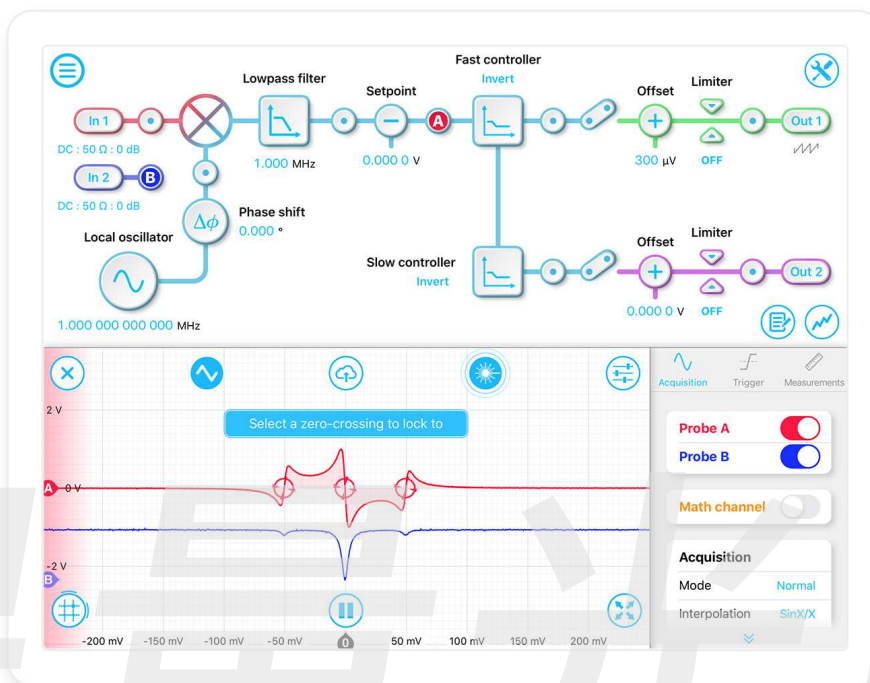




# Laser Lock Box for PDH Technique



Moku:Lab's Laser Lock Box enables you to lock a laser's frequency to a reference cavity or atomic transition using high-performance modulation locking techniques. The Laser Lock Box includes a 'Tap-to-Lock' feature, enabling you to quickly lock to any zero-crossing on the demodulated error signal.



Demod. Frequency  
1 mHz to 200 MHz

Scan Frequency  
up to 10 MHz

Adjustable Filter  
1 kHz to 14 MHz

DAC Resolution  
16 Bits

Built-in Controllers  
Dual PID

Integrated Oscilloscope  
500 MSa/s

## Features

- Stabilize a laser's frequency to a reference cavity or atomic transition
- Virtually probe within signal processing chain to observe signals using an integrated oscilloscope
- Quickly lock to any zero-crossing in the error signal using the 'Tap-to-Lock' feature
- Individually configure high- and low-bandwidth PID controllers for fast and slow feedback
- Quickly access the controls you need with a customizable control palette view

## Specifications

- Local oscillator frequency: 1 mHz to 200 MHz (3.55  $\mu$ Hz resolution)
- Scan waveforms: positive sawtooth, negative sawtooth, triangle
- Scan frequency: 1 mHz to 10 MHz
- Infinite impulse response low-pass filter corner frequency: 1 kHz to 14 MHz (second or fourth order)
- Integrator crossover frequency: 1.25 Hz to 125 kHz (fast PID), 19.53 mHz to 1.953 kHz (slow PID)
- Ultra-fast data acquisition: snapshot mode up to 500 MS/s, continuous mode up to 1 MS/s

## Applications

- Pound-Drever-Hall technique
- Precision spectroscopy
- Gravitational wave detection
- Custom phase-locked loop
- Other closed-loop control systems