High Voltage Test Interfaces For The Alpha-A Modular Measurement System

HIGH VOLTAGE EXTENSIONS UP TO 4000 VOLTS

Typical applications:

- Non-linear spectroscopy
- Electronic and ion conduction studies
- Ferroelectrics and FLCs
- Leakage current of insulators
- High voltage engineering
- Materials tests under electric stress

Features:

- Excellent performance for general purpose dielectric and impedance measurements
- Accurate measurements with both high AC, high DC or combinations thereof
- Safe and reliable high-voltage applications
- Dedicated high voltage sample cells available

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Technical specification	HVB 300	HVB 1000	HVB 4000
Frequency range	3 µHz – 1 MHz	3 µHz – 10 kHz	3 µHz – 10 kHz
AC output voltage rms	106 V	353 V	1414 V
AC output voltage pp	300 V	1000 V	4000 V
DC output voltage	± 150 V	± 500 V	± 2000 V
Output current rating	70 mA	3.3 mA	2.7 mA
Signal output impedance	200 Ω	150 kΩ	750 kΩ
Impedance range	1 Ω – 10^{15} Ω	100 Ω – 10^{15} Ω	1 kΩ – $2 \cdot 10^{15}$ Ω
Capacitance range	0.001 pF – 0.01 F	0.001 pF – 0.01 F	0.001 pF – 0.01 F
Loss factor (tan δ) accuracy	$3 \cdot 10^{-5}$	$3 \cdot 10^{-5}$	$3 \cdot 10^{-5}$
Voltage attenuator	included	included	included

Safe High Voltage Measurements

Impedance analyzers built by NOVOCONTROL Technologies, renowned for high accuracy and precision, deliver top performance in various applications, like materials science, macromolecular research, semiconductor development, analysis of chemical reactions, and many more. For the investigation of **non-linear properties**, it is essential to apply **high electric fields** to the materials under test.
The use of commercial high voltage amplifiers in combination with a highly sensitive measuring instrument like a Novocontrol impedance analyzer, however, is troublesome as chances are high that the measurement system might be damaged or even destroyed. It is, therefore, imperative to apply particular techniques that achieve **protection against potential high voltage input signals.**

HVB Test Interfaces

The risk of severe instrument damages during high-voltage experiments is easily overcome by the application of the high voltage extension **HVB 300, HVB 1000**, and the **newly developed HVB 4000.** In these devices, a specially designed high voltage input amplifier is a key part of a reliable system for continuous operation in high voltage mode.
All high voltage extensions are designed as test interfaces for the Novocontrol Technologies advanced frequency analyzer **ALPHA-A,** which, in turn, is controlled by a computer typically running the Novocontrol WinDETA software. This instrument controls all functions of the test interface, resulting in a turnkey integrated solution for high voltage dielectric and impedance measurements, including calibration and automatic reference capacitor selection for ultimate measuring accuracy.

Software Support

All high-voltage test interfaces are fully supported in terms of the control, diagnostics, calibration, set-up, data collection and their visualisation by the Novocontrol standard instrument control software **WinDETA.**

High voltage sample cells

Dedicated high-voltage sample cells compatible with our Novotherm, Novocool, and Quatro temperature control systems allow high-voltage/non-linear impedance measurements as a function of temperature.

Seamless Integration

The HVB test interfaces are easily integrated into various Novocontrol turnkey measurement systems (e.g., Concept 40, Concept 80)