TELEDYNE TEST TOOLS
Everywhereyoulook™

T3LCR1002, T3LCR1100, T3LCR1300 Precision LCR Meters Data Sheet

Measure With Confidence

10 Hz – 300 KHz



Tools for Improved Debugging

• 3.5" Large TFT LCD Display.	✓ Clear visibility of your power settings.
• Continuous adjustable test frequency range.	✓ Flexibility in choosing measuring frequency for various components.
• Basic Accuracy of 0.05 %.	✓ Measurements will be faster as well as accurate.
• Provides PASS/FAIL test function.	✓ Helps in faster validation process.
• Standard Interface: RS-232C, Handler, USB and USB Storage.	✓ Support for the maximum control flexibility.
• 3 years warranty as standard.	✓ Reliable product gives peace of mind.

Key Specifications

Model	Test Frequency	Measurement Resolution	Measuring Speed
T3LCR1002	10 Hz – 2 KHz	6 digits	Fast: 25 ms Med: 100 ms Slow: 33 ms
T3LCR1100	10 Hz – 100 KHz	6 digits	
T3LCR1300	10 Hz – 300 KHz	6 digits	

PRODUCT OVERVIEW

Teledyne Test Tools introduces the brand new series of high precision LCR meters. The T3LCR series offers three models with maximum test frequency ranging from 2 kHz to 300 kHz and basic accuracy of 0.05 %. The T3LCR meters are well suited for the needs of R&D, production environment, as well as performing a full range of automated measurements.

The T3LCR series provides a rich set of functionalities while maintaining a compact size. The entire series adopts 3.5-inch color LCD and features clearly displayed parameters. In addition to simultaneously displaying setting criteria and measurement results, the series also includes two additional monitoring parameters. The four parameters (primary + secondary and two monitoring) are simultaneously shown on the screen that enhances the measurement efficiency. The enlarged display mode not only emphasizes the measurement results, but also provides PASS/FAIL result to facilitate a rapid and convenient validation process.

The T3LCR series comes equipped with full frequency range zero and spot frequency zero selections. Users can change frequency within the T3LCR frequency range to conduct measurements without having to power off the instrument or changing test fixture. This feature is particularly useful for repeated zeroing operation and saves a tremendous amount of time for the user. Additionally, the continuous frequency range function allows the user to input precise frequency values to test various components.

The T3LCR series also features a range of ancillary measurements to meet the measurement requirements of different materials. For instance, the T3LCR series provides the automatic level control (ALC) function to satisfy the test voltage requirement of MLCC devices. For inductive component measurements, the T3LCR series provides the adjustable test current function and the D.C. resistance measurement function. With respect to the D.C. bias voltage test for capacitive components requirements, the T3LCR series allows users to conduct verification measurements on materials by using its internal ± 2.5 V adjustable voltage. Furthermore, in order to observe the trend of the DUT characteristics a list of up to 10 functional steps allows users to set testing parameters (either by frequency, voltage or current) for each step based on user's requirements.

The T3LCR meter's List Measurement feature can be used to perform automatic sweep measurements. The sweep measurements can be performed by listing up to 10 swept frequency or amplitude (voltage/ Current) points. Up to 10000 measured readings can be saved to an internal buffer. These readings can then be exported to an external USB drive in a .csv file format.

For the external control, the T3LCR series comes equipped with Handler interface, RS-232C and USB interface. Handler outputs 10 BIN (9 BIN, AUX: 1 BIN) sorting results that are suitable for external control. For example, controlling a component sorting operation based on the measurement results obtained by the LCR meter. RS-232 and USB is suitable for remote control operation as well as to retrieve measurement results. Additionally, the free PC software gives users an instant tool to store measurement results.

The brand new T3LCR series LCR meters are compact and is equipped with diverse measurement functionalities making it the best choice in meeting the requirements of R&D, component assessment for engineering departments, sorting and quality control in production environments.

PANEL INTRODUCTION

3.5" Large TFT LCD Displays
both Setting Parameters
and Measurement Result

Softkeys Provide More Intutive
And Fast Operation

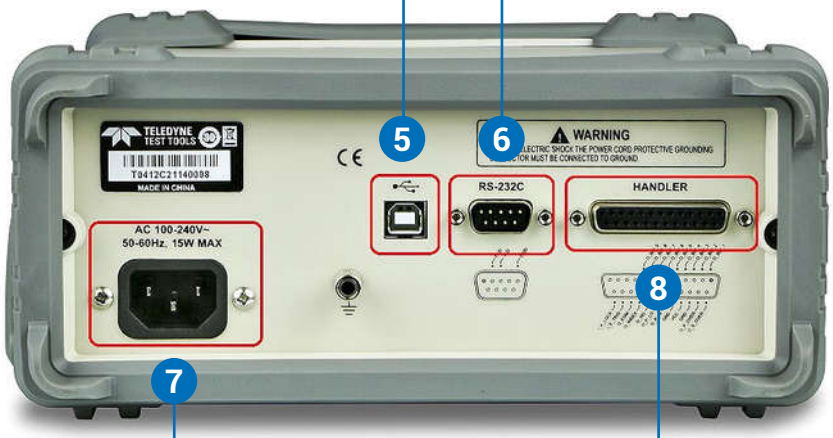


USB host for Data Storage
and Display Screen Retrival

Four Wire Measurement Terminal

USB Interface (Type B)

RS-232C Port



Universal Power Input AC 100–240 V

Handler Port

Features

- 3.5" Color LCD Display
- Continuous test frequency
- Basic Accuracy of 0.05 %
- Measuring speed: 25 ms (max)
- Spot Frequency or Full Frequency range OPEN/SHORT Correction
- 16 Major/Secondary Parameter Measurement Combinations and 2 additional Monitoring Parameters (maximum four different parameters can be shown simultanously)
- DCR Measurement and Internal D.C. Bias Voltage (± 2.5 V)
- PASS/FAIL Result
- Auto Level Control (ALC) Function
- BIN Function Provides 10 BIN (9 BIN, AUX: 1 BIN)
- List Measurement feature to perform automated sweep measurements by listing up to 10 frequency or amplitude points.
- Standard Interface: RS-232C, USB, Handler and USB Storage
- Compact Size, Ideal for Automatic Equipment (2U, 1/2 Rack)

A. Continuous Frequency and Convenient Zero Function



Continuous and Adjustable Frequency
Freely Input Frequency Within Provided Frequency Range



Selectable Fixture Zeroing Methods
Full Frequency Range Zero or Spot Frequency Zero

The T3LCR series, within the provided frequency range, features continuous and adjustable frequency capability which allows users to conduct measurement and analysis on components with specific frequency requirements. For OPEN/SHORT fixture compensation function, the T3LCR series is equipped with full frequency range zero and spot frequency zero selections. After executing full frequency range, users can change test frequency to execute component measurements without having to power off the instrument or changing the test fixture. This allows for a faster measurement time during repeated zeroing operations.

B. Various Information Display Modes



MEAS Display
Parameter Setting and Four Measurement Parameters



ENLARGE Display
Enlarge Measurement Results and Include PASS/FAIL Result

The measurement result display of the T3LCR series not only displays major and secondary measurement parameters but also includes two monitoring parameters. Therefore, four DUT related parameters can be simultaneously shown on the display screen to save time if repeated measurements are required. The T3LCR series features various display modes to meet user requirements. For instance, MEAS display shows setting parameters and measurement results at the same time; ENLARGE display focuses on measurement results and PASS/FAIL result, which assists in swiftly obtaining the validity of measurement results.

C. Various Additional Measurement Functions



Automatic Level Control
Ideal for Measuring Components With Voltage Requirements



Internal Bias (± 2.5 V Adjustable)
Ideal for Capacitive Components' Characteristic Tests



D.C. Resistance Measurement
Ideal for inductive components' D.C. Characteristics Verification

To satisfy a wide range of measurement application requirements for different components and materials, the T3LCR series offers many additional measurement functions.

Automatic Level Control (ALC) is mainly for components which requires a constant or rated test voltage such as multilayer ceramic capacitor (MLCC).

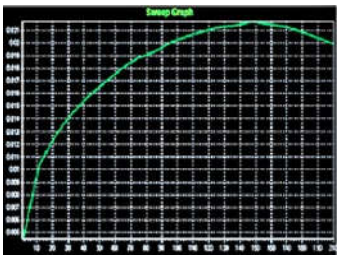
An internal D.C. bias voltage (± 2.5 V) allows simulating A.C and D.C simultaneously to measure the capacitance variation. For measurements involving inductors, the D.C. resistance measurement function allows the user to validate D.C. Resistance characteristics.

Additionally, the Auto LCZ function helps in selection of proper measurement parameters automatically. The Auto LCZ fuction will automatically determine the characteristics of the DUT and dispay the optimum measurement parameters.

D. List Measurement Function



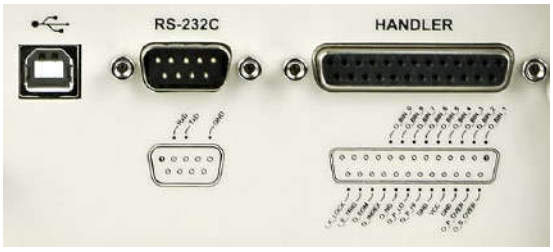
Listed Tests
Variation Criteria Based Upon Frequency or Voltage/Current



On Software – Characteristic Curve
Provides More Accurate Characteristic Variation Trend

The List Measurement feature offered by T3LCR series assists in performing automated measurements. Up to 10 measurement parameters (such as Cs-Rs) can be selected as per the DUT requirements. This function is useful in characterizing and to visualize variation trends of the DUT. The measurement results can be recorded in the internal memory and can later be exported to PC. Free PC software is available to assist users in performing various analytical tests (maximum of 1000 points listed tests can be performed).

E. Standard Interface



Standard Interface

For interface connectivity, the T3LCR series comes equipped with Handler interface, RS-232C and USB interface. Handler outputs 10 BIN (9 BIN, AUX: 1 BIN) sorting results that are suitable for external control. For example, controlling a component sorting operation based on the measurement results obtained by the LCR meter. RS-232 and USB is suitable for remote control operation as well as to retrieve measurement results.

SPECIFICATIONS

Test Frequency

T3LCR1300	10 Hz ~ 300 kHz (± 0.01 %)	(4 digits resolution)
T3LCR1100	10 Hz ~ 100 kHz (± 0.01 %)	(4 digits resolution)
T3LCR1002	10 Hz ~ 2 kHz (± 0.01 %)	(4 digits resolution)

Output Impedance

30 Ω / 50 Ω / 100 Ω selectable

Basic Accuracy

Slow/Med	0.05 %
Fast	0.1 %

Test Speed

Fast	25 ms
Med	100 ms
Slow	333 ms

Test Signal Levels

AC	**Voltage**	10.00 mV – 2.00 V (± 10 %)	CV: 10.00 mV – 2.00 V (± 6 %)
	Current	100.0 µA – 20.00 mA (± 10 %)	CC: 100.0 µA – 20.00 mA (± 6 %) (@ 2 VMax)
DCR		± 1 V (2 Vpp), Square wave, 3 Hz up 0.033 A (Max)	

D.C. Bias

Internal	± 2.5 V (0.5 % + 0.005 V)

Display Range

R, X, |Z|	0.00001 Ω ~ 99.9999 MΩ
G, B, |Y|	0.01 nS ~ 999.999 S
L	0.00001 H ~ 9999.99 H
C	0.00001 pF ~ 9999.99 mF
D	0.00001 ~ 9.99999
Q	0.00001 ~ 9.99999
θd	-179.999° ~ 179.999°
θr	-3.14159 ~ 3.14159
DCR	0.00001 Ω ~ 99.9999 MΩ
Δ %	-99999 % ~ 99999 %

Test Mode

Combinations	Cs-Rs, Cs-D, Cp-Rp, Cp-D, Lp-Rp, Lp-Q, Ls-Rs, Ls-Q, Rs-Q, Rp-Q, R-X, DCR, Z-θr, Z-θd, Z-D, Z-Q, Auto LCZ
Monitor Parameter (2 Selectable)	Z, D, Q, Vac, Iac, Δ, Δ %, θr, θd, R, X, G, B, Y

Listed Mode

10 steps

BIN Function

Comparator (9 BIN, AUX: 1 BIN)

Memory

INT – Panel Setting	10 file name
INT – Measured Data	10000 Data (.csv)
USB Storage	10 file name for setting, 9999 file name for data, 999 Log file for LCD screen

SPECIFICATIONS

Other Function

Auto Level Control (ALC)	On/Off
Average	1 ~ 256 times
Trigger	INT / MAN / EXT / BUS
Delay	0 ms ~ 60 s
Judgment	PASS / FAIL
Screen Capture	Saving in to USB (Bmp form)

Display

3.5" LCD, RGB color (320 x 240)

Interface

RS-232 (SCPI), Handler, USB

Power Source

AC 100 V ~ 240 V, 50 ~ 60 Hz, Max. 30 W

Dimension & Weight

265 (W) x 107 (H) x 312 (D) mm; Approx. 3 kg

ORDERING INFORMATION

Ordering information

Model		
T3LCR1002	LCR Meter 10 Hz – 2 KHz High Precision	
T3LCR1100	LCR Meter 10 Hz – 100 KHz High Precision	
T3LCR1300	LCR Meter 10 Hz – 300 KHz High Precision	
Standard Accessories		**Quantity**
	Test Lead	1
	Power Cord	1
	D-SUB	1

ABOUT TELEDYNE TEST TOOLS

TELEDYNE TEST TOOLS
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Company Profile

Teledyne LeCroy is a leading provider of oscilloscopes, protocol analyzers and related test and measurement solutions that enable companies across a wide range of industries to design and test electronic devices of all types. Since our founding in 1964, we have focused on creating products that improve productivity by helping engineers resolve design issues faster and more effectively. Oscilloscopes are tools used by designers and engineers to measure and analyze complex electronic signals in order to develop high-performance systems and to validate electronic designs in order to improve time to market.

The Teledyne Test Tools brand extends the Teledyne LeCroy product portfolio with a comprehensive range of test equipment solutions. This new range of products delivers a broad range of quality test solutions that enable engineers to rapidly validate product and design and reduce time-to-market. Designers, engineers and educators rely on Teledyne Test Tools solutions to meet their most challenging needs for testing, education and electronics validation.

Location and Facilities

Headquartered in Chestnut Ridge, New York, Teledyne Test Tools and Teledyne LeCroy has sales, service and development subsidiaries in the US and throughout Europe and Asia. Teledyne Test Tools and Teledyne LeCroy products are employed across a wide variety of industries, including semiconductor, computer, consumer electronics, education, military/aerospace, automotive/industrial, and telecommunications.

Distributed by:

Teledyne LeCroy (US Headquarters)

700 Chestnut Ridge Road
Chestnut Ridge, NY. USA 10977-6499

Phone:	800-553-2769 or 845-425-2000
Fax Sales:	845-578-5985
Phone Support:	1-800-553-2769
Email Sales:	contact.corp@teledynelecroy.com
Email Support:	support@teledynelecroy.com
Web Site:	http://teledynelecroy.com/

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RoHS and WEEE information can be found at:
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Teledyne LeCroy (European Headquarters)

Teledyne GmbH
Im Breitspiel 11c
D-69126 Heidelberg, Germany

Phone:	+49 6221 82700
Fax:	+49 6221 834655
Phone Service:	+49 6221 8270 85
Phone Support:	+49 6221 8270 28
Email Sales:	contact.gmbh@teledynelecroy.com
Email Service:	service.gmbh@teledynelecroy.com
Email Support:	tlc.t3.appsupport.eu@teledyne.com
Web Site:	http://teledynelecroy.com/

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T3 stands for Teledyne Test Tools.

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