## **PC Software**

LCR-6300/6200/6100/6020/6002

#### PC Software Guide

VERSION: 1.10



ISO-9001 CERTIFIED MANUFACTURER



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Software

## NTRODUCTION

This manual is suitable for all models in the LCR-6000 Series. The LCR-6000 PC Software Guide describes how to use the PC software on Windows OS based computers (Windows XP, Windows 7 supported).

This manual consists of the following chapters:

- Setup: Installation, Connection, Uninstallation, Configuration
- Measurement: Displaying, recording measurement values and setting measurement parameters.
- LIST MEAS/LIST SETUP: Setting List Measurement parameters, executing List Measurement and logging List Measurement results.
- SWEEP GRAPH: Displaying and recording swept graphs.



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#### Connection

Before initiating the PC connection between the PC software and a LCR-6000, first set and confirm the RS-232/USB settings on the LCR-6000.

In terms of RS-232 connection, use a 9-pin female to 9-pin female null modem cable such as GW Instek's GTL-232 to connect the LCR-6000 to the PC.

In terms of USB connection, use a Type A-B USB cable such as GW Instek's GTL-246 to connect the LCR-6000 to the PC.

Configure the RS232/USB Baud	1. Set in S	the baud rat	te for RS-232/ YSTEM CONI	USB comm FIG page.	unication			
rate &	2. Th	2. The baud rate is adjustable between $1200 \sim 11$						
Settings	3. Set	<ol> <li>Set TERMINATOR setting as LF.</li> <li>Set the HAND SHAKE and ERROR CODE settings to OFF.</li> </ol>						
C	4. Set							
	5. Set	the RESUL	T setting to FE	ЕТСН.				
Note	Please	see the us	er manual foi	r setting d	etails.			
	DATE/T ACCOUNT KEY BEI BAUD TERMIN HAND SI ERROR RESULT DATA BI DEFAUL	IME 2020-0 T ADMIN EP ON 115200 ATOR F HAKE OFF CODE OFF FETCH UFFER 10000 T SET OFF	07-15 11:19 ISTRATOR PASS 0 REMOTE SETS	5:42 YORD RS232 (KEY_LOCK)	LF (0x0A) CR (0x0D) CR+LF			

Connect the RS232/USB Cable	1.	Connect the RS232/USB cable to the rear panel RS 232/USB terminal on the LCR.	RS-232C

2. Connect the other end of the RS232/USB cable to the PC side.

#### Installation

The following describes how to install the LCR-6000 PC software on your PC.

Installing	PC	
Software		

- 1. Go to the PC Software directory on the CD-ROM.
- 2. Click on setup.exe.

#### 🛃 setup.exe

3. The installation wizard will start up. Follow the directions from the installation wizard. When choosing an install location it is recommended that the default location is chosen.

The default location for the software is C:\Program Files\LCR6000

A program icon should be available from the Start Menu.



4. After the installation has completed, a shortcut icon for the PC software will be added to your desktop.



### Uninstallation

1.

The following describes how to uninstall the LCR-6000 PC software from your PC.

Uninstalling the PC Software

- From the Windows Start menu select the LCR-6000 program directory and choose Uninstall.
  - LCR-6000 LCR-6000 Uninstall LCR-6000
- 2. Select Y to uninstall the product. The dialogue box asks "Are you sure that you want to uninstall this product?"



3. The Uninstaller will automatically finish the uninstallation.

## Configuration

Configure PC Software	1.	Activate the PC software.	LCR-6000
	2.	Click on the Setting menu and open the setting dialog. Enter the default settings as detailed below.	Setting Al
	•	Com Port: according to the Windows Manager	Device
	•	Baud Rate: 115200 (The baud rate set the same with what is set on the mete	here must be r.)

Baud Rat	e	
C 1200	O 38400 @ 115200	
O 9600	O 57600	

3. Click on the OK button. The PC software and the LCR-6000 will try to establish a connection (success), or an error message appears (fail). If the connection is successful, the windows header (title bar) for LCR-6000 PC software will display the com port and baud rate of the connection.

Success	LCR-60	00 Series	Com Port:	l / Baud	Rate: 9600
Fail	Warning			X	
	<u> </u>	"" ComP	ort Off_Line	!	
			ОК		

The possible reasons of connection failure:

- Wrong COM port or baud rate settings.
- Wrong wiring in the RS-232 cable or the connectors of the RS-232 cable are not well connected.
- 4. Move the cursor onto the Power icon and Click it to synchronize the PC software and the LCR meter.



5. When the power icon turns green, it indicates that the PC software is now synchronized with the meter display.



6. After the software and meter have synchronized, the measurement readings and settings from the meter will be displayed on the software display. For future reference, we will call these readings "synchronized parameters".

The synchronized parameters include these items:

FUNC: Cs-D	RANGE: AUTO
FREQ: 1kHz	TRIG: INT
LEVEL: 1V	SPEED: SLOW
SRC RES:100 $\Omega$	AVG: OFF
BIAS: OFF	MON1: OFF
AUTO LCZ: OFF	MON2: OFF
DELAY: 0ms	
ALC: OFF	

Note The buttons on the LCR meter will be automatically locked and disabled after the PC connection is initiated.

The two icons shown below will be shown on the bottom left corner of the LCR meter's display to indicate that the meter is connected to the PC and is in the key-lock state.



# **M**EASURE

# MeasurementPerforming operations on the LCR-6000 PC software is<br/>basically the same as using the physical LCR meter,<br/>except that you use the mouse to click on the various<br/>icons instead of pressing a button with your finger.<br/>Please refer to the LCR-6000 user manual for the<br/>function of each measurement icon (button.)

Note Before connecting the LCR meter to the software, remember to perform the OPEN TEST and SHORT TEST calibration first. The PC software doesn't have the ability to perform the Open/Short correction. These functions can only be performed on the meter itself.





LOG

Unlike the other software functions, the log function differs from the meter's log function in that the pc software will save the log files to the PC's hard drive rather than to the meter's internal memory. The log files are saved in a txt file format to C:\LCR-6000\LiveMeasResult.



SETUP Setting up the PC software is the same as setting up the LCR meter.



BIN SETUP Setting up the PC software is the same as setting up the LCR meter. Only set 1-BINS for PASS/FAIL judgment.



## LIST MEAS/LIST SETUP

The LIST measurement mode on LCR-6000 meter provides maximum 10 list measurement steps, which share one common, variable measuring condition that is selected from these three measuring conditions: Vac (LEVEL V,) Iac (LEVEL A) or frequency.

The PC Software's list setup allows a maximum of 1000 list measurement steps. Each step can be programmed and measured with a variety of measuring conditions to facilitate diverse measurements.

Display LIST Measurement Use the cursor to click the LIST SETUP or LIST MEAS icons on the main display of the PC software to enter the LIST measurement function.



List Measurement

Loop	Stop	Eurotion	Mon(1)	Mon(2)	Free Value	Louis Value	Primaru	Second	Monitor(1)	Monitor(2)		
1	Jiep	Color	Mon(T)	Mon(2)	1.000.111-	1.00.1	E2 211EE	0.00000	Monitor(1)		CAR (1773)	Se Se
÷	-	C: D:	Vac	lac	22.11.5U-	1.00 V	40.0570.05	0.35602 onm	0.0277 V	9.9606 mA	PASS	Loop
	2	Co Ro	Vac	OFF	25.11 KHZ	1.00 Y	43.6373 ur	0.22623 0hm	0.0028 ¥	3.3734 104	S-H C H DACC	
÷	4	Co.Re	OFF	OFF	67.33 kHz	1 00 V	46.9464 uE	0.23718 ohm			PASS PASS	
	5	Cs-Bs	OFF	OFF	89 44 kHz	1.00 V	46 6961 uE	0.23576_ohm			1100,1 400	
	6	Cs-Rs	OFF	OFF	111.6 kHz	1.00 V	46.8515 uF	0.23470 ohm				
1	7	Cs-Rs	OFF	OFF	133.7 kHz	1.00 V	47.5391 uF	0.23390 ohm				
1	8	Cs-Rs	OFF	OFF	155.8 kHz	1.00 V	48.5262 uF	0.23301 ohm				
1	9	Cs-Rs	OFF	OFF	177.9 kHz	1.00 V	50.5240 uF	0.23211 ohm				Те
1	10	Cs-Rs	OFF	OFF	200.0 kHz	1.00 V	52.3639 uF	0.23143 ohm				
												Re

	Please refer to the LCR-6000's userCMP(P / S)manual for explanations of the testPASSresults from the LIST measurement.S-H
	CMP: Comparison measurement S-H,PASS using a standard value and a tolerance PASS,PASS range.
	PASS: The measured value falls inside the tolerance range.
	P-H/L: The primary measurement value falls outside the tolerance range.
	S-H/L: The secondary measurement value falls outside the tolerance range.
	Test Mode: Test mode selection for LIST measurement.
	Seq: Measure all the listed, test steps in one sweep.
	Step: Every time when the Start icon is clicked one step in the list will be tested (sequentially); the measurement finishes when all the listed steps are tested. You can click on the Terminate button to stop and quit the Step test mode during the test.
	Loop: Loop is used to set the maximum sweep count for all the listed steps; the maximum settable value is 1000.
Main View	Click on this icon to quit the LIST measurement environment and return to the main display.

List Meas: Functional Icons in the LIST Measurement Function.	Start: Click on the Start icon to start a test.	Start
	Terminate: Click on the Terminate icon to stop the test in this measurement mode.	Terminate
	Save: Click on the Save icon to save the test result to the PC's hard drive. The test result will be saved as a tyt	Save
	file to C:\LCR-6000\ListMeasResult	
	Remove All: Click the Remove All icon to clear and remove all the test	Remove All
	results.	

#### List Setup



Function: Click on the Function icon to choose the primary and secondary measurement parameters in the pull down menu.

Frequency: Use the Frequency settings to set the unit and value of the frequency of the measuring signal. (kHz).

Level: Use the pull down menu in the Level settings to choose to set the unit and value of the voltage or current of the measuring signal, e.g., V, mA.



	Limit: Set the parameters for the comparison measurement here. Primary: Compare the primary measurement value. Second: Compare the secondary measurement value.	Limit Type Mode Primary SEQ Second SEQ Both SEQ Both SEQ OFF -
	Both: Compare both the primary & secondary measurement values.	
	You need to key in the tolerance range (or upper and lower values) for the parameters that you chose to compare with in the Limit settings.	UnitPrimary LowerPrimary UpperuF50.000070.0000UnitSecond LowerSecond UpperUnitSecond LowerSecond Upperohm0.010000.10000
	You can designate two parameters to be monitored during the test.	Mon1 Mon2 Vac lac
Note	List Setup has a maximum of 100	00 test steps.
List Setup Function Keys	Open a previously saved LIST setup file.	Open
	Save: Save the current LIST setup in a file. The location of the saved LIST file is: C:\LCR-6000\ListSetup	Save
	New: Clear the current contents of the LIST setup.	New
	Settings for the LIST Sweep test.	Set Sweep

Set List Swe	ер				
Function	- F	-Sween Tyne			
Cs-Rs	<b>–</b>	<ul> <li>Freq(kHz)</li> </ul>	C Lev	vel(mA)	
Freq Type	Freq Value	C Leve(V)			
Freq(kHz) 🔽	1.000	Start	1.00		
Level Type I	evel Value	Start	1.00		
Level(V) 🔻	1.00	End	300.00		
Limit Type					
OFF	•	Point	10		
Limit Mode				• Front	
SEQ	-	Destination	- 1	O Back	
Monitor(1)					
OFF	-				
Monitor(2)					
OFF	•			ancel	

Please refer to previous sections for any setting items that have been previously explained.

Sweep Type: Designate the type of sweep: frequency or amplitude (voltage or current).

Set the conditions, parameters and range for the LIST sweep test.

Start: The starting value of the selected variable parameter.

End: The stop value of the selected variable parameter.

Point: Designate the number of steps in a LIST sweep test.

Destination: Destination step for step insertion.

Front/Back: This will insert all the steps from the sweep before/after the step number that is designated.



Front
Back

For example, if you programmed a LIST sweep to have a measuring frequency from 1~200kHz in 12 consecutive LIST steps, these twelve LIST sweep steps will be created (inserted) before the 1st step if you set the Destination step number to be '1.'

Add step is used to append new, blank test steps after the current, last step. An "Add Step" dialogue box will be shown so you can key in how many steps need to be appended.

Add Step			<u> </u>
Please key in	Step		
3			
	OK	Cancel	

Copy Step

Add Step

Copy step is used to copy the steps in between the Start and the End step and have these selected steps duplicated and inserted before the designated destination step.

Copy List Step	
Start Step	1
End Step	2
Destination	3
Ok	Cancel

Main View is used to quit the LIST setup environment and return to the main display of this PC software.





The Sweep Graph function gives a graphical representation of the measured readings from a sweep test. It's much easier for you to interpret the measured values of a sweep test when you can see how the characteristics of a DUT changes.

The Sweep Graph function provides up to two overlaid, swept curves which represent the characteristics of a DUT in two different aspects for you to observe, compare and understand.



Sweep Parameter Set the measurement parameters for a Sweep Parameter sweep test.

Sweep Parameter	
Function Cs-Rs	Sweep Type © Freq(kHz) © Level(mA)
Freq Type Freq Value Freq(kHz)	Start 1.00
Level TypeLevel ValueLevel(V)1.00	End 200.00
Monitor(1) OFF	Point 10
Monitor(2) OFF	
Ok	Cancel

For information on the function of each setting, please refer to previous explanations in this manual.

Sweep Type: Sweep Type is used to select what type of sweep is performed: frequency, voltage or current sweep.

Set the starting and ending values for the sweep range.

Start: Set the starting value here.

End: Set the ending value here.

Point: Sets the number of points used in the sweep. Each point will be spaced out evenly over the sweep range(sweep range/#points).

For example, if you set Point = 10and the sweep range is from 1kHz to 10kHz, then 10 steps will be created at 1, 2, 3, 4, 5, 6, 7, 8, 9 & 10kHz, over the full sweep range.



Graph Parameter

Graph Parameter Set the parameters for how you want the swept graphs displayed in the Graph Parameter settings.

> Graph Parameter wis Scale Compare Graph Y Left Logarithmic Compare C Linearity No Compare Auto Color Lower Limit Upper Limit 01 40.0185 <mark>u</mark>F Primary\_1 57.7214 uF O 2 ✓ 2 Second\_1 0.23062 ohm 0.35519 ohm 03 Monitor(1)\_1 0 0 04 Monitor(2)\_1 0 0 2 4 0.000 uF 05 Primary\_2 999.999 u F 5 0.000 ohm 999.999 06 Second\_2 ohm  $\square 6$ • 7 Monitor(1)\_2 0.000 0.000 7 8 Monitor(1)\_2 0.000 0.000 Ok Cancel

Choose the scale for the horizontal axis.





Choose whether or not to overlay the Compare Graph graph of the current sweep with the previous sweep for comparative purposes. Choose Compare to have the graph overlaid. This Compare function is convenient when you need to compare the differences between two different DUTs under the same test conditions.



#### Note

As the Compare function can show only 2 swept graphs at the most, if Compare is activated and a third sweep test is conducted, then the swept graph of the first sweep test will be replaced by the third sweep test. If a fourth sweep test is conducted, then the swept graph of the 2nd sweep test will be replaced by the fourth sweep test and so on. The two graphs in the Compare mode are displayed in a FIFO (first-in-first-out) manner.

Select the scale for the Y axis here.

Auto: Select Auto to auto-fit the Y scale to contain the maximum and minimum values of all the shown graphs.

1-8: Select 1~8 to auto-scale Y axis according to the selected graph.

Graph display setting: up to 8 graphs can be shown at the same time; this setting can be used as a filter to deselect a graph from being drawn.

Color settings: Use this setting to choose the color of each graph.







	Scale setting for Y axis: Each swept graph has its own default scale setting for the Y axis; this default Y scale setting is set by the PC according to the maximum and minimum values of the graph line automatically. However, you can still manually adjust (overwrite) the scale setting for the Y axis manually by modifying the default setting values. Note: Although every graph line has its own Y axis scale setting; the left Y scale activation selector decides which graph line's Y axis scale setting will be used as the activated scale setting for the Y axis of the overall sweep graph.
Icons for Controlling the Sweep Graph Function	Start: Click on the Start icon to start a sweep test. Terminate: Click on the Terminate icon to stop a sweep test.
	Save: Click on the Save icon to save Save the swept readings onto the PC in a txt file format.
	Save Graph: Click on the Save Graph icon to save the sweep graph onto the PC as a BMP file to C:\LCR-6000\SweepGraphResult
	Graph Preview: Click on Graph Preview to preview the graph before printing it out.

	■ Pret Preser 回動後 H ↔ H 御命 留論 <u>Den</u>				
	Graph Report Pint Date : 07/06/2015 17:39:05				
	Remove All: Click on the Remove All Remove All icon to clear all the measurement settings and results of the Sweep Graph function.				
	Main View: Click the Main View icon Main View to quit the Sweep Graph function and return to the main display.				
Sweep Results	Click on the Result tab at the bottom left of the displa in the Sweep Graph function to view the swept results as logged readings.				
	LCR-6000 Series  Setting About  Sweep Graph				

Step	Function	Freq(kHz)	Level(V)	Primary	Second	Monitor(1)_OFF	Monitor(2)_OFF	o noop r arame
1	Cs-Rs	1.000	1.00	1.01234 uF	0.60481 ohm			
2	Cs-Rs	20.93	1.00	1.00155 uF	0.12953 ohm			Graph Parame
3	Cs-Rs	40.87	1.00	999.932 nF	0.10103 ohm			
4	Cs-Rs	60.80	1.00	1.00168 uF	0.09030 ohm			Chard
5	Cs-Rs	80.73	1.00	1.00581 uF	0.08516 ohm			Start
6	Cs-Rs	100.7	1.00	1.01189 uF	0.08268 ohm			
7	Cs-Rs	120.6	1.00	1.01953 uF	0.08155 ohm			Terminate
8	Cs-Rs	140.5	1.00	1.02866 uF	0.08123 ohm			
9	Cs-Rs	160.5	1.00	1.03940 uF	0.08138 ohm			
10	Cs-Rs	180.4	1.00	1.05147 uF	0.08183 ohm			Save
11	Cs-Rs	200.3	1.00	1.06517 uF	0.08249 ohm			
12	Cs-Rs	220.3	1.00	1.08048 uF	0.08335 ohm			Save Graph
13	Cs-Rs	240.2	1.00	1.09750 uF	0.08431 ohm			a are areapri
14	Cs-Rs	260.1	1.00	1.11620 uF	0.08533 ohm			
15	Cs-Rs	280.1	1.00	1.13692 uF	0.08652 ohm			Graph Preview
16	Cs-Rs	300.0	1.00	1.15958 uF	0.08769 ohm			
								Remove All
								Main View

# About

This section describes how to view the version number of the software.

## View SoftwareYou may need to check the version of the software toVersionsee if you have the latest version.

- 1. Start the PC Software.
- 2. On the main display window click the **About** menu tab to show the version number.

