25%+2digits	±0.0025	serial
		4μF	400.0nF--3.9999μF	0.25%+2digits	±0.0025	------
		400nF	40.00nF--399.99nF	0.25%+2digits	±0.0025	parallel
		40nF	4.000nF--39.999nF	0.35%+2digits	±0.0035	parallel
		4nF	0pF--3.999nF	1.25%+3digits	------	parallel
	1kHz Min. Resolution 0.1pF	1000μF	400.0μF--999.99μF	1.80%+3digits	±0.0180	serial
		400μF	40.00μF--399.99μF	1.00%+3digits	±0.0100	serial
		40μF	4.000μF--39.999μF	0.35%+2digits	±0.0035	serial
		4μF	400.0nF--3.9999μF	0.25%+2digits	±0.0025	serial
		400nF	40.00nF--399.99nF	0.25%+2digits	±0.0025	------
		40nF	4.000nF--39.999nF	0.25%+2digits	±0.0025	parallel
		4nF	400.0pF--3.9999nF	0.35%+2digits	±0.0035	parallel
		400pF	0.0pF--39.99nF	1.25%+3digits	------	parallel
	10kHz Min. Resolution 0.01pF	100μF	40.00μF--100.00μF	2.00%+5digits	±0.0200	serial
		40μF	4.000μF--39.999μF	1.80%+3digits	±0.0180	serial
		4μF	400.0nF--3.9999μF	0.35%+2digits	±0.0035	serial
		400nF	40.00nF--399.99nF	0.25%+2digits	±0.0025	serial
		40nF	4.000nF--39.999nF	0.25%+2digits	±0.0025	------
		4nF	400.0pF--3.9999nF	0.25%+2digits	±0.0025	parallel
		400pF	40.00pF--399.99pF	0.35%+2digits	±0.0035	parallel
		40pF	0.00pF--39.99pF	1.25%+5digits	------	parallel
	100kHz Min. Resolution 0.001pF	10μF	4.000μF--10.000μF	5.00%+20digits	±0.0500	serial
		4μF	400.0nF--3.9999μF	2.50%+10digits	±0.0250	serial
		400nF	40.00nF--399.99nF	0.80%+5digits	±0.0080	serial
		40nF	4.000nF--39.999nF	0.50%+2digits	±0.0050	serial
		4nF	400.0pF--3.9999nF	0.50%+2digits	±0.0050	------
		400pF	40.00pF--399.99pF	0.80%+2digits	±0.0080	parallel
		40pF	4.000pF--39.999pF	1.20%+5digits	±0.0120	parallel
		4pF	0.000pF--4.999pF	3.00%+10digits	------	parallel

Handheld LCR Meters		TH2822	TH2822A	TH2822C
Instrument Accessories				
Instruction Manual		√	√	√
IEC 6LR61	9V Alkaline battery (builted-in)	√	√	×
LH-200H7C	8.4V Ni-MH 200mAH Rechargeable Battery (builted-in)	×	×	√
TH26028	AC Adapter	√	√	√
TH26004F	Banana plugs - crocodile clip test leads	√	√	√
TH26010B	Short plate	√	√	√
TH26027A	4-terminal Kelvin clip test leads	Optional	√	√
TH26029C	SMD 4-terminal Kelvin test tweezers	Optional	Optional	√
TH26009C	SMD4-terminal Kelvin test tweezers	Optional	Optional	Optional
Mini-USB Communication Cable		√	√	√
FastAccess	PC Communication Control Interface	Download on www.tonghui.com.cn		

CONTACT US

CHANGZHOU TONGHUI ELECTRONIC CO.,LTD.

Addr : No.3,TianShan Road,XinBei District,Changzhou,Jiangsu,China PC : 213022

Tel : 00-86-519-85195566 Fax : 00-86-519-85109972 85195190

More products information please visit: **http://www.tonghui.com.cn** Email: sales@tonghui.com.cn