

# TRANSONIQ HACKER

*The Independent News Magazine for Ensoniq Users*

## Ensoniq Introduces EPS-16 PLUS Digital Sampling Workstation With Effects

Ensoniq Corp has announced the development of the EPS-16 PLUS Digital Sampling Workstation. The EPS-16 PLUS is the first and only sampling instrument to include on-board dynamic digital effects processing, providing the open-ended sound possibilities that sampling offers, with a polished sound that only effects processing can provide.

The EPS-16 PLUS provides true 16-bit sampling with 100dB signal-to-noise performance, and exceptional audio fidelity. It is based on the same voice architecture and processing capabilities as the successful EPS and EPS-M samplers, with many new enhancements. Internal memory comes standard with 1 Megabyte RAM, with optional expansion to 2 Megabytes. A new form of optional memory expansion, FLASHBANK™ is possible, which greatly enhances the performance capabilities of a sampler. Now you can have your favorite sounds (perhaps piano, bass, and drums) always ready to play, without loading them from disk. That's because FLASHBANK memory is user-programmable ROM memory, which can be written to multiple times, and retains its memory even when the unit is turned off.

The addition of dynamic effects adds greatly to the quality of the sounds and music that can be made with the EPS-16 PLUS. Single and multiple effects are possible with Ensoniq's 24-bit ESP chip, and new effects can be loaded from disk (and even stored in the optional FLASHBANK memory). Effects provided include reverb, chorus-

ing, flanging, phase shifting, delay, and distortion. With dynamic effects it's possible to change many aspects of the effects mix and settings with any of the 15 modulators in the EPS-16 PLUS, such as pitch and mod wheels, velocity, pressure, key range, and pedals. The EPS-16 PLUS can resample sounds with their effects. This allows you to capture the sound mixed with effects and then use different effects on other sounds or tracks.

The EPS-16 PLUS also has an upgraded 16-track sequencer with complete editing and MIDI automated mixdown capabilities. It sports 96 PPQ clock resolution, up to 160,000 note memory, and Ensoniq's exclusive ability to audition all editing changes against the original part, to help the user compare and decide which version to keep. The Ensoniq EPS first offered the ability to load sounds while you played. Now the EPS-16 PLUS takes that concept a step further, with the ability to even load sounds while the sequencer is playing.

The EPS-16 PLUS also features Ensoniq's exclusive Patch Selects and Poly-Key™ Pressure keyboard, providing expressive performance possibilities. SCSI can added as an option, allowing hook-up to hard disks and CD-ROM players, with direct dialing of any files on a disk. The EPS-16 PLUS is also completely compatible with all the existing sound libraries and computer software support developed for the EPS, giving it the largest library of available sounds for a sampling instrument today.

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By combining high fidelity sampling, an advanced synthesis-style voice architecture, dynamic effects, expressive controllers, and a quality sequencer, the EPS-16 PLUS is a perfect example of a sampler designed as a musical instrument for performance and composition. The keyboard version of the EPS-16 PLUS retails for \$2395.00 and will begin shipping in late September, 1990. A rack-mount version with additional memory and outputs standard will be available in November and will retail for \$2495.00. For more information contact: Ensoniq Corp, 155 Great Valley Parkway, Malvern, PA 19355, or call 1-800-553-5151.

#### Accessories (Suggested Retail Price)

SL Sound Libraries (5 disks per set) \$39.95  
SLT Sound Libraries (10 disks per set) \$69.95  
ESS Sound Libraries "Signature Series" (3 disks per set) \$39.95  
MEP16 PLUS 2x memory expander (keyboard only) \$349.95  
FB-1 FLASHBANK™ memory expander (512k byte) \$349.95 including installation  
FB-2 FLASHBANK™ memory expander (1 Megabyte) \$649.95 including installation  
OEX-6 output expander (keyboard only) \$249.95  
SP-2 SCSI interface (requires ME-16 PLUS memory expander) \$199.95

### COMPLETE SPECS

#### Keyboard

- 61 note (C-C) weighted action Poly-Key™ (polyphonic aftertouch) keyboard with programmable velocity and pressure sensitivity \*
- Up to 8 "Instruments" instantly available
- Stack/split any 2 or more Instruments together by double-clicking Instrument buttons

#### Controllers

- Exclusive Patch Select Buttons for instant access to 4 different sounds within each Instrument
- Pitch and Mod wheels\*
- Programmable footswitches (SW-1, optional SW-5)
- Mod/Volume pedal (optional CVP-1)
- Data Entry slider

#### Internal Memory

- 1 Megabyte internal RAM (512k words—16 bit format)\*
- Expandable to 2 Megabytes internal RAM with optional ME-16 PLUS Memory Expander (1 Megaword — 16 bit format)\*\*
- Optional FLASH BANK™ memory al-

lows user to add programmable ROM (FB-1 512k/256k words, FB-2 1 Meg/512k words)

#### Sampling

- True 16 bit input linear sampling utilizing multiple oversampling technology
- Sample rates — 11.16 kHz, 12.76 kHz, 14.88 kHz, 17.86 kHz, 22.32 kHz, 29.76 kHz, 44.64 kHz
- Maximum sample times: Internal Memory: \*11.5 sec @ 44.64 kHz, 17.2 sec @ 29.76 kHz, 22.9 sec @ 22.32 kHz, 28.6 sec @ 17.86 kHz, 34.4 sec @ 14.88 kHz, 40.13 sec @ 12.76 kHz, 45.88 sec @ 11.16 kHz
- With optional ME-16 PLUS Memory Expander: \*\*23.2 sec @ 44.64 kHz, 34.8 sec @ 29.7 kHz, 46.4 sec @ 22.32 kHz, 58 sec @ 17.86 kHz, 69.64 sec @ 14.88 kHz, 81.21 sec @ 12.76 kHz, 92.86 sec @ 11.16 kHz
- No minimum or maximum size for Instruments (within the limits of available memory)
- Expert System Autoloop
- Wide variety of Digital Signal Processing editing commands: wavesample copy, truncate, mix, merge, splice, volume smoothing, gain normalize, fade in, fade out, five different kinds of cross-fade loops (with the ability to audition most of these edits)
- Resample sounds with effects

#### Playback

- Frequency response: 2 - 20 kHz 1 1.5 dB @ 44.64 kHz
- 2x oversampling with 1st order linear interpolation for enhanced frequency response
- 100 dB signal-to-noise, 96dB dynamic range, 94 dB THD + noise (>.002%) at unity playback
- 3 playback modes:
  - 20 voices at 29.76 kHz playback rate for 14.8 kHz frequency response
  - 13 voices at 44.64 kHz playback rate for 20 kHz frequency response
  - 7 voices at 78.13 kHz playback rate for 20 kHz frequency response with enhanced transposition fidelity
- Compatible with all existing EPS libraries with improved fidelity playback
- Can convert Mirage sounds to EPS format and play them with improved fidelity

#### Voice Architecture

- 20 voices dynamically assigned
- 2 independent multi-mode dynamic digital filters per wavesample — low pass, high pass or variable-width band-pass
- Instant selection of alternate samples with exclusive Patch Select buttons, velocity, or legato playing
- Each Instrument can contain up to 127 wavesamples
- Each individual wavesample has a complete set of program parameters; includ-

ing pitch, filter and amplitude envelopes (5-stage), LFO, and 15 routable modulation sources with 8 assignable destinations (including pan position modulation)

- Wavesamples are organized into Layers, which map groups of wavesamples across the keyboard. Each Instrument can contain up to 8 Layers, which can be crossfaded at any number of points by the keyboard, pressure, velocity, or any other modulator
- Layers can be delayed up to 5 seconds
- Each wavesample can be individually panned and assigned to one of four stereo busses (with optional OEX-6 output expander)
- Fully programmable pitch tables — up to 8 per instrument
- Exclusive loop modulation provides real-time modulation of loop start, loop end, loop position, and wave start index from any of the 15 mod sources

#### Effects

- Custom VLSI 24-bit digital signal processor (ESP Chip) w/48-bit accumulation
- Programmable stereo multi-effects processing with real-time dynamic performance capability, including modulation of reverb decay time, chorus depth, flanger feedback, phaser feedback, delay regeneration and effects mix
- Effects can be loaded from disk allowing easy updating and copying
- Effects include Hall Reverb, Room Reverb, Chorus, Flange, Phaser, Delay, Roto Speaker simulation, Distortion, and multiple combinations
- 4 Stereo busses allowing for dry, individual or grouped effects processing with routing to optional OEX-6 expander box \*\*

#### Sequencer

- 8 polyphonic tracks, each with separate Instrument, Volume and MIDI channel
- 8 additional "Song Tracks" permit recording of song-length tracks once Sequences are assembled into a Song, for virtual 16-track recording
- Tracks can play internal voices and/or external MIDI instruments
- Song form provides up to 99 Steps with up to 99 Repetitions for each Step (each Sequence Track in a Step can be individually muted)
- Sequence size limited only by internal memory (up to 160,000 notes without ME-16 PLUS expander, up to 320,000 with expander) \*\*
- Clock resolution of 96PPQ
- 3 real-time recording modes (Replace, Add, Looped) and Multi-track recording
- Up to 20 internal voices per Track, dynamically assigned (no limit on MIDI voices per track)
- Post-quantization (auto-correct to 1/64 note triplets)
- Step-editing, transposition, time-shifting, append, change length,

track merge, and filter events

- Auto-locate controls, adjustable click track and Tap Tempo control
- MIDI Auto Mix automated mixdown feature records all volume/panning changes for each Track

#### MIDI

- Poly, Omni, Multi, Mono A and B modes supported
- Multi-timbral, accommodating up to 8 simultaneous polyphonic MIDI channels with separate Instruments
- MIDI Local On/Off per Instrument allows up to 8 outbound MIDI keyboard zones for master controller applications
- Global controllers in Mono mode for use with MIDI guitar and alternate controllers
- MIDI Song Position Pointer supported for use with SMPTE auto-locators and other sequencing hardware

#### Disk

- 800k double-sided 3.5" micro-floppy
- DMA (Direct Memory Access) for "Play While Load" feature
- Variable-size file storage (even across disks)
- Subdirectory organization
- Save MIDI System Exclusive dumps from any MIDI device to disk
- Optional SCSI connection (SP-2) allows

hook up to hard disks (up to 5 Gigabytes) or CD-ROM players with "direct dialing" of any sound on the storage device

#### Inputs/Outputs

- Left/Mono and Right/Mono audio outputs for programmable stereo mix
- Headphone jack
- Optional OEX-6 output expander provides 3 additional sets of stereo outputs or 6 mono outputs \*\*
- Pedal/Control Voltage input (allows modulation of voices or volume control w/optional CVP-1 pedal)
- Audio input switchable between mic and line level
- Single/dual pedal input (SW-1, optional SW-5)
- MIDI IN/OUT/THRU
- Optional SP-2 SCSI port available for ME-16 PLUS memory expander \*\*

#### Standard Accessories

- Musician's Manual
- Current Operating System disk
- 15 Essential sound disks
- Detachable power cord
- SW-1 Footswitch

#### Optional Accessories

- Additional sound disks [SLT-1 thru 13 (10 disks per set), Signature Series (3

disks per set), SL series (5 disks per set)

- SW-5 dual footswitch — 2 pedal piano-type for sustain, Patch Select and sequencer control
- OEX-6 output expander box \*\*
- ME-16 PLUS memory expander \*\*
- SP-2 SCSI option (requires ME-16 PLUS)
- FB series FLASHBANK™ Eproms for non-volatile storage of sounds in unit (FB-1 512k/256k words, FB-2 1 Meg/512k words)

#### Physical

- Keyboard dimensions: 40 1/2" (103 cm) wide x 4" (10 cm) high x 13 1/2" (34 cm) deep
- Keyboard weight: 29 pounds (13.2 kg)
- Rack dimensions: 17" (43.2 cm) wide x 5 1/4" (13.3 cm) high x 15" (38.1 cm) deep
- Rack weight: 28 pounds (13 kg)

#### Limited Warranty

- One Year parts and labor

\* Specifies keyboard version only

\*\* Rack comes standard with expanded memory and additional outputs

## Front Panel

### RND (♪♪♪)

Well, it had to happen eventually—with declining patches coming in and Sam Mims moving on to newer gear, the ESQ-1 & SQ-80 portion of Hackerpatch is going to have to be cut down to a couple patches per issue. This will also help free up some room for some SQ-1 patches (once we figure out how!) It's always a little sad to see things dwindle away but, when you get right down to it, the *Hacker* is a reflection of our reader's interest—it's our job to read the signs and try to keep up.

\* \* \*

Error Alert! Kirk Slinkard tells us that his 8'LES patch in last month's Hackerpatch should actually have all its DCA levels set to zero (which, not too surprisingly, was one of the tweaks that Sam suggested).

\* \* \*

John Greenland, former sound designer at Ensoniq, has been meeting with a lot of success with his first album, *Soft Robot*. In you're in the Philly area, there's going to be a Public Radio special on John on October 16 at 9 pm. WHY? 91 FM. (We'll be printing an interview with John in the near future.)

### HYPERSONIQ

#### NEW PRODUCT RELEASES

In response to many requests for the hard-to-get 20,000-note expander for the ESQ-1, **Sound Logic** has decided to do a limited production run of 40 units. The cost will be \$59.95 each which includes shipping in the U.S. and a five-year warranty. For further info: Sound Logic, 1125 Eleventh St., Ramona, CA 92065, phone: 619-789-6558.

**Rubber Chicken Software** continues their "VFX meets EPS" Series with *Number III*—the SQ-1 10-disk set. These EPS samples come complete with tips and documentation. The price is \$49.95. For complete information, a free catalog, or to order, call: 1-800-877-6377. Rubber Chicken Software, PO Box 428, Renton, WA 98057.

**New Sound Music** announces *Background Rhythm Patterns, Volume One*—a collection of 59 popular sequenced rhythm patterns for virtually all styles of music. Available in EPS, VFX-sd, SQ-80, ESQ-1 and other popular sequencer formats. \$29.95. For info: New Sound Music, PO Box 37363, Oak Park, MI 48237. Phone: 313-355-3643.

"I Love My  
MUSIC PACK EPS!"  
- Michael Josephus  
- America's Most Wanted\*  
(featured in June '89 KEYBOARD)

# Smart Accessories

## ESQ-1/M/SQ80

\$49.95

### 160 Voice Programmable Storage Cart

Since we've announced the last production run of MUSIC PACK ESQ, hundreds of Hackerites have ordered! We've had to add manufacturing runs to fill everyone's request. Now quantity is extremely limited, so GET ONE NOW BEFORE YOU REGRET NOT HAVING ONE. MUSIC PACK MR-4 has 160 programmable memories and comes loaded with 160 Rock/ NuAge/ Acoustically modeled patches. One Year Warranty.

## ESQ-1

\$59.95

### 20,000 Note Sequencer Expander Cartridge

ONLY a few left! MUSIC PACK SEQ20 is an approved plug-in cartridge that records up to 20,000 note/events. UPGRADE NOW BEFORE YOU REGRET NOT HAVING ONE. Identical to Ensoniq SQX-20. One Year Warranty.

## VFX-SD/ SQ-1/ EPS-II

Call

### 2 Megabit 75,000 Note Sequencer Update

Maximize the potential of your synthesizer. Easy installation. Fully approved. Absolute best price. One Year Warranty.

## VFX/ VFX-SD

\$59.95

### 60 Prog/ 20 Preset RAM storage cartridge

Now keep more sounds on line. Double your present capacity with the MUSIC PACK MR-1. Loaded with 60 new programs and 20 new presets. Fully programmable. One Year Warranty.

## Largest Line of Memory Expansion

### forAKAI

2 Meg S-1000 Memory/ 8 Meg S-1000 Memory/ S-1000 SCSI Interface/ 750K S-950 Memory/ 750K MPC-60 Memory/ Hard Drives.

### forYAMAHA

1.5 Meg TX16W Memory/ 256 Voice DX7-II; TX802 RAM cartridge/ 1024 Voice DX7-II; TX802 RAM cartridge/ 128 Voice DX7 RAM cartridge.

### forROLAND

D50, D10, D70, D5, D20, etc ... Memory cards.

### forCASIO

1 Meg FZ-1 Memory Expansion. Five Year Warranty.

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## Always a Guarantee of Satisfaction

For over 5 years, many thousands of musicians have enjoyed the unequalled quality and value of our products. As the largest seller of the most complete line of sampler and synthesizer memory/sound accessory products, we take pride in bringing you the best accessories available.

Call to find out where you can obtain Maartists products. We'll help you get the products you need, or refer you to one of our stocking retailers. Continental US ship chg: \$4.00. Int'l/ Outside Continental US: \$15. MC/ VISA/ COD/ check/ money order.

Remember, if you're not completely satisfied with any Maartists product you purchase, return it within 30 days for a full refund.

## EPS

Call

### Fully Approved 4X Memory Expander - #1 In Its Field

MUSIC PACK EPS is your best bet for memory expansion. It is fully approved by Ensoniq, it doesn't cause start-up or technical problems like other expanders, and is the ONLY user-installable 4X+SCSI expander that fits entirely inside your EPS! THOUSANDS IN USE WORLDWIDE. (See specifications below.)

## EPS SCSI

Call

### Fully Approved SCSI Interface

When time is the bottom line, install the Maartists MUSIC PACK E/SCSI Interface card. Then use a SCSI Hard Drive to access your samples, sequences, bank files, etc, for virtually instant loading. Once you've used a Hard Drive with your EPS you'll never want to wait for floppy loading again. Includes Maartists SCSI Operation Guide Booklet. Five Year Warranty.

## EPS MZPatch Visual Editor (V3.0!)

Call

### Sample Editing on Atari ST 520/1040 (monochrome)

The Hacker says of MUSIC PACK MZPatch V2.1: "After a week of editing samples and instruments using this program I am a VES convert for life. I give it two thumbs up." (Sept. '90). Version 3.0 is now here and improves upon a great thing. View an entire instrument layout - samples, copies, layers, patch selects, etc. Locate good loop points. See long term repeating patterns on which to loop. Edit on your ST or EPS in real time. Easily modify envelopes, LFO's, after touch, velocity sensitivity, pitch portamento, panning, etc. 30 Day Money Back Trial.

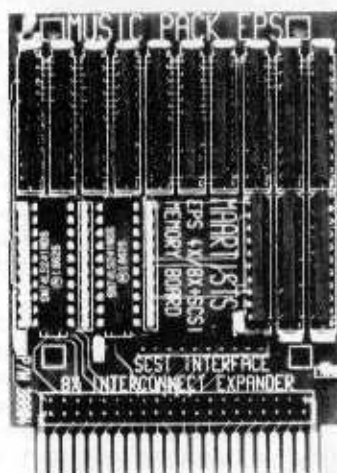
## SCSI HARD DRIVES

Call

### 40, 45, 80, 105 Meg Fixed and Removeable Hard Drives

The Maartists HDXXX/s series SCSI hard drives perfectly complement our SCSI systems. Each drive is enclosed in an attractive metal case and is fully tested and formatted for the EPS. Includes all necessary cables. Each drive is fully compatible with the Ensoniq SCSI System Standard and Macintosh computer. The drives have a 10 month warranty and are priced competitively.

## MUSIC PACK EPS Technical Specifications

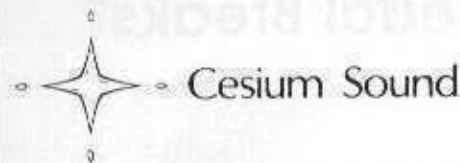


- 1 Megaword RAM memory safely expands internal memory to 2.1 Megabytes for quadrupled sampling times and 80,000 notes of dedicated sequencer memory.
- Fully buffered 4 layer PC card prevents start-up lock-up and provides consistent operational reliability with ultra low digital noise.
- Protective custom injection molded plastic case (not shown) provides safe and easy user installation. (No shop down time.)
- Port for Maartists MUSIC PACK EPS/SCSI hard disk interface card for instant access to hundreds of samples.
- All connectors gold plated for long term operational reliability.
- Five Year Warranty.

*Maartists*

Helping Technology Create Music<sup>SM</sup>

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Cesium Sound

## The Premier VFX Library

Professionally programmed by Nick Longo,  
most with multiple Patch Select variations

Volume 1, grand and hybrid pianos, fine pianos, B3 organs,  
guitars and basses

Volume 2, drums, hits, tuned and exotic percussion

Volume 3, analog synths, leads, pads, sweeps, layers,  
power chords and unique timbres

Volume 4, ethereal, atmospheric, soundtrack, space

Volume 5, solo and ensemble strings, brass, woodwinds,  
(saxes) choirs, etc.

Selected volumes	one	two	three	four	five
EPROM cartridges	\$55	\$95	\$130	\$160	\$190
VFXSD, EPS, SQ-80, or MDF-1 disk	\$40	\$70	\$90	\$110	\$120

Patchloader™ sysex disk: \$45 \$80 \$110 \$130 \$140  
Atari, Mac, or IBM

PatchPro™ librarian including Volumes 1-5 \$160  
Unlimited sound storage, rearrange volumes, Atari or Mac

## TX81Z sounds on cassette or disk

"I'm really impressed with your voices for the TX81Z. A few are  
among my favorite electronically generated sounds, quite an  
accomplishment considering the TX81Z is a relatively low end  
"one module" letter to Cesium Sound

9 volumes (256 sounds) on cassette, EPS, SQ-80, \$30  
VFXSD, TX81Z Pro, Opcode, or MDF-1 disk

Patchloader™ disk for Atari ST \$40

Demo cassettes for VFX, ESQ-1, SQ-80, D-50, or  
TX81Z libraries are \$5.00 each. Sound lists with  
descriptions for any of the above are \$1.50 each.

## The Ultimate ESQ-1 Library

"Some of the patches are nothing short of stunning  
and are worth the price alone." *Letter to Cesium Sound*

80 Voice Cartridges	40 Voice Volumes
A	1. Acoustic Keyboards 2. Electric Keyboards
B	3. Electric Guitars and Basses 4. Plucked Strings
C	5. Drums and Percussion 6. Pitched Percussion
D	7. Lead Synths 8. Synth Pads
E	9. Analog 10. Modern Rock
F	11. Techno 12. Metallic
G	13. Balls 14. Gongs, Jars, and Glass
H	15. New Age 1 16. New Age 2
I	17. Spectral 18. Space
J	19. Abstract Effects 20. Imitative Effects
K	21. Singing Voices 22. Strings
L	23. Woodwinds 24. Brass

Non-erasable EPROM cartridges A-L  
each four eight twelve  
\$25 \$90 \$160 \$220

All 960 sounds on cassette or disk \$96.00

Available on data cassette, Mega, MDF-1, EPS, MC-500 disk,  
C64 format, and most librarian formats or loader disk.

## The Complete SQ-80 Library

"These patches SING. They have a life and presence I have  
not heard on ANY of the nearly 1600 patches I have collected."  
*Letter to TRANSONIC HACKER*

### 40 Voice Volumes on disk

1. Keyboards
2. Guitars and Basses
3. Lead Synths
4. Synth Pads
5. Analog
6. Techno
7. Modern Rock
8. Metallic
9. Drums
10. Pitched Percussion
11. New Age
12. Crystalline
13. Space
14. Bells and Voices
15. Harps and Strings
16. Brass and Woodwinds

one	two	four	eight
\$12.00	\$20.00	\$30.00	\$50.00

All 640 SQ-80 sounds \$80.00  
All 1600 ESQ-1 and SQ-80 sounds \$128.00

Programmable EEPROM cartridges for ESQ-1, SQ-80  
80 voice with any two volumes \$50 blank \$40  
160 voice with any four volumes \$75 blank \$60

## D-50 Sounds on ROM, RAM, & disk

"Nick Longo, the programmer, has made an outstanding contribution...  
I cannot believe I am hearing a product of synthesis."

1. Top 40
2. Analog
3. New Age, Space
4. Orchestral

	one	two	four
ROM cards	\$50	\$90	\$160
RAM cards	\$80 with any volume	\$70 blank	
All four volumes on disk	\$60		

Available in most librarian formats, MDF-1, MC500, or loader disk

## Synthesized PROTEUS Sounds!

64 excellent programmed sounds transferable to Proteus RAM.  
Loader disks for Atari, Mac, IBM, SQ-80, EPS, VFX SD, or MDF-1 \$25.00

Shipping charges for the above are \$3.00 per order in the US, \$4.00 per order to Canada, \$6.00 per order to any other country. CA residents include sales tax.

## Clean, clear, memory efficient. Each disk, numbered 1-69 has two to ten sounds, most under 400 blocks.

D-50	M1	Proteus	Drum Machines	VFX
1.) Keyboards 2.) Basses 3.) Synths 4.) Pads 5.) Ethereal 6.) Pitched Percussion 7.) Woodwinds 8.) Strings	9.) Acoustic Keyboards 10.) Electric Keyboards 11.) Basses 12.) Brass 13.) Woodwinds (sax) 14.) Atmospheric 15.) Drums and Percussion	16.) Keyboards 17.) Add'l Pianos 18.) Bass 19.) Guitars 20.) Drums 21.) Tuned Percussion 22.) Brass 23.) Saxs and Flute 24.) Voices and Strings	25.) Roland 626 26.) Yamaha RX16, RX21L 27.) TR808 28.) HR16 Kicks, Toms, Snare 29.) HR16 Cymbals 30.) RB Kicks Toms and Snare 31.) RB Cymbals and Percussion 32.) RB Contemporary Percussion 33.) RB Jazz 34.) RB Special Effects 35.) RB Jazz Brushes	36.) Keyboards 37.) Basses 38.) Strings 39.) Percussion 40.) Hits 41.) Analog 42.) Atmospheric 43.) Spectral 44.) Sweeps
Minimoog	Matrix 6/1000	"Real" Sounds	DX7II	
45.) Synth Bass 46.) Lead Synths 47.) Synth Brass 48.) Pads and Strings 49.) Percussive	50.) Lead and Synth Bass 51.) Pads and Strings 52.) Brass and Percussive	53.) Alto Sax 54.) Fender Rhodes 55.) Folk Guitar 56.) Funk Guitar w/Gestures 57.) Chorused Strat w/Gestures	58.) Keyboards 59.) Basses and Effects 60.) Mallets and Bells 61.) Plucked Sounds	
Add'l FM	K1000	K1	MIDI Bass	Jun6 60
62.) Keyboards 63.) Basses	64.) Pianos and Organs 65.) Chorus and Strings	66.) Layers 67.) Instruments	68.) Bass Sounds	69.) Misc. Analog Sounds

Prices 11.95 per disk 4-9 disks \$10.00 each 11-16 disks \$9.00 each 19-49 disks \$8.00 each all 69 disks, \$399.00  
Shipping \$3.00 \$3.00 \$4.00 \$5.00 \$7.00

Special Deal!! 4X memory expanders, fully approved, call for price! All 69 disk plus expander, call!!!

Demo cassette \$7.50, sound list with descriptions \$1.50. Send Check, MO, or call. COD \$5.00 additional shipping, cash or MO only.  
Cesium Sound, 1442A Walnut St. #300 Berkeley, CA 94709. (415) 548-6193. FAX (415) 540-1057  
All company and equipment names are trademarks or registered trademarks of their respective holders.



Cesium Sound 1442A Walnut St. #300 Berkeley, CA 94709 (415) 548-6193	Price	Sub Total	CA tax	shipping	Total	exp.	Phone	Pacific Time
Qty	Description	Name	Address	City	State	Zip	Signature	Check <input type="checkbox"/> MO <input type="checkbox"/> COD <input type="checkbox"/> (shipping \$8.00) (415) 548-6193

# What If Your Control-Voltage Pedal Breaks?

Kirk Slinkard

## CV Guts

On your CV pedal, if any part of the inner mechanism should break, using adhesives like epoxy or superglue probably wouldn't do much good because of the strain on the gears. Fortunately, Ensoniq can provide replacement parts. If the potentiometer dies, you can get a replacement at a local Radio Shack for around a dollar. This pedal uses a ten thousand ohm, linear-taper one. Be sure to make a diagram of which wire goes where before you take out the old potentiometer. Ensoniq informs me that this type of problem is extremely rare, though.

## The Case

I have had two Ensoniq pedals and they both broke the same way. They developed a large crack in each side that caused the action to feel wishy-washy. This leads me to believe that broken cases must be happening to at least some other users. The plastic that this case is made of is apparently styrene, a less expensive, and unfortunately, less durable plastic. On the up side, this is basically the same plastic that model kits are made of and you can find the perfect glue for it at hobby shops. Be sure to get liquid cement for styrene plastic. The tube kind will also work, but it takes a lot longer to dry and is more of a mess. This is better than other adhesives because it actually welds the plastic together chemically. I

recommend using electrical tape to hold it together tightly as it dries. To be safe, allow it to dry overnight.

## Reinforcement

Even if your pedal has not broken, you can do the following to extend its life. First go to the hardware store and get some coarse sandpaper (I used 100) and some slow-curing epoxy (not the five-minute kind). Next remove the four rubber feet and the metal bottom panel. Use the sandpaper to rough up the left and right sides on the inside surfaces only. This will give the epoxy a much more secure grip. Set the pedal on its side. Mix the epoxy according to instructions and apply a thick coat to the roughed up surface of whichever side is on the bottom. Let this dry overnight and lay the pedal on its other side. Now repeat for the remaining side. Not only will this make a more durable case, but it will feel heavier and more durable. If you want even more weight, put a big glob of epoxy on the upper surface of the rear half of the metal panel. Avoid the front half so that the gears won't be interfered with.

Also be sure to consider the information in C.R. Fischer's article in TH, Issue #44.

Mod you later. ■

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# Mirage Hackerpatch

Bob Spencer

Howdy, folks! Here's another brief chapter on Soundprocess hacking for you Mirage people. I STILL get a lot of mileage both with my regular MASOS samples and my SP sounds, but being able to take my favorite samples and put them in SP format for multi-timbral use is even better. A lot of people I talk with want to learn how to take their samples and do this. The manual is OK on this, but leaves a little to be desired. So, here goes...

First, use your MASOS disk and sample a unique sound (pretty simple so far, huh?). In case you don't have anything handy, we'll take a stock Mirage sample. Let's use the electric piano sample on sound disk #5.1, circa 1985.

Boot up with this disk and load in sound bank 3, electric piano. We'll be looking at sample addresses, parameters 60 and 61, and wavesample numbers, parameter 26, in MASOS. Hit the PROG key and set for L1. Hit 26 and look at Value—it should be 1. Parameter 60 should be 00, 61 is 7F. Now change Parameter 26 value to 2 and look at p60 (value 80) and p61 (value 9F). A-HA! We've just found a wavesample which will fit neatly into our SP wavesample table at #9. Write these numbers down—"lower bank 3, ws. 2, start 80, end 9F." Now granted, all wavesamples won't be so conforming. That's where the elbow grease works well, trying to find a compromise of starting and ending addresses to fit. We'll try to cover this later.

Time now to boot up SP. Now go into your Parameter

mode and type in lucky 13 (it was Friday the 13th when I started this article). Change to value 3, MASOS disk. P14, disk bank will be value 5, Lower 3. P15 should be value 80, and p16 will be whatever location on your SP wavetable it will fit—in this case any location from 9 through 16. We'll choose value 9. Make sure your electric piano disk is in your drive. Now hit your enter key. Your disk drive will chatter for about 3 seconds. You've just loaded your first MASOS sample into SP!

On to setting up the sound. Set p01 for value 1, p54, Patch Select, to value 1. Change p60 to value 1, p73 and 74 to value 9 (your sample), and p75 to value 4 (Loop Algorithm). Change p60 to value 2 and repeat the above changes on p73, 74, and 75. Now we go in and change your loop. Change p55 to value 9, p56 to value 1E, and p57 to value 1E. Play! You should have something resembling the MASOS electric piano in the lower octaves. Now adjust all envelopes to taste, and you can then split the keyboard, find your values for the upper electric piano, and repeat the above steps. Make sure you store your upper electric piano in a different wavetable location—#10, for instance. Also p14, disk bank, will be set to value 6 (upper bank 3).

Here's a nice patch I've made using just this sample with no splits. Hope you like it! As always, drop me a line if you'd like to trade SP patches or samples. My address is: Bob Spencer, 703 Weatherby Lane, Greensboro, NC 27406. ■

## Soundprocess Patch: E.P. Horns

Parameter	Pair 1	Pair 2
<b>Volume Envelope</b>		
[61] Attack	0	0
[62] Peak	9	9
[63] Decay	25	25
[64] Sustain	5	5
[65] Release	11	11
[66] Decay kbd	0	0
[67] Peak vs	24	22
[68] Sustain vs	10	10
<b>Osc A</b>		
[69] Octave	1	2
[70] Fine	FE	2
[73] Waveform	9	9
[80] Volume	63	63

Parameter	Pair 1	Pair 2
<b>Osc B</b>		
[71] Octave	1	2
[72] Fine	FE	2
[74] Waveform	9	9
[81] Volume	63	63
<b>LFO</b>		
[76] Freq	30	30
[77] Depth	0	0
[78] Switch	3	3
<b>MISC</b>		
[75] Algorithm	4	4
[79] Kbd Switch	3	3
[82] Vol Track	31	31
[83] Trig Time	NA	NA
[84] Trig Cntr	NA	NA

Filter	
[89] Attack	10
[90] Peak	0
[91] Decay	31
[92] Sustain	0
[93] Release	31
[94] Decay kbd	18
[95] Peak vs	19
[96] Sustain vs	5
[85] Freq	21
[86] Q	4
[87] Track	19
[88] Max Freq	99
<b>Patch</b>	
[97] Transpose	12
[98] Volume	58

Comments: Use Mirage El. Piano in wavesample #9.

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# Imitating Analog Synthesizers on the ESQ-1/SQ-80

Charles R. Fischer

One of the strangest fads in the music business has been the renewed interest in analog synthesizers (in the midst of our digitally sampled era). Certain synths that were completely ignored during the mid '80s are now back with a vengeance. Some sell from several times their price a few years back, while a few rare items are hoarded like fine wines or Gutenberg bibles. I know, because I have a few of these critters myself—and I still can't believe some of the offers people have made for my Minimoog!

But I'm not here to write about how great my dinosaurs sound or whine about how today's gear doesn't have the punch that my Mini has. Instead, I want to demonstrate how you can tweak your ESQ-1 or SQ-80 to imitate classic analog sounds. I'll be perfectly honest with you: I've never heard either synth stand up to a Minimoog bass if you A/B them directly (my SQ-80 would rather hide in the closet). It's not that they have design flaws, it's simply that the Minimoog has a magical sound that resists duplication by other synths or sampling! Hands down, the Mini will eat anything in its path.

However, you might not have the chance to A/B the two any time soon. If you don't own one or can't afford to rent one, then using your ESQ-1 as a sub really doesn't have to be that bad. With the following tips in mind, you'll find that your good ol' ESQ/SQ makes a pretty fair substitute...

## Bad Analog

There are a number of ESQ-1 patches that were allegedly devised to emulate analog synths; I find most of them to be truly lame. Oscillators detuned 'til it hurts, wimpy filter sweeps and goofy vibrato or portamento end up as a sick parody of the real thing! (If my synths sounded like some of these patches, I don't think I would have bought them in the first place). And it's really too bad, for these toy sounds lack the warmth and fatness that analog synths have—and so does the ESQ-1 and SQ-80 when programmed with a little care.

If you compare the hardware in the ESQ/SQ and a Minimoog, you'll find that there are many similarities. Both sport 3 oscillators, a resonant 4-pole lowpass filter, a few VCAs, envelopes, and more. Of course, the ESQ-1 has more waveforms, 8 voices instead of 1, MIDI, a sequencer—but there still are a lot of common features—on paper, anyway.

This should mean that we ought to be able to mimic the

Mini, more or less. One reason many of the aforementioned "analog" patches were so bad was that the programmer was evidently unaware of the limitations of the original synth; in other words, because our ESQs have lots of features at hand, it's all too easy to use them where they're not called for! So...

**RULE #1—What you leave out is at least as important as what you put in.** I suspect that many programmers ignore this to try and exaggerate or emphasize some of the characteristics of analog synths, perhaps to make them seem yet more "analog." These patches tend to have all three oscillators detuned to the point of gastric distress, or they might use several LFOs to irregularly churn each oscillator as though it were spastic or something. All I know is that my dinosaurs don't do this; neither do most others unless they're long overdue for calibration or servicing.

## Where To Get Started

In order to make your imitations realistic, you should be aware of the limitations that I just mentioned. Most synths were monophonic until the early '80s. Instead of dozens of sampled waveforms, there were usually two to four waveforms available from the oscillators. The big two were the sawtooth and pulse waves, as well as square and triangle waves on some designs.

The noteworthy thing about these waves is that they have extremely simple harmonic structures—which is why analogs are usually weak at imitating acoustic sounds. Yet they do sound warm and full.

Obviously, you should only use these waveforms as you begin your analog adventure. The ESQ-1 has saw, square and pulse waves, while the SQ-80 throws in a triangle as well. At this point you can follow me along by entering the patch in figure 1: SYNTH.

First, notice that we're only using two of the three DCOs here; most dinosaurs had only two and we're gonna keep rule number 1 in mind here. DCO 2 is detuned just a bit for animation; LFO 1 is used for vibrato via the mod wheel. Next, check the DCAs. Both are set to a fixed level; there's no modulation tricks going on (as in the original.) Then we go through the filter, on through DCA 4 for a volume envelope, and on to the outputs. There's no dynamic panning; once again, this feature was non-existent on early synths.

The envelopes are especially spartan. Notice the simple shapes and lack of velocity control. However, the real secret to the sound is found on the FILTER page.

### Getting Filtered

Before digital synths came around with neat little tricks like transwaves or FM, analog synthesis relied on voltage-controlled filters (VCFs) to create dynamic changes in timbre. By sweeping the filter's cutoff frequency with an envelope, it was easy to make "WAHS" and "OWWS." One of the comfiest cliches was to use filter resonance to exaggerate the sweep, giving birth to a sound that is still abused to this day. Sometimes musicians used an LFO or sample/hold to create sweep effects that were more repetitive or rhythmic in nature.

To duplicate the effect, you should try to keep the filter FREQ setting pretty low; 000 to 030 is a good starting point. Now you can use ENV 3 to open up the filter to get that infamous synthesizer sound. The amount and shape of ENV 3 determines the overall brightness of your patch.

Now play the patch while slowly increasing the RES (Q) setting. Before long, you should be hearing the sound that put a lot of money into Bob Moog's bank account. In

general, it's wise to avoid high Q settings, as extreme resonance can cause the output level of your axe to go through the roof as lower harmonics are emphasized. This might clip out your mixer or even blow out a speaker that was already near its limits. So do try and keep that Q down, kids.

### Going Further

Because of space limitations, we simply can't go into all the variations at hand here. Pick up a good book on synth programming or look for appropriate articles in related magazines. A great training trick is to borrow a friend's analog synth and sit down with it and your SQ and do your stuff.

Before we close, I'll leave you with a few more analog patches for your ESQ-1 or SQ-80. ■

*Bio: Charles R. Fischer is a professional keyboardist, synthesizer programmer, writer, and electronic designer. He runs Mescal Music, an electronic music consulting and design firm, and has written articles for magazines like Electronic Musician and Modern Electronics. He has also gigged everything from C/W to Rap.*

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ESQ-1/SQ-80 PROG: SYNTH

BY: Charles R. Fischer

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-1	00	00	SAW	LFO1	+02	OFF	-
OSC 2	-1	00	01	PULSE	LFO1	+02	OFF	-
OSC 3	-	-	-	-	-	-	-	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	60	ON	OFF	-	OFF	-
DCA 2	60	ON	OFF	-	OFF	-
DCA 3	-	-	-	-	-	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	044	00	14	ENV3	+24	OFF	-

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	52	08	OFF	-

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	21	OFF	OFF	TRI	00	00	-	WHEEL
LFO 2	-	-	-	-	-	-	-	-
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	-	-	-	-	-	-	-	-	-	-
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	+63	+00	+00	00	00	00	18	00	04	00
ENV 4	+63	+63	+63	00	00	00	32	32	08	00

	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC
MODES	OFF	OFF	OFF	00	ON	OFF	OFF	OFF

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

ESQ-1/SQ-80 PROG: MOOG

BY: Charles R. Fischer

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-2	00	00	SAW	LFO1	+02	OFF	-
OSC 2	-1	00	01	SAW	LFO1	+02	OFF	-
OSC 3	+0	00	03	PULSE	LFO1	+02	OFF	-

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

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	022	04	10	ENV3	+35	OFF	-

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	58	08	OFF	-

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	23	OFF	OFF	TRI	00	00	-	WHEEL
LFO 2	-	-	-	-	-	-	-	-
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	-	-	-	-	-	-	-	-	-	-
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	+63	+00	+00	00	00	00	18	00	06	00
ENV 4	+63	+54	+54	00	00	00	30	56	21	00

	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC
MODES	OFF	OFF	ON	00	ON	ON	OFF	OFF

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

ESQ-1/SQ-80 PROG: PROPHT

BY: Charles R. Fischer

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-1	00	00	SAW	LFO1	+02	OFF	-
OSC 2	+0	00	00	SAW	LFO1	+02	ENV2	+28
OSC 3	-	-	-	-	-	-	-	-

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

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	018	00	20	ENV2	+20	ENV3	+20

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	48	08	-	-

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	21	OFF	OFF	TRI	00	00	-	WHEEL
LFO 2	-	-	-	-	-	-	-	-
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	-	-	-	-	-	-	-	-	-	-
ENV 2	+63	+50	+00	00	00	00	08	08	16	00
ENV 3	+63	+12	+12	00	00	00	18	00	02	00
ENV 4	+63	+63	+63	00	00	00	32	32	02	00

	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC
MODES	ON	OFF	OFF	00	ON	OFF	OFF	OFF

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

ESQ-1/SQ-80 PROG: ARP1

BY: Charles R. Fischer

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-2	00	00	SAW	LFO1	+02	OFF	-
OSC 2	-1	00	01	SAW	LFO1	+02	OFF	-
OSC 3	-	-	-	-	-	-	-	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	62	ON	OFF	-	OFF	-
DCA 2	58	ON	OFF	-	OFF	-
DCA 3	-	-	-	-	-	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	022	05	14	ENV3	+42	PEDAL	+26

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	53	08	OFF	-

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	22	OFF	OFF	TRI	00	00	-	WHEEL
LFO 2	-	-	-	-	-	-	-	-
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	-	-	-	-	-	-	-	-	-	-
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	+63	+12	+12	00	00	00	18	00	06	00
ENV 4	+63	+63	+63	00	00	00	32	32	16	00

	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC
MODES	OFF	OFF	ON	01	ON	ON	OFF	OFF

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

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It was a cold and rainy night when we were startled by a knock at the door. BAM, BAM, BAM! It was Dudley DoRight of the Royal Canadian Mounties. He had just ridden for days on horseback to deliver the latest EPS sound disks from Keel Productions in Canada. I took the disks in my hands as he headed for the liquor cabinet. "Why, these disks are in code!" I cried. "What do KM, LA, PR, TS and VF mean?" No sooner did the question mark leave my lips, when he was gone. "Hi ho, Silver!" he exclaimed, and was off. "No, no," I yelled, "that's the wrong show," but it was too late. Before I knew it, he was on another channel. I was left with the coded disks.

Unable to stand the suspense, I phoned Keel and asked what all this meant. "Korg M-1, Roland D-Series, Proteus, Turbo-Synth and VFX" they said. Then it all came together. These were no ordinary disks. They were apparently samples of synths! I began to sweat. Before I knew it, I was actually putting those 3.5" pieces of plastic into the EPS! Not only that, but the more I put in, the more I wanted to put in. I was becoming a sound junkie! I needed to hear more, and more, and more!! I can talk about it now but it isn't easy. First it was the KM-1 disk. CONCERTO was the first sound I heard: a digital piano, simple enough. But wait..., if I held down the keys, a synth string sound swelled from within my speakers. It was as if the piano was instantly transformed into strings, filling the void left after the decay of the piano. Next it was CANTATA: a choir of angels and one of them was playing the clavier. I wanted to play the intro to *You Can't Always Get What You Want* and I did, and it was good. Then I loaded SITAR, and it wasn't. There, in the background of a lead sitar sound, was a lonely, lost organ type sound. What did it mean? Why was it there??

I had to get away so I loaded KM-2. I played with COOL SAX and my pulse began to slow again. I relaxed to the feeling of pressure-sensitive pitch bends and switched to patch 2 to slur up into my notes. Then ANGEL MUTES... All of a sudden, I had a toy sax under my fingers and the angel voices were back in my speakers. Before I knew what I was doing, I had plugged MAGIC ORGAN in and I seemed to feel the presence of a B-3. Only this time, there were wind chimes attached to it (or attached to me), but whatever it was, I could not get the organ to play

without the wind chimes. My vision began to blur and I reached for the next disk.

LA-3 got off to a bad start. ROYAL PAD was a breathy lead voice, but with an annoying clipping or perhaps some sort of phase shifting. Unable to determine just what I was listening to, I turned to RUSH BASS for support. Ah, yes. A mixture of digital and synth basses. Not quite as fat as the ghost of Christmas present, but that's another story. No sooner had the feast began, when MAGIC Mallet was on the set. "Lighten up" it seemed to say, with its combination of steel drum, xylophone and string pad.

Then I popped LA-4 into the disk drive. These are the sounds I had been looking for! PRESSURE LEAD brought me back to the days of ELP. HOLLOW LEAD echoed the words in my head, "Dragons, the policeman knew, were known to breathe fire, FIRE!" Then, without warning, KITARO was loaded and I played for at least an hour! It was a sound right off the Vangelis "Spiral" album, yet they call it by another name... I had to tear myself away. I loaded LEAD BASS and found myself playing slap bass lines to Stevie Wonder tunes! So that's how he did it!

Armed with the strength of giants, I fearlessly sent PR-1 into the disk drive, and lo there was the sound of PHANTAZIA: a glass harmonica that would have cured Ben Franklin's gout (replete with overtones a 12th above the fundamental). Then there was LEAD STRINGS, great in the midsection, but not much on top. As if to mock me, EAST WEST GUITAR came barreling in. I landed on patch 4 and played Tex-Mex until my wife called me in for enchiladas. "No, wait," I pleaded. So many sounds, so little time. I rushed to hear PR-2 and was greeted by WINSTON PIANO, a delicate electric grand. "Now!" she insisted! "But honey, LEAD STRINGS! It's a rich synth string sample, even if there is a little loop beating in the upper register." "I'll show you loop beating!" she retorted. Then I really heard WIND CHIMES. A wonderful sound, but not very useful until you need it, and if I ever needed it, it was then.

When I came to, it was the next morning, Sunday. I booted the EPS (just for the heck of it). In between sips of coffee, I snuck TS-1 in the disk drive slot. First it was KEYED CHORAL, with voices and bells and an abrupt register shift in the middle of the keyboard. Then it was AMBROSIA, which was reminiscent of a church choir that had too much coffee and donuts before the service. Finally, the choir broke into DANCE DAZE and all hell broke loose. A major 6th chord for synth/electric brass. Sort of

like Glenn Miller on a MIDI high and strangely, very appealing.

I was just about to relax when I spied two more disks lurking around the 4X expander. Why, it was VF-2 and VF-3. In a flash, the two disks and I were face to face, just like in a Felini film. VF-2 cried ELIZABETHAN, and a clavier came blurring from the speakers. It recalled French films from the '60s or perhaps *Take the Money and Run*. Then, in total contrast, STUDIO ELECTRIC jumped in with a good clean sound. It was almost as if the bass player had just put on new strings. Then POP PIANO popped in with a clavino type sound.

Knowing I was at near the end of my rope, I threw VF-2 into the drive. TRANS-TINE 1 was a delight of pure sine waves and pressure added brightness. There was good panning and patch 2 was wonderfully delicate. TRANS-TINE 2 was a close kin to the mellotron type sound I knew from Shadowfax. But it wasn't until DEEP STRINGS that I really started off the deep end. Now I had cellos, violas, basses... Everything I needed for an incredibly deep, dark sound. Oh, the drama of it! The profound masses of swarming, rich tones... I can fly... I can soar...

But that was then and now is now. The only therapy for my condition is to keep listening and searching and ordering sounds from Keel. They keep me reeling. ■

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## The EPS as a Drum Machine

Barbara Ockel

I've been playing the EPS from a drum controller as my main sound module for about a year now. In the process, I've discovered a few tricks which should be useful to other pad drummers as well as keyboard players who want to use the EPS as a drum machine.

Velocity sensitivity (or rather the lack thereof) has probably been the major obstacle in the popularization of electronic drums. The EPS's soft and hard velocity response curves can be used to greatly improve the velocity response of drum samples to hits from a pad controller when compared to the response of most drum machines. It's best to set the soft velocity values to some value between 0 and 30, while hard velocity is at maximum. To match the EPS's response curve, the velocity curve on the pad controller should be set to a linear curve for best results. I've sampled all the sounds from my Alesis HR-16 drum machine and was amazed how many more dynamically differentiated beats I could play when accessing the EPS samples than when playing the same sounds on the HR-16. Try it—the dif-

ference is striking.

Often drum samples seem to lack sufficient volume compared to other sounds because of their extreme transient attack. If you don't have a computer and sample editor which will allow you to digitally limit (take off the peaks of that attack transient, and then renormalize) those samples, here are some other options.

First, if you have the 8X output expander, you can of course send the drums out another channel and increase the volume on your mixer. Another possibility is to make a layer copy of your drum set and play 2 layers instead of one. When doing that, though, it is worthwhile to listen to each drum sound carefully by itself to hear how it sounds layered. Some sounds change their character in a subtle, yet sometimes undesirable way.

Yet another possibility for increasing drum volume as well as enhancing the drum sound quality is to put different drum samples in the second layer which will be

triggered simultaneously with the first. This is particularly effective for putting together very fat sounding bass and snare drums, considerably more so than simply doubling one sample. When doing this the relative tuning of the two samples is important. Listen to them separately first and make sure that the interval they form is right to the ear. Then adjust the relative wavesample volume for the best combination sound. It's also frequently worthwhile to experiment with layering other drum sounds, and the two layers need not be similar in timbre. For example, I got a great soft hissy snare type sound out of a layer of a tambourine and a crash cymbal with a very short envelope, and a lot of vocal plate reverb applied to both. Or try a timpani with a layer of a pizzicato bass. Shorten envelopes to use percussive attacks of guitar or piano sounds and layer them with a tom. Fairly random experimentation can lead to totally cool custom drum sounds which no one has ever heard before. The possibilities are endless.

If you have already recorded a drum sequence, you can also improve a drum sound by layering it, using the following procedure. Simply copy the drum track to another track, use "erase key range" to erase all notes but the one you want to double. Then transpose the copy (which now only has one drum sound left in it) to the key with the sound you want to use as your layer, then merge the copy back into the original. Again, pay attention to the relative volume of the two samples.

Reverb (especially on snare drums) and equalization (especially boosting the lows on bass drums) can do a lot to improve most drum sounds. In order to get just the right kind of effect on each drum used, it is often best to resample the sounds with the optimal effect on it, and then using it dry or with just a little ambient reverb. If you have 8 outputs and several outboard effects, this is probably unnecessary, but if you don't, it's a good way to go. Reverb of course eats lots of memory when sampled, but equalization doesn't have that problem. Another option is to sacrifice the two stereo channels on the EPS to the drums; you can put lots of reverb on one channel and none on the other, and then pan each sound in between the two for just the right amount of reverb. Then pan both channels to center on your mixer. But really, do yourself the favor of adding bass EQ to kick drum samples; you'll know what I mean when you try it.

There are some tricks to make sequenced drums sound more realistic and alive, and here are a few of them. You can create a custom pitch table for the drums such that they have 1/4 instead of 1/2 steps between adjacent keys. That makes it a lot easier to pick out a pitch for each drum that goes best with your tune. Vary the root key of a drum sound while playing the sequence and see where the drum sounds best. Or play the drums from the keyboard along with the music sequence (without

drums), and listen to the blending of sounds. Also, perfectly tuned drums which vary in pitch by regular scale intervals tend to sound artificial. Of course, the 1/4 step is only one of many choices, but using an arbitrary number for an interval makes it very difficult to relate the root key of the sample to its appropriate keyboard range. As it is, it is best to make up a chart relating the two, rather than doing the math for each sample every time you make up a new drum kit.

For percussion instruments which are played in a back and forth motion like shakers and maracas, a more realistic sound can be achieved by alternately playing two different pitches of the same sample. Anything between a quarter and a whole step interval works for most sounds. Most of the time it sounds best to play the lower one as the unaccented note and to use a lower volume for that one as well.

For drum sounds which get triggered repeatedly in rapid succession, you can assign the same sample at the same pitch to two different keys or drum pads, so that the second strike doesn't cut off the first. This is important for double crashes or fast snare drum rolls (buzz rolls).

Speaking of buzz rolls, they are somewhat of a problem on the EPS when sequenced because of the low clock resolution (48 clocks per quarter note). They tend to sound irregular and nervous because playing 20-30 notes per quarter note is quite common for that type of roll, and they get quantized into only 48 slots, even without actually applying quantization. A solution to this problem is to record the sequence at double tempo, and doubling the number of bars in the sequence, thus improving the resolution to 96 slots per quarter note. This works, because the number of notes played in a buzz roll per unit time stays more or less constant no matter what the tempo is, since you simply play enough notes to achieve a continuous sound.

I haven't met any other drummers who use an EPS as their main sound module, so if you do and are interested in exchanging ideas, please write to me: Barbara Ockel, 3300 Scott St., #207, San Francisco, CA 94123. ■

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# Playing in Quarter-Tones on the VFX/VFX-SD

Gary Drenan

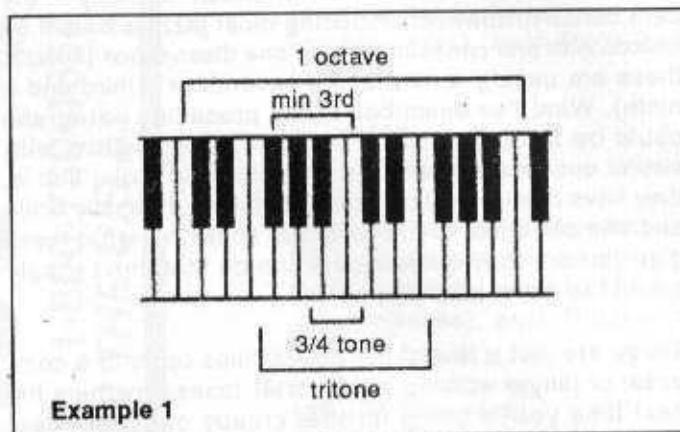
Here's a trick for you advanced composers and programmers: You all know about the VFX's ability to be tuned to other pitch systems than the traditional 12-note scale, but most of you have probably never investigated it. In this article I'll show you how to instantly turn the VFX into a quarter-tone keyboard; then I'll give you some tips on how to find your way in the unfamiliar world of quarter-tone tonality.

If you've looked through your *Musician's Manual*, you know about the VFX's pitch tables (see Section 9 if you want a refresher). You can extrapolate (copy the relations between certain notes across the whole keyboard), interpolate (divide the keyboard evenly between any two notes), or set up your own system, note by note. But there's an easier way to get the keyboard into quarter-tones; simply pick any voice and set it to solo (on the Select Voice page of any program). Check to see that the voice's pitch table is set to "System" on the Pitch page. Go to the Pitch Mods page for that voice, set the Mod Src to "Keybd," and set the Mod Amt to "-99." Now play your VFX—things will sound a bit different than you're used to! The entire keyboard is now set to play in quarter-tones, centered around middle C (which is still the same pitch).

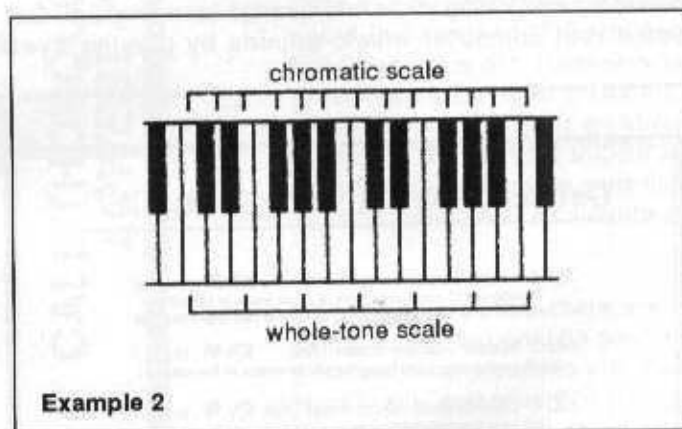
After a few minutes of fooling around, you may be thinking: Okay Gary, it's a neat trick, but what can I DO with it? A good question. Working with quarter-tones requires you to think a bit differently. Here are a few ideas to help you find your way.

First of all, the fact that each quarter-tone is half of a chromatic half-step means that each interval is double what it normally appears to be. That means that if you play any pair of notes that look like they're two octaves apart, you will hear the interval of one octave. Play a pair of notes that look one octave apart, and you'll get a tritone (which splits the octave evenly in half). Half of that (which is what you're used to fingering as a tritone) gives you a minor third, and half again of that gives you a brand new, quarter-tone interval. (See Example #1.)

If you want to start finding familiar scales on the keyboard, think of this: What looks like a whole-step is now a half-step; what looks like a major third is now a whole-step. If you play a whole-tone scale as you're used to seeing it, what you hear is the good old chromatic scale. Play an augmented triad (C-E-G#, for example) up and down the keyboard and what sounds is the whole-tone scale. Finding a diatonic scale is only a bit more difficult. Since the first two intervals are whole-steps, play what look like major thirds. The next



step (E-F if you started on C) is a half-step, so from the last note you played, play what looks like a whole-step up. You can find most familiar sounds easily in this way. (See Example #2.)



The point, of course, is not to learn a new set of fingerings for everything you can already play. In fact, the first suggestion I would make is for you not to use familiar chords and scales as you explore the world of quarter-tones. You can do some very interesting things making triads and diatonic melodies go increasingly "out of tune" this way, but I believe the most creative uses of this tonality are elsewhere. If you use chords based on tritones (very easy to find since you just finger them as you would octaves) rather than perfect fifths (which you would have to finger as major 9ths, anyway), you can avoid the "in-between" notes sounding wrong because there is no consonance (i.e. the fifth) for them to try to resolve to. Another technique you might try is to play what you are used to fingering as ordinary triad chords (like C-E-G and E-G-B) in the left hand while finding melody notes in the right. These chords will now sound one chromatic interval (a whole-step) and one non-chromatic, quarter-tone interval (between a whole- and a half-step);

you will find that nearly any pitch will work equally well above such a chord.

This last idea has some interesting implications. Traditional Western harmony is based on chords of two consonances (the third and the fifth). Much harmony in the 20th century, however, including most jazz, is based on chords with one consonance and one dissonance (in jazz, these are usually a third and a seventh or a third and a ninth). What I've described in the preceding paragraph could be turned into sets of chord progressions with similar qualities in relation to the chromatic scale; that is, they have one interval consonant with the chromatic scale and one dissonant to it. Practically speaking, what these give you are truly quarter-tone chords that don't simply sound like out of tune triads.

These are just a few of the possibilities open to a composer or player working with quarter-tones. Try them the next time you're going for that creepy or spacey feel (especially, as mentioned above, with tritone chords which have "creepy" associations to begin with). Use a shifting quarter-tone "wash" (on a string or other mellow patch) behind more active parts in a floating, nature-music piece. Give punchy cluster harmonies more power by expanding them into quarter-tone clusters. Get some real computer music sounds by playing even

sixteenth-notes on an incisive, electronic sounding patch. In these ways and more you'll find that quarter-tones can be a useful addition to your creative bag of tricks. ■

*Bio: Gary Drenam is a composer/keyboardist living in Los Angeles. He has a degree in music composition and writes pop, jazz and classical music. He is also the author of several Macintosh programs for use with the VFX and VFX-SD.*

## BACK ISSUES

Back issues are \$2.50 each. 5 - 20: \$2.00 ea. 21 & up: \$1.75 ea. (Overseas: \$3 each.) Issues 1-9, 11, 13-23, 27, 29, 30, 36, and 38 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. (But didn't really get going till Number 35.) VFX coverage got started in Number 48. The original VFX patch sheet was published in Issue #55. Permission has been given to photocopy issues that we no longer have available—check the classifieds for people offering them.

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# The ESQ-1 Sequencer Internals Revealed

## Part 1 (Pitch Bend)

Joe Slater

This series of articles will attempt to explain the format of the ESQ-1 sequencer data. For the most part, the information given should also apply to the SQ-80 sequencer (but I don't have one of those). *Warning:* The accuracy of the information revealed here has not been confirmed by Ensoniq. Consider yourself forewarned!

Admittedly the articles will at times become quite technical, seemingly geared for computer programmers. However, there is also information revealed that non-programmers can appreciate. When using the sequencer, it is important to know just what it is capable of doing.

While examining the sequencer data, we will uncover some shortcomings (loss of precision) of the sequencer. It is possible to record a performance, and have the playback of that performance sound quite different! In defense of Ensoniq, they were quite clever in the compaction of information so as to use very little memory. At the time when the ESQ-1 was made, memory was an expensive and therefore precious resource.

All but one of the limitations discussed are with the sequencer, and NOT with synthesizer itself. It's important to be aware of the difference. So let's start off with the Pitch Bend Wheel constraints, which exists for *both* the synthesizer and the sequencer.

MIDI defines the range of values associated with Pitch Bend Wheel positions to be 0..16,383 with value 8,192 for the center (resting) position. This amounts to 16,384 different possible positions! Whew! The ESQ-1 defines the range of values associated with Pitch Bend Wheel positions to be 0..127 with value 64 for the center (resting) position. This amounts to 128 different possible positions. There is a considerable loss of precision here, but how important with respect to sound is debatable. The Pitch Bend values are simply converted as follows (division remainders are discarded):

MIDI ---> ESQ-1 :  $ESQ-1value = MIDValue / 128$   
ESQ-1 ---> MIDI :  $MIDValue = ESQ-1value \times 128$

This means the ESQ-1 can send out MIDI values of 0; 128; 256; 384; ...; 16,128; 16,256.

How a synthesizer reacts to Pitch Bends is denoted by the Pitch Bend sensitivity. On the ESQ-1 GLOBAL MASTER page, the BEND-RANGE can be set from 0..12 semitones (for each bend direction), and MIDI allows a maximum of more than 10 octaves. Most synthesizers perform Pitch Bends logarithmically. Let's look at some examples (I hope you didn't skip your algebra classes):

If the Pitch Bend sensitivity is set to 1 semitone (total range of 2 semitones or 200 cents), each Pitch Bend change value represents:

ESQ-1 :  $(200 \text{ cents}) / 128 = 1.5625 \text{ cents}$   
MIDI :  $(200 \text{ cents}) / 16,384 = 0.0122 \text{ cents}$

1.5625 cents is the least amount of pitch change that can be transmitted on the ESQ-1. That seems minute enough... However, if the Pitch Bend sensitivity is set to 12 semitones (total range of 24 semitones), each Pitch Bend change value represents:

ESQ-1 :  $(2400 \text{ cents}) / 128 = 18.7500 \text{ cents}$   
MIDI :  $(2400 \text{ cents}) / 16,384 = 0.1465 \text{ cents}$

Now, 18.75 cents is the least amount of pitch change that can be transmitted on the ESQ-1 (as opposed to the fully MIDI capable 0.1465 cents). Note that if the ESQ-1 sequencer externally receives and records MIDI Pitch Bend values 1..128, it will record in memory 127 Pitch Bend values of 0, and one Pitch Bend value of 1 (retransmitted as 128). If the recorded track is intended for an external fully MIDI capable synthesizer, you will hear an abrupt change of 18.75 cents at the end, instead of a smooth and graceful incremental change of 0.1465 cents over time. The redundant 126 Pitch Bend values of 0 also waste sequencer memory.

You may have noticed on the ESQ-1 that there are 64 positions below the center position, but only 63 positions above the center. Using our last example, does that mean when the Pitch Bend Wheel is fully extended that the tone is 18.75 cents flat from an octave? It might be on an external synthesizer, but not on the ESQ-1. The pitch change values given above still apply, but the ESQ-1 treats full extension as an exception, as if it were a 64th position above the center. The following shows the ESQ-1 positions and corresponding pitch changes ON THE ESQ-1:

0 =  $(-64 * 18.75) = -1200.00 \text{ cents}$   
1 =  $(-63 * 18.75) = -1181.25 \text{ cents}$   
2 =  $(-62 * 18.75) = -1162.50 \text{ cents}$

62 =  $(-2 * 18.75) = -37.50 \text{ cents}$   
63 =  $(-1 * 18.75) = -18.75 \text{ cents}$   
64 =  $(0 * 18.75) = 0.00 \text{ cents}$   
65 =  $(+1 * 18.75) = +18.75 \text{ cents}$   
66 =  $(+2 * 18.75) = +37.50 \text{ cents}$

126 = (+62 \* 18.75) = +1162.50 cents

127 = (+64 \* 18.75) = +1200.00 cents

The expected value of +1181.25 cents for full extension is not used, but another 18.75 cents is added to give the true upper bend range value. An external fully MIDI capable synthesizer however, WILL PROBABLY be 18.75 cents flat from an octave because the ESQ-1 is transmitting the MIDI value 16,256 which is 127 below the maximum (i.e. fully extended) MIDI value 16,383.

Most musicians use a Pitch Bend sensitivity set to 2 semitones. This accounts for pitch change transitions of only 3.125 cents. So the ESQ-1's loss of precision doesn't seem too bad in that capacity (but there are those that will argue!). Especially at a savings of one byte of sequencer memory per Pitch Bend value.

The next article will discuss the loss of precision in note velocities, followed by the long awaited interpretation of ESQ-1 sequence MIDI dump data... ■

*Bio: Joe owns an ESQ-1 (and other related unmentionables). He has been a professional Software Engineer for 10 years, and a Composer/Musician for 19 years. But the Composer/Musician side (and long hair) is definitely taking over.*



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## Ensoniq SC-1 VoiceROM Card

Pat Finnigan

For: Ensoniq SQ-1, SQ-R.  
Product: SC-1 VoiceROM Card.  
Price: \$99.95.

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Once again, third-party programmers are burning midnight oil to provide sounds for those of us who haven't the time, energy, or patience (or, could it be, ability?) to program sounds ourselves. And with synthesizer parameters multiplying exponentially, it's getting to be a real bear wading through myriad menu pages necessary with this type of alchemy. Not that we aren't up to some edits of existing sounds (isn't that how we learn voice programming, anyway?), but for the reasons above, sounds are getting tougher and yet tougher to come up with. The SC-1 VoiceROM from Ensoniq is the first offering for the SQ-1, and judging from the contributing programmers, it's gonna win a lot of devotees. The list of programmers reads like a veritable "Who's Who" of third-party vendors; Clark Salisbury of the MIDI Connection, Eye & I Productions, Cosmo Watts of Sounds Your Way, Newman

Sounds, Greenland Sounds, Scott Frankfurt, and Synthetic Productions all have offerings in this collection of 160 voices arranged in 2 banks.

These sounds are not edits of existing sounds; rather, they are apparently ground floor voices. Attention to detail is evident in most of these programs, some of which make brilliant use of the mod wheel as a voice mixer. Many of the patches are New-age pads, but thankfully, these guys don't subscribe to the "splice a choir, bell and chiff flute together and call it a cloud or planet" school of programming. These are *new* programs, and since reviewing sounds is such a subjective matter, I'll just say that I'm very impressed with the amount of programming smarts evident in this collection.

For instance, I had no idea the SQ-1 had a "sample and hold" modulator until I heard "Dissident!" Sample and Hold filter mod? The SQ-1 has no dynamic panning, yet "Clavishna" sweeps slowly left to right! Clever use of velocity parameters make you forget that the SQ-1 has no aftertouch. I tweaked the amplitude and filter envelopes

of "Jazz Guitar" and now I have Barney Kessel resident in A56. If you're into the "Humpty Dance," try the top octave of "Slam Bass." "Spurrito," with a few quick edits, is the definitive steel string Spanish guitar. "Low cal Frets" with an envelope edit is my new standard fretless bass when played legato at low velocity, yet if you nail it, the frets return. "Oblivion" with a few edits is a pretty cool Prophet-5 "hard-sync" Cars bill of fare. And that's only some of the the A bank!

For those of you as critical as I am about drum sounds, you've probably discovered the SQ-1's ride cymbal is a little weak. If you sequence bebop or other straight-4 type jazz tunes, you'll appreciate program B78 on this card, "Ride cymbal." Looping is barely noticeable; calling up this program and devoting a separate track for it on those type of jazz arrangements really helps humanize drum tracks. Although the piano waves aren't in the Kurzweil league (check the new piano "megawaves" to be released for the VFX-SD), some fairly accurate acoustic piano programs are presented in the card and sound quite credible when played in appropriate registers. "Big City Grand" (patch A10), with velocity sensitivity tweaked up, is probably as close to an acoustic piano sound as you're gonna get out of the SQ-1 (a thinly disguised third-party challenge here), and unless you sequence Rachmaninoff on a regular basis, this patch is a credible grand piano. And for the New Age coup 'de gras, "Firstlight" (B67) is reminiscent of old buddy "Nimbus" in M1-speak.

Many of the new age pads have a great deal of motion and depth, a number of which masquerade as vector-synth sounds of the first order. Velocity controls timbre on many of these; the mod wheel extends diffusion time of the reverb on some patches. A lot of these patches sound as thick as many VFX-SD patches, which says a lot for the SQ-1, and even more about the programmers. To be sure, you'll find keepers and losers, but this card contains plenty of millgrist for SQ-1 hackers out there. The voices stand clear and concise by themselves; with a few edits on your part to suit to taste, you'll be glad all those programmers put together such a collection.

The SC-1 is available only as a ROMcard; in order to save any edits you must overwrite an existing voice in the SQ-1's internal memory. Since the SQ-1 is shipped with identical patches in its 80 patch "internal" and 80 patch "ROM" memory it's no big deal; you can't accidentally erase patches on ROMcard. RAMcards are more expensive, to be sure, but I'd imagine some users would prefer the SC-1 collection in that medium. Six of one, half a dozen of the other... Use of the Data Entry slider as an active timbre control could have been implemented on patches, but since a standard use of this parameter has yet to be determined on the VFX (let alone the SQ-1!), it's not really an oversight on the part of the programmers. They probably left it alone so we could define its function; a new parameter for new uses. An example would have been nice...

As difficult as some people may find it to be to come up with sounds from scratch on the SQ-1, this card represents an excellent value. I'm not saying that you're necessarily gonna have to edit: these guys really did their homework and it shows. You may just tweak some already superb programs to taste, alter the effects a bit, and learn some SQ-1 programming tricks in the process. And the SC-1 is thick with slick programming techniques.

An 11-page book with notes, explanations, some "humorous" descriptions, and at long last, a program map of patch locations (Hazzah!) is included with this offering. It's about time somebody printed just where those 160 programs lived in front-panel addresses (do you remember Biology 101 and the Punnet Square?). Nothing is more frustrating than trying to find that one particular fave patch, wading through the entire bank listening to the entire other 179, and forgetting the subtlety of the sound you're searching for in the process...

So generally, the SC-1 card contains material that is excellent stuff for personal edits/tweaks and the like. I predict that we'll see many spin-offs of this type, but I sincerely doubt, of this caliber. ■

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## Additive Synthesis for the EPS

*Earle Peach*

Here's a way of custom-designing rich, beautiful timbres from the ground up, using nothing more than your EPS and your ears. (Whoops, and maybe also a tuning fork.) What I'm going to describe is as close as I can get to additive synthesis on the EPS.

Henri Fourier, the French mathematician, demonstrated that any continuous wave function can be analyzed into sine waves with different amplitudes and frequencies. Additive synthesis simply reverses that assumption and aims to build any sound entirely out of sine waves. Logi-

cally, to reproduce this process you need to start with a sine wave. Probably the easiest place to get one is from a tuning fork. Sample your tuning fork, isolate a single-cycle loop, and throw away the remainder of the sample, as well as your tuning fork (Why bang a fork against your knee, man, when you can bang your head against an idea?). Here I should mention one drawback to this whole process for which someone else may be able to suggest a solution. No matter what I've tried, I can't isolate an absolutely perfect sine wave: there's always just the tiniest bit of noise which I assume has something to do with the

d/a conversion (but what do I know? I'm just a dumb musician). The further along you carry the process I'm about to describe, the more this noise multiplies, effectively limiting how far you can go. In any event, when you have as good a sine wave as you're going to get (ideally a pure fundamental with no overtones), save it as an instrument. It will come in handy and it will take up about 3 blocks.

Back to work. On a new instrument, create an empty sample by forcing the \* over to the far left. Give yourself maybe 100k samples (no point worrying about room if you can afford it—everything can be cut down later, right? Right). If you're nervous about noise, you can CLEAR DATA from the entire sample, just to exorcise the ghost in the machine. Next, COPY DATA from your single-cycle sine wave to the top of your "vessel" sample, and REPLICATE throughout. You now have one humongous sample of a sine wave: WS 1. Copy layer 1 at least 3 or 4 times, one with PARAMETERS & DATA. You've now used 200k samples.

Leave layers 1 and 2 in the patch. Now detune WS 2 to some harmonic of WS 1. Turn down the volume of WS 2 and mix WS 2 to WS 1, adjusting relative levels to taste. You might consider making the harmonic a little louder than "natural," for reasons which will become obvious. If you like the result, keep it. At this point, I've found it very useful to go back to WS 1, find a single cycle of the new timbre and REPLICATE it. Otherwise, the higher you tune your harmonics, the shorter they are, so that each time you mix, you're affecting a shorter and shorter portion of WS 1 until you can't really hear what you're doing. REPLICATING relieves this problem; however, don't forget to turn off the LOOP before you REPLICATE, so that you can hear the result throughout the entire sample before you decide to keep it.

Since you've changed your original, you've also changed its copies. The next step is to turn WS 2 back up and retune it again—only this time you're moving a fundamental and a harmonic! When you tune WS 2 to another harmonic of WS 1, the new harmonic of WS 2 may sound like an inharmonic of WS 1. In fact it is also a pure harmonic and this is easy to show. Let's say that WS 1's frequency is 100 Hz, and WS 2's is 200 Hz (an octave up, the 1st harmonic). After mixing WS 2 to WS 1, each WS will have a harmonic an octave up, but in WS 2's case, the harmonic will be at 400 Hz. If you now retune WS 2 to another harmonic of WS 1—say, 300 Hz—the octave relationship between WS 2 and its harmonic will be preserved, to produce a tone at 600 Hz: the 5th harmonic of WS 1. Since all harmonics are in whole-number ratios to the fundamental, each harmonic's harmonic is as well. Using this principle, it is easy to produce perfectly tuned high harmonics, making this a very powerful form of synthesis. Of course, after you do a second WS mix, you can repeat the process yet again, giving you an eight-

harmonic timbre. You can also mix your as-yet unadulterated sine wave to WS 1, to support a particular harmonic or to reinforce the fundamentals. If you find the overall amplitude of WS 1 dropping, you can bring it back up with a judicious SCALE DATA. This works nicely.

There are so many variations on this theme that it's impossible to list them all, but here are a few.

1. Tune the harmonic of WS 2 to a harmonic of WS 1. This may make WS 2's fundamental a non-harmonic (i.e., WS 1 at 100 Hz, harmonic at 400 Hz.; WS 2's harmonic, which was at 1600 Hz, when retuned to, say, 500 Hz, produces a WS 2 fundamental at 125 Hz.), leading you into metallic-timbre land.
2. Use SCALE DATA to shape WS 2's amplitude before you mix WS's. A straight rolloff, for example, will after mixing, reproduce itself in the timbre of both WS 1 and 2, creating a brilliant, but perfectly harmonic, attack.
3. Detune your WS's to something other than a harmonic. Good luck!
4. Create two different timbres and a loopfade between them (see my previous article, "Creative Synthesis on the EPS," Issue #60).

With these and other variations on this principle it should be theoretically possible to build any sound from the ground up. However, as with any form of true synthesis, the work involved in painstakingly cloning acoustic sounds is beyond the capacity of sane people and is, furthermore, perverse in my opinion. No matter how good your horn sound is, unless it's coming from a horn you are not a horn player, period. I see techniques like this as bringing the EPS a little closer to its rightful place as a great synthesizer and not just a fancy tape recorder. ■

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## SEQUENCES

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# 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. Requests for particular patches are also very welcome.

## ESQ Patch: MY PAD

by Steve Munro, Guilderland Center, NY

This is a fairly versatile electric keyboard patch that can be played soft and mellow or loud and bright. It sounds pretty good on its own, and really adds depth to another sound when layered. The filter is modulated by **VELOCITY**, so soft keystrokes yield a mellow sound while playing hard gives a brighter and louder sound. **LFO 2** pans the sound back and forth. The **WHEEL** also modulates the filter, so push the wheel forward to open it up; this can come in handy during a loud chorus, or during a solo.

**The Hack:** There's no witchcraft in this patch—it's just straight-ahead tasteful programming of a simple sound. The velocity control of the filter in addition to the volume makes the sound very expressive. If you're an SQ-80 user, you could program in a pressure-controlled vibrato for more expression, using **LFO 1** or **3**. Alternately, you could use the aftertouch to open the filter in place of the mod wheel.

To get a flanging effect, set the **FINE** tuning of **OSC 3** to 01. To get a heavy chorus effect, tune **OSC 3** to **OCT=-2**, **SEMI=11**,

**FINE=29**. And for some timbral variations, try using **BELL**, **SINE**, **SQUARE**, and **SQR 2** as substitute waveforms (use the same waveform for all three oscillators).

## SQ-80 Patch: FUNORG

by Jack Stephen Tolin, Quincy, MA

Here is a digitally synthesized SQ-80 simulation of a digitally synthesized organ. With only a light touch, you get a **BIG** organ sound. Slam those keys and hear that high-end soar! You also get vibrato when you turn the mod wheel and clearer stereo separation when you press down. The **CV** pedal also gives a neat mood effect caused by **LFO 3** modulating the filter.

**The Hack:** Jack has started with a big "baseball game" organ, and added lots of expressive controller routings. The **CV** pedal effect is especially nice. I wasn't thrilled with the vibrato settings, however—it seemed too slow and wobbly. Turning the **FREQUENCY** of **LFO 1** up to 25 or 26 works better, with the mod wheel only halfway on. But if I didn't have a **CV** pedal, I'd swap the modulators of **LFOs 1** and **3**, ditching the vibrato in favor of the filter "mood effect." Try turning on the **SYNC** and the **AM** (**MODES** page) for some interesting non-organ (inorganic?) variations. This patch ports straight into an **ESQ**; just ignore the extra letters in the envelope parameters.



**Bio:** Sam Mims is a studio session player and programmer in Los Angeles, and is keyboardist for Richard Elliot. He owns Syntaur Productions, a company that produces music and markets synth sounds.

ESQ-1 PROG: MY PAD								BY: STEVE MUNRO									
	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH									
OSC 1	-1	0	0	SAW	OFF	-	OFF	-									
OSC 2	-1	0	3	SAW	OFF	-	OFF	-									
OSC 3	-1	0	0	SAW	OFF	-	OFF	-									
	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH											
DCA 1	63	ON	OFF	-	OFF	-											
DCA 2	63	ON	OFF	-	OFF	-											
DCA 3	63	ON	OFF	-	OFF	-											
	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH										
FILTER	20	S	10	VEL	+63	WHEEL	+63										
	FINAL VOL	PAN	PAN MOD	DEPTH													
DCA 4	63	8	LFO2	+63													
	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD									
LFO 1	-	-	-	-	-	-	-	-									
LFO 2	12	OFF	OFF	TRI	63	0	0	OFF									
LFO 3	-	-	-	-	-	-	-	-									
	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK							
ENV 1	-	-	-	-	-	-	-	-	-	-							
ENV 2	-	-	-	-	-	-	-	-	-	-							
ENV 3	-	-	-	-	-	-	-	-	-	-							
ENV 4	+63	+50	0	35	63	0	35	63	25	15							
	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC									
MODES	OFF	OFF	OFF	0	OFF	OFF	ON	OFF									
	SPLIT/LAYER	S/L PRG	LAYER	L PRG	SPLIT	S PRG	SPLIT KEY										
	OFF	-	OFF	-	OFF	-	-										

SQ-80 PROG: FUNORG								BY: JACK STEPHEN TOLIN									
	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH									
OSC 1	0	0	3	OCT+5	LFO1	+2	OFF	-									
OSC 2	-1	0	0	4OCTS	LFO1	+2	OFF	-									
OSC 3	+1	11	29	SAW	LFO1	+2	OFF	-									
	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH											
DCA 1	33	ON	ENV1	+63	OFF	-											
DCA 2	58	ON	ENV2	+63	OFF	-											
DCA 3	0	ON	ENV2	+63	VEL	+63											
	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH										
FILTER	0	18	63	ENV3	+63	LFO3	-63										
	FINAL VOL	PAN	PAN MOD	DEPTH													
DCA 4	63	8	LFO2	+63													
	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD									
LFO 1	20	OFF	ON	TRI	0	0	0	WHEEL									
LFO 2	12	OFF	OFF	TRI	63	0	63	PRESS									
LFO 3	5	ON	ON	TRI	0	0	0	PEDAL									
	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK							
ENV 1	+63	+63	+48	26L	0	0	11	55	29R	1							
ENV 2	+63	+58	+53	23X	0	0	38	43	29R	0							
ENV 3	+45	+25	-6	30X	22	0	29	55	27R	15							
ENV 4	+63	+63	+63	29L	63	0	0	0	33R	9							
	SYNC	AM	MONO	GLIDE	VC	ENV	OSC	CYC									
MODES	OFF	OFF	OFF	0	OFF	OFF	ON	OFF									
	SPLIT/LAYER	S/L PRG	LAYER	L PRG	SPLIT	S PRG	SPLIT KEY										
	OFF	-	OFF	-	OFF	-	-										

# VFX Hackerpatch

## VFX Prog: SAMS PIANO, By: SAM MIMS

**NOTES:** This is an acoustic piano patch that I developed when I didn't find one I liked in the VFX factory programs. Several people who have heard it encouraged me to publish it, as they also felt the need for a better piano. The VFX piano samples have a very rich and wonderful lower range, but suffer in the upper register, and fare even worse in the middle of the keyboard. My approach was to make up a piano of two components, one which served the low end well (Voice 2), and a second component which added the necessary punch to the high end (Voice 5). An earlier version actually added a third component which helped out the midrange a bit, but this was later abandoned in the inter-

WAVES	1	2	3	4	5	6
Wave	Grnd Pno	Grnd Pno	Grnd Pno	Gtr Harmo	Grnd Pno	DPno-Tine
Wave Class	0	0	0	0	0	0
Delay	Forward	Forward	Forward	Forward	Forward	
Start	44	44	0	44	0	
Vel Start Mod	-46	-46	0	-46	0	

MOD MIXER	1	2	3	4	5	6
SRC-1						
SRC-2						
SRC-2 Scale						
Shape						

PITCH	1	2	3	4	5	6
Octave	-1	0	0	0	0	0
Semitone	0	0	-7	0	+5	0
Fine	0	0	-28	-2	-28	+2
Pitch Table	System	System	System	System	System	System

PITCH MODS	1	2	3	4	5	6
MODSRC	Off	Off	Wheel	LFO	Wheel	LFO
MODAMT	0	0	+16	0	+16	0
Glide	None	None	None	None	None	None
ENV1	0	0	-29	0	-29	0
LFO1	0	0	0	0	0	0

FILTER 1	1	2	3	4	5	6
Mode	2 LP	2 LP	3 LP	2 LP	3 LP	2 LP
Cutoff	10	10	21	2	21	2
KBD	+4	+4	+60	0	+20	0
MODSRC	Veloc	Veloc	Veloc	Veloc	Veloc	Veloc
MODAMT	+13	+13	0	+13	0	+13
ENV2	+75	+75	+68	+75	+68	+75

FILTER 2	1	2	3	4	5	6
Mode	2 HP	2 HP	1 HP	2 HP	1 HP	2 HP
Cutoff	0	0	63	0	63	0
KBD	0	0	0	0	0	0
MODSRC	Timbr	Timbr	LFO	LFO	LFO	LFO
MODAMT	+99	+99	0	0	0	0
ENV2	0	0	0	0	0	0

OUTPUT	1	2	3	4	5	6
VOL	74	74	74	74	74	74
MODSRC	Off	Off	Off	Off	Off	Off
MODAMT	0	0	0	0	0	0
KBD Scale	0	0	0	0	0	0
LO/Hi Key	D5/C7	D5/C7	D5/C7	D5/C7	D5/C7	D5/C7
Dest Bus	FX1	FX1	Dry	FX1	Dry	FX1
Pan	50	50	50	50	50	50
MODSRC	Keybd	Keybd	Keybd	Keybd	Keybd	Keybd
MODAMT	+20	+20	+20	+20	+20	+20
Pre-Gain	On	On	On	On	On	On
Voice Prior	Medium	Medium	Low	Medium	Low	Medium
Vel Thresh	0	0	0	0	0	0

LFO	1	2	3	4	5	6
Rate	35	35	35	35	35	35
MODSRC	Off	Off	Off	Off	Off	Off
MODAMT	0	0	0	0	0	0
Level	0	0	0	0	0	0
MODSRC	Wheel	Wheel	Wheel	Wheel	Wheel	Wheel
Delay	0	0	0	0	0	0
Waveshape	Triangle	Triangle	Triangle	Triangle	Triangle	Triangle
Restart	Off	Off	Off	Off	Off	Off
Noise SRC RT						

est of greater polyphony. The trick to Voice 5's high end (it helps out in the mids as well) is raising the multisampled GRAND-PNO wave by modulating it upward with ENV 1, so that it plays beyond the range of its normal split points. Another trick to getting the piano sound richer was adding a hint of chorusing. For slight detuning, add in a bit of the mod wheel. The 'O' patch select simply drops the whole piano an octave. The 'O' select plays a fairly standard electric piano sound, and the '\*' select combines acoustic and electric pianos. - Sam Mims

### SELECT VOICE

00	1	2	3	4	5	6
0*	1	2	3	4	5	6
*0	1	2	3	4	5	6
**	1	2	3	4	5	6

ENV1	1	2	3	4	5	6
Initial			255		255	
Peak			99		99	
Break 1			99		99	
Break 2			99		99	
Sustain			0		0	
Attack			99		99	
Decay 1			99		99	
Decay 2			99		99	
Decay 3			99		99	
Release			99		99	
KBD Track			0		0	
Vel Curve			Convex 2		Convex 2	
Mode			Normal		Normal	
Vel-Level			0		0	
Vel-Attack			0		0	

ENV2	1	2	3	4	5	6
Initial	99	99	99	99	99	99
Peak	99	99	79	99	79	99
Break 1	49	49	49	49	49	49
Break 2	30	30	30	30	30	30
Sustain	0	0	0	0	0	0
Attack	0	0	34	0	34	0
Decay 1	66	66	66	66	66	66
Decay 2	58	58	58	58	58	58
Decay 3	72	72	72	72	72	72
Release	52	52	52	52	52	52
KBD Track	0	0	0	0	0	0
Vel Curve	Conv2	Conv2	Conv2	Conv2	Conv2	Conv2
Mode	Normal	Normal	Normal	Normal	Normal	Normal
Vel-Level	44	44	44	44	44	44
Vel-Attack	0	0	0	0	0	0

ENV3	1	2	3	4	5	6
Initial	99	99	99	99	99	99
Peak	99	99	99	99	99	99
Break 1	75	75	75	75	75	75
Break 2	56	56	56	56	56	56
Sustain	0	0	0	0	0	0
Attack	0	0	0	0	0	0
Decay 1	45	45	45	45	45	45
Decay 2	60	60	60	60	60	60
Decay 3	80	80	80	80	80	80
Release	36	36	36	36	36	36
KBD Track	28	28	28	28	28	28
Vel Curve	Conv1	Conv1	Conv1	Conv1	Conv1	Conv1
Mode	Normal	Normal	Normal	Normal	Normal	Normal
Vel-Level	17	17	17	17	17	17
Vel-Attack	0	0	0	0	0	0

### PGM CONTROL

Pitch Table	Off
Bend Range	0
Delay	x4
Restrike	18
Glide Time	0

### EFFECTS (1)

Effect	Chorus & Revb2
Decay	41
FX1 Mix	39
FX2 Mix	25

### EFFECTS (2)

Rate	20
Depth	6
Delay	15
Rate Mod	+8
Depth Mod	0
Mix	50

### EFFECTS (3)

Waveshape	Sine
Mod Scr	Mod Pedal
HF Cut	Off

### PERFORMANCE

Timbre	0
Release	0

# 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. Resident answer-man is Clark Salisbury (CS).

Dear Mr. Salisbury:

You've asked us Hackers for a procedure to outline the quantizing problem in the EPS using OS 2.4 - and here it is.

First, when defining a new sequence (setting its length) whichever track you use will always quantize correctly, no matter how many times you redo it. It is only on subsequent tracks that the problem occurs.

Second, the last note event in a track if moved forward in time (i.e., played late) will quantize correctly. Only notes that get played early get placed on the last clock tick of the sequence.

To demonstrate:

1) Define a sequence length of one bar using the Inst. in track 1. You can use the default sequence or create a new one and leave the meter at 4/4.

2) Having just a down beat on track 1, switch to track 2, set the tempo to about 60 bpm, turn the COUNTOFF to OFF and set the CLICK for 1/8 notes.

3) Having 8 clicks for the sequence, use the first four to count to yourself and play one note on click 5. (Bar 1, beat 3, ticks 0)

Using the EVENT EDIT TRACK function you can tell if your note was played before or after the beat. Quantize the track to 1/4 notes and, as I've said before, if the note was late it will quantize on time, but if it was early it will wind up on bar 1, beat 4, tick 47.

You can also take a perfectly quantized note and move it up about 3 clicks in the EVENT editor, quantize it again and it, too, will push all the way back to 1.4.47. Rolled chords usually quantize all right so long as at least one note of the chord winds up past the desired quantize interval. But try this: Take a quantized chord on 1.3.00 (this must be the last event in the track) and using the EVENT editor, move just one note up 3 ticks. When you re-quantize the track, all the notes of the chord will wind up on 1.4.47.

Hope this info helps you to help us.

Jon Gaiser  
Mesa, AZ

*[CS - I've tried to duplicate your results, but with no success, I'm afraid. On my rig*

*(EPS with 2x and SCSI), quantize operations all seem to be performing as advertised. Weird, huh? The only thing that's a bit strange is that during the course of experimentation, I found myself viewing some 1/8 notes in the event editor. The notes in question were playing back OK, but in the event editor they were showing up as 1/4 notes - in other words, some notes which I expected to see appear on measure 1, beat 2, clock 24, for example, would show up on measure 1 beat 2 clock 0. To double check what was going on, I tried moving the event editor one click at a time. Moving through the data in this way displayed the notes on the proper beat and clock, oddly enough. When I next scrolled through the data on a note-by-note basis (note name underlined in the event editor), the notes showed up in their proper places. Unfortunately, I have yet to be able to repeat this result. Oh well.]*

*[TH - Maybe enough readers will try this so we can figure out if there's some common factor.]*

Dear Hacker,

Is there any way to stop the EPS from sending MIDI program changes when you load a "MIDI instrument"? I'm using Vision to send program setups to my various tone and EFX modules. If after doing the above, I load and use a "MIDI instrument" on the EPS, it changes its corresponding MIDI channel's program number, thus the selected program.

I have found a work-around using a small in line MIDI filter (Pocket Filter). At \$80 it does the job but this seems like something the EPS should do.

Joe Shepard  
Coal Creek Canyon, CO  
[71640,2762]

*[CS - Unfortunately, there's no way to disable the program change from sending when you select a MIDI instrument. (It does not automatically change when the instrument is loaded - just when the instrument is selected.) It's tough to make any recommendations without knowing more about your setup, but my guess, based on what you say, is that you are having difficulties in a live performance situation. Have you thought about the possibility of leaving the EPS set to "Transmit on=Base Channel"? You would not have to activate an EPS instrument to send MIDI data from the keyboard, and you*

*could let Vision handle all the setup data (I believe Vision allows you to load instrument maps right along with sequence files). If you need to play an instrument from the EPS, go ahead and load it, but don't select it. You can route your MIDI data from the EPS MIDI out back to its MIDI in, using Vision to control transpositions, multi-channel, multi-instrument setups, and so on.]*

Dear TH,

Just a really quick hint that I discovered. I was unable to use Midicaster on my **Mirage** to back up my Yamaha RX-5. I discovered by accident that running the RX-5 SysEx through my Anatek Pocket Merge first fixed the problem. No idea why, but it might help with other devices if someone is having a problem. (Note: running "THRU" my VFX didn't help, only the Pocket Merge.)

Johnny Klonaris  
CompuServe: 75036,1351  
Internet: johnny%hpda@hplabs.hp.com

Dear TH,

Some questions for Ensoniq about the EPS:

1) Will there be a back-up and a restore function in O.S. 2.5 or is copy/back-up/restore only one function?

2) Many people have the 2X or 4X expansion. Isn't it possible to do the copying in 1 time? (Thanks anyway for the copy function; it's a great help.)

3) About the filter: I realize that your kind of filtering has more possibilities, but it is very complex in using. (Maybe TH could explain how to use the filter.) And I don't understand why you don't use a resonance. I'd rather see a filter like the S-770 which has almost the same possibilities but is easier to use, self-oscillating and has resonance. Is this possible (hard or software) and will it be done?

4) Is it possible to integrate an onboard digital effects like in the VFX because the effects are one of the elements that make the original sound better than the sampled version?

Of course, I have an external effect (DIGITAL DSP 128), but isn't it a waste to go from analog to digital and then back to analog? Again, is it possible to do this and





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will it be done?

Thanks for the time; keep on doing the good work.

Sincerely,  
Patrick Voes  
Hoeselt, Belgium

*[Ensoniq - 1) Copy/back-up/restore are all planned to be integrated. We released the copy function in O.S. 2.4 since it was ready at that time. When 2.5 is ready it will have the other missing functions.*

*2) In the current implementation you can do the copying in one pass if you have sufficient memory. In a 4X expanded machine you certainly can copy any file in a single pass.*

*3) No, the digital filter structure used in our products trade off resonance for multi-mode capability with independent tracking. This approach is more useful for simulating acoustic timbral changes. Also, the sound of resonance can be created through appropriate waveforms (as we do in the Transwaves, found in our VFX and SQ-1 synthesizers).*

*4) Your request couldn't have come at a better time - see our announcement of the EPS-16 PLUS at the beginning of this*

*issue. The current EPS cannot have effects integrated into it. At the time the EPS chip (DOC II) was designed, the standards didn't exist for direct digital communication between audio devices. The EPS-16 PLUS uses our latest generation sound chip which has digital outputs that can communicate directly with our ESP effects chip.]*

Hello Hatchets,

I love my new EPS (Serial #23563) and we're getting along fine. It sure beats my old Akai X-7000 (Those QUICKDISKS are a golden pain in the posterior region.)

I use my EPS/4X with a Roland D-20, and MIDI communications are hunkydory (so far), but I need to get a better grasp of MIDI utilization between the two units. With two sequencers (well, okay, one and a half), the potential is super.

Most of my song library is utilized through the D-20 (in Multi-timbral Mode, sequenced), and I've got both units MIDI'd IN/OUT. I've been "flip-flopping" between the two units "sequence-wise" and it takes a lot of load time due to the D-20's sluggish hardware.

Using the SYSEX in the EPS seems futile;

the D-20 sends system exclusives in the form of sound, rhythm, or ALL. No wavesample dumps, no sequence dumps. I could record everything on the EPS track by track and I have done this to certain sequences.

What I need to know is how to implement MIDI SONG SELECT, shortcuts on using both sequencers combined and, in general, all the info you can provide. You people have a great forum, and I'm proud to be a part of it.

Or, if anyone's interested, trade an SQ-1 for my D-20 (Hal). That ought to improve MIDI communication 100%! Oh - by the way, David Merrill's tips in #58 helped me immensely. My custom drum kit is great.

Alan Goldberg's article in #60 really hit home with me. Three years ago, I had an accident that set me back quite a bit. I've been doing exactly what he wrote on a regular basis to keep my chops and ideas flowing smoothly.

Before I go, I need to address you whiners out there. ANY piece of hardware you buy can give you problems, especially if it's a new segment. Research your potential purchases thoroughly before laying down the cash. And J. P. from Long Beach, your whimpering in #60 really killed me. Once

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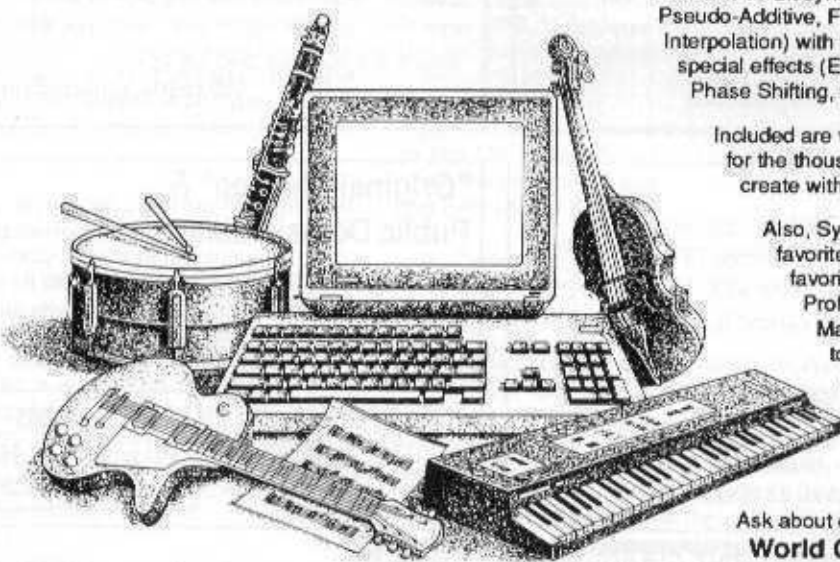
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again - no research, no dice. Quit wasting the Hacker's time so folks like this "dayglo dago" can get some helpful information.

Keep chopping--  
Darel Peter Santucci  
Virginia Beach, VA

[CS - Thanks for the kind words, Darel.

MIDI Song Select is generally used to allow a host device to tell a slave device which song to cue up next. One example is of using a sequencer designated to handle keyboard parts with a drum machine designated to handle the drum stuff. Selecting a song on the sequencer can send a message to the drum machine telling it which song has been selected, so that it will play the appropriate part when the whole shebang is started up. Usually, though, all the MIDI data for the songs and the drum parts must be resident in memory for this to work, so unless you have multiple songs loaded into both your EPS and your D-20, I don't think that song select will be of much use to you.

As for other tips regarding the D-20/EPS connection, we just don't have too many D-20 experts hanging out here at TH Galactic headquarters. But if any of you readers have tips, we'd be happy to publish your letters, or maybe even an article.]

[TH - We too would like to see the info/whimpering ratio in the Interface go up. It seems like it's really improved the last few issues. Now if the hold-down-the-whining letters would just start to drop off...]

Dear TH,

Is it true that we EPS-I owners won't be able to upgrade to EPS-II? I've got the 8-output expander, a mixer, and a Midiverb, but it would be nice to have it on board and "bank"able.

Also, I have trouble with instruments with non-center pan components which are routed to the stereo outputs coming through on one or more of the 8-track outputs. Is there a fix or is this just the way it works?

I'd like to announce myself as an EPS point-of-contact for the Albuquerque, NM area. T.H. is welcome to print my name, address, and phone as an amateur user/regional coordinator.

TH is a terrific service. Many, many thanks!

Very truly yours,  
Jonathan Hull  
8640 Horacio Place NE  
Albuquerque, NM 87111  
(505) 296-9215

(505) 844-2723

[CS - You should not be experiencing leakage into your OEX-8. I'd suggest you get in touch with your service center, or contact Ensoniq service directly at 215-647-3930.]

[Ensoniq - Wow, word travels fast!]

It is not possible to upgrade from a current EPS to the EPS-16 PLUS. Although they appear and function similarly, the circuitry is completely different inside. You would need to replace your power supply, main board, disk drive and case to "upgrade." When the EPS was designed (nearly 4 years ago), built-in digital effects were not available and the unit was just not designed to accommodate them.]

Dear Hacker,

I have recently purchased an EPS for use in my eight track studio. Upon trying to record my first sequenced song on my Fostex E-8 tape deck with Dolby C, I was plagued with what appeared to be extreme compression, loss of low level instruments and ghosting when the EPS tracks were played back. As I have never experienced this problem recording any other brand of keyboard, I figured my E-8 had a major

failure in the Dolby system. After numerous calls to Fostex and several audio technicians, all of whom had never heard of such a problem, I finally called Ensoniq.

The technician told me that yes, they knew of the problem and that it was caused by ultrasonic frequencies that the EPS transmits that fools Dolby systems. He said it is because the EPS has no internal low-pass filters.

I was told that the only way to overcome this problem was to get some brick wall filters to run in line between the EPS and my mixing console. Well, after many, many long distance phone calls, I am unable to find any company that makes these filters. They all suggested I buy crossovers or mega dollar EQs that have these filters internally. All I want to do is record my EPS! Next, they tell me to have an electronics engineer build some filters for me. Being a "specialty item," they tell me it will cost \$200 to \$300 each to have them custom made. When I get the output expander for the EPS, I'll have to mortgage the house just to get enough filters!

What I need to know is, are there any companies who could supply these filters, or is there anything else I can do to over-

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come this problem without going broke in the process?

Thank you,  
Fred Weber  
Pigeon Forge, TN

*[Ensoniq - Almost any hi-cut filter can be used to reduce the unwanted supersonic frequencies. The highest band on a graphic EQ is a simple solution. It is common to use simple output filters on lower cost audio equipment. There may be some variance in the Dolby circuitry of different manufacturers, but generally it is incumbent on the input device to prevent unwanted frequencies from causing problems.]*

*The EPS is not the only sound source that could cause this problem, any miked sound source with a lot of high frequencies (crotales, or strong cymbals for instance) might have the same effect.]*

*[TH - We certainly agree that spending \$200 to \$300 a pop just to get some engineer to kill some high frequencies would be nuts.]*

Dear Hacker,

Ditto on what Michael Mortilla said about the Hacker in the August Interface. I sub-

scribe to several music/technology magazines (I know - I just admitted to heresy), and despite the gloss of the others, this is the ONLY one I read from cover to cover EVERY month. Keep it up.

Now a note to Ensoniq: We begged. We pleaded. We nagged. We whined. But, despite our united hacker tantrum, you said no. No VFX rack mount. No, no, no. Begrudgingly, we bit our lips and accepted it because we had no choice.

Now you release the SQ-1, a synth so similar in sound to the VFX that they could be twins (fraternal), and one month later you announced that a rack mount version will be available? What gives? All the kvetching in the world, and you would not budge on a VFX rack mount. But, without the slightest provocation from your loyal hackers, you release a rack version of the SQ-1? I'm a little confused. Did the collective clamor over the lack of a VFX rack actually influence the powers that be for future reference? Or do you simply derive pleasure from depriving us of our God-given right to nag?

Whatever the case, the SQ-1 is an incredible piece of equipment and by far, the most powerful workstation in its price range (just like every other workstation you've ever made). I hope to be adding one to our studio (rack mount version, of course) as soon as possible.

P.S. All kidding aside, Ensoniq is probably the one company who does listen to us as individuals and as a whole. Keep up the great work!

Begrudgingly yours,  
Erech Swanston  
Maestro Sounds

*[CS - Nagging is not a God-given right. Whining is.]*

*[Ensoniq - You actually miss the point. We created the SQ-R specifically because of all the "clamor" about a VFX rack. While there really have not been that many people who requested it (but they sure are a loud minority) we listened. We still maintain that a rack of the VFX, which would cost around \$1700, would not sell well enough to be worth the effort. By costing down that item as an SQ-R we have been able to give you a great-sounding Dynamic Component Synthesis module (complete with Transwaves, 24-bit dynamic effects and almost the complete VFX voice architecture) for only \$1195.]*

Dear Ensoniq,

You know what I'd really like to buy from you guys is a combination EPS/VFX with 100 voices, 100 voice multi-effects,

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Please let me know as soon as it's ready.

Thanks  
Douglas Alemanne  
Los Angeles, CA

[CS - Yeah - and I'd pay a little extra for a spell checker and a drink holder.]

[TH - And let's have it print out patches ready for publication while we're at it.]

Dear TH,

I own an IVM Megabank with apparent brain damage. Do you know of anyone who can supply me with repair info? I'm a fair tech, but I don't fly blind.

Secondly, in all the letters I've read in the past 3 years, I don't remember any mention of the use of line conditioners. Would anyone run their PC without spike protection, etc.? Perhaps we need to get the word out.

Keep up the good work.  
Dennis Hoffer  
70353 Elkhart Road  
Edwardsburg, MI 49112

[TH - Anyone with the IVM info please contact Dennis directly at the above address.]

Dear Sir or Madam,

My EPS quite often tells me "Disk not responding." What, if any, are some common user quirks that would cause such a response?

Thanks for your patience.  
John Campbell  
Dartmouth, N.S., Canada

[CS - John, you don't say if you're using a hard disk or not. You should not get this message using a floppy drive. If this is the case, it's time to call service. If you are using a hard drive, check to make sure you are using the current OS (2.4), and that your SCSI cable is not overly long - long, shielded SCSI cables can cause problems. If you need to use a long SCSI cable, Ensoniq recommends using the non-shielded ribbon-type, such as the Radio Shack #26-1398, or to use a 25-pin external termination at the EPS, such as

that offered by Integrated Media Systems, 1370 Willow Rd. Suite 201, Menlo Park, CA, 94025 - part #5011690-01. Also, make sure your hard drive has a termination (most do).]

Dear TH,

In a recent letter, Mark Lyth asks why you haven't reviewed my ESQ-1 or SQ-80 sounds. For those readers who, like Mark, would like to see my sounds reviewed more, I should apologize. It is my own decision not to seek reviews generally. I have even turned down requests from magazines who wanted to review my sounds, including at least two who, during the same phone call, asked me to run ads in their publication.

Part of the problem is that synthesizers have been in existence for nearly thirty years, but they have exploded into general use only in the last five or six. This means that real experts are scarce and most of those are busily involved in design, production, or professional use, and have little enough time even to keep up with new developments. Who has time to write patch reviews? Clark Salisbury, for example, responding to Mark's letter, mentions several companies advertising



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Pipe Organ 4 & 5  
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Classic Hammond 35  
"M1" Hammond B3  
Puffin Organ  
Accordion 1 & 2  
New Organ  
Solo & Duo Bass  
Solo Vocals & Moans 1 - 16 vocals  
Solo Vocals & Moans 2 - no vocals  
String Sadder 1  
String Sadder 2  
String Sadder 3  
String Sadder 4  
String Sadder 5  
String Sadder  
Piano Solo & Moans

Harp 1-4  
Harp 5 & 6  
Classical Guitars 1 & 2  
Steel String Guitars 1 & 2  
Jazz Guitar & Acoustic Bass  
Mandolin, Koto & 12-String Guitar  
Trombone 1, 2 & 3  
Trombone 4, 5 & 6  
Midi Trumpet, Tuba & Euphonium  
Bass 1 & 2  
Classical Horns  
Bass 3 & 4  
Saxophones 1, 2 & 3  
Saxophones 4 & 5  
Bassoon & Contrabassoon  
Oboe & Clarinet  
Flute, Piccolo & Recorder  
Solo Wind  
Solo Wind 2  
French Horn  
English Horn/Oboe 3/Flute  
Bagpipe  
Baritone Horn & Euphonium  
Sax Sadders  
Bass 5 & 6  
Curtain 1 & 2 - Studio 40/Reed  
Curtain 3 & 4 - Garage Kit/Power Kit  
Drum Kit 5 & 6 - Live Kit 1, Live Kit 2  
Drum Kit 7 & 8 - Live Kit 3, Live Kit 4  
Drum Kit 9 & 10 - Electronic/Synth Kit  
Linn Percussion 1

John Percussion 2  
Solo Percussion 1  
Solo Percussion 2  
Assorted Kicks  
Assorted Snare  
Assorted Tom  
Assorted Cymbals & Gong  
Assorted Hi-hat  
Assorted Gongs  
Acoustic Snare  
Acoustic Tom  
Acoustic Hi-hat  
Acoustic Cymbals 1 - 8  
Acoustic Cymbals 9 - 16  
Jazz Piano Percussion 1  
Jazz Piano Percussion 2  
Perc Percussion 1  
Perc Percussion 2  
BCE Kit  
EGE 903000 Gls  
SGE 903000 Gls  
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Sequentia Studio 40 Kit 1  
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Maracas & Gourds  
Vibes  
Xylophone  
Mallets & Steel Drums  
Glockenspiel & Bells  
Bells 2  
Tambourine & Maracas  
Tambourine Finger Cymbals & Bells  
Tambourine  
Sound Effects 1 - Connected Animals  
Sound Effects 2 - Wild Animals  
Sound Effects 3 - Cannon FX  
Sound Effects 4 - Car FX One  
Sound Effects 5 - Car FX Two  
Sound Effects 6 - Transportal FX  
Sound Effects 7 - X-Factor  
Sound Effects 8 - Military and War FX  
Sound Effects 9 - Household FX  
Sound Effects 10 - Industrial FX  
Jangle 1 Soundtrack  
Jangle 2 Soundtrack  
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Jangle 100 Soundtrack

Overhorn 1 - March 6-9  
Overhorn 4 - March 12  
MirMOOG - 1  
MirMOOG - 2  
MirMOOG - 3  
Jangle 8  
Super JAWS 70  
Jangle 101  
Phonix 10 - 1  
Phonix 10 - 2  
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Electric Guitar 7 & 8 - Jazz  
Electric Guitar 9 & 10 - Funk  
Theater SFX  
Synth Hit 1  
Synth Soundtrack 1  
Synth Soundtrack 2  
Synth Soundtrack 3  
Synth Soundtrack 4  
Chestnut Hit 1  
Chestnut Hit 2  
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SQ-80 sounds. What he fails to say is that all the companies he mentions are only selling ESQ-1 sounds on SQ-80 disk. None of these sounds were programmed on an SQ-80, or take advantage of the additional 40+ SQ-80 waveforms. My entire SQ-80 library does.

I myself just don't have as much time to pursue such matters as I did when I was just starting up, and I have to admit I don't have much respect for the opinions of the reviewers, preferring to make an effort to please myself and my customers instead. On the other hand this is what most artists say. I haven't sent any patches in to Hackerpatch for a long time either, for which I also apologize. I do write letters frequently about important matters such as copyright infringement. I have obtained copyright certificates for my sounds, and I and several other developers are preparing a lawsuit against another "developer," for those who have been following this story. Transoniq Hacker has, incidentally, taken the rather courageous stand of refusing to run ads from this company, thus protecting their readers from fraud. We have extensive evidence and expect to put them out of business shortly.

Sincerely,  
Nick Longo  
Cesium Sound  
Berkeley, CA

[TH - We should note that we, like most other magazines, don't rely SOLELY on developers requesting reviews and submitting products. If we want to review something (and we have space for it) we will. We appreciate your hazzahs regarding refusing ads (which we sometimes do), but we suspect that the "developer" you're referring to has been absent from these pages for the simple reason that we haven't received any ads from them! We asked several developers to send us any evidence of plagiarism - otherwise we'd just be in the position of refusing ads based on say-so. (Which could easily get ugly.) Nobody did.]

[CS - My response to Mark Lyth's letter was meant only to give him some ideas about where to look for patches - it was not meant as an endorsement or review of any company's product.

Most people (myself included) rely at least in part on product reviews when it comes time to make a buying decision. Most companies that I have had dealings with (my own included) welcome reviews of their products. From my point of view, a review can not only help to spread the word about a good product, an ambivalent or negative review can help to point the way towards product improvements.

Perhaps I'm just a bit sensitive, since I've

done product reviews myself. But I think that each customer for a product really does his own review of that product. I think that when that customer takes the time to organize and write down his thoughts for publication, he should be given a little extra respect - especially those who write for the Hacker. More often than not, they are sharing their thoughts because of a genuine love for music and Ensoniq products and because of a feeling of connection with other Hacker readers. They certainly don't do it to become rich or famous. Whether or not you agree with what they say, the fact remains that they've put in a bit of extra effort for all of us "end users." To write them off, for whatever reason, is unfair.]

Dear Hacker,

I'd like to direct a question to Craig Anderson regarding his article "The Ultimate Bitchin' EPS Drum Set" in the August '90 issue:

Dear Craig c/o TH,

I also use Alchemy/Macintosh for editing my EPS samples. Therefore, I'm especially interested to know the reason you selected individual half-cycles of the sample for scaling to maximum amplitude (paragraph eight of your article) as opposed to full cycles or the entire first "50 milliseconds or so" of the sound file. What would the differences be?

It also seems like not every half-cycle in Figure 1, page 2 was scaled or fully scaled?? Does this depend on exactly what constitutes a half-cycle? I'm under the impression that a half-cycle begins each time the waveform crosses the zero amplitude axis marker.

Also, here are two more semi-related questions: 1. Do you or have you had any success with sampling into the Macintosh first via Digidesign's A/D converter-sound accelerator and then porting the sound files over to the EPS via Alchemy? 2. Do sound files from other 16-bit machines transfer well to the EPS via Alchemy?

P.S. I purchased you Signature Series samples and really enjoy them. I'm amazed at how memory efficient they are while still not sacrificing any quality. Perhaps in a future article (or is there an old one I missed?) you would be generous enough to share some of your memory conserving secrets as well as some more innovative sampling tips.

P.P.S. Are you aware of any graphic EPS parameter editing (as opposed to sample editing like Alchemy) software being developed for the Mac?

Thanks,  
Jim Piekarski  
Denton, Texas

[Craig Anderton responds — It is necessary to select individual half cycles (or full cycles) with any signal that attacks or decays over time. This is because scaling will multiply all levels by a constant amount, so if you select a group of cycles for scaling, they will be multiplied by the amount that will bring only the highest waveform peak up to the maximum level. If the group of cycles is decaying, then successively softer cycles would need to be multiplied by a greater amount in order to reach the maximum available level, which scaling does not do.

Concerning how to determine where a half-cycle begins and ends, that is very easy with something like a sine wave but a waveform containing a significant amount of unpitched energy (e.g. white noise) will be harder to analyze because a half-cycle can contain numerous zero-crossings. Fortunately, you can be pretty sloppy about where you consider a "half-cycle" to be with noise since if you're off by a little bit you won't hear any significant sonic difference. In general, look for the largest signal "bumps" to determine where half-cycles begin and end.

Regarding the semi-related questions, I have not personally used Digidesign's A/D converter but be aware that they now have a "pro" version with Apogee filters that reputedly has superb sound quality. However, I have had considerable experience with all-digital sample chains since I'm currently adapting a lot of Prosonus samples to the EPS for their ProDisk EPS library. Prosonus transfers their digitally-recorded samples into the Mac via Digidesign's DAT I/O; the files are then given a preliminary massage with Alchemy and/or Sound Designer, saved to disk, and sent to me. I then load the data into Alchemy and transfer the disk data over SCSI into the EPS for adaptation (patch selects, aftertouch assignment, layering, etc.), so everything stays in the digital domain until it leaves the EPS output. I was pretty shocked by the clarity of DDD samples; getting all the A/D stages out of the signal chain significantly increases the sample quality. When porting samples over from a 16-bit sampler, the limitation becomes the original source sample, since in digital transfers so little is lost.

About the P.S.—thanks for the compliments, I really enjoyed doing the Signature Series disks. In the course of doing the EPS ProDisk library I've come up with a bunch of memory-saving techniques and hope to write them up for the Hacker when I get some time. By the way, Ensoniq is very generous about giving lots of credit to

their sound developers but Tony Mc Anany, who coordinated the entire EPS sound library effort, is the "unsung hero" behind the scenes. If you like the Sig Series or factory disks, he should get his share of thanks as well.

Finally, I know of no graphic EPS parameter editing package for the Mac. However, I've heard rumors that Doctor T's X-Or universal editor will be available for the Mac at some point and it may be possible to develop an EPS "template" for the program.]

Dear TH,

In Issue #62 R. Shelton asked about saving Roland Juno 1 patches to the EPS. Actually, Roland has a little trick of holding down three buttons at once that works with the Juno. Hold down the Data Transfer Button, then press Write, then press Bulk Dump. The display shows "Bulk Dump MIDI .0." The ".0" at the end shows that a non-handshaking transfer is taking place. A similar trick works with a D-50 — hold down Data Transfer as you select Bulk Dump.

Also, regarding SCSI and Atari software: I have Digidesign's Sound Designer Universal communicating over MIDI to an EPS. I installed a SCSI board (Maartists) to get to the hard disk, and Sound Designer stopped working — nothing but crashes. After I removed the SCSI board everything works fine. Digidesign tells me they are aware of the problem but have no plans to update their SD Universal software. (They do plan to release a new version of Turbo Synth that will work.)

I tried this on a second EPS with the same results. A few issues back Mike Mortilla reviewed an Atari EPS editor and expressed some frustration with its performance. Did his EPS have SCSI? Comments?

Mark Rensel  
Olympia, Washington

[TH — Thanks for the Juno tip! The EPS/SCSI thing sure sounds like it would explain a lot of the problems Mike mentioned in his review (Gelva's EZE, Issue #57). The only bad part is that we checked with Mike after receiving your letter and his EPS doesn't (and didn't) have SCSI installed. Good theory though...]

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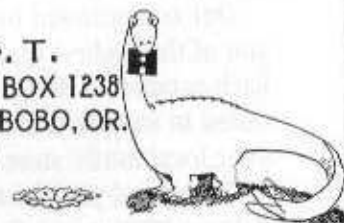
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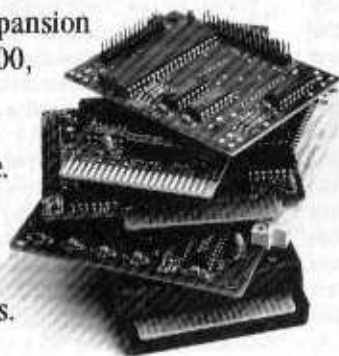


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