Moku:Delta Instrument Datasheet
Spectrum Analyzer

The Moku:Delta Spectrum Analyzer provides precision spectral analysis from DC to 2 GHz with a noise floor below 10 nV/√Hz across eight independent analog input channels. Hybrid 14-bit and 20-bit ADC blending enables high-fidelity acquisition with wide dynamic range across the full bandwidth. Real-time analysis and advanced digital windowing support detailed spectral inspection, making it well suited for RF diagnostics, quantum systems, and advanced research applications.

Frequency Range	Minimum RBW	Input Noise	Sine Wave Generator	Output Frequency	Advanced
DC to 2 GHz	**618.5 mHz**	**< 10 nV√Hz**	**4 channels**	**Up to 2 GHz**	**Real-time cross-correlation**

Features

- Display and record power spectra or power spectral densities in the frequency domain from DC to 2 GHz
- Real-time cross-correlation measurement to enhance signal detection amid noise
- Integrated high-speed signal generator channels with analog bandwidths up to 2 GHz
- Supported external clock reference: 10 MHz, 100 MHz, GPS
- Independent cursors for active peak tracking
- Live measurement functions: peak level, peak frequency, noise level, peak SNR, and occupied bandwidth

Specifications

- Frequency range:
  - 50 Ω: 2 GHz
  - 1 MΩ: 1 MHz
- Frequency span: 100 Hz to 2 GHz
- Number of input channels: 8
- Minimum resolution bandwidth (RBW): 618.5 mHz (span dependent)
- Input range:
  - 50 Ω: 100 mVpp, 1 Vpp, or 10 Vpp
  - 1 MΩ: 1 Vpp, or 40 Vpp
- Input impedance: 50 Ω / 1 MΩ
- Number of output channels: 4
- Output range: up to 2 GHz (1 Vpp)
  up to 100 MHz (10 Vpp)
- Video filter bandwidth: 580 mHz to 24 MHz

Applications

- Multi-channel spectrum monitoring
- System response characterization
- Noise spectra analysis
- Satellite communications
- RF system design and characterization
- Spurious signal identification
- Electromagnetic Interference (EMI) testing

Note: All Moku:Delta specifications are subject to change.

Spectrum Analyzer

The Moku:Pro Spectrum Analyzer allows you to observe input signals in the frequency domain between DC and 300 MHz with an ultra-low noise floor. View four channels simultaneously with a resolution bandwidth as low as 2.2 Hz and a minimum span of 100 Hz. The Spectrum Analyzer also features four 500 MHz sine wave generators.

Frequency Range	Frequency Span	Minimum RBW	Input Noise	Signal Generator	Output Frequency
DC to 300 MHz	100 Hz to 300 MHz	2.2 Hz	30 nV√Hz @ 100Hz	4 channels	Up to 500 MHz

Features

- Display and record power spectra or power spectral densities in the frequency domain from DC to 300 MHz
- Generate four sine waves up to 500 MHz using the Moku:Pro built-in analog outputs
- Quickly measure key metrics by dragging measurement cursors onto features of interest using the multi-touch interface
- Live measurement functions: peak level, peak frequency, noise level, peak SNR, and occupied bandwidth
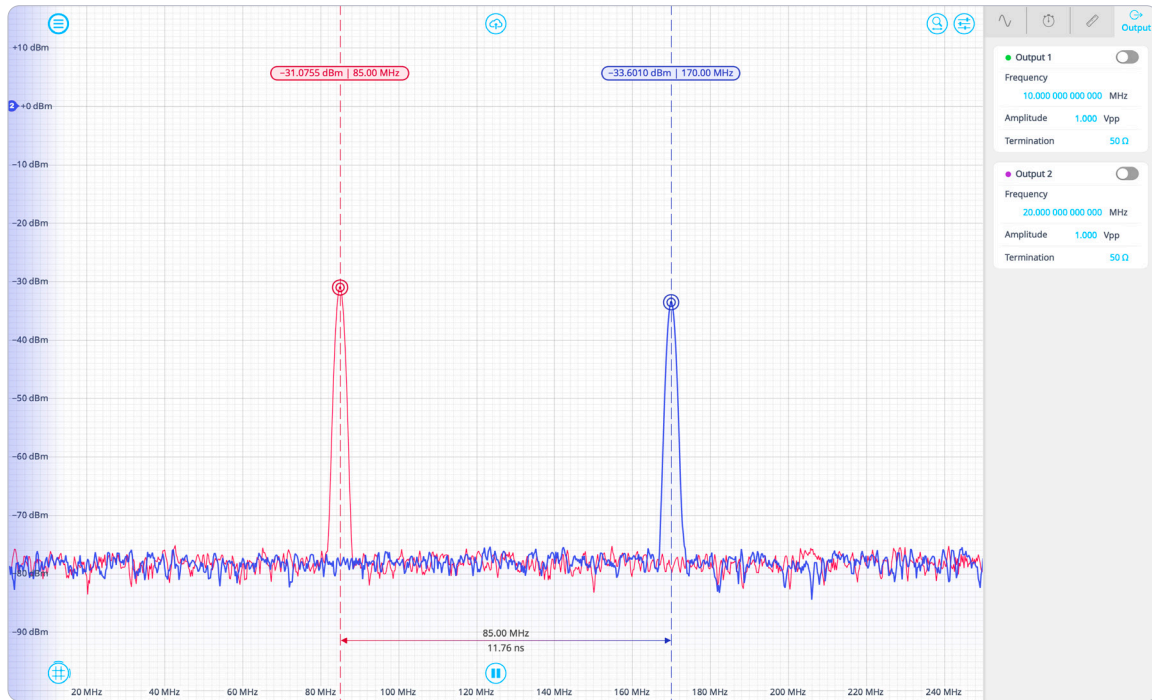
Specifications

- Frequency range: DC to 300 MHz
- Frequency span: 100 Hz to 300 MHz
- Resolution bandwidth (RBW): span dependent, minimum RBW is 2.2 Hz
- Number of input channels: 4
- Input range: 400 mVpp, 4 Vpp, or 40 Vpp
- Input impedance: 50 Ω / 1 MΩ
- Number of output channels: 4
- Output range: up to 500 MHz (2 Vpp)
  up to 100 MHz (10 Vpp)
- Video filter bandwidth: 2.3 Hz to 4.6 MHz

Applications

- Frequency-domain analysis
- System response characterization
- Noise measurement
- RF system design
- Spurious signal identification

Spectrum Analyzer

The Moku:Lab Spectrum Analyzer allows you to observe input signals in the frequency domain between DC and 250 MHz. View two channels of data simultaneously with a resolution bandwidth as low as 1 Hz over a minimum span of 100 Hz. The Spectrum Analyzer also features two integrated waveform generators capable of producing sine waves at up to 250 MHz.

Frequency range	Frequency span	Minimum RBW	Video filter bandwidth	Signal generator	Output frequency
DC to 250 MHz	**100 Hz to 250 MHz**	**1 Hz**	**10 Hz to 2.4 MHz**	**Integrated**	**Up to 250 MHz**

Features

- High-bandwidth input and output options: display and record power spectra or power spectral densities in the frequency domain from DC to 250 MHz
- Generate two sine waves up to 250 MHz using the Moku:Lab built-in analog outputs
- Quickly measure key metrics by dragging measurement cursors onto features of interest
- Python, MATLAB, and LabVIEW APIs for advanced programming support
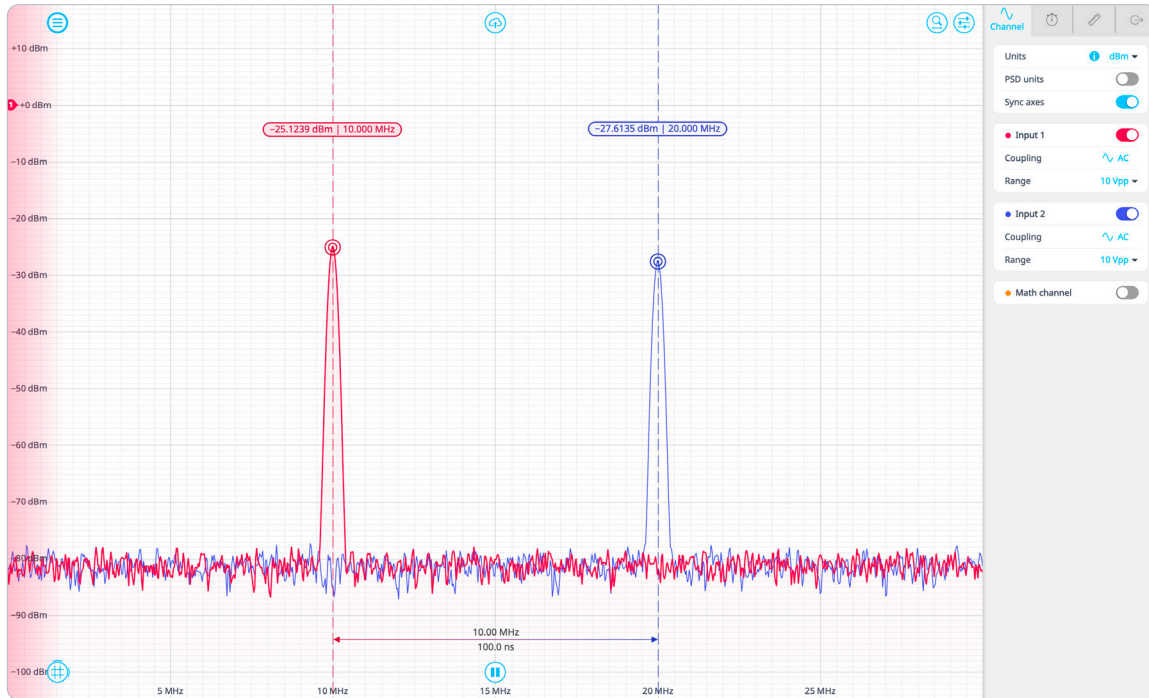
Specifications

- Frequency range: DC to 250 MHz
- Frequency span: 100 Hz to 250 MHz
- Resolution bandwidth (RBW): span dependent, minimal RBW is 1 Hz
- Number of inputs: 2
- Input range: 1 Vpp or 10 Vpp
- Input impedance: 50 Ω / 1 MΩ
- Noise floor: -130 dBm with 1 Vpp input range, 1 Hz RBW
- Number of outputs: 2
- Output frequency range: 1 mHz to 250 MHz
- Output voltage: 2 Vpp into 50 Ωs

Applications

- Frequency domain analysis
- System response characterization
- Noise measurement
- RF system design
- Spurious signal identification

Spectrum Analyzer

Moku:Go's Spectrum Analyzer allows you to observe input signals in the frequency domain between DC and 30 MHz. The frequency down-conversion / FFT hybrid approach provides significant improvement in dynamic range and spectral resolution compared to an FFT-based spectral analysis. View two channels of data simultaneously with a resolution bandwidth as low as 470 mHz over a minimum span of 100 Hz. The Spectrum Analyzer also features two integrated waveform generators capable of producing sine waves at up to 20 MHz.

Frequency Range	Frequency Span	Minimum RBW	Video Filter Bandwidth	Signal Generator	Output Frequency
DC to 30 MHz	**100 Hz to 30 MHz**	**470 mHz**	**20 Hz to 610 kHz**	**Integrated**	**up to 20 MHz**

Features

- High bandwidth input and output options: display and record power spectra or power spectral densities in the frequency domain from DC to 30 MHz.
- Generate two sine waves up to 20 MHz using Moku:Go's built-in analog outputs.
- Quickly measure key metrics by dragging measurement cursors onto features of interest using the graphical interface.

Specifications

- Frequency range: DC to 30 MHz
- Frequency span: 100 Hz to 30 MHz
- Resolution bandwidth (RBW): span dependent, minimum RBW is 470 mHz
- Number of inputs: 2
- Input range: 10 Vpp
- Input impedance: 1 MΩ
- Number of outputs: 2
- Output frequency range: 1 mHz to 20 MHz
- Output voltage: 10 Vpp

Applications

- Frequency domain analysis
- System response characterization
- Noise measurement
- Spurious signal identification