
Compensation of LCR Measurements with NI- DCPower

Contents

Compensation of LCR Measurements with NI-DCPower..... 3

Compensation of LCR Measurements with NI-DCPower

Compensations for LCR Measurements with NI-DCPower

Compensation improves the accuracy of LCR measurements you make with NI-DCPower. NI-DCPower includes different compensations that you can combine in various ways to achieve the accuracy you need.

You can make LCR measurements with NI-DCPower without applying any compensation at all. However, the more comprehensive your approach to compensation, the closer you can expect your measurements to be to the actual values of the quantities you are measuring. You can perform as much or as little compensation as is necessary for the degree of measurement accuracy your application requires.

There are two overall compensation types for NI-DCPower instruments that support LCR functionality—**cable compensation** and **LCR compensation**—and there are a few ways to perform each based on your test setup and requirements.

- **Cable compensation**—Corrects for cabling effects: improves coherence across measurements. There are two types of cable compensation for NI-DCPower instruments:
 - **Standard cable compensation**—Applies a compensation for a typical NI-made cable of supported lengths. Does not require you to generate compensation data experimentally.
 - **Custom cable compensation**—Generates compensation data for your specific test setup using open and short configurations. Best suited to complex test setups or setups that involve non-NI cables.
- **LCR compensation**—Applies corrections to your LCR measurements to account for the effects of cables and fixtures: improves overall measurement accuracy. There are three types of LCR compensation for NI-DCPower instruments:

- Open LCR compensation—Generates data to compensate for stray admittance in your test setup by determining corrections when the circuit is open.
- Short LCR compensation—Generates data to compensate for residual impedance in your test setup by determining corrections when the circuit is shorted and no DUT is connected.
- Load LCR compensation—Generates data to compensate for effects in complex circuit configurations that open and short compensation alone cannot account for by determining corrections when a reference load with well-known characteristics that are similar to those of your DUT is used in place of the DUT.


Determining Which Compensations to Perform

There are multiple options for performing both cable compensation and LCR compensation. The approach you should take depends on your test setup, as well as the tradeoff between the degree of accuracy you need for your application and the amount of effort needed to perform the compensations.

NI recommends performing at least some form of compensation for the best accuracy, but you are not required to perform compensation before making LCR measurements.

Refer to the following to determine the types of compensations you may want to perform and, for the relevant types of compensation, how many sets of compensation data you may want to collect and apply.

1. Determine the cable compensation to perform using the following criteria.




Note NI recommends applying cable compensation for the best accuracy, particularly for low-level LCR measurements where the effects of cabling may be significant relative to the quantity you are measuring.

Option	Recommended When
Standard cable compensation	You are using a standard NI cable that is represented with a profile in the Cable Length property, and your test setup is simple—it

Option	Recommended When
	excludes complex circuitry, like switches, that could affect LCR measurements.
Custom cable compensation	<ul style="list-style-type: none"> ▪ Your setup includes non-NI cabling. ▪ Your test setup is complex—it includes complex circuitry, like switches, that could affect LCR measurements.

2. Determine the LCR compensation to perform using the following criteria.

Option	Recommended When
Open LCR compensation	Stray admittance in your test setup may influence LCR measurements; such stray admittance is present in most test setups.
Short LCR compensation	The impedance of your DUT is low ($<100 \Omega$), so the residual impedance of cabling and fixtures may be a meaningful percentage of your DUT impedance.
Load LCR compensation	<p>You know, or can determine, the value of a reference load that is similar to your DUT with a high degree of confidence, and:</p> <ul style="list-style-type: none"> ▪ Your test setup is complex—it includes complex circuitry, like switches, that could affect LCR measurements. ▪ Open and short LCR compensation alone do not yield sufficient accuracy for your application. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">  <p>Note If you want to perform load LCR compensation, you must also perform open and short LCR compensation.</p> </div>

3. If you are performing custom cable compensation or any LCR compensation, determine how many sets of compensation data you may benefit from generating with the following criteria.

Option	Recommended For
Single data set	Simpler applications that involve a single test configuration or where a single set of data improves measurement accuracy enough for your purposes.
Multiple data sets	<p>More complex applications that involve different measurement conditions and that require the best accuracy. Applications may include:</p> <ul style="list-style-type: none"> ▪ Wafer testing, where you are testing and can compensate for multiple physical locations on the wafer

Option	Recommended For
	<ul style="list-style-type: none"> ▪ Using switches, where you can compensate for different paths through the switch ▪ Testing different DUTs (on the basis of part number, rather than serial number) in the same run ▪ Using different measurement parameters



Note If you generate multiple sets of compensation data, you should generate the same number of data sets for each discrete compensation type you perform. For example, if you have two different test points and want to perform custom cable compensation and all three types of LCR compensation, generate two sets each of custom cable compensation data, open LCR compensation data, short LCR compensation data, and load LCR compensation data.

Once you have chosen the types of compensation you want to use, continue with [Compensating an LCR Meter with NI-DCPower](#).

Compensating an LCR Meter with NI-DCPower

Follow this procedure to complete the compensation process for an NI-DCPower LCR meter. You have the flexibility to choose which compensations to perform for your LCR test setup based on the tradeoff between the accuracy you need for your application and the effort required.

Before you begin, complete [Determining Which Compensations to Perform](#).

In addition, if your instrument is due for an external calibration, perform the external calibration before beginning this process.

Based on the compensations you want to perform for your LCR test setup, complete the following steps:

1. Self-calibrate the channels you are compensating with Cal Self Calibrate in your programming environment or in Measurement & Automation Explorer (MAX).
2. If you want to perform a **cable compensation**, complete the relevant procedure:
 - Standard cable compensation: [Selecting a Standard Cable Compensation](#)
 - Custom cable compensation: [Generating Custom Cable Compensation Data](#)
3. If you performed **custom cable compensation**, and depending on how many sets of compensation data you generated, apply the compensation to your measurements:
 - [Applying Custom Cable Compensation: Single Data Set](#)
 - [Applying Custom Cable Compensation: Multiple Data Sets](#)
4. If you want to perform any type of **LCR compensation**, complete the relevant procedure(s):
 - Open LCR compensation: [Generating Open LCR Compensation Data](#)
 - Short LCR compensation: [Generating Short LCR Compensation Data](#)
 - Load LCR compensation: [Generating Load LCR Compensation Data](#)
5. If you performed any type of **LCR compensation**, and depending on how many sets of compensation data you generated, apply the compensation to your measurements:
 - [Applying LCR Compensation: Single Data Set](#)
 - [Applying LCR Compensation: Multiple Data Sets](#)

Completing the parts of this overall process you identified as necessary for your application applies the related corrections to your LCR measurements to improve the quality of those measurements for your test setup.



Note If certain aspects of your test setup change, you should generate and apply a fresh complement of compensation data to ensure the level of

accuracy you need. Refer to [When to Generate New Data for Custom Cable Compensation or LCR Compensation](#) for more information.

Selecting a Standard Cable Compensation

Standard cable compensation applies a preset compensation for supported NI cables. Standard cable compensation is the simplest way to improve your LCR measurements because you do not need to manually generate your own cable compensation data.



Note Complete this process only in the context of the overall compensation process described in [Compensating an LCR Meter with NI-DCPower](#).



Note Before you begin, follow any instructions for preparing your cables in your cable documentation and fully assemble your LCR test setup.

Supported cables are those NI cables represented by an "NI Standard" value of the Cable Length property. Though standard cable compensation may also improve LCR measurements with non-NI cables, NI recommends custom cable compensation for such setups.

To apply a standard cable compensation to your LCR measurements, set Cable Length to an "NI Standard" value as follows.

Cable Type	Description
NI standard cable	Set Cable Length to the "NI Standard" length that corresponds to your NI cabling.
Non-NI cable	Set Cable Length to the "NI Standard" length that best describes your non-NI cable.

Selecting an NI standard cable length applies the cable compensation to your measurements.



Note Because standard cable compensation applies a typical compensation, it does not account for variations in your test setup that

can affect LCR measurements, such as different physical orientations of components within the test setup.

Once you have completed this process, return to [Compensating an LCR Meter with NI-DCPower](#) to continue any other parts of the overall compensation process you want to perform.

Generating Custom Cable Compensation Data

Custom cable compensation calculates corrections specifically for your exact test setup. Generating custom cable compensation involves setting up open and, optionally, short connections at the test fixture to determine corrections experimentally.



Note Complete this process only in the context of the overall compensation process described in [Compensating an LCR Meter with NI-DCPower](#).



Note Before you begin, follow any instructions for preparing your cables in your cable documentation and fully assemble your LCR test setup.

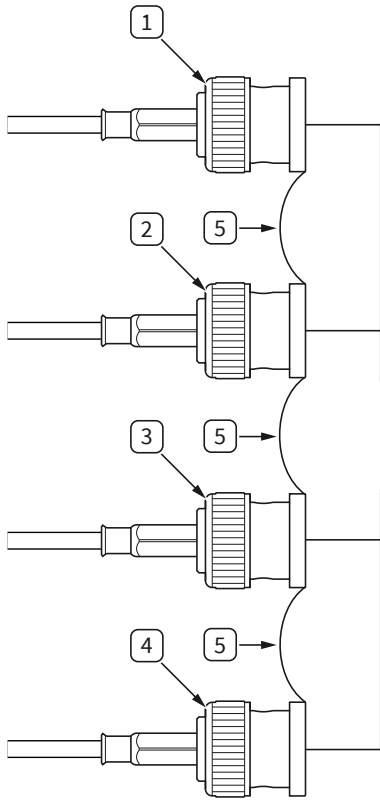


Notice Changes to the physical layout and orientation of components of an LCR test system can affect your LCR measurements. Keep the physical layout of all components of your test system as consistent as possible between compensation and test deployment to ensure your compensation is as effective as possible.

Complete the following steps to generate custom cable compensation data for an LCR test setup:

1. Leave the circuit open across the test fixture as shown.

Figure 1. Compensation: Open Setup. Four-terminal pair (4TP) connection scheme shown.



1. HI CUR
2. HI POT
3. LO POT
4. LO CUR
5. Connection between isolated shield conductors

2. Call Perform LCR Open Custom Cable Compensation to generate the open compensation data.

Calling this function writes the open data to the onboard storage of the instrument. Data from only the most recently performed open custom cable compensation is recorded in onboard storage.

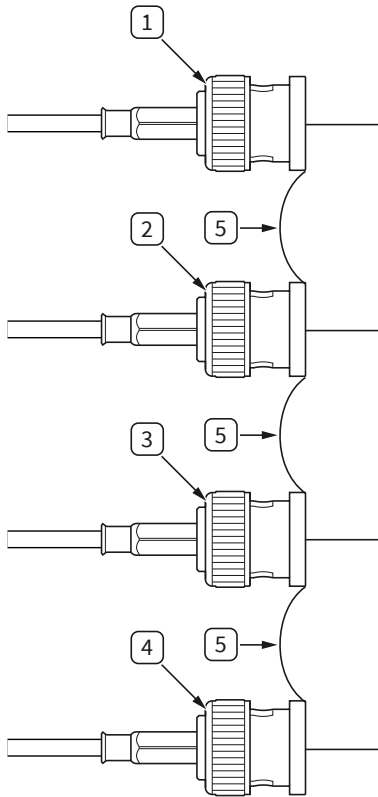



Note When you call this function, most NI-DCPower properties in the session are reset to their default values.

3. Rewrite the values for any session properties that you want to maintain.
4. Determine whether you need to generate your own short custom cable compensation data.

Option	Description
Generate your own data	<p>Generate your own data when it is feasible for you to set up short connections in your application.</p> <p>Yields the best accuracy because the data is calculated for your exact setup.</p> <p>For this option, proceed with step 5.</p>
Use default data	<p>Use the default data when it is not practical for you to set up the short connections in your application.</p> <p>You avoid having to set up short connections, though the default data is not custom-generated for your exact setup.</p> <p>For this option, skip to step 8.</p>

5. Configure a physical short across the test fixture as shown.
Figure 2. Compensation: Short Setup. Four-terminal pair (4TP) connection scheme shown.



1. HI CUR
 2. HI POT
 3. LO POT
 4. LO CUR
 5. Connection between isolated shield conductors
6. Call Perform LCR Short Custom Cable Compensation to generate the short compensation data. Calling this function writes the short data to the onboard storage of the instrument. Data from only the most recently performed short custom cable compensation is recorded in onboard storage.
- 

Note When you call this function, most NI-DCPower properties in the session are reset to their default values.
7. Rewrite the values for any session properties that you want to maintain.

- Prepare the compensation data, based on how many discrete sets of compensation data your application requires.

Data Required	Description
Single set	No action required: onboard storage of the instrument already contains the open and, if generated, short custom cable compensation data.
Multiple sets	<ol style="list-style-type: none"> Call Get LCR Custom Cable Compensation Data, which returns the most recently generated custom cable compensation data as a discrete set of data that you can track. Repeat steps 1 through 8 for each discrete set of custom cable compensation data your application requires.

You have now generated all the custom cable compensation data for your setup. The associated corrections are not yet applied to your measurements.

Once you have completed this process, return to [Compensating an LCR Meter with NI-DCPower](#) to continue any other parts of the overall compensation process you want to perform.

Applying Custom Cable Compensation: Single Data Set

Use this process to apply a single set of custom cable compensation corrections to your LCR measurements.



Note Complete this process only in the context of the overall compensation process described in [Compensating an LCR Meter with NI-DCPower](#).

- Based on whether you generated your own short custom cable compensation data or want to apply default data, set LCR Short Custom Cable Compensation Enabled as follows.
 - Generated short data: TRUE
 - Using default data: FALSE

2. Set Cable Length to Custom (Onboard Storage).

The compensation data you generated are now applied to your instrument.

Once you have completed this process, return to [Compensating an LCR Meter with NI-DCPower](#) to continue any other parts of the overall compensation process you want to perform.

Applying Custom Cable Compensation: Multiple Data Sets

Use this process to apply multiple sets of custom cable compensation corrections to your LCR measurements.



Note Complete this process only in the context of the overall compensation process described in [Compensating an LCR Meter with NI-DCPower](#).

1. Set Cable Length to Custom (As Configured).
2. Based on whether you generated your own short custom cable compensation data or want to apply default data, set LCR Short Custom Cable Compensation Enabled as follows.
 - Generated short data: TRUE
 - Using default data: FALSE
3. For each discrete set of custom cable compensation data you generated with Get LCR Custom Cable Compensation Data, call Configure LCR Custom Cable Compensation at the point in your program that corresponds to the test conditions where the data set applies and supply the corresponding custom cable compensation data.

The compensation data you generated are now applied to your instrument.

Once you have completed this process, return to [Compensating an LCR Meter with NI-DCPower](#) to continue any other parts of the overall compensation process you want to perform.

Generating Open LCR Compensation Data

Generating open LCR compensation data calculates corrections that you can then apply to your LCR measurements.



Note Complete this process only in the context of the overall compensation process described in [Compensating an LCR Meter with NI-DCPower](#).



Note Before you begin, follow any instructions for preparing your cables in your cable documentation and fully assemble your LCR test setup.

The cable compensation data you apply affects the LCR compensation data you generate with this process. Apply a standard cable compensation or apply custom cable compensation data before performing this process.

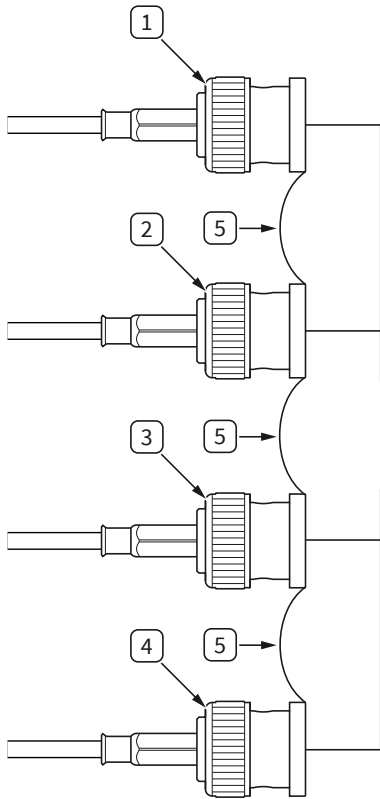


Notice Changes to the physical layout and orientation of components of an LCR test system can affect your LCR measurements. Keep the physical layout of all components of your test system as consistent as possible between compensation and test deployment to ensure your compensation is as effective as possible.

Complete the following steps to generate open LCR compensation data:

1. Leave the circuit open across the test fixture as shown.

Figure 3. Compensation: Open Setup. Four-terminal pair (4TP) connection scheme shown.



1. HI CUR
2. HI POT
3. LO POT
4. LO CUR
5. Connection between isolated shield conductors

2. Reconfigure settings related to cable compensation to correspond to the cable compensation you performed, as follows:

Cable Compensation Option	Description
Standard Cable Compensation	Set Cable Length to the NI standard option you chose.
Custom Cable Compensation	1. Set Cable Length to the custom option you used.

Cable Compensation Option	Description
	<ol style="list-style-type: none"> 2. Set LCR Short Custom Cable Compensation Enabled in the same manner it was set when you applied the custom cable compensation. 3. If you selected Custom (As Configured) for Cable Length, call Configure LCR Custom Cable Compensation and provide the custom cable compensation data you generated for the present point in your program to it.

3. Call Perform LCR Open Compensation and supply any specific frequencies you want to compensate for.

This function generates compensation data based on a default set of test frequencies and the additional frequencies you can specify. NI-DCPower interpolates compensation for frequencies other than these frequencies. Calling this function writes the open data to the onboard storage of the instrument. Data from only the most recently performed open LCR compensation is recorded in onboard storage.



Note When you call this function, most NI-DCPower properties in the session are reset to their default values.

4. Rewrite the values for any session properties that you need to maintain.
5. Based on how many discrete sets of compensation data your application requires, manage the compensation data.

Data Required	Description
Single set	No action required: onboard storage of the instrument already contains the open data.
Multiple sets	<ol style="list-style-type: none"> 1. Measure the complex admittance, Y, of the circuit with Measure Multiple LCR or Fetch Multiple LCR. 2. Calculate the conductance and susceptance from the complex admittance and keep track of the values. 3. If relevant to your application, physically reorient your setup for the next compensation point.

Data Required	Description
	4. Repeat steps <u>2</u> through <u>5</u> for each discrete set of open LCR compensation data your application requires.

You have now generated open LCR compensation data for your setup. The associated corrections are not yet applied to your measurements.

Once you have completed this process, return to [Compensating an LCR Meter with NI-DCPower](#) to continue any other parts of the overall compensation process you want to perform.

Generating Short LCR Compensation Data

Generating short LCR compensation data calculates corrections that you can then apply to your LCR measurements.



Note Complete this process only in the context of the overall compensation process described in [Compensating an LCR Meter with NI-DCPower](#).



Note Before you begin, follow any instructions for preparing your cables in your cable documentation and fully assemble your LCR test setup.

The cable compensation data you apply affects the LCR compensation data you generate with this process. Apply a standard cable compensation or apply custom cable compensation data before performing this process.

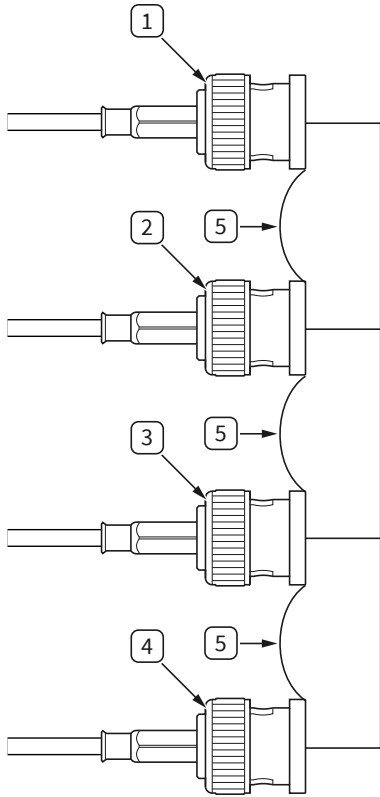


Notice Changes to the physical layout and orientation of components of an LCR test system can affect your LCR measurements. Keep the physical layout of all components of your test system as consistent as possible between compensation and test deployment to ensure your compensation is as effective as possible.

Complete the following steps to generate short LCR compensation data:

1. Configure a physical short across the test fixture as shown.

Figure 4. Compensation: Short Setup. Four-terminal pair (4TP) connection scheme shown.



1. HI CUR
2. HI POT
3. LO POT
4. LO CUR
5. Connection between isolated shield conductors

2. Reconfigure settings related to cable compensation to correspond to the cable compensation you performed, as follows:

Cable Compensation Option	Description
Standard Cable Compensation	Set Cable Length to the NI standard option you chose.
Custom Cable Compensation	<ol style="list-style-type: none"> 1. Set Cable Length to the custom option you used. 2. Set LCR Short Custom Cable Compensation Enabled in the same manner it was set when you applied the custom cable compensation. 3. If you selected Custom (As Configured) for Cable Length, call Configure LCR Custom Cable Compensation and provide the custom cable compensation data you generated for the present point in your program to it.

3. Call Perform LCR Short Compensation and supply any specific frequencies you want to compensate for.

This function generates compensation data based on a default set of test frequencies and the additional frequencies you can specify. NI-DCPower interpolates compensation for frequencies other than these frequencies. Calling this function writes the short data to the onboard storage of the instrument. Data from only the most recently performed short LCR compensation is recorded in onboard storage.



Note When you call this function, most NI-DCPower properties in the session are reset to their default values.

4. Rewrite the values for any session properties that you need to maintain.
5. Based on how many discrete sets of compensation data your application requires, manage the compensation data.

Data Required	Description
Single set	No action required: onboard storage of the instrument already contains the short data.
Multiple sets	<ol style="list-style-type: none"> 1. Measure the complex impedance, Z, of the circuit with Measure Multiple LCR or Fetch Multiple LCR.

Data Required	Description
	<ol style="list-style-type: none"> 2. Calculate the resistance and reactance from the complex impedance and keep track of the values. 3. If relevant to your application, physically reorient your setup for the next compensation point. 4. Repeat steps 2 through 5 for each discrete set of short LCR compensation data your application requires.

You have now generated short LCR compensation data for your setup. The associated corrections are not yet applied to your measurements.

Once you have completed this process, return to [Compensating an LCR Meter with NI-DCPower](#) to continue any other parts of the overall compensation process you want to perform.

Generating Load LCR Compensation Data

Generating load LCR compensation data calculates corrections that you can then apply to your LCR measurements.



Note Complete this process only in the context of the overall compensation process described in [Compensating an LCR Meter with NI-DCPower](#).



Note Before you begin, follow any instructions for preparing your cables in your cable documentation and fully assemble your LCR test setup.

The cable compensation data you apply affects the LCR compensation data you generate with this process. Apply a standard cable compensation or apply custom cable compensation data before performing this process.



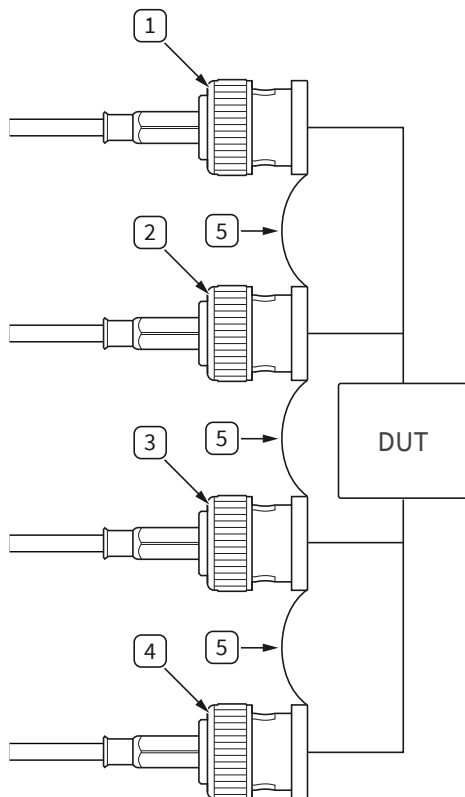
Note Load LCR compensation can be performed only if you also perform open and short LCR compensation.



Notice Changes to the physical layout and orientation of components of an LCR test system can affect your LCR measurements. Keep the physical layout of all components of your test system as consistent as possible between compensation and test deployment to ensure your compensation is as effective as possible.

Complete the following steps to generate load LCR compensation data:

1. Connect a reference load to the fixture that will contain your DUT as shown. Figure 5. Compensation: Load Setup. Four-terminal pair (4TP) connection scheme shown.



1. HI CUR
2. HI POT
3. LO POT

4. LO CUR
 5. Connection between isolated shield conductors
2. Reconfigure settings related to cable compensation to correspond to the cable compensation you performed, as follows:

Cable Compensation Option	Description
Standard Cable Compensation	Set Cable Length to the NI standard option you chose.
Custom Cable Compensation	<ol style="list-style-type: none"> 1. Set Cable Length to the custom option you used. 2. Set LCR Short Custom Cable Compensation Enabled in the same manner it was set when you applied the custom cable compensation. 3. If you selected Custom (As Configured) for Cable Length, call Configure LCR Custom Cable Compensation and provide the custom cable compensation data you generated for the present point in your program to it.

3. Set the additional properties that influence the generated load LCR compensation data.
- In addition to the cable compensation, properties that affect the load LCR compensation data you generate with this process are as follows:

- Current Compensation Freq
- Current GBW
- Current Pole-Zero Ratio
- LCR Current Amplitude
- LCR Custom Measurement Time
- LCR DC Bias Current Level
- LCR DC Bias Source
- LCR DC Bias Voltage Level
- LCR Impedance Range
- LCR Measurement Time
- LCR Stimulus Function

- LCR Voltage Amplitude
 - Source Delay
 - Transient Response
 - Voltage Compensation Freq
 - Voltage GBW
 - Voltage Pole-Zero Ratio
4. Call Perform LCR Load Compensation and supply the load compensation spots you need for your DUT.
 1. Provide a test frequency to compensate for.
 2. Choose a reference value type—a known specification of the reference load.
 3. Use reference value A and reference value B to supply the specification value.

Documentation for the reference value type you choose tells you how to use reference value A and reference value B for each value type.
 4. Repeat steps [4.a](#) through [4.c](#) for as many spots as desired, up to the maximum allowed.



Note This function generates compensation data for only those compensation spots you specify. NI-DCPower does not interpolate compensation data for areas between these spots.

Calling this function writes the load data to the onboard storage of the instrument. Data from only the most recently performed load LCR compensation is recorded in onboard storage.



Note When you call this function, most NI-DCPower properties in the session are reset to their default values.

5. Rewrite the values for any session properties that you need to maintain.
6. Based on how many discrete sets of compensation data your application requires, manage the compensation data.

Data Required	Description
Single set	No action required: onboard storage of the instrument already contains the load data.
Multiple sets	<ol style="list-style-type: none"> 1. Measure the complex impedance, Z, of the circuit with Measure Multiple LCR or Fetch Multiple LCR. 2. Calculate the resistance and reactance from the complex impedance and keep track of the values. 3. If relevant to your application, physically reorient your setup for the next compensation point. 4. Repeat steps <u>2</u> through <u>6</u> for each discrete set of load LCR compensation data your application requires for that particular reference load–DUT pair. 5. If you also need to generate data for multiple reference load–DUT pairs, repeat steps <u>1</u> through <u>6</u>.

You have now generated load LCR compensation data for your setup. The associated corrections are not yet applied to your measurements.

Once you have completed this process, return to [Compensating an LCR Meter with NI-DCPower](#) to continue any other parts of the overall compensation process you want to perform.

Applying LCR Compensation: Single Data Set

Use this process to apply a single set of LCR compensation corrections to your measurements.



Note Complete this process only in the context of the overall compensation process described in [Compensating an LCR Meter with NI-DCPower](#).

Your complete set of LCR compensation data may include any of open, short, and load data.



Note This process accounts for open, short, and load LCR compensation. You can disregard any information for a compensation type you did not perform.

1. Set LCR Open/Short/Load Compensation Data Source to Onboard Storage.
2. Based on the LCR compensations for which you generated data, set the associated NI-DCPower properties to TRUE.
 - Open: LCR Open Compensation Enabled
 - Short: LCR Short Compensation Enabled
 - Load: LCR Load Compensation Enabled

Enabling each property allows NI-DCPower to apply the corrections based on the corresponding compensation to LCR measurements on the associated channel(s).

The compensation data you generated are now applied to your LCR measurements. Once you have completed this process, return to [Compensating an LCR Meter with NI-DCPower](#) to continue any other parts of the overall compensation process you want to perform.

Applying LCR Compensation: Multiple Data Sets

Use this process to apply multiple sets of LCR compensation corrections to your measurements.



Note Complete this process only in the context of the overall compensation process described in [Compensating an LCR Meter with NI-DCPower](#).

Your complete set of LCR compensation data may include any of open, short, and load data.



Note This process accounts for open, short, and load LCR compensation. You can disregard any information for a compensation type you did not perform.

1. Set LCR Open/Short/Load Compensation Data Source to As Defined.
2. For each discrete set of LCR compensation data you generated, write the values you tracked to the relevant properties at the point in your program that corresponds to the test conditions where the data set applies.

LCR Compensation Type	Properties
Open LCR compensation	<ul style="list-style-type: none"> ▪ LCR Open Conductance ▪ LCR Open Susceptance
Short LCR compensation	<ul style="list-style-type: none"> ▪ LCR Short Resistance ▪ LCR Short Reactance
Load LCR compensation	<ul style="list-style-type: none"> ▪ LCR Measured Load Resistance ▪ LCR Measured Load Reactance ▪ LCR Actual Load Resistance ▪ LCR Actual Load Reactance

3. Based on the LCR compensations for which you generated data, set the associated NI-DCPower properties to TRUE.
 - Open: LCR Open Compensation Enabled
 - Short: LCR Short Compensation Enabled
 - Load: LCR Load Compensation Enabled

Enabling each property allows NI-DCPower to apply the corrections based on the corresponding compensation to LCR measurements on the associated channel(s).

The compensation data you generated are now applied to your LCR measurements.

Once you have completed this process, return to [Compensating an LCR Meter with NI-DCPower](#) to continue any other parts of the overall compensation process you want to perform.

When to Generate New Data for Custom Cable Compensation or LCR Compensation

If certain elements of your test setup change and you performed custom cable compensation or any type of LCR compensation, the compensation data you generated will become outdated and less effective, so you should recalculate the compensation data.

Generate new custom cable compensation data or LCR compensation data if any of the following occur.

- You perform a new external calibration
- You perform a new self-calibration
- You add complex circuit elements, such as a switch, between the end of the cable and the fixture containing your DUT
- You change the length of the cabling in your test setup
- You change the physical orientation of the cabling in your test setup
- You begin testing a DUT that is different (on the basis of part number) from the DUT for which you originally generated compensation data; for load LCR compensation, also choose a new reference load appropriate for the new DUT



Tip You can use `Get LCR Compensation Last Date And Time` to find out when each type of custom cable compensation data or LCR compensation data was last generated.



Note Standard cable compensation applies a typical compensation profile rather than compensation data generated specifically for your test setup.