

Lynx Hilo



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Lynx's Hilo is a free-standing, mastering-quality, two-channel A-D/D-A converter featuring 'reference' grade electronics — and the technical specifications justify the use of that over-employed description. The company have a reputation for producing impressive converters but the Hilo differs from previous products, both in the way the DAC chips are employed, and in the deliberately open-ended design: it's only a firmware upgrade away from being able to do far more than it currently does.

Overview

The I/O configuration is mostly pretty standard stuff, but the 480x272-pixel colour touchscreen, which dominates the front panel, might raise an eyebrow: the screen defaults to one of three metering displays but also provides the means of configuring and controlling the unit. A glance at the Hilo's block diagram reveals that there's an internal 32x32 digital router with channel-mixing facilities, and sufficient DSP power to enable almost any processing and analytical function you might dream

A-D/D-A Converter & Digital Mixer/Router

Boasting reference-quality converters, the Hilo also promises to be future-proof...

of. These features combine to make operation simple and hugely flexible, while ensuring that there's unlimited upgrade and expansion potential.

The converters found on Lynx's highly respected Aurora served as the baseline, but the company have substantially reworked and enhanced the analogue circuitry, raising the performance to world-class standards. One key technique used to achieve this was to employ separate stereo ADC chips for each line input and stereo DAC chips for each line output for parallel conversion and subsequent summation. It's an expensive approach, but it significantly reduces distortion and achieves a 3dB improvement in the noise floor. The stereo monitor and headphone amps use stereo DACs in the conventional way, but the technical specifications are still very good. I don't have the space to explore those specifications in detail here, but you can read more about

them at www.soundonsound.com/sos/jul12/articles/lynxhilo.htm.

Ins & Outs

On the analogue side, the Hilo sports a stereo line input (on XLR sockets) and three completely independent outputs: line (XLR), monitor (quarter-inch TRS jack), and a powerful headphone amp (TRS). The digital side comprises AES3 (XLR), S/PDIF (RCA-phono), ADAT and USB 2, the last on a plug-in 'LSlot' module, which will allow other interface formats to be embraced in the future. The asynchronous USB 2 interface can be operated with eight channels in and out for all sample rates, or 16 channels for base and double rates. Most sample rates up to 192kHz are supported.

The maximum signal levels of the line inputs and outputs can be adjusted independently, through the configuration menu, from +18 to +24 dBu, or 0 to +6 dBV.

Fine level-trimming is available via multi-turn trimmers, accessible after removing the base panel. By default, the monitor outputs provide a maximum level of +10dBu to suit most powered monitors. However, jumper-links under the bottom panel allow it to be increased to a maximum of +24dBu.

The Toslink optical ports can be switched to serve as either ADAT or optical S/PDIF, and wordclock I/O is via BNCs. At the time of writing, the ADAT mode is supported only as an output, with support for the S/MUX protocol to provide four channels at double sample rates and two channels at quad rates. Sample-rate conversion is also available for the digital inputs.

The internal power supply accepts 100-240V AC via an IEC connector with an on-off switch. Unusually, the Hilo also has a four-pin XLR to accept supplies of 9-18V DC.

Soft Control

The review unit was running Application v1.0.1 on Firmware v4 (dated April 2012), with LSlot firmware v8. The latest firmware, updatable via USB, is available on Lynx's web site. Rapid development of the feature set is promised, so the version numbers should increment quickly.

As well as the screen's default metering display, there are currently three options: a pleasingly lifelike stereo VU meter, dual horizontal stereo LED bar-graphs (with peak and RMS indications), and a comprehensive set of vertical bar-graphs showing the input and output levels across all I/O. For the

two stereo options, a virtual button below the meters allows their audio source to be selected from any of the inputs or outputs (in channel pairs).

Another virtual button opens the last-accessed menu page. The Home page has more virtual buttons for selecting things like the sample rate and sync source, switching the SynchroLock function (Lynx's proprietary digital jitter-reduction system) on and off, setting Toslink output mode, line I/O operating levels and digital input source, and providing signal routing and mixing controls. SynchroLock seems to work well, but it can take a long time to achieve full lock (well over a minute is not unusual!) and can glitch audibly when lock is finally achieved. That might sound inconvenient,

but it's not an issue in practice, provided you aren't constantly changing the clock-sync source. If audio is being transferred via USB, the sample rate is determined via the computer interface software, and the Hilo's sample rate, sync source and SynchroLock soft-buttons are disabled.

Additional buttons access other menus, including a Tools menu to save and recall system defaults, sample rate conversion parameters, USB mode and power-up state; an Information menu to check digital channel-status data, input sample rates and software versions; and a Display menu to calibrate the display touch-sense and configure the brightness, default meter mode and screen time-outs. The menu structure is logical and easy to navigate. »

New in Firmware Rev 5 (October 2012)

- **DSD Playback** - Hilo supports the recently adopted DoP V1.1 standard which is a method for transferring DSD audio over PCM frames
- **New Test Tone Function** - For use in system testing and calibration, Hilo's new Test Tone provides a 1 kHz audio signal to be played to any output. The tone level can be controlled in 0.5 dB increments from a new dedicated screen
- **New Screen Dim Function** - Now users can not only set the brightness level of Hilo, but allow the screen to dim or turn off after a set period of time.
- **ADAT Upgraded** - ADAT is now supported on the optical input. Eight channels of ADAT input and output can be utilized via the optical ports at 48 kHz.
- **Analog Meter Upgrade** - Now you can calibrate the Analog meters to set the 0 dB level. The redraw function has also been improved.
- **Monitor and Headphone Level Indicators Improved** - When changing the level of the headphone or monitor output a horizontal bar with dB level is shown on the screen. Now the bar for the Monitor output is a different color than the Headphone's bar, for easier visual recognition.
- **Scenes are now Nameable** - The six user programmable scenes can now be names using the new QWERTY keyboard screen.
- **Stereo/Mono Feature Improved** - There are now four mode selections for each stereo input pair. Stereo (default), Sum (left and right channels summed to mono); Left (left channel to Left and Right at the same level), and Right (right channel to Left and Right at the same level).

No other converter can offer this level of feature improvement, added utility and new operations, making Hilo truly "future proof."

Lynx Hilo \$2495

PROS

- Technically and sonically stunning.
- Flexible digital I/O with sample-rate conversion and multi-channel USB.
- Open-ended functionality.
- Attractive styling and touchscreen graphics.

CONS

- Current firmware offers only basic functions: I want everything NOW!
- ADAT input not currently active.

SUMMARY

A state-of-the-art converter with comprehensive digital I/O including multi-channel USB 2. Major strengths are its internal routing matrix, which allows input signals to be mixed and mirrored to various outputs, and its touchscreen interface, which enables almost unlimited potential for future function upgrades.



» The heart of the Hilo is the routing and mixing facility, configured by selecting the desired output pair in the Routing sub-menu. The display shows the output on the right, with a stereo meter, on-off button and digital level fader, and the available input sources on the left, again with another meter, fader, and a mono button. Active inputs are coloured green, while inactive or muted ones are red and the selected input is highlighted with white box edging.

Selecting an input displays its signal on the meter, and its level can be adjusted by dragging the on-screen fader or turning the encoder wheel. Pressing the encoder knob toggles control between input and output faders, the active fader being highlighted with a yellow track. It's worth noting that all the I/O levels are adjusted digitally, except for the monitor and headphone outputs, which have both digital and analogue level controls. The latter is the default, but the former can be used to wind the mix level back if digital overloads occur. When the default meter screen is displayed, the encoder control toggles between the headphones and monitor output levels.

In this way, multiple sources can be routed and mixed to any output, with signals being merged, muted, level-adjusted and mirrored as necessary. There are some limitations in the current application firmware, though. First, all signals are routed as stereo pairs and it's not currently possible to route individual channels independently. Secondly, only one digital input may be used at a time: AES3, S/PDIF coaxial or S/PDIF optical. Every output pair can have a completely independent mix of inputs, comprising any combination of the analogue stereo line inputs, a selected digital stereo input, and any of the USB interface channel pairs (1-16 or 1-8, depending on

The touchscreen features a number of different metering and control displays, and lies at the heart of the Hilo's potential for future upgrades.

the USB mode), with their levels balanced as required. Every output pair can have a completely independent mix of inputs. (The ADAT and optical S/PDIF modes are mutually exclusive, of course.) There are currently six 'scenes' in which the user can store routing and mixing configurations.

Test Drive

The Hilo is a very attractive device, both visually and intellectually, and everything worked reliably and logically during my tests. In fact, my only difficulty was with the touchscreen interface, where my podgy fingers only needed to be slightly off centre of the relatively small virtual buttons on the routing pages to either get no response or activate the wrong source — but increasing familiarity and greater care easily resolved that.

The technical performance is exemplary, and of a standard equal to some of the best converters on the market, regardless of price. When I auditioned it as a simple stereo D-A converter, the performance was astounding, and amongst the best I've ever heard. I compared it directly with the likes of Grace Design's M902, Benchmark's DAC1 and a Bryston SP1.7 Processor, and it came out on top without much argument. The Hilo sounds very controlled and refined, with a detailed soundstage that seems polished and precise. The stereo imaging is superb, with a fantastic sense of depth on appropriate material, but the thing that really stands out is the impression of space and separation between different instruments in true coincident stereo recordings. There was no detectable coloration or sonic fingerprint, just sublime

neutrality and accuracy.

The same comments largely apply to the A-D stage: the Hilo doesn't add anything of its own, but maintains stereo imaging precision and separation with absolute fidelity. Although the tech specs show the monitor outputs to be marginally inferior to the line outputs, I couldn't hear any difference, and the positive qualities I described above are equally present on both outputs. The headphone output proved capable of generating very significant sound pressure levels even with high-impedance headphones, and the sound was sublime on my AKG K702s and Sennheiser HD650s.

The I/O all worked as intended, and the USB interface operated very happily with a buffer size of 128 samples, providing a negligible latency (around 5ms, using Cockos Reaper on a PC at 44.1kHz), and I was able to run it with 64-sample buffers for simple projects. The routing and mixing functions were impressive, too.

Wish List

The Hilo clearly excels as a two-channel A-D/D-A converter and digital router, but the more you use it the more you realise what it potentially *could* do... and then you become desperate for firmware upgrades! Early adopters have contributed lots of ideas to a feature wish-list, which I'm sure will grow quickly, but there are some obvious omissions that I'd have thought essential, and even urgent, for the Hilo's primary role: the absence of ADAT input selection is frustrating, as is the VU meter calibration (since 0VU is fixed at -3dBFS), which should be made adjustable.

Everything else comes under the heading of 'nice to have', and the strength of the Hilo is that they're all possible. When I first saw this device in pre-production form last year, I suggested to Lynx that to serve as a monitor controller or mastering hub, it needed comprehensive monitoring controls: facilities such as buttons to dim the output temporarily, invert the polarity of one channel (and both to allow absolute phase checks), monitor the mono sum and side signals, and mute the left/right channel, for example. These would all be trivial to implement, but would put the Hilo on a functional level with high-end

Alternatives

There are countless two-channel converters, but few match the Hilo's technical or sonic performance, and none offer the routing versatility or potential for new functionality.

USB connectivity is offered via an LSlot expansion port, which should enable the Lynx to be upgraded to work with future communication protocols.



monitor controllers from Cranesong, Crookwood, Dangerous, Audient and others.

The LCD screen also opens the door to alternative forms of metering and signal analysis. A phase meter and/or audio vectorscope or Goniometer would be very handy, as would FFT spectrum and third-octave frequency analyser displays. For mastering, BS.1770 True Peak and Loudness metering would also be useful additions.

Something I'd really like to see added is a cross-point overview display to show the routing matrix assignments, as having to select each output to check what's routed is a little laborious. For both recording and mastering applications, being able to route channels individually to destinations instead of in pairs would be useful, both for recording single inputs and for correcting channel swaps. The ability to control the stereo width of input signals would be handy too, especially if it could be frequency selective, to narrow the LF to mono. Being able to name the scene memories as an aide-memoire to their intended functions would help as well, and maybe just six user memories is a little stingy?

I was initially amused to discover that

it's possible to play audio files directly from an iPad (via Apple's camera-connection USB kit), but soon started wondering about enabling the Hilo to record and play back directly to and from a USB drive. Given its battery-power option, that would be interesting for location recording, and perhaps open a door into the consumer world of music servers. Finally, given the Hilo's four analogue outputs, perhaps some form of bass management control could be added to allow the easy integration of subwoofers in an active 2.1 system?

Verdict

In terms of pure audio quality, the Hilo is a very impressive flagship product for Lynx, and it is going to be a very interesting product to watch in the coming months. The connectivity should already make the Hilo appeal to anyone wanting a simple but very high-quality line-level interface (there are no mic or instrument preamps) for studio or battery-powered location recording. Its attractive styling (it will also be available in black) should appeal to well-heeled

consumers for audiophile listening. The Hilo has great future potential as a monitor controller, and, with its comprehensive interfacing and internal signal-routing and mixing facilities, there's potential for simple mastering applications.

The wish-list above would, for most products, imply a failure to meet the needs of the market, but it's important to stress that this is a strong positive about the Hilo, and absolutely not a negative. The hardware can support all these things, and Lynx will be developing its functionality in response to user feedback, via firmware upgrades. Clearly, the converter platform and DSP engine provide an exemplary foundation, and the touchscreen interface offers an ideal means of adding and controlling new functionality and displays. ■■■

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