Technical Data Sheet
Bode 500
Vector Network Analyzer

V 1.2

Visit www.omicron-lab.com for more information.
Contact support@omicron-lab.com for technical support.

Technical data subject to change without notice.

1. Signal Source (OUTPUT)

Waveform	Sinusoidal
Frequency range	10 mHz* to 450 MHz
Signal level range	-50 dBm to 16 dBm** 4 mVpp to 8 Vpp (no load) 2 mVpp to 4 Vpp (50 Ω load)
Source level accuracy	± 0.2 dB*** (DC to 100 MHz) ± 0.6 dB*** (100 MHz to 450 MHz)
Source signal dc offset	Up to 35 kHz: < 5 mV or < 0.2% of Vpp Above 35 kHz: < 2 mV
Frequency accuracy after adjustment	± 0.5 ppm ± 0.5 · step size
Frequency step size / resolution	3.52 µHz
Frequency stability	± 1 ppm (< 1 year after adjustment) ± 2 ppm (< 3 years after adjustment)
Source impedance	50 Ω
Return loss	> 30 dB, > 35 dB typical (DC to 100 MHz) > 26 dB, > 30 dB typical (100 MHz to 200 MHz) > 23 dB, > 28 dB typical (200 MHz to 450 MHz)
Spurious signals & harmonics	< - 25 dBc at full output power (typical)
Maximum reverse signal / power	0.5 W = 5 Vrms (≤ 3.3 V recommended)
Connector type	N

*… 10 mHz requires Bode Analyzer Suite 3.52 or newer
**… linear power derating from 16 dBm to 13 dBm between 100 MHz and 300 MHz and to 7 dBm at 450 MHz
***… below -10 dBm, the source level tolerance increases by 0.3 dB

2. Inputs (CH1, CH2)

Frequency range	10 mHz* to 450 MHz
Input impedance (software switchable)	**High**: 1 MΩ (AC-coupled) **Low**: 50 Ω (DC-coupled)
1 MΩ input impedance Input capacitance	1 MΩ ± 0.5 % (AC-coupled) 25 pF @ 1 MHz (typical)
50 Ω input impedance return loss	> 28 dB, > 35 dB typical (DC to 100 MHz) > 23 dB, > 28 dB typical (100 MHz to 450 MHz)
Receiver bandwidth (RBW) software selectable	1 Hz, 3 Hz, 10 Hz, 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 5 kHz, 10 kHz, 15 kHz
Input attenuators (software selectable)	0 dB, 20 dB
Full-scale ac input signal	1 Vrms @ 0 dB input attenuator 10 Vrms @ 20 dB input attenuator
Input channel sensitivity (typical)	< 1 µVrms** (@ 0 dB attenuator, 10 Hz RBW)
Maximum dc voltage (1 MΩ input impedance)	50 V
Maximum dc voltage (50 Ω input impedance)	7 V
Input channel dynamic range (typical)	> 120 dB (@ 10 Hz RBW)**
Connector type	N

*… 10 mHz requires Bode Analyzer Suite 3.52 or newer
**… from 3 kHz to 100 MHz

3. General

Noise floor (S21 measurement) RBW = 10 Hz, P_{SOURCE} = 16 dBm Attenuator CH2: 0 dB	1 Hz to 2 kHz: - 120 dB (typical) 3 kHz to 100 MHz: - 130 dB (typical) at 300 MHz: -115 dB (typical) at 450 MHz: -105 dB (typical)
Warm-up time (3τ)	84 min*

*… specifications are valid after the device has warmed up and reached a stable temperature

Dimensions (width × height × depth)	26 x 5 x 27.5 cm 10.25 x 2 x 10.85 inch
Weight	2.2 kg / 4.9 lb
Control (and supply) USB connector	USB-C
Control (and supply) Ethernet connector	RJ45
USB host connector	USB-A**
External reference frequency input	BNC**
External trigger input / output	BNC**

**… reserved for future use

4. Environmental

Temperature range	Storage Operating For specification	–35…+60 °C / –31…+140 °F +5…+40 °C / +41…+104 °F 23 °C ± 5 °C / 73 °F ± 18 °F
Relative humidity	Storage Operating	20…90 %, non-condensing 20…80 %, non-condensing

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5. PC Requirements for Bode Analyzer Suite 3.52

Processor	Intel Core-i Dual-Core (or similar)
Memory (RAM)	2 GB, 4 GB recommended
Graphics resolution	Super VGA (1024 x 768) higher resolution recommended
Graphics card	DirectX 11 with Direct2D support
USB interface	USB 2.0 or higher
Operating system	Windows 11

6. Power Requirements

Wide-range mains power adapter

Line input voltage / frequency / current	100…240 V / 47…63 Hz / < 0.5 A
DC output voltage / current / power	18 V / 1.33 A / 24 W

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Maximum power requirement	24 W
DC coaxial power socket	+ 9 V…+ 24 V Inner diameter 2.5 mm Outer diameter 5.5 mm
Polarity	Inner conductor…positive
USB-PD demand	20 V @ 1.25 A or 15 V @ 1.75 A
PoE demand	PoE+, class 4

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7. Absolute Maximum Ratings (device will be destroyed)

Maximum DC supply voltage	+26 V
Maximum DC supply reverse voltage	-26 V
Maximum input signal at CH1 or CH2 (low impedance, 50 Ω)	1 W (= 7 Vrms)
Maximum AC input signal at CH1 or CH2 (high impedance, 1 MΩ)	40 Vrms (10 mHz to 1 MHz) 15 Vrms (2 MHz to 5 MHz) 10 Vrms (5 MHz to 10 MHz) 7 Vrms (10 MHz to 450 MHz)
Maximum DC input signal at CH1 or CH2 (high impedance, 1 MΩ)	- 50 V…+ 50 V
Maximum peak value for AC + DC signal (high impedance, 1 MΩ)	- 60 V…+ 60 V
Maximum return power at the OUTPUT connector	0.5 W (= 5 Vrms)

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