Keysight Sequential Measurement Function Supports Fast and Efficient Test Sequencing

Integrated Keysight B2985A/87A Electrometer/High Resistance Meter function

The sequential measurement function allows you to sequence and control a series of measurements (such as charging and sampling measurements). For example, using only front panel settings you can easily and quickly execute a test sequence as per ASTM D 257 specifications without having to program or use an external PC. Note: ASTM D 257 is a standard test method for the measurement of insulating material DC resistance.

The sequential measurement function is ideal for device or material tests that need to be made at a specified time after applying a stimulus (voltage). This includes resistance/resistivity measurements on insulating materials, capacitors, electro-mechanical components, etc. This function is supported on firmware revision 2.0 and higher.
You can find the latest firmware at http://www.keysight.com/find/precisionMeasure
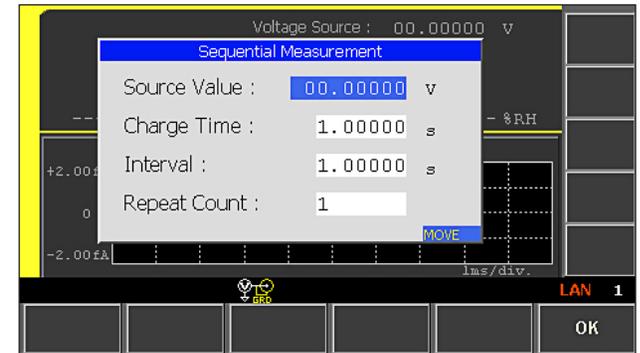
How does the Sequential Measurement function work?

The Sequential Measurement function on the B2985A/87A works as follows:

1. Turns the input/output switches on and applies the specified source value (Vs) voltage.
2. Waits for the defined charge time (Tc) to allow the applied voltage to charge the DUT.
3. Next, it repeatedly measures for the number of times specified by the repeat count (N) using the specified interval time (Ti) between measurements.
4. After all measurements have completed, it turns the input/output switches off.

Keysight B2985A/87A
Electrometer/High Resistance Meter

Vs: Source value
Tc: Charge time
Ti: Interval
N: Repeat count

KEYSIGHT
TECHNOLOGIES

Unlocking Measurement Insights
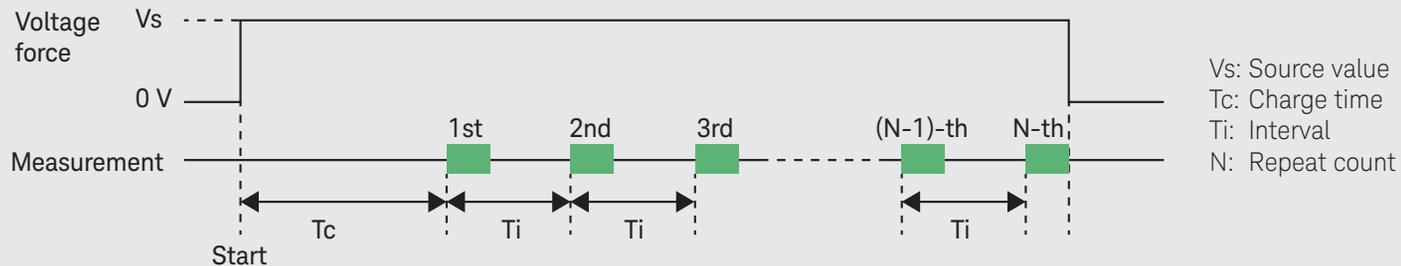
Sequential measurement function and graphical capabilities increase insight into device behavior

Capacitor leakage current measurement (Film capacitor)
− Minimize "Charge Time" to observe transient current during charging
− The last measurement is made after 60 s (= 5.0 s x (13 pts - 1)) of charging

Set

Sequential Measurement

Source Value : +20.00000 v

Charge Time : 1.00000 ms

Interval : 5.00000 s

Repeat Count : 13

MOVE

Run

Graph view
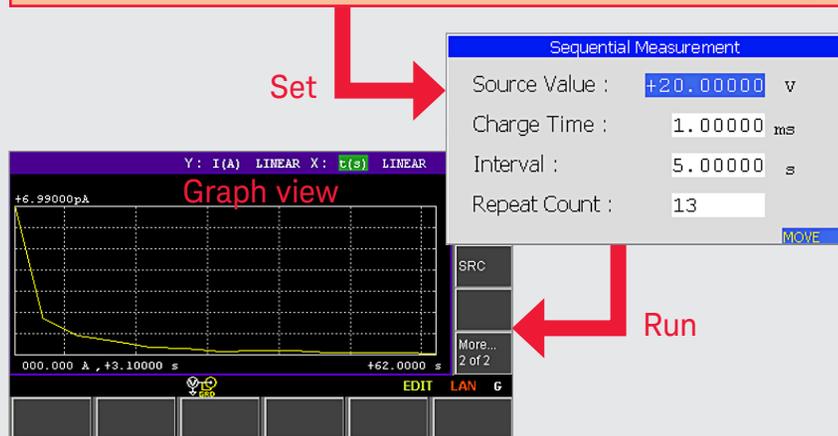
Figure 1. Time dependency of total capacitor leakage current

You can use the sequential measurement function with the B2980A's graphical capabilities (graph, time domain and histogram views) to perform detailed evaluations. For example, if you want to observe transient phenomenon (such as capacitor leakage current after applying voltage) you can view it using the B2980A's graph view. All you have to do is set up the parameters using the sequential measurement feature and change the view mode to graph view. Figure 1 shows a time versus current graph example. Being able to view the characteristics graphically provides useful insights into a given DUT's behavior that are not obtainable from looking at purely numerical information.

You can use time domain and histogram views with the sequential measurement feature as well.

Time domain view

Histogram view
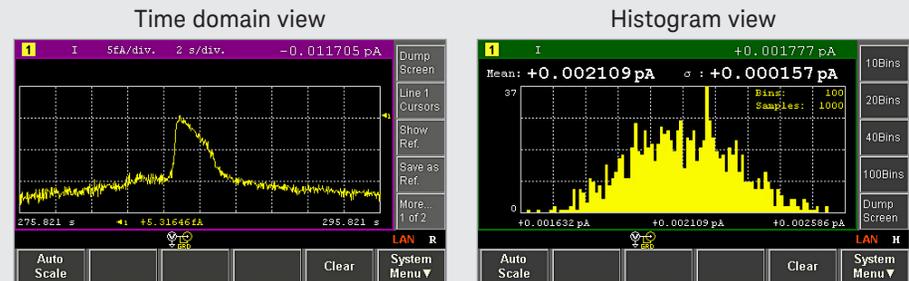
Figure 2. The B2980A's graphical capability

Need to use a remote PC to perform measurement?

If you want to remotely control the B2980A series, a variety of free sample programs written in Microsoft's Visual Basic for Application (VBA) programming language are available; they can be downloaded at no charge from Keysight's website. These sample programs allow you begin making measurements right away, and since the source code is open you are free to customize the code as desired. These sample programs can significantly reduce development times as compared to developing code from scratch.

You can find free sample programs and technical information at:
http://www.keysight.com/find/SensitiveMeasurement

To learn more about the Keysight B2980A series, please visit our website:
http://www.keysight.com/find/b2980a
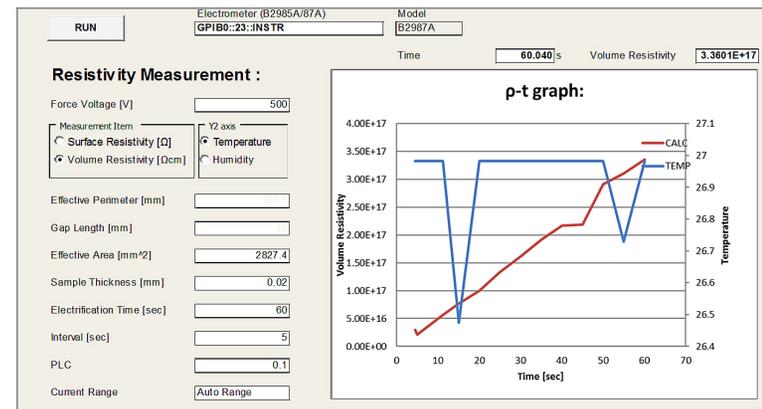
Sample program for Surface/Volume resistivity measurement using the B2985A/87A

![Keysight Technologies logo] **KEYSIGHT** TECHNOLOGIES

Unlocking Measurement Insights