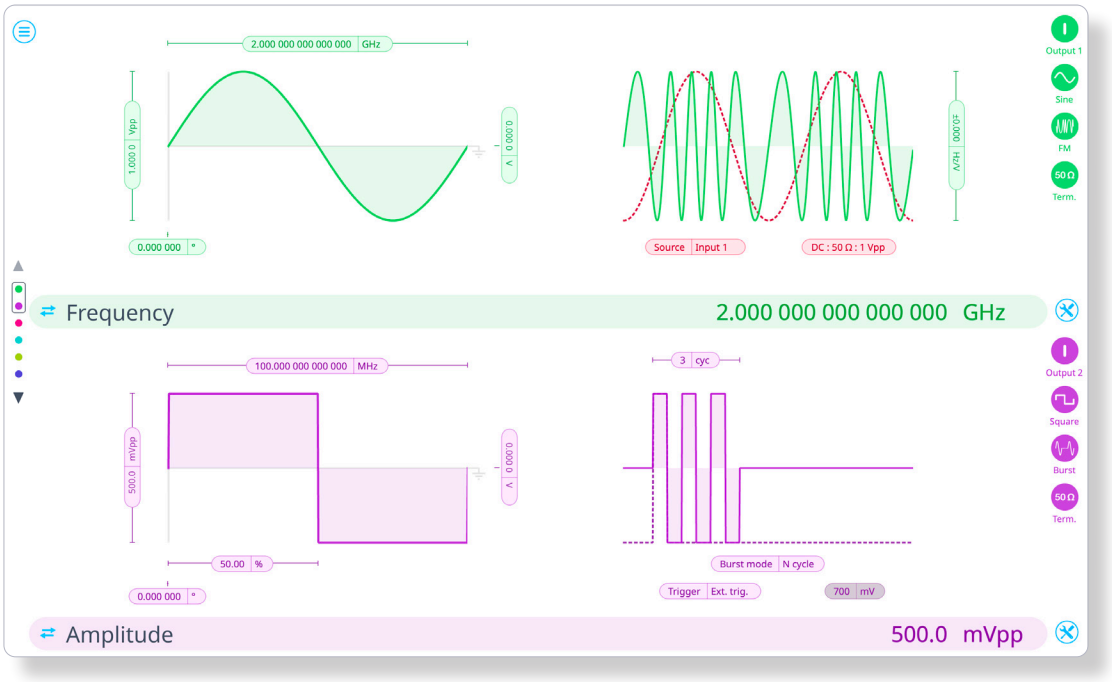
Moku:Delta Instrument Datasheet

Waveform Generator

The Moku:Delta Waveform Generator provides six independent analog outputs at 10 GSa/s with up to 2 GHz bandwidth. It supports sine, square, ramp, pulse, noise, and DC waveforms with configurable frequency, amplitude, phase, and offset. Modulation options include AM, FM, PM, and PWM. Advanced triggering from internal or external sources, multi-channel synchronization, and a GPS-disciplined clock enable precise waveform delivery in RF, quantum control, and timing-critical applications.



Frequency Range	Output Voltage Range	Modulation	Other Modes	Timebase Accuracy
1 mHz to 2 GHz	**Up to 10 Vpp (50 Ω)**	**FM, AM, PM, PWM**	**Burst, Sweep**	**1 ppb**

Features

- Generate six independent phase coherent waveforms from DC to 2 GHz
- Six built-in waveforms: sine, square, ramp, pulse, noise, and DC
- Broadband FM, AM, PM, and PWM modulation with internal waveform (cross-channel modulation) or external input
- Versatile trigger options: from input, dedicated TTL trigger port, or another channel
- Supported external clock reference: 10 MHz, 100 MHz, GPS

Specifications

- Output bandwidth:
  - 2 GHz (1 Vpp)
  - 100 MHz (10 Vpp)
- Frequency range (1 Vpp):
  - Sine: 1 mHz to 2 GHz
  - Square: 1 mHz to 600 MHz
  - Ramp: 1 mHz to 600 MHz
  - Pulse 1 mHz to 600 MHz
- Pulse width: 500 ps to period
- Modulation bandwidth: 156 MHz
- Timebase accuracy: 1 ppb
- Burst mode: start, N-cycle, gated
- Sweep time: 1 ms to 1 ks

Applications

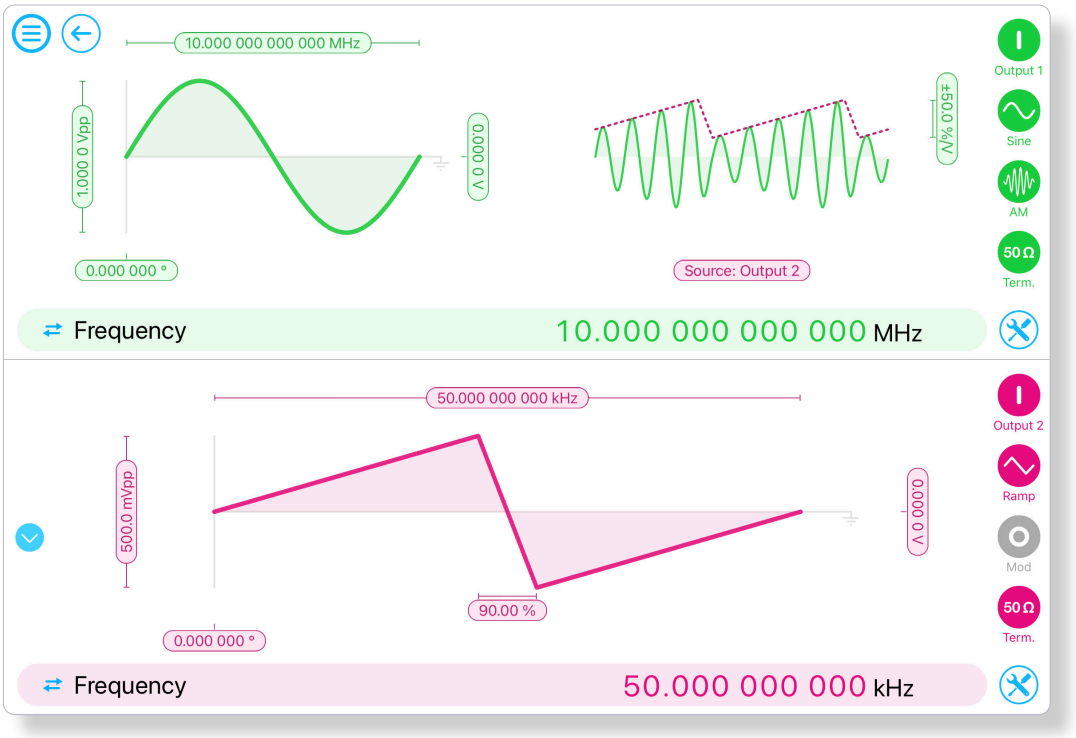
- Quantum control and readout
- RF system prototyping and testing
- Signal simulation
- Laser scanning microscopy
- Circuit design and characterization
- System synchronization
- Clock source
- Microwave photonics and electro-optic modulation
- Modulation scheme evaluation

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

Moku:Pro Instrument Datasheet

Waveform Generator

The Moku:Pro Waveform Generator enables you to generate four independent waveforms with a maximum bandwidth of 500 MHz. Select between sine, square, ramp, pulsed, noise, or DC waveform shapes. Perform high-bandwidth modulation of phase, frequency, amplitude, and pulse width; and generate triggered bursts or sweeps from an internal or external source.



Frequency Range	Output Voltage Range	Modulation	Other Modes	Timebase Accuracy
1 mHz to 500 MHz	**Up to 10 Vpp (50 Ω)**	**FM, AM, PM, PWM**	**Burst, Sweep**	**< 300 ppb**

Features

- Generate four independent phase coherent waveforms from DC to 500 MHz
- Six built-in waveforms: sine, square, ramp, pulse, noise, and DC
- Broadband FM, AM, PM, and PWM modulation with internal waveform (cross-channel modulation) or external input
- Versatile trigger options: from input, dedicated TTL trigger port, or another channel
- 10 MHz reference input and output

Specifications

- Output bandwidth:
  - 500 MHz (2 Vpp)
  - 100 MHz (10 Vpp)
- Frequency range (2 Vpp):
  - Sine: 1 mHz to 500 MHz
  - Square: 1 mHz to 150 MHz
  - Ramp: 1 mHz to 150 MHz
  - Pulse 1 mHz to 150 MHz
- Pulse width: 4 ns to period
- Modulation bandwidth: 125 MHz
- Timebase accuracy: < 300 ppb
- Burst mode: start, N-cycle, gated
- Sweep time: 1 ms to 1 ks

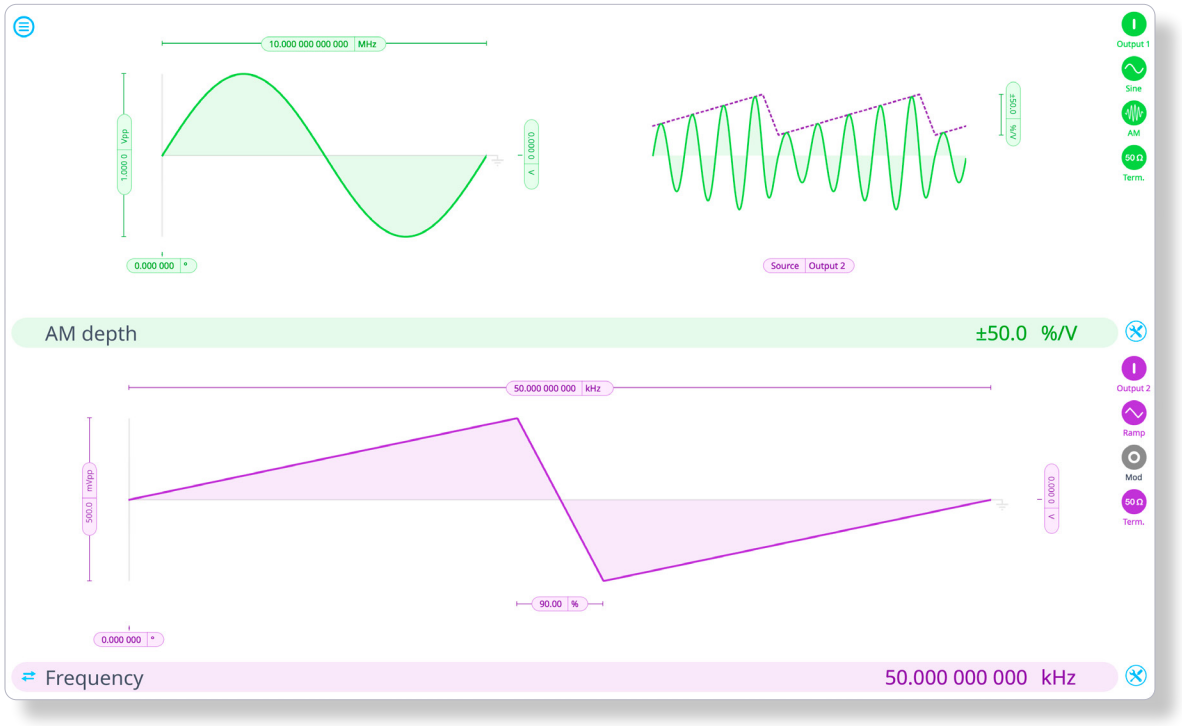
Applications

- Signal simulation
- Laser scanning microscopy
- Circuit design and characterization
- System synchronization
- Clock source
- DAC/Op-amp characterization
- Motor control

Moku:Lab Instrument Datasheet

Waveform Generator

The Moku:Lab Waveform Generator enables you to generate two independent waveforms with a sampling rate of 1 GSa/s, a maximum frequency of 250 MHz and an output voltage range of 2 Vpp into 50 Ω. Select between sine, square, ramp, pulsed, noise, or DC waveform shapes. Modulate the phase, frequency, amplitude, pulse width; or generate triggered bursts or sweeps from an internal or external source.



Frequency Range	Sampling Rate	Resolution	Output Voltage Range	Modulation	Other Modes
DC to 250 MHz	500 MSa/s	16 bit	2 Vpp into 50 Ω	FM, AM, PM, PWM	Burst, Sweep

Features

- Generate 2 independent waveforms from DC to 250 MHz
- 6 built-in waveforms: sine, square, ramp, pulse, noise and DC
- Broadband FM, AM, and PM, and PWM modulation with internal waveform (cross-channel modulation) or external input
- Versatile trigger options: from input, dedicated TTL trigger port, or the other output channel
- 10 MHz reference input and output

Specifications

- Output bandwidth: 300 MHz
- Frequency range:
  - Sine: 1 mHz to 250 MHz
  - Square: 1 mHz to 100 MHz
  - Ramp: 1 mHz to 100 MHz
  - Pulse 1 mHz to 100 MHz
- Pulse width: 4 ns to period
- Modulation bandwidth: 62.5 MHz
- Burst mode: start, N-cycle, gated
- Sweep time: 1 ms to 1 ks
- SFDR: >50 dBc below 20 MHz
- THD: 0.5% (1.5 MHz, 5 harmonics)

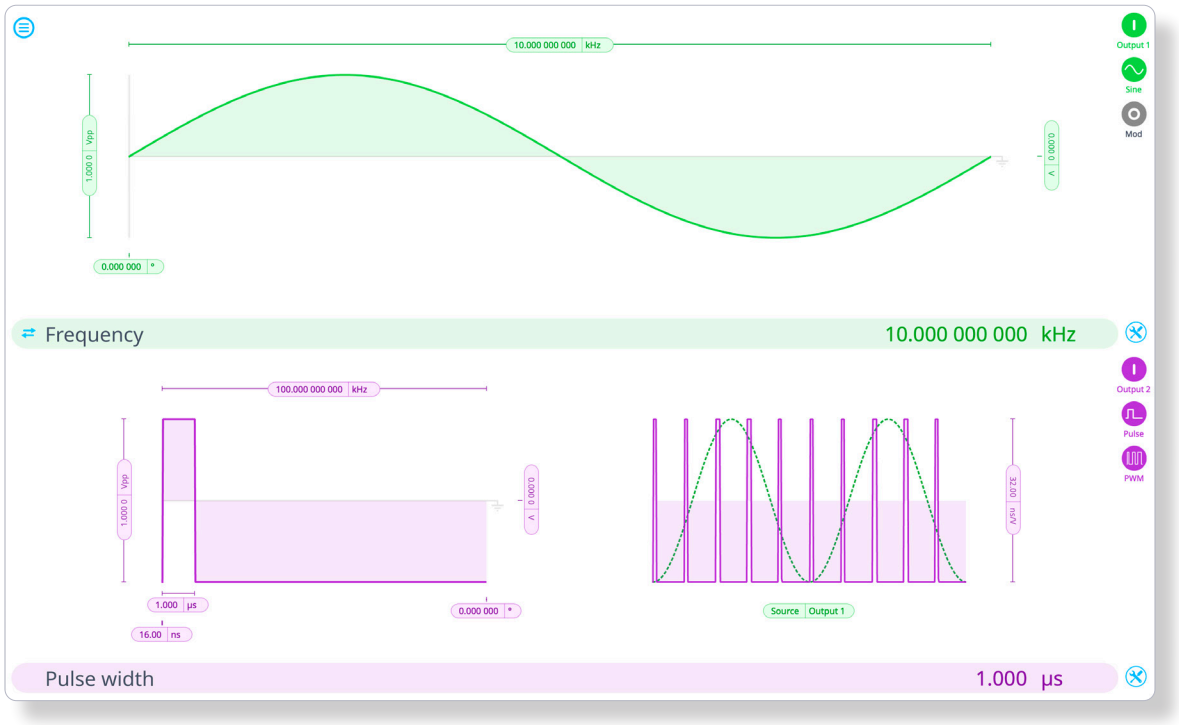
Applications

- Signal simulation
- Laser scanning microscopy
- Circuit design and characterization
- System synchronization
- Clock source
- DAC/Op-amp characterization
- Motor control

Moku:Go Instrument Datasheet

Waveform Generator

The Moku:Go Waveform Generator enables you to generate two independent waveforms with a sampling rate of 125 MSa/s, and a maximum frequency of 20 MHz with an output voltage range up to 10 Vpp. Select between sine, square, ramp, pulsed, noise, or DC waveform shapes. Perform high bandwidth modulation of phase, frequency, amplitude, and pulse width; and generate triggered bursts or sweeps from an internal or external source.



Frequency Range	Sampling Rate	Resolution	Output Voltage Range	Modulation	Other Modes
DC to 20 MHz	**125 MSa/s**	**12 bit**	**10 Vpp**	**FM, AM, PM, PWM**	**Burst, Sweep**

Features

- Generate 2 independent waveforms from DC to 20 MHz.
- 6 built-in waveforms: sine, square, ramp, pulse, noise, and DC.
- FM, AM, PM, and PWM modulation with internal waveform (cross-channel modulation) or external input.
- Versatile trigger options: from input, or the other output channel.

Specifications

- Output bandwidth: up to 20 MHz (-3dB)
- Frequency range:
  - Sine: 1 mHz to 20 MHz
  - Square: 1 mHz to 5 MHz
  - Ramp: 1 mHz to 5 MHz
  - Pulse 1 mHz to 5 MHz
- Pulse width: 16 ns to period
- Modulation bandwidth: > 5 MHz
- Burst mode: start, N-cycle, gated
- Sweep time: 1 ms to 1 ks

Applications

- Signal simulation
- Circuit design and characterization
- System synchronization
- Clock source
- Op-amp characterization
- Motor drive