Moku:Delta Instrument Datasheet

Arbitrary Waveform Generator



The Moku:Delta Arbitrary Waveform Generator offers eight independent analog outputs with 14-bit resolution and supports sample rates up to 5 GSa/s with waveform lengths of up to 65,536 points. Users can define waveforms via file import or as up to 32-segment piecewise equations, with fine-grain control over amplitude, phase (0.001° resolution), and DC offset (100 µV resolution). Burst mode enables triggered waveform generation and channel synchronization, while pulsed mode supports precise dead time insertion between pulses for advanced timing control.



Maximum Sample Rate	Output Bandwidth	DAC Resolution	Independent Triggering	Supported Waveforms
5 GSa/s	**Up to 2 GHz**	**14-bits**	**Burst/Pulsed**	**5 predefined, segmented equations (up to 32), or custom**

Features

- Eight independent AWG channels with up to 2 GHz bandwidth
- Choose between preset waveforms, load points from a file, or input an equation directly
- Phase synchronization output between the eight channels
- Configure pulsed output with over 250,000 cycles of dead time between pulses
- Trigger output from TTL trigger port or any of the input channels
- Ultra-stable clock of 1 ppb with selectable 10 MHz or 100 MHz external reference

Specifications

- Supported waveforms: Sine, Gaussian, Exponential fall, Exponential rise, Sinc, equation editor, and custom (from file)
- Output amplitude (50 Ω):
  - 10 Vpp @ 312.5 MSa/s
  - 1 Vpp above 312.5 MSa/s
- DC offset: ± 5 V with 100 µV resolution
- Phase offset: 0° to 360° with 0.001° resolution
- Maximum output rate:
  - 312.5 MSa/s with 65,536 points
  - 625 MSa/s with 32,768 points
  - 1.25 GSa/s with 16,384 points
  - 2.5 GSa/s with 8,192 points
  - 5 GSa/s with 4,096 points

Applications

- Random pattern scanning
- Sensor excitation and system identification
- Biomedical signal emulation
- Quantum optics and cold atom experiments
- Quantum control and qubit manipulation
- Multi-channel RF signal emulation
- Photonic modulation and pulse shaping
- Mixed-signal system co-simulation

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