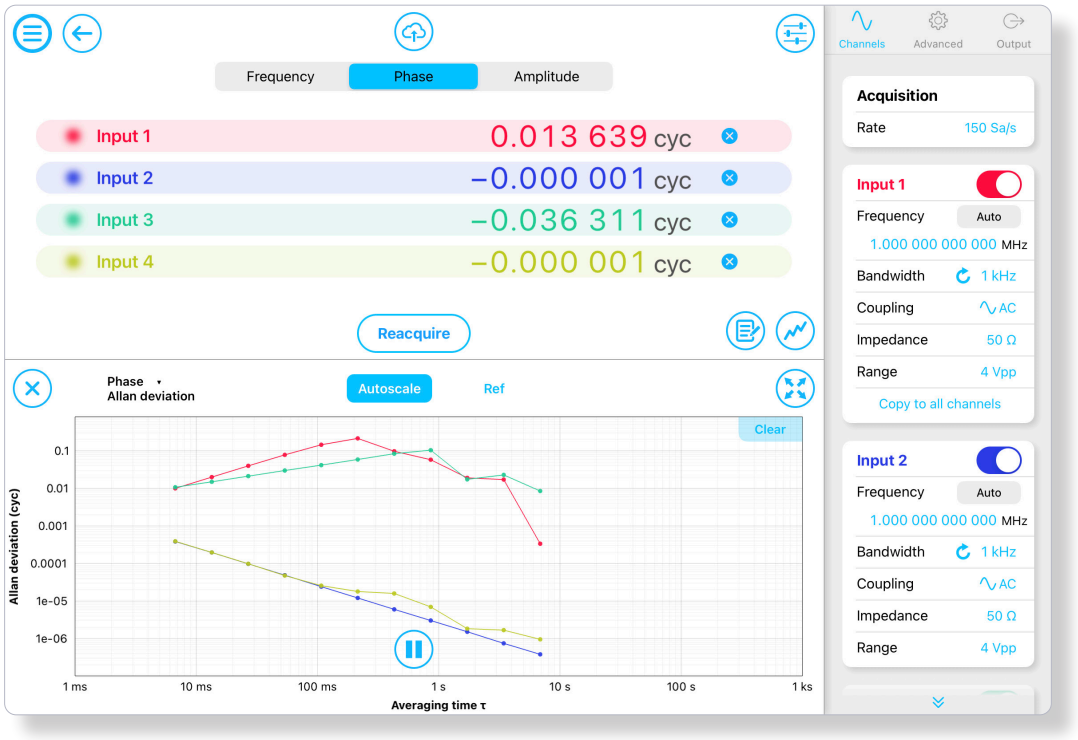
Moku:Pro Instrument Datasheet

Phasemeter

The Moku:Pro Phasemeter measures phase (relative to a reference clock) of up to four input signals with 1 nanoradian precision from 1 kHz up to 300 MHz. Based on a digitally-implemented phase-locked loop architecture, the 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 capturing rates	Built-in analysis
1 kHz to 300 MHz	Up to 1 MHz	0.1 µrad/√Hz @ 10 Hz	1 nrad	37 Hz to 152 kHz	Allan deviation

Features

- Four 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 1 MHz

Specifications

- Input frequency range: 1 kHz to 300 MHz
- Input voltage range: 400 mVpp, 4 Vpp, or 40 Vpp
- Tracking bandwidth: 1 Hz, 10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, 1 MHz
- Data acquisition rates: 37 Hz, 150 Hz, 596 Hz, 2.4 kHz, 19.1 kHz, 152 kHz
- Phase precision: 1 nanoradian
- Frequency precision: 10 µHz
- Sine wave generators: four-channel 500 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