

LCR-7000 Series

Precision LCR Meter

FEATURES

- 5” Touch Color LCD
- 5 Models (10 Hz to 2 kHz/20 kHz/100 kHz/200 kHz/300 kHz)
- Consecutive Test Frequency
- Basic Accuracy : 0.05 %
- Measuring Speed up to 25 ms (max.)
- Full Frequency Range for OPEN/SHORT/SPOT
- 16 Major/Secondary Parameter Measurement Combinations and Two Additional Monitoring Parameters (Maximum Four Different Parameters Can be Shown Simultaneously)
- DCR Measurement and Internal DC Bias Voltage (± 5 V)
- BIN Function Provides 9 BIN and 1 AUX, Totally 10 BIN
- Two Curves Sweep Mode
- Go/NoGo Judgment
- Auto Level Control (ALC) Function
- 10 Steps Listed Tests to Select Different Frequency, Voltage and Current Criteria
- Standard Interface : RS-232C, Handler, USB Host / Device (Type C) and LAN

GW INSTEK
Simply Reliable

GW Instek has launched its new generation of precision LCR meters – the LCR-7000 series, featuring touch operation and sweep curve functionality. This series offers five corresponding models with test frequencies ranging from 2 kHz/20 kHz/100 kHz/200 kHz/300 kHz, replacing the existing LCR-6000 series. This series inherits the core measurement capabilities of the LCR-6000 series, including 16 sets of measurement parameter combinations, 0.05% basic accuracy, 25 ms measurement speed (fastest), 10-step list testing, and other existing features and functions, allowing users to easily replace the existing system without re-evaluation during the transition. Furthermore, command compatibility greatly enhances customer convenience, especially for users with integrated systems, allowing them to continue using their existing systems without modifying existing computer software. The LCR-7000 series boasts a diverse range of features, making it an invaluable tool for all stages of passive component applications, including R&D, engineering testing, material screening, incoming inspection, and production sorting.

The entire LCR-7000 series utilizes a 5-inch touchscreen color LCD display to present a wealth of parameters. In addition to displaying setting conditions and primary/secondary parameter measurement results, it also adds two extra monitored parameters; in short, up to four parameter results can be displayed on the same screen, significantly improving measurement efficiency. Furthermore, the newly added GO/NOGO mode not only emphasizes the measurement results but also provides PASS/FAIL judgments, making test determination faster and more convenient.

To eliminate errors (parasitic impedance) caused by test leads and fixtures so as to ensure the accuracy of measurement results, the LCR-7000 series offers two zeroing modes: full-frequency and spot. Full-frequency zeroing allows measurement at any frequency point within the applicable frequency range without shutting down the power or changing the test fixture, saving time wasted on repeated zeroing. Spot zeroing is performed at a specific frequency. Furthermore, the frequencies within the range are consecutive, allowing users to input the actual required frequency value for the most realistic component testing.

The LCR-7000 series also features diverse ancillary measurements to meet the measurement requirements of different materials. For instance, the series provides the automatic level control (ALC) function to satisfy the test voltage requirement of MLCC. For inductive component measurements, the series provides the adjustable test current function and the D.C. resistance measurement function. The optional external bias current adapter (±2.5 A) is to satisfy the measurement requirements. With respect to the D.C. bias voltage test for capacitive components requirements, the series allows users to conduct verification measurement on materials by its internal ±5 V adustable voltage or via an optional external bias voltage adapter (±45 V). Furthermore, the SWEEP function and 10-step list test function allow users to observe trends or specific frequency point in the characteristics of the component under test according to their settings.

The LCR-7000 series has 10 memory sets defined by panel setting criteria to facilitate users in slecting test criteria and saving time in repeated settings. 10,000 measurement result storage capability can easily record measurement results instantaneously. The USB host allows easy access to recorded results without connecting the series to the PC. The USB host also allows USB to retrieve and save screen so as to assist users in compiling setting guidelines.

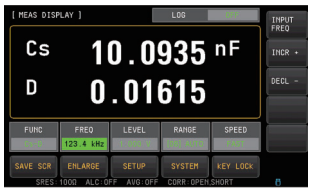
For the external control, the LCR-7000 series provides handler interface and collocates with its measurement sorting function (9BIN, AUX: 1BIN) to facilitate the connection with sorting machine so as to sort out the materials. For remote control and measurement result retrieval requirements, the LCR-7000 series provides RS-232C/LAN/USB (Type C) to assist setting control or measurement result retrieval via the PC commands. Additionally, the free PC software gives users an instant tool to store measurement results that saves time in developing programs.

The new compacted LCR-7000 series can effectively improve the limitation of space. Diverse measurement functionalities and display methods are making the series the high CP ratio choice in meeting the requirements of R&D, component assessment for engineering departments, category sorting requirements for component production, and IQC for verification on component specifications.

PANEL INTRODUCTION



A. CONSECUTIVE FREQUENCY AND CONENIENT ZERO FUNCTION



Consecutive and Adjustable Frequency

Freely input frequency within provided frequency range

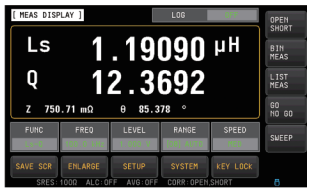


Selectable Fixture Zeroing Methods

Full frequency range zero or spot zero

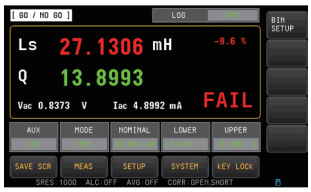
The LCR-7000 series, within the provided frequency range, features consecutive and adjustable frequency capability which allows users to conduct measurement and analysis on components with the most genuine frequency requirements. For OPEN/SHORT fixture compensation function, the LCR-7000 series is equipped with full frequency range zero and spot zero selections. After executing full frequency range zero, users, under the conditions of not turning off the power and not changing test fixture, can freely change test frequency for the LCR-7000 series to execute component measurements that tremendously saves time in repeatedly zeroing test fixture after changing frequency.

B. RICH AND DIVERSE INFORMATION DISPLAY



MEAS Display

Parameter setting and four measurement parameters

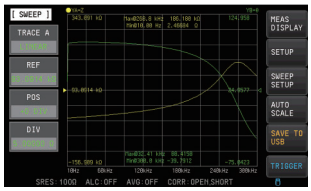


GO/NOGO Display

Measurement results and PASS/FAIL judgment

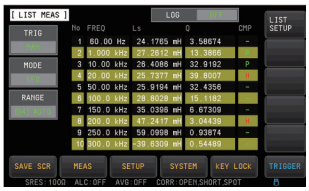
The measurement result display of the LCR-7000 series not only reveals primary and secondary measurement parameters but also includes two monitoring parameters. Therefore, four DUT related parameters can be simultaneously shown on the display screen to save time if repeated measurements are required. With respect to display screen, the LCR-7000 series features diverse display to meet users' observation requirements. For instance, MEAS display shows setting parameters and measurement results at the same time; GO/NOGO display focuses on measurement results and PASS/FAIL judgment is available, which is conducive to assist engineers to swiftly obtain the validity of measurement results.

C. SWEEP FUNCTION AND 10-POINT LIST TEST.



Sweep Characteristic Curve

Provide more delicate characteristic variation trend

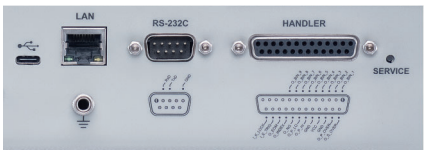


Listed Tests

Variation criteria based upon frequency or voltage/current

The LCR-7000 series offers two key component analysis functions. One is the sweep curve function, allowing users to define initial and final frequency ranges to plot characteristic curves on the display screen. The other is the 10-point list test function, which allows users to define a set of measurement parameters for the device under test (DUT) (e.g., Cs – Rs) and set 10 test conditions with identical properties (e.g., frequency or voltage/current) but different values for measurement. Regardless of the function used, users can quickly and clearly obtain the trend of DUT characteristic changes, thereby determining the DUT's suitability for practical applications. Measurement results can be directly stored in internal memory or stored in USB drive and then transferred to a PC for further analysis.

D. COMPREHENSIVE CONTROL INTERFACE



Comprehensive Control Interfaces

In terms of interface configuration, the LCR-7000 series offers a Handler interface suitable for external connection control; this interface provides 10 BIN (9 BIN, AUX:1 BIN) sorting result output, which can be used to connect to a sorting machine for component sorting operations. For remote control, it provide USB (Type C)/LAN/RS-232C interfaces, suitable for system integration or automation applications, allowing setting controls or reading measurement results via PC commands.

E. DIVERSE ANCILLARY MEASUREMENT FUNCTIONS



Automatic Level Control

Ideal for measuring components with voltage requirements



Internal Bias (±5 V Adjustable)

Ideal for capacitive components' characteristic tests



D.C. Resistance Measurement

Ideal for inductive components' D.C. characteristics verification

To satisfy the diverse measurement application requirements for different components and materials, the LCR-7000 series collocates with many auxiliary measurement functions. For capacitor measurement, Automatic Level Control (ALC) is mainly for component which requires a constant or rated test voltage such as multi-layer ceramic capacitor (MLCC). An internal D.C. bias voltage (±5 V, internal) is allowing simulating A.C. and D.C. coexistence to learn capacitance variation.

For inductor measurement, the D.C. resistance measurement function is to validate D.C. resistance characteristics. Additional, the LCZ function is to quickly identify components 'characteristics. When the function is activated, the LCR-7000 series will automatically determine DUTs' characteristics and reveal the optimum parameters to show the measurement results.

SPECIFICATIONS

TEST FREQUENCY		LCR-7300: 10 Hz to 300 kHz (± 0.01 %) (4 digits resolution) LCR-7200: 10 Hz to 200 kHz (± 0.01 %) (4 digits resolution) LCR-7100: 10 Hz to 100 kHz (± 0.01 %) (4 digits resolution) LCR-7020: 10 Hz to 20 kHz (± 0.01 %) (4 digits resolution) LCR-7002: 10 Hz to 2 kHz (± 0.01 %) (4 digits resolution)
OUTPUT IMPEDANCE		30 Ω / 50 Ω / 100 Ω selectable
BASIC ACCURACY	**Slow / Med** **Fast**	0.05 % 0.1 %
TEST SPEED		FAST:25 ms / MED:100 ms / SLOW:333 ms
TEST SIGNAL LEVELS	**AC Voltage** **Current** **DCR**	10.00 mV to 2.00 V (± 10 %) CV :10.00 mV to 2.00 V(± 6 %) 100.0 µA to 20.00 mA (± 10 %) CC :100.0 µA to 20.00 mA (± 6 %) (@2 V max.) +2 V, 0.066 A(Max.), Output impedance fixed 30 Ω
DC BIAS	**Internal**	± 5 V (0.5 % + 0.005 V)
DISPLAY RANGE	**R, X, |Z|** **G, B, |Y|** **L** **C** **D** **Q** θd θr **DCR** Δ%	0.00001 Ω to 99.9999 MΩ 0.01 nS to 999.999 S 0.00001 µH to 9999.99 H 0.00001 pF to 9999.99 mF 0.00001 to 9.99999 0.00001 to 99999.9 -179.999° to 179.999° -3.14159 to 3.14159 0.0000 1Ω to 99.9999 MΩ -99999 % to 99999 %
TEST MODE	**16 Combinations** **Monitor Parameter** (2 selectable)	Cs-Rs, Cs-D, Cp-Rp, Cp-D, Lp-Rp, Lp-Q, Ls-Rs, Ls-Q, Rs-Q, Rp-Q, R-X, Z-θr, Z-θd, Z-D, Z-Q, DCR Z, D, Q, Vac, Iac, Δ, Δ%, θr, θd, R, X, G, B, Y
LISTED MODE	**Steps** **Parameters**	10 steps Freq./Volt./Curr.
BIN FUNCTION	**Numbers** **Comparators**	10 (BIN: 1 to 9 , AUX:1 BIN) ABS/PER/SEQ
SWEEP	**Swept Graphical** **Swept Parameter** **X-AXIS/Y-AXIS** **Value Point** **Measure Function** **SCALE** **Cursor Function** **Storage Function**	Two of measurement parameters Frequency LINEAR/LOG more than 250 points MAX/MIN Frequency point and value TRACE A/B, AUTO SCALE Available Data (.csv) & Screen capture (bmp file)
MEMORY	**INT – Panel Setting** **INT – Measured Data** **USB Storage**	10 file name 10000 Data(.csv) 10 file name for setting, 9999 file name for data, 999 Log file for LCD screen
OTHER FUNCTION	**Auto Level Control (ALC)** **GO/NOGO** **Average** **Trigger** **Delay** **Judgment** **Auto LCZ** **Screen Capture**	ON/OFF Available 1 to 256 times INT / MAN / EXT / BUS 0 ms to 60 s PASS / FAIL ON / OFF Saving in to USB (Bmp file)
DISPLAY		5' Touch LCD
INTERFACE	**SCPI** **Others**	RS-232, Device(Type C), LAN Handler, USB Host
POWER SOURCE		AC 100 V to 240 V, 50 Hz to 60 Hz, Max. 15 W
DIMENSIONS & WEIGHT		256(W) mm x 101(H) mm x 315(D) mm, Approx. 3 kg

Specifications subject to change without notice. LCR-7000 Series_GD1BH

ORDERING INFORMATION

LCR-7300	DC, 10 Hz to 300 kHz Precision LCR Meter
LCR-7200	DC, 10 Hz to 200 kHz Precision LCR Meter
LCR-7100	DC, 10 Hz to 100 kHz Precision LCR Meter
LCR-7020	DC, 10 Hz to 20 kHz Precision LCR Meter
LCR-7002	DC, 10 Hz to 2 kHz Precision LCR Meter

ACCESSORIES

Power Cord x 1, D-Sub kits (for handler) x 1
Safety sheet x 1, Test lead LCR-06B x 1

OPTION

LCR-16	DC Bias Voltage Box (± 45 V)
LCR-17	DC Bias Current Box (± 2.5 A)
LCR-DB1	DC Bias Voltage box (Freq. upto 2 MHz / max. input voltage ± 200 V)

OPTIONAL ACCESSORIES

LCR-05	Test Fixture for axial & radial leaded components
LCR-06B	Test Lead with Kelvin clip (4 wire type)
LCR-07	Test Lead with Alligator clip (2 wire type)
LCR-08A	Test Fixture (Tweezers) for SMD/Chip components
LCR-15	Test Fixture for SMD/Chip components (0201 to 1812)
GTL-232	RS-232C Cable, 9-pin Female to 9-pin, null Modem for Computer, Approx. 2000 mm
GRA-459	Rack Mount Kit (19" 2U)

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