



Optical Finesse μ LIA-320

Dual-phase USB Lock-in Amplifier



The μ LIA-320 is a versatile, low-cost, dual-phase, high analog bandwidth, DDS-enabled lock-in amplifier with a native full-speed USB 2.0 interface. Powered by 32-bit ARM technology, this easy-to-use instrument is specifically designed for economical deployment in high-channel-count OEM applications. The μ LIA-320 can be operated by our intuitive *uLIA-Panel* application, or tied into a user-supplied program via the device driver toolkit--source code is provided. The lock-in is 100% RoHS compliant and is powered by a separate international power supply.

Features

- Dual-phase signal recovery to 400 kHz
- Native full-speed USB 2.0 compliant interface
- Continuous real-time streaming of demodulated (x, y) samples, or readings-on-demand
- Flexible 32-bit DDS-based reference channel can act as input or output; can recover signals conventional quadrature lock-in's cannot
- Analog monitor output enables standalone mode; software-selectable between four different signals
- Lightweight, miniature form-factor
- Separate international triple power supply
- RoHS compliant



Authorized Reseller

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DEMODULATOR CHARACTERISTICS

Signal input	<ul style="list-style-type: none">• Bipolar voltage-only 0 to $\pm 10V$, 1 MΩ/10 nF input impedance, AC-coupled• 800 Hz to 410 kHz frequency range
AC gain	<ul style="list-style-type: none">• 0 to 63 dB in discrete, calibrated 0-3-10 dB steps
AC overload	<ul style="list-style-type: none">• Overload LED will illuminate for AC gains resulting in greater than $\pm 10V_{peak}$ into demodulator stages
Reference input	<ul style="list-style-type: none">• Logic-level TTL-compatible signal, 800 Hz to 410 kHz, arbitrary duty cycle. Input signal is opto-isolated for reference input configuration
Reference output	<ul style="list-style-type: none">• Logic-level TTL-compatible signal, calibrated frequencies 800 Hz to 410 kHz, 50% duty cycle
Reference configuration	<ul style="list-style-type: none">• Conventional 1F quadrature: X and Y channels held 90° apart, phase-adjustable with respect to reference input or output. Phase adjustable to 0.1°
Monitor output	<ul style="list-style-type: none">• Bipolar analog output• Software-selectable between four internal signal sources: AC-coupled signal input, AC gain stage output, X DC output, or Y DC output• X or Y demodulator outputs may be substituted for X or Y DC outputs by internal jumper selection
Demodulator type	<ul style="list-style-type: none">• High bandwidth analog multiplier (homodyne)
Demodulator lowpass filter	<ul style="list-style-type: none">• 4th-order Butterworth, 160 Hz cutoff frequency
DC gain	<ul style="list-style-type: none">• 6 to 66 dB, set parametrically by chosen DC Sensitivity setting
Sensitivity	<ul style="list-style-type: none">• 10 μV to 2V sensitivity ranges, in discrete, calibrated 1-2-5-10 steps
DC overload	<ul style="list-style-type: none">• Overload LED will illuminate for AC & DC gain combinations resulting in greater than $\pm 10V$ into either X or Y analog-to-digital stages
Time constants	<ul style="list-style-type: none">• Time constants implemented by real-time digital filtering of acquired samples• 1 ms to 50 ms in discrete steps
Gain accuracy	<ul style="list-style-type: none">• $\pm 0.5\%$ typical end-to-end, $\pm 1\%$ maximum
A/D resolution	<ul style="list-style-type: none">• Bipolar, 12 bits plus sign, referenced to 10.00 V

INTERFACE

Host computer interface	<ul style="list-style-type: none">• Full-speed USB 2.0 compliant, self-powered device; one interrupt and two bulk endpoints
Software	<ul style="list-style-type: none">• <i>μLIA-Panel</i> application software (source code provided) permits instrument control and real-time acquisition of demodulated samples in (x, y) or (R, θ) formats• Host USB drivers for Windows 7, Vista and Windows XP (executable only; 64-bit Windows XP not supported. Windows XP installation requires Service Pack 2 or higher)
Device drivers	<ul style="list-style-type: none">• <i>uLIA_dd</i> device-driver toolkit (source code provided) for application programming in Visual Studio

PHYSICAL

Dimensions	<ul style="list-style-type: none">• 5.5 in W x 7.5 in. L x 1.6 in H
Weight	<ul style="list-style-type: none">• 1.4 lbs (μLIA-320); 2.9 lbs (μLIA-320 + power supply)
Chassis material	<ul style="list-style-type: none">• Blue anodized aluminum, rubber bottom feet• Machined aluminum front & back panels, blue-anodized and laser etched
Front panel	<ul style="list-style-type: none">• Power, Lock and Overload LEDs• 50-ohm BNC female bulkhead for Signal Input• 50-ohm BNC female bulkhead for Monitor Output
Back panel	<ul style="list-style-type: none">• DIN-5 female receptacle for power input• ON/OFF power switch• Series B USB receptacle for USB to host computer• 50-ohm BNC female bulkhead for Reference Input/Output
RoHS and CE compliance	<ul style="list-style-type: none">• 100% RoHS compliant; CE certification to FCC Class A emissions level upon special arrangement
Operating temperature	<ul style="list-style-type: none">• 5 to 45° C
Power supply	<ul style="list-style-type: none">• Separate, supplied with μLIA-320• International +5V/+15V/-15V triple power supply, 42W, 100-240VAC 47-63Hz input, CE listed• DIN-5 male plug on 48 in cord
Warranty	<ul style="list-style-type: none">• One year

In keeping with our commitment to continuous product improvement, these specifications are subject to change without notice.



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