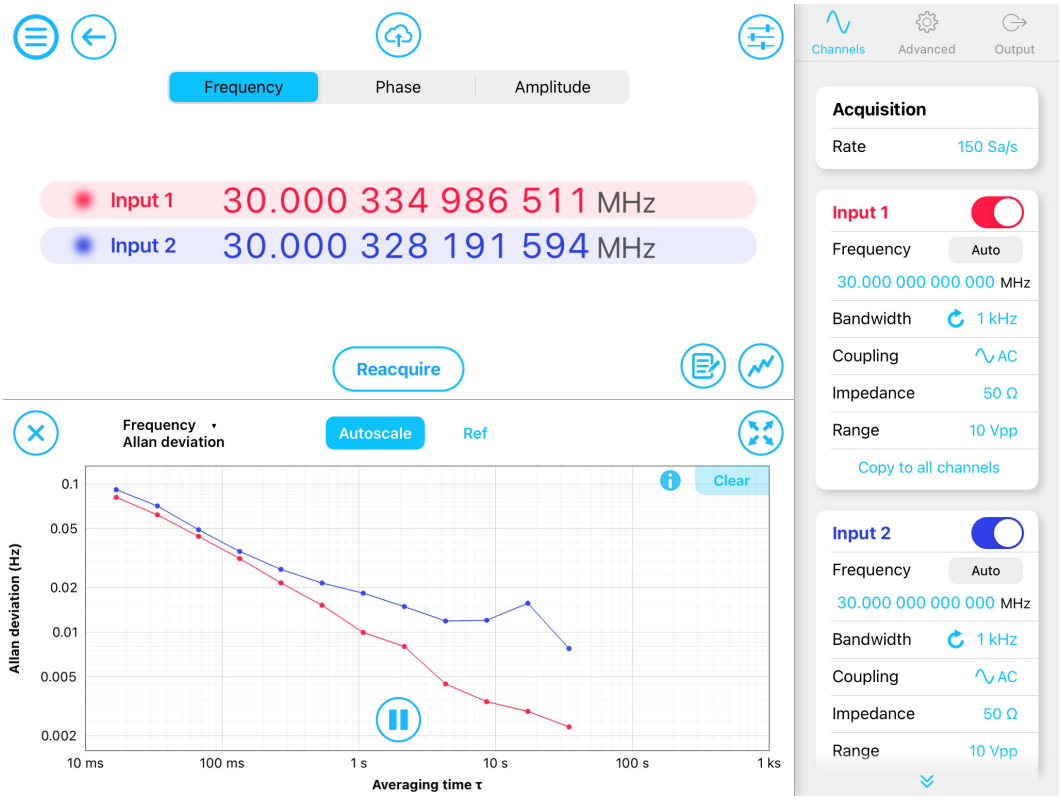
Moku:Lab Instrument Datasheet

Phasemeter

The Moku:Lab Phasemeter measures phase (relative to a reference clock) of up to two input signals with 1 nrad precision from 1 kHz to 200 MHz. Based on a digitally implemented phase-locked loop architecture, the Moku:Lab Phasemeter provides exceptional dynamic range, zero dead time and measurement precision that exceeds the performance of conventional lock-in amplifiers and frequency counters.



Frequency Range	Tracking Bandwidth	Phase error	Phase precision	Data Logging rates	Built-in Analysis
1 kHz to 200 MHz	Up to 100 kHz	0.3 µrad/√Hz @ 10 Hz	1 nrad	Up to 15.2 kSa/s	Allan Deviation

Features

- Two independent phasemeter channels that track and record phase, frequency, and amplitude
- Phase-locked output option enables you to generate sine waves that are phase-locked to the inputs at the fundamental frequency or harmonics
- Output measured amplitude, phase, or frequency offset for closed-loop control systems, or stream to a computer using Moku APIs
- Real-time spectral analysis to display and save power spectral densities, Allan deviation, and more
- Phase-locked loop tracking bandwidths from 1 Hz to 100 kHz

Specifications

- Input frequency range: 1 kHz to 200 MHz
- Input voltage range: 1 Vpp or 10 Vpp
- Tracking bandwidth: 1 Hz, 10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz
- Phase precision: 1 nanoradian
- Frequency precision: 4 µHz
- Data logging rates: 30 Sa/s, 119 Sa/s, 477 Sa/s, 1.9 kSa/s, 15.2 kSa/s
- Sine wave generators: Dual-channel 250 MHz (manual or input-locked)
- Output frequency multiplier: 0.125x to 250x (phase-locked to input)
- Phase output wrap: off, ± π, ± 2π, ± 4π

Applications

- Oscillator analysis
- Optical/ultrasound ranging
- Gravitational wave detection
- Interferometry
- Phase-locked loop