



WWW.EQMAG.COM

IN|REVIEW

By Craig Anderton • canderton@musicplayer.com

LynxTWO Audio Interface

Audiophile performance in a sound card format

For years, I've recommended using all-digital audio interfaces with external converters. Computers are noisy environments, and analog electronics can't withstand that onslaught without high-quality multi-layer PC board design, transformer-coupled digital I/O to minimize ground loops, low-jitter clock, precision tolerance components, and other sophisticated (and costly) measures.

Well, Lynx Studio Technology decided to take those measures on, and the result, the LynxONE, proved that a sound card can deliver quality audio. The LynxTWO is similar, but adds 192 kHz capabilities (a phase-locked loop-based sample clock supports high-resolution frequency adjustments for any sample rate from 8 to 200 kHz, including video pullup and pulldown rates), as well as hooks for useful expansion options slated for release later this year. A software mixer application manages input and output routing within the computer, as well as provides metering, digital level control, mute, phase reverse, etc. Note that bandwidth is not limited to the audio

▶ LYNXTWO

MANUFACTURER: Lynx Studio Technology, 1048 Irvine Ave. #468, Newport Beach, CA 92660. Tel: 949-515-8265. Web: www.lynxstudio.com

SUMMARY: It isn't cheap, but you get what you pay for: a truly fine-sounding sound card that can more than hold its own against external converters.

STRENGTHS: Superb sound quality, design, and construction. Sample rates up to 200 kHz. Includes high-quality breakout cables. Solid sync options. Easily handles video work. Expansion options. Eliminating the need for a breakout box saves space and reduces costs.

LIMITATIONS: Breakout cables not as convenient as a rack-mount breakout box. No MIDI I/O.

PRICE: LynxTWO-A 4 in/4 out \$1,095; LynxTWO-B 2 in/6 out \$995; LynxTWO-C 6 out/2 in \$1,195.

range; for example, sampling at 200 kHz provides an analog signal bandwidth of 92 kHz.

The package includes two high-quality breakout cables: an XLR male to RCA male S/PDIF adapter and an XLR female to RCA male S/PDIF adapter. Driver and application software is distributed via floppy.

The main components of interest on the half-size PCI card include AKM5394VS 24-bit A/D converters, Crystal Semiconductor CS4396-KS 24-bit D/A converters, and Analog Devices OP275 op amps. About 2/3 of the upper and lower surfaces of the board are ground planes to provide shielding, and there are miniature 1000 µF filter caps draped across the supply lines. Bottom line: Lynx didn't cheap out on the parts or construction. This type of attention to detail isn't just nice, it's essential to achieving quality results in a computer environment.

CONNECTIONS

The board has two main connectors:

The L2Audio Port is a 25-pin D-type connector; a 6-foot breakout cable provides XLR balanced analog ins and outs. The cable packed with the unit depends on which model you've ordered: 4 analog ins and outs ("A" model), 2 ins and 6 outs ("B" model), or 6 ins and 2 outs ("C" model). Nominal signal levels per audio pair are selectable for +4 or -10 dB operation within the mixer application (described later).



The mixer application has multiple windows for controlling various parameters.

THE L22: LYNXTWO'S LITTLE BROTHER

For those who don't need video sync capabilities, LTC read/write, or more than 2 ins and 2 outs of analog I/O, the Lynx L22 — which is otherwise very similar to the LynxTWO — lists for \$749.

The L2Sync Port is a 15-pin D-type connector. Its breakout cable offers XLR digital I/O, Linear Timecode (LTC) in/out on BNC connectors (the LynxTWO has a SMPTE reader and generator), sync in, and word clock out (both BNC). The digital I/O can be either AES/EBU or S/PDIF, as selected in the mixer application. The 75-ohm sync in connection accepts TTL or Composite Video level signals.

There are three other connectors on the top edge of the board. A clock in and clock out port allow hooking multiple LynxONE, LynxTWO, or compatible video capture cards together. Of the two LStream expansion ports, the first, LStream Port 1, is available from pins in the 15-pin D connector that are not used by the L2Sync cable. The 14-pin LStream Port 2 is the board's remaining top-edge connector. It connects to internal LStream interface modules and other LynxTWO's (or L22's) for routing data. Both ports may be used simultaneously, but operation is limited to 16 total LStream channels.

The maximum number of I/O channels on one LStream port varies with sample rate: 16 channels at rates up to 48 kHz, 8 channels at rates up to 96 kHz, and 4 channels at rates up to 200 kHz.

DRIVERS

With Windows machines, the boards are designed to work with a single interrupt in a multi-card setup, thus saving precious IRQs. However, this usually requires manually assigning the same interrupt to each card in the BIOS setup procedure. Otherwise, the computer may assign separate interrupts to the cards during bootup.

The board reviewed for this article shipped with MME and DirectSound drivers for Windows 98/ME/NT/2000, and ASIO 2.0 drivers for 98/ME. ASIO 2.0 drivers for NT/2000/XP were in late beta stages as this article was being written. Macintosh ASIO 2.0 drivers are under development (first for OS 9, then OS X), as are WDM drivers. Currently, no GSIF (Gigasampler) drivers have been announced.

Of course, this gives a bit of a work-in-progress feel, but, to be fair, most audio interface companies are having to go back to the "driver drawing boards" to deal with the changes thrown at us by OS X, Windows XP, WDM, CoreAudio, etc.

INSTALLATION

My favorite part about installation (aside from the fact that it was trouble-free) is that, after the process is done, a screen appears with a cork popping out of a champagne bottle. Maybe I'm easily amused....

Anyway, with Windows 98/ME, you install the software first, then plug in the board (the reverse is true with NT/2000). The process worked as advertised, and the card was recognized by every program I tried — Wavelab, Sonar, Acid, and Cubase. Latency was excellent with ASIO and Win98SE (6 ms with as much audio as I could throw at it), but using MME with Sonar — which is optimized for WDM drivers — required 90 ms for glitch-free multitrack audio. (Note: The company reports that the ASIO drivers for Windows XP/NT/2000 offer a dramatic improvement in efficiency, due to support for bus mastering. This exploits the LynxTWO's optimized DMA controller and ASIO-specific hardware to yield real-world latencies under 2 ms with multichannel audio.)

THE SOFT MIXER

The 32-channel/32-bit mixer is basically a software use interface for the hardware-based mix engine. It has four windows: Record

(assigns ins to the host app), Outputs (shows the card outs), Play (assigns logical outs to physical outs), and Adapter (card setup). All of this is a bit overwhelming until you start inputting and outputting signals, at which point it all becomes obvious as you route signals and watch the meters move. Some of the Adapter parameters are fairly esoteric, but, fortunately, the printed documentation does a reasonably good job of describing them.

The mixer's ability to support 16 inputs and 16 outputs is not just for multiple card systems, but to allow routing and mixing audio signals in hardware to/from the two LStream ports and the analog and digital I/O. For example, the LynxTWO with an LS-ADAT module can serve as a "stand-alone" 4-channel 192 kHz A/D to ADAT converter. In this case, the analog input signals feed the LStream outputs.

PRO FEATURES

The LynxTWO card provides some options you're simply not going to find on many other sound cards. The digital input does automatic sample rate conversion, and can sync to word clock, 256X word clock, 13.5 MHz, or 27 MHz clock sync. There are three different dither types (as well as none, of course), composite video genlock, and non-audio digital I/O support for Dolby Digital and HDCD (in other words, these can be routed through the card). Throw in the SMPTE timecode reader/generator (with the usual 24, 25, 29.97, and 30 fps rates), and you have a card that would be very happy in broadcast and video as well as audio.

YOU GET WHAT YOU PAY FOR

The LynxTWO is an impressive card. It would be overkill for some applications; a lot of smaller studios are not going to be cutting at 192 kHz, syncing to video, or in need of 117 dB of dynamic range

REQUIREMENTS

- Windows 98/ME/NT4.0/2000/XP (supports dual processors for NT/2000/XP; Mac drivers are slated for release soon)
- PCI slot
- 32 MB RAM

when they're squashing the hell out of everything anyway. For audio connoisseurs, though, it's a different story. First, the audio performance is exemplary. And, second, the cost is reasonable compared to top-of-the-line stand-alone converter boxes — and believe me, the comparison is apt — because using breakout cables is less expensive than a rack box and associated packaging.

Well, it looks like my recommendation that people keep audio out of the computer needs updating — the LynxTWO proves it can be done. What's more, it does it well. ■



Lynx Studio Technology, Inc.
 web: www.lynxstudio.com
 email: sales@lynxstudio.com • Phone: (949) 515-8265