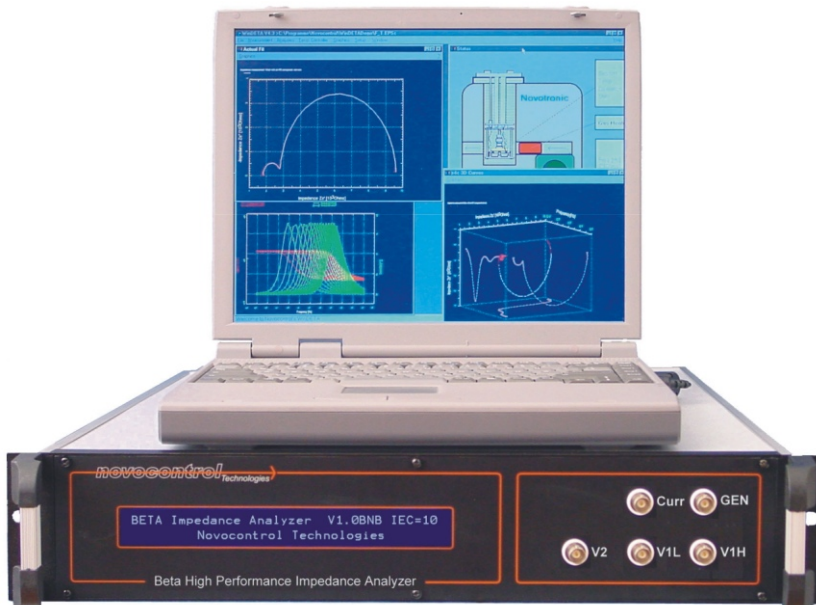


BETA

Advanced Impedance Analyzer



BETA Advanced Impedance Analyzer

- advanced programmable analyzer for highly accurate impedance measurements
- two/three/four-terminal measurement configurations selectable
- broad frequency range: 3 μ Hz ... 20 MHz
- wide impedance range: 1 m ... 100 T
- highest phase resolution of 0.001° to capture even the smallest losses in materials
- fast data acquisition rate: 60 ms/point optionally 6 ms/point in direct mode
- harmonics measurements to analyze non-linearity effects
- high level command set for easy programming
- powerful WinIMP/WinDETA software package for turnkey applications

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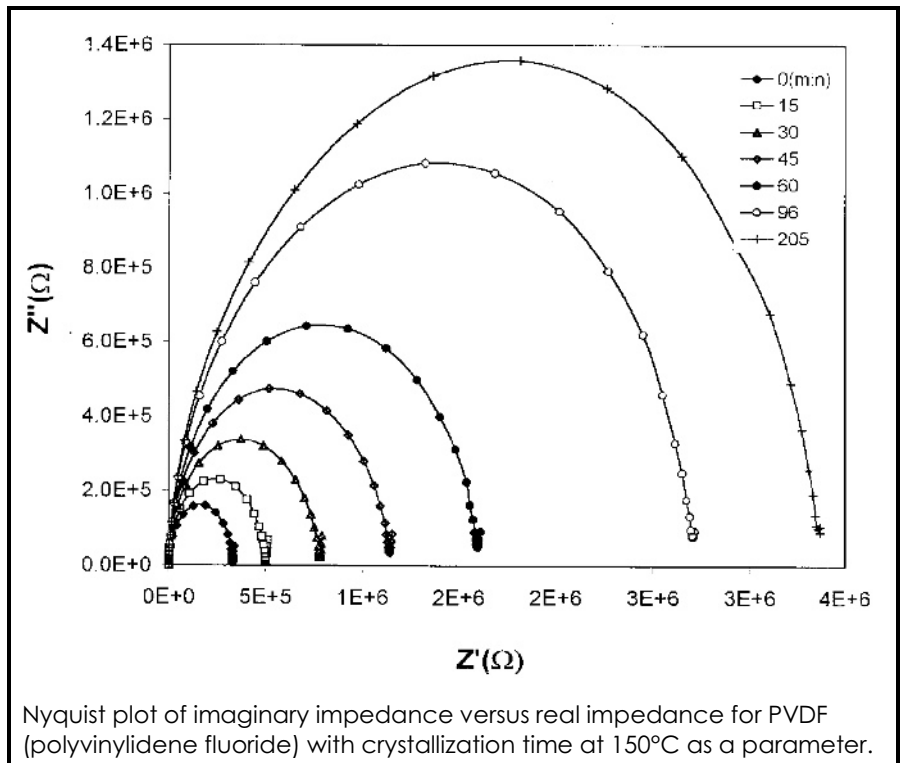
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A new concept for impedance spectroscopy

In physics, chemistry, biology, and materials science, the interaction of electrical charges and dipoles in materials with external electrical fields is of predominant importance.

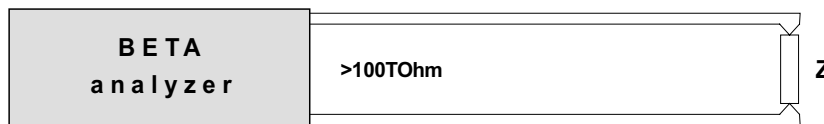
As a leading manufacturer of broadband dielectric spectrometers, NOVOCONTROL Technologies excels in modern measuring techniques using AC impedance methods for the electrical characterisation of materials.

Our BETA analyzer is the measurement solution of choice for researchers who need, in a single instrument, a flexible input configuration for two-, three-, or four-terminal impedance measurements in the frequency domain. NOVOCONTROL Technologies' patented measuring techniques guarantee the highest accuracy and reliability, making this instrument first choice for sophisticated applications in R&D and QA/QC.



Stretching the limits of impedance measurements

In impedance measurements, larger impedance and frequency ranges substantially increase the number of systems, materials, and phenomena that can be studied. Using state-of-the-art digital processing techniques, NOVOCONTROL Technologies has succeeded in reaching formerly inaccessible performance, such as ultrahigh input impedance, wide impedance range, ultralow capacity resolution and high $\tan \delta$ resolution. These features create new options for impedance spectroscopy applications. By separating the signal current and the voltage sensing paths, the four-terminal configuration of the BETA analyzer, in particular, reduces the effects of lead inductance and stray capacitance which are particularly important in case where samples have to be connected via unusually long BNC cables.



Specification BETA Dielectric/Impedance Analyzer

	Voltage	Current	Impedance
Frequency range BETA-L	-	-	3 μ Hz – 300 kHz
Frequency range BETA-K	-	-	3 μ Hz – 3 MHz
Frequency range BETA-N	-	-	3 μ Hz – 20MHz
AC signal	0 – 3 Vrms	0 – 60 mA	-
AC accuracy	$\pm 1\% + 0.1\%/MHz > 10\text{ MHz}$	$\pm 1\% + 0.1\%/MHz > 10\text{ MHz}$	-
AC resolution	50 μ V	100 nA	-
DC Bias	$\pm 40\text{ VDC}$	$\pm 75\text{ mA}$	-
DC accuracy	$\pm 1\% + 10\text{ mV}$	$\pm 1\% + 20\text{ }\mu\text{A}$	-
DC resolution	10 mV	40 μ A	-
Output impedance	50 Ohm $\pm 1\%$	50 Ohm $\pm 1\%$	-
Phase resolution	-	-	0.001°
Measuring V/I/R ranges	30 mV – 3 Vrms	10 fA – 60 mA	1 mOhm – 100 TOhm
Capacitance range	-	-	0.001 pF – 1 F
tan range	-	-	0 – 10^6
tan accuracy	-	-	$3 \cdot 10^{-5}$
tan resolution	-	-	10^{-5}
Sweep types	Voltage AC/DC	-	Frequency lin/log
Result parameters from data acquisition with WinIMP/WinDETA software	-	-	Real/Imaginary/Vector part of Z, R, X, Y, G, B, C, L plus Q and D, tg delta
Interface: IEEE488 (GPIB)	-	-	-