

## FEATURES

- Parallel/serial test mode
- Sorting mode for QC
- Auto-ranging
- 46 segments bar graph display
- Static Recording
- Self-Calibration

## RS PRO LCR-1703 Handheld LCR Meter 20mF, 200M $\Omega$ , 20kHz

RS Stock No.: 123-3254



RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

## Product Description

RS PRO LCR1703 hand held LCR smart meter features innovative automatic selection technology. Its USB interface provides the convenience of external DC power supply and connection to a PC for data acquisition. The auto ON/OFF backlit display gives the user continuous visibility while extending battery life. This instrument is competitively priced, technically advanced, highly efficient, slim and tactile, with ergonomically designed comfort grip. Also includes alligator clips, shorting bar, magnetic hanging kit, 4 wires SMD test clip, DC power cable, USB cable, software CD, battery (installed) and manual.

## General Specifications

<b>Model Number</b>	LCR-1703
<b>Type</b>	Handheld
<b>Components Type</b>	Inductors, Capacitors, Resistors
<b>Measurement Parameters</b>	L / C / R / D / $\theta$ / EsR
<b>Test Mode</b>	Series / Parallel
<b>Test Frequency</b>	100Hz to 300kHz
<b>Output Impedance</b>	20 $\Omega$ / 200 $\Omega$ / 2k $\Omega$ / 20k $\Omega$ / 200k $\Omega$ / 2M $\Omega$ / 20M $\Omega$ / 200M $\Omega$ selectable
<b>Basic Accuracy</b>	0.2%
<b>Temperature coefficient</b>	0.15x (Specified accuracy) / $^{\circ}$ C, < 18 $^{\circ}$ C, > 28 $^{\circ}$ C .
<b>Display Type</b>	Auto Backlit Bar Graph Display
<b>Auto Ranging</b>	Yes
<b>Data Hold</b>	Yes
<b>Auto Power Off time</b>	Yes
<b>Low Battery Indicator</b>	Yes
<b>Overload Indication</b>	Yes
<b>Interface</b>	USB
<b>Calibration Availability</b>	Self-Calibration

## Display Range

Parameter	Range
R, X,  Z	20 $\Omega$ to 200M $\Omega$
L	20.000uH to 20.000kH
C	20.000pF to 20.000mF
D	2.000 to 2000
Q	2.000 to 2000
DCR	200 $\Omega$ to 200M $\Omega$

**Test Signal Measurement**

AC	
Levels	600mVrms
Level Accuracy	±10%
Output Impedance	200Ω
Frequency	100Hz to 100kHz
Resolution	0.01Hz (100Hz to 120Hz)
	0.1Hz (1KHz)
	1Hz (10kHz)
	10Hz (100.0kHz)
Frequency Accuracy	± 0.01%
DC	
Level Range	1V dc
Level Accuracy	± 10%
Output Impedance	200Ω

**Inductance Measurement**

Range	100/120Hz	1KHz	10KHz
20.000uH	N/A	N/A	N/A
200.00uH	N/A	N/A	0.5% + 5
2000.0uH	N/A	0.5% + 5	0.2% + 5
20.000mH	0.5% + 5	0.2% + 5	0.2% + 5
200.00mH	0.2% + 5	0.2% + 5	0.2% + 5
2000.0mH	0.2% + 5	0.2% + 5	2.0% + 5
20.000H	0.2% + 5	0.2% + 5	5.0% + 5
200.00H	0.2% + 5	0.5% + 5	N/A
2000.0H	0.5% + 5	1.0% + 5	N/A
20.000KH	1.0% + 5	N/A	N/A

**Capacitance Measurement**

Range	100/120Hz	1KHz	10KHz
200.00pf	N/A	N/A	0.5% + 5
2000.0pF	0.5% + 5	0.5% + 5	0.2% + 5
20.000nF	0.2% + 5	0.2% + 5	0.2% + 5
200.00nF	0.2% + 5	0.2% + 5	0.2% + 5
2000.0nF	0.2% + 5	0.2% + 5	0.5% + 5
2000.0µF	0.2% + 5	0.5% + 5	2.0% + 5
20.000µF	0.5% + 5	1.0% + 5	5.0% + 5
200.00µF	1.0% + 5	2.0% + 5	N/A
20.000mF	2.0% + 5	N/A	N/A

**Resistance Measurement**

Range	100/120Hz	1KHz	10KHz
20.000Ω	N/A	0.5% + 5	0.5% +5
200.00 Ω	0.2% + 5	0.2% + 5	0.2% +5
2.0000kΩ	0.2% + 5	0.2% + 5	0.2% +5
20.000kΩ	0.2% + 5	0.2% + 5	0.2% +5
200.00kΩ	0.2% + 5	0.2% + 5	0.2% +5
2.0000MΩ	0.2% + 5	0.2% + 5	2.0% +5
20.000MΩ	0.5% + 5	2.0% + 5	5.0% + 5
200.00MΩ	1.0% + 5	5.0% + 5	N/A

**DC Resistance Measurement**

Range	Resolution	Accuracy
200.00Ω	10mΩ	0.2% +5
2.0000kΩ	100mΩ	0.2% +5
20.000kΩ	1Ω	0.2% +5
200.00kΩ	10Ω	0.2% +5
2.0000MΩ	100Ω	0.2% +5
20.000MΩ	1kΩ	0.5% +5
200.00MΩ	10kΩ	1.0% +5

**Electrical Specifications**

<b>Power Source</b>	Battery
<b>Battery Included</b>	Yes
<b>Battery Type</b>	AA
<b>Battery Life</b>	80 hours

**Mechanical Specifications**

<b>Dimensions</b>	95mm x 51.2mm x 200mm
<b>Length</b>	95mm
<b>Width</b>	51.2mm
<b>Height</b>	200mm
<b>Weight</b>	605g

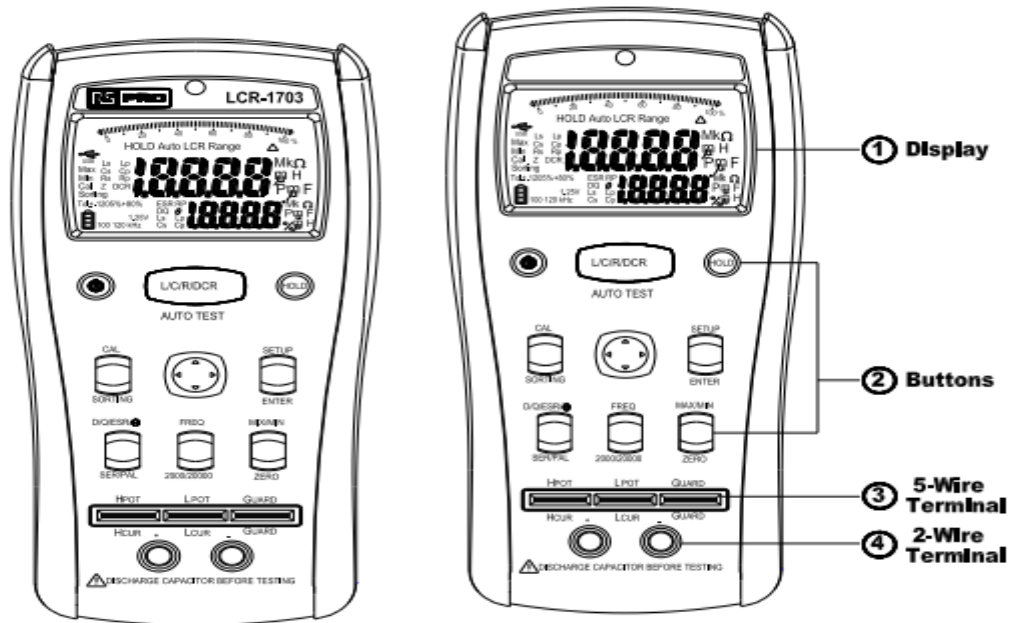
## Operation Environment Specifications

<b>Operating Humidity</b>	Up to 80% R.H.
<b>Storage Humidity</b>	0% to 80% R.H.
<b>Operating Temperature</b>	0°C to 50°C
<b>Storage Temperature Range</b>	-20°C to 60°C
<b>Pollution Level</b>	Pollution Degree 2

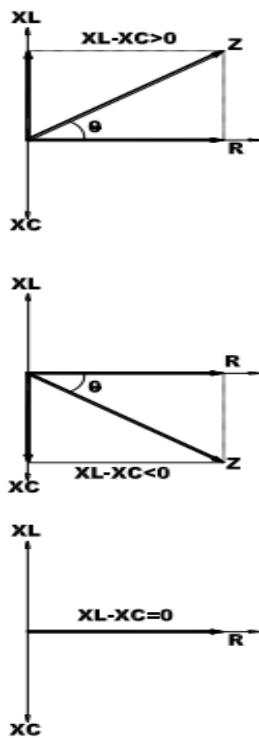
## Approvals

<b>Compliance/Certifications</b>	EN 61010-1, IEC 61010-1, EN 61326-1
<b>Declarations</b>	RoHS Certificate of Compliance






Phase Drawing



## General:

<b>Sampling Rate:</b>	1.25 times/sec
<b>Overload Indication:</b>	"OL" or "-OL"
<b>Low Battery Indication:</b>	
<b>Auto Power Off:</b>	Approx. 10 minutes after last operation
<b>Operating Temperature:</b>	Non-condensing < 10°C 11 °C ~ 30 °C (<80% RH) 30 °C ~ 40 °C (<75% RH) 40 °C ~ 50 °C (<45%RH)
<b>Storage Temperature:</b>	-20°C to 60°C, 0% RH to 80% RH (batteries not fitted)
<b>Temperature Coefficient:</b>	0.15 x (Specified accuracy) / °C, < 18°C, > 28°C .
<b>Safety:</b>	Complies with EN 61010-1, IEC 61010-1, EN 61326-1
<b>Power Requirement:</b>	4 x 1.5V IEC LR6 or AA size
<b>External Power requirement:</b>	DC 5V (USB or AC adapter)
<b>Battery Life:</b>	80 hours
<b>Size:</b>	95mm(W) x 207mm(L) x 52mm(D)
<b>Weight:</b>	Approx. 630g (with battery)
<b>Accessories:</b>	Alligator Clips, Shorting bar, Magnetic Hanging Kit, 4Wires SMD clip, DC Power Cord, USB Cable, Software CD, Battery (installed) and Manual

RS PRO LCR-6000 Series offers a choice of 5 models with different test frequency: 2 kHz, LCR-6002, [117-6718](#) ; 20 kHz, LCR-6020, [117-6717](#) ; 100 kHz, LCR-6100, [117-6716](#) ; 200 kHz, LCR-6200, [117-6715](#) ; 300 kHz, LCR-6300, [117-6714](#) )

## A. Consecutive Frequency and Convenient 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-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

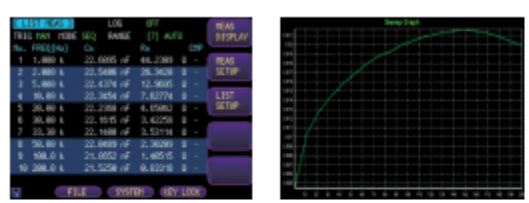


**Automatic Level Control** Ideal for Measuring Components With Voltage Requirements  
**Internal Bias (±2.5V Adjustable)** Ideal for Capacitive Components' Characteristic Tests  
**D.C. Resistance Measurement** Ideal for inductive components' D.C. Characteristics Verification

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 (±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.

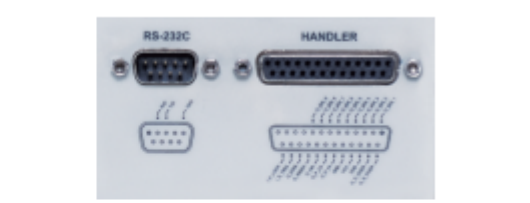
## D. 10 Points Listed Tests and PC Software



**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.