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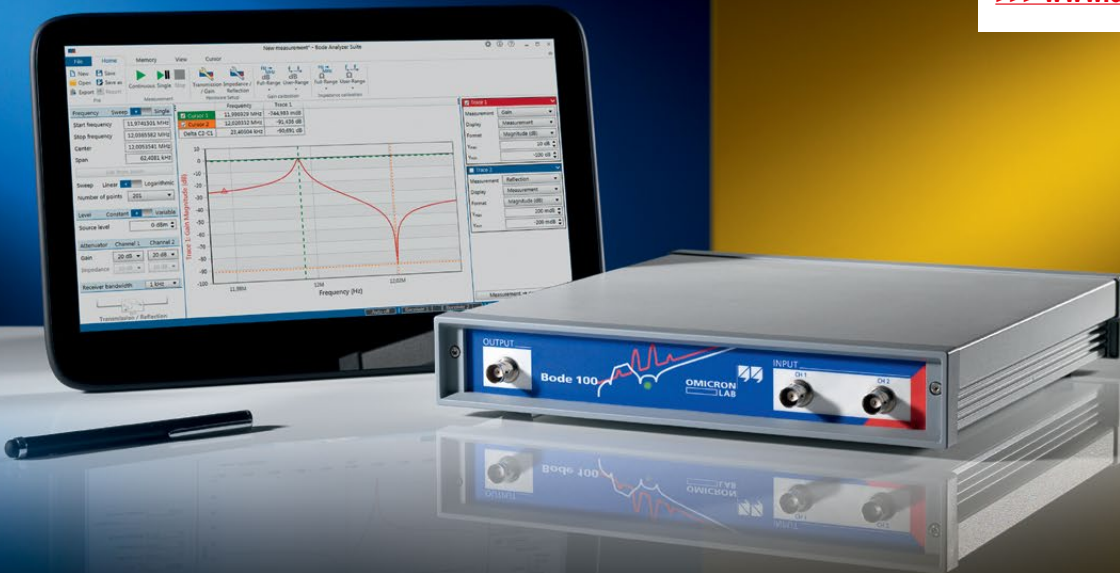
**dataTec AG**

E-Mail: [info@datatec.eu](mailto:info@datatec.eu)

>>> [www.datatec.eu](http://www.datatec.eu)

# Vector Network Analyzer

## Bode 100 - 1 Hz to 50 MHz



### Transmission/Reflection

Measure S-parameters of cables, filters, amplifiers, antennas and more.



### Resonance Frequency

Detect even very narrow, high-Q resonance peaks of piezo elements or RFID and NFC transponders.



### Frequency Response

Measure the complex transfer function (Gain/Phase) of active and passive electronic systems.



### Complex Impedance

Analyze passive electronic components and active electronic circuits.



### Stability Analysis

Analyze electronic control systems such as power supplies. Generate Bode diagrams & Nyquist plots.



### Automated Measurements

Integrate the Bode 100 into measurement setups via its versatile Automation Interface.



# Bode 100

The Bode 100 consists of hardware and software. The high quality hardware ensures **accurate** measurement results in the **wide frequency range** from 1 Hz to 50 MHz. Its **portable** and **compact** design enables you to test wherever you want. Due to the **versatile** system design, the Bode 100 works as **three devices in one**:

## 1. Vector Network Analyzer

The vector network analyzer function of the Bode 100 allows you to measure:

- Swept S-parameters in the 50  $\Omega$  system
- Reflection coefficient and return loss
- Insertion loss of filters
- Group delay characteristics
- Influence of termination on amplifiers

## 2. Frequency Response Analyzer

The Bode 100 serves as a Gain/Phase meter and is ideally suited to measure:

- Transfer functions of electronic circuits
- Stability of control systems such as DC/DC converters or voltage regulators
- Power Supply Rejection Ratio (PSRR) respectively Audio Susceptibility



## 3. Impedance Analyzer

The Bode 100 offers you a high variety of impedance measurement possibilities to easily analyze:

- Electromagnetic devices such as transformers and inductors
- Capacitors and their parasitics
- Ultrasonic and piezo electric components
- Very high Q-circuits such as quartz crystals and oscillators
- Input impedance and output impedance of electronic circuits
- Resonance frequency of RFID, NFC and wireless power systems
- Impedance of power delivery networks (PDN)

### Your benefits:

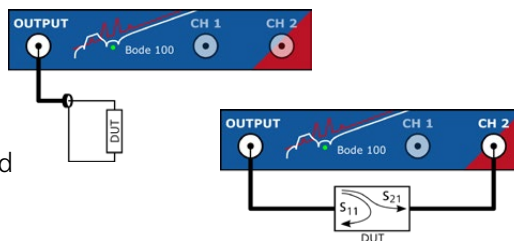
- One device for multiple applications
- Accurate measurement results
- Simple setup - fast results
- Easy data processing
- Automated measurements

# Bode Analyzer Suite

You can fully control the Bode 100 via the Bode Analyzer Suite (BAS). The BAS is an **easy-to-use**, intuitive user interface, which is **included** in the Bode 100 delivery. It allows you to control the Bode 100 hardware from your Windows PC. The BAS helps you to quickly **measure and analyze** your device under test. In addition, it offers great functions to **save, document and share** your measurement results.

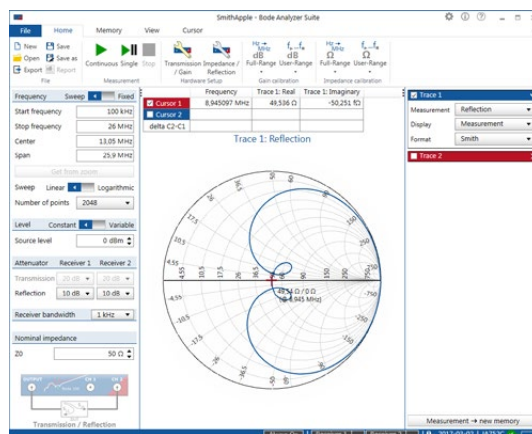
## Measurement Modes

The BAS offers pre-defined measurement modes for quick configuration of the Bode 100 hardware. Impedance measurements from  $m\Omega$  to  $M\Omega$  are supported in Shunt-Thru and Series-Thru configuration.



## Analysis

To understand and optimize your system under test, the BAS offers all kind of chart formats, like Smith, Polar, Nyquist and Bode plots. You can extract all required results and parameters from your measurements using a great variety of analysis features & manipulate your data using mathematical expressions.



## Documentation

The BAS helps you to easily extract the measurement results for your documentation. You can share and archive your results by:

- Exporting CSV, Excel or Touchstone files.
- Copying and pasting the results, charts and settings into your documents.
- Generating a PDF report containing all measurement graphs and device settings.
- Saving your entire measurement including the device settings to a \*.bode3 file which can be viewed on any Windows PC having the Bode Analyzer Suite 3.X installed.

## Integration & Automation

Easily automate your Bode 100 measurements via the Bode Automation Interface 3.X using:

- OLE compliant controllers such as VBA (e.g. Excel), Matlab,...
- Programming languages like Visual Basic, C#, C++ or any other COM+ compatible system/language
- LabVIEW 2015 or newer

# Technical Data

## Signal Source (BNC Connector)

Frequency range: 1 Hz to 50 MHz  
Output impedance: 50  $\Omega$   
Waveform: Sinusoidal signal  
Signal level: -30 dBm to 13 dBm @ 50  $\Omega$

## Inputs: CH1, CH2 (BNC Connector)

Input impedance: 50  $\Omega$  or 1 M $\Omega$  || 50 pF  
Receiver bandwidth: 1 Hz to 5 kHz  
Input attenuators: 0 dB, 10 dB, 20 dB, 30 dB, 40 dB  
Input sensitivity: 100 mV<sub>RMS</sub> full scale @ 0dB  
Dynamic range: > 100 dB  
Gain error: < 0.1 dB (calibrated)  
Phase error: < 0.5° (calibrated)

## PC Requirements

Processor: Core-i Dual-Core (or similar)  
Memory (RAM): 2 GB, 4 GB recommended  
Graphics resolution: > Super VGA (1024x768)  
Graphics card: DirectX11 with Direct2D  
USB interface: USB 2.0 or higher  
Operating system: Windows 10

## General

Weight Bode 100: < 2 kg / 4.4 lbs  
Dimensions: 26 x 5 x 26.5 cm  
10.25 x 2 x 10.5 inch  
DC power demand: 9 V - 24 V / 10 W

## Delivery Includes

Vector Network Analyzer Bode 100  
Bode Analyzer Suite on DVD  
Printed Quick Start Guide (English)  
Power supply (100 V - 240 V / 47 Hz - 63 Hz)  
USB cable  
4 x 0.5 m BNC cable 50  $\Omega$  (m - m)  
1 x BNC T-adapter (f - f - f)  
1 x BNC straight adapter (f - f)  
1 x BNC 50  $\Omega$  load (m)  
1 x BNC short circuit (m)  
Test objects: quartz filter and IF filter on a PCB  
Order number: P0005755

# Accessories



**B-WIT 100**  
Wideband injection transformer  
Order number: P0005758



**B-LFT 100**  
Low-frequency injection transformer  
Order number: P0005773



**B-SMC**  
Impedance fixture for SMD components  
Order number: P0005759



**B-WIC**  
Impedance fixture for THT components  
Order number: P0005760



**B-AMP 12**  
Amplifier to increase output power.  
Order number: P0005772

## B-LCM

Low-frequency common mode choke  
Order number: P0005778



**PML 1110 & PHV 1000-O**  
Passive 10:1 or 100:1 probe for Bode 100  
Order numbers:  
10:1 Probe PML 1110: B1666600  
100:1 Probe PHV 1000-O: P0008137



**B-RFID**  
Measure contactless resonance-frequency and Q-factor of RFID and NFC tags  
Order numbers:  
B-RFID-A for Class 1: P0005774  
B-RFID-B for Class 3: P0005775  
B-RFID-C for Class 6: P0005776



**Carrying Case**  
Protective case for your Bode 100  
Order number: E1399000



**B-RMK-10** Rack Mount Kit  
Order number: P0001108

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**dataTec**

**Ihr Ansprechpartner /  
Your Partner:**

**dataTec AG**  
E-Mail: info@datatec.eu  
>>> [www.datatec.eu](http://www.datatec.eu)

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