



# LCR-6000 Series

## Precision LCR Meter

**Test Equipment  
Depot**  
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## FEATURES

- 3.5" Color LCD
- 5 Models (10Hz ~ 2kHz/20kHz/100kHz/200kHz/300kHz)
- Consecutive Test Frequency
- Basic Accuracy : 0.05%
- Measuring Speed up to 25ms (Max.)
- Full Frequency Range or Spot OPEN/SHORT
- 16 Major/Secondary Parameter Measurement Combinations and Two Additional Monitoring Parameters (Maximum Four Different Parameters Can be Shown Simultaneously)
- DCR Measurement and Internal D.C. Bias Voltage ( $\pm 2.5V$ )
- PASS/FAIL Judgment
- Auto Level Control (ALC) Function
- BIN Function Provides 9BIN and 1AUX, Totally 10 BIN
- 10 Steps Listed Tests to Select Different Frequency, Voltage and Current Criteria
- Standard Interface : RS-232C, Handler and USB Storage
- Compact Size, Ideal for Automatic Equipment (2U,1/2 Rack)

**GW INSTEK**  
Simply Reliable

GW Instek introduces the brand new high precision LCR meter - LCR-6000 series, which, with five models, has a test frequency range extending from 2kHz/20kHz/100kHz/200kHz/300kHz (maximum) and with 0.05% basic accuracy. The compact size design, 2U height and 1/2 rack, is one of the practical features of the series which is the optimum space saver suitable for either bench top or system rack. The compacted LCR-6000 series with abundant features is absolutely the excellent tool for R&D, production test, IQC, etc. on implementing each test stages for passive components.

The LCR-6000 series provides rich functionalities with the compact size. First of all, the entire series adopts 3.5-inch color LCD and features opulent display parameters. In addition to simultaneously displaying setting criteria and measurement results, the series increases two additional monitoring parameters. In other words, there are four parameters, primary/secondary and two monitoring, simultaneously shown on the screen that tremendously enhances the measurement efficiency. The enlarge display mode not only emphasizes the measurement results, but also provides PASS/FAIL judgment to facilitate a rapid and convenient test result.

Convenience is one of the unique features. The LCR-6000 series comes equipped with two zero methods, which are full frequency range and spot. Users, without turning off the power and changing test fixture, can freely change frequency within the provided frequency range to conduct measurements. By so doing, tremendous time can be saved from repeatedly executing zero operation. Additionally, frequency range of the series is consecutive that allows users to input precise frequency value to conduct the most genuine test on components.

The LCR-6000 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 ( $\pm 2.5A$ ) 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  $\pm 2.5V$  adjustable voltage or via an optional external bias voltage adapter ( $\pm 45V$ ). Furthermore, 10 steps of listed test functionalities allow users to set testing parameters (either by frequency, or voltage, or current) for each step based on users' requirements in order to observe the trend of DUT characteristics.

The LCR-6000 series has 10 memory sets defined by panel setting criteria to facilitate users in selecting 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-6000 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-6000 series provides RS-232C 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 brand new compacted LCR-6000 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





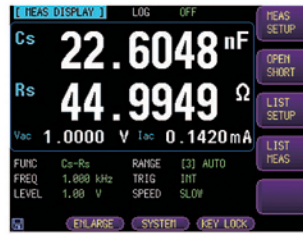
## A. Consecutive Frequency and Convenient Zero Function



**Consecutive and Adjustable Frequency** Selectable Fixture Zeroing Methods  
**Freely Input Frequency Within Provided** Full Frequency Range Zero or Spot Zero  
**Frequency Range**

The LCR-6000 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-6000 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-6000 series to execute component measurements that tremendously saves time in repeatedly zeroing test fixture after changing frequency.

## B. Rich and Diverse Information Display

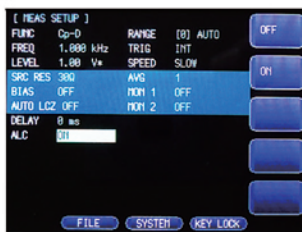


**MEAS Display**  
**Parameter Setting and Four**  
**Measurement Parameters**

**ENLARGE Display**  
**Enlarge Measurement Results and**  
**Include PASS/FAIL Judgment**

The measurement result display of the LCR-6000 series not only reveals 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. With respect to display screen, the LCR-6000 series features diverse display to meet users' observation requirements. For instance, MEAS display shows setting parameters and measurement results at the same time; ENLARGE 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. Diverse Ancillary Measurement Functions



**Automatic Level Control**  
**Ideal for Measuring Components**  
**With Voltage Requirements**



**Internal Bias ( $\pm 2.5V$  Adjustable)**  
**Ideal for Capacitive Components'**  
**Characteristic Tests**



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

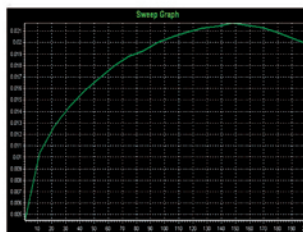
To satisfy the diverse measurement application requirements for different components and materials, the LCR-6000 series collocates with many auxiliary measurement functions. For capacitor measurement, Automatic Level Control (ALC) is mainly for component which requires a constant or rated test voltage such as multi-layer ceramic capacitor (MLCC). An internal D.C. bias voltage ( $\pm 2.5V$ , 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-6000 series will automatically determine DUTs' characteristics and reveal the optimum parameters to show the measurement results.

## D. 10 Points Listed Tests and PC Software

No.	FREQ [kHz]	Cs	Rs	CRP
1	1.000 k	22.6095 nF	44.2309 Ω	-
2	2.000 k	22.5486 nF	26.3428 Ω	-
3	5.000 k	22.4374 nF	12.5895 Ω	-
4	10.00 k	22.3454 nF	7.62774 Ω	-
5	20.00 k	22.2388 nF	4.65862 Ω	-
6	30.00 k	22.1615 nF	3.42258 Ω	-
7	33.30 k	22.1480 nF	3.53114 Ω	-
8	50.00 k	22.0489 nF	2.30269 Ω	-
9	100.0 k	21.8652 nF	1.40515 Ω	-
10	200.0 k	21.5250 nF	0.83319 Ω	-

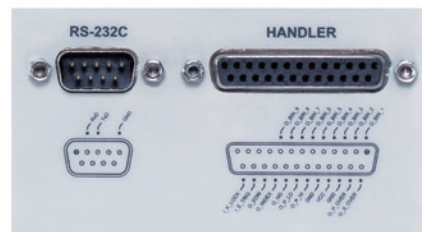
**Listed Tests**  
**Variation Criteria Based Upon**  
**Frequency or Voltage/Current**



**On Software - Characteristic Curve**  
**Provide More Delicate Characteristic**  
**Variation Trend**

The LCR-6000 series provides the 10 points listed test function, which allows users to define a set of DUT measurement parameters (such as Cs-Rs) and to set 10 test criteria of category (either by frequency or by voltage or by current) but different values to conduct measurements. Through this function, users can rapidly and clearly obtain DUT's characteristic variation trend to determine the adaptability of DUT's practical applications. The measurement results can be recorded directly in the internal memory and be transferred to the PC through USB. The LCR-6000 series also provides free PC software (maximum 1,000 points listed tests) in order to satisfy users' analytical requirements on delicate variation.

## E. Standard Interface



**Standard Interface**

For interface connectivity, the LCR-6000 series comes equipped with Handler interface and RS-232C interface. Handler outputs 10 BIN (9BIN, AUX: 1BIN) sorting results that is best for external connection control, for instance, connecting to a sorting machine to conduct components' sorting operation. RS-232C is suitable for remote control and measurement results retrieval. The PC gives commands to control settings or to read measurement results so as to achieve the requirements of verifying automotive applications.

## SPECIFICATIONS

<b>TEST FREQUENCY</b>		LCR-6300 : 10Hz ~ 300kHz(±0.01%) (4 digits resolution) LCR-6200 : 10Hz ~ 200kHz(±0.01%) (4 digits resolution) LCR-6100 : 10Hz ~ 100kHz(±0.01%) (4 digits resolution) LCR-6020 : 10Hz ~ 20kHz(±0.01%) (4 digits resolution) LCR-6002 : 10Hz ~ 2kHz(±0.01%) (4 digits resolution)
<b>OUTPUT IMPEDANCE</b>		30Ω / 50Ω / 100Ω selectable
<b>BASIC ACCURACY</b>	Slow / Med Fast	0.05% 0.1%
<b>TEST SPEED</b>		FAST : 25ms / MED : 100ms / SLOW : 333ms
<b>TEST SIGNAL LEVELS</b>	Voltage Current	10.00mV- 2.00V (±10%) CV : 10.00mV- 2.00V (±6%) 100.0μA- 20.00mA (±10%) CC : 100.0μA- 20.00mA(±6%) (@2VMax)
<b>DC BIAS</b>	Internal	±2.5V (0.5% + 0.005V)
<b>DISPLAY RANGE</b>	R, X,  Z  G, B,  Y  L C D Q θ d θ r DCR Δ %	0.00001Ω ~ 99.9999MΩ 0.01nS ~ 999.999S 0.00001μH ~ 9999.99H 0.00001pF ~ 9999.99mF 0.00001 ~ 9.99999 0.00001 ~ 99999.9 -179.999° ~ 179.999° -3.14159 ~ 3.14159 0.00001Ω ~ 99.9999MΩ -99999% ~ 99999%
<b>TEST MODE</b>	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, DCR, Z-θ r, Z-θ d, Z-D, Z-Q, Auto LCZ Z, D, Q, Vac, Iac, Δ, Δ %, θ r, θ d, R, X, G, B, Y
<b>LISTED MODE</b>		10 steps
<b>BIN FUNCTION</b>		Comparator (9BIN,AUX:1BIN)
<b>MEMORY</b>	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
<b>OTHER FUNCTION</b>	Auto Level Control (ALC) Average Trigger Delay Judgment Screen Capture	ON/OFF 1~256 times INT / MAN / EXT / BUS 0ms~60s PASS / FAIL Saving in to USB (Bmp form)
<b>DISPLAY</b>		3.5" LCD, RGB color (320x240)
<b>INTERFACE</b>		RS-232(SCPI), Handler, USB Host
<b>POWER SOURCE</b>		AC 100V ~ 240V, 50 ~ 60Hz, Max. 30W
<b>DIMENSIONS &amp; WEIGHT</b>		265(W) x 107(H) x 312(D) mm ; Approx. 3kg

Specifications subject to change without notice. CR-6000GD1BH

### ORDERING INFORMATION

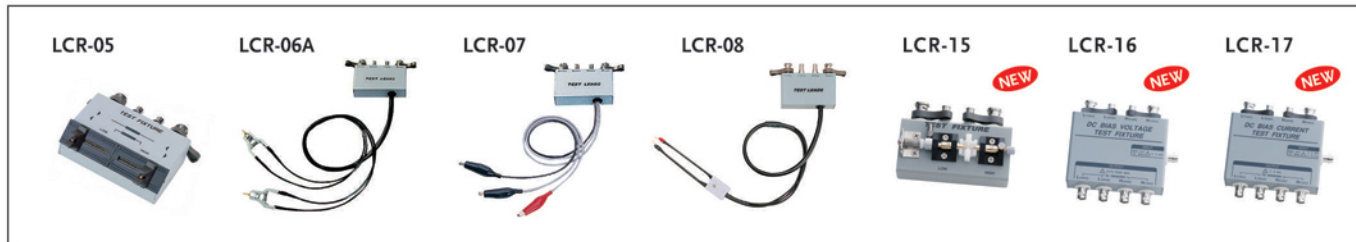
LCR-6300	10Hz ~ 300kHz Precision LCR Meter
LCR-6200	10Hz ~ 200kHz Precision LCR Meter
LCR-6100	10Hz ~ 100kHz Precision LCR Meter
LCR-6020	10Hz ~ 20kHz Precision LCR Meter
LCR-6002	10Hz ~ 2kHz Precision LCR Meter

### ACCESSORIES

Safety Sheet x 1, Power Cord x 1, Test Fixture LCR-06A x 1,  
CD x 1 (User manual/PC software)

### OPTIONAL ACCESSORIES

LCR-05	Test Fixture for Axial & Radial Lead Components
LCR-06A	Kelvin Clip Test Lead
LCR-07	Test Fixture, Two-Wire with Alligator Clips
LCR-08	Test Fixture (Tweezers) for SMD/Chip Components
LCR-15	Test Fixture for SMD/Chip Components (0201 to 1812)
LCR-16	Test Fixture – ±45V DC Bias Voltage Box
LCR-17	Test Fixture – ±2.5A DC Bias Current Box
GTL-232	RS-232C Cable, 9-pin Female to 9-pin, null Modem for Computer, Approx. 2m



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