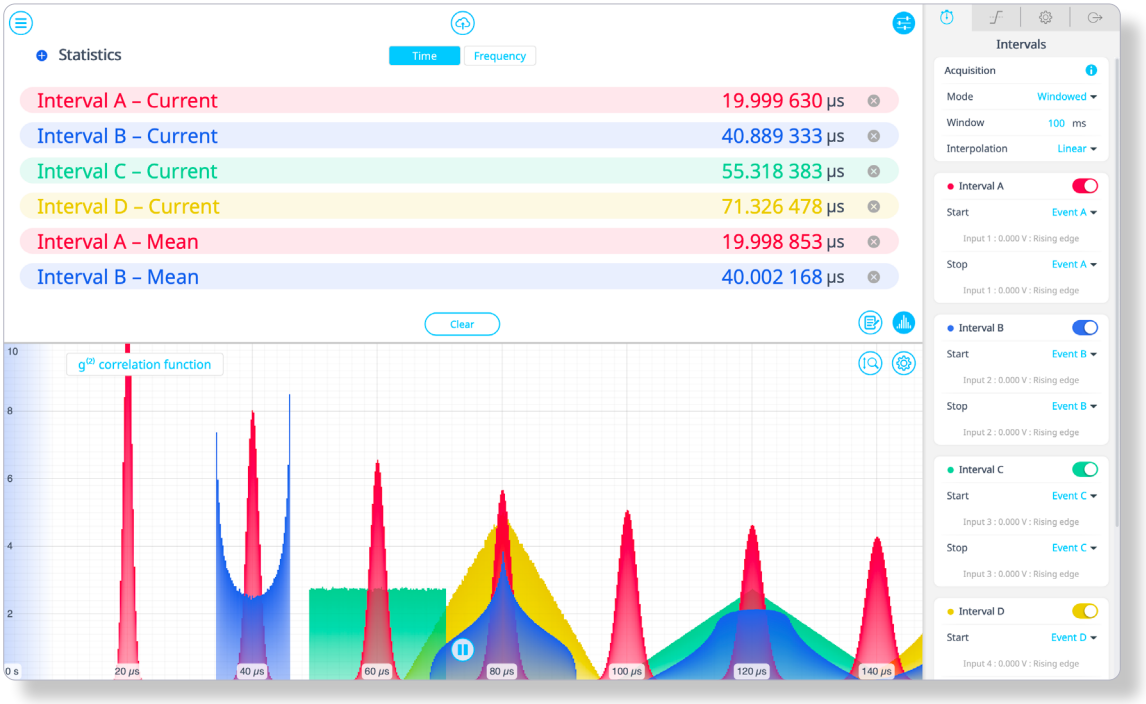
Moku:Delta Instrument Datasheet

Time & Frequency Analyzer

The Moku:Delta Time & Frequency Analyzer delivers high-resolution interval measurements between user-defined start and stop events, with a 5 GSa/s sampling rate and 0.2 ps digital resolution. It supports continuous, windowed, or gated acquisition modes with real-time and lossless histograms, statistical analysis, and correlation information. It can also generate high-resolution timestamp data to on-board storage. Optimized for precision timing applications, it is ideal for photon counting, pulsed laser characterization, and synchronized multi-detector systems.



No. of independent interval analyzers	Clock stability	Digital resolution	Max interval rate	Histogram
8	1 ppb	0.2 ps	312.5 MHz	Real-time and lossless

Features

- Up to eight independent event detectors with configurable thresholds on rising edge, falling edge, or both edges
- Lossless, real-time histograms with a minimum bin width of 0.2 ps
- Output interval count or current interval with adjustable scaling factor
- High-resolution raw event timestamp logging to on-board storage for post processing
- Combine with up to seven other instruments in Multi-Instrument Mode for system level characterization and feedback control
- Real-time calculation of second-order correlation ($g^{(2)}$) function

Specifications

- No. of independent interval analyzers: 8
- Digital resolution: 0.2 ps
- Input frequency range: DC to 2 GHz
- Input trigger threshold range: 100 mVpp, 1 Vpp, 10 Vpp, or 40 Vpp
- Maximum interval rate: 312.5 MHz
- Acquisition mode: continuous, windowed, or gated
- Interpolation mode: none or linear
- Output range: 1 Vpp or 10 Vpp
- Output mode: interval count or current interval

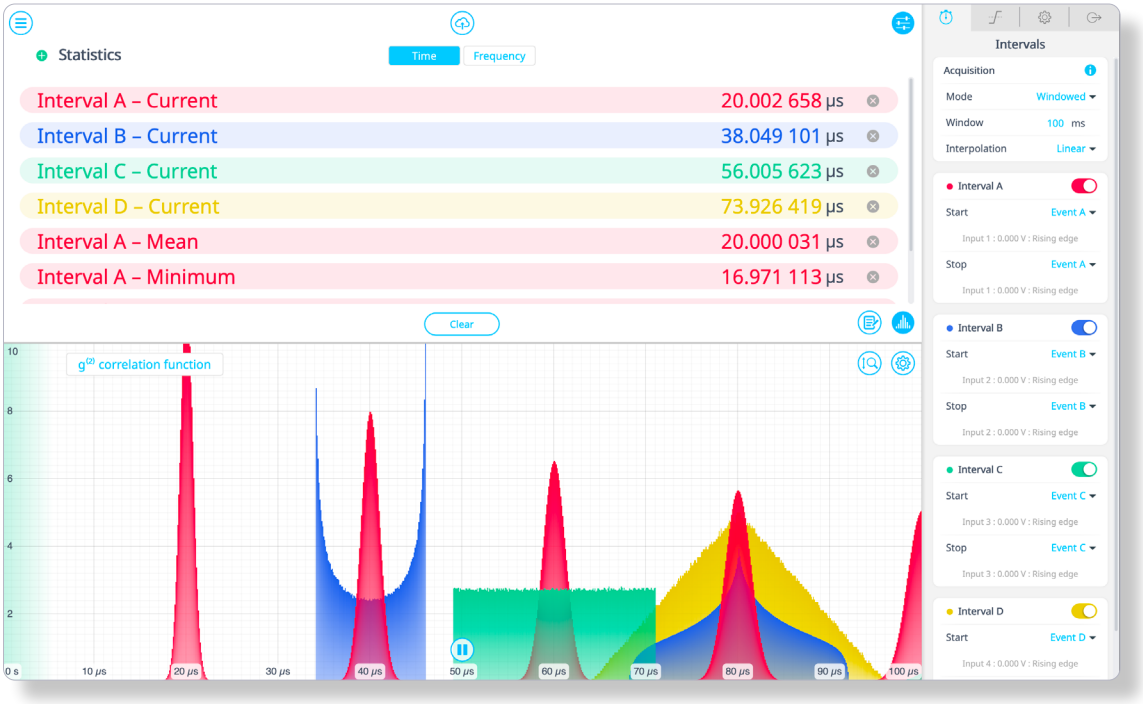
Applications

- Oscillator analysis
- Photon counting
- Jitter and phase noise analysis
- Light source characterization
- Linear optical quantum computing
- Pulsed laser stabilization
- Time-of-flight and LiDAR systems
- Particle or neutron detection
- Quantum computing and quantum sensing

Moku:Pro Instrument Datasheet

Time & Frequency Analyzer

The Moku:Pro Time & Frequency Analyzer measures intervals between user-defined start and stop events with sub-ns precision. Select between continuous, windowed, or gated acquisition mode, compute histograms of interval duration losslessly and in real time, and log high-resolution event timestamps to on-board storage. Output the measured interval count or current interval to analog output channels for active feedback control.



No. of independent interval analyzers	Jitter	Clock stability	Digital resolution	Max interval rate	Histogram
4	**< 20 ps**	**300 ppb**	**0.78 ps**	**150 MHz**	**Real-time and lossless**

Features

- Ultra-low device jitter of < 20 ps for high timing resolution analysis
- Up to four independent event detectors with configurable thresholds on rising edge, falling edge, or both
- Lossless, real-time histograms with a minimum bin width of 0.78 ps
- Output interval count or current interval with adjustable scaling factor
- High-resolution raw event timestamp logging to on-board storage for post processing
- Combine with any other instruments in Multi-Instrument Mode for system level characterization or feedback control
- Real-time calculation of second-order correlation ($g^{(2)}$) function

Specifications

- No. of independent interval analyzers: 4
- Jitter: < 20 ps
- Digital resolution: 0.78 ps
- Input frequency range: DC to 300 MHz
- Input trigger threshold range: ± 200 mV, ± 2 V, or ± 20 V
- Maximum interval rate: 150 MHz
- Acquisition modes: continuous, windowed, or gated
- Interpolation mode: none or linear
- Event logging rate:
  - up to 150 Mevnt/sec burst
  - up to 10 Mevnt/sec continuous
- Output range: 2 Vpp, or 10 Vpp
- Output mode: interval count or current interval

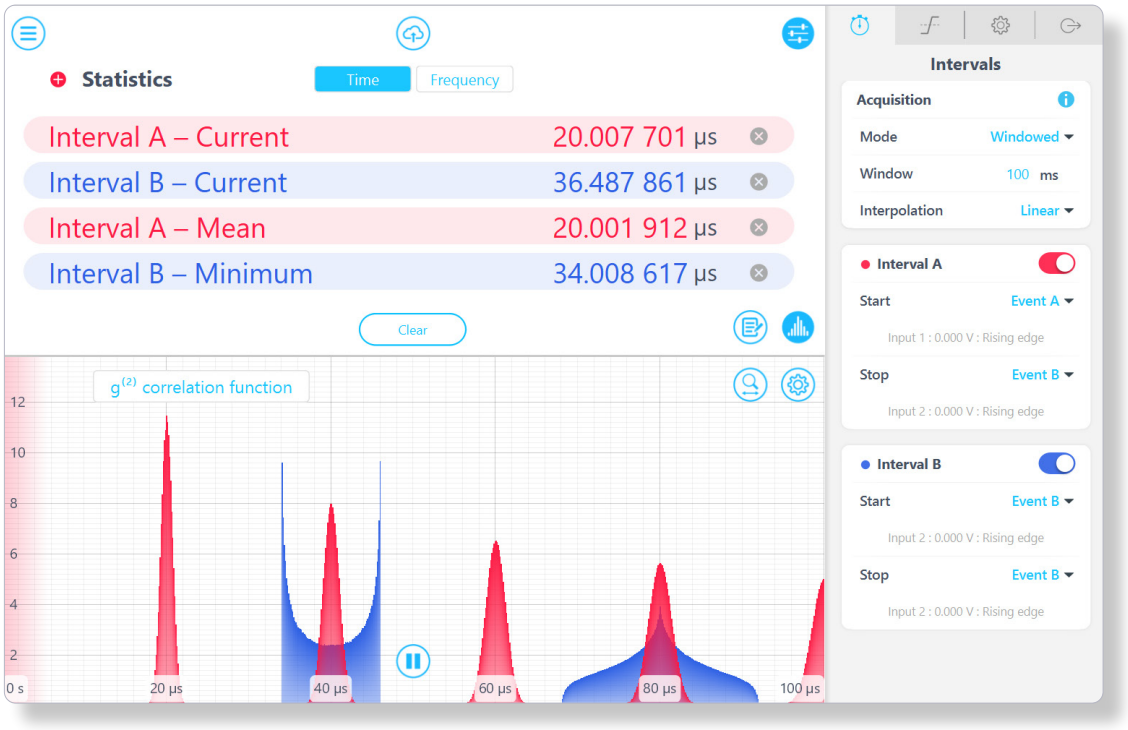
Applications

- Oscillator analysis
- Photon counting
- Jitter analysis
- Light source characterization
- Linear optical quantum computing
- Pulsed laser stabilization

Moku:Lab Instrument Datasheet

Time & Frequency Analyzer

The Moku:Lab Time & Frequency Analyzer measures intervals between user-defined start and stop events with sub-ns precision. Select between continuous, windowed, or gated acquisition mode, compute histograms of interval duration losslessly and in real time, and log high-resolution event timestamps to an SD card. Output the measured interval count or current interval to analog output channels for active feedback control.



No. of independent interval analyzers	Jitter	Clock stability	Digital resolution	Max interval rate	Histogram
2	<20 ps	500 ppb	1.95 ps	62.5 MHz	Real-time and lossless

Features

- Low device jitter of <20 ps for high timing resolution analysis
- Up to two independent event detectors with configurable thresholds on rising edge, falling edge, or both
- Lossless, real-time histograms with a minimum bin width of 1.95 ps
- Output interval count or current interval with adjustable scaling factor
- High-resolution raw event timestamp logging to an SD card for post processing
- Combine with any other instruments in Multi-Instrument Mode for system level characterization or feedback control
- Real-time calculation of second-order correlation ($g^{(2)}$) function

Specifications

- No. of independent interval analyzers: 2
- Jitter: <20 ps
- Digital resolution: 1.95 ps
- Input frequency range: DC to 125 MHz
- Input trigger threshold range: ± 500 mV or ± 5 V
- Maximum interval rate: 62.5 MHz
- Acquisition modes: continuous, windowed, or gated
- Interpolation mode: none or linear
- Event logging rate:
  - up to 62.5 Mevnt/sec burst
  - up to 10 Mevnt/sec continuous
- Output range: 2 Vpp
- Output mode: interval count or current interval

Applications

- Oscillator analysis
- Photon counting
- Jitter analysis
- Light source characterization
- Linear optical quantum computing
- Pulsed laser stabilization

Moku:Go Instrument Datasheet

Time & Frequency Analyzer

The Moku:Go Time & Frequency Analyzer measures intervals between user-defined start and stop events with sub-ns precision. Select between continuous, windowed, or gated acquisition mode, compute histograms of interval duration losslessly and in real time, and log high-resolution event timestamps to on-board storage. Output the measured interval count or current interval to analog output channels for active feedback control.

No. of independent interval analyzers	Jitter	Clock stability	Digital resolution	Max interval rate	Histogram
2	< 50 ps	25 ppm	7.8 ps	15 MHz	Real-time and lossless

Features

- Low device jitter of < 50 ps for high timing resolution analysis
- Up to two independent event detectors with configurable thresholds on rising edge, falling edge, or both
- Lossless, real-time histograms with a minimum bin width of 7.8 ps
- Output interval count or current interval with adjustable scaling factor
- High-resolution raw event timestamp logging to on-board storage for post processing
- Combine with any other instruments in Multi-Instrument Mode for system level characterization or feedback control
- Real-time calculation of second-order correlation ($g^{(2)}$) function

Specifications

- No. of independent interval analyzers: 2
- Jitter: < 50 ps
- Digital resolution: 7.8 ps
- Input frequency range: DC to 30 MHz
- Input trigger threshold range: ± 5 V, or ± 25 V
- Maximum interval rate: 15 MHz
- Acquisition modes: continuous, windowed, or gated
- Interpolation mode: none or linear
- Event logging rate:
  - up to 15 Mevnt/sec burst
  - up to 10 Mevnt/sec continuous
- Output range: 10 Vpp
- Output mode: interval count or current interval

Applications

- Oscillator analysis
- Photon counting
- Jitter analysis
- Light source characterization
- Linear optical quantum computing
- Pulsed laser stabilization