Transoniq Hacker

The Independent News Magazine for Ensoniq Users

SQ Modulation — The Story Continues...

Clark Salisbury

Editors can be so brutal. Take last month's column, for example.

We were right in the middle of working out an envelope for a piano-type of sound. We'd gotten all the basic settings together and we'd even discussed keyboard tracking. I had made you my most excellent promise that we'd talk about the "Mode" parameter and the next thing you know YOWWW! GRARR! ARGHGH! Column over, signing off now, g'night folks, write when you find work, a kiss is but a kiss — in short, I got edited! And I coulda been a contender. *[Ed. — Clark, you'd already run on for over two and a half pages. Somebody had to stop you.]*

Oh well, happens to the best of us, I suppose. And there is some small solace in that this current rant still counts toward my total word count for this month's article and since I'm paid by the word I suppose there is some justice after all.

But I suppose I've milked this one out enough. What this means to you, though, is that the following article was meant to be part of last month's article. Since I'm planning on just picking up right where we left off, you may want to review last month's column before you continue on here. Then again, you may not. I get paid either way, so no skin off my proboscis.

At any rate, when we last left our hero, he had just finished revealing the mystical secrets of the wily keyboard tracking parameter and was preparing to undertake an unassisted explanation of the "Mode" parameter. If your SQ-1 happens to still be in the same condition it was in when we were so rudely interrupted last time, the SQ-1's display should be showing something like

Mode=NORMAL
KeyboardTrk=+28

If, though, you have used your SQ-1 since last month, you will need to fish last month's copy of TH out of the trash, look up my column, and repeat steps 1 through 4997 to bring yourself (not to mention your SQ-1) back into sync with this month's column. Once That's out of the way, you should be looking at the aforementioned display, accessed (as you probably know) by hitting the "Edit" button, then the "Amp" button, and then the "2" button. All set? Good. Let's (AHEM) continue.

There are three modes that an envelope can run in. So far we've been using "NORMAL" mode. Selecting the mode parameter and scrolling up once sets the mode to "FINISH." In this mode, the en-

In this issue

velope runs through its complete cycle whether you hold the keys down or not. It's sort of like having the sustain pedal stuck in the "on" position. "FINISH" mode is most often used with percussion sounds, where you want the sound to play all the way through whether you are holding the keys down or not. There are other applications as well, many of which are found in the "special effects" category.

The third mode, accessed by scrolling up one more time, is called "REPEAT" mode. Here, the envelope runs through from beginning to end in a cyclic fashion for as long as the key or sustain pedal is held down. This also has a lot of applications from the "special effects" category, but it can be pretty useful for some complex kinds of tremolo and vibrato effects, or for creating interesting filter sweeps. More about these later.

Now we're getting close to a basic piano-type of envelope. But there's still a couple of parameters we should check out.

Press the "1" button, and you'll find yourself at another page of envelope modulators — specifically, modulators that deal with velocity. The first modulator in the display is the "LevV" modulator — the "envelope level controlled by velocity" modulator. It is here that you can adjust an envelope's sensitivity to key velocity — higher values make the envelope more sensitive. Since we're dealing with the amplifier envelope here, adjustments made to this parameter will affect how the loudness of the sound will be affected by key velocity. You may want to experiment a bit with the different velocity curves available — these are accessed through the "VelCurv" parameter located at the bottom of the page, and allow you to tailor the velocity curve of the current voice. Perhaps the easiest way to get a feel for what these different curves do is to set the "LevV" parameter to an overly-high value, perhaps in the range of 53-72, then try each of the velocity curves available while playing the keyboard at different velocities. For our piano patch, I've settled on a "LevV" amount of 26, and a "CONVEX" velocity curve, but I have a fairly light touch. You may well find that some other combination of settings is more to your liking.

The final parameter on this page is the "AtckV" parameter — "attack time controlled by velocity." This has the effect of shortening time one of the envelope — "attack time" — when playing at higher velocities. The classic example of how to use this parameter is the string patch, in which notes played softly take a while to build up, and notes played harder attack more quickly. To try this parameter out, go to the first page of this envelope (hit the "0" button) and set level one to 00 and time one to some value greater than 00 — since velocity can only be used to shorten the attack time of the envelope, using a time one setting of 00 gives us no where to go — the attack time is already as short as it can get. For an example, try a value of 50 for time one. This should give you an interesting "bowed piano" effect; the piano sound swells to full volume rather than attacking percussively. Now head back to the velocity control page (hit button"1"), and set "AtckV" to a relatively high number — say, 66. Now when you play softly on the keyboard, you get the "bowed piano" effect, but as you play harder the sound becomes more percussive.

Anyway, This is what an envelope can do when it's used to control volume. Of course, envelopes can be used to control a lot of other things besides volume — pitch, tone, effects, even other modulators such as the LFO. We'll be spending a bit more time with envelopes before we move on. For now though, there's one last thing to mention, and it's perhaps one of the best features of the SQ-1's envelopes. It is this: there are preset envelopes built into the SQ-1! That's right, you don't necessarily have to go through all these machinations every time you need to set up an envelope — you simply load one of the preset envelopes, and if it's not perfectly suited to your needs, simply tweak it a teensy bit, and it'll probably fall right into place. Here's how it works:

From any of the envelope pages (in this case we're dealing with the amp envelope, remember?) press the "3" button. The display will say, "Press ENTER to select defaults." — go ahead and press enter. You can now scroll through a listing of 17 default envelopes that can be applied to your work-in-progress. For example, we could have saved a lot of time by simply scrolling to the "PIANO DECAY" envelope, and loading it by hitting the "Enter" button — but that way you wouldn't have learned anything about how envelopes work.

To try out a bunch of different envelopes, hit the "Enter" button, select the envelope you want to check out, and hit enter again. If you don't like the results, just repeat the process, selecting a different envelope to try. Of course, not all envelopes are meant for the same types of applications, so some might seem somewhat strange when tried out in the wrong context — using the "ALL ZEROS" default with the amplifier envelope results in no sound, for example. But if anything arouses your curiosity, scroll through the rest of the envelope menu pages to see what parameters went into creating that particular envelope — an opportunity to pick up a trick or two.

Also, be aware that loading one of the default envelopes replaces whatever the current envelope is. So if you've been working for three hours perfecting the envelope for your bazouki patch, save your work before loading any of the default envelopes.

Anyway, if you are reading these words, it's a good bet that this article made it into the current issue in a more-or-less complete form and you may now safely use the last two issues of the Hacker to wrap fish in. On the other hand, we'll be doing a bit more with envelopes next time, so you may want to hang onto these issues for future reference. Besides, you never know when a crazed editor with a big pair of scissors is going to ▬

Bio: Clark Salisbury is a freelance writer, consultant, sound developer, recording engineer/producer, educator, and guitarist. His latest project is as script developer and technical consultant for a series of instructional videos, many of which will feature Ensoniq products.

RND (♪♫♪)

News from Ensoniq

New Products: Ensoniq Corp is pleased to announce two new additions to the SQ family of products, the SQ-1 PLUS and SQ-2 Personal Music Studios.

The SQ-1 PLUS is an improved version of our popular SQ-1 with an additional Megabyte of 16-bit piano waveforms doubling the internal wave memory. These new sampled piano waves offer the best-sounding acoustic piano available, and address your requests for a stronger piano sound. The SQ-1 PLUS is voiced with a selection of different piano programs providing you with many styles of piano sounds and combinations. Available now, the SQ-1 PLUS has a suggested list price of $1595.00. Current SQ-1 owners can upgrade their keyboard to an SQ-1 PLUS by purchasing a new main board assembly for approximately $499.95 (including installation). Contact Ensoniq Customer Service for more information.

The SQ-2 is a 76-key version of the SQ-1 PLUS, with an all-new weighted synth action keyboard. This gives you the most inexpensive 76-key MIDI controller/piano/sequencing synthesizer available today. Available in May, the SQ-2 has a suggested retail price of $1795.00. There has been much discussion over the last few years in the Hacker about more than 61 key instruments and we were listening — enjoy!

Ensoniq Corp has developed a new top-of-the-line synthesizer, the SD-1 Music Production Synthesizer. The SD-1 combines high fidelity synthesis, 24-bit dynamic effects, a 24-track sequencer with extensive editing controls, and capable MIDI performance controls in a single integrated keyboard.

The SD-1 is a 61 key keyboard with programmable velocity and 3rd generation Poly-KeyTM Pressure response, and includes Ensoniq's exclusive Patch Select buttons for instant performance variations. It is based on Ensoniq's Dynamic Component Synthesis technology, with 3.5 Megabytes of sampled waveform ROM, including all new 16-bit piano waves, additional select solo instruments and percussion, as well as all the waveforms from the previous VFX-SD. This assures compatibility with the thousands of sounds already available from Ensoniq and many third-party companies.

The major new features of the Ensoniq SD-1 are as follows:

• Fidelity has been greatly increased with the inclusion of all-new output circuitry borrowed from the Ensoniq EPS-16 PLUS (Ensoniq reports a signal-to-noise response of 100 dB, and 96 dB dynamic range for crystal clear sound).

• All new waveforms include a Megabyte of 16-bit piano waves and various new 16-bit drums, percussion, solo violin, electric piano, slap bass, tympani and Moog bass.

• The SD-1 holds 180 internal Sound Programs and 60 Performance Presets (the VFX-SD held 120/40).

• 22 effects algorithms, including new phaser, distortion combinations, and improved reverb programs.

• A new drum program architecture, which allows up to 61 drum waves per program, with all the voice parameters that the regular SD-1 synthesis allows. This will enable drum programming that fits any other manufacturer's maps, as well as advanced pitch enveloping, filtering, and modulation of the drum waves.

The SD-1 is available now, and has a suggested list price of $2695. Current VFX-SD owners can upgrade their keyboard to the fidelity and features of the SD-1 by purchasing a new main board assembly for approximately $699.95 (including installation), contact Ensoniq Customer Service for more information.

Operating System News: The long-awaited EPS O.S. 2.5 is in the final months of beta-testing (with the copy/backup/restore function!), but in the meantime Ensoniq Customer Service does have an interim release (version 2.49) which addresses all the known sequencer, Patch Select and other bugs that have been reported. Contact Ensoniq Customer Service if you need a copy before O.S. 2.5 is officially released.

Don't forget that the ***Talking Owner's Manual*** for the VFX-SD (TOM-1) is currently available, for only $14.95. This is a very helpful getting started aid that includes a 110 minute audio tour of the VFX-SD and an accompanying disk of tutorial examples, play-along music, and sequencer templates. Ask your local dealer or contact Ensoniq Accessory department today!

News from Third-Parties

IA — Intellegence Artistians (VFX software) has moved from their Westwood Blvd. address to 11301 Olympic Blvd., Suite 405, Los Angeles, CA 90064.

Tom Shear (SQ-80 sounds) also has a new address: PO Box 271, Lyme, NH 03768.

HYPERSONIQ

NEW PRODUCTS

Interval Music Systems has introduced new editing and librarian software for Macintosh computers and the Ensoniq VFX — *VFX Ed/Lib*. VFX Ed/Lib gives you full access to all Program, Preset, Effects, and Pitch Table parameters and allows you to catalog and store thousands of sounds on floppy disks. Editing can be done either through the program's graphic interface or remotely with external MIDI controllers such as the keyboard's mod wheel and data slider. VFX Ed/Lib comes with new sounds and a free Desk Accessory PatchLoader. Suggested retail price is $139. Distributed by ThinKware (1-800-369-6191). Interval Music Systems, 12335 Santa Monica Blvd., #244, Los Angeles, CA 90025. Phone: 213-478-3956.

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39.) Percussion
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SQ-1 QUESTIONS — Pat Finnigan, 317-357-3225. 8:00 am to 10:00 pm EST.

CHANGE OF ADDRESS

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

BACK ISSUES

Back issues are $2.50 each. (Overseas: $3 each.) Issues 1-9, 11, 13-23, 27, 29, 30, 35, 36, 37, 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. Permission has been given to photocopy issues that we no longer have available - check the classifieds for people offering them. Reprints in our "Quick and Dirty Reprint Series" are available: MIRAGE OPERATIONS, for $5, and MIRAGE SAMPLE REVIEWS for $4. Each contains material from the first 17 issues.

ESQ1 Sequencer Internals Revealed –
Part 8 (The END)

Joe Slater

Hello, Goodbye! We finish (sniff) this series of articles by discussing some possible applications using the information disseminated here. We will also briefly point out the correct structure for Program data format. **Warning**: The accuracy of this information has not been confirmed by Ensoniq, so be forewarned!

Let's say that you've decided that the ESQ1 sequencer is adequate for your needs. And you have a couple of songs you've just finished stored in your ESQ1. You need to save them, so you do; using the ALL Sequence Dump function (tape or via MIDI). Oh, but don't forget to save the programs too. This includes the internal banks, and/or cartridge banks A and B, depending primarily upon the locations of the programs you used in your songs. No problem (painstaking, but no problem).

Time passes... You have since trashed the songs from your ESQ1. But you want to show off your songs to a friend of a friend of a record producer. So you load the songs, and press PLAY. Gaak! Something sounds wrong! The friend makes a funny face. You turn sheepish, realizing that the wrong programs are being used. You quickly (as possible) load the proper programs, and now all sounds as it should. The friend leaves requesting a demo tape and you smile.

Now you've got your first gig, just enough time for three songs. All you need is your ESQ1 (and the band members), loaded with three songs. So you load the two songs you saved, and this time, no fool you, you remember to load the proper programs too. There's plenty of memory left in your ESQ1 to load that one remaining song (and its programs). But the only way you know to do it is with the ALL Sequence Load function, which destroys the two songs already there. And what about loading its programs without destroying the needed programs already there? You think about it, think about it, think about it, think about it some more, and then you start to cry — or worse.

Now let's dream a little. You have a PC. You have a computer program that is an integrated ESQ1 sequencer/program librarian. It manages GIGs, SONGs, and PROGRAMs. You run it, and tell it to save a SONG. It locates the song, all the sequences used, all the programs used, and tucks it away nicely on disk. Now that you're finished with the song, it can also delete that song and all its sequences from the ESQ1, of course without disturbing any of the other songs/sequences still in your ESQ1.

Now you want to hear one of your old songs again. You tell it to load a song. It finds the song on disk, its sequences, and all the programs used. It checks that there is enough memory in the ESQ1. There is. It checks that there is enough free sequences in the ESQ1. There is. It finds that some of the programs are already loaded in the ESQ1, but the bank locations are different. If the programs only play locally, it adjusts the sequence track programs to point to the new location. But some programs must be loaded. It checks the existing sequences in the ESQ1 so as not to disturb the programs (and locations) they use. It checks all track statuses for BOTH, so that program rearranging won't disturb the MIDI Program Change number. If all is okay, it then asks you where to load the needed programs (in the permissible locations) with a quick option to just say anywhere. It does it, of course without disturbing any of the other songs/sequences already in your ESQ1. And it took care about saving any programs it replaced in the ESQ1 that wasn't already saved on disk.

While you enjoy listening to your old song, you're trying to setup for an upcoming gig. You tell it which songs are needed. You also tell it which programs you want in addition to the those used by the songs; those you play live. Then at your command, provided there are no conflicts and enough memory, it is then ready to send all songs, sequences, and programs to your ESQ1, rearranging sequence and program numbers dynamically as needed.

Yes, my friends, this is all possible, only awaiting an eager computer programmer (me?) to get busy and write the code. And the computer program could do much more (I leave the 'more' to your imagination). Well that about wraps it up for the ESQ1 sequencer...

For those interested in interpreting the data from a SEND "All Internal Programs" or "One Program" a correction needs to be made. In the back of the ESQ1 Manual, a diagram of the PCB (Program Control Block?) shows all (most) of the variable locations. First, no mention is made that the first six bytes are the six characters comprising the Program Name. Also, the Low Frequency Oscillators diagram is incorrect (the LFO Mod Source and Waveform Select). The correct diagram is as follows:

```
+----+----+----------+
| W1 | W0 | LFO Freq |
+----+----+----------+
| M3 | M2 |    L1    |
+----+----+----------+
| M1 | M0 |    L2    |
+----+----+----------+
| R  | H  |   Delay  |
+----+----+----------+
```

Before closing (again, sniff), I should mention that while the format of the ESQ1 data is the same across all versions of the ESQ1 firmware, some values are not handled by earlier versions (Example: saving the song LOOP setting, and track pro-

gram numbers extended from 1..128 were added after Version 2). Of course this isn't a problem since everyone has the latest and greatest version (except me, I still have 3.4). And LASTLY, I leave you with sample data definitions (Turbo C for the IBM PC) to reference an ESQ1 PCB (SQ-80 is slightly different). ■

Bio: Joe owns an ESQ1 (and other related unmentionables). He has been a professional Software Engineer for 10 years and a Composer/Musician for 20. The Composer/Musician side (and long hair) is definitely taking over.

```
const char SetASCII [64] = {
   ' ' , '\"', '\'', '*' , '/' , '+' , '-' , '=' ,
   '<' , '>' , '^' , '_' , ',' , '.' , '?' , '@' ,
   '$' , '&' , '!' , '#' , '%' , '(' , ')' , ':' ,
   ';' , '[' , '\\', ']' , '0' , '1' , '2' , '3' ,
   '4' , '5' , '6' , '7' , '8' , '9' , 'A' , 'B' ,
   'C' , 'D' , 'E' , 'F' , 'G' , 'H' , 'I' , 'J' ,
   'K' , 'L' , 'M' , 'N' , 'O' , 'P' , 'Q' , 'R' ,
   'S' , 'T' , 'U' , 'V' , 'W' , 'X' , 'Y' , 'Z'
};

const char WaveLFO [4] [4] = {
   "TRI", "SAW", "SQR", "NOI"
};

const char WaveOSC [32] [7] = {
   "   SAW", "  BELL", "  SINE", "SQUARE",
   " PULSE", "NOISE1", "NOISE2", "NOISE3",
   "  BASS", " PIANO", "EL PNO", "VOICE1",
   "VOICE2", "  KICK", "  REED", " ORGAN",
   "SYNTH1", "SYNTH2", "SYNTH3", "FORMT1",
   "FORMT2", "FORMT3", "FORMT4", "FORMT5",
   "PULSE2", "SQR  2", "4 OCTS", " PRIME",
   "BASS 2", "E PNO2", "OCTAVE", " OCT+5"
};

const char SourceMOD [16] [6] = {
   " LFO1", " LFO2", " LFO3", " ENV1",
   " ENV2", " ENV3", " ENV4", "  VEL",
   " VEL2", "  KBD", " KBD2", "WHEEL",
   "PEDAL", "XCTRL", "PRESS", "*OFF*"
};

const char SplitSetting [4] [6] = {
   "  OFF", "  OFF", "LOWER", "UPPER"
};

const char OffOn [2] [4] = {
   "OFF", " ON"
};

typedef struct {
   unsigned int              : 1;  /* ------ Unused ------ */
            int L1           : 7;  /* Range -63..+63       */
   unsigned int              : 1;  /* ------ Unused ------ */
            int L2           : 7;  /* Range -63..+63       */
   unsigned int              : 1;  /* ------ Unused ------ */
            int L3           : 7;  /* Range -63..+63       */
   unsigned int T1           : 6;  /* Range   0..+63       */
   unsigned int              : 2;  /* ------ Unused ------ */
   unsigned int T2           : 6;  /* Range   0..+63       */
   unsigned int              : 2;  /* ------ Unused ------ */
   unsigned int T3           : 6;  /* Range   0..+63       */
   unsigned int              : 2;  /* ------ Unused ------ */
   unsigned int T4           : 6;  /* Range   0..+63       */
   unsigned int              : 2;  /* ------ Unused ------ */
   unsigned int              : 2;  /* ------ Unused ------ */
   unsigned int LV           : 6;  /* Range   0..+63       */
   unsigned int T1V          : 6;  /* Range   0..+63       */
   unsigned int              : 2;  /* ------ Unused ------ */
   unsigned int TK           : 6;  /* Range   0..+63       */
   unsigned int              : 2;  /* ------ Unused ------ */
} PCB_ENV;

typedef struct {
   unsigned int Freq         : 6;  /* Range   0..+63       */
   unsigned int Wav          : 2;  /* Index to WaveLFO     */
   unsigned int L1           : 6;  /* Range   0..+63       */
   unsigned int ModH         : 2;  /* --- Special NOTE --- */
```

```
    unsigned int L2             : 6;  /* Range   0..+63       */
    unsigned int ModL           : 2;  /* --- Special NOTE --- */
    unsigned int Delay          : 6;  /* Range   0..+63       */
    unsigned int Human          : 1;  /* Index to OffOn       */
    unsigned int Reset          : 1;  /* Index to OffOn       */
} PCB_LFO;

typedef struct {
    unsigned int SemiTones      : 7;  /* --- Special NOTE --- */
    unsigned int                : 4;  /* ------ Unused ------ */
    unsigned int Fine           : 5;  /* Range   0..+31       */
    unsigned int OscMod1        : 4;  /* Index to SourceMOD   */
    unsigned int OscMod2        : 4;  /* Index to SourceMOD   */
    unsigned int                : 1;  /* ------ Unused ------ */
             int OscDepth1      : 7;  /* Range -63..+63       */
    unsigned int                : 1;  /* ------ Unused ------ */
             int OscDepth2      : 7;  /* Range -63..+63       */
    unsigned int Wave           : 5;  /* Index to WaveOSC     */
    unsigned int                : 4;  /* ------ Unused ------ */
    unsigned int Level          : 6;  /* Range   0..+63       */
    unsigned int Output         : 1;  /* Index to OffOn       */
    unsigned int DcaMod1        : 4;  /* Index to SourceMOD   */
    unsigned int DcaMod2        : 4;  /* Index to SourceMOD   */
    unsigned int                : 1;  /* ------ Unused ------ */
             int DcaDepth1      : 7;  /* Range -63..+63       */
    unsigned int                : 1;  /* ------ Unused ------ */
             int DcaDepth2      : 7;  /* Range -63..+63       */
} PCB_OSCDCA;

typedef struct {
    char         Name   [6];          /* Select From SetASCII */
    PCB_ENV      Env    [4];          /* Envelopes 1..4       */
    PCB_LFO      Lfo    [3];          /* LFOs      1..3       */
    PCB_OSCDCA   OscDca [3];          /* OSC/DCAs  1..3       */
    unsigned int                : 1;  /* ------ Unused ------ */
    unsigned int Dca4Level      : 6;  /* Range   0..+63       */
    unsigned int ModeAM         : 1;  /* Index to OffOn       */
    unsigned int FiltFreq       : 7;  /* Range   0..+127      */
    unsigned int ModeSync       : 1;  /* Index to OffOn       */
    unsigned int FiltResQ       : 5;  /* Range   0..+31       */
    unsigned int                : 3;  /* ------ Unused ------ */
    unsigned int FiltMod1       : 4;  /* Index to SourceMOD   */
    unsigned int FiltMod2       : 4;  /* Index to SourceMOD   */
             int FiltDepth1     : 7;  /* Range -63..+63       */
    unsigned int ModeVC         : 1;  /* Index to OffOn       */
             int FiltDepth2     : 7;  /* Range -63..+63       */
    unsigned int ModeMono       : 1;  /* Index to OffOn       */
    unsigned int                : 1;  /* ------ Unused ------ */
    unsigned int FiltKeybd      : 6;  /* Range   0..+63       */
    unsigned int ModeEnv        : 1;  /* Index to OffOn       */
    unsigned int ModeGlide      : 6;  /* Range   0..+63       */
    unsigned int                : 1;  /* ------ Unused ------ */
    unsigned int ModeOsc        : 1;  /* Index to OffOn       */
    unsigned int SplitKey       : 7;  /* Range +21..+108      */
    unsigned int SplitL         : 1;  /* --- Special NOTE --- */
    unsigned int LayerPgm       : 7;  /* Range   0..+119      */
    unsigned int Layer          : 1;  /* Index to OffOn       */
    unsigned int SplitPgm       : 7;  /* Range   0..+119      */
    unsigned int SplitH         : 1;  /* --- Special NOTE --- */
    unsigned int SplitLayerPgm  : 7;  /* Range   0..+119      */
    unsigned int SplitLayer     : 1;  /* Index to OffOn       */
    unsigned int Dca4Mod        : 4;  /* Index to SourceMOD   */
    unsigned int Dca4Pan        : 4;  /* Range   0..+15       */
             int Dca4Depth      : 7;  /* Range -63..+63       */
    unsigned int ModeCyc        : 1;  /* Index to OffOn       */
} PCB;

typedef PCB PCB_BANK [40];

/*---------------------- Programming NOTES ----------------------*/
/*                                                               */
```

```
| /* Structure PCB_LFO:                                                  */ |
| /*    ((  ModH << 2) |   ModL) = Index to SourceMOD                    */ |
| /* Structure PCB:                                                      */ |
| /*    ((SplitH << 1) | SplitL) = Index to SplitSetting                  */ |
| /* Structure PCB_OSCDCA:                                               */ |
| /*    To convert value SemiTones [0..107] to OCT and SEMI values:      */ |
| /*             int OCT  [-3..+5] = ((SemiTones / 12) - 3)              */ |
| /*    unsigned int SEMI [ 0..11] =  (SemiTones % 12)                   */ |
| /*                                                                     */ |
| /* ------------------------------------------------------------------- */ |
| /*                                                                     */ |
| /* When building a program from scratch you MUST clear entire PCB     */ |
| /* first so that all unreferenced bits are 0:                          */ |
| /*                                                                     */ |
| /*    PCB Program;                                                     */ |
| /*    memset (&Program, 0, sizeof (Program));                          */ |
| /*                                                                     */ |
| /*-------------------------------------------------------------------*/ |
|                                                                         |
+-------------------------------------------------------------------------+
```

Current Ensoniq O.S.s	
EPS	2.49
EPS-M	2.49
EPS-16 PLUS	1.1
MASOS	2.0
MIRAGE	3.2
ESQ	3.5
ESQ-M	1.2
SQ-80	1.8
VFX	2.1
VFX-SD	2.1
SQ-1	1.0

Buried Treasures

Daniel Mandel

A few weeks ago I had an idea and made a proposal to the Hacker to create a column wherein readers could send their tapes (produced primarily with Ensoniq keyboards) for review and comment. Many people out there are doing a lot of interesting things with these keyboards and I'm assuming we'd all like to know what it is, exactly, they're doing and how it's getting done. Well, I've got the green light, so let's get going.

There are several reasons why I'm excited about getting something like this started. With all the basement music being generated, it seems like there aren't really enough ways for us musician-types to get listened to, to get the ball rolling. Too often, we close ourselves off after creating the music because we don't have the time or the energy or the information we need to pursue our own marketing and distribution. A public forum of this type opens up more possibilities for networking, for finding out what others are doing with similar equipment that we might not have thought of on our own. And it might be cool, as well, to get some occasional input on individual marketing techniques from those of you out there who've tested those murky waters.

My background is fairly straightforward. I'm a songwriter. I have a BA in Theatre Arts and have used an ESQ-1 and a Mirage as a professional sound designer. And now I own a VFX-SD, which has become a main component of my home studio. I have sold pro audio and keyboard equipment and produce demo-tapes for local bands.

The proposal is as follows. You send TH a copy of your tape(s), I'll review them (and maybe squeeze in a mini-interview with you) — all of which will be published in the Hacker. Some basic ground rules. 1) Send copies only. If you want anything returned (photos of your happy [or snarling] face, tapes, etc) include a SASE. 2) Include contact information. Folks may want to get in touch with you — might want to hear what I hear, offer recording deals, etc. 3) Include an equipment list. One of the points of this column is to find out what people are doing with Ensoniq equipment. We need to know, in addition, what mics, EQs, mixers and tapedecks, etc. you're using and some comments on why, if you like. 4) And this is maybe the most important thing here — include some words about your purpose, your intent. If you're writing music that's intended as a commercial for toothpaste, say so. You may, for example, be writing progressive country with a hard rock edge. We need to know that. Just jot down a short description of what you're heading for. And include a phone number in case I can think of any really smart questions to ask you.

Send 'em on in to: Transoniq Hacker Basement Tapes, 1402 Upland Dr., Portland, OR 97221. ▬

[Ed. — If you've already landed that big contract don't feel left out. Send 'em on in to "Hacker Glitz" at the same address. We've got something a little different cooking for you folks...]

Ensoniq Performance Tour '91 Dates

To help support the new products we've just introduced, the Ensoniq team of District Sales Managers/clinicians are touring the country performing very entertaining and informative seminars on the whole line of Ensoniq instruments. Catch them at one of the following locations:

Alaska			
5/4	DB Music	Anchorage	(907) 276-8742
Alabama			
5/6	Music Alley	Birmingham	(205) 988-3688
5/7	AB Stephens	Huntsville	(205) 880-1234
5/9	Counts Brothers Music	Muscle Shoals	(205) 383-7454
5/16	Gordon's M&S Music	Mobile	(205) 476-1303
5/30	Arts Music Shop	Montgomery	(205) 271-2787
Arizona			
6/3	Workshop Music	Tucson	(602) 327-0118
6/4	Synthony Music	Phoenix	(602) 955-3590
California			
5/1	K & K Music	San Francisco	(415) 928-1233
5/2	K & K Music	San Jose	(408) 998-4850
5/7	Nadine's Music	Reseda	(818) 782-4787
5/8	Goodman Music	N Hollywood	(818) 760-4430
5/9	Goodman Music	West Covina	(818) 967-5767
5/14	Nadine's Music	Hollywood	(213) 464-7550
5/15	Instrumental Music Co	Thousand Oaks	(805) 496-3774
5/16	West LA Music	W. Los Angeles	(213) 477-1945
5/21	Custom Music	Dublin	(415) 829-2170
5/22	Music Unlimited	San Leandro	(415) 357-4880
6/12	New World Audio	San Diego	(619) 569-1944
6/13	JA-AM Systems	San Diego	(619) 673-8275
6/19	Gelb Music	Redwood City	(415) 365-8878
Colorado			
5/14	Prosound	Boulder	(303) 444-1731
5/15	Prosound	Colorado Springs	(719) 597-9962
5/16	Prosound	Denver	(303) 751-7575
Connecticut			
5/14	Daddy's Junky Music	New Britain	(203) 224-4648
5/15	Brian Guitars	New Haven	(203) 387-4492
Delaware			
6/5	Delaware Music Industries	Wilmington	(302) 478-6500
6/24	Earle Teat Music	Dover	(302) 736-1937
Florida			
5/15	Dollarhide Music	Pensacola	(904) 435-9898
6/4	Rock Warehouse	Ft Meyers	(813) 334-8081
6/5	Music Arts Enterprises	Ft. Lauderdale	(305) 581-2203
6/6	Tune Town	Leesburg	(904) 326-2143
Georgia			
5/28	Atlanta Discount Music	Atlanta	(404) 457-3400
5/29	Arts Music Shop	Columbus	(404) 563-8398
Illinois			
5/7	Gand Music & Sound	Northfield	(708) 446-4263
5/8	Sound Post	LaGrange	(708) 352-3338
5/21	CV Lloyd	Champaign	(217) 352-7031
5/22	SoundCheck Music	Springfield	(217) 525-7788
5/23	Don's Musicland	Peoria	(309) 692-0854
6/25	Naperville Music	Naperville	(708) 355-1478
6/26	Music Works	Chicago	(312) 728-2929
Indiana			
5/14	Music Today	Anderson	(317) 644-3361
5/15	IRC Music	Indianapolis	(317) 849-7965
5/16	Conservatory Of Music	Terre Haute	(812) 232-2735
6/18	Far Out Music	Jeffersonville	(812) 282-1122
6/27	Rubino Music	Portage	(219) 762-3169
Kansas			
5/1	Steam Music	Topeka	(913) 267-3771
Kentucky			
5/14	Willcutt Guitar Shoppe	Lexington	(606) 276-2713
6/13	Buddy Rodger's Music	Florence	(606) 525-1491
Louisiana			
6/6	Vince's Backstage Music	Lafayette	(318) 988-1717
6/10	SoundCheck Music	Metaire	(504) 454-6331
6/12	Be Bop Music	Baton Rouge	(504) 343-7433
Maine			
5/7	Daddy's Junky Music	Portland	(207) 772-3239
Maryland			
5/30	Bill's Music House	Baltimore	(301) 747-1900
Massachusetts			
5/8	Rick's Music World	Seekonk	(508) 336-6164
5/9	Union Music	Worcester	(508) 753-3702
5/16	E.U. Wurlitzer	Boston	(617) 738-7000
5/21	Daddy's D.J. Price	Boston	
5/23	Falcetti Music	Holyoke	(403) 538-7970
Michigan			
6/11	Farrow's Music	Kalamazoo	(616) 342-9919
6/12	Arnoldt Williams	Canton	(313) 453-6586
6/13	Music Box Studios	Mt Clemens	(313) 263-1994
6/18	Marshall Music	Lansing	(517) 337-9700
6/19	Farrows Music	Flint	(313) 238-2433
6/20	Farrows Music	Grand Rapids	(616) 538-8430
Minnesota			
6/5	Marguerites Music	Moorehead	(218) 233-7546
6/6	Knut Koupee Music Store	Minneapolis	(612) 872-9774
Mississippi			
6/11	Mississippi Music	Meridian	(601) 693-6317
6/12	Mississippi Music	Jackson	(601) 922-1200
6/13	Mississippi Music	Hattesburg	(601) 264-0150
Missouri			
5/2	Big Dude's Music City	Kansas City	(816) 931-4638
5/7	Crazy Music Sound & Light	Columbia	(314) 443-2559
5/8	McMurray Music	St. Louis	(314) 428-8600
5/9	Sounds Great	Springfield	(417) 883-4543
Montana			
5/1	Morgenroth Music Center	Great Falls	(406) 727-4143
Nevada			
6/11	Pro Music & Drum	Las Vegas	(702) 382-9141
New Hampshire			
5/22	Daddy's Junky Music	Nashua	(603) 888-1160
New Jersey			
5/20	Dave Phillips Music	Phillipsburg	(201) 454-7868
5/28	Long & McQuade	Parsippany	(201) 335-1148
6/4	Keyboard World	Ledgewood	(201) 384-9049
6/6	Music City	Cherry Hill	(609) 662-8044
New Mexico			
5/14	Candyman Limited	Santa Fe	(505) 983-2742
5/15	Grandma's	Albuquerque	(505) 292-0341
New York			
5/29	Alto Music	Monsey	(914) 352-6275
5/30	Alto Music	East Middletown	(914) 692-6922
6/5	McNeil Music	Ithaca	(607) 257-1142
6/6	McNeil Music	Binghampton	(607) 729-1548
6/11	Onondaga Music	Syracuse	(315) 422-8423
6/12	Unistage, Inc.	Buffalo	(716) 853-6500
6/26	Sam Ash	Carle Place	(516) 333-8700
North Carolina			
5/22	McFayden Music	Charlotte	(704) 372-3960
6/19	McFayden Music	Fayetteville	(919) 864-4855
6/20	McFayden Music	Wilmington	(919) 392-1770
Ohio			
5/7	Lentine's Music	Akron	(216) 434-3138
5/8	Coyle Music	Columbus	(614) 885-2729
5/9	Buddy Rodger's Music	Fairfield	(513) 829-8334
6/11	Music City Associates	Steubenville	(614) 282-3677
6/12	Coyle Music	Lancaster	(614) 653-9062
6/19	Ace Music Superstore	Dayton	(513) 253-4318
6/20	Lentine's Music	Cleveland	(216) 741-1400
Oklahoma			
5/6	Music Sound World	Tulsa	(918) 664-2555
Oregon			
5/8	Portland Music	Portland	(503) 226-3719
5/9	Southbound Sound	Roseburg	(503) 672-7056
Pennsylvania			
5/2	George's Music	Feasterville	(215) 357-6610
5/28	Robert M Sides Music	Williamsport	(717) 326-2094
5/29	Ford Music	Altoona	(814) 943-8520
6/4	Louie Cossa's Keyboards	Scranton	(717) 343-2002
6/13	Osiecki Bros. Music	Erie	(814) 453-6565
6/25	Stephen Nicholas Music	Lancaster	(717) 569-8100
6/27	George's Music	Springfield	(215) 543-4050
South Carolina			
5/23	Express Music	Spartanburg	(803) 583-6768
6/18	Sims Music	Columbia	(803) 772-1185
South Dakota			
5/1	Sioux Falls Music	Sioux Falls	(605) 334-5361
6/6	Haggerty's Music Works	Rapid City	(605) 348-6737
Tennesee			
5/1	Music Man Country	Nashville	(615) 833-7000
5/2	Amro Music	Memphis	(901) 323-8766
5/21	Morrell Music	Bristol	(615) 764-2171
Texas			
5/16	Danny's Music Box	El Paso	(915) 593-1035
5/21	H & H Music	Houston	(713) 652-0857
5/28	Brook Mays	Dallas	(214) 631-0923
5/29	Strait Music	Austin	(512) 476-6927
5/30	Musicmakers San Antonio	San Antonio	(512) 737-0612
6/4	Guitar & Banjo Studio	Beaumont	(409) 892-8628
6/17	Musicmakers Austin	Austin	(512) 444-6686
6/19	Randy's Music Mart	Amarillo	(806) 358-0131
6/20	Sound Vibrations	Corpus Christi	(512) 884-8981
Vermont			
6/19	Advanced Music Systems	Burlington	(802) 863-8652
Virginia			
5/21	Audio, Light & Music	Norfolk	(804) 853-2424
5/22	Stage Sound	Roanoke	(703) 342-2040
5/23	Virginia Music Company	Richmond	(804) 282-4261
6/26	Ace Music & Electronics	Harrisonburg	(703) 434-4722
Washington			
5/22	American Music	Seattle	(206) 633-1774
5/23	Music 6000, Inc	Lacey	(206) 491-2222
6/4	Music World	Tacoma	(206) 473-2120
West Virginia			
5/15	Pied Piper Music	Huntington	(304) 529-3355
5/16	Pied Piper Music	Charleston	(304) 925-7676
Wisconsin			
5/29	Henri's Music	Green Bay	(414) 496-3710
5/30	Jerry's Music	Wausau	(715) 842-3272
6/4	Morgan Music	Eau Claire	(715) 834-7177

Programming the VFX and VFX/SD

Great Effects, Part I

Wherein I explain the Wonders of Reverb as Seen Through the Eyes of a VFX Performer/Programmer

Gary Drenan

What's reverb, really?

In the natural, acoustic world (as opposed to the digital world inside your synth), any sound you hear is affected by the space in which it occurs. The dimensions (size and shape) of the space, the materials its surfaces are made of, and the distance between the source of the sound and your ears (or the microphone picking it up) all add reverberation to the sound.

Reverberation consists of the reflections of sound waves as those waves bounce off the surfaces of the surrounding space. Natural acoustic reverb consists of many reflections with varying times, intensities and phase relationships. These reflections add to the intensity of the sound and if there are several sounds the reverberation blends them together. Reverb is a complex phenomenon, simulated on a synthesizer by using complex algorithms. If you've looked at the screens of some of the VFX's effects that feature reverb, you've probably noticed terms like decay time, early reflection, pre-delay, and diffusion.

Now let's look at the various reverb programs available on the VFX. First, pick a program on your VFX and solo one voice on the Select Voice page. A good "live" voice with an acoustic waveshape will make it easier to hear the changes you'll be trying. Press the Effects button in the Performance section and set the effect routing to FX1. Hit the Effects again and the screen shows which effect the program is set to. Make sure the effect name is underlined and move the slider all the way down so that it reads LARGE.HALL.REVERB. Noodle around on the keyboard for a few minutes. Sounds like you're playing in a cave somewhere, right? Hit the up arrow button so that the effect name reads SMALL.HALL.REVERB, and noodle some more. This time it doesn't sound so cavernous, but there's still a sense of space. Move through the next several effects, playing on the keyboard each time to hear how each is different. CONCERT.REVERB sounds very spacious, perhaps brighter than LARGE.HALL, while ROOM.REVERB sounds much more close up. WARM. CHAMBER is close too, but with more richness, and DYNAMIC.REVERB seems to echo forever. These are the reverb-only effects; I'll cover the remaining effects in another article.

Now let's examine the parameters which are shared by all the reverb effects:

Decay Time

Controls how long it takes for the reflections to die away to a very low level (-60dB). In rooms with surfaces made of hard, reflective surfaces like concrete or stone, the reflections take a long time to decay. If the surfaces are made of more absorptive materials like carpet, drapes, or wood, the echoes are absorbed, and the reverb dies away much more quickly. Move back to LARGE.HALL.REVERB and select the decay time parameter on the upper right. Take a minute to try different settings and you'll hear how this affects the sound. At 00 there is no reverb, at 50 the echoes are audible but vanish fairly quickly, and at 99 they ring for quite a while. Try different settings on some of the other effects to see what sounds natural and interesting.

Reverb Mix

This controls the amount of reverb added to the output of the sound. Higher levels of reverb make it sound as though the sound source is further away. Try several settings. Notice that at 50 the original signal becomes weaker than the reverb. Notice also the difference between a long decay time with a low reverb mix and a shorter decay time mixed at a higher level. FX1 and FX2 can be set to different levels, allowing you to have solo instruments that stand out from the rest, or sounds seemingly "in the distance" behind others.

Early Reflections

On the second Effects page is the early reflection parameter. Early reflections are the reflections from the first surface the sound waves contact, usually the floor. This will probably be set to 10; as you increase it the immediate presence of the sound seems stronger, as though you were nearer to its source. If you want your arrangements to have more punch, try a higher level, but if you're going for a 'spacey' sound, set the decay time to maximum and the early reflections to 00.

Pre-Delay

Between the early reflections and the rest of the reverb echoes there is a short pause. The larger the space, the longer this pause, called the pre-delay time, will be. Pre-delay is measured in milliseconds (1000ths of a second), ranging from 0 to 250 (-1/4 second).

High Frequency Damping

More absorptive surfaces tend to absorb high frequency echoes more quickly than the rest of the spectrum. On the third Effects page is the HF Damping parameter, with which you can control how soon the high frequencies fall away. Setting this parameter to a low level will give your reverb a more

resonant sound; higher levels produce a softer, muffled quality.

FX2 Mode

This doesn't affect the reverb itself, but gives you the flexibility in determining how the reverb is mixed into the sound signal. Read the section on Effects Mixing (4-4) in your Musician's Manual for a description of how to use this parameter.

Those are the parameters common to all the VFX's reverb effects. Now we'll look at features unique to certain of the effects algorithms. The first apply to the CONCERT REVERB and WARM CHAMBER effects.

Diffusion

Essentially, diffusion refers to the number of reflections in the initial stage of the reverb. High levels of diffusion give the reverb a brighter, richer quality. It is this added richness that makes the CONCERT.REVERB effect especially pleasing (notice that Ensoniq assigned many of the ROM programs to this effect).

Low Frequency (LF) Delay

As the name implies, this controls the amount of low frequencies in the reverb. The lowest frequency of a musical note is its fundamental and higher settings of the LF-Decay parameter cause the fundamentals of any notes you play to ring for as long as the reverb persists. Use this to achieve a highly resonant effect or to create that Notre Dame Cathedral feel (along with a high decay time) for an organ solo.

Time

This refers to the early reflection time; it allows you to set (again in milliseconds) the time it takes the early reflections to be heard. High settings give the perception that the source of the sound is very far from any reflecting surface (musicians in space!), so it is best used when you're going for an out-of-this-world ambience.

The next set of parameters applies to the DYNAMIC.REVERB and DYNAMIC.HALL effects. What is unique about these two is that you can change the decay time while the reverb is happening with any of the VFX's modulation sources for effects. This allows you to create a very interesting sense of movement from one note to the next, or between different instruments in a multitimbral arrangement. The parameters you control this with are:

Decay-Mod

Use this to set the amount by which the modulator (coming up next) changes the decay time. As you probably guessed, the higher the setting, the greater the change.

Modulation Source (ModSrc)

Here's where you choose which modulator controls the decay time. Try them all out and see how each affects the sound; there's a great difference between using 'KEY-GATE,' for instance, which lengthens the decay as long as any notes are held, and 'VELOCITY,' which increases the decay base on how hard you strike each note. 'PRESSURE,' unlike either of those, actually lets you change the decay time while a note is being held. You can begin to see the power of this feature for creating novel sound environments.

So these are the things that make up the various forms of reverb and here are a few suggestions for how to get the most out of the VFX's on-board effects. LARGE.HALL.REVERB and CONCERT.REVERB are the ones to use for a sense of wide-open spaces, such as you'd hear in a cathedral or stadium. Setting the decay time and the pre-delay to high values will intensify the effect. SMALL.HALL.REVERB will give you the feel of a medium-sized hall or room, while ROOM.REVERB 1 and 2 or WARM.CHAMBER can be used for a more intimate, up-close sound characteristic of a small club. Set the decay time and the HF damping to low values and turn the early reflection level up to accentuate the immediacy of these. DYNAMIC.REVERB and DYNAMIC.HALL give you enormous latitude to create sound-spaces unlike those found in nature, which respond to the music in ways you decide. Experiment with the different aspects of the reverb; whether you're after a wildly unusual sense of space or just a good, clean studio sound, a little fine tuning of the effects parameters will bring your music into better focus and help it sound unique.

That covers the reverb effects of the VFX. Next time we'll look at the remaining effects: those which use some form of digital delay (including chorusing and flanging) and one which combines reverb with a noise gate. In experimenting with reverb just think of perfecting the acoustic picture as just another aspect of synth musicianship. ▬

Bio: Gary Drenan is a composer/keyboardist living in Los Angeles. He has a degree in music composition and writes pop, jazz, and classical music. His alter ego, Intelligence Artisans, produces and markets software for the VFX/VFX-SD using a Macintosh.

EPS DOS/SCSI Miscellaneous Ramblings
Part II

Alan K. Smith

An earlier version of this article was published in TH in March of 1989 to coincide with the release of the EPS SCSI interface. Two years of SCSI use has provided technical feedback which has been used to revise and update the original article. Part I (published last month) contained an EPS DOS overview, a discussion of the EPS SCSI implementation, and the first part of miscellaneous SCSI topics...

III. Miscellaneous SCSI Stuff (continued)

4) SCSI Cables

As you know, termination will prevent the SCSI signals from ringing, and therefore provide reliable communication. The ringing is actually caused by impedance mismatches between the cable and the SCSI device. The impedance of the cable, however, is actually made up of many different components. Wire has resistance, capacitance and inductance, the latter of which can also vary with frequency. The longer the cable, the more capacitance each signal line will have. Also, most SCSI cables are shielded which adds more capacitance.

All of this should explain why it's easy to get an EPS with a short SCSI cable and one SCSI drive to work.

A simplified way of thinking about termination (a very simplified way) is that by terminating the SCSI bus at its two end points (or devices) you are essentially forcing the bus to appear as an ideal cable regardless of the number of devices you have connected. Whenever you terminate a cable with its characteristic impedance you essentially force the cable close to its ideal. This will minimize the ringing that causes false transitions and also will maximize the speed of the signal transitions, and therefore the transfer rate.

Sometimes people use a ribbon cable to extend the length of their SCSI connection. When using a ribbon cable it's usually not necessary to terminate the EPS due to certain characteristics of ribbon cable (like impedance, etc). You must however have the SCSI drive terminated. So, if you want a 10 foot SCSI cable, you can use the 2 foot SCSI cable that is normally supplied with the drive and add 8 feet of ribbon cable. For the ribbon cable, you want a 25 pin D-sub male connector on one end and 25 pin D-sub female connector on the other end. Connect the male end of the ribbon cable into the EPS. Then connect the female end of the ribbon cable into the 25 pin connector end of the SCSI cable supplied with the drive and the other end of the SCSI cable into the disk drive. I have successfully used a 14 foot ribbon cable with the two foot SCSI cable. But this may not work in all setups. Unlike termination which will always work (provided you follow the rules), the ribbon cable approach will take some experimentation. For example, if a 14 foot ribbon cable does not work, then cut off a couple of feet and try it again. Also, since ribbon cables are usually not shielded you must be careful about how you route the cable in your setup. For example, avoid running it across power cables or other sources of electromagnetic fields.

An alternate approach is to only use ribbon cables in your system. This would limit impedance mismatches because the internal cables used in the SCSI drives are usually ribbon cables. The only source of impedance mismatches would be the SCSI bus drivers/receivers and the SCSI connectors. This is difficult to do because MAC's and the EPS use 25 pin D-Sub connectors while most drives use 50 pin SCSI connectors and it is hard to make a ribbon cable with the required connectors.

Although it may appear that using ribbon cable is the way to go, I strongly suggest that you don't use it. The fact that it's not shielded and can usually be made to work without terminating both ends of the SCSI bus means that there's a very high probability of failure, which can occur at any time and will not be predictable. *If you choose to use ribbon cable then you must follow these two rules:*

1) Follow the rules for termination (i.e., terminate the EPS even though it appears to work without it)

2) Be very careful about how you route the ribbon cable (due to the fact that it is not shielded). For example don't run it over fluorescent lights or across unshielded power lines, etc.

The bottom line on cables is this: Follow the rules for termination, use shielded SCSI cables (or follow the above rules for ribbon cables) and minimize the number of cable impedance mismatches by following these two rules:

1) Avoid different types of cables. For example don't use both ribbon cable and a shielded SCSI cable to extend the length of your cable connection.

2) Avoid extending cables by using smaller segments of cable. For example, if you want an eight foot SCSI cable from your drive to the EPS then buy an eight foot SCSI cable. Don't buy two or more smaller cables and connect them together to get the desired length cable.

Termination/Cables conclusion — In my opinion the SCSI cabling issues are more complicated than the SCSI software. Most people treat cabling as a given (you plug it in and it works) but when you're dealing with high speed transfers there's much more to it than just plugging in cables. I am amazed that people will spend thousands of dollars on their setup (EPS, SCSI drives, computers, etc.) but resist buying a $40 to $80 terminator. They will then spend days trying to get a working configuration (just that fact alone says that something

is not right). If things are done right, getting a SCSI system working (EPS, SCSI drive(s), computer(s)) is not a major undertaking. But if you're going to scrimp on termination and cables, or if termination is not set up right, you will have immediate or eventual problems. It's your data — How lucky do you feel?

5) SCSI Drives and Load Times

Keep in mind that there are companies who sell SCSI drives as OEM's (Original Equipment Manufacturers) such as Microtech, PLI, Rodime, Eltekon, etc. and there are companies who manufacture the SCSI drives like Seagate, Rodime, Quantum, and CDC. Most OEM's use multiple manufacturers in their product line. For example, Eltekon may use Seagate, CDC and Quantum disk drives. So, it is possible that different OEM's may actually be using the same SCSI drive in their systems. So, if you are considering company XYZ's disk drive that uses the same manufacturer's model drive Ensoniq has approved, then it should work. Note that some older OEM's, like Dataframe, used a SCSI controller board made by Scientific Micro Systems. Since it was one of the first SCSI controllers available it had a very limited SCSI implementation. These drives will not work with the EPS. Most OEM's these days are using SCSI drives that have the SCSI implementation built into the hard drive itself. Some of the SCSI hard drive manufacturers I prefer are Syquest, Rodime, CDC and Quantum. These drives have a cache built into the drive which does a prefetch on Sequential blocks. If you make your files contiguous this prefetch can make file load times even faster.

Load times for most drives loading 512K bytes takes two seconds or less. For the Quantum and CDC drives I've loaded 2M Bytes (maximum sound ram in an EPS or EPS-16 PLUS) in under five seconds. Note that these numbers are for contiguous files. Some Seagate drives have taken as much as nine seconds to load 512K bytes. This is because they do not have a cache and the interleave of the sectors needs to be optimized for the EPS. When formatting a SCSI drive on the EPS keyboard, you currently cannot select an interleave factor (usually two to one works fine). This will be added in the next release. It will require a ROM upgrade. The EPS-16 PLUS does provide the interleave selection.

IV. SCSI Disk Drive Topics

Here are a few things to consider when connecting a SCSI drive to an EPS.

1) PARITY OPTION — The EPS does not generate parity. Most drives have a parity jumper that can be used to either enable or disable parity. Normally parity is disabled by removing the jumper, however this can vary from drive to drive. Refer to the drive manual or contact customer service of the company who sells the drive (either the O.E.M. or the manufacturer) to ensure proper disabling of parity. Please do not call Ensoniq customer service for this information because the location of this jumper will vary from drive to drive and manufacturer to manufacturer. Most SCSI drives are sold with parity disabled.

2) UNIT ATTENTION OPTION — Some drives also have a jumper which can be used to disable the unit attention condition the drive may generate when it is powered up. The current EPS software (2.4 disk and 2.0 roms) will not handle this condition correctly and therefore wants this option disabled. This will be fixed in the new release. The comments made above in reference to the parity jumper also apply to this jumper. The EPS-16 PLUS will handle the unit attention condition correctly.

3) SCSI BUS RESET SIGNAL — The EPS system reset signal was connected to the SCSI bus reset signal on very early Ensoniq SP-1's, and, until recently, PS Systems SCSI interface cards. This will not work with SCSI drives that have the SCSI bus reset signal internally connected to their system reset signal (this includes most of the drives currently being sold). The EPS will not recognize the SCSI drive on bootup or will recognize the SCSI drive intermittently during bootup (say one out of ten times). The solution is very simple but you should contact the customer service department of the company who manufactured the SCSI card. It's important to note that by the time this article is published very few (if any) SCSI problems will be caused by the SCSI bus reset signal.

4) TERMINATION POWER — If the EPS is terminated (either internal for the rack or new SCSI card or external for the keyboard via the external terminators) then at least one SCSI device (other than the EPS) must supply termination power. Most drives I have used (except early versions of the Syquest 44 Mbyte removable drives) do supply termination power. Once again if you have any questions refer to the Customer Service department of the drive manufacturer or the O.E.M. who sells the drive. Refer to the section on termination for more information.

5) FILE OPERATION ERRORS — If the "FILE OP ERROR = xxx" message appears in the EPS display during a SCSI transfer then most likely you have either a SCSI cable or termination problem. Usually it turns out to be a termination problem. This error will usually occur when either formatting a SCSI drive or saving a file to a SCSI drive. It can also be caused by a bad main board, SCSI board or bad internal cables but 99.9% of the time it's caused by termination/external cable problems. In other words don't rush out to get your main board or SCSI board replaced if you're having trouble — these two boards are rarely the problem.

6) SOFTWARE INCOMPATIBILITIES AND BUGS — One major bug in the EPS SCSI implementation is its inability to format a drive over about 150 megabytes. This will be fixed in the next release. This release will also support CD-ROM drives. There are currently two companies working on releasing CD-ROMs for the EPS. Both of these companies will also sell the CD-ROM drives. Most of the problems with SCSI on the EPS are implementation differences. You may call these bugs but SCSI-I left a lot of implementation details up to the vendors discretion. The SCSI-II specification has been released and from what I've read has addressed these types of issues. Hopefully this will make things easier in the future. Until this happens providing us with as much information about your problem as you can will make it easier to solve your specific

problem. I believe that I can get the EPS to work with any SCSI drive in any type of SCSI configuration, but to do it may require your help.

7) CONNECTING MAC'S AND HARD DRIVES TO THE EPS — When connecting SCSI hard drives to the EPS the most important thing to remember is to assign different SCSI ID's for each drive you attach to the SCSI bus. Do not use SCSI ID three because this is the ID of the EPS. The MAC's ID is seven and internal MAC hard drives are usually assigned to SCSI ID zero. Also, refer to the section on termination and cables.

When connecting MAC's to the EPS follow these rules:

1) Position the EPS and the MAC (or any computer system) at the opposite ends of the SCSI Bus.

2) Locate the MAC (computer) SCSI hard drives closest to the MAC and the EPS SCSI hard drives closest to the EPS

3) Follow the rules for termination

If these rules are followed, you will have one SCSI jumper cable that will connect the MAC SCSI devices to the EPS SCSI devices. If you have trouble booting the MAC or the EPS, unplug this SCSI cable and boot the MAC and EPS separately, then plug this cable back in. Some MAC's will not boot up if they see an EPS formatted hard drive. The Plus and MAC II seem to exhibit this problem while the SE does not. If this is indeed your problem you may want to consider a RS-232 type switch box to solve this problem.

A RS-232 switch box can be used to isolate the two systems. Make sure that the box switches all 25 lines and that the EPS is terminated whenever it is isolated from the SCSI Bus. One modification that may have to be made to the switchbox is to jumper pin 25 (termination power) and pin 14 (ground) of all the connectors together. If you don't do this and you're using an EPS (with external terminator or the new SCSI board) or an EPS rack, when you switch the EPS off the SCSI bus you may inadvertently remove termination power from the EPS. This will cause the EPS SCSI interface to lockup, forcing you to reboot. Whether you actually will have to perform this modification or not depends on exactly where your switchbox is in your SCSI configuration.

In general, if you use the switchbox to isolate the EPS from all SCSI devices including its own SCSI drives, then you will have to perform this modification. If you are using the switchbox to isolate the EPS and its SCSI drives from another Initiator (computer) and its SCSI drives then you probably won't have to modify your switchbox.

If you do decide to use a switchbox remember the rules for termination and consider how termination will be affected as you switch systems in and out of the SCSI network. In many cases when you switch in a computer system to your EPS SCSI system you will end up with more than two termination points and this can cause intermittent failures when doing data transfers or loading/saving files etc.

I hope this information is useful. If you have any additional questions write me at Ensoniq. If you are encountering SCSI problems and need a faster response call customer service and ask for Dave McMahan. ▬

Bio: Weenie Engineer. Special thanks to Charlie, Gary and Tish and howdy to the Marksman and Nina.

Tested and Approved Hard Drives for the EPSs

Note: The drives listed below are known to be compatible with the EPS and EPS-16 PLUS *at the time of testing*. Changes in firmware or hardware by drive manufacturers may make later versions incompatible (with the exception of **PS Systems** and **Eltekon** whose drives are configured to work specifically with Ensoniq products). Drives *not* included on this list may also work just fine. For up-to-date information about specific drives call Ensoniq Customer Service: 215-647-3930.

MANUFACTURER	MODEL
PS Systems	All Models
Eltekon	All Models
Rodime	45plus, 60plus, 100plus, 140plus
Microtech	R45, N20, N40, N80, N100, N150
PL1	45 Meg Removable
Mass Micro	Datapack 45

The Great Workstation Shootout

or What hath Ensoniq Wrought?

Pat Finnigan

As often as I read and write for the *Hacker*, I haven't seen a comparative article on workstations. Since the market seems to be saturated with "do it all" keyboards, let's get a little picky here — none of them do it all. Some have tons of polyphony and a weenie sequencer, some have disk drives, some don't, but all are some compromise of available features. In the hopes of dispelling the myth that manufacturer X's "workstation" is the "best" (a subjective term), here's a comparison of the most popular "do-it-all" keyboards. Since Ensoniq started the whole idea with the ESQ-1, it's a good place to start.

The ESQ-1 The keyboard that started it all. Out of Engineering and into Production around June, 1987, this marvel from Malvern not only set the synthworld on its ear, it sent the rest of the keyboard manufacturing industry back to the drawing board. The world's first affordable sequencing keyboard. List was $1395, and you can pick one up now with the 64K SQX-20 expander and a coupla ramcarts for around $600. With OS 3.5, the most uncrashable keyboard of the Ensoniq line (since the OS was ROM-based), and a real workhorse, even now. The base unit offered cassette storage only, no aftertouch, no disk drive to store sound and sequence data. But if you had a Mirage, you could fool it into storing sequence data via MIDI handshake (another first) as a sound file using MASOS. Very slick back in those days. And its 8-track pattern-based sequencer became the standard of the industry. It was the only Ensoniq keyboard to offer built-in FSK tape sync capability. A used ESQ-1 and an MT-32 is still the cheapest, most flexible and user-friendliest compositional center for around $1000. Wish I'd never sold mine...

The D-20 Roland takes note of Ensoniq's increasing market share and introduces their ESQ-1 clone around June 1988. Predicting it will outsell the ESQ-1 by a wide margin by inclusion of a disk drive, an advertising blitz ensues. Basically a D-110 (editable MT-32) with a non-aftertouch keyboard and disk drive, the instrument looks good on paper, but at $1795, way too pricy. Public appreciated the built-in disk drive and in-board effects; built-in demos sold all of these instruments at the expense of D-50 sales. 32-tone polyphony, decent drumkit, but hideous sequencing environment. Its little brother sans sequencer, the D-10, outsold it 10 to 1. The D-20 offered no pattern-based sequencer, no event editing, was user-unfriendly with a 16x2 LCD display (compared to the 40x2 fluorescent ESQ-1 display). The D-20 resides in back rooms of keyboard stores, heavily discounted, lurking for unsuspecting buyers.

The SQ-80 In response to customer feedback for an ESQ-1 with a disk drive, Ensoniq performs major hardware revisions and introduces the SQ-80. The first keyboard to use their new DOC chip, the unit sported new and improved drum kits (a weak spot of the ESQ), cleaner output circuitry, offered as standard a built-in SQX-20 sequence expander, and a 60-pattern architecture (vs. 40 for the ESQ), and a price tag of $1795. Since most ESQ-1 users were storing sequence data on their MASOS disks (*everybody* owned a Mirage), the SQ-80 was a trifle overpriced and sales never took off as anticipated. First of the Ensoniq "clack" keyboards, the SQ-80 was quietly discontinued on or about March 1989. Ensoniq was tooling up to gun down the next competitor in the new workstation area it had just created only a year earlier...

The M1 Korg, after an absence of new product for most of 1987, introduces the M1 early in 1988 and takes the world by storm. First affordable sample player, CD-quality sounds, Korg becomes responsible for naming sounds after clouds and planets. Built-in effects, 16-note polyphonic (when not in combi mode), Ramcard storage, 4400-7700 note 8 track sequencer, Korg wins keyboard of the year honors. List was $2695 and can be found used in the $1500 range from users who are upgrading to the T-series. Expandable, but expensive. PCM channel mod cost around $800 to load samples, Frontal Lobe disk drive around $700; all of a sudden, it's not so affordable. Still, you'll find these on A-frames in clubs everywhere with "For Sale" signs on them.

The EPS The EPS is introduced early 1988 and sampling is changed forever. Pairing the new DOC chip with a 6 MHz 68000, this new keyboard is so Mac-like nobody knows what the instrument is capable of doing. Basically eight Mirages under front-panel macro control, with a Poly-aftertouch keyboard, 8-track sequencer ("16-track" in Song mode, really an 8 track chainer), open-ended (both sampling and sequencer memory are expandable), 20-NOTE polyphonic (not 20-tone or 20-timbre), the ballyhoo upon its introduction promised this instrument to be the living end. But import restrictions dried up the memory market and the 4X expander wasn't available for another 6 months, seriously restricting the power of the instrument (not to mention sales). So Ensoniq pulled a stunt we haven't seen from keyboard manufacturers; the Road Test! "Take it home, drive it 3 days, see what you think." Brilliant marketing put this instrument in the hands of more keyboard players than ever before; not surprisingly, very few were returned. Disk drive, multiple instruments, load while playing, SCSI compatible, 80K sequencer memory (w/4X), Ensoniq sets the standard for sampling and sequencing keyboards and sends Japan back to the drawing board. The most user friendly affordable sampling workstation money can buy. List $1995, usually available for around $1750 with the 2X expander. Best library

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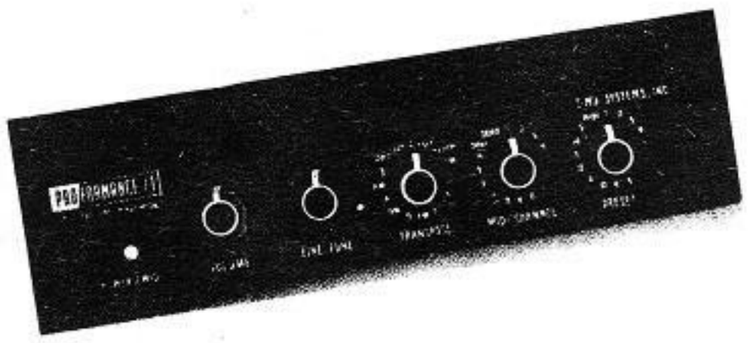

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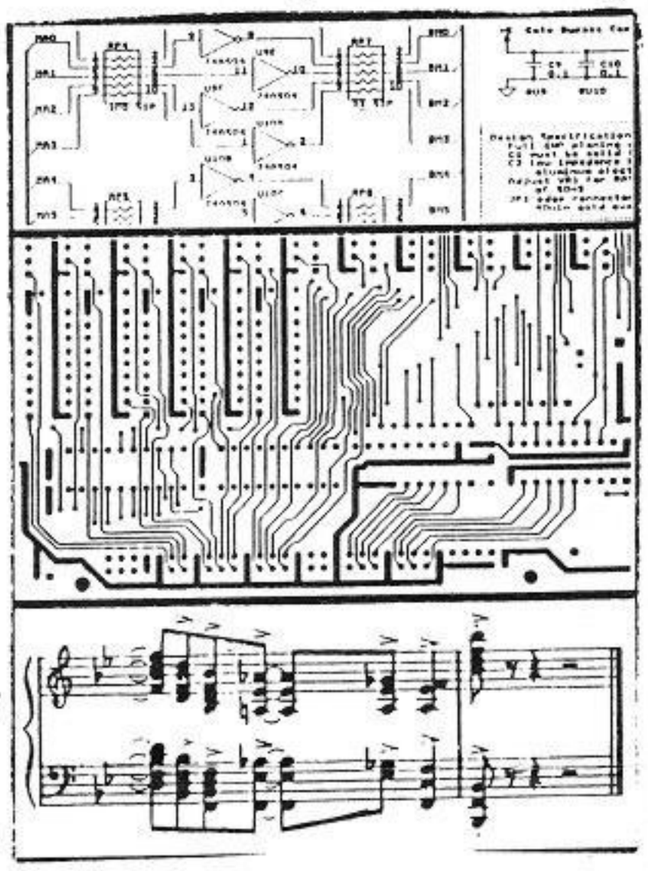

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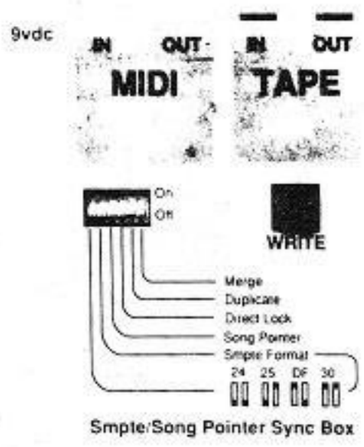

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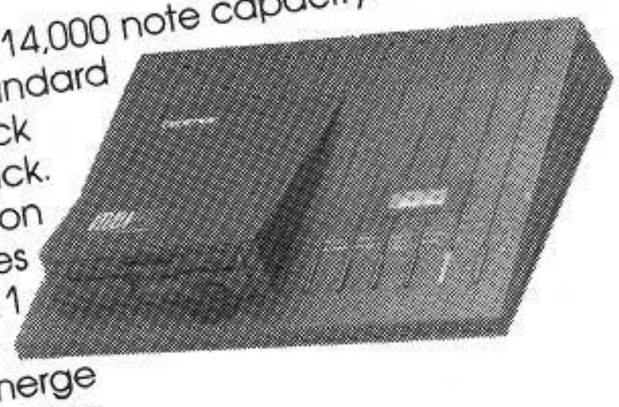

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support in the universe. Crashes occasionally, but that's the price you pay for this power. The EPS outsold the Mirage as of June 1990.

The V50 Yamaha, after market pressures, introduces their "workstation" around May of 1988. Basically a TX81Z with 16-note polyphony, RX120 drum machine, QX5 and effects in a box, this offering from Yamaha promises to be a pretty capable workstation. The disk drive even reads and writes MS-DOS format (innovative!). They should've had a winner. But FM only goes so far, the drum sounds were terribly compressed, and at $1995, a bit pricy. RamCards were expensive, plus we all know how much fun FM programming can be, and the sequencer was limiting. One's been sitting at my local keyboard store for over a year now at $1395, and it's getting very dusty.

The W-30 All this time, Roland was trying to design a workstation that could win them some market share without eating into their other product lines. Enter the W-30, June-ish of 1989. Promising the best of sample players and samplers combined, it sported a meg of onboard samples and 512k of sample RAM. Sporting an 800k internal disk drive, SCSI options, waveform editing on board, sleek and sexy, the world waited for this keyboard to upset Ensoniq. In a few ways, it did. The sound quality was up there with the M1, an onboard MC-300 was the built-in sequencer, quick drive speed, 8 separate outs standard, aftertouch keyboard, huge display, they might've had a winner. But not at $2795. And the ROM samples were, to be polite, disappointing. No acoustic piano, no effects, although pretty good drum samples (a la R-8). But the user interface, arrgghh! You couldn't just call up an instrument and play it; you had to assign it a slot (if there were any open tone slots available), load it from disk (even the ROM sounds, kinda makes you say "hmmmmmm?), and then save back to disk if you ever want to hear it again. Actually, the W-30 was, in all likelihood, the Japanese interpretation of the EPS. Anybody who ever bought one (including me) probably knows why Ensoniq engineers are smiling. Roland has the EPS pegged now with its S-770, but no sequencer and a sticker price of $7995? More grins from Malvern.

The Korg T-Series Korg, through user feedback, redesigned the M1, and presto, enter the T-series of workstations. The major differences are the number of keys and onboard sample memory. The T3 sports 61 aftertouch keys, optional sample memory, onboard effects, 8 track sequencer w/56K note memory, 1.44 M disk drive, (the first keyboard to do so), and a price tag to match. Listing at $3295, they're available for around $2700, but you're still looking at 16-note polyphony (except in combi mode). With the optional sample memory expansion, it will read Korg DSS-1, Akai and Emulator samples (for $695). But you start pushing the $3500 level with a T-3 expanded like that. Still, the T-series is why you see so many M1's on the block for $1500. . .

The VFX-SD Those Ensoniq guys are at it again. Being known as the company who made sampling affordable, they decided to go after the sample player companies. (The ESQ-1 *was* a sample player, you know). The VFX is upgraded to VFX-SD status with the inclusion of a disk drive and sequencer. All hell breaks loose. VFX owners are miffed, dealers are hot about no lead time, and Ensoniq rushes like hell just to get the machine out the door October of 1989. Software bugs proliferate, Ensoniq engineers are pulling their hair out, and after 5 levels of software revision the SD becomes the complete workstation (as of the latest OS last month). 20 note polyphony, inboard effects to rival a quadraverb, polyphonic aftertouch, multitimbral 1-pass recording, expandable sequence memory, realtime waveform modulation, 24 track sequencer, disk drive, the list is deep. VFX-SD, Version II, offers a full meg of acoustic piano samples (hardware rev) at $2695, seems pricy but offers everything. The keyboard sells like wildfire. I'll have to try one when they get down to the $1995 level...

The Peavey DPM-3 This keyboard has been a long time coming: I remember seeing it at the '88 NAMM show when it sounded like a Mirage. Since then it's become an American M1. Inboard effects, expandable sample memory, mono aftertouch, disk drive (MS-DOS format too!), FM option available August '90, good drum kits. At $2795, too little, too late. At $1595, a winner, but where you gonna get that kind of deal? Expect price to decrease soon. This keyboard has put many Peavey dealers on credit hold, so expect a really good deal on this piece very soon. And it really is an excellent keyboard — considering Korg brought it out 2 years earlier as the M1...

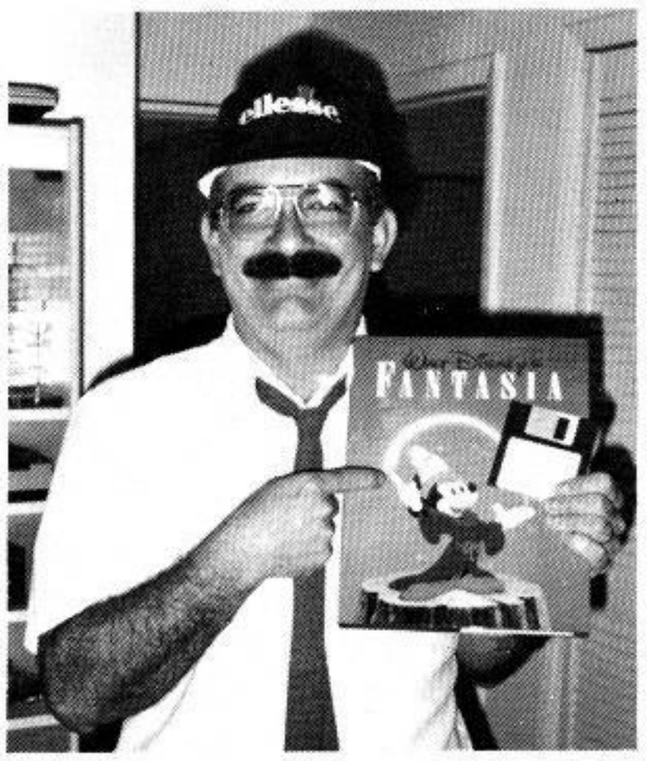
The SQ-1 Ensoniq discovered a big hole in the $1000-$2000 keyboard market and plugged it with their new offering, the SQ-1. Basically a VFX with 2/3 the wave memory of the VFX, no disk drive, and no step entry functions, they bring the keyboard in at $1595. I haven't worked with one yet, so I can't really say much about it, although it sounds very good. Knowing Ensoniq, the sequencer and user interface are as good as can be found.

The SY55 and SY77 Yamaha, still reeling from the V-series, completely reworks FM as we came to know and love it, and now allows samples to be used as modulators! As with the VFX, this synth engine is so new and unexplored we may see third party development of really *new* sounds sometime in 1991. The SY55 holds an 8-track sequencer, the SY77 a 16-track. Both sport MS-DOS disk drives, and both lack decent punchy drum kits, although a $135 set of wave ROM cards will give you what they should've had all along. 16-note polyphony for the SY55, 32-note for the SY77. With this serious an overhaul of 6-op FM, can't really tell what the instruments will sound like until more sounds are available. But at that price for wave ROM cards, don't hold your breath. Priced at $1995 and $2995 respectively, pricy but competitive. Built-in effects stan-

dard. Oddly enough, the VFX-SD sounds clearer and less processed/bandwith-limited to me than the SY77, and the hallmark of FM was its clarity at the cost of thinness. Too soon to tell; should I go look for my breath controller? Not today. . .

Well, there you have it; a highly subjective report on "workstations" available [Ed. — as of very early '91. Pat will undoubtedly have something to say about recent developments.] I didn't include the VFX since it lacks a sequencer, nor did I include "packages" like the Kawai K-4 and Q-80 since they were separate keyboard and sequencer units. Once again, ALL are some compromise, and none are as effective as a good software/computer system, but, as the name indicates, they're all you need to make effective music with a minimum capital outlay. But don't let your wallet totally decide which is for you, as you're gonna have to listen to it for as long as you own it. And you're gonna have to live with it after the purchase, so make sure you're comfortable with it. And last, but foremost, remember why you're looking at workstations. To make *music*.

Maybe that's why the boys in Malvern have been smiling... ▬



FRONTERA I-COVE

45 MEG Removable-Cartridge Hard Drive

Sam S. Mims

For: EPS, EPS-16 Plus, other SCSI devices.
Product: 45 Meg removable-cartridge hard drive.
Price: $965
From: Frontera Electronics, 1318 E. Mission Rd., Suite 202, San Marcos, CA 92069, (619) 727-3410.

An EPS or EPS-16 Plus with a hard drive is amazing. Sounds that fill up two complete floppy disks load in just a few seconds, normal-sized instruments load in an eyeblink. With the operating system on the hard drive the EPS boots up by itself and you don't ever need to insert the OS disk repeatedly while editing samples. With a well structured directory, all your bass samples can be stored in one area, all your drum samples in another, and so forth. So if you can afford it, a hard drive for your sampler is absolutely fantastic.

I recently got Frontera's 45 Meg removable cartridge rackmount hard drive for use with my EPS-16 Plus rack. (Note that the sampler has to have a SCSI kit installed to use the drive.) The Frontera unit, like all 45 Meg removable drives, uses the SyQuest drive mechanism and cartridges, so in that respect, it is no different from similar units from Eltekon or PS Systems. (These SyQuest drives have been thoroughly tested by Ensoniq, and even though the Frontera unit is not specifically listed in the "Approved Hard Drives" list, it poses no compatibility problems whatsoever.) Where any difference between the brands lies is in the power supply, the packaging, and any "extras."

The packaging of the Frontera i-cove drive is flawless (and quite attractive.) The power switch is on the front panel, along with the cartridge opening and drive LED's, of course, and on the back panel the SCSI connectors, the SCSI address selector, the fan outlet, and the detachable power cord. Everything is solid and well-designed, and the drive mechanism is double shock mounted.

The power supply is an auto-switching universal supply, meaning that if you travel to Finland and plug it into the 220 volt, 50 Hertz line voltage, there is no problem; the supply automatically compensates and the drive works correctly without missing a beat.

Along with the drive itself, the cartridge, the power cable, three-foot SCSI cable, and SCSI terminator, the Frontera package came with some nice extras, such as four allen-head rack screws (to help deter theft from your rack), an allen wrench to insert these, scores of EPS samples, a very well-written and comprehensive manual, and more dealer support than many large companies dole out in a lifetime. The drive mechanism is guaranteed for a year and the power supply for two years.

My own unit has worked flawlessly, and very many hours, during the month that I've owned it. The removable cartridge concept is great; I have one cartridge for musical instruments, and another for sound effects (for doing audio/video post-production). You could have a cartridge for your Macintosh as well, or for any other SCSI device, since each cartridge is formatted individually for its particular application.

It's hard to think of any way to improve the Frontera drive. One novel concept would be an AC power outlet on the rear panel that had a 20-second delay built in, so that your sampler could be plugged in here. (When you boot up an EPS from the hard drive, you have to wait for the drive to spin up before turning on the sampler.) This would allow an entire rack to be powered up from a single strip, rather than having to turn things on individually. In any case, as it is, the i-cove drive slams. You can't go wrong here. ▬

The Hollywood Edge

Rob Feiner

For: Mirage, EPS, EPS-M, EPS-16+.
Product: The Edge Edition, a 4 CD set - Sound Effects
Price: $295.
From: The Hollywood Edge, 7060 Hollywood Blvd., Suite 700, Hollywood, CA 90028, 800-292-3755, 213-466-6723.

Even in the Baroque-Classical era, composers sought to make their sound unique. If Bach had an EPS or VFX his music clearly would have taken on a whole new sound. Groups like Pink Floyd and ELO and even the Beatles have more than dabbled with sound effects in their music...so why not you?

When I started out on my latest album project, "*Outer Planetary Movements*," I decided that I wanted to create several different illusions and needed some sound effects. All I could think about was those old scratchy LPs that worked fine in my FM-Radio-Days, you know, where you could never find the right groove. Well, it's okay, if you have any of those old collections you can melt them down and use them for engine oil. The Hollywood Edge will see to all necessary clean-up.

Perhaps you've never heard of the Hollywood Edge. Me neither, but once I started into my investigations, their name kept coming up. The two founders of Soundelux (an L.A. audio-post house) Wylie Stateman and Lon Bender got together with Tod Maitland and formed the Hollywood Edge. Now these three guys are the last word in field sound design. Their credits including "*Glory*," "*Born on the Fourth of July*," *Young Guns*," etc. The collections are mostly recorded digitally and then edited in the AMS Audiofile, a hard-disk based recording system. The recordings that are analog, I have been told, have been digitally "cleaned-up" to where you can't tell the difference.

When I get a new CD sample set to review several wheels begin spinning. First, I get together with other sound engineers and use a CD player with a minimum 8X oversampling and 32 bit technology. The disc player has digital outputs. After the just-listening-for-fun ends we hook up the digital outputs to an oscilloscope and look for glitches and noise. In true digital there should be NONE. Yes, of course if there is ambient sound in a particular wavesample this will show up, but things such as "tape path" noise should not be there. Then we listen again.

The sound effects in The Edge Edition were, overall, ultra-clean, almost all in stereo, and very well edited. The arrangement and organization are excellent. Included with the set is listing and description of the sounds, alphabetically and numerical according to the CD. Included is the "SPARS" code, indicating an analog or digital recording source. Many, in fact most, sounds include several variations of its category (for example, train horns includes "freight" and "steam" variations of several types, no less.) Some effects contain the doppler effect for true perspective. The Roller-Coaster actually pans across the stereo field. If, though, you are using a CD player connected to a console, don't pan your pots left and right, leave them dead center and the stereo field will go away. Also, by using this hook-up you can send your own amount of echo or reverb through the effects buss and create a fine custom sound. And, of course, the sounds can be layered and multi-layered and cross-fade points can be added.

The Edge Edition is conclusive. Hundreds and hundreds of hours of work were involved in creating this collection and it is apparent. There were some minor flaws, a scant few of the effects being noisier then the true digital ones. If these effects are incorporated into a music track it shouldn't be a problem. There are over 800 digitally recorded sounds plus the analog ones here so I'll live with it. I, myself, would have liked to see some more screams and such and more spacy, S-F sounds but if you want more, you'll just have to spring for the premier edition, a 20-CD set, for $895 which contains every possible intragalactic sound except "man's head slammed into car door." The 4-CD set, for many of us, is perhaps, however, the best bet. These collections deserve high praise and special attention. The Hollywood Edge is a fantastic choice! ▬

EPS-16+ Effects Tips

Barry Carson

The word is out and here it is. The EPS-16+ is *much* more than an updated EPS. It is a new instrument that sounds, feels and looks great. 16-bit huzzahs to the people at Ensoniq for putting this together at a price normal people can afford. 5 years ago these folks designed the Mirage DSK so well that the same shape looks perfectly respectable compared to the other 1991 high-tech keyboard wonders. If using the same body on six instruments is one way Ensoniq can keep the prices on these things so remarkably low, I wish more instrument companies would consider doing the same thing.

Getting back to that great sound. To me the most obvious difference in the sound of the EPS-16+ compared to the EPS is because of the 16+'s effects. We could argue about whether most customers in the smoky corner bar where you pound out heavy metal on Friday nights will really appreciate the improved S/N ratio that 16 bits offers. It would be pretty hard, however, for anyone not to notice the difference that a wide range of programmable, 24 bit effects can have on any sampled sound. I'll bet that for most new EPS-16+ users (especially those who have had an EPS), the effects section is the first to be earnestly explored.

The first tip I can offer has to do with editing the effects of any given instrument. Load a sample of, for example, an electric piano. Assume that whoever programed this sound used the Hall Reverb effect on this instrument. Pretty neat, but you remember playing your Honher Pianet through your buddy's fuzz tone in the junior high gym and you would really like to (for whatever dumb reason) relive this experience. Sound easy? You bet! You hit the Effect Select switch and scroll up to ROM 11, 12 or maybe 13. You go to the edit mode, effects page, scroll through the parameters, and set every value to recreate the sound you remember so well. When everything is perfect, you immediately save the instrument to disk so you won't lose any of your hard work. Later, when you want to show off your handiwork to the wife and kids, you slide in the disk, load the electric piano, play a few notes and a small part of your world crumbles away. The piano is back in the gym, but your buddy took the fuzz tone back. Tip number 1 — when you edit a ROM effect it automatically becomes the BANK effect. It will not be saved with an instrument. You must use the Copy Current Effect command to copy your work to the instrument you want to have that effect. Once an effect is copied to an instrument, it becomes the INSTRUMENT effect and will be saved with that instrument.

The next tips deal with using the EPS-16+ as a multitimbral tone generator used with a sequencer (its own or one that belongs to someone else). For quite a while users of workstation type synthesizers (D-20, SY77 etc. as well as the Ensoniq synthesizers) have had to deal with these problems, but, since the EPS-16+ is the first sampler with effects, these concerns are new to sampler-type folks. The bottom line is this: The EPS-16+ can produce an almost unlimited number of effects, but only one at a time. This bit of information contains bad news and good news.

First the bad news. If you have a wonderful organ sample that uses the rotary speaker effect, a great guitar that uses distortion, chorus and reverb, a hot synth that uses the dual delays and drums in a huge hall, you can't have one EPS-16+ create all of these effects at once. This is simply beyond the capabilities of the instrument. Now for the good news. Many of the EPS-16+ effects actually contain two or three effects at once, and, by making creative use of the bus system, effect control and effect parameters, some very powerful multitimbral effects can be obtained with only a few audio compromises. Of course, a musical composition that only uses acoustic sounds, strings, with the effects section simply placing these instruments in an acoustic space is no problem. Using a reverb bank effect globally on all the samples will create the place in which your string quartet will perform, be it an intimate chamber or a vast cathedral.

Let's take a look at the worst case scenario presented by the rock band composition mentioned earlier. My first tip would be to look at the various multi-effects and see which one may fill most of your needs. You may have to decide which the most important elements of our song are. If the screaming distortion lead is the focal point, you may have to use ROM 11, 12 or 13. If you absolutely have to have the speed changing Leslie effect, you may have to use ROM 9, etc. Once you have made the decision of what effect to use, it's time to begin some creative thinking (what hackers do best). If you really need that distortion guitar to get the girls, but that organ sample sounds like poop without its Leslie, try a compromise of ROM 12. Use the chorus effect to bring some life to the organ, the distortion on the guitar, the reverb on the drums and, since no delay is available for the synth, try it with the reverb or maybe the reverb and chorus. If this is a minor part, it might not hurt as much as you may think. If it ruins your chance for that recording contract, you can go to ROM 10 which has chorus, reverb and digital delay and maybe use a sample of a distorted guitar instead of using the 16+ to add that effect (it is possible to have the 16+ resample one of its own sounds with its attendant effect for just this purpose — the subject for some future Hacker article, I suspect). Once you pick, let's say, ROM 12 as your bank effect and you start playing the parts, get set. Everything — drums, organ, synth and guitar will be played through the distortion. Even if you're a total metalhead, this may not be to your liking.

Ensoniq, as it happens, has a very handy way to work around this problem. Built into the EPS-16+ are three buses (four, if you have the OEX-6 Expander). Each track can ride one of these buses to the stereo outs of the instrument. This is how it works. A quick look at ROM 12 shows us that bus 1 can go through the distortion, chorus and reverb, perfect for your guitar lead, bus 2 goes into the chorus and reverb, just what you need for the organ, bus 3 is for reverb only, ideal for the drum set, bus 4 is always dry. If you had an OEX-6, you could send your synth track out the Aux outputs and into an outboard digital delay if you so chose. As you begin to look through the Edit Effects page, you

will find that things are even more flexible than this. Different variations of the multi-effects have different bus routing, and different wet/dry mixes of various effects are available for the 3 buses.

Even after setting up the bank effects and track buses to perfection, there still may be one problem to torment you. My next easy tip will take care of this one. Going back to the rock band example we just used, once you have all the tracks recorded, you may come across a seemingly inexplicable phenomenon. If your lead guitar is screaming away nicely using distortion with a velocity controlled wah effect, you may find this wah effect being triggered by the keyboard velocity of other instruments, like drums or organ, even though they are not being bused through the distortion effect. Again, there's an easy fix. On the Track Edit page, you can scroll to Effect Control. When switched on, this lets the controller information (wheel, velocity etc.) affect the effect (effect the affect?). Effect Control should only be turned on for the instruments (in this case, guitar) that you want controller information from (in this case, velocity), to control some aspect of the effect (in this case, filter modulation). In other words, turning Effect Control off for the drum track will prevent every snare drum hit from making the wah sound trigger on the guitar track. You should realize that this switch will in no way affect velocity control over envelopes, filters etc.

My last tip concerning the effects section of the EPS-16+ deals with the fact that not only can tracks be bused to one or several different effects, but layers (and individual wavesamples for that matter) can also be bused in a similar way. What this means is that the patch select buttons, for example, can be used to switch digital effects. Let's take a sample of a guitar. If you make two copies of the original layer, you can use the patch select switches to call up identical sounding patches. The fun starts when you route these layers through different parts of a multi-effect. If you use layer one through bus 1 using ROM effect 10, you get a guitar through a chorus and maybe a little reverb, layer two goes through bus 2 giving you a guitar with lots of reverb (if you so edit the effect), layer three can go through bus 3 resulting in the same guitar playing through a digital delay line. The final patch select could play all three layers going through all three buses for a guitar sound with chorus, lots of reverb and digital delay. All available at a fingertouch!

Players getting used to the effects on the EPS-16+ seem to go through three stages: the first euphoric experience of hearing the lush, clean 24 bit sound that brings the realism of samples to a new level, the second level of frustration at realizing that these wonderful effects seem to have to be ditched if one is to use the EPS-16+ in a multitimbral way, and the third level of understanding the many ways Ensoniq has built into the instrument of putting together great sounding, flexible multitimbral banks. I hope this article will help get some folks through the second stage and straight into the third! ▬

Bio: Barry Carson still maintains that his favorite color is the flickering yellow of the Mirage display. the purple of the racing stripes on the EPS-16+ comes in a close second.

Tom Shear's Bank O' Patches for the SQ-80

Leonard Crockett

Product: Tom Shear's Bank O' Patches, Volume 1 and 2.
For: SQ-80.
Price: $32 (includes diskette and booklet).
From: Tom Shear, Box 388, Day Hall, Mt. Olympus Drive, Syracuse, NY 13210, (315) 443-0082.

This month's offering of new and useful patches for the SQ-80 comes from Tom Shear. Included with the disk that contains the patches is a handy booklet that describes the 80 patches (two groups of 40, Volume 1 and 2) in detail. The booklet also provides some helpful programming tips for each sound.

Let me just say one thing about reviews. After reading some of the comments that readers have had about reviews (and the reviewers), we need to remember that a review of anyone's effort is a subjective process and there is no right or wrong, only likes and dislikes. If you are not sure of the validity of the review in question, write or call the creator of the product you are interested in before you buy. The creator may be able to provide the answers to any questions you have about that product.

When Tom's sounds arrived, the first thing that impressed me about his package was the booklet describing each sound in detail. This was a big help in the listening process as I was able to refer to the notes he made concerning programming hints to confirm that changes he suggested to each sound were accurate.

The sounds themselves range from the usual drum and piano imitations to sounds with names like "GANKS," "SCRATCH" and "HANGOVER." These sounds are clever variations on ideas we may all have had at one time or another and can serve as good special effects sounds in a sequence or live performance. And the programmer frequently uses the MOD wheel to create changes in volume, filter cut-off frequency, vibrato, echo effects, etc. Also evident in many of the patches is the use of Env 4 Parameter T-4R to create ambiance for each sound (for those of us who don't have an outboard effects processor handy). The SQ-80's polyphonic aftertouch is also utilized in many of the patches and gives the player more control over articulation and dynamics.

If you are still looking for SQ-80 imitations of D-50, M1 and DX-7 sounds, you will find some here. In most cases all the patches offered can be customized to suit, while not straying to far from the original idea. With the programming notes as a guide, you should have no problem tweaking your brains out. All in all, not a bad buy for $32. ▬

Bio: Leonard Crockett attended Berklee College of Music and currently produces demos for Triad Productions. He's also a writer and arranger in the Hartford, Connecticut area.

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: GEBBY9

by Steve Munro, Guilderland Center, NY

The SAW waveforms on Oscillators 1 and 3 are detuned for depth. I used VEL2=+63 as a filter modulator: play soft and mellow, or hard and bright. LFO 2 pans the sound back and forth and is modulated by ENV 1 to create a short, quick movement to coincide with the attack.

The Hack

Here's a fat one for ya'. I wanted to hear it sliding around more in my speakers, so I set DELAY=02 and L2=63 on the LFO 2 page, to get more motion. It's interesting how Steve has used the NOISE2 waveform as a pitched component of the sound; he accomplished this by syncing it to OSC 1 (SYNC=ON on the MODES page). You can have some fun with GEBBY9 by playing with the filter resonance - I liked setting it to 20 or so. Or set it to 31, with the filter frequency set to 15, and see what a difference note velocity makes.

SQ-80 Patch: SLOW2.

by Craig Roth, Skokie, IL

This patch is best appreciated in stereo. Pulse waves with a filter sweep start in the distance, fly in close, then go away. Hold a chord down for a few seconds to hear the fulll effect.

The Hack

If you're doing space music, SLOW2. is just what the doctor ordered. (It certainly works well for other types of music too.) To get even more spacey, turn the filter resonance up full blast (to 31). Try swapping other waveforms in oscillators 1 and 2 for variations; the GRIT waveforms and ALIEN work very nicely. If you're working with an ESQ-1, use PULSE for all three oscillators.

Just because the mod wheel wasn't doing anything, I used it to add a bit more spaciness. Set LFO 1 with these parameters: FREQ=49, RESET=ON, HUMAN=OFF, WAV=SAW, MOD=WHEEL, others should be 00. Then, go to the FILTER page and set MOD #2=LFO 1, DEPTH= -63. With the resonance turned up, this really takes you to another planet.

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 for film and TV and markets sounds for Ensoniq keyboards.

ESQ-1 PROG: GEBBY9 — BY: Steve Munro

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-2	11	30	SAW	*OFF*	-	LFO1	+2
OSC 2	0	0	0	NOISE2	*OFF*	-	*OFF*	-
OSC 3	-1	0	3	SAW	LFO1	-2	*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	50	0	0	*OFF*	-	VEL2	+63

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

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	23	OFF	OFF	TRI	0	0	0	WHEEL
LFO 2	6	OFF	OFF	TRI	30	0	0	ENV1
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	+63	0	0	0	15	0	13	0	0	11
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	-	-	-	-	-	-	-	-	-	-
ENV 4	+63	+63	+63	30	0	0	0	0	26	9

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

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

ESQ-1 PROG: SLOW2 — BY: Craig Roth

	OCT	SEMI	FINE	WAVE	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1	-1	0	0	PULSE	*OFF*	-	*OFF*	-
OSC 2	0	0	3	PULSE	*OFF*	-	*OFF*	-
OSC 3	0	0	2	GRIT2	*OFF*	-	*OFF*	-

	LEVEL	OUTPUT	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1	36	ON	ENV1	+63	*OFF*	-
DCA 2	29	ON	ENV1	+63	*OFF*	-
DCA 3	30	ON	ENV1	+63	*OFF*	-

	FREQ	Q	KEYBD	MOD#1	DEPTH	MOD#2	DEPTH
FILTER	47	0	63	ENV1	-63	*OFF*	-

	FINAL VOL	PAN	PAN MOD	DEPTH
DCA 4	63	9	LFO1	-56

	FREQ	RESET	HUMAN	WAV	L1	DELAY	L2	MOD
LFO 1	5	ON	OFF	TRI	0	63	63	VEL
LFO 2	-	-	-	-	-	-	-	-
LFO 3	-	-	-	-	-	-	-	-

	L1	L2	L3	LV	T1V	T1	T2	T3	T4	TK
ENV 1	0	+63	+63	0L	0	0	48	26	63	19
ENV 2	-	-	-	-	-	-	-	-	-	-
ENV 3	-	-	-	-	-	-	-	-	-	-
ENV 4	+63	+63	+63	0L	0	0	0	0	34R	0

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

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

VFX Hackerpatch

Prog: HAREM BAND, By: Walter Cooper, Latter Sound

Notes: HAREM BAND is part of the Exotic Collection from Latter Sound. The patch selects control timbre, octave, and the effect of the processor. The mod wheel controls the rest of the band. While playing around a pentatonic scale (or use just black keys) in 4/4 time, move the mod wheel forward on counts 1 and 3 and back on 2 and 4. You will hear the hand drum while the wheel is moving forward and the whip when it is moved back. The faster you move the wheel, the more noticeable the effect.

The Hack – This is probably the most exotic use of the mod wheel I've seen. The motion of the wheel is actually used to produce a component of the sound. Surprisingly enough, it uses the effects processor to do this. Clav and fretless bass waveforms are combined for a middle-eastern sounding string instrument. Then, the sound is routed through a Flanger+Reverb effect, where the mod wheel controls the notch frequencies of the flanger in real time. Changing these quickly in opposite directions drives the processor bananas, and the result is the hand drum and whip sounds. Pretty clever, though it requires an interesting playing technique.... Note that the effects processor does not produce any sound on its own; it merely changes the existing sound so the drum and whip will not be heard unless a note is being played. But since these "extra" sounds are an artifact of the effects settings, they can be used on any of your favorite patches merely by copying the HAREM BAND's effects parameters to the other patch. Kinda neat! I didn't change much of anything on this patch. Instead, I played around with performance techniques. To emphasize certain notes in a melody (forget about the mod wheel for now), try flipping the pitch wheel fully forward on the attack of a note, then let it immediately bouce back. The bend range should be set to 02 (Master page), and the whole bend should take about half a second. This gives a very exotic flavor to the sound. – 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

WAVES	1	2	3	4	5	6
Wave	Clar.Var	Fretless	VocalBell	Clav.Var	Fretless	SynthBell
Wave Class						
Delay	0	0	0	0	0	0
Start						
Wavetype	Waveform	Waveform	Waveform	Waveform	Waveform	Waveform

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	+1	+1	+1	+1	+1
Semitone	0	0	0	0	0	0
Fine	0	0	+3	0	0	0
Pitch Table	System	System	System	System	System	System

PITCH MODS	1	2	3	4	5	6
MODSRC	Env2	Keybd	LFO	Env2	Keybd	Mixer
MODAMT	0	0	0	0	0	0
Glide	None	None	None	None	None	None
ENV1	0	0	0	0	0	0
LFO1	0	0	+1	0	0	+3

FILTER 1	1	2	3	4	5	6
Mode	2LP	3LP	2LP	2LP	3LP	3LP
Cutoff	17	127	0	17	127	23
KBD	+15	+15	+15	+15	+15	0
MODSCR	Env2	Env2	Timbr	Env2	Env2	Timbr
MODAMT	+15	+15	+33	+15	+15	0
ENV2	+64	+41	+99	+64	+41	+80

FILTER 2	1	2	3	4	5	6
Mode	2HP	1LP	2HP	2HP	1LP	1HP
Cutoff	0	45	127	0	45	68
KBD	+6	+6	0	+6	+6	0
MODSCR	LFO	LFO	Timbr	LFO	LFO	Timbr
MODAMT	0	0	+30	0	0	+70
ENV2	+46	+46	-99	+46	+46	-99

OUTPUT	1	2	3	4	5	6
VOL	89	72	82	89	72	96
MODSRC	*Off*	*Off*	Wheel	*Off*	*Off*	*Off*
MODAMT	0	0	0	0	0	0
KBD Scale	0	0	0	0	0	0
LO/HI Key	A0/A0	A0/A0	A0/A0	A0/A0	A0/A0	A0/A0
Dest Bus	FX1	FX1	FX1	FX1	FX1	FX1
Pan	50	50	50	50	50	36
MODSRC	LFO	LFO	LFO	LFO	LFO	Env2
MODAMT	0	-15	0	0	-15	+18
Pre-Gain	Off	Off	Off	Off	Off	Off
Voice Prior	Medium	Medium	Medium	Medium	Medium	Medium
Vel Thresh	0	0	0	0	0	0

LFO	1	2	3	4	5	6
Rate	20	24	22	20	24	33
MODSRC	Env2	*Off*	Press	Env2	*Off*	*Off*
MODAMT	0	0	+10	0	0	0
Level	99	15	16	99	15	6
MODSRC	Press	Press	Press	Press	Press	LFO
Delay	28	28	10	28	28	48
Waveshape	Sawtooth	Sine	Sine	Sawtooth	Sine	Pos/Tri
Restart	On	Off	Off	On	Off	Off
Noise SRC RT						0

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

ENV2	1	2	3	4	5	6
Initial	99	99	98	99	99	99
Peak	99	99	99	99	99	99
Break 1	77	77	54	77	77	77
Break 2	50	99	52	50	99	14
Sustain	50	0	45	50	0	1
Attack	0	0	0	0	0	0
Decay 1	3	10	55	3	10	10
Decay 2	17	34	38	17	34	46
Decay 3	5	81	38	5	81	23
Release	76*	76*	59*	76*	76*	54*
KBD Track	-9	-9	0	-9	-9	-9
Vel Curve	QkRise	LtRise	Convx1	QkRise	LtRise	QkRise
Mode	Normal	Normal	Normal	Normal	Normal	Normal
Vel-Level	31	31	44	31	31	31
Vel-Attack	0	99	0	0	99	99

ENV3	1	2	3	4	5	6
Initial	99	0	99	99	0	99
Peak	99	99	99	99	99	99
Break 1	99	72	99	99	72	69
Break 2	99	46	83	99	46	46
Sustain	1	0	87	1	0	0
Attack	0	0	6	0	0	0
Decay 1	9	34	17	9	34	62
Decay 2	7	40	34	7	40	77
Decay 3	73	41	26	73	41	50
Release	36*	57*	58*	36*	57*	50*
KBD Track	0	0	0	0	0	0
Vel Curve	Convx1	Convx3	Convx2	Convx1	Convx3	Linear
Mode	Normal	Normal	Normal	Normal	Normal	Normal
Vel-Level	28	28	6	28	28	28
Vel-Attack	10	10	0	10	10	10

PGM CONTROL

Pitch Table	Off
Bend Range	**
Delay	x1
Restrike	45
Glide Time	8

EFFECTS (2)

Rate	52
Min	44
Max	94
Mod Scr	Mod Wheel
Min Mod	-99
Max Mod	-99

Pressure Key

EFFECTS (1)

Effect	Flanger & Reverb1
Decay	50
FX1	49
FX2	44

EFFECTS (3)

Mix Level	67
Feedback	+48
HF Cut	Off

PERFORMANCE

Timbre	0
Release	0

SQ-1 Hackerpatch

Prog: Custom B-3

By: Mark Clifton

NOTES:

Sick of wimpy organ sounds, I set out to create this fat, dirty B-3 complete with key-click. I cranked the filter on Voice 3 wide open to distort the sound and make the high end scream. (Warning: don't try playing this near a dog.) The modwheel controls the Leslie, but if you want to free up your hands you can assign the pedal to do this job.

WAVE	1	2	3
Select Voice	On	On	On
Wave Class	Waveform	Waveform	Inharm
Wave	Org.Var.1	Org.Var.1	NoiseLp
Delay Time	007	008	000
Wave Direction			
Start Index			
MODSCR			
MODAMT			
Restrk Decay	45	45	45

LFO	1	2	3
LFO Speed	38	17	28
Noise Rate	13	00	26
Level	30	28	02
Delay	19	13	66
MODSRC	Off	Wheel	Kbd
Wave	Tri	Tri	Tri
Restart	Off	Off	Off

AMP	1	2	3
Initial	98	98	98
Peak	98	95	01
Break	98	98	00
Sustain	98	98	00
Attack	19	19	17
Decay 1	21	19	00
Decay 2	21	21	00
Release	03	00	00
Vel-Level	00	00	26
Vel-Attack	00	00	00
Vel Curve	Conv	Conv	Quick
Mode	Norm	Norm	Norm
KBD Track	00	00	+14

PITCH	1	2	3
Octave	+1	0	-2
Semitone	00	00	00
Fine	00	00	+06
ENV1	00	00	00
LFO	00	00	-01
MODSCR	Off	Off	Kbd
MODAMT	-	-	-98
KBD Ptch Track	On	On	On
Glide	Off	Off	Off
Glide Time	-	-	-

FILTER	1	2	3
Filter 1	3Lo	3Lo	3Lo
Filter 2	1Hi	1Lo	1Lo
FC1 Cutoff	000	000	001
ENV 2	+60	+70	+98
FC1 KBD	+79	+79	+01
MODSCR	Off	Off	Off
MODAMT	-	-	-
FC2 Cutoff	000	126	001
ENV2	+80	+48	+59
FC2 KBD	+64	+64	+01
FC1MOD-FC2	On	On	On

OUTPUT	1	2	3
VOL	55	70	90
Boost	On	On	Off
MODSRC	Off	Off	Timbre
MODAMT	-	-	-10
KBD Scale	+21	+09	+10
Key Range	A0-C8	A0-C8	A0-C8
Output Bus	FX1	FX1	FX2
Priority	Med	Med	Low
Pan	00	00	00
Vel window	000	000	000

ENV1	1	2	3
Initial			
Peak			
Break			
Sustain			
Attack			
Decay 1			
Decay 2			
Release			
Vel-Level			
Vel-Attack			
Vel Curve			
Mode			
KBD Track			

ENV2	1	2	3
Initial	98	98	98
Peak	98	98	01
Break	80	80	00
Sustain	89	89	00
Attack	02	02	03
Decay 1	01	01	00
Decay 2	41	41	00
Release	01	02	00
Vel-Level	00	00	00
Vel-Attack	00	00	00
Vel Curve	Quick	Quick	Quick
Mode	Norm	Norm	Norm
KBD Track	00	+98	00

Standard Sound Programming

Effects Programming

(To save space, only those effects utilized are listed. A complete blank form was published in Issue #68.)

ROTERY SPEAKER & VERB

FX-1	04
FX-2	30
Decay Time	47
HF Damping	40
Slow Speed	09
Fast Speed	61
Roter Center	50
Roter Depth	39
Speed Mode	Switch
MODSRC	Modwheel

The Hack:

This B-3 is truly gut city and it's certainly rude enough to make the neighbors move away. It may remind some of us that what passed for "Percussion Stop" on the original B might have been dirty contacts. The ROTARY SPEAKER + VERB (MODWHEEL) rounds out this Hammond sound. If you're having Green Onions with dinner or if Deep Purple is still your favorite color, dial up CMPRSS + DIST +VERB in the Effects Section. Set the Distortion Level In to 04 and the Out to 07. Also, you can vary the key click to taste by adjusting the Vol of Voice 3 in the Output Section.

Jeffrey Rhoads

Bio: Jeffrey Rhoads has been a keyboardist/composer on the Philadelphia Jazz and R + B scene for a period of time resembling forever. He has an interest in cinema and has developed some film courses. Jeff still believes in magic and longs for city lights.

SQ-1 Hackerpatches are published with the same constraints and understandings as the ESQ, SQ-80, and VFX patches except that the hacking and mutilating part is being handled by Jeffrey Rhoads.

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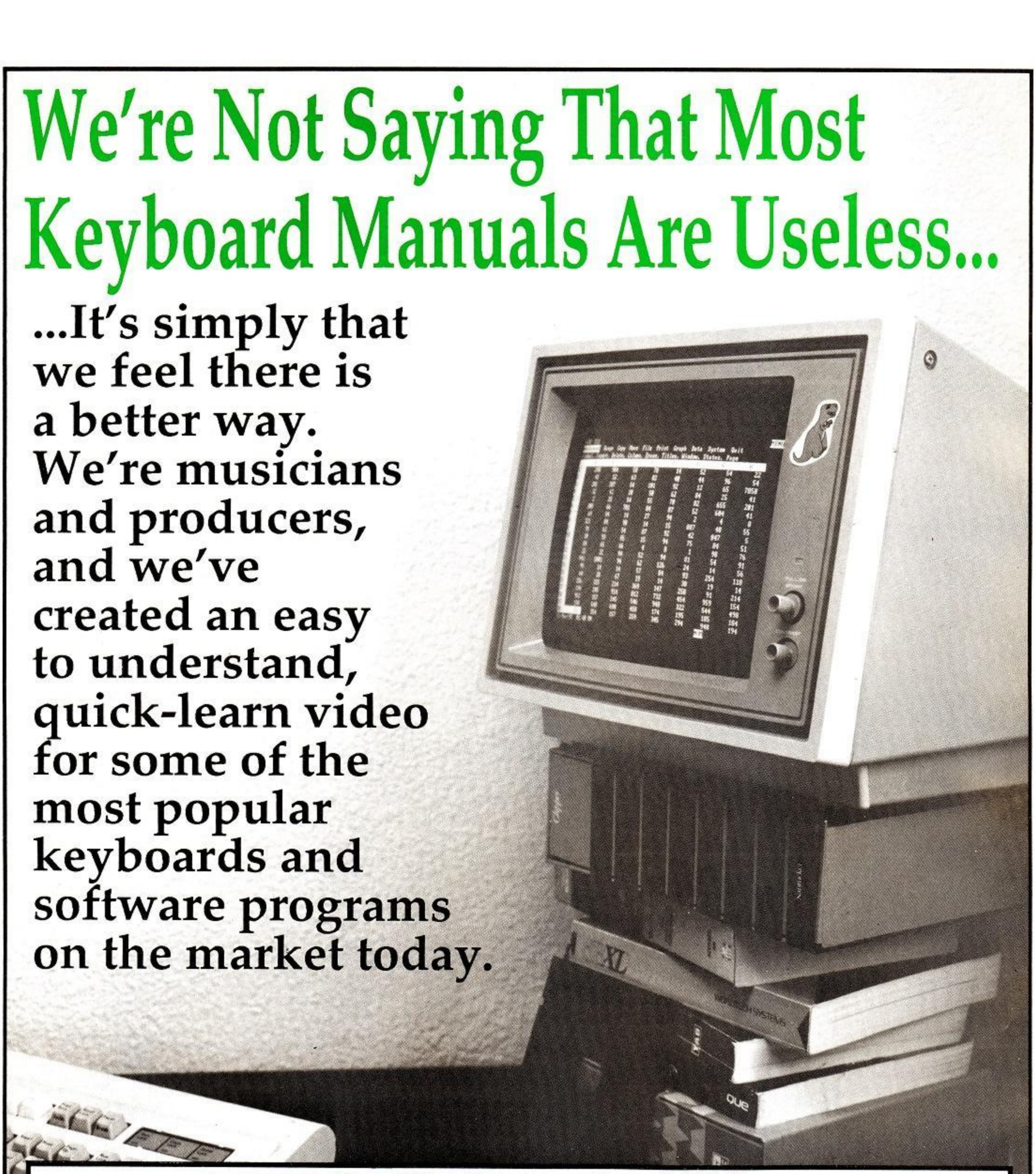

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USER GROUPS

ESQ-1/SQ-80 owners wanting to trade sounds and/or sequences contact Kevin Casey, PO Box 111522, Aurora, CO 80042.

Announcing Mirage-Net; an informal and unofficial collection of Mirageusers connected via e-mail. Information is exchanged between members using e-mail messages. For more info, or to join, send e-mail to the following Internet address: mirage-request@hpdsojk.cup.hp.com. From CompuServe, mail to: >INTERNET:mirage-request @hpdsojk.cup.hp.com. Please include your e-mail address (return addresses don't always work) and your name. Also, if you'd like, include some information about your Mirage setup. You'll receive additional information, as well as instructions and guidelines on using Mirage-Net.

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EPS 2x, OEX-8, all manuals. In exellent condition $1350. Call Dave at 407-880-1985.

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ESQ-1 with 2 cartridges and several cassettes with thousands of sounds. Mint condition. Asking $650. Philip, (318) 255-8934, 6:30 – 10:00 pm CST weekdays.

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WANTED

Love my new VFX-SDII, but I miss some of those gritty ESQ-1 sound effects (Landing, F-111, Seagulls, Growl, Noistring, Cats, Laughs, Copters, etc.) Send suggestions/offers for patches/disks to Reesa, R.D. 1, Box 89AA, Glassboro, NJ 08028.

Wanted: ESQ-1 acoustic patches for WX7 wind controller. Ken Beesley, 22650 Silver Oak Ln., Cupertino, CA 95014. (408) 252-2339.

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Folks in the New York City area can get copies of unavailable back issues of the Hacker - call Jordan Scott, 212-995-0989.

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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). Letter publication is subject to space considerations.

Dear Hacker,

Thanks for the article on sample copyrights ("Shootout..." March 1991). The article did not seem to cover one very gray area, however, that of "sampling collections," those CD's, DAT's, and cassettes with sounds recorded from synths and/or acoustic instruments. Is it legal to distribute or sell sampler patches made from these recordings? Duplicating and distributing the entire collection on some sort of audio medium would obviously be in violation of copyright laws, but taking individual samples from these collections and turning them into machine-specific sounds is not so obviously illegal. Could Mr. McCaffrey comment?

Also, a question for Ensoniq: Is Ensoniq planning a 4x or larger memory expander for the **EPS 16+**? I sure could use the extra megs! The only thing that separates this excellent sampler from the higher-priced competition is the availability of large memory expansions. Could such an expansion use commonly available SIMM's?

Keep up the great work,
Keith R Crosley
Boulder, CO
CompuServe: 71510,1503

[CS – I know what you mean, Keith. I'd love to be able to stick about 8 megs of garden-variety SIMMs into my EPS 16+. Unfortunately, the hardware involved is maxed out with the addition of the standard memory expander and an FB-2 flashbank. Still, that's six times as much memory as the original, unexpanded EPS – I guess we could do worse.]

[Tom McCaffrey – You're absolutely correct in calling this a "gray area." When sampling sound collections on compact disk, infringement may or may not occur due to the specifics of the case. There are several factors to consider.

First, if the creators of the CD give permission to sample their work and to sell your sampler files, then there should be no problem. It would be wise, however, to get this permission in writing.

If you can't obtain permission then the following (somewhat conflicting) facts apply. The position of the Library of Congress is that a single sound cannot be registered for copyright, regardless of the media on which it is stored (CD, sampler file, etc.). However, a collection of several sounds can be copyrightable as a "compilation" if it is determined that more than a minimal amount of intellectual property exists. We get into the gray area because there is no strict definition of what this minimal amount of information is and there are few rules of thumb to go by. It is likely that any of the available CDs of samples taken as a whole do contain much more than this minimum amount. In fact, this minimal amount may be satisfied by a subset of the collection, such as several of the violin samples. When taken together to form a multisampled EPS instrument, for example, it is possible that infringement has occurred; the governing factors are the number of samples copied and how readily identifiable they are with respect to the originals.

There is an additional consideration with respect to the sampling of other types of audio recordings such as professional sound effects CDs. Although an individual sound on such a CD is not copyrightable, it may still be protected due to another area of law known as "misappropriation." In this situation, legal damages may be awarded because a work has been used outside the scope of its licensing.

Finally, it's important to keep in mind that the Library of Congress makes a distinction between the registration of intellectual property and the infringement of copyright. Copyright infringement is a legal issue – its outcome is determined by the courts. When walking this fine line, it's best to obtain professional legal advice which takes your individual situation into account.]

Dear TH,

I've set up an informal and unofficial network of **Mirage** users. The purpose is to provide a way of exchanging info and hints and possibly even sounds. Everyone is invited: All you need is e-mail access to the Internet (this includes CompuServe users and possibly others) and an interest in our old friend, the Ensoniq Mirage. To join, or to get more info, send e-mail to:

mirage-request@hpdsojk.cup.hp.com

CompuServe users can access this with the address:

>INTERNET:mirage-request@hpdsojk.cup.hp.com

We currently have 26 members. The way the Mirage-Net works is that mail sent to the network is broadcast to all members. Replies can be one-on-one or also broadcast to the net. I don't expect the traffic to be too high, so it shouldn't be a real mail hog but it is a way to stay in touch with other users.

Johnny Klonaris
San Jose, Ca
Internet: johnny@cup.hp.com

[CS – Sounds like a great idea to me. Thanks for writing, johnny@cup.hp.com]

[Ensoniq – Johnny, thanks for your continued efforts. Your ongoing support and dialog with all of us is very valuable.]

Greetings,

As we all know, Ensoniq makes great products and the *Hacker* is a great magazine. I just finished a recording project that exemplifies this thoroughly. I hope someone will benefit from these thoughts.

My entire keyboard/sequencing setup consists of an Ensoniq **SQ-80** and a **VFX**. The two synths are a match made in heaven. The SQ-80's sequencer and unique sound MIDI'ed to the monstrous VFX make for a setup that still causes me to wake screaming when I think about it at night. Add a multitrack and you have a home studio that can produce some great stuff.

Now, since Ensoniq doesn't make everything (yet), I use a Tascam 688 Midistudio to lay down vocals and the occasional guitar track. This is what I used to produce "Looks Like Rain...Tastes Like Chicken," a 60-minute cassette of satirical comedy written by my band, The Sponge Awareness Foundation.

The *Hacker* played an intimate role in the production of this tape, Because I do not have the skill to program my own sounds, I rely on Hackerpatch to breath new life into my axes. I would say that 70% of the SQ-80 sounds that I used on the project were from the Hacker contributors! Thanks goes to Sam Mims and everyone who sent those sounds in.

What I'm trying to say is, with relatively low cost equipment, one can produce truly astonishing results. Don't worry that you don't have the latest toy that comes out, but instead, make the most of what you've got and you'll find that there's a lot of music that can be made.

Ed Lecuyer
Wrentham, MA

[TH – Ed, this is just the kind of thing Daniel

Mandel is looking for. Check out his intro to the new Hackercolumn, "Hacker Basement Tapes"]

[CS – Sponge Awareness Foundation?]

[Ensoniq – We're glad to hear you are having so much fun and making great music with our products – your description (with the exception of your nightly wake-up call!) is the exact intention we have for our products. Thank you for sharing your satisfaction.]

Dear TH,

I have a **VFX-SD** (it's great!). I've heard that Ensoniq has a "talking manual." Is it available yet? If not, when?

What's the best way to rearrange and save various sound programs for later retrieval from disk? In banks of six? I'm sure keeping a written log book of these banks would help to find them later. I'm interested in your ideas on the subject.

Also, once I buy a personal computer (an IBM), what's a good library program for saving and retrieving sound programs or banks?

Any help or ideas will be appreciated!

Jay Anderson
Elburn, IL

[CS – The arrangement of sounds on disk is probably best determined by your personal needs. I've found two basic arrangements that I use, though.

The first is to simply arrange like sounds together – strings in one bank, pianos in another , and so on. When you need to audition a number of similar sounds to find just the right one, this method seems to work best. I like the idea of keeping the banks in small, six-sound groupings – that way you don't have to wipe out half or more of your internal sounds to load a bank of sounds when you're looking for that perfect bagpipe patch.

I also have my favorite sounds stored individually on a disk of their own. This makes it very easy to select specific sounds and get them into the current setup with a minimum of fuss. This method doesn't work that well for sounds you're not familiar with, though, as it can take a while to audition 27 different harmonica sounds.

As to your question about IBM editor/librarians, I don't like making recommendations in this forum, especially for a computer format that I don't use myself. You might want to check out Justin Dune's review of Turtle Beach's "OVIEW" editor/librarian in the July '90 issue of TH (#61), and maybe scout around for the public domain MIDI-EX generic librarian for IBM mentioned in Steve Vincent's letter below.]

[Ensoniq – Yes, the "Talking Manual" is available, see "News From Ensoniq" in the Front Panel for more information.]

Transoniq Hacker,

Before I get to my questions I briefly want to extend my congratulations to *Transoniq Hacker* for the very informative and useful articles, tips, etc. I love the Ensoniq products (I have a **VFX-SD** and **EPS 16+**), their user friendliness, sound quality and functionality. The *Transoniq Hacker* adds just the right amount of icing to the cake as an invaluable resource.

Now my questions:

1) I have the VFX-SD Version II with Megawaves. I have experienced some problems possibly related to the sequencer. First the unit is completely re-initialized, and then loaded with Sequencer OS V2.10, my setup config file, my 60 programs and seq/songs, and my 20 presets. All appears to work fine. If I then turn the unit off and turn it back on a bit later I get an error like the following: 'System error 33... Press any key to re-initialize.' The software doesn't wait for me to press 'any' key but proceeds to calibrate the key-

board and complete its initialization. Again, all appears to work fine. In fact, the system error message never appears again unless I perform the above re-initialization procedures again.

Also, if I remove some of the sequences, save out to a new 60 song/seq file and re-init again and load the new 60 songs/seq file the system error does not appear.

2) While playing back a song or sequence, if I press the 'Sounds' button and try to call up other programs, the software sometimes gets confused and will either stop playing the sequence, give me a system error message or completely corrupt the sequencer OS so that on next boot-up the sequencer OS and all the stored sequences no longer occupy memory.

3) I have the 2x expansion plug-in for the EPS 16+ and have had trouble loading a bank that contains an instrument whose block size extends over more than one diskette. When it is time to load the large instrument sample, and asks for the second diskette first and of course fails. When I try to fake out the software by renaming the first diskette to be the same as the second diskette, the system begins the load but fails trying to load the second diskette. I certainly have a workaround (loading the bank with single diskette samples first and then manually loading the larger instrument samples), but, if this is a bug, and the folks at Ensoniq are aware of it, do they know when a fix for this might be available?

Rob Levine
Freeville, NY

[CS – The VFX problems you describe sound to me as though they are probably hardware related. Time to get in touch with good ol' customer service, I'd say. As always, the Ensoniq Customer Service phone number is 215-647-3930.

The difficulty you describe having with your EPS 16+ is normal. Because of the way banks are implemented in the EPS 16+, you will have problems loading banks which use two-disk sounds, unless you manually load the two-disk sound first, before loading the bank. The EPS 16+ is smart enough to know when correct sounds are already loaded, and therefore won't delete those sounds before loading the rest of the bank. This is an improvement over the way that the original EPS handled banks. Unfortunately, implementing this feature made it impossible to load multi-disk sounds as part of a bank. Ensoniq is aware of the difficulty and is looking at the problem. For now, though, load the multi-disk sound first, then the rest of the bank, and things should work out alright.]

Dear Hackers:

Thanks for the review of the First Generation EPS samples in your March issue. While I don't agree with Michael Mortilla's philosophical objections to FG's "perfect" samples (at least, I think that's what he was insinuating), I'm glad he enjoyed them regardless.

I thought the bold headlines "Computer Generated Samples..." were obvious enough, but apparently not, so let me clarify a point of confusion. First Generation samples are created from scratch on a computer using synthesis software and then sent via MIDI to the **EPS**. No sampling A/D stage is ever used for these samples, therefore, aliasing artifacts and (I'm being more specific here) analog noise inevitably created by imperfections in that stage are not present. More importantly, compared with other synth samples, the noise, aliasing, bit resolution or frequency response limitations inherent in the original instrument aren't carried over to the EPS.

For more authoritative observations on the advantages of all digital signal chains, I refer you to Craig Anderton's comments in the October Interface.

John Loffink, First Generation
Cocoa, FL

Dear Hacker,

Over the past three years I have been faithfully adding each month's Hackerpatches to my **ESQ** sound library, so that I now have six banks of ESQ/SQ-80 programs from the *Hacker* (240 sounds) and one bank of exclusively SQ-80 patches. I am now making these sounds available to anyone who wants them. I can send the data in any of five formats: Remote Control-ESQ (RC-ESQ) Editor Librarian for IBM, Dr. T's ESQape Librarian for IBM (ver2.21), MIDI-EX generic librarian for IBM, EPS sysex disk, and data cassette.

If you have an IBM or compatible with an MPU-401 compatible MIDI interface, but don't have an editor/librarian program, I can send the banks to you on floppy disk, along with MIDI-EX, a public domain generic sysex program (you can also use MIDI-EX for many other sysex data storage and retrieval applications).

If you would like these programs on IBM format, send me a formatted 5 1/4" floppy disk in a mailer that I can use to return your disk, a buck for postage, and specify whether you have RC-ESQ, Dr. T's ESQape, or if you want me to send the banks with the MIDI-EX patch utility. If you have an EPS, send me a formatted EPS disk and a buck for postage. If you have none of the above, send me a decent blank cassette tape, and a buck for postage. If you have more than one of the above, I'd prefer to send the data on IBM disk (least hassle) or EPS disk (medium hassle).

What's the catch? Isn't any. It's my birthday today and I'm in a magnanimous mood. However, if you have any public domain EPS samples or ESQ patches you'd be willing to send on your disk/cassette, I'd be right proud to accept 'em, thanks.

Send to:
Steve Vincent
3615 – 66th Ave. W.
Tacoma, WA 98466

[CS – A most excellent offer indeed, Steve. Generations of ESQ-1 and SQ-80 users are sure to worship the ground upon which you walk. And happy birthday!]

[TH – Wow!]

Greetings:

My Ensoniq **Mirage** has blown the 74LS145 located at U6 at least eight times in the past two years. This causes the "Value," "2" and "Seq Rec" keys to go dead along with the "g" segment in the seven segment displays to stay dark.

Fortunately, after the first time it blew, I installed a socket. I am perplexed at the cause of this failure. It seems to blow more frequently lately. I do not believe it is from static discharges, since I now touch a grounded metal plate before I touch the Mirage.

Unfortunately, I do not have the cash flow for any authorized service on it. I can easily perform any repair on the main board if I knew what to look for. Any help in this regard would be greatly appreciated.

Ron Slabe
Lakewood, OH

[CS – I'm afraid your question goes beyond the technical scope of this column, and Ensoniq has no mechanism for helping individual users at this level. I'm afraid that the best we can do is to refer you to a qualified service center, although I know this isn't the answer you were hoping for. But thanks for writing, anyway.]

[Ensoniq – It's possibly a short in one of your cables inside the Mirage, the 74LS145 is a fairly robust chip and not likely to blow out this often. You should definitely get to an Authorized Repair Station. This is not a do-it-yourself task, as it involves some qualified trouble-shooting.]

[TH – But first you might try giving it a thorough eyeball inspection looking for possible sources of an intermittent short.]

Dear TH,

Hi, love the *Hacker*.

I'm the owner of a marvelous **SQ-80** which, to some, is an old hat by now. In defense of this machine, I must confess that I don't believe that 60% of its programming potential was ever reached, although there are some good sounds for it.

Here's a question: Since the SQ-80 has some sampled sounds, why can't those samples be updated via IC chip internally or on cartridge? Although I'm preparing to buy the EPS 16+ I would still be willing to shell out the extra bucks for my trusty SQ-80. Keep up the good work!

Roy Gary
Greenville, S.C.

[CS – To change the sounds stored internally in the SQ-80 would involve not only changing the actual waveform ROM, but also changing the SQ-80 operating system so that it would know what to do with the new waveform ROM. This would be an awfully big job for a third party vendor to attempt, and since the keyboard is out of production it's not too likely that Ensoniq will be doing too much more development along those lines. But you're right about one thing – there's a heck of a lot that can be done with what's already in there. Live long and prosper.]

Dear Hacker,

I have just added to my keyboard collection with the purchase of the **VFX-SD**. Added to my **ESQ-1** and **Mirage** rackmount I get a fairly nice sound and sequence arrangement. Now, the trouble I'm having has, I'm sure, a simple solution but I can't put my finger on it. When all the cables are hooked up to each keyboard (using the VFX as a master) the VFX receives information back into itself and plays double notes. It did this even before the ESQ and Mirage were MIDIed. All this is just my hobby (taking up the whole living room) so I haven't really researched it. I'm just looking for simple answers and quick solutions.

I also bought a music transcriber for my PC that you plug MIDI in and out. This also back-feeds and double plays the VFX unless I unplug the MIDI in cable. Is there an easy solution here?

I've had the VFX for about two weeks now and I'm learning more each time I can sit and play. Last night I was working on a sequence with key changes, etc. and when I went back to real time sounds the keyboard shifted a whole step down. Wow! I saved what I was working on, reinitialized, and that fixed it, but it doesn't tell me what caused it. What's going on?

One more thing before I go. The other night, again, the VFX did a strange thing. While adjusting the pitch of an organ patch, the keyboard started playing some strange, random notes. I turned the unit off and back on and had an initialization failure. After a couple of re-initialize tries and on-off attempts, I called the local music store, where I was talked through a "CPR" of my keyboard. A couple of raps under the belly, a quick reinitialization and back in business. What if I had been performing somewhere? Would I have put this into the act?

Had to let you know I enjoy the Hacker. Keep it up and keep making music.

David E. Conrad
Lake Charles, LA

[CS – Ah yes – the dreaded MIDI loop. You've pretty much put your finger on the problem – data that you send to your computer echoes or loops back to your VFX, causing it to sound two notes for every one you play. There are at least a couple of solutions, though.

First, almost every piece of music software available allows you to turn off the echoing of data received at the computer interface's MIDI in jack to the MIDI out jack. Sometimes

this function is referred to as "Echo," or "Thru." Check to see if your software doesn't have some way of turning off "echo" or "thru."

Another solution is to set up a "dummy track" on the VFX which is meant only to send MIDI data – not to receive it. For example, set up a multi-channel sequence in the VFX, but set one track to "EXT" status (hit the "MIDI" button in the Performance section). The track set to EXT will send all keyboard and controller data, but will not play any sound of its own. Since you can switch MIDI channels for this track at any time, as well as send program changes, volume changes, and so on, you can use this track to "control" any other sequencer tracks you'd like. One thing to be aware of, though. This special "dummy track" should be the highest numbered track of any you are using. In other words, if you are using four track, the dummy track should be track number five or higher. The reason for this is that the VFX prioritizes incoming MIDI data by track position. If you have two tracks set to receive on MIDI channel one, for example, the lower numbered track will play the data and the higher numbered track will ignore it. Since using a dummy track requires that you have two tracks set to the same MIDI channel (the dummy track and the target track) the dummy track must be the higher numbered one for the data to be correctly routed to the target track. For more information on this potentially confusing topic, you might want to check out Jim Johnson's article, "Using the VFX as a Master Keyboard," from the November, '89 TH (Issue # 53).

I'm not quite sure what the "CPR" procedure that you were shown involves, but if you have no more problems, there's probably not too much to worry about. If you're still a bit nervous, though, I'd get in touch with Ensoniq customer service (215-647-3930) – they may be able to advise you about avoiding future difficulty.

As far as the VFX coming up a whole step flat, it could be something as simple as a downward pitch bend sent to the VFX without a corresponding upward bend. If it happens again, try moving the pitch-bend wheel before going to the trouble of re-initializing the machine.]

[Ensoniq – As far as the pitch bend scenario is concerned, this is an interesting aspect of MIDI that many people can be confused by. If you are working with a sequencer and stop it while it's playing, any controller info (pitch bend, modulation etc) may be left in midstream. To be sure that notes stop sounding many manufacturers use the ALL NOTES OFF command of the MIDI spec, but there is no such command for controller information. Flicking the Pitch Bend wheel works fine in your case.]

Dear Hackers,

Regarding Kenrick Gordon's questions about the "phantom" waveforms in the **ESQ-1** (April Interface), it is indeed possible to save such data to cassette. My Soundset 3 collection utilizes phantom waves up to WAV255 (only up to WAV075 is available by reading SQ-80 sounds), as well as other parameter values that are outside of their normal ranges (for example, OCT = +6). The data saves perfectly to cassette, cartridge, or through sysex dumps to the Mirage, VFX-SD or whatever. The only problem I have encountered is in saving the data via software librarians and editors – these sometimes force the "illegal" parameters into normal ranges.

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Publisher: Eric Geislinger
Editor: Jane Talisman
Staff: Marcia Crawford

Our (somewhat regular) illustrious bevy of writers includes: Craig Anderton, Chris Barth, Gary Dinsmore, Rob Felner, Pat Finnigan, Charles R. Fischer, Jim Grote, Garth Hjelte, Bryce Inman, Jim Johnson, Bill Lewis, Kenn Lowy, Sam Mims, Gary Morrison, Michael Mortilla, Earle Peach, Clark Salisbury, Jordan Scott, Mick Seeley, Joe Slater, Kirk Slinkard and Bob Spencer.

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

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