



Advanced Test Equipment Corp.

Rentals • Sales • Calibration • Service

Technical Data Sheet

Bode 500

Vector Network Analyzer



V 1.0

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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 Vdc recommended) |
| Connector type | N |

*...currently limited to 1 Hz. 10 mHz planned in a future software version.

**...linear power derating from 16 dBm to 13 dBm between 100 MHz and 300 MHz, and to 7 dBm at 450 MHz

2. Inputs (CH1, CH2)

| | |
|---|---|
| Frequency range | 10 mHz* to 450 MHz |
| Input impedance (software switchable) | High: 1 M Ω (ac-coupled) Low: 50 Ω (dc-coupled) |
| 1 M Ω input impedance | 1 M Ω \pm 0.5 % (ac-coupled) |
| Input capacitance | 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 μ Vrms** (@ 0 dB attenuator, 10 Hz RBW) |
| Maximum dc voltage (1 M Ω 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 |

*...currently limited to 1 Hz. 10 mHz planned in a future software version.

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

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5. PC Requirements for Bode Analyzer Suite

| | |
|---------------------|---|
| 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 10, 11 |

6. Power Requirements

Wide-range mains power adapter

| | |
|--|------------------------------------|
| Line input voltage / frequency / current | 100...240 V / 47...63 Hz / < 0.5 A |
| Output voltage / current / power | 18 Vdc / 1.33 A / 24 W |

Bode 500

| | |
|---------------------------|--|
| Maximum power requirement | 24 W |
| Coaxial power socket | + 9 Vdc...+ 24 Vdc 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 |

7. Absolute Maximum Ratings (device will be destroyed)

| | |
|---|----------------------------|
| Maximum supply voltage | +26 Vdc |
| Maximum supply reverse voltage | -26 Vdc |
| 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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