Moku:Pro Lock-in Amplifier (LIA) vs. Zurich UHFLI

Applications/customer:

Microscopy, spectroscopy, PICs research, industrial production, MEMs sensing and actuation, NMR, optics and photonics, biophysics, biochemistry, materials science

Moku:Pro LIA features:

- Pricing: $19k
- Multi-instrument Mode (MiM): Deploy 4 lock-ins simultaneously
- 600 MHz bandwidth
- 120 dB of dynamic reserve
- Input noise: 30 nV/√Hz at 100 Hz, 400 mVpp input range,

Zurich features:

- Pricing: $45k
- 600 MHz bandwidth
- 100 dB of dynamic reserve
- Input noise: 4 nV/√Hz above 100 kHz, 10 mV input range

Competitor claims/strengths	Rebuttal
Their noise floor is better.	Noise floor depends on input range, so ask your customer what level their input signal is. Zurich specifies at a very low input range, while most users will be working with a larger input signal where our performance will be very similar.[1]
They have a boxcar averager.	We can make one with Moku Cloud Compile – there is an example online to get started. Zurich's is a paid add-on while ours is included in MCC at this time.
They can do phase unwrapping.	We cannot do this on the LIA, but can with the Phasemeter. The Phasemeter is great for applications requiring extremely precise phase control. Ask the customer if they need to measure phase – the Phasemeter may have even better performance for them!
Competitor weaknesses	**Where we win**
High noise corner frequency.	Blended ADCs allow us to have a low noise corner frequency: 100 Hz vs. 100 kHz. Moku:Pro has better noise performance at low frequencies (< 1 kHz).
It's a paid add-on to do higher harmonic demodulation or use a PID Controller.	We do this for free! Demodulate higher harmonics with the LO multiplier and adjust gain profiles in real-time with a built-in PID Controller.
One device contains 2 independent lock-in units.	We have better multi-demodulation. We can use MiM for up to 4 independent LIAs.
Confusing user interface.	Our block diagram user interface is incredibly intuitive. Users can easily configure and troubleshoot by probing at various points throughout the signal path with the built-in Oscilloscope.

Moku:Pro vs Zurich UHFLI

Input voltage noise density at 50 Ω

Zurich Instruments UHFLI
Input range 200 mV

Liquid Instruments Moku:Pro
Input range 400 mV

40 nV/√Hz
30 nV/√Hz

Moku:Pro :400 mV input range   Zurich UHFLU 200 mV input range