TRANSONIQ HACKER

The Independent News Magazine for Ensoniq Users

Soundprocess - The Secret Life of a Mirage

by Alan Hamer

Soundprocess is alternative software for all models of the Mirage. When Soundprocess is booted into the Mirage, many things are different. Parameter numbers take on new meanings, many of the front panel buttons have new functions, and most importantly, 48 sounds reside in memory awaiting your selection. Further, the system improves sound quality, makes the Mirage multi-timbral, and provides a level of programmability unknown to digital sampler owners. These and other features are possible due to a new role for the oscillators.

32 OSCILLATORS

Users of the original operating system know that the instrument is eight note polyphonic. The ability to chorus, detune and use "mix mode", promotes the belief that there must be at least two oscillators per sound, for a total of 16 oscillators. But in reality, Mirage owners have a 32 oscillator engine under the hood. That which is called an oscillator in OS 3.2 speak, is actually an oscillator pair in fixed configuration. One oscillator plays the wavesample through the first time, and then the second continuously repeats the section of the sample between the loop markers.

When the Soundprocess operating system is loaded into the Mirage each oscillator can play its own waveform. In the original operating system this would not be significant, but with Soundprocess, there are 72 waveforms from which to chose.

Two pairs of oscillators (four waveforms) are called a patch. When the Mirage is in "multi-mode", patches will independently respond to MIDI messages. By enabling the Mirage to operate multi-timbrally, the instrument's usefulness with a sequencer expands eight-fold. Each MIDI channel can be assigned a keyboard arrangement of up to 6 patches, called a program. And just to complete the picture, a Soundprocess data disk holds three banks, loadable one at a time, each puts 48 patches into memory assembled into 32 programs. Patches can be realistic acoustic sounds like the Mirage traditionally produces, or synthetic textures similar to the ESQ-1, or composite sounds like the SQ-80.

WAVES AND WAVESAMPLES

The variety of sound is due to the availability of both waves and wavesamples. Soundprocess partitions the Mirage's memory into pieces of specific sizes. Each time a sound bank is loaded, a wavetable of 72 blocks goes into memory. Wavesamples are the larger, more complex waves, numbered 1 - 16. Waves 1 through 8 are 16 pages long and waves 9 through 16 are 32 pages long. Waves 17 to 72 are single cycle waveforms which can be either 1, 2, or 4 pages long.

Owners of samplers are naturally biased in the belief that more is better, particularly in regard to memory. Small waves could tend to be regarded as informational light weights. But small waves can offer some significant relief from two of the issues common to samplers; looping and aliasing, both of which rise in importance during the sustain portion of a sound.

The familiar single page loop is a wave based upon a sample. Also familiar are synth

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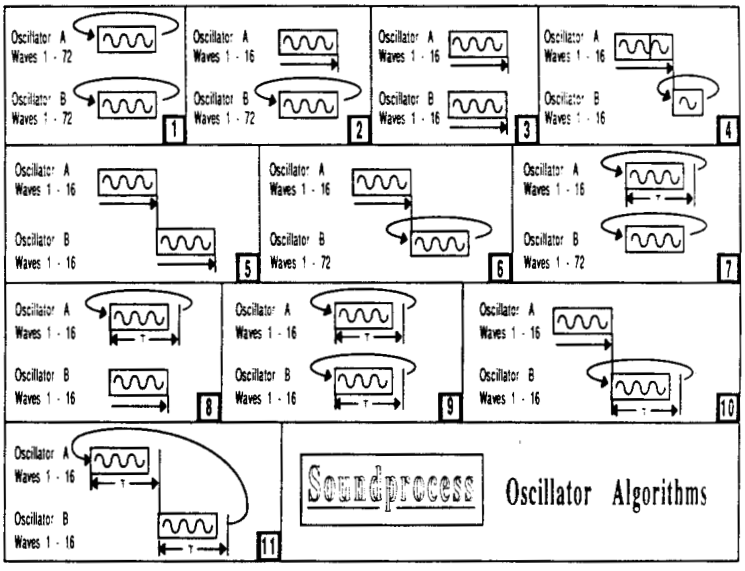
waves (square, sine, sawtooth etc.), the output of analog and some digital synthesizers. So there is certainly precedent for the musical use of single cycle waves. Soundprocess provides a choice of waves to be the sustained tone for samples which are themselves unsuitable for cycling due to either tonal or frequency fluctuation, undesirable characteristics for a loop.

Wavesamples, like the samples traditionally played on the Mirage are harmonically rich and can vary in pitch and tone during their duration. Wavesamples are especially useful to convey a natural causation, or believability to a wide range of sonic creations.

Like many of the currently popular "Samploid" instruments, the Mirage can now be used to fashion sounds in a cut and paste manner. Acoustic attack transients can be combined with a variety of waves or wavesamples simply by changing parameter values. With the original operating system, most waveform manipulation requires a computer based visual editing system (or luck better appropriated to the Lottery). Layering and splicing dissimilar sounds with Soundprocess is done by selecting the waveforms and the playback structure, called an algorithm.

ALGORITHMS

Soundprocess allows you to gang together the oscillators in the traditional looping configuration if you like, but you are also provided ten other algorithms from which to chose. With a variety of modes for waveform use, including continuous replay, one-shot, and timed re-triggering; different algorithms provide commonly used mode combinations. Please recall, as you view the Algorithm Chart, that each patch is comprised of two oscillator pairs. Each pair is governed by it's own algorithm.



Examples might help to indicate possible applications of the different algorithms. When both oscillator pairs employ algorithm 1, waves produce thick four oscillator synth textures, especially when each wave is slightly detuned. Algorithm 2 is used to pair a sampled attack simultaneously with a continuous tone. The tandem one-shot wavesamples of algorithm 3 are commonly used for drums and percussion. Algorithm 4 supports looping, but with a twist, the wavesample used for sustain need not be the same as the one used initially. If a wavesample is too complex to capture in 32 pages, algorithm 5 is designed to allow two pieces of the same sample to be played sequentially. And then we come to algorithm 6, the darling of the cut'n'paste crowd.

There may be some readers who are exhausted simply at the mention of parameters, algorithms, waveforms and other technical terms. Soundprocess can be a satisfactory experience just on the merits of the new sounds, no load time, MIDI implementation, and multi-timbral operation. But the system also provides an intuitive format for the creation of new sounds: component waves are combined and shaped by amplitude and filter envelopes. Soundprocess gives the novice an opportunity to get involved in sound programming. The experience of building a sound sharpens ones awareness of how sound works.

CONTROLLED WAVESAMPLE CYCLING

The remainder of the algorithms all involve oscillators using the time re-triggered mode. Samplers, regardless of price, accomplish pitch changes by varying the playback rate of the waveform. Though normally acceptable, certain sounds suffer when played at different rates. The Ensoniq sound disk of strummed mandolin is great if you only use one note. Otherwise, the extremes in strumming rate in different parts of the keyboard conjure the image of a mandolin player with a substance abuse problem. The oscillators which are time re-triggered still are subjected to speed changes for pitch change, but the wavesample will not loop at a rate varying with the position on the keyboard. So to return to the mandolin example, the time between strums will be the same, independent of keyboard position. Further, the re-trigger time is adjustable in 10 millisecond increments up to 2.5 seconds and the number of repetitions can also be set. You can help a good mandolin player go straight.

You can also use this technique to create an echo effect with the help of the correct amplitude envelope. Imagine a mallet hit which repeats each time fading out further, simulating the results of a digital effects unit.

LOAD YOUR OWN

Soundprocess sound banks contain user defined wavetables contrary to the instruments whose tone selection is permanently burned into ROM. Who are the residents of the wavetable? Your Mirage sound disks are one of the best sources for material. When the location of the sample is specified, Soundprocess provides an additive synthesis capability. To make a wave free from digital sampling noise, enter the relative amplitudes of the first ten harmonics, and the calculated result can be added to the wavetable.

NO SUCH THING AS A FREE LUNCH

Can you do without the on-board sequencer? Soundprocess uses that space for other things and the front panel buttons have new meanings. Now that the Mirage can be run multi-timbrally, serious sequencing is indicated anyway.

Can sampling be done? No, use MASOS and then transfer the results to Soundprocess.

NEW TRICKS FOR YOUR OLD DOG

We reap a tremendous advantage from being musicians during a period of furious development in electronic instruments. On the downside though, an attitude of disposability is created by the constant quest for the new technology, keyboard or sound. But software based instruments can stand up boldly to these elements. For when hardware resources are re-allocated by a new operating system, these instruments can actually improve with age.

Bio: Alan Hamer, author of SOUNDPROCESS TUTORIAL, *is a professional baker who cooks as a member of "Head Cleaner," a musical mutual appreciation society.* ▬

Front Panel

RND (♪♫♪)

Soundprocess for the Mirage hasn't really gotten the attention (from us) that it deserves. There should be at least a couple articles elsewhere in this issue covering this product - with more on the way.

* * *

Our EPS coverage this month will probably seem a little heavy-going for most readers. Dick Lord is happily working away reverse engineering his favorite new toy. This is the kind of info that has to get out there to really get the third-party juices flowing, so hang in there. (How about a "Soundprocess-type" OS for the EPS?...) We've got a few more general-audience type EPS articles in the works but we're in the market for more. Good time to submit your discoveries.

* * *

Latest word on the DRAM situation is that the import restrictions have been relaxed and that short supplies and prices are expected to ease over the next several months.

* * *

Last month's *Interface* had some discussion on incompatibilities between **Valhala's** C-64 *ES1 librarian* and ESQ-1 O.S. 3.5. Word from Valhala is that the only problem was that the new O.S. uses MIDI Channel 2 for the default instead of Channel 1. If you're in this situation - check your channels.

* * *

A few Canadian subscribers have let us know that they're less than thrilled with the added delay in mailing their issues via England. (If you missed why this came about, it's too weird to go into and you wouldn't believe it anyway.) We've decided to offer a "First Class Option" for Canadian subscribers: $34/year. The regular rate for Canada (via England) is still $30. The difference between Canadian rates and US rates is pure Post Office - postage, required envelopes, and extra handling. In either case, you still get 'em once a month.

* * *

In case you've ever wondered just when to start worrying about getting your issue: we're on a 4-week, 4-week, 5-week, 4-week, etc. schedule. (Just so the year comes out fairly even.) So if one month seems a little late (like, for instance, this month), it's probably just one of our 5-week months.

* * *

Last month we ran a (very favorable) review on **Heaven's** *BBC Voice Series* for the ESQ and SQ-80 along with a warning that they've been very hard to get - shipping delays, unanswered phone calls, and the like. The latest word from Heaven is that the owner has been going through some (unrelated) difficulties but that these have been resolved and they are ready to ship. All previous orders have been filled. If you'd like to give it a shot, you can speak to the owner (Glenn Javaheri) personally at 408-287-2268. COD orders are also welcome. (And advised.)

* * *

Rob Weber (who has been the Hacker's #1 "Inside Advocate") is leaving his position as Director of Marketing at Ensoniq. We'd like to publicly thank Rob for his support over the years and wish him the best as he returns to his first love: business consulting (which is how he hooked up with Ensoniq in the first place).

TRANSONIQ-NET

HELP WITH QUESTIONS

EPS QUESTIONS - Garth Hjelte. Advent Productions. Pacific time (WA). Call anytime. If message, 24-hour callback. (206) 242-9220.

MIRAGE 24-HOUR HOTLINE - M.U.G., 914-963-1768.

ESQ-1 AND SQ-80 QUESTIONS - Tom McCaffrey. ESQUPA. 215-750-0352, before 11 p.m. Eastern Time.

ESQ-1 QUESTIONS - Jim Johnson, (602) 821-9266. 8 a.m. to 5 p.m. Mountain Time (AZ).

ESQ-1 QUESTIONS - International, Brendon Sidebottom, (03) 689-5731 Australia. No calls between 4 a.m. and 10 a.m. Australian ES time.

SAMPLING & MOVING SAMPLES - "Mr. Wavesample" - Jack Loesch, (201) 264-3512. Eastern Time (N.J.). Call after 6:00 P.M.

MIDI USERS - Eric Baragar, Canadian MIDI Users Group, (613) 392-6296 during business hours, Eastern Time (Toronto, ONT) or call MIDILINE BBS at (613) 966-6823 24 hours.

SAMPLING - Mark Wyar, (216) 323-1205. Eastern time zone (OH). Calls between 6 pm and 11 pm.

MIRAGE HARDWARE & FIRMWARE - Scott D. Willingham. Pacific Time (CA). Weekdays: 6-9 p.m., Weekends: 12-9 p.m. (213) 397-4612.

MIRAGE OPERATING SYSTEM - Mark Cecys. Eastern Time (NY). Days. (716) 773-4085.

MASOS - Pete Wacker. Whenever. (602) 937-1177.

CHANGE OF ADDRESS

Please let us know at least four weeks in advance to avoid missing any issues. The Post Office really will NOT reliably forward this type of mail. (Believe us, not them!) We need to know both your old and your new address. (Issues missed due to late or no change notification are your own dumb fault - we mailed them!)

BACK ISSUES

Back issues are $2.50 each. (Overseas: $3 each.) Issues 1-9, 11, 13-19, 21, 22, and 27 are no longer available. Subscriptions will be extended an equal number of issues for any issues ordered that are not available at the time we receive your order. ESQ-1 coverage started with Issue Number 13. SQ-80 coverage started with Number 29, (although most ESQ-1 coverage also applies to the SQ-80). EPS coverage started with Number 30. Permission has been given to photocopy issues that we no longer have available - check the classifieds for people offering them. Reprints in our "Quick and Dirty Reprint Series" are available: MIRAGE OPERATIONS, for $5, and MIRAGE SAMPLE REVIEWS for $4. Each contains material from the first 17 issues.

HYPERSONIQ

NEW PRODUCT RELEASES

Still Voice Audio has released 120 new Rock and New Age sounds for their ESQ-1/SQ-80 *Mix and Match Voice Library* specifically programmed for the SQ-80. Musicians may choose only the sounds they want in a variety of formats, including SQ-80 disk. All new comments, tips, and musings are included with the sounds. Information and free sample sounds are available by contacting Still Voice Audio, 3041 Sumter Ave. South, St. Louis Park, MN 55426.

SOUND LOGIC of San Diego now has three 40-voice modules for their ESQ-1/SQ-80 *Modular Voice System*. You get your choice of any one of the three modules with purchase of the system. There are two modules from the Unicorn Series of unique voices and one module from the Soloist Series of layered lead voices. The *Modular Voice System* sells for $39.95 on Mirage disk or data cassette. $20 more gets you an 80-voice E2PROM cartridge. The modules are available individually for $18.95. For info or to order: SOUND LOGIC, 1125 Eleventh St., Ramona, CA 92065.

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Feed your Mirage some Leaping Lizards

• New operating systems for the Ensoniq Mirage •

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KORG • DDD-1, DDD-5, DS-8, EX-800, DW-8000, & more
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O.S. 3.d IMPROVE YOUR PERFORMANCE — $24.95

Turn your Mirage into the ultimate controller keyboard! O.S. 3.d is an update to Ensoniq's O.S. 3.2 which adds new performance enhancements to the Mirage: Receive and transmit over seperate MIDI channels. Re-define the modulation wheel to transmit other MIDI controller data in real time, such as breath control, volume, portamento time, data entry, etc. Re-define the footswitch to transmit other MIDI switch information other than sustain. Transpose by semi-tones to give the Mirage keyboard an effective range of all 128 notes. Transposing affects the Mirage's internal voices as well as the voices of your other instruments. A MIDI "panic button" sends an all notes off message to the Mirage and to your other instruments. Parameter changes are now more than three times faster. Plus three new banks of sounds by Steven Fox.

• "...no Mirage owner should do without" T.H. 4/88 •

THE IGUANA JUNIOR FOR THE PERFORMING MUSICIAN — $24.95

THE IGUANA JUNIOR is a small version of THE IGUANA plus O.S. 3.d, both incorporated within the normal Mirage operating system environment. It lets you play your Mirage sounds like normal but with all the additional features of O.S. 3.d (see above), then at a touch of a button you can send MIDI SysEx data to all your other instruments. Just as quickly, you're back to the normal O.S. 3.d operating system and playing sounds again. Ideal for the performing musician, since you no longer need to boot and re-boot operating systems for different tasks. Requires THE IGUANA to initially record and store your SysEx data dumps on the same disks as your Mirage sounds. With the additional performance enhancements of O.S. 3.d, no similar operating system offers nearly as much. Includes three banks of new sounds by Steven Fox, including the infamous "10 STORY BUILDING" & "BUBBLIN' BASS".

MIRAGE MONITOR v1.0 DESIGN YOUR OWN O.S. — $49.95

For the C-64 or C-128. Not a visual editor! This program allows you to disassemble & assemble the entire 160k of Mirage memory in true 6809 assembly language. MIRAGE MONITOR V1.0 gives you direct access to the operating system memory, sequencer memory, sample memory, disk drive, VIA, ROM, MIDI UART, Q-chip, etc., entirely from the Commodore. Use MIRAGE MONITOR V1.0 to customize your Mirage O.S., or create entirely new O.S.'s. Includes a disk for the Mirage, a disk for the C-64, and a 32 page instruction manual.

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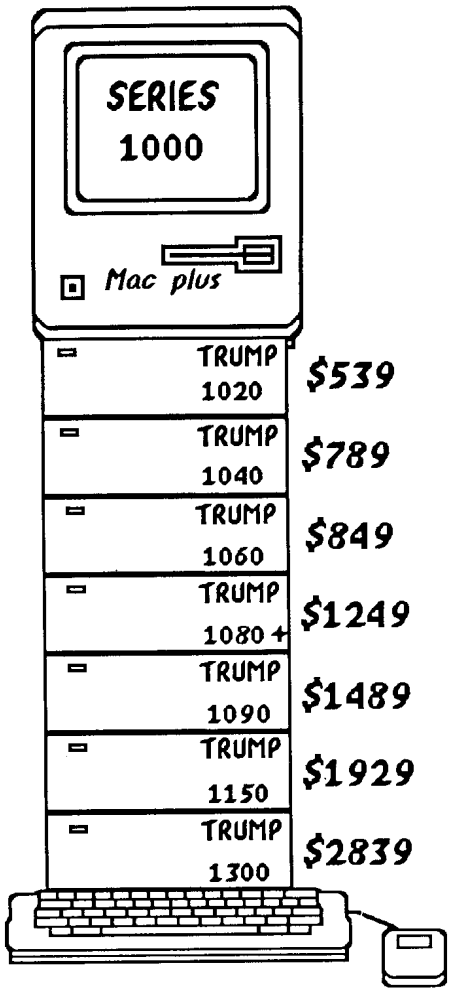

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Triton's Mark Cecys

Interviewed by Duane King

Mark Cecys (SAY-seas) is the proud father of Triton's SOUNDPROCESS program for the Mirage. When I read the first ad for SOUNDPROCESS in the Transoniq Hacker I just passed over it. But when I heard it at A.B. Steven's here in Huntsville, I went crazy! You see, I am a holdout. I resisted the very strong temptation to buy an ESQ-1 when it first came out because I found out that it used the very same Q-chip that is in my Mirage. I figured that if the ESQ-1 could make those clear, clean sounds, then my Mirage could, too. So I waited... and waited... and waited. In fact, I waited for so long that when the solution came along I almost completely missed it!

It comes down to this - you can read all the reviews you want - but please go listen to SOUNDPROCESS! Sure the patches on the system disk are not spectacular - but they are good enough and diverse enough that you get the idea real quick; this software makes the Mirage into a patch programmable synthesizer that also plays samples!

Now that you completely understand my bias, settle back and enjoy this interview with Mark. You may learn some fascinating things about your Mirage - and about SOUNDPROCESS.

Why did you write SOUNDPROCESS?

When I finished with the Mirage disk formatter I was more familiar with how the Mirage worked and I wanted to see what else it could do. I've always felt that a straight sampler has a more limited voice than a conventional synthesizer - that a sampler is basically a tape recorder that plays back whatever sounds you have sampled into it. So in that way samplers are only somewhat more sophisticated than the Mellotron. What I wanted to do was to see if I could merge the good features of synthesizers - versatile voice architecture, rich sustaining sounds and instant recall of patches - with the good features of samplers - realistic instrument sounds, rich attack transients, and unique sounds like orchestra hits, bizarre samples, and sound effects.

Explain your relationship with Ensoniq.

Currently my relationship with Ensoniq is strictly a marketing agreement. They are offering SOUNDPROCESS free to new Mirage purchasers. *[Ed. - That offer was for a limited time only.]*

How is your present relationship with Ensoniq different than when you wrote your disk formatter?

We have a more cooperative relationship with Ensoniq now than when I wrote the formatter.

Explain how you obtained the knowledge and information necessary to write SOUNDPROCESS.

I disassembled the ROM code, wrote experimental software to test how the hardware in the Q-chip worked and became an Apple IIGS developer so I gained access to Apple's publicly available documentation of the internals of the Q-chip [Apple uses the Q-chip in their Apple IIGS computer]. Within a week of reading Apple's documentation on the Q-chip, I had the Mirage making sounds under the control of my own software. Now other people have written books about sound generation on the Apple IIGS that are even more detailed than the information that Apple has published.

Describe your development tools and how you use them.

I have an Apple IIGS with a MIDI interface. I use a Motorola 6809 cross-assembler that runs on the IIGS. I made a special ROM cartridge that takes control of the Mirage when it is turned on. The code in the cartridge controls the MIDI interface in the Mirage and allows me to send code to the Mirage, receive code from the Mirage and to execute code in the Mirage. I used my ROM cartridge to send the contents of the ROMs to the IIGS so I could disassemble it. I also wrote a program to allow the IIGS to send and receive code over the MIDI interface. When I write software on the IIGS, I assemble it with the cross-assembler and down-load it to the Mirage with the custom transfer program that runs on the IIGS. I don't have any kind of debugging tools on the Mirage so I have to write programs carefully and always keep an up-to-date listing handy.

What was the most difficult part of SOUNDPROCESS and what is its most complex feature?

Making SOUNDPROCESS multi-timbral turned out to be the most complicated and difficult feature to add. It was hardest part of the program to get debugged and working.

Explain your company, Triton. How many employees do you have?

Triton is a software company that produces software for the Ensoniq product line. We are not a hardware company. We write software for the market that Ensoniq has created through the sales of their samplers - over 25,000 Mirages have been sold world-wide. Since we are a small company we are concentrating our efforts on supporting and improving SOUNDPROCESS instead of spreading ourselves thin across a broad product line. We currently have one full-time employee and one part-time employee.

How well is SOUNDPROCESS selling?

We have directly sold over 200 copies plus what Ensoniq has sent out to new purchasers. SOUNDPROCESS has been reviewed by *Transoniq Hacker* and *Music Technology*. In August, *Electronic Musician* will print their review of SOUNDPROCESS. These reviews will do a lot to educate Mirage owners about it. And I'm very confidant that once they understand what SOUNDPROCESS is and what it will do for their Mirage, they will want to own it.

Some people feel that SOUNDPROCESS is overpriced. What is your reaction? How do you explain the price?

Software is priced according to the size of the market and by the amount of work required to produce it. SOUNDPROCESS provides you with a totally new synthesizer for less than $250. If you consider that Ensoniq is offering SOUNDPROCESS to new purchasers of Mirages for no charge, you are getting a sampler and a synthesizer [a la Roland D-50] for under $1300. I can't think of a 4-oscillator synthesizer, much less one that costs less than $250 and SOUNDPROCESS can produce some really PHATTT sounds!

Is SOUNDPROCESS copy-protected?

Yes, that's why we ship two system disks with every order. The Triton disk formatter won't copy SOUNDPROCESS.

What are your plans for future versions of SOUNDPROCESS?

The current version of SOUNDPROCESS is 1.3. We are compiling a list of features that users are interested in. We want to add more features to SOUNDPROCESS but unfortunately when we do so the interface will become even more complex. This trade-off forces us to move more slowly than we would otherwise. Additionally, we do not see the Mirage being used as a keyboard controller - there are other keyboards that are better suited for that. We see the Mirage more as a MIDI-controlled instrument. So we are more inclined to add features like responding to the volume controller number, as we did for version 1.3. This is a priceless feature for getting a good mix in multi-timbral mode as well as for doing dynamic mix control from your computer or sequencer.

Have you instituted an upgrade policy for current SOUNDPROCESS customers?

Right now we are in the process of sending out release 1.3, a tutorial, a disk of sounds [Sound Disk 1], and documentation for the sounds on the system disk and Sound Disk 1 to all registered owners of SOUNDPROCESS at no charge. We expect to continue doing this for our customers.

What about the EPS? Will you write software for it?

I certainly would like to support the EPS, and will as detailed technical information becomes available.

How do you copy or move patches with SOUNDPROCESS?

You save the patch you want to move onto disk and then use the disk utility parameters to load the patch into the new patch location.

Why does the Mirage sound so much fatter with SOUNDPROCESS than it does with OS 3.2?

The Q-chip contains four oscillators for each of the eight voices, but the algorithm that Ensoniq uses (algorithm 4) only allows two of the four oscillators to loop. This is why the Mirage appears to have only two oscillators per voice. All four oscillators are being used but only oscillator B of each pair loops, so it sounds like two oscillators. Oscillator A of each pair is used to play the unlooped portion of the sample and oscillator B plays only the loop.

With 11 oscillator algorithms to choose from, how do I pick the best algorithm for a particular kind of sound - like strings?

That is a tough question because when I was making the algorithms, I didn't have particular sounds in mind. There really aren't any set rules for algorithm selection. As more and more patches are created, guidelines will emerge - as was the case with the DX series. The best advise I can offer at this time is: experiment and see what you can come up with. I'm still learning how to get good sounds out of it- just like everyone else.

The Mirage envelopes and the SOUNDPROCESS envelopes are different. Why?

There are only 100 parameter numbers and I use all of them. So naturally I had to choose which features were important and which ones to leave off. In early versions of SOUNDPROCESS I had velocity control of all the envelope parameters and a fairly elaborate velocity controlled mix mode that allowed key velocity to control the mixing of the four oscillators. I had also implemented a feature that allowed you to change to a different wavesample or wave when you released the key. As I added more and more of the Q-chip's features to the SOUNDPROCESS user interface, I eventually ran out of parameter numbers. This forced me to sacrifice some of the more exotic features of the pre-release software in order to make all the basic-features of the Q-chip available for editing. I found myself in the position of having to decide which features are really useful in musical situations and which are not.

You make it sound like some of the Mirage envelope parameters are implemented in software. Is this true? What about in SOUNDPROCESS?

All the parameters for both amplitude envelopes and for the filter envelope are done in software. This is true of OS 3.2, MASOS, and SOUNDPROCESS.

What other features of the Mirage are done in software?

Most of the features of OS 3.2, MASOS, and SOUNDPROCESS are implemented in software, unlike the Yamaha products. The DX series is implemented almost entirely with hardware - the LFOs, pitch bends and so on. In the Mirage, the LFOs and the pitch wheel are implemented entirely in software, as are the envelopes.

I really liked the attack velocity parameter in the Mirage. Will this feature be available in a later version of SOUNDPROCESS?

I'm weighing the importance of adding these kinds of features against the increased complexity of the interface. Since I have used all 100 of the parameter numbers I'll have to add mode parameters or find some other way of having more than 100 parameters. Then I can add velocity sensitivity to other envelope parameters and add some of the other features users are asking about. Another problem associated with adding parameters is the two digit display on the Mirage. I haven't found a way of showing the user which mode they are in. In some ways this is more of a problem than running out of parameters. So until I can find a way around problems like these, parameter expansion will have to be done on a case-by-case basis. I've noticed that some of the features of SOUNDPROCESS are only available through MIDI. That's right. Some of the features, like the keyboard tuning table and the LFO table would have required many parameters. Since parameter numbers were in short supply, I decided to make the more complex features available only via MIDI and reserve the parameter numbers for voice features - envelopes, algorithms, etc. The manual doesn't tell you how to save the tuning table or the LFO table. Can you save them? Every time you save a bank to disk, the tuning table and the LFO table are automatically saved to disk. This means that you can have a different keyboard tuning and a custom LFO waveform for every bank.

I think many people don't really understand what SOUNDPROCESS is, so please give us your explanation of SOUNDPROCESS in 25 words or less...

SOUNDPROCESS basically turns your Mirage into a four oscillator ESQ-1 with user-programmable wavetables. This isn't the most complete description of SOUNDPROCESS but it conveys the basic idea. ■

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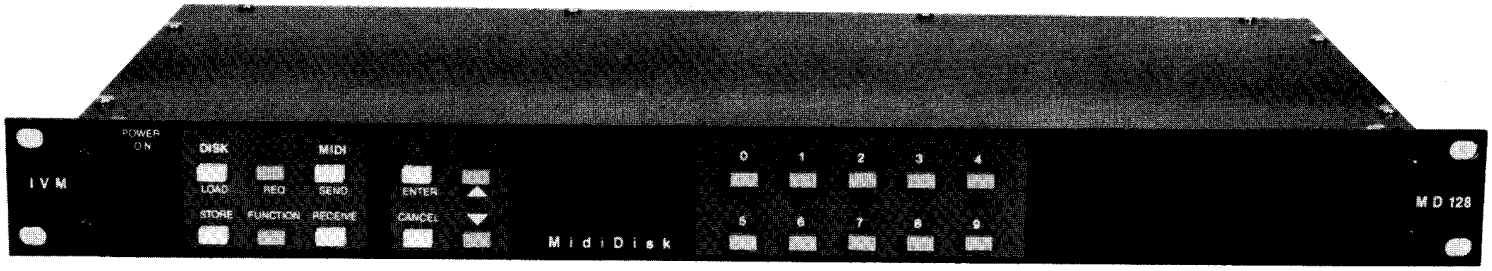

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RC030127

Playing Between the Keys

Inside The EPS

By Dick Lord

Many of the Hacker's readers know by now that this is the column where we take apart Ensoniq's products to see how they work. Since the EPS has been generating a lot of excitement lately, it seems appropriate that we should examine its inner innards and see where all this "performance" comes from.

After much hoping and waiting, I finally got my EPS at the end of March. With some trepidation, I set forth on my exploration of the inner workings. This is always a nerve wracking experience. After each investigation, I plug it all back together and hope and pray that it will still work. Then I take it all apart to look some more.

The first major operation was opening the EPS case. Ensoniq has a fascination with Allen screws of many different sizes. A 1.5-mm hex wrench is essential here if you're trying to do a neat job. Of course, I had to pull a screw and take it to the hardware store to find this out. For this operation I discovered that a #2 screw extractor worked just fine without doing too much damage.

Once inside the case, I found a power supply, a display assembly mounted on the hinged lid, and the main circuit board, partly hidden beneath the keyboard. To seriously examine the main board, the keyboard has to come out, and it unscrews just like the DSK/ESQ keyboards.

However, the keyboard is a whole lot different from the ones in the Mirage and ESQ-1. The keyboard assembly is identical to that used in the SQ-80. It has its own 68HC11 microprocessor. In addition to scanning the keyboard this processor talks to a slave processor in the display assembly. A whole separate article will be needed to describe how the keyboard processor works, so for the present, I will consider it to be a black box that generates serial data messages that are sent to the main board.

Of course, it is this main board that is the focus of attention in this article. While similar in size to the ESQ board, it has a very different set of parts. Gone are the familiar Curtis filter chips. The EPS board is dominated by the two giant 64-pin IC's (a 68000 central processor unit and a 68440 direct memory access chip) that indicate that this is a serious piece of hardware. In addition, there is the new 48-pin Digital Oscillator Chip (the DOC II) that does much more than its predecessor. These IC's really stand out, and it takes a while to notice the other 60-odd mundane little memory chips, op-amps and logic circuits that it takes to make this all work so well.

To fully describe the inner workings of the EPS would fill a fairly thick book. In fact, description of the operation of just the CPU and DMA chips themselves require data books from the manufacturer. However, this level of detail is not necessary for a first look at the EPS architecture. For the present, we will take a broader overview that shows the basic concepts and the details of signals available on the EPS connectors.

From Figure 1 you can see that the 68000 has its own dedicated data bus separated from the DOC and wavetable RAM. On this CPU bus are 64K bytes (32K words) of ROM and 64K bytes of RAM for use by the operating system. A 1772 disk controller and 68681 dual serial port are tied to the lower 8 bits of the CPU data bus.

The 68000 also shares its bus with a 68440 Quad DMA controller. This is what gives the disk drive direct memory access to the wavetable RAM so that you can load new samples while you are playing. The address of the memory block that is to be loaded is placed in the registers of the DMA chip. The CPU then starts the DMA controller which reads 512

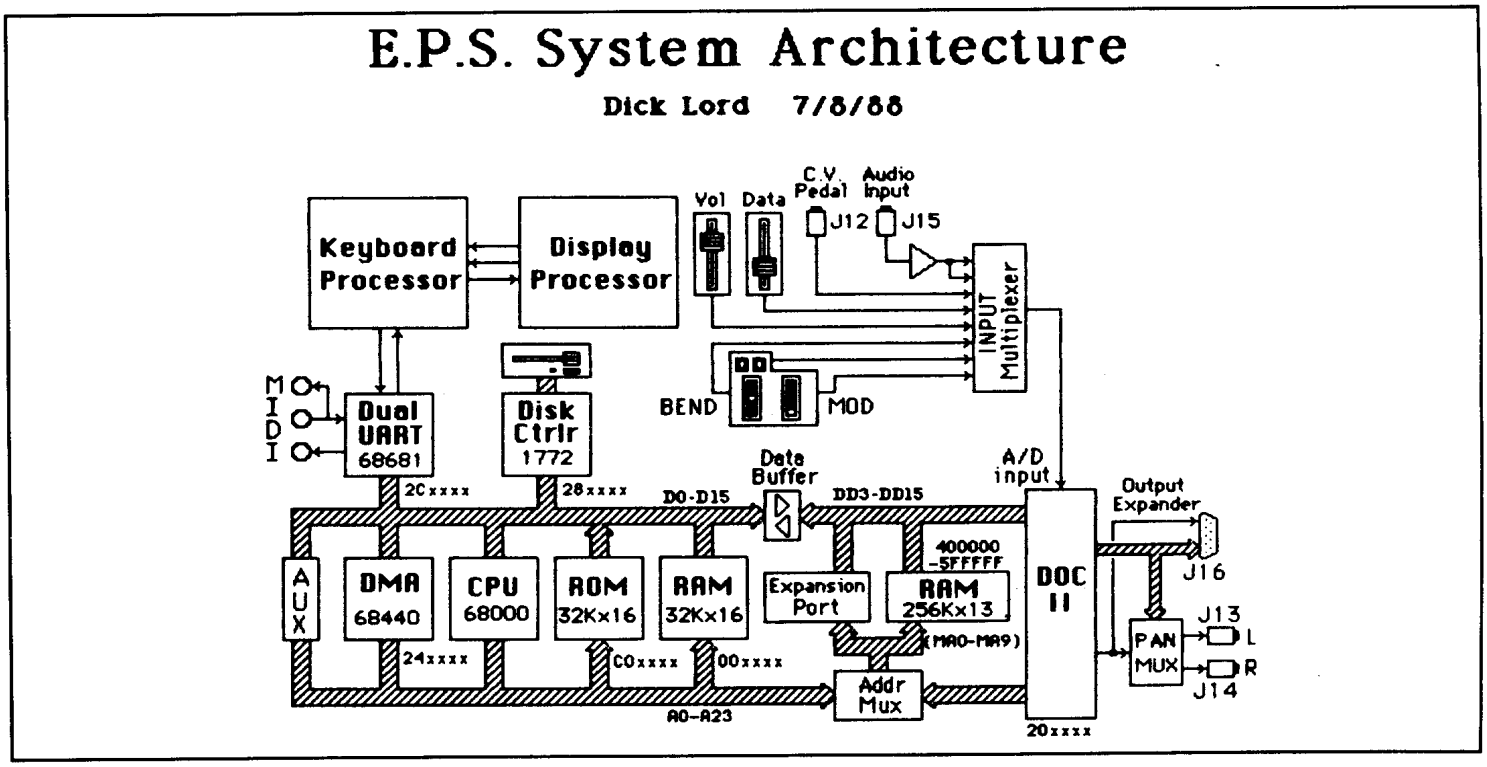

Figure 1.

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bytes of data from a sector of the disk and stores the data in memory. This gives the CPU a chance to do something else for a while (like playing music). However, the CPU is responsible for controlling the disk drive to determine what sectors will be read, so it has to be available before the DMA controller can read the next sector. Only one channel of the DMA controller is presently used. The internal SCSI expansion connector is wired to the second DMA channel so that when the SCSI port is attached, it will also have direct access. The remaining two channels of DMA are not available through any of the EPS connectors and are unused.

As mentioned earlier, the wavetable memory and DOC have a separate data and address bus from the CPU. When the DOC is playing a note, it must read the data directly from the wavetable memory. With 20 note polyphony and increased playback sample rate, the new DOC can be very busy. The old DOC could share the bus with the Mirage CPU, but the new DOC needs much more access. When the CPU or DMA controller needs to access the DOC bus, it waits until the DOC is not busy and then enables the bus data buffer and the address multiplexer to read from or write to the DOC bus. Access is controlled by two programmable logic devices labelled MMU (memory management?) and BCU (bus control unit).

The MMU also is partly responsible for decoding addresses of devices on on the CPU bus. ROM is assigned to address $C00000 through $C0FFFF. On power up and when other exception vectors are being fetched, this ROM also appears at address $000000-00FFFF to provide these vectors, which the 68000 fetches from the first 1024 bytes of its address space. The rest of the time, address $000000-00FFFF is assigned to the 64K of dedicated OS RAM. Addresses $400000-$7FFFFF are used to access the wavetable RAM. This is 256K by 13 bits internal, with another 1 Meg being available through the RAM expansion connector.

Address range $200000-3FFFFF is further decoded by a 74LS138 to provide for the DOC at $200000-23FFFF, the DMA controller at $240000-27FFFF, the disk controller at $280000-2BFFFF and the serial data chip (UART) at $2C0000-2FFFFF. Addresses $300000-3BFFFF are decoded as three select lines for the SCSI port on the auxiliary expansion connector.

Of course, not all of this vast address space is used. For example, the disk controller has only four registers. Because the 1772 is only connected to the lower 8 bits of the data bus, it can only be accessed at odd numbered addresses from $280001 to $280007. These four registers also appear at $280009-28000F and on up through to $2BFFFF. There is plenty of address space in the 68000 and it is cheaper to decode only to the extent needed.

The inner workings of the new DOC are not yet clear to me, so it will be a while before, "Inside the DOC II" appears. I understand that the new DOC fetches two adjacent entries from the wave memory and performs linear interpolation (a weighted average) to prevent the table lookup noise that was so annoying on the Mirage. I don't yet have further details of its operation until I've had a closer look at both software and bus activity.

Analog inputs from the pitch-bend, mod wheel, program buttons, foot pedal, volume slider and data entry slider are periodically scanned by software. The input is selected by control lines from an output port of the UART chip. The audio sampling input appears at two inputs because the control line that switches between those inputs also controls the gain of the sampling input op-amp to accommodate microphone or line levels.

The new DOC implements filtering internally in the digital domain, so the VCF chips of Ensoniq's previous units are no longer present. This greatly simplifies the output circuitry (which otherwise would require 20 VCF's) and allows Ensoniq to dedicate more effort to a really quiet output design. Apparently this design may still be evolving, since my EPS (built on 3/21/88) has a "penthouse" kludge card that has a few more IC's that didn't make it onto the main board. While the full details of this circuitry are beyond the scope of this article, the most interesting points are presented in Figure 2 which shows how the pan and output expander work.

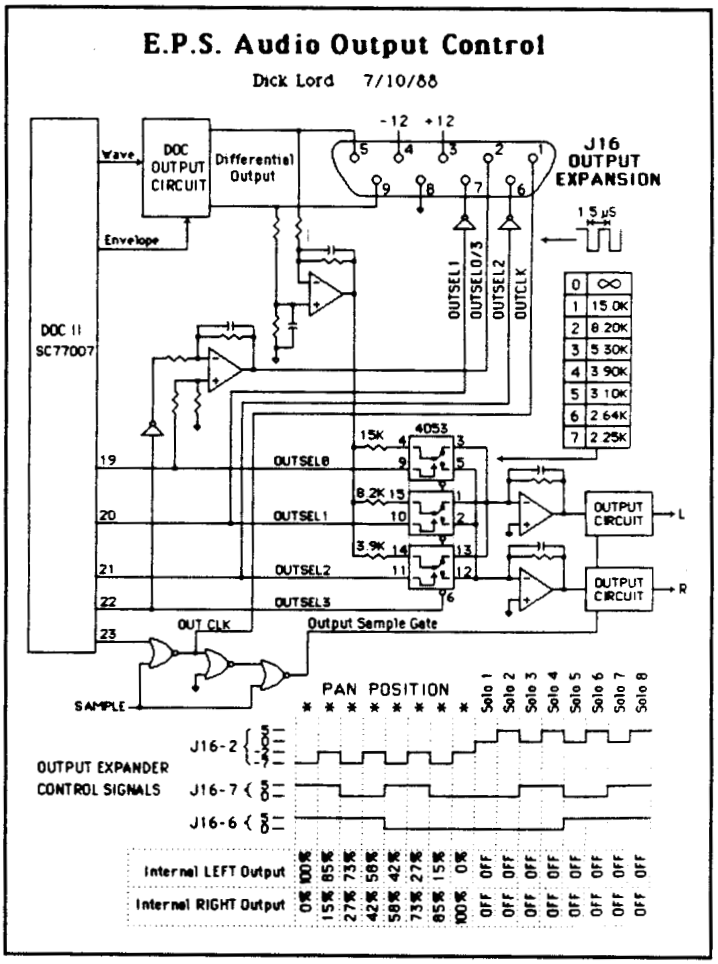

Figure 2.

The DOC generates a new analog sample every 1.5 microseconds at its output. An internal counter keeps track of the number of voices available and repeatedly steps through them. A RAM refresh cycle is also inserted at the end of the count. With 12-voice polyphony, each voice gets a cycle every 20 microseconds. With 20 voices it takes 30 microseconds.

The DOC waveform output is multiplied by the envelope output externally in the block marked DOC output circuit, and a differential signal is supplied to the output expansion jack at the back of the instrument. Each active oscillator also has a 4-bit output selection code associated with it. These bits select the internal pan position or solo output channel for each oscillator when its sample appears at the DOC output.

Internal panning is accomplished with three CMOS two-position switches. Combinations of the three resistors provide 8 output levels to each of the stereo outputs. As can be seen in the table at the bottom of Figure 2, there is no center position. Ensoniq's answer to Steven Fox in the Interface section of Hacker #37 seems somewhat inaccurate since the two "dead center" spots are 42% and 58%. The CMOS switches are disabled for solo outputs when output selection bit 3 (outsel3) is high.

The 8-output expander uses these output selection lines to route the differential signals at pin 5 and pin 9 of J16 to one of the eight outputs. Since only three pins are available for selection, outsel0 and outsel3 are combined by an op-amp and fed to pin 2 of the connector. When pin 2 is non-negative, it can control bit 0 of the external output selector. Pin 1 supplies a clock to gate each output sample. In the Ensoniq expander the differential signals probably are not re-combined immediately, but pass through a differential pair of output selectors to minimize switching noise. Power for the output expander circuitry is available from the positive and negative 12V supplies on pins 3 and 4.

Figure 3 shows the pinouts for the RAM expansion connector (a 44-pin printed circuit edge connector like the one in the ESQ-1) and the internal ribbon connector that provides the SCSI port signals for Ensoniq's 4X+SCSI cartridge (if it ever appears). Note that the 4X will actually be a 5X since it will add a megabyte externally. With the 4X in place, the internal 256K will be dedicated to 70,000 notes of sequencer data.

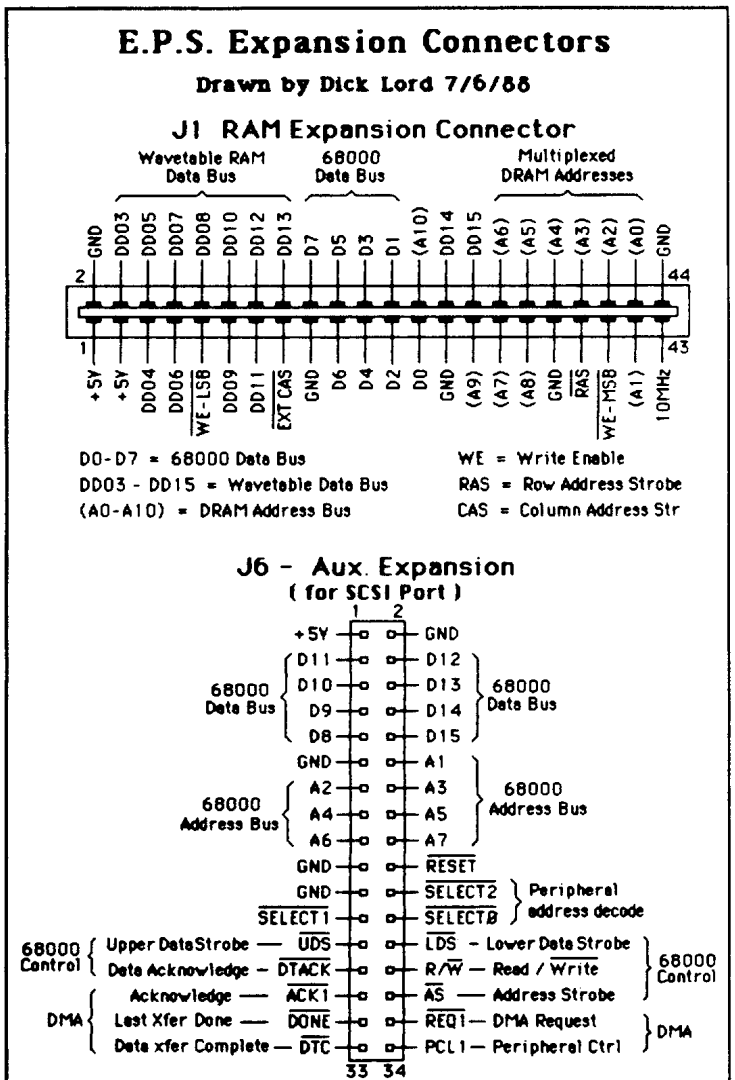

Figure 3.

Rumor has it that Ensoniq has been badly hurt by the problem of 1M chip price/availability and may come out with a 2X+SCSI. *[Ed. - Note the 2X+SCSI announcement in TH #38.]* The 4X may see the light of day if our government stops trying to manipulate DRAM prices which has hardly protected our memory manufacturers and has seriously hurt our computer manufacturers, while increasing Japan's profits.

At any rate, J1 contains all the signals needed for RAM expansion and a few more for the SCSI port. Signals (A0) through (A10) are the DRAM address lines that are multiplexed into row/column addresses and also multiplexed between the DOC II and the CPU bus. Signals DD03 - DD15 are the data lines of the DOC's 13-bit data bus.

Note: *USE EXTREME CAUTION if you play around with J1 and with these lines in particular, as they are directly connected to the DOC. Most of the parts in an EPS can be purchased from one of the many IC mail order houses if you have the misfortune to zap them, but the DOC is unique to Ensoniq and it will be damned hard to get them to send you a replacement.*

The WE-LSB and WE-MSB signals are write enables to the DRAMS on DD03-DD07 and DD08-DD15 respectively. RAS and CAS are the standard DRAM row and column strobes. The 2X expander does not use (A9) and (A10) which are needed by the 1M chips. Since all signals are provided, the 2X cartridge consists only of 13 of the 256Kx1 ZIP parts, some pull-up and damping resistors and a 74LS04 and 74LS07 to buffer the address and control lines. CPU data bus lines D0-D7 are provided for the SCSI port's use as is the 10MHz clock.

On the main circuit board is a 34-pin ribbon connector marked Auxiliary Expansion which provides the rest of the signals needed by a SCSI port, and possibly a few more options. Since this connector is inside the case, Ensoniq will make you take your EPS to a repair station when you add the SCSI port.

The CPU data bus is completed by lines D8-D15 and CPU address lines A1-A7 are provided for register selection. The 68000 control signals AS, DTACK, LDS, UDS, R/W and RESET are also provided. If you don't recognize their function, look them up in a 68000 reference manual. The address, data and control signals are all un-buffered lines directly from the 68000, so use some caution if you play with them. At least the 68000 is socketed (and quite a bit cheaper than a DRAM chip at the present time).

The REQ1, ACK1, PCL1, DTC and DONE lines connect directly to channel 1 of the 68440 DMA controller and allow the SCSI device to transfer data directly to memory. Of course, the CPU has to set up each block transfer as it does for the internal floppy disk. However, the SCSI port transfers bigger blocks at higher data rates, so the DMA controller is essential for SCSI transfers. Select lines SELECT0, 1 and 2 come from the 74LS138 peripheral address decoder and are low for addresses $300000-33FFFF, $340000-37FFFF, and $380000-3BFFFF. Since only A1-A7 are available, each of these selects is actually limited to 256 bytes (128 words).

This is an overview of the main features of the EPS for all you hackers to get excited about. Like the Mirage, the EPS is a hardware platform from which alternate operating systems can be launched to do new and exotic things. I am now exploring the EPS software and will report on my discoveries in future columns.

Ensoniq's design philosophy is to provide the simplest hardware needed to do the job. While their sampler manuals seem a bit thin, their hardware and software designs are elegant and impressive. The more I look inside the box, the more I like what I see.

Bio: Dick Lord has no musical chops, whatsoever. His interest in keyboards is mainly surgical. The voice behind the Upward Concepts phone, he occasionally has been known to work as a consultant in the design of pulmonary test systems (just to pay the bills). He is married to Persis Ensor, a very talented Medieval/ Renaissance musician who finds it fairly difficult to relate to instruments that have power cords and MIDI cables, even when they play in meantone.

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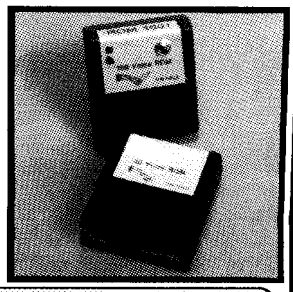

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Reviewed by Chris Barth

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This month we're listening to 80 synth patches from Preston Connick from MusicBank. This set is advertised as the "Songwriter Series" and is designed to provide most of the basic sounds which would be required by composers using the ESQ or SQ-80 for recording home demos. In Preston's case, he's running an advertising agency which uses the ESQ to provide instrumental accompaniment to commercial radio spots and videos produced by his agency.

Before we get to the sounds themselves, a word about his demo tape, which is offered to prospective buyers. It's great! Preston has assembled a bunch of short, well-orchestrated pieces which show off his work to great advantage. I was very impressed with the overall presentation. Some of the acoustic simulations, in particular, the strings and percussion, are so convincing that it's hard to believe they're all coming out of the same instrument at the same time. These patches work together beautifully. There is no signal processing other than a little overall reverb (applied to the entire mix as it left the stereo outs of the ESQ) to add some depth. There is plenty of old fashioned good taste in the scoring and arranging of the instruments, and Preston shows off a few chops in some of the solos. If anything, I wished some of the pieces lasted a little longer.

In this set of 80 sounds, 40 are brand new, and the other 40 constitute an improved version of the first 40 MusicBank patches which have been offered for sale for about a year now. The string patches are exceptional. I hear lots of string patches which sound like the same sawtooth wave, unconvincing, undistinguished, and synth-sounding. These patches do not sound synthesized at all; on the contrary, they sound very real, very pretty. Part of this is the programming; the rest is in the performance (including the right signal processing). Preston has proved that in the right hands, the ESQ can sound like a high quality sampler when it comes to orchestral sounds. If your music includes standard string parts for violins, cellos, etc., you would be hard pressed to find a better assortment than this one, and the demo tape should give you at least a few ideas on how to use them properly.

In the same vein, there are four symphony patches which are string/piano layers. There is a slight echo and delay on each of the pianos which works great with the underlying symphony strings. These patches remind me of the orchestrated sound which characterized the Dan Fogelberg albums which were so popular a few years back - majestic but with a sad wistfulness. If you do standards or soft rock in your live set, these sounds would be deadly on late-night ballads. Goodbye, Norma Jean...

There are twenty percussion patches, and overall, this is the best ESQ percussion package by a mile. WOOD gives you either a flat rim shot, a wood block, or a castanet, depending on where you play it on the keyboard. It's split with a great fat kick on the bottom end of the keyboard. The high-hat patch is split so you can play an open high hat on one key, and closed high hat on the other. By playing the two keys alternately, you can produce a very effective simulation of a real high hat. TOMS 1 and TOMS 2 are still the two best tom sounds I've ever heard on the ESQ.

What's missing is an effective cymbal; there's one included, but even Preston agrees that it's marginal and would require a lot of processing to work. I'm not sure the ESQ has a cymbal sound in it anyway. If you need your synth to provide your percussion, though, I can't imagine a better set to buy. For those of us with drum machines, though, the ability to layer these sounds over the drum machine sounds can put a lot of new life and sounds in the old machine. I tried this with my KAWAI R-100 and was very pleased with the results.

There is one problem which hopefully has been resolved by the time this review sees print. If you have OS 3.4 or higher upgrade installed in your ESQ, or if you have an SQ-80, some of the percussion patches (which were created on a pre-OS 3.4 ESQ, just like mine) may not sound right. Apparently, the new ESQ operating system acts like the SQ-80 and treats some waveforms, particularly the noise waveforms, differently than before. This is not a problem with the MUSIC BANK in particular, but with any patches created on pre-3.4 operating systems which are then played on OS 3.4 ESQs or any SQ-80s. Rather than take space from this review, I will defer to the Interface where I assume some sort of solution will be announced.

In the meantime, you might want to think twice before you upgrade your older ESQ to OS 3.4, especially if you have a large collection of sounds using the noise waveforms. If you order patches from any source and something seems wrong, keep the above in mind and talk to your vendor before you hit the roof! I understand the MUSIC BANK will offer modified and/or substitute patches if this continues as a problem.

The real surprise is the quality of the sax and trumpet patches. This sax is very realistic if you're looking for a lot of "spit" in the sound. Likewise, the two trumpets are right on the mark. The key here is to forget classical keyboard technique when playing these patches. If you look at some "How To Play Jazz Piano" instruction books, you'll find that one hot topic concerns learning how to transfer horn lines to the piano keyboard. It requires some new technique (for example, using the thumb to slide up and down the black keys - I had a classical piano teacher once who would have chewed my thumb off if he'd seen that!) but it's well worth the effort. Preston includes some performance notes which are helpful in this regard; I particularly liked his comments regarding the proper way to arrange the string sounds.

The organ patches are all good Hammond imitations, a little lighter and jazzier than others I've heard. VIBES1 also works well; you should hear the solo on the demo.

There are a number of traditional synth brass and pad sounds which come right off the radio. In particular, WINWOOD is a mellow keyboard sound from the song "Split Decision"; you can guess where "HUEY 1" comes from. *[TH - HUEY 1 is one of this month's Hackerpatch offerings.]* My favorite is STARTK, correctly advertised in the liner notes as "broad, expansive" - no kidding, this is a big synth-brass sound. My beef is with the depth of the LFO settings; the mod wheel introduces way too much vibrato. Reducing the settings is a simple edit and it sounds so much better, but I'm told that if the effect isn't set the way it's sold, it's missed by most people. This is depressing, but it's probably true. I let a few people listen to these sounds, and I was amazed how fast some of them auditioned the patches - one guy evaluated the entire cartridge in less than two minutes and said "There's nothing

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here". Later that evening I played him the demo tape, whereupon he immediately demanded that I let him hear "those great patches"! Whenever you see this happen, think of the child who gets the 64 pack of Crayola crayons for his birthday, dumps them on a table, and then complains a few minutes later that there's nothing to draw with.

What's missing? Well, to borrow from one of Rick Hall's reviews, it's not full of the tinny bells and plunks and doinks which characterize a lot of ESQ patch collections. What we have here is a very warm analog-sounding acoustic set with some effective synth pads and percussion as a bonus. And to our friend still staring at the crayons: these sounds won't hit you over the head to get your attention. Then again, neither will a Steinway.

Bio: Chris Barth writes and produces his own top 40 demos in his MIDI home studio using an ESQ-1, a Kawai R-100 drum machine, various guest musicians and signal processors. He played bass in nightclubs for 6 years before getting his law degree. Chris knows the words and music to all the songs recorded by Paul Revere and the Raiders.

Technosis Masterpatches

Reviewed by Rick Hall

For: SQ-80.
Product: SQ-80 Masterpatches.
Price: 80-voice diskette: $27.50, Patches + Proselects: $52.50.
From: Technosis, 3960 Laurel Cyn, Blvd., #353, Studio City, CA 91604. 213-656-3515.

Here we go with a new set of SQ-80 sounds, this time offered by Technosis and programmer Mike Peake, familiar in these pages as the developer of the much-praised PSYCHE SHRIEK group of ESQ-1 patches. Those sounds were distinctive in their originality so it's no surprise to find some very unique sounds in this set as well. And although I can't say that I found EVERYTHING here to my liking, there are many good points about this product that warrant consideration. Keep in mind that, as with any set of patches, the composer or player's needs will dictate what he or she feels are usable sounds, and this is a very mixed bag indeed.

Two outstanding features that I would like to mention right off the bat are the 7-page owner's manual and the Technosis one-year warranty and Patch Replacement Service. I am always impressed with good customer support in the form of informative documentation and warranties. The Masterpatch manual contains helpful programming notes on all 80 sounds, detailing ways in which you can adjust or alter the patches to your liking. This really expands what you get with a product like this, because each sound is capable of acquiring several identities...if you don't like it in its original incarnation, the suggestions are there to metamorphose it into something you might find to be more useful. The one-year warranty covers material defects in the disk, cassette or cartridge - if it fails under normal use during that time, Technosis will replace it for free. Registered owners can also call or write for replacement of any sound they may accidentally erase - a thoughtful touch, as this sometimes happens.

The PolyKey feature of the SQ-80 is used extensively, making for some nicely playable patches. For example, the solo CELLO patch is very good, sounding remarkably realistic (except in the very lowest register, which is below a cello's normal range anyway). The PolyKey feature is used here to provide vibrato - a vast improvement in expressivity over the mod wheel!

Here come the knocks. I was not impressed with the CLARINET patch, which was probably due to the fact that it was named "CLARINET". It has a clarinet-like sound but is still far from the real thing to my ears. I had a similar reaction to the voice called BASOON, which has the wrong kind of attack if it is intended to sound like an actual bassoon. Perhaps under another name I would be more charitable, and this is a problem I run into all the time when reviewing voices, because these are still perfectly usable sounds, although I would not use them to emulate the instruments for which they are named. Likewise, it is evident that this guy doesn't own a Moog...Those of you who do will not recognize any of the supposed Moog emulations such as LUCKYMAN or MOOGBASS, although the patches do have an analog quality, and are nice sounds in their own right. Just don't call them Moogs, because the sounds of those venerable synths can indeed be accurately emulated on the SQ-80, but not here...

So much for the knocks. There is a wealth of really good stuff. I was mightily impressed by some of the monstrous percussion sounds and effects, most notably the patches SKINNY and PUPPY ("...Dedicated to the death-synth band Skinny Puppy, whom I no longer listen to. DO NOT PLAY THIS VOICE WITH HIGH VOLUME OR BOOSTED BASS UNTIL YOU HEAR IT AT LOW VOLUME. Technosis IS NOT RESPONSIBLE FOR DAMAGED LOUDSPEAKERS..." - quote from the Owner's Manual). There is true programming genius here, as well as with the patch RHYTHM 2 which sounds like a stuck record... belonging to a giant. You can write a whole composition from a sound like this. The patches DRUM ROLL and SNARE ROLL are clever hacks, with the speed of the latter being controlled by key pressure (or an internal adjustment, if you wish). The notes accompanying the sound HIGH HAT 2 are useful and add tremendously to the effectiveness of the patch - good work, Mike!

I also liked the DX-PIANO, which uses the mod wheel to change the timbre of the sound, as do many of the other patches in the set. LITTLE BELL was a favorite, this being despite the name a very rich bell-like keyboard voice (at least, that's how I was moved to use it). And TREMOLONDE is an emulation of a string section playing with tremelo, which, with the proper effects, can yield a startling result.

Unlike some developers, Technosis does not offer a sampler cassette so that you can poke around for what you like. Still, they are offering you 80 sounds for 30 bucks postpaid on a disk, so depending on your budget and your needs, it may be worth the risk. You will get a lot of different kinds of sounds with some great, educational documentation and some definitely killer percussion that you won't find anywhere else that I know of. Sounds like a deal to me!

Bio: Rick Hall is a well-known -- some say notorious -- denizen of the Philadelphia music scene who keeps himself busy writing, performing, producing and recording with numerous ensembles of every conceivable nature, including his own R&B group DANIELS/HALL. He frequently sluffs off his serious obligations in order to go fly hot air balloons and indulge a passion for fiddle-making.

Brandin's 8-Outs For The Mirage

Reviewed by Don Slepian

For: Mirage
Product: 8-Pak Multiple Mirage Output Module
Price: $350.00
From: C.L.Brandin, 1502 East Pikes Peak Ave, Colorado Springs, CO 80909. (719) 599-0635

[Ed. - As always with this kind of thing, Ensoniq's not going to enjoy fixing your Mirage if you mess it up. This will void your warranty, so you should be very comfortable with hardware hacking before you try it.]

Finally, after considerable delay, Mr. C. L. Brandin's hardware upgrade to the Mirage is now available. I have had some time to work with it, and can report that is does fulfill or exceed all of its promises. It is simple to install, and greatly expands the power of the Mirage both in the studio and on stage.

The 8-Pak is a circuit board mounted on a metal frame that easily mounts under the cover of a Mirage rack mount and presents ten output jacks facing towards the rear of the unit. The hardware and layout are of very high quality. Two new disks are provided, one configuration disk for assigning the new outputs, and one performance disk.

The performance disk is a modified version of OS 3.2 that controls the 8-Pak in a transparent fashion. Once a sound is set up using the configuration disk and saved to an 8-Pak performance disk, the 8-Pak configuration is recalled when the program is loaded, and changes when the program is changed. Note that it is essential that you own a utility for copying operating systems, such as the ones sold by Triton and Leaping Lizards. As of this writing, installation will void the Ensoniq warranty. The 8-Pak is not compatible with the now discontinued Mega-Bank Ram extension from IVM, or any other hardware mod that makes use of the U-14 EPROM socket. It is compatible and especially suited for the new Mirage operating systems such as the one recently introduced by Triton, which exploit the wavesample structure of the Mirage.

The product does meet all of its claims. The new stereo is spread a bit wider than Ensoniq standard, and the residual noise is reduced. Once some initial effort is invested in installing the unit and setting up a number of 8-Pak performance disks, the power and capabilities of the Mirage are enhanced with no additional work required of the user. Individual wavesamples are easily assigned to separate clear and clean sounding outputs.

This product took a while to grow on me. I was immediately put off by the price, which at $350 is one third of the cost of a rack mount. Being much more a live player than a studio musician, I had not been particularly wanting assignable outputs. Ultimately, of course, it is the successful applications of a tool that determine its value. I've found several applications that make the unit quite worthwhile, even for me.

At first I just wasn't excited at the prospect of assignable separate outputs. My concept was that of a drum machine with the separate outs for each drum sound. Pan this here and that there. Ho hum.

My first surprise was taking the separate outputs, processing them separately, and then recombining them in an external mixer to make a new stereo sound field. The creative possibilities here are enormous. On a multisampled sound, imagine one small section of the keyboard echoed, one section flanged, one section dry and bright, and one section assigned to its own auto panner. Combining these differing treatments into one stereo field makes for some new and interesting layered effects. If you have several MIDI programmable effect devices and 8 extra channels of mixer, some very unusual effects can be easily and conveniently realized on stage.

The other surprise was the concept of using the separate outputs of the Mirage as a tool for your MIDI sequencer to control the analog world. Output #8 could output a sound that could function as a trigger pulse to clock your analog sequencer, output #7 could control an analog drum machine or turn on and off a cherished ancient analog effect device, output #6 could turn on or off a spotlight, output #5 could rhythmically flash a light backstage that would cue the entrance of your dancing elephants, and you would still have four separate outputs, four notes of polyphonicity, and 57 keys left for playing your music, with all of this mayhem under the cool competent control of your MIDI sequencer. Since the wavesamples are assignable to eight independent output channels, they don't all have to be busy making music. In a simple example, you set up a click, a sharp percussive sound, to appear on output eight, and assign key #61 to control it. Amplify the click and you have an analog trigger. Instead of a click you send an organ tone to that output channel. Amplify that and you have an analog gate, suitable for starting and stopping anything, including spotlights and dancing elephants. Since you can play these gates and triggers by hand, and record, quantize, and edit them on a MIDI sequencer, you now have the power to sequence the world.

In a studio application you might use all eight Mirage outputs non-musically to place a number of videotape decks and other devices under MIDI sequencer control. Now for the catch! If you intend to use the Mirage in this fashion and need reliable operation, simply amplifying the outputs of the 8-Pak will not do. You will need to build or buy a simple interface circuit (comparator and one-shot) to generate clean triggers and gates from the Mirage's sound outputs. PAIA Electronics envelope follower kit or most any control voltage processor from a modular synth will do, though these are commercially rare in this brave new digital world - (I have grey hairs and a deep toybox). An eight channel convertor would cost less than $20 in Radio Shack parts, but requires some electronic knowledge to design and assemble.

I don't feel that a qualified technician is needed to install this kit. If you can solder your own patchcords you should be able to follow the clear and simple installation instructions that come with the 8-Pak. A few cautions should be added for the inexperienced. The Mirage is a static sensitive device. Make sure you are not carrying any static charge (ground yourself) and do the installation when there is some humidity in the air (or use a humidifier) to prevent any unwanted sparks. You will need a small allen wrench to open the Mirage's case. Use a small screwdriver or special IC extraction tool to very carefully remove the U-14 EPROM, and be sure to wrap the EPROM in tinfoil and save it. If you should ever need to remove the 8-Pak, you will need to reinstall the EPROM for the Mirage to work.

The 8-Pak was designed for the Mirage rack mount, and fits into it beautifully. There isn't enough room in the keyboard Mirage unless you don't need the keyboard. In many studio set-ups and even a few live set-ups the Mirage keyboard is never played. If you have been using the Mirage keyboard as a MIDI module, it is possible, although a bit awkward, to install

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the 8-Pak. Open the keyboard Mirage and remove jumper J-3 in the upper left of the main board. This is the jumper to the keyboard. Turn the machine upside down, and remove the small screws that hold the keyboard in place. Carefully lift the keyboard out of the Mirage. Test the instrument to see that all is well. The Mirage doesn't need or miss the keyboard to function as a MIDI module, and this creates room to install the 8-Pak. If there is enough demand from users, perhaps Mr. Brandin can make a special version of the 8-Pak to accommodate this application. While I'm asking, how about an 8-Pak with clean positive or negative, switch or voltage (Arp or Moog type) trigger and gate options?

In summary, this is a well constructed, well thought out product that might only be faulted on a lack of musical application notes. Given the expansion of creative possibilities, it should prove to be a strong value to a number of people in the Mirage universe.

Bio: Don Slepian has been an active performer in electronic music since 1970 and video art since 1976. He has twice been sponsored by the French Ministry of Culture to perform electronic music and computer graphics in Paris and La Rochelle, and presently consults in these areas for Bell Communications Research. His album "Reflections" is on the Audion label distributed by JEM Records.

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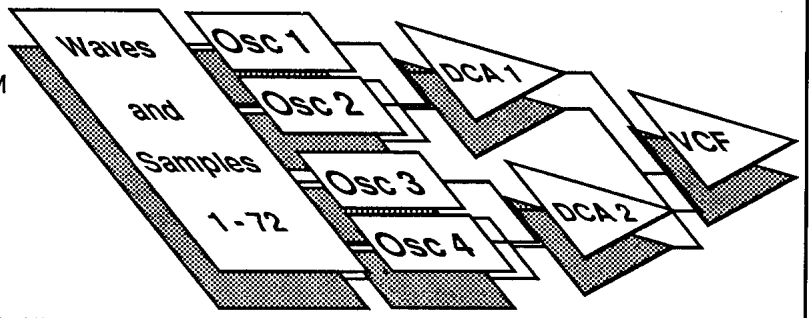

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ESQ Tips
Synthesizing the Piano

By Jim Johnson

When I first found out about the ESQ-1, and in my first few months of fantasizing about the neat sounds I'd be able to make when I finally got one, one of the most intriguing things about the instrument was the sampled piano waveform. At long last, after years of trying to create a piano on an analog synth using detuned pulse waves, I'd be able to use the real thing as raw material. And, when I did get my hands on an ESQ, I was duly impressed by the PIANO1 factory patch. No synthesized piano had ever sounded better to my ears.

After a while, though, the sound started to wear a little. True, it was still better than any other synthesized piano, but when compared to a real or sampled piano, it was way behind. The most glaring problem was the one mentioned in Steve Hodak's letter to the Hacker in Issue 37 - buzzy notes in the second octave - but even after that was tamed, there was room for improvement.

So, I sat down with my ESQ-1, my ears, and a few textbooks on the physics of sound, and proceeded to improve the PIANO1 patch. The physics textbooks, while not standard equipment in most synthesists' tool boxes, were a big help in understanding why a piano sounds the way it does. Of course, the ESQ's PIANO waveform takes a lot of the drudgery out of this task, since there is no longer any need to fully comprehend the piano's harmonic structure, but there are many more subtle things going on that aren't captured in the single-wavelength sample provided by Ensoniq. For example, when a piano string is first struck by a hammer, it is stretched slightly, which means that the note will be just a little bit sharp during its attack. This kind of subliminal "cue" is the type of thing that makes the difference between a sound that just sits there, and one that jumps out and screams "Piano!".

Incidentally, since my excursion to the public library in search of information on sound, I've discovered a great book that puts a lot of this information under one cover, and is available through music dealers! Look for "A Synthesist's Guide to Acoustic Instruments" by Howard Massey, Alex Noyes, and Daniel Shklair, $19.95 from Amsco Publications. The section on the piano is especially well done.

Now, with the background out of the way, here it is - my "best shot" at creating a grand piano with the ESQ-1. The sound is based on Ensoniq's PIANO1 sound - why reinvent the wheel? - but there are a few subtle changes that make all the difference in the world. (The patch diagram shown below was created with Caged Artist's ESQ-apade program for the Atari ST.)

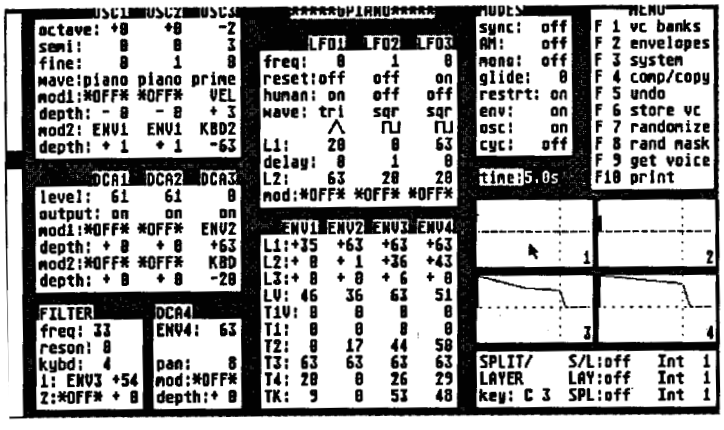

Fig. 1 - GPIANO

The most important difference between GPIANO and PIANO1 is the change in tuning in OSC2. By tuning OSC2 slightly above OSC1 (rather than below it, as in Ensoniq's patch) the buzziness in the second octave is completely eliminated. I don't fully understand the reason for this, but it seems to have something to do with the split points in the ESQ's multi-sampled piano waveform. By the way, I can't take credit for this fix - the solution appeared in a letter from Joe Sallenger in the Interface way back in the early days of the Hacker (Issue #18), but apparently not many people know about it. In any case, it does work.

The other major changes I've made have to do with the attack portion of the sound. As I mentioned earlier, when a hammer strikes the piano's strings, a small "thump" occurs in addition to the strings' vibrations. In this patch, the thump is simulated with OSC3, using a very short, percussive envelope provided by ENV2. The frequency of OSC3 is held constant throughout the range of the instrument by the negative modulation from KBD2, and the VEL modulation adds a little "stress" to the thump on louder notes. The negative KBD modulation on DCA3 tames the thump in the upper portion of the keyboard. I changed the waveform on OSC3 from SYNTH3 to PRIME purely on the basis of personal taste. You might want to try different waveforms and tunings on OSC3, but be sure to disable the other two oscillators (on their DCA pages) when tweaking the thump, so you can hear this part of the sound in isolation.

Another change made to the attack portion of the sound is the simulation of the initial pitch bend. This is accomplished using a very fast "spike" envelope from ENV2 to slightly modulate the frequencies of OSC1 and OSC2. You'll notice the mod depth for ENV2 is very low, and is further reduced by the less-than-maximum setting of ENV2's peak, and the velocity sensitivity in ENV2. This makes the effect so slight as to be not noticeable, though it does have a subliminal effect on the sound. When I'm creating effects like this in a sound, I like to start with the mod depth high enough to produce a fairly grotesque pitch bend, then back off until the pitch bend just disappears. This results in an effect which is audible without being obvious.

The other settings in my patch are not much different than the originals, though they do have an important effect on the sound. The envelope settings, in my mind, are perfect just the way they are. In particular, you may object to the full velocity sensitivity (LV = 63) on ENV4, but that's a good simulation of the way a real piano responds. The filter settings, as always, affect the "brilliance" of the sound. For a slightly brighter piano, you might try raising the mod depth for ENV3 to 63, or the RES setting to a value between 3 and 6. For a more mellow piano, reduce the FREQ setting to about 28.

Honky-tonk pianos are very popular with some people, though I'll never understand why. It's easy enough to modify the basic grand piano patch to create this effect. For starters, change the waveform on OSC3 to NOISE3, change OCT for the same oscillator to +3, and increase T2 for ENV2 to about 24. This makes the initial thump a little nastier. Now detune OSC2 a little more by changing FINE to 2 or 3, as you prefer, and change the filter RES to 6, for a brighter sound.

Once you've entered this patch into your ESQ, I think you'll be able to put away your sampled piano, and use your sampler for more creative applications, like stuttered vocals. Ensoniq took a lot of the challenge out of synthesizing the piano when they included the PIANO waveform in the ESQ-1, but there are other, related instruments that are a lot more difficult to synthesize. Next time, we'll look at two of them: the harpsichord and clavinet. In the meantime, enjoy your new piano.

Bio: Jim Johnson, an electrical engineer, has played synths in several Phoenix, AZ bands. He's written for Electronic Musician, *KCS, and co-wrote Dr. T's Algorithmic Composer package. He is owner of JAMOS Music, a MIDI programming and consulting firm.*

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RC030127

Hackerpatch

By Sam Mims

HACKERPATCH is intended to be a place where patch vendors can show their wares and musicians can share their goodies and impress their friends. Patches designated "ESQ-1" will also work on the SQ-80. The reverse is not always true. Once something's published here, it's free for all. Please don't submit patches that you know to be minor tweaks on copyrighted commercial patches unless you have permission from the copyright owner. All submitted patches are subject to consideration for mutilation and comments by Sam Mims - our resident patch analyst. If you send in a patch, *PLEASE* include your phone number.

The Patch: HUEY 1

by Preston Connick, MusicBank

This patch is a sample from our Songwriter Series 2 sound set. It's a contemporary synth sound that should be familiar to Huey Lewis fans. It's a bright keyboard synth patch with a percussive attack, good for a lot of pop/rock applications. The mod wheel controls the depth of the auto-panning and the volume and attack are velocity sensitive.

The Hack

HUEY 1 is a very good analog brass sound and should be quite useful to most players. The top end is punchy, and the bass range is nice and fat. Three sawtooth oscillators provide the basic sound, and the set-up of ENV4 allows for very expressive playing, with the LV parameter giving velocity- controlled volume, and the T1V parameter providing velocity-controlled attack time. The attack is instantaneous if played hard, and much smoother with a lighter playing touch.

You can turn HUEY 1 into a nice string patch (brass and string sounds are basically quite similar on a synth) merely by playing with ENV4. Try changing L3 to +44, T1 to 32, T2 to 43, and T4 to 35. You might also want to modify ENV1 as well, since it's controlling the filter.

The Patch: CRIKTS

by Scott Lake, Union Lake, MI

This is a patch I created as a background for New-Age type songs. It is intended to sound like a field full of crickets at nightime. There are only a few notes on the keyboard that sound decent, ranging from MIDI notes 77 to 84 (F4 to C5). I suggest depressing and holding down two adjacent notes and rhythmically depressing a third note to give the effect of a nearby cricket.

The Hack

This is an interesting sound effect created by all three LFOs modulating the oscillators rapidly and somewhat randomly to simulate thousands of tiny legs rubbing feverishly together. The sound came in a bit too abruptly for me, though, so I went to the ENV4 page and changed T1 to 20. I also wanted the ability to control the loudness by how hard I hit the keys, so I also changed LV to 27.

The sound itself seems a bit electronic. I toned it down slightly by changing the waveforms of the oscillators. Try OSC1 and 2 set to SINE and OSC3 set to SQR - you may prefer some variations here. And speaking of variations, try turning on the AM mode. This turns a serene field of crickets into the interior of a flying saucer from the planet Skyron.

The Patch: O-BASS

by Mike Sales, Elizabeth, NJ

Since the digital revolution, many people have forgotten what analog synthesizers have to offer. For those who used to own Oberheims and Prophets, this sound may restore your faith in the digital tidal wave. There is nothing fancy about O-BASS, just a fat solid foundation on which to build your compositions. Adjusting the filter frequency and Q will bring out brightness and emphasis. You might want to add some vibrato as well for soloing.

The Hack

A couple of minor changes easily adapt this SQ-80 sound to the ESQ-1 - change MOD1 of DCA2 to VEL2, and LV of ENV2 to just 20. As Mike suggests, playing with the filter makes some useful variations on the sound. I like the frequency just where it is, and RES (Q) works well up to 13 or so, certainly enhancing the analog synth-bass flavor of the sound. Turning on either the SYNC or the AM on the MODES page gives interesting variations as well.

Vibrato is easy to add. On the LFO1 page, set FREQ=22, RESET and HUMAN=OFF, WAV=TRI, L1, DELAY, and L2=0, and MOD=WHEEL. Then set one modulator on each of the three main oscillators to LFO1=5.

While you're on the OSC pages, you might try fattening the sound in two ways. First, tune OSC1 up a fifth (SEMI=7). The bass is now very fat, though the top range loses its clear brass quality. (Be sure SYNC and AM are back OFF for this.) The second variation is to detune the oscillators slightly, thus adding a chorus effect. Set FINE=3 on OSC1 (SEMI is back to 0), and FINE=5 on OSC3. Now you have a punchy synth brass on top, as well as a fat bass on bottom.

The Patch: JIMIBL

by Michael Duhaime, Softworx MIDI Systems

Velocity is the key to the performance of this sound. Try different touches to see what you can do with it.

The Hack

Velocity really is the key to this dark, ethereal sound. The filter is completely closed, with the resonance on full blast - the key velocity is what opens the filter up. A medium-light touch produces a great water-dripping-in-a-cavern effect.

A nice sound is created as well by changing the waveform of OSC2 to BELL. Or instead, try changing the OCT of OSC1 to 5 for a high tinkle mixed in with the sound.

There's no point in tuning EVERY oscillator sharp, so I turned FINE to 0 on OSC2 and to 4 on OSC1 and 3. It's also slightly somewhat a little bit sort of redundant having both modulators on OSC1 set to LFO1 - only one will do the same job, set at -58. Perhaps MOD1 was supposed to be LFO3, but this change doesn't really affect the sound. The LFOs (operating only when the mod wheel is cranked up) turn this sound into an underwater sonar gone berserk.

Bio: Sam Mims is a performing musician and a member of the LA band MESSENGER. He owns Syntaur Productions, a company that has produced music for TV and radio, commercials, planetarium shows, and films. He plans to market synth patches for the ESQ-1 and Mirage samples.

ESQ-1 PROG: HUEY 1

BY: PRESTON CONNICK

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	0	0	0	SAW	LFO1	3	OFF	-
OSC 2	-1	0	2	SAW	LFO1	2	OFF	-
OSC 3	0	0	3	SAW	LFO1	-2	OFF	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	63	ON	OFF	-	OFF	-
DCA 2	58	ON	OFF	-	OFF	-
DCA 3	63	ON	OFF	-	OFF	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	22	0	30	ENV1	63	OFF	-

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	55	8	LFO2	63

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	24	ON	ON	TRI	2	0	0	OFF
LFO 2	15	OFF	ON	TRI	35	0	0	WHEEL
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	55	29	23	0	18	14	24	26	27	0
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	-	-	-	-	-	-	-	-	-	-
ENV 4	63	50	0	32	18	10	0	56	27	35

	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC
MODES	OFF	OFF	OFF	0	OFF	ON	OFF	OFF

SPLIT/LAYER	S/L PRG	LAYER	LAYER PRG	SPLIT	SPLIT PRG	SPLIT KEY
OFF	-	OFF	-	OFF	-	-

ESQ-1 PROG: CRIKTS

BY: SCOTT LAKE

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	2	10	0	SAW	LFO1	-63	OFF	-
OSC 2	2	5	0	SAW	LFO2	-6	OFF	-
OSC 3	2	10	0	SAW	LFO3	-29	OFF	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	36	ON	OFF	-	OFF	-
DCA 2	37	ON	OFF	-	OFF	-
DCA 3	32	ON	OFF	-	OFF	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	63	0	33	OFF	-	OFF	-

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	63	8	LFO3	63

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	22	ON	ON	NOI	15	0	0	LFO1
LFO 2	48	ON	ON	NOI	63	0	0	LFO1
LFO 3	26	ON	ON	NOI	0	1	47	LFO2

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	-	-	-	-	-	-	-	-	-	-
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	-	-	-	-	-	-	-	-	-	-
ENV 4	63	63	63	0	0	0	29	0	6	0

	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC
MODES	OFF	OFF	OFF	0	ON	OFF	OFF	OFF

SPLIT/LAYER	S/L PRG	LAYER	LAYER PRG	SPLIT	SPLIT PRG	SPLIT KEY
OFF	-	OFF	-	OFF	-	-

SQ-80 PROG: O-BASS

BY: MIKE SALES

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-1	0	0	SAW	OFF	-	OFF	-
OSC 2	-1	0	0	SQR2	OFF	-	OFF	-
OSC 3	0	0	0	SAW	OFF	-	OFF	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	53	ON	ENV2	63	OFF	-
DCA 2	53	ON	VEL-X	50	OFF	-
DCA 3	63	ON	ENV2	63	VEL	23

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	15	3	16	ENV2	61	KBD2	11

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	63	8	OFF	-

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	-	-	-	-	-	-	-	-
LFO 2	-	-	-	-	-	-	-	-
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	-	-	-	-	-	-	-	-	-	-
ENV 2	63	20	16	20L	37	0	26	32	20	9
ENV 3	-	-	-	-	-	-	-	-	-	-
ENV 4	63	63	38	0	63	0	0	45	25	0

	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC
MODES	OFF	OFF	OFF	0	OFF	ON	OFF	OFF

SPLIT/LAYER	S/L PRG	LAYER	LAYER PRG	SPLIT	SPLIT PRG	SPLIT KEY
OFF	-	OFF	-	OFF	-	-

ESQ-1 PROG: JIMIBL

BY: MICHAEL DUHAIME

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-1	0	5	SINE	LFO1	-63	LFO1	5
OSC 2	0	0	1	SINE	LFO3	63	LFO1	-4
OSC 3	0	0	5	SINE	LFO3	-63	LFO1	1

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	63	ON	ENV4	63	OFF	-
DCA 2	63	ON	ENV4	63	OFF	-
DCA 3	63	ON	LFO1	63	OFF	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	0	31	0	VEL	63	VEL2	63

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	47	8	KBD2	47

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	63	ON	ON	NOI	0	63	0	WHEEL
LFO 2	-	-	-	-	-	-	-	-
LFO 3	63	ON	OFF	NOI	0	63	0	WHEEL

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	-	-	-	-	-	-	-	-	-	-
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	-	-	-	-	-	-	-	-	-	-
ENV 4	63	63	0	0	63	12	3	47	40	0

	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC
MODES	OFF	OFF	OFF	0	ON	ON	ON	OFF

SPLIT/LAYER	S/L PRG	LAYER	LAYER PRG	SPLIT	SPLIT PRG	SPLIT KEY
OFF	-	OFF	-	OFF	-	-

RC030127

Classifieds

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I would be happy to accomodate requests for copies of no longer available back issues of the Hacker. 5 cents per page plus postage. Pat Finnigan, 4817 E 17th St., Indianapolis, IN 46218. 317-357-3225.

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Current Ensoniq Operating Systems

INST	OS	DISK	EPROMS
EPS	1.5	X	
MASOS	2.0	X	
MIRAGE	3.2	X	
ESQ	3.5		X
ESQ-M	1.2		X
SQ-80	1.8		X

The Interface

Letters for The Interface may be sent to any of the following addresses:
U.S. Mail - The Interface, Transoniq Hacker, 1402 SW Upland Dr., Portland, OR 97221
Electronic mail - GEnie Network: TRANSONIQ, CompuServe: 73260,3353, or PAN: TRANSONIQ.
This is probably one of the most open forums in the music industry. Letter writers are asked to please keep the vitriol to a minimum. Readers are reminded to take everything with a grain of salt.

Hi TH,

In case you are not aware of it, the dimensions that are given for the EPS in the manual are not correct. I found this out when I ordered a case using these. The correct size is 40 1/2 by 4 by 13 1/2 inches. Hope this stops someone else from making an expensive mistake.

Jamie Hilboldt
Austin, Texas

[Ensoniq's response - All of the major case manufacturers have been notified of the error. We apologize for any inconvenience.]

Dear Hacker:

Thanks for a very fine magazine. I have been with you since Issue #13 and have found few other periodicals really worth subscribing to. As artist and producer I appreciate receiving a concentrated dose of information and ideas on my arsenal favorites. When I'm running between sessions and functions I want it hard and fast. Food for thought of this variety also inevitably affects my thinking not only about Ensoniq products but equipment from other manufacturers as well. In light of this I have a suggestion/question for Ensoniq.

When operating in OVERFLO mode it is not possible to use the ESQ and ESQ-M together as a sixteen-voice unit and a controller for a Kurzweil module, Emulator, or other 16 voice instrument at the same time due to the fact that no MIDI information is sent until the first eight notes are played on the ESQ. Would you consider reversing this so that the first eight notes are sent out (similar to the KAWAI K3 spillover mode) since it is assumed that by using OVERFLO mode you will be overflowing to another ESQ or M module? Could this be incorporated in your next software revision? I have been waiting for this mod and feel that this kind of application supports your viewpoint on the value of your keyboards as controllers - especially in today's market which supports more and more eight voice polyphonic equipment.

In light of current trend towards LCD displays, your fluorescent readouts are the best on the market at any price. Thanks for the help.

Peace and love,
Ace Olfre'
Palm City, FL

[Ensoniq's response - Thank you for the suggestion, however there are no plans to implement this feature at this time.]

Dear TH,

I have a few questions and comments to make regarding the EPS and the SQ-80. First, I don't understand why Ensoniq made the SQ-80 with an eight voice architecture. I feel any keyboard that can split and layer should at least have a sixteen voice architecture. The ESQ-M allowed ESQ-1 owners to circumvent this problem. If Ensoniq is not going to make rackmounts for these units, they should take this into consideration. The eight voice architecture of the SQ-80 is just enough to make me NOT want to upgrade to it from ESQ-1.

Regarding the EPS,... a standing ovation is in order. This keyboard is everything and more it's quoted as being. There simply isn't time to cover all the excellent features of this machine in one letter but there is one feature that needs a comment. The expressive capabilities of polyphonic aftertouch truly makes this an enjoyable keyboard to play.

There are a few questions I have, though. Will the internal memory be expandable beyond 1024K sample-words? A memory of about 8x would be beneficial for large samples of say 900 blocks or more. Another thing... I heard the Sequencer section would be able to load in sounds as it needed them. Will the Advanced Applications Guide have anything to say about this or have I been daydreaming again?

Thanks,
John Megehee
Tulsa, OK

[Ensoniq's response - The voice chips used in the SQ-80 are quite expensive and adding additional voices would be cost-prohibitive. Also, the 'Q' chip does not have enough oscillators to produce 16 voices with 3 oscillators per voice. There are no multi-timbral synthesizers available which offer that many tone sources.

The maximum amount of sample memory for the EPS is 1 Megaword.

Due to the complexity of dynamically assigning memory, the built-in sequencer cannot load sounds.]

Dear Transoniq Hacker,

I recently succeeded in buying an EPS (I had already ordered one on the spot after a very good demo at the Frankfort Messe). Exit Mirage, exit difficult techniques, welcome to something we haven't seen the last of!

But some questions arise, and the musician's manual is very general and the sampling manual is not ready yet. (When will it be?)

Question one: Since I have also purchased the 2x memory expander, I can make long (multi)samples. But, the EPS refused to save such a sample. It answers "no room on disk" and that's it! Could anyone help me on this?

Question two: How do you use the disk drive in connection with ESQ-1 (for saving sounds) and can I use my old Mirage disks (with ESQ1 - sounds on it..) to reload the ESQ1? I also hear an audible click with every Mirage disk I use. Is that normal?

Thanks in advance.
Sincerely,
Jan Laerte
EKE, Belgium

[Ensoniq's response - Answer one: The EPS can only save a long (multi)sample that will fit on one disk. The optional SCSI interface can save any size file to a hard disk.

Answer two: The EPS will save sounds and sequences directly from the ESQ-1 as a system exclusive file. However, you can't reload the ESQ-1 using a Mirage disk with ESQ-1 files stored on it.

Mirage sounds may need to be edited on the EPS due to differences in the voice architecture.]

Dear Transoniq Hacker,

I've just read Ensoniq's reply to my letter in the July '88 issue of the Hacker. Frankly, I am not surprised by it, although several of my questions were simply rhetorical and should really have been phrased as comments. However, there is one issue with which I am not satisfied.

I still don't understand why Ensoniq won't make the EPS respond to ALL NOTES OFF. Let me quote a couple lines of their response: "It is our opinion that some companies do not implement this command correctly... ...it's better to ignore this command and only respond to KEY-UP commands. Otherwise, a MIDI ALL NOTES OFF command will tend to shut everything down (including notes that you would want to sustain)."

I want to take them up on this. First of all, whether some companies implement the ALL NOTES OFF command properly or not, there is no reason why Ensoniq still can't implement it correctly themselves. And exactly how can a company wrongly implement this command? I've yet to see an ALL NOTES OFF command that didn't follow the defined syntax, or didn't do what is was supposed to do.

Secondly, they say this command will tend to shut everything down, including notes that you want to sustain. Huh? I thought the whole point of sending an ALL NOTES OFF command was to shut off ALL THE NOTES. Why would I still want some notes to sustain? Are they referring to the internal sequencer playing? Even if they are, I still can not imagine an instance when an ALL NOTES OFF command is going to screw up my sequencing. And as wonderful as the EPS' internal sequencer may be, I still find my trusty ol' C-64 PRO-16 sequencer to be superior, mostly for its ability to let me visually edit my sequences. I am SSSOOOOO frustrated having to slam my arm down on the keyboard every time I stop the sequencer mid-sequence (only on the EPS I might add, since all my other gear does respond to ALL NOTES OFF), that I almost wish I HAD bought that OTHER 16-bit sampler instead!

Come on Ensoniq, I thought your programmers were supposed to be musicians, too.

Since THE INTERFACE is supposed to be a place where Ensoniq owners have a chance to share their ideas with Ensoniq as well as with

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each other, I would like to encourage other readers to write to the Interface in support of the ALL NOTES OFF command.

Steven Fox
CEO, Leaping Lizards
Seattle, WA

[TH - The problem isn't that other companies' gear is interpreting the ALL NOTES OFF command improperly - but that they're issuing it improperly. See below.]

[Ensoniq's response - The following answer comes from a member of the International MIDI Association:

ALL NOTES OFF was intended as an emergency shut down. The companies in violation of the MIDI spec transmit an ALL NOTES OFF every time all the keys are released on a particular MIDI channel. Some products in the Roland product line (the D-50, for example) sends an ALL NOTES OFF command.

If you are playing on the keyboard and you are driving the instrument from a MIDI sequencer (or controller which does the above), and an ALL NOTES OFF command comes in, it will cut off the notes that you were holding on the keyboard.

The MIDI spec specifically states that a transmitter must transmit INDIVIDUAL NOTE OFF events. You cannot transmit an ALL NOTES OFF command in lieu of the individual key-up events.]

Dear Hacker,

Perhaps you or one of your readers can suggest a way to help me solve a problem in making a sequence on my ESQ-1, version 3.5. I would like to make a four-part strict canon in my sequencer by assigning one track to each part. Each part will contain exactly the same music and will begin 2 measures after the preceding part. I wanted to record the first track from the keyboard, then create the remaining tracks by copying the first track into them, followed by inserting the required number of empty measures. In this way, I would avoid having to re-record each part. I have been unable to find any way to do this. Can anyone suggest a way?

Sincerely,
Michael Gray
11609 Birchbard Trail
Austin, TX 78750

[Ensoniq's response - You can't change the length of a track independent of the sequence, so you can't insert empty measures into a track.]

Dear Hacker,

Maybe you won't need to print this letter. Maybe soon we'll all get our EPS manuals and all of us who went without sleep for a week when we first got our EPS's, exploring the uncharted mysteries of the instrument, will have already gone another week without sleep exploring the charted mysteries of the manual.

If not, here's a tip on getting full use of the "patch" buttons when using an external sequencer -- specifically Performer.

First of all, make sure the EPS is set to MULTI by clicking 'EDIT' and 'MIDI' and scrolling to position #3.

Then in Performer pull down the 'Insert' window to 'Controller'. Designate the controller number as 70. To cause the EPS to play no patch buttons, send a zero, which Performer will change to "OFF". To access the left button send 64. To access the right button send 32. To access both buttons send 127, which Performer will change to "ON".

Here is what a sample controller change line looks like in Performer: 1'1'000 ^#70 /64

This is very handy in situations where you might have, for instance, a bowed string patch, a pizzicato string patch, a tremolo string patch, and a marcato string patch all in one instrument. I've also used it to switch back and forth between four instruments that would all be played by one percussionist.

Hopefully other sequencers will work in a similar way and this will he helpful to you readers.

GREAT MAGAZINE!!! Thanks for all the information.

Sincerely.
Bill Stevens
Winston-Salem, NC

Dear Hacker,

I was intrigued by Ensoniq's response to Ron Mashburn's letter that appeared in the June issue of TH. Ensoniq commented on a problem (now reportedly solved by a software upgrade) with Yamaha TX-81Z Tone modules when MIDIed to an ESQ-1. According to Ensoniq, a software bug in the TX-81Z was interpreting MIDI Foot Controller messages on the ESQ-1 as MIDI Volume Controller instructions. This and other bugs were preventing the TX-81Z from receiving volume instructions properly.

I am using an EPS with a Yamaha TX-802 Tone Module. I'm having trouble controlling the volume of the TX-802 with the volume slider on the EPS, which according to the MIDI specs of both instruments, I should be able to do. The TX-802 has a utility feature which enables me to re-assign Control Change Messages (going into the TX) to a different controller function. For example, I can set things up so that the TX's volume (Controller #7) can be controlled by the EPS's mod wheel (Controiler #1). Likewise, I should be able to control the TX's volume from the EPS's volume slider (also Controller #7), but this won't work. Like the TX-81Z, is there also a problem with the TX-802/EPS combination? As Ron asked, any ideas or solutions?

Looking through the accessories catalog that came with the EPS, I was glad to see that Ensoniq is offering a 4x memory Expander and a 4x Memory Expander with a SCSI port for the EPS. I talked with someone from Ensoniq a month ago, however, and he said that because of this year's shortage of RAM and ROM memory chips the 4x Memory Expanders will not be available until next year, and at double their initially reported prices (will that make a 4x/SCSI cost around $800?). ...And Ensoniq EPS sound disks and the Advanced Applications Guide? What is the current availability info on these products?

Sincerely,
Brian Deitch
Alexandria, VA

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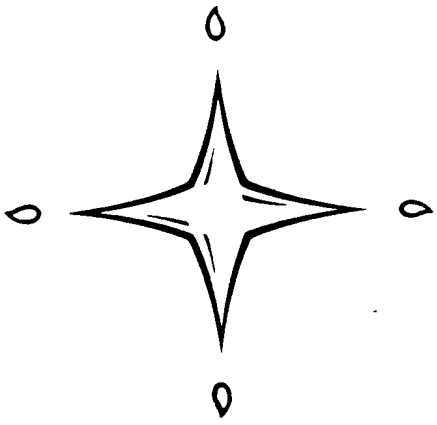

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[TH - By now you've probably seen the latest on the expanders, RAM$, and SCSI in last month's Front Panel.]

[Ensoniq's response - The EPS doesn't transmit its own front panel volume control as controller #7. This would make it difficult to mix the EPS with the MIDI'd instrument. The volume of a given instrument on the EPS will control the volume of external MIDI devices assigned to that instrument button. The volume of the MIDI instrument is controlled by the data entry slider.]

Dear Hacker,

I own an ESQ-1, and a Korg DDD-5 Drummer. I use my ESQ-1 as the master keyboard. I use all of my equipment to duplicate popular songs to my own satisfaction and to trade. The problem is that since purchasing my EPS, I feel like I've ended up with just a slightly enhanced Mirage.

Sure, I'm impressed with the amount of SYS-EX Data I can store and the ease of sampling (although I have no interest in that aspect), but the main reason I sold my Mirage and purchased the EPS was to have more authentic sounds in my songs, which I feel the EPS is lacking. For instance, the steel string guitar sound that came with the unit; the first nine keys of the sound are excellent, the rest are, well, put it this way, I end up using my converted Mirage guitar instead.

Maybe the problem is that on any given layer of the EPS guitar, there is never more than four wavesamples. It is my understanding that the more wavesamples over the natural range of an instrument, the more realistic it will sound. Ensoniq likes to boast about the EPS' 127 wavesamples so much, why aren't they using more of them, or at least more than a Mirage does, on a sound?

So what's the deal? Can this keyboard sound better if Ensoniq hires better sound people or did I just blow $2300 or so on an EPS with 2x memory expander? Don't get me wrong, I love my ESQ-1 and think Ensoniq makes excellent products. But shouldn't former Mirage owners be tremendously impressed with the difference in sound quality? After all, a 13-bit sampler ought to be able to shame any 8-bit sampler any day, shouldn't it? Or did Ensoniq really screw up by not spending enough time on the first disk set? Or...did they just convert and modify Mirage samples to hurry and get the EPS out the door? The bottom line is, can the EPS sound a lot better than the first sounds that came with it in the box?

Question #2... I have many Mirage sounds which are terribly altered when loaded into the EPS, such as mandolin which doesn't repeat while you're holding down the key, or terrible clicks in sounds, etc. Is this normal?

Question #3... I do not play in a band so I have no use for performance loading - will it be possible for software hackers like Leaping Lizards to drop some of these features to increase memory or enhance the EPS with new features like was done with the Mirage? Now that I think of it, I don't use the EPS sequencer either. Is the EPS hackable in that aspect?

Thanks Hacker for a great magazine!!

Sincerely,
Kevin Muse
Vinita, OK.

[TH - See last month's Front Panel regarding new (FREE) sound disks. Ensoniq probably did "rush" the first set a bit. But can you imagine the screaming there would have been if they had held up the EPS while they were working on sounds!? Remember, Ensoniq is still a fairly small company. They can't do everything at once (much as they'd like to.)]

[Ensoniq's response - Regarding question #1: This isn't true. You can have up to 127 wavesamples per instrument, across the keyboard, up to eight layers. However, unless the wavesamples are small, you will run out of memory before you use them all.

We have recently released the new EPS sound library which is being shipped with all EPS's and is available for free to registered owners.

As always, we are continuously working on new sounds. Remember, it took over three years for the Mirage library to develop.

#2: Due to differences in the voice architecture, some Mirage sounds must be edited on the EPS for best results. This is true of any of the sample "translation" programs available. The primary purpose is to get the sound into the EPS in the first place.

As far as #3: The EPS is certainly hackable, but there is little that can be done to increase memory. The operating system doesn't use waveform memory.]

Dear Hacker,

My question is about the ESQ sequencer's option of setting the time signature of a new sequence. Hopefully you can enlighten me in this area or perhaps Ensoniq can.

Being a musician into ODD meter Jazz-Fusion, at times I find the available options to be of little help due to the fact that most of the choices put the time in an eighth note mode. So what one has to do is slow down the tempo 50% to compensate. I must say I love my ESQ but I do however feel that if one were able to set the time from 1/8 1/4 through 30/8 30/4 this would be fantastic because times like 5's, 7's, 9's, 11's through 29 would work much better in a quarter note mode rather than eight note mode. Perhaps a future software update could contain this important feature. I hope it makes sense. I guess I just find it easier to groove to 15/4 than 15/8. It's less strenuous.

Thanks for listening.
C Alleyne
Brooklyn, N.Y.

[Ensoniq's response - There are no plans to implement the feature at this time. Many unusual time signatures can be achieved by altering the time signature in conjunction with the sequence length and tempo. It's not necessarily easy, but it is possible.

We have implemented this feature into the EPS. You can create almost 600 different time signatures by selecting 1-99 beats per measure and note values up to 32nd notes.]

Dear Steve Coscia (Ensoniq),

I am writing this time, instead of calling, as I have done in the past, because I still have the same on-going problem with my ESQ1 that I have had ever since I bought the unit in December of 1986.

The problem is that when I try to transfer sequence data to the computer, and then load it back to the ESQ from the computer, I get all kinds of trash. Some of the data is OK, but invariably I get trash sequences and then am unable to use any sequence data, and have to reinitialize the machine and lose everything, and I HAVE HAD IT!!

This is so very frustrating. I have spent time and money taking the unit to repair people. When I last talked to you, you suggested I buy the new X20 expander cartridge, as you thought the problem was in the expansion port or my old cartridge. I did this, no success! I also at the same time got the latest 3.5 software update, no luck!

I need your help really badly. I use my ESQ for professional playing, and I can't rely on the sequences I save being retrieved properly, so I have to play everything from start every time I want to do the same song, and that is very time consuming and frustrating when I am supposed to have a top notch MIDI sequencer and keyboard. The only storage I am able to use is tape, which does work OK.

I made a few notes of what prints out on the ESQ when I download sequences back from the computer.

On the Locate page, sometimes it shows a SEQ=57 or some number higher than there is, since there are only 30 sequences. At the time signature readout, sometimes FUNC reads out. Bar number reads out some extreme number. The music when you play it back is trash and won't cut off, even if you try to erase a trash sequence, it won't go away!!!!

What are we going to do? I must have this problem rectified once and for all. It's already cost me time and money for repairs that have done no good. I want the problem fixed by Ensoniq or a new unit, and this should not continue to be my expense, since this problem has existed ever since I have owned the unit. I could send it back to the factory, but I would need something to play, since I have gigs practically every weekend. I would consider trading this for the newer SQ-80, if it was compatible with the sequences and extensive sound library I have for the ESQ. I am sending a copy of this letter to the HACKER in hopes someone may have a clue to what is wrong.

I really would appreciate your assistance, and I do believe I have a good product, but I must get this flaw straightened out. I don't believe it could be my MIDI interface, as sound patch data transfers and transmits fine. Incidently, I am using a Commodore 64, with Passport MIDI Interface. I have tried two different software packages, Valhala and Blank, to try and see if it was a third party software problem. Same results.

I am looking forward to hearing from you soon.

Best regards,
Jeri Ray
Mount Juliet, TN

[Ensoniq's response - It is difficult to diagnose the problem without having each of the components to test, including the ESQ-1, C-64, and MIDI interface. Be aware that if the data is getting scrambled in the computer, transferring the data to an ESQ-1 will confuse it every time, producing the kind of results you are describing.

The amount of data in a sequence dump is much greater than a patch dump so there is much more chance of data scrambling. ESQ sounds and sequences are compatible singly with the SQ-80, and can be transferred with OS 3.5.

(Steve Coscia has since contacted Jeri.)]

Dear TH,

I'm a guitarist who works in the computer industry. Because of the advent of MIDI and music I have purchased an ESQ-1. I love it but don't have enough time to spend. I have also purchased a MIDI interface card and the CakeWalk sequencer software. I have 2 questions that relate to the use of CakeWalk with the ESQ-1.

The latest update to CakeWalk allows the sending and receiving of system exclusive messages to synths. This is really great for hobbyists like myself who are on a tight budget. I don't have to buy a patch librarian, etc. Sending and receiving patches is very straightforward. However, doing the same for sequences does present two problems that I thought the ESQ-1 3.4 O/S had solved.

1) I can receive sequences (I choose the send to another ESQ-1 option) okay but have to resort to a work-around procedure to send them back to the ESQ-1. Shouldn't I be able to set the ESQ-1 to receive system exclusive messages and send a sequence to sequencer memory? Presently I use the system exclusive editor in CakeWalk to strip off the sequence dump alert packet from the front of the sequence stored on my PC. I build my own dump alert packet. When I want to load a sequence I send the dump alert packet then immediately select and send the sequence data file. This works very reliably except for the second problem.

2) Once the sequence is loaded it plays back the last few measures at a tempo of about 1 beat per minute. So I developed Work Around Number 2. Before sending the sequence to the PC I add about 10 measures, then when I load it back in the ESQ-1's sequencer I delete the 10 extra measures.

Is there some way I can eliminate these time consuming work-arounds? The update notes to the 3.4 O/S gave me the impression that this could be done reliably in spite of the ESQ-1's handshake protocol. The notes implied that before O/S 3.* the ESQ-1 assumed that a sequence would be stored on a Mirage and the new update undid that requirement.

Other than this, the only thing I'd like is a good raspy electric guitar patch. Thanks for your informative articles. I still have a lot to learn to fully utilize the ESQ-1's capabilities.

Best regards,
Rick Jensen
Newark, CA

[TH - Both Cesium and Voice Crystal II have a kind of gutsy electric guitar, not a full fledged FUZZ sound, but something to check out. Chris Barth was pretty impressed with MusicBank's electric guitar - see this month's Patch Bay *column. In any case, Chris suggests you read Steve De Furia's articles in the August and September issues of* Keyboard Magazine *- "Distortion Techniques for Synths" - addressing just this problem.]*

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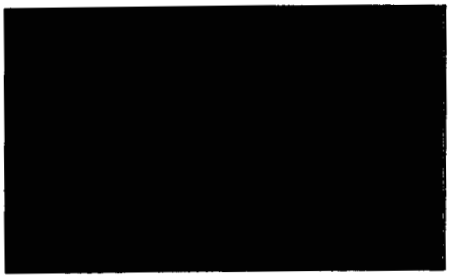

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[Ensoniq's response - The dump alert packet contains the sequence size; perhaps you are setting it incorrectly when you create your own. The alert packet must be properly implemented or the ESQ-1 could miss data. As far as we know, single-ended transfers of data work properly.]

Hi Ho Transoniq Hacker,

So here I am in ESQ-1 Land, and I'm having a wonderful time.

I play mostly blues, and ironically, the style of blues I prefer is the kind that doesn't depend on electricity, much less electronic keyboards.

So my Quest has been for the better acoustic sounds, and I've found some. But the one eluding me so far is a good, raw gritty, harmonica. The kind that makes the hair stand up on the back of your neck.

If anyone out there knows where a patch like this exists, or wants a challenge, here's my address: Robert Graham, HCR61 Box 41A, So. Wardsboro, Vt. 05355.

So far you guys at TH are right... One issue, and I'm hooked. It's nice to read a magazine that holds my interest from cover to cover. Keep it up.

Sincerely,
R. Graham
So. Wardsboro, VT

[TH - Getting a good, gritty blues harmonica patch is tough. You may be best off just using the best melodic harmonica patch you can find and then running the sound through a small outboard effects processor like, for instance, the Ibanez Tube Screamer or the Roland OD1. You'll have to experiment with small to middling amounts of distortion and see what sounds right.]

Dear Transoniq Hacker,

I was trying out some new disks for my EPS recently when I experienced a complete failure of the unit. (No power, no lights, no display, etc.) I was not performing at the time so the tragedy was minimal. The first thing I checked was the fuse in the back of the unit. This fuse was fine. I then brought the unit in for repair and their conclusion was that there was some sort of flaw in the design pertaining to the fuses. The unit seems to be fine now. The fuses in question have been updated. Is Ensoniq doing something about this problem? I do not have a back-up keyboard if this happened at a performance.

Thank You,
Bob Mancini
Carol Stream, IL

[Ensoniq's response - There was a potential problem with power supply fuses when using a memory expander with units below serial number 11580. This has been corrected and upgraded fuses are available. Contact Ensoniq Customer Service for details.]

Dear Hacker,

You were right. After purchasing my SQ-80 I thumbed through the manual, fiddled with buttons, Thumbed through the Manual, Fiddled with Buttons, seriously studied the manual, and fiddled with buttons. I now have a serious need to know what's going on out there so I can quit fiddling and actually know what the hell all those buttons do. If the complementary (July, 87) issue I received with my purchase is any example, no doubt the current issues with SQ-80 information are alive with raves. Reading the letters from ESQ-1 owners and their problems with data storage and retrieval reinforced my decision to get the SQ-80 over the ESQ1.

When I saw the SQ-80 for the first time I said to myself, "I want it" even though I have no background in synthesis. I do guitar, bass, and meager piano so this was a step into a new realm for me. Sequencing is a snap, data storage and editing is a breeze, but programs still baffle me. All those buttons and parameters leave me in a daze. I spend hours pushing buttons and staring at the LED display till my brain is about to burst and I still only have the feeblest concept about what all those OSCs, DCAs, ENVs, and LFOs actually can do. So far my only successful patches have been modified cymbal crashes from Disk 1 and all other attempts are just watered down versions of the factory programs.

One problem I've experienced sequencing is that with certain programs notes are stolen. When I change programs or edit certain tracks the notes return. Could this be pressure related? Or is it just my own insensitivity to velocity? I experience the same "theft" when I play a split/layer program live with a drum sequence. On one instance re-editing a "RIDE" program returned my note to me in my MINIM program. And I don't know why. I step edited the RIDE program on the beat where the MINIM note was stolen and the MINIM note returned. So I put a CRASH on the beat and it works fine.

Also, can I adjust pressure sensitivity of a layered RIDE/CRASH program so the CRASH reacts to velocity but the RIDE stops? Would this allow me to split another CRASH sound into the same program and save me all the track space I now use for percussive accents? How can I create a HI HAT that uses velocity to create open and closed sounds, perhaps an enveloped CRASH with velocity layered with the closed HI HAT? Could I split the OPEN/CLOSED HI HAT with RIDE/CRASH and put all my accents on one track?

I guess there's only one way I'll ever find out so sign me up while I've got the cash handy before I'm broke again. Are there going to be any SQ-80 seminars in the Portland area in the near future? This would be a nice way to start a user's group.

One final thing - my SQ-80 doesn't collect dust like my other instruments do. This is nice, but I don't understand it.

Sincerely,
Jon Jacoby
Welches, OR

[Ensoniq's response - Programming synthesizers is an art as well as a science. There are numerous books on the subject including an SQ-80 Programming Guide *by Clark Salisbury and other related ESQ-1/SQ-80 topics available from Alexander Publishing. And of course, you can refer to* Hackerpatch *as well as past articles of the TH written by Jim Johnson among others. The best way to start is by editing factory patches as you've already discovered.*

The SQ-80 has eight voices. If more than eight sounds happen at once, some will not sound or others will be stolen. Make sure that the OVERFLOW Mode is OFF on the MIDI

Page. Remember also that notes with long decays may still be sounding even if you can't hear them and can result in unexpected voice stealing.

Pressure and velocity are different things. Using the SPLIT/LAYER function, you could create what you want by splitting the keyboard and putting a Crash/Ride layer on one side and an Open/Closed hi-hat layer on the other.]

Dear TH,

This is in response to Al Goldberg's letter in the 6/88 Interface. I have always read the Interface word for word, but this is the first time that any letter therein has affected me enough to respond to it.

Mr. Goldberg expressed his concern with the growing trend toward technical proficiency rather than creativity. He cites a lack of musicality in your publication. Here I must rush to the Hacker's defense. My reasoning is that, indeed, the Hacker is generally directed toward the technical aspects of the modern music-making process. Many of the articles and discussions in the Hacker provide valuable insight on how to fully utilize the new breed of keyboards. Mr. Goldberg concedes that this information is useful inasmuch as it allows people to "(be) ABLE to make music with them."

However, Mr. Goldberg then speaks of the "deep and fundamental" relationship between the musician and his/her instrument. He points to a pianist's love for their piano as expressing a "sense of gratitude that it allows them to produce the music they feel," and goes on to denigrate a synthesist's similar feeling for a keyboard such as the SQ-80.

As a long-time musician who is still in love with both the acoustic piano and his Mirage/ESQ duo, I do not understand why Mr. Goldberg makes this comparison. Both acoustic and electronic instruments are valid and useful in today's musical world. Even if a musician chooses to become embroiled in the technical side of their instruments (e.g., step-editing, punch-ins, punch-outs, obscure forms of sequencer editing), this does not make their music any less a statement than that of a virtuoso who writes a piano concerto and plays it in real time. Everyone has the right to express themselves, especially now that the resources to do so are readily available.

Mr. Goldberg adds that "long hours of practice can be replaced by programming prowess." Perhaps, but the intangible creative spark that produces good music in the mind of the composer cannot be replaced or simulated by ANYTHING (except, perhaps, Dr T's Algorithmic Composer - just kidding!) And that, Al, is what music is all about, no matter how the composer arrives at the finished product.

By the way, Al, I ALWAYS get goosebumps listening to my music!

Sincerely,
Greg Lief
Alexandria, VA

Dear Transoniq Hacker,

As a proud owner of an ESQ-1 since November, '86, I recently came across a problem which I had not seen addressed in the Hacker. In purchasing some additional voice cartridges, including a blank storage cartridge, I discovered that the Voice Crystal blank cartridge (Eye and I Productions) does not fit the cartridge slots for the old ESQ-1s (apparently, those with serial numbers below 25,000). Although I have not tested that many other sound cartridges, the Ensoniq cartridges and the Cesium Sound cartridges do fit. I don't know if this was due to a different structure for the crystal clear blank RAM cartridge for Voice Crystal or if all the Voice Crystal cartridges have this problem. Also, this is no reflection on the quality of the Voice Crystal sounds or products, just a note that at least this cartridge will not fit early ESQ-1s.

Keep up the good work with the magazine.

Very truly yours,
Thorne D. Harris, III

[Ensoniq's response - Although the plastic was made sturdier on later ESQ-1's to prevent warping, there is little physical difference. We don't really understand this. We offer our own cartridge plastic to third-party developers to insure compatibility. We can't comment on people who use their own.]

Dear Hacker,

I would like to respond to Mark Curran's letter concerning his problem with his ESQ1 and Kawai R-50 drum machine. He says that his R-50 defaults to pattern 49 whenever he records on track 1. The problem is not in his ESQ1 but rather in the R-50.

The R-50 is a very capable instrument, and can respond to MIDI program change messages. Mark probably has it set to MIDI

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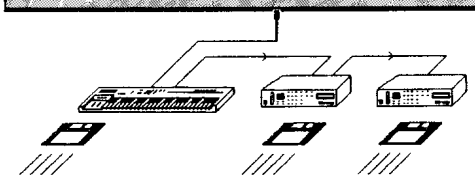

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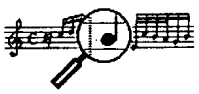

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channel 1 with the patch change enabled, so when he goes to record track 1 on channel 1 (more than likely), the ESQ sends a program change message that the R-50 receives and consequently responds to.

There are several ways to remedy this problem. First, change the R-50's receive channel to one that you won't normally use (I use channel 10 as my percussion channel). This will still enable the program changes in case you want to send them, but allow you to record without driving yourself nuts. The second remedy is to disable the MIDI program change. Press the MIDI button on the front panel, and then press the ENT/REP button until you get to the window that says PROGRAM ON. Use the left or right arrow to turn it OFF. At this point, it is still probably a good idea to change the MIDI channel to something other than 1 anyway; you can save yourself some headaches in the future.

Good luck,
Mike Sales
Elizabeth, NJ

Dear Transoniq Hacker,

First, I would like to thank you as many other readers have for revealing yourself when both of my Ensoniq products came out of their boxes. I waited six months before succumbing to a subscription, but not before I read my two free issues from cover to cover many times. I don't know why I didn't order sooner having found such helpful hints and tips to use on my ESQ-1 and DSK. I also have an Alesis HR-16 to ease the DSK from the mundane use as drum instruments to interesting vocal stabs and other impressionable samples.

I have a couple of tips and questions which require yours and Ensoniq's attention.

TIPS: The July issue of Keyboard Magazine listed a bunch of items not included in the manual such as the soft reset of the ESQ (hold the Seq. "REC" button and press the bottom left soft button.) After a bit of playing around I found a few more tips not mentioned. Holding REC and pressing MASTER displays the startup message only - no reset. Holding REC and pressing WRITE produces an analog test screen to display the current positions of the mod wheel, pitch bend, pedal, and data slider along with some other things. Pressing the button under READ updates these values for that instant.

I have a Mac Plus that I use for sample manipulation, but not in the usual wavesample editing sense. I purchased a digitizer for the computer a while back and got this sudden idea for use. It could replace the void of a variable speed tape recorder. The only problem is the limited bandwidth (which is better if you're lucky enough to have a Mac II), so I use it to size lower frequency sounds such as speech. I can determine exact length of a passage, mathematically figure the necessary sample rate for the DSK, and end up with a bit more efficient memory usage than I normally have. I am, however, saving my pennies for Alchemy and a Studio Plus Two.

QUESTIONS: Everyone wants the SQ-80 waveforms in the ESQ. What about the disk drive instead? It has to be possible - even if it won't fit in the case it would be a nice option to plug in the back and mount somewhere. I don't even care if the data is SQ-80 compatible. It would just be easier than loading MASOS, loading bank 1, WAIT, transfer over MIDI, WAIT, etc...You also lose a whole keyboard this way.

Why do nice people like Alex, Bill, John, Marc, and Mats hide specialty stuff like their names, the resets and other little programmed-in ideas in the software (version 2.1) without mentioning it? That's REALLY annoying.

Is it possible to exchange a four-digit LED display in the DSK in place of the old one? This would greatly ease the rigors of hexidecimal programming to have both high and low bits displayed.

When does ESQ software version 3.6 come out? Soon? I want to upgrade from 2.1, but if 3.6 is around the corner I'll wait a little longer...

Why can't the MIDI OUT on the ESQ be used an an OUT/THRU? Even the DSK is selectable as either/or. Trying to work around that is a pain.

Why does the ENABLE selection on the MIDI page always revert to everything BUT SysEx messages when powered off even if SysEx was included in the ENABLE listing before it was shut down? This happens every time power is cycled and if I want to transfer data from ESQ to DSK I always have to reset that particular parameter.

And, finally, one of those questions Ensoniq's already had to repeatedly deal with... Why don't the new machines come in rackmount? I have an ESQ. In the future, I would like to obtain an EPS. In a rack, the SQ-80 could do double duty by acting as a rack-ESQ (no insult intended) and only require one polytouch keyboard - the EPS. Fits better in my little car that way as well as my little budget. I just don't need four complete keyboards. I think Ensoniq should rethink their position on that one. If the SQ-80 was in a rack, I'd be sorely tempted to get it with my future EPS, but, for now, it's Just Too Big. Think about it.

I enjoy my setup and can reproduce many good sounds with it all. Thanks Ensoniq for such good equipment and thanks to the Hacker for giving us insights on how to work these things!

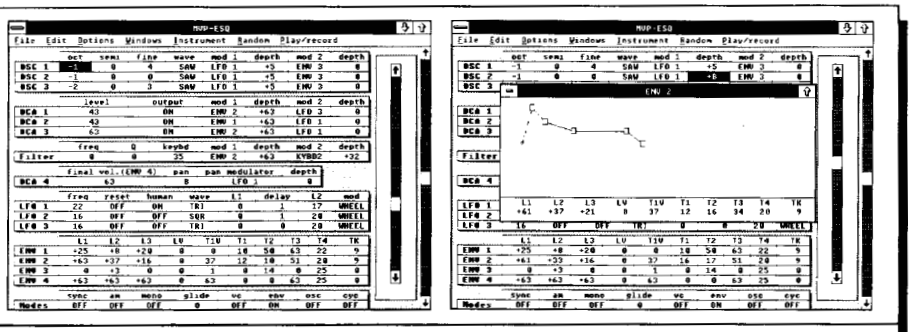
Sincerely,
Ross A Roberts
Waldo, OH

[TH - In an attempt to give Ensoniq a month's break on Ross's semi-final point - Yeah, we agree it would be fantastic to be able to pick up an EPS or SQ-80 in a rackmount. We suspect that if Ensoniq's expectations were that enough of these would sell to warrant the R&D and start-up expenses they would do it but their past experiences and current market expectations just don't seem to justify it at this time.]

[Ensoniq's response - There are already MIDI disk drives available on the market that will work with ESQ version 2.3 or higher. The ESQ-1/Mirage transfers do not require that sys-ex be enabled.

-Most of the hidden pages are diagnostic and test tools which could confuse the system if used improperly.

-There are no plans to change to a four-digit LED on the DSK.



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-There are no plans for OS 3.6 at this point.

-The microprocessor in the ESQ-1 is too busy to echo incoming data the way the DSK does.

-At the time the ESQ-1 was designed, it was our interpretation of the MIDI spec that systems should power-up with sys-ex disabled to prevent undesired operations due to turn-on transients.

-There are no plans at this time to release an EPS or SQ-80 rackmount.]

Dear Hacker,

I would like to publicly thank Ensoniq for the prompt personal attention they gave me with a recent ESQ-1 problem I had shortly after my warranty expired. I thought I was out of luck when the repair shop told me I needed a new main board, and that they would not expect Ensoniq to cover it since the warranty had indeed expired. I wrote to Ensoniq to ask for their help.

Exactly two days after I dropped the letter in the mailbox, Mr. Steve Coscia from Ensoniq Customer Service called, and offered a very equitable solution to help me out.

This willingness to help clearly demonstrates Ensoniq's dedication to their customers and to their products. This will certainly effect my decision when making future instrument purchases.

THANK YOU, ENSONIQ!

I hope to purchase an EPS in the near future. Can the EPS sequencer read my ESQ sequence files? If not, is there any easy way to transfer all of my ESQ sequence data to the EPS? Will I have to record one track at a time from the ESQ to the EPS?

Since the 4X memory expander is so expensive to make right now, how about a 2X expander with a SCSI port?

Have you ever reviewed the sounds available from Heaven? Has anyone ever RECEIVED any sounds from Heaven? I've been waiting two months for a 160 voice RAM cartridge!

Thank you for your help, and thank you for a tremendously helpful magazine!

Sincerely,
Brian Jacobi
Morton Grove, IL

[TH - You probably saw our editorial note in last month's Heaven review. Check our Front Panel for last-minute news on this. (The 2X with SCSI is on the way.)]

[Ensoniq's response - You're welcome, Brian! -SC

The EPS can't read ESQ-1 sequence files and there is no way to transfer the sequence data to EPS format. You would have to record it one track at a time.

The 2x with SCSI should be available at your local Ensoniq dealer by the time you read this.]

Dear Hacker,

While I enjoyed seeing the review of our FSK footswitch kit in the July issue, I feel obliged to question Larry Church's engineering expertise. I'm uncertain about his abilities because of his opinions about our design.

While using a "15 cent transistor and two resistors" would lower the cost by a dime or two, and somewhat lower the chances of static discharge during installation, I believe that Larry is completely off the wall about any other benefits. A discrete transistor switch would consume MORE, not less power; this would lower battery life by a great deal. My prototype ran for over 6 months on one of those cheezoid batteries that Radio Shack gives away. A decent battery (like the Duracell) will last for more than a year.

As to the risk of damage from static discharge, CMOS ICs have infinitely better protection than similar ICs from 5 or 10 years ago. We've sold over 75+ kits, and I'm pleased to say that we've only had to replace a single defective IC. If you use any care at all, you will have no problems.

Finally, when you look at the enhanced battery life that CMOS provides, the price difference using discrete parts is minuscule (30 cents for the chip, 15 cents for the socket.) The few cents difference is insignificant compared to the more expensive items (the PC board, the postage, testing, and other factors). If Larry's kit had blown up, I could expect him to whine about the design. Our paying customers have been overwhelmingly positive about our products and service.

Best wishes,
Charles R Fischer
Mescal Music
Hercules, CA

[TH - Ok, some valid points, but just wait till Radio Shack hears what you called their cheezoid batteries!]

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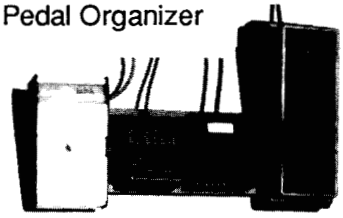

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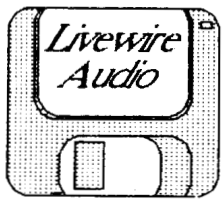

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Subscriptions: 12 monthly issues. US: $23/year, All others: $30/year. Payable in US funds.

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While you're at it, check out the reviews in *KEYBOARD*, (August 1988), and *MUSIC, COMPUTERS, & SOFTWARE*, (September 1988).

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