

# THE LEXICON STUDIO MONITOR

Issue I

September 1998

Welcome to the first issue of the Lexicon Studio Monitor. This newsletter is meant to spread the word about all the latest and greatest information concerning Lexicon Studio. We will cover everything from new products and software updates, scheduling of events and demonstrations, application notes, technology news, review reprints, and even testimonials from users in the field. If there is something you want to learn about Lexicon Studio, you'll find it here. Of course, if you still have questions, you can always check our website at [www.lexicon.com](http://www.lexicon.com), or contact us direct by telephone at 781.280.0300 for the latest information.

## PRODUCT NEWS

### **Now Available from Lexicon, PC Wave Drivers for Lexicon Studio**

Wave drivers are sound card drivers that support the generic MMIO (Microsoft multimedia input output) format. Virtually every audio application available for the PC supports this standard. The following is a listing of only a few of the more notable programs that are now compatible with Lexicon Studio:

- Steinberg Cubase VST
- Steinberg WaveLab
- Steinberg ReCycle
- Steinberg ReBirth
- Emagic Logic Audio
- Syntrillium Cool Edit Pro
- CakeWalk Pro Audio
- SEK'D Samplitude 24/96
- Sonic Foundry Sound Forge
- Sonic Foundry Acid
- JBL Smart

### **Great News for Macintosh Users**

Lexicon is 30 days away from releasing Macintosh ASIO (audio streaming, input, output) drivers. This will allow you to use Steinberg Cubase VST/24 and Opcode VisionDSP with Lexicon Studio! You'll see much more information about this great development in the next issue of the Studio Monitor!

# PARTNER FOCUS

Already, Lexicon has a strong complement of software developers working on direct drivers for use with Lexicon Studio. With an obvious strong partnership with **Steinberg**, Lexicon is also extremely pleased to be development partners with **SONIC FOUNDRY** (developers of Sound Forge™ and Acid™), **SEK'D** (developers of Samplitude 24/96) and **o.p.c.o.d.e.** (developers of VisionDSP™).

Lexicon also made some very exciting announcements at the AES show in San Francisco this September. Joining Lexicon as development software partners are **Syntrillium**, creators of Cool Edit Pro™. In an equally exciting announcement, **emagic**, creators of Logic Audio™, have announced ASIO support for Logic Audio on the Macintosh.

With powerful software from these fantastic developers driving Lexicon Studio, you can finally achieve truly professional results with your computer.

If there is certain software that you would like to see supported on Lexicon Studio, let us know! Also, the best way to get support of your favorite software on Lexicon Studio is to contact the software manufacturer and request Studio support. Stay tuned for more partner information in upcoming issues of the Lexicon Studio Monitor.

# EVENTS & CLINICS

Lexicon is busy getting the word out about our system. We are visiting dealers and distributors all throughout the USA and Europe. Contact your local dealer for information about when you can meet with a Lexicon Studio specialist in your area, or look to our website for more details.

See the new Lexicon Studio Counter Card at your local dealer! This display drives all the points home about why this system is so powerful.

**LEXICON STUDIO**

## SPEED · POWER · EXPANDABILITY

**SPEED**  
Most audio cards use CPU power to enable each input and output. Lexicon Studio provides its own power for lots of I/O — freeing up your computer for other things — like more tracks and more plug-ins.

**POWER**  
The PC-90 provides the best of both worlds. Plug-in controls with hardware-quality reverb — and no hit on your computer's performance. Routes into 2400 more tracks, and more plug-ins.

**EXPANDABILITY**  
The Lexicon Studio System is designed for expansion — add I/O, Synchronization, DSP and Tracks as you need them.

**Steinberg**  
**SONIC FOUNDRY**  
**SEK'D**  
**o.p.c.o.d.e.**

**System 12T (uses 120 PC 90 & 12T hardware)**

- 32 Voices — for Inputs and Outputs
- 34-bit Architecture
- 2 Discrete Stereo Reverbs
- Reverb inherited from award-winning PCM 90
- 5 Algorithms; 100 All-New Presets
- 32 Simultaneous Audio Channels (2 Analog 34-bit; 2 Digital S/WDF; 8 Digital A/D A/T™)
- Time Code Input
- Word Clock Input
- RS-422 Sony Serial Machine Control

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**lexicon**  
The Real Working World Company

# POWER USERS

This issue, we feature Eric Poitevin and Gary Evans of AREA 505 Inc. in Montreal, Canada. These audio veterans are opening the doors to their new studio, AREA 505 Inc. in mid-October. Eric and Gary are concentrating on music production at AREA 505 Inc., but will also produce other types of multimedia productions. The computer equipment at AREA 505 Inc. is state-of-the-art. Eric and Gary have been working hard to get the perfect equipment for their new facilities (see their equipment list on the following page).



“Essentially, whether we do sampling on one computer, mastering on another one, or multitrack recording on the third one, the audio input of any system will be the Lexicon Studio” says Eric Poitevin. All computers at AREA 505 Inc. are networked via fast Ethernet 10/100 mps cards on twisted pairs.

Eric's reasons for choosing the Lexicon Studio system:

1. Lexicon's reputation of excellence (proven through many products that we've owned over the years).
2. The features: Full 24-bit path with Lexicon A/D conversion, we also liked the idea of having 2 PCM-90's with a computer sound card for the price of 1 PCM-90.
3. Having tried many different audio products for the PC without success, we were about to switch to a Macintosh based system when someone mentioned to us that Lexicon was about to release audio hardware for the PC. That is when we started believing that professional audio finally had a place on the PC platform.
4. We realized after buying the card that it produced no noise, and had a very clean audio path.
5. Quality of construction and manufacturing.

Aside from ongoing in-house production, upcoming projects at AREA 505 Inc. include multimedia CD productions for several corporations. Eric and Gary will also use the Lexicon Studio system on the upcoming French-Canadian albums by Patrick Bourgeois and Marie-Jo Th erio.

The following gear is used at the facilities at AREA 505 Inc.

### **Computer Gear**

- Computer 1: (Recorder)
- Lexicon Studio 12T System
  - Pentium II 400Mhz
  - Asus BX motherboard
  - Full SCSI
  - 160 MB PC100 RAM
  - Seagate 5 GB Drive
  - AGP 16 MB Matrox G-200 video board
  - Opcode XTC64 Midi interface
  - Steinberg Cubase VST

- Computer 2: (Sampler)
- 2 32 voice sampling cards with 32 MB sampling memory
  - Pentium 200 MMX
  - 64 MB RAM
  - Dual IDE drives

- Computer 3: (Mastering)
- Terratec EWS-64XLS
  - Pentium 200 MMX
  - 128 MB RAM
  - Dual IDE drives
  - SCSI CD-Writer

- Computer 4: (Business NT server)
- Pentium 200MMX
  - 128 MB RAM
  - Dual IDE drives

### **Audio Gear**

- YAMAHA 03D Digital Console  
Meyers HD-1
- Aphex 612 Dual-Gate  
Aphex Type-III Exciter  
Aphex Implulse (audio Triggers to Midi)  
Aphex Expressors  
Behringer Stereo Expander  
DBX De-esser  
MIDAS XL-42 Stereo Pre-amp/EQ

### **MIDI Devices**

- Roland TD-7 Drum module with Pads  
Roland Groovebox  
Roland JP-8000  
Roland U-220  
E-Mu Proteus1

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**Canada H2W 2M4**  
(514) 282-9002  
area505@yahoo.com

# LEX TECH

This issue, we are featuring the benefits of genuine LexiChip™ DSP versus generic DSP and native processing.

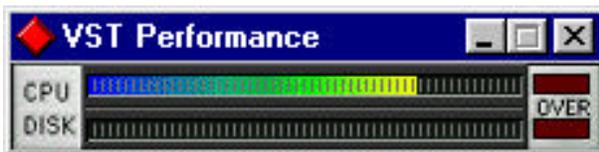
## *First, what exactly is a LexiChip?*

The LexiChip is a VLSI chip that Lexicon has created from 25 years of research in room acoustics, reverberation, ambience, wave propagation and psychoacoustics. Simply put, this chip is the most sophisticated hardware that was designed specifically for reverberation and room simulation.

## *How does the LexiChip compare to other DSP?*

There are two main types of digital reverberation for computers. Some audio companies utilize generic DSP chips, from computer manufacturers such as Motorola. While using a generic DSP has its benefits, it is a Jack-of-all-trades, and a master of none. Reverb computations are the most complex type of DSP, and a generic chip can never compare with the reverb audio quality of a LexiChip.

Another option is native processing. Some applications such as Cubase VST use the computers host processor for DSP effects. There are several great advantages to this method of DSP. For starters, as computer technology improves and faster processors become available, performance of your audio system also increases. The other great thing is that no additional hardware is required. The user can do a great deal of things without being locked into a generic hardware environment. The greatest problem with native processing is the strain on your computers CPU. This is why Lexicon Studio and Cubase VST are such a good match.



Plug in a few native reverbs and look how much processing you have left to do EVERYTHING else!



Plug in two PC-90s, not only are they higher quality reverbs, but look at all the room to run other things!

## *So where else are LexiChips used?*

Just about every Lexicon rack effects unit utilizes LexiChip for reverb. Some examples include 300, 300L, PCM 81, PCM 91, MPX 1, MPX G2, MPX 100 and others. Our home theater processors also use the LexiChip to simulate stunning room environments within our DC-1 and CP series home theater processors.

## *What can LexiChip Technology do for you?*

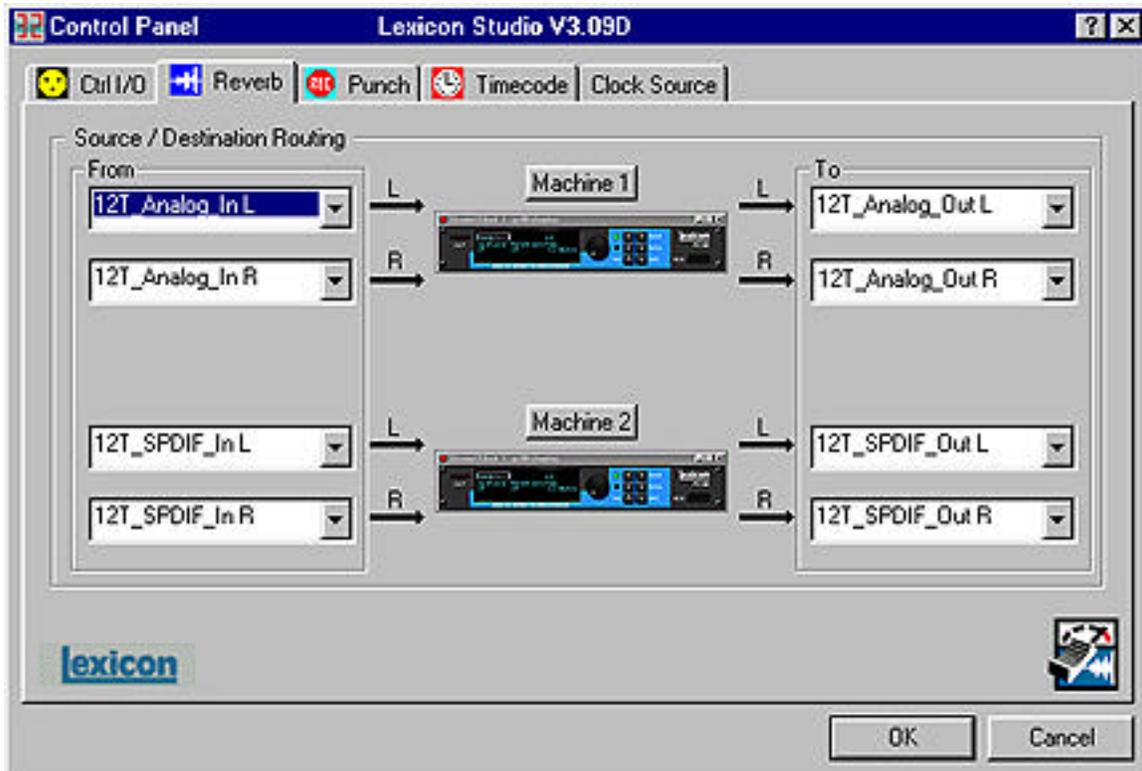
Use a Lexicon Studio PC-90 in a mix. After mixing with the reverb plug-ins you're probably used to, using PC-90 will be like putting on a new pair of ears. Also, don't forget that PC-90 has 100% real-time control, is fully automatable, provides five powerful reverb algorithms and has extensive routing capabilities including daisy-chaining and also stand alone use!

All thanks to the power of the LexiChip, and our clever engineers at Lexicon.

# APP NOTES

## Using the PC-90 as Outboard Gear

Using Lexicon MMIO drivers, you can configure your PC-90 to be used as a stand alone reverb box.



With the above settings, the PC-90 is being used as TWO stand alone reverb units. Machine 1 is using analog I/O, and Machine 2 is using S/PDIF digital I/O.

The source (send from your console) is routed directly to the inputs of the PC-90 engines and the outputs can be routed (analog or digitally) to the returns of the mixer. There is no latency.

You are not restricted to the routing shown in this example. It is possible to use any input as a Source and any output as a Destination.

### Notes:

The example above requires the audio clock be set to SPDIF12T. If only analog sources are being used this is not necessary.

# REVIEW REPRINTS

Reprinted in its entirety from **Sound on Sound**, July 1998

**Combining the famous Lexicon reverb sound with the latest hard disk recording technology, the Lexicon Studio system should win many admirers. MARTIN WALKER falls in love.**

## Lexicon of Love

### LEXICON STUDIO RECORDING SYSTEM

It is a sign of the importance now being given to audio recording systems based on computer soundcards that heavyweight industry professionals like Lexicon are joining the fray. A few years ago, soundcards were regarded by some companies as toys suitable only for games -- and now look what they can do!

As you might expect, the Lexicon Studio is a fully professional recording system - all the audio circuitry is contained within an external rack-mounting case for optimum fidelity, and the main analogue inputs and outputs are at +4dBu levels on balanced XLRs. However, when compared to other recent systems, there are two major differences in the approach that Lexicon have taken. Rather than moving their expertise to the software plug-in market, Lexicon have incorporated their PCM 90 reverb hardware into the new Studio recording system, and such is the desirability of the 'Lexicon sound' that many musicians have been eagerly awaiting the launch for this reason alone. We're not talking about a simulation either. The Lexicon Studio uses exactly the same core processing engine as the famous PCM 90, taken out of its original rack housing and grafted on to a PCI soundcard.

The other major difference in the approach taken by Lexicon is that of software. Many hard disk audio systems have been launched over the last year or so, offering a wide range of features and capabilities. However, while most of these new systems are audio-only, many also use proprietary software as the sole means of accessing the hardware. This is a significant area of concern for many people using MIDI keyboards, synth modules, or samplers, since it is vital for them to be able to record and play back MIDI tracks as part of the overall process of making music. Most such systems have options to sync a MIDI sequencer to the Audio software, but this is not an ideal solution. Not only does it involve running two pieces of software side by side on a single monitor screen, it also means possible conflicts when relying on the Audio software to supply tight timing for the MIDI software.



Lexicon have neatly side-stepped this problem, as well as winning many people over in the process, by working closely with Steinberg to ensure that the Lexicon Studio integrates well with their Cubase VST software (which already supports both Audio and MIDI in a single package). Existing Cubase users will be very pleased to carry on using the same familiar package, rather than having to learn new software from scratch. The other benefit of working with Steinberg is that a dedicated ASIO (Audio Stream Input/Output) driver is available from day one. This should ensure good performance in VST, by minimising any latencies (those annoying time delays between doing something and getting a reaction from the hardware).

Lexicon are to be applauded for ensuring good performance with Cubase VST from the start, but initial shipments do not include a standard Win 95 Multimedia driver. This does mean that Cubase VST is the only application that can currently be used, although a standard driver is expected "in the near future" along with a driver for Apple Macintosh owners.

### INSTALLATION

For the purposes of this review, Stirling Audio supplied me with a Pentium II 300MHz PC containing 128Mb RAM, and an internal Ultra Fast Wide SCSI-3 hard drive (see 'System Requirements' box). The Lexicon

Studio was boxed separately, so I still got the chance to try out the installation procedure.

There are three main components to the Lexicon Studio 12T system: the Core-32 System PCI buss card is common to all systems, and this has a daughterboard socket to attach the PC-90 Processor card; two sockets on its back panel allow a couple of interfaces to be connected simultaneously. There is also a 24-bit multi-channel digital signal buss, which can communicate with other Lexicon cards to expand system processing power. Although nothing much is being said about this at the moment, "expanding system processing power" sounds suspiciously like a DSP farm to me. Who knows? The third part of the package is the LDI-12T Interface, a 1U-high rackmount box providing all the ins and outs.

The Core-32 may be PCI, but unlike many such cards it is a full 14 inches long. The review PC was fitted with an ATX format motherboard, which allows every slot to be occupied by a full-length card, but anyone contemplating installation onto a Baby-AT format motherboard may not be so lucky -- my own motherboard cannot accommodate PCI cards longer than about eight inches, due to the position of the processor heatsink.

**“ The Lexicon Studio uses exactly the same core processing engine as the famous PCM 90, taken out of the original rack housing and grafted on to a PCI soundcard.”**



Figure 1: Main VST Screen. Both Lexicon reverb modules can be used as either Channel effects (as shown here) or as Channel inserts. Notice that the Buss Output has been set to 'PC-90 1' and 'PC-90 2' in the VST Effects window, to route Aux Sends 1 and 2 to the PC-90 hardware. The VST Master window shows the two active busses.

After attaching the PC-90 daughter-board to the Core-32, installing the combination into the review PC was quite easy. Such is Lexicon's attention to detail that disposable anti-static wrist straps are provided for safe installation of the circuit boards, as well as a screw-on bracket to support the far end of the card.

Once the cards are in place, rebooting the PC allowed Win 95 to detect the new hardware, and after inserting the appropriate floppy disk, [the drivers were installed with no fuss](#) -- they take a single IRQ and one 64kb memory range. Once the Win 95 desktop appeared, the PC-90 plug-in software was installed from two further floppies, and that's all there was to it. A demo version of Cubase VST was also included in the packaging, but most people will want the full version, which will normally come already installed if you are buying a complete system.

The LDI-12T Interface connects to the Core-32 back panel via a single proprietary multi-way cable, and thankfully this is a generous three metres in length, which is quite long enough for the interface to be fitted inside a 19-inch rack. Its 1U rack casing is only four inches deep, and looks to be exactly the same as that used for the Lexicon Alex and Reflex, as does the supplied 'wall-wart' external power supply. The front panel (from left to right) features an on/off switch, followed by a balanced female XLR socket for Timecode In, a pair of gold-plated coaxial phono sockets for S/PDIF In and Out, and then the analogue I/O: a pair of male XLR (balanced) sockets for Left and Right outputs at +4dBu level, a pair of gold-plated phono inputs (-10dBV level), and a further pair of female XLR (balanced) inputs at +4dBu level.

On the back panel you will find a pair of 9-pin D-type connectors for ADAT Sync In and Sync Out, a pair of optical (Toslink) sockets for Audio In and Out (these can be used as either 8-channel ADAT format, or stereo S/PDIF), the

socket for the computer umbilical, a BNC Word Clock Input (with 75 ohm termination), another 9-pin D-type RS-422 Comm Port (to connect to video and audio devices capable of Sony serial control), and finally the wall-wart socket, along with a cable tidy to stop the plug being accidentally pulled out.

## INITIAL SETUP

Most of the external connection options are fairly obvious: digital connections can be made either using the rear-panel Toslink sockets or the front-panel coaxial ones, for easy connection to ADATs, DAT recorders, CD players or effects processors. Format conversion is also available, so that you can freely route between optical and coaxial devices. I did miss a pair of unbalanced outputs, but you can make up a special lead to achieve this, so it's not too much of a problem.

As far as interfacing with Cubase VST goes, you simply need to select 'ASIO Lexicon Studio' as your ASIO Device in the Cubase VST Audio System Setup window. This is my first experience of a hardware-specific ASIO driver (there are very few yet available -- notably the Korg 1212), and there are no buffers to set up -- as soon as you select the driver, [a latency value of 47 milliseconds appears, which is a factor of 10 better than with most recommended soundcard settings when using the ASIO Multimedia driver.](#)

Adjustments to routing are made inside the Lexicon Studio Control Panel -- to find this you need to select Audio System Setup, and then click on the ASIO Control Panel button. To be honest, you are likely to be using this Panel quite a lot initially, so it is useful to leave it open, ready to be used directly from the Win 95 Taskbar, rather than having to find it every time.

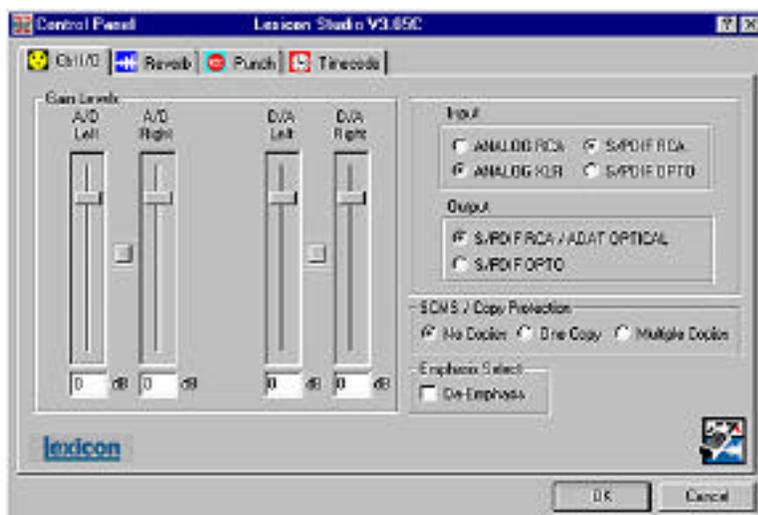


Figure 2: Ctrl I/O window allows full access to the hardware, for selecting inputs and outputs, digital options, and for setting up gain structure.

There are four main pages in the Control Panel. The first is Ctrl I/O, and this is fairly self-explanatory, providing access to functions of the LDI-12T Interface. There are two pairs of gain faders -- one for the A-D converters, and the other for the D-A ones. These can be set at any value between -96dB and +12dB. The nominal position of 0dB represents unity gain between XLR input to XLR output, where +4dBu is 14dB below digital full scale. For the phono inputs 0dB corresponds to -10dBV, 14dB below digital full scale. These values are fairly standard and sensibly chosen to give you a useful amount of headroom. Each pair of faders can be ganged together, using a small button.

Also on this page are switches to select which of the various Input and Output sockets on the Interface are to be used, along with SCMS settings (copy-protection can be used or ignored), and a De-Emphasis switch for the analogue output. Finally, clicking the Turbo Mode box enables full 32 channel capability (this setting defaults to off, with 24 channels available at 44.1kHz and 21 at 48kHz sample rates, and will give higher quality, glitch-free audio with slower machines such as 166/200MHz Pentiums).

The second page is Reverb, and this allows a wide variety of sources and destinations to be routed to each of the two PC-90 DSP engines. These include 12 inputs from the LDI-12T (two analogue, two S/PDIF, and eight Toslink), 12 outputs of the same persuasion, along with four Aux sends (Aux Send 1 L and R, and Aux Send 2 L and R), and four Aux returns of the same variety.

This versatility allows the PC-90 to be patched directly to an input or output signal, as well as within Cubase VST in the normal manner of plug-ins. It is even possible to create a cascaded reverb using both PC-90 engines in series. However, although comprehensive, this is one area in which some sort of graphic patchbay would help - it can initially be confusing until you get your head around the alternatives. Thankfully, a default routing is set for Lexicon Studio (shown in Figure 3), allowing you to use the PC-90 straight away, as an Aux effect in Cubase VST.

The third page is for Punch Record (with its own Mix level fader). This is a very useful feature that allows you to bypass the normal Cubase monitoring, and directly patch any selected combination of Lexicon Studio input signals through to one of the Lexicon Studio hardware outputs during recording (you will need to select Global Disable for Cubase monitoring in its System Setup window). This overcomes an annoying problem with all Win 95 audio recording packages -- that there is inevitably a latency between the input signal and the playback of previously recorded tracks during recording. On playback every track will be perfectly in sync, but if you listen to an input signal after it has passed through the software buffers, it will sound delayed, and even the low latency figure of 47ms can be tricky to

“ ...controlling VST using the Lexicon Studio felt much more like using an analogue machine – no wonder that Steinberg are so keen for other soundcard manufacturers to develop ASIO drivers.”

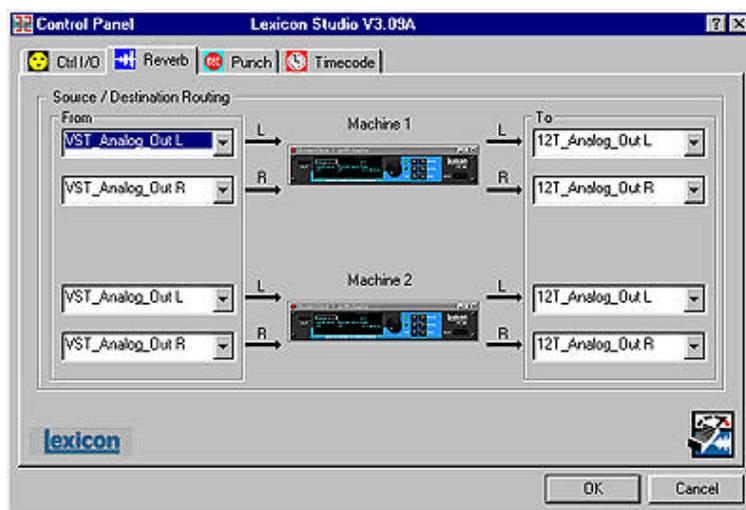


Figure 3: The Reverb window is where the routing of the two PC-90 modules takes place, and the options are comprehensive, to say the least!

work with. Of course, you could achieve the same end by monitoring the input using an external mixer, but Punch Record allows you to do it with direct connections.

The final Control Panel page is Timecode, and here you can enable timecode reading, select the timecode source, as well as displaying its current type, validity, and value. The LDI-12T uses a MIDI driver to convert the LTC (Longitudinal TimeCode) supplied by its front-panel XLR socket into MTC (MIDI TimeCode).

## IN USE

Given the number of inputs and outputs on offer, it takes a short while to get to grips with audio recording, but I soon had some tracks recorded. I couldn't measure noise figures using my normal software of choice due to the lack of a Win 95 driver, but audio quality was subjectively excellent. The main signs of the dedicated ASIO driver were the almost immediate Play/Stop response (the Multimedia driver, in comparison, typically takes half a second to fill up its buffers before anything happens) and the snappy response of recording and playback level meters (which reflected the actual signals much more closely). In fact, [controlling VST using the Lexicon Studio felt much more like using an analogue machine](#) -- no wonder that Steinberg are so keen for other soundcard manufacturers to develop ASIO drivers.

To check that multitrack recording was working correctly, an ADAT was patched in using optical cables, and an existing 8-track ADAT tape recorded directly onto the PC's hard drive using Cubase VST. Once the routing was configured, and the ADAT data selected as the word clock source within VST, this worked very well, although some clicks were noticed during the transfer process. However, this didn't happen during further tests with a different ADAT machine, so the problem seems unlikely to be due to the Lexicon Studio. When employed in a larger digital system, using a mixer such as the Yamaha 02R or 03D, you could use its word clock output connected to the rear panel BNC word clock input of the LDI-12T, and select this as the word clock source, to provide centralised clocking for everything.

## PC-90 SOFTWARE

OK, so I've left the best bit till last. Since the PC-90 uses exactly the same core processing engine as the PCM 90, the reverbs and effects sound just as good, and its front-panel display will look very familiar to any Lexicon owner. There are two reverb plug-ins available from within Cubase VST (Machine 1 and Machine 2), and there are five algorithms available for each: Ambience (to add space around the sound), Chamber (particularly useful with voice), Concert (very clean halls), Room, and Inverse (for gate and special effects). Two new banks, each of 50 presets, have been created for the PC-90, although I suspect that many libraries of other effects will be quickly transported to the computer format.

[Using the PC-90 was a revelation.](#) Switching it into circuit took no more overhead than the simple Wunderverb3 plug-in supplied free with Cubase VST, and for all practical purposes you have simply connected your VST channels to a piece of external hardware. [For anyone who has not used a Lexicon reverb before, the overwhelming feeling is of clarity -- a 100% wet signal sounds just as clear as the direct one, with no metallic colouration during long decays, and it was a treat to have such a variety of quality reverbs on tap inside a PC.](#) The other thing to note is the sheer variety of sounds on offer. Most reverbs only offer a handful of controls, but here there are up to 24 (depending on the algorithm). Scrolling through the two new banks of 50 presets created for the PC-90 shows its versatility. There are the standard rooms, halls, and churches, and beautifully clean they are too, but other special effects like Synth Hall (with pitch modulation) and CyberVerb (using the Inverse algorithm with staggered delays) show just what can be achieved. Mind you, I doubt that I need to convince anyone of the benefits of using a Lexicon reverb!



Figure 4: PC-90 reverb module. This familiar-looking PC-90 plug-in is modeled on its hardware equivalent, and should make a lot of people happy.

The hardware PCM 90 does provide access to many more parameters than the PC-90, but Lexicon told me that future PC-90 software updates may well add more if users demand it. The current interface only has three parameters visible at any one time, so some algorithms need eight display pages in total. I can't help thinking that here is a missed opportunity to provide an alternative software interface which shows more (or all) of the controls simultaneously, as well as using a graphic approach, with a flowchart for each algorithm. Yes, I know it's the sound that is important and that most people will tweak the presets, but here's the chance to make existing Lexicon owners green with envy, and possibly gain some more potential customers.

## SUMMARY

Lexicon seem to have designed a system that has a very useful balance of features. For many people who work with tape-based 8-track recorders such as the ADAT or DA88, moving the data to a computer-based system for editing and mixdown is ideal, and for nearly all such applications a couple of high-quality reverbs will always be needed. Implementing reverb functions in software demands a great deal of processing power, and the better the quality of the reverb, the more DSP power it normally consumes. By building in a pair of hardware reverbs, offering the legendary quality of the PCM 90, [Lexicon have created a winning combination](#), since all of your computer power remains free to run more channels of audio, or a wider selection of other less intensive plug-in effects.

By opting to integrate their system with Cubase VST, many people who have already devoted a large amount of time learning the Steinberg software can immediately achieve useful work, without starting at the bottom of yet another software learning curve. The people who grumble about timing and latency problems with VST are unlikely to have used a powerful PC with hardware-specific ASIO drivers and built-in reverb hardware, such as the Lexicon Studio. If they did, they would find a system with huge power and few compromises, which should win over the majority of doubters.

Lexicon's audio hardware is also well thought out. [By providing 24-bit A-D converters, as well as internal 24-bit resolution, you are assured of high audio quality recordings.](#)

The fact that the D-A converters are only 20-bit is less important, since the majority of audio ends up as 16-bit in the final master, and you are normally using these converters for monitoring, rather than as part of the recording chain. However, when using Cubase VST v3.55, recording is currently restricted to 16-bit resolution. The forthcoming Cubase 4.0/24 (initially for the Mac from June 98, and then later in 98 for PC) will remove this restriction, allowing full 24-bit recording, as well as a host of new features.

The main limitation of this version is the lack of standard Win 95 drivers (and Mac ones). Both of these are promised within a few months, and then the Lexicon Studio could be used with any Audio+MIDI sequencer, albeit with greater latency.

## “ Lexicon are to be applauded for ensuring good performance with Cubase VST from the start.”

Lexicon intend to specifically support other sequencers, to provide optimum results a package at a time. Personally, I think their approach is sensible, given the many potential problems when using a universal driver. [Overall, I think Lexicon have a definite winner on their hands in the Lexicon Studio 12T](#), and I suspect that they may be initially hard-pressed to keep up with demand.

### COMING SOON...

For anyone requiring more extensive I/O, there will be a larger Lexicon Studio system available in the future incorporating the LDI-16S (16-channel

interface. This offers eight sets of balanced analogue inputs and outputs, S/PDIF and Word Clock connections, plus a 8-channel TDIF connection for a Tascam DA-88 or DA-38 digital recorder.

The following optional screw-in modules will also be made available:

- AES-8 – this provides an additional eight channels of AES/EBU digital ins and outs (with real-time sample conversion between any pair).
- MDM (Modular Digital Multitrack) – this provides another TDIF connection and two ADAT optical ones, as well as ADAT sync.
- STC-1 – this is a timecode reader/generator that generates LTC, and reads and generates VITC

## SYSTEM REQUIREMENTS

Although Lexicon recommend a minimum of a Pentium 166MHz processor and 64MB RAM, I think most people spending over £2500 on the audio sub-system would be best advised to budget for a PC containing a Pentium II processor. Running Steinberg's Cubase VST, a good recommendation would be a Pentium II 266 or even 300MHz processor, 64MB RAM, and an 8GB SCSI hard drive. This should give you between 24 and 32 audio tracks, with 64 EQs, eight average plug-in effects, and of course two built-in Lexicon PC-90 reverbs. Also, contrary to the supplied printed manual, any version of Windows 95 can now be used. To be honest, any system capable of 24-bit operation, and able to support up to 32 simultaneous audio streams, is best bought ready-installed in a suitable fully-tested computer environment, whether Mac or PC. Stirling Audio, who distribute Lexicon in the UK, have wisely decided that it is far better for them to sell through a selected group of dealers who can supply ready-configured computer systems and full technical support, although they will also sell individual soundcards to anyone keen on DIY installation.

## PC TWEAKS

Since the review model PC supplied with the Lexicon Studio system seemed representative of what both Stirling Audio and Steinberg are recommending, I took a closer look at the way it had been set up.

The main programs were installed on a 2GB drive, but as expected, the audio hard drive was entirely separate from the one used for Windows 95 installation (for optimum performance). A Western Digital Enterprise E4360 drive had been installed. This is a 4.3GB device with Ultra Fast and Wide SCSI-3, a quoted access time of 8ms, and rotational speed of 7200rpm. The SCSI adapter itself was for Adaptec and built into the motherboard. In Windows 95 itself, Read Ahead Optimisation had been switched off, and Write-Behind caching had been disabled for all drives, as recommended by Steinberg. The typical role of the machine had been set to 'Network Server' (opinions are divided on whether this adjustment gives and improvement). Finally, in the System.ini file, the Vcache settings had already been adjusted to MaxFileCache=32768 and MinFileCache=32768.

## AUDIO SPECIFICATION

Balanced Analogue Inputs:	-14 to +18dBu full scale, 100k impedance.
Unbalanced Analogue Inputs:	-20 to +12dBu full scale, 50k impedance.
A-D converters:	24-bit.
Input Dynamic Range:	104dB, (106dB A-weighted typical, 20kHz bandwidth).
Input THD:	less than 0.05%, 20Hz to 20kHz.
D-A converters:	20-bit.
Output Dynamic Range:	94dB, (97dB A-weighted typical, 20kHz bandwidth).
Output THD:	less than 0.01%, 20Hz to 20kHz.
Analogue Outputs:	+22dBu full scale (balanced), +16dBu (unbalanced), 600 ohm nominal impedance, each side.
Frequency Response:	20Hz to 20kHz +/-0.5dB ref 1kHz.
System Sample Rates:	44.1kHz, 48kHz.
Internal Data Resolution:	24-bit.
PC-90 Processing:	20-bit.

You can also browse to this review on the internet at the Sound On Sound website at:

[www.sospubs.co.uk/sos/pastiss/july98/articles/lexicon/lexiconstudio.html](http://www.sospubs.co.uk/sos/pastiss/july98/articles/lexicon/lexiconstudio.html)

The Lexicon logo is rendered in a bold, blue, sans-serif font. The letters are thick and closely spaced, with a slight shadow or gradient effect that gives it a three-dimensional appearance. The 'L' is particularly prominent, starting with a vertical bar that extends downwards.