ROLAND S-50
SAMPLER
VERSION 2.0

By Dominic Milano

USER-FRIENDLINESS IS A TOPIC OF much discussion these days. If you build an instrument with lots of knobs on it, you increase its user-friendliness, but you also drive the price up. Building a spartan front panel lowers the cost, but also makes it hard for the user to tap the depths of a synth. Manufacturers of sampling instruments face an even bigger dilemma. There's almost no way to include the kinds of easy-to-deal-with controls needed to manipulate a sampled waveform in the ways musicians would like—at least not without building a computer screen into the instrument.

Both the Fairlight and the Synclavier come with CRTs—their makers knew the importance of visual feedback. Those of us operating in the real world of Mirages, Emulators, S900s, Prophet 2000s, and the like have had to turn to external visual editing software running on some kind of computer in order to do any serious sample editing. But that gets pricey—the computer, interface, and software can cost as much or more than the sampler itself.

Roland's S-50 is designed to eliminate the need for an external computer and visual editing software. All you need is an external video monitor—RGB or monochrome (a color TV will work too)—and you're set to do most anything a visual editing software package will allow you to do to your samples. The only other sampler that comes close to offering this kind of capability at an affordable price is Casio's FZ-1 (Keyboard Report, Sept. '87); its backlit LCD screen is built-in, but tiny by comparison to what you can hook up to the S-50.

The S-50 is one of the only 16-voice polyphonic samplers currently available (short of a Fairlight Series III or Synclavier, the Korg DSM-1 is the only other in a comparable price range). It has four separate outputs with eight ways of assigning voices to them, it holds two banks of up to 7.2 seconds of 30kHz sampled sounds (14.4 seconds at 15k), it has 512K words of memory, and 32 different samples can be in memory at once.

For those of you with bits on the brain, the machine features 12-bit resolution. It sounds great, and has one of the best sample libraries we've ever heard.

Organization. The S-50's operating system is stored on the same 3.5" disks that hold its samples. It takes anywhere from 30 to 40 seconds to load the contents of a disk into the machine (if you want to get picky, our tests ran at an average of 33 seconds). Booting a disk will always load the contents of that disk
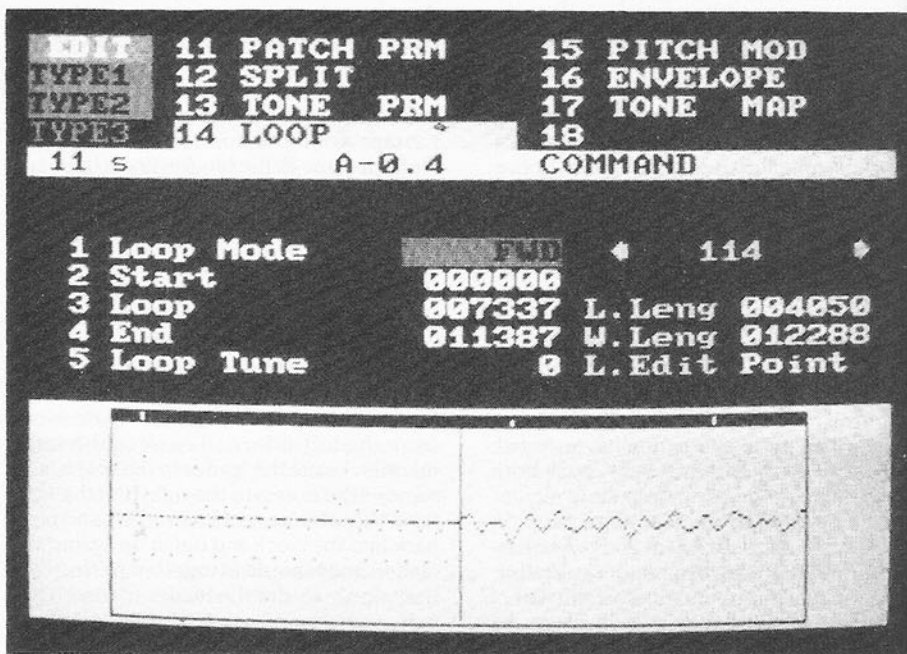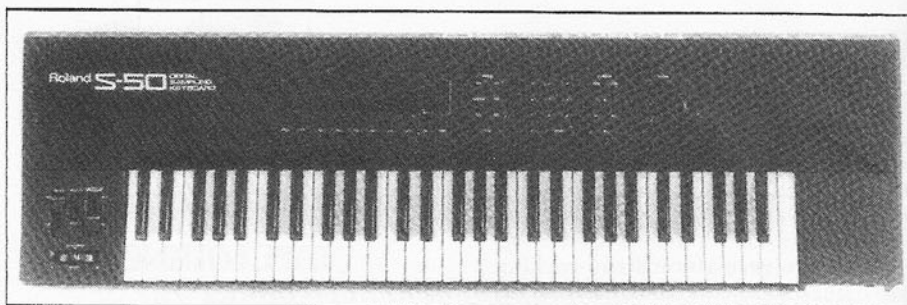
The S-50's CRT display for setting loops. Menu of options is displayed at top. Loop mode, start and end points, and loop tuning are set in the center of the screen. At bottom is the looping window for aligning end and start points, displayed on either side of center line.

Roland S-50 Sampler

Keyboard: Five octaves, velocity- and pressure-sensitive.

Voices: 16.

Memory: 512K. Two banks of 7.2 seconds total sample time at 30kHz; two banks of 14.4 seconds at 15kHz. Up to eight patches and 32 tones stored per 3.5" floppy disk.

Interfacing: MIDI in, out, thru. Eight-pin DIN (IBM 5234 compatible with Roland adapter cable) and RCA video output. Four individual 1/4" audio outputs, mix output, and headphone output.

Features: Built-in visual editing software, velocity cross-fades and switching, eight-stage amplitude enveloping, visual display of samples, truncating, mixing, and combining, etc.

Size: 43.5" wide, 13" deep, 3.75" high, weight is 28 lbs, 11 oz.

List Price: $3,295.00. S-550 rack mount version: $3,295.00.

Contact: RolandCorp US, 7200 Dominion Circle, Los Angeles, CA 90040. (213) 685-5141.

into the sampling memory, which is great unless you want to do a bunch of sampling from scratch, in which case it takes a lot of time to go in and manually delete things from the sample memory. What you'd think would be the obvious solution, creating a disk with nothing on it but the system, turns out to make things easier but takes nearly as long to load. We would have liked to see a function that would tell the unit to load just the system and ignore the sample memory for those times when you want to do your own sampling.

But that's the only drawback we could find with having a disk-resident operating system. It's far overshadowed by the benefit of being able to update older systems by using new disks instead of changing ROM chips. A simple procedure in the aux mode (one of seven operating modes) in the 2.0 system converts old disks to the new system. We converted about 20 disks from OS 1.0 to OS 2.0 in just over three minutes—about 10 seconds per disk.

System 2.0 does a number of things that were conspicuously absent from the 1.0 system, including display waveforms in a

number of editing modes and allow you to assign and route four patches or four tones to separate MIDI channels and separate outputs (more on this below). If you bought an S-50 with version 1.0 software, you can get the system 2.0 disk for $15 from Roland. (All new units are currently shipping with version 2.0 software).

The open system approach leaves room for lots of expansion. Soon to be released is a disk-resident pattern sequencer (Sys-503). Look for details in a future Update column.

Roland refers to individual samples as tones, while the term 'patch' is used to refer to a collection of tones that have been mapped across the keyboard. Each disk can hold up to 32 tones and eight patches, but only four patches at a time (holding any number of tones) or four individual tones can be assigned to their own MIDI channels and outputs for external control.

Calling up patches or tones from the S-50's own five-octave velocity- and pressure-sensitive keyboard is quick and easy. A group of 10 switches just under the internal 32-character LED display selects either patches or tones, depending on whether the instrument is in patch play or tone play mode. To select a new patch only takes one keystroke. Selecting a tone never takes more than two, usually only one, keystroke. Once selected, patches and tones are available to play instantaneously; no waiting for them to load from disk.

The 32-character LED provides a lot of visual feedback, but if you're planning to do any sampling, sample editing, or just building your own disks from a presampled library, take our advice and pick up an inexpensive monitor. The amount of information shown at any given time (there are about 37 screens!) is far greater than you get from the front panel's display. Some of the system 2.0 operations, particularly waveform drawing, would be impossible without visual feedback from a monitor. The rest of our comments will focus on using the S-50 with a video monitor.

As to the question of color versus black and white: An RGB will look pretty, but the contrast on a green and black computer monitor is plenty good enough. If you do intend to go color, make sure you'll be able to get the right kind of adapter for your cables—we have five color monitors in the *Keyboard* offices (two for IBM PCs, one ST, one Amiga, and one generic) and couldn't find one that would hook up to Roland's 8-pin DIN connector without an adapter (RGB 25N or 25i), which Roland sells for $32. The monochrome video hookup requires only an RCA connector.

Unlike some non-mouse-driven computer software, you don't have to remember weird combinations of keystrokes for selecting different menus or inputting data on the S-50. There is a separate switch for each of the seven operating modes (recording, aux, function, MIDI, edit, disk, and play). An alphanumeric keypad is used for inputting numeric values and naming tones and patches. Up/down/left/right cursor keys
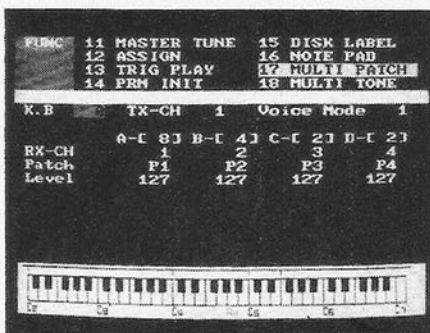

In the multi-patch screen the keyboard image shows split points, while MIDI receive channels, patch numbers, and relative output levels are set for the individual outputs in the center of the screen.
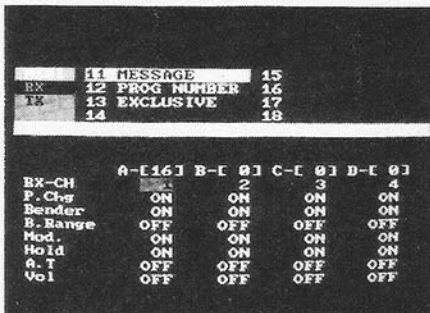
In this display, MIDI messages are toggled on and off for each of the four outputs. The number of voices allocated to each channel is displayed at the top of each column (A=16, B=0, C=0, D=0).

Display of samples in bank A. The currently selected sample is highlighted in color (grayed out here). Remaining sample time is shown at center screen.
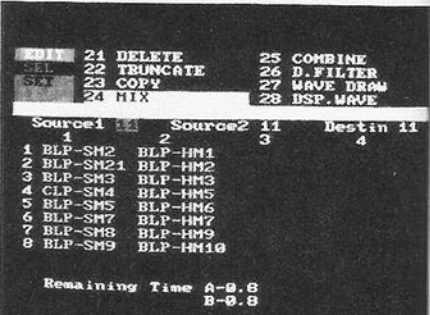
Display of samples in memory by name. In this screen, two source samples to be mixed are routed to a destination.

move the cursor around the display, and a Roland alpha dial steps through parameters once the cursor is parked on them. That's about as close to having one button for each function as anyone is likely to come by in this day of keeping costs to a minimum. The system is extremely user-friendly.

The Sample Library. Let's face it, not too many people do their own sampling, so let's skip to the part everyone is wondering about: the sample library. We haven't noticed too many third-party developers offering S-50 sounds, even though the unit (with OS 1.0) has been around for about a year. But that shouldn't bother anybody. Roland's library, which includes six 10-disk volumes with more on the way, features some wonderful sounds. And best of all, it's free. Well, almost. What you're supposed to do is drop by the dealership where you bought the instrument with your own blank disks and make copies of any disks in the library you like, which is a wonderful policy.

We don't have space to mention them all, but here are some highlights: The piano disk is superb, with almost no audible split points. We expect some of the exotic percussion sounds (balophones, anklungs, and like that) as well as some of the vocal sounds (oohs, low ohs, soprano ohs) to end up on the classic samples list, although they'll no doubt be overused before long. There are plenty of orchestra hits (barf) that use the outputs in stereo (make sure plugs are inserted in the first two individual outputs only), and there's even a disk of shakuhachis (would someone *please* burn all the disks with shakuhachi samples on them? Maybe Congress could pass a law against them . . .). We were a little disappointed by some of the brass samples, but they worked well when layered with synth patches.

The disk operations of the system are very well designed. If you find a number of different samples you'd like to use in an arrangement, but they aren't located on one disk of the library, it's very simple to save that conglomeration of sounds to a single disk. Unlike at least one sampler we can think of, the S-50's disk operations allow you to format a new disk without dumping sample memory in the process. You can save just about every kind of data (function settings, MIDI settings, patches, the system) without saving anything else. You can also load tones, patches, MIDI, and function data singly or *en masse*. In order to boot the system with a blank memory for sampling, you'll have to create a disk with nothing on it but the system.

Editing. Even if you aren't into doing your own sampling, chances are you'll want to reset loop points, combine samples, map samples across the keyboard, and generally mess with editing sounds. Be sure to make a backup of the original disks, because you don't want to accidentlly demolish your original sample. We recommend using work copies for all your editing operations, in spite of the fact that most of the tone editing operations allow you to route the edited sample to an empty memory position (provided there's enough memory left). This makes comparing the old with the new a fairly straightforward procedure.

What kind of mutilating can you do? Just about everything you might expect: Individual tones can be truncated, deleted, copied to a new location, mixed, combined, their start points shifted in time, looped, *lowpass or highpass filtered, and enveloped.*

Mixing two samples superimposes two tones to create a third new tone (note that the
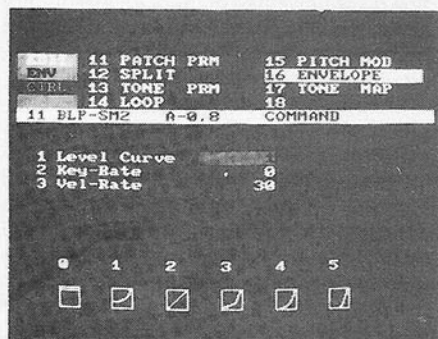
Display of the velocity scaling curves. Velocity control of envelope rates is also set here.
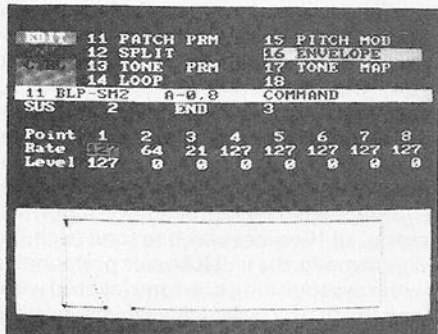
The amplitude envelope consists of eight break points and eight levels. Values can be entered numerically in the center of the screen using the alpha dial or numeric keypad. An optional digitizing tablet can be used to grab and move break points anywhere on the screen.

documentation doesn't warn you that mixed samples will come back at you on their original key setting, as programmed in the tone map menu. If it's different from the original pitches of the mixed samples, you'll wonder why they get transposed when this edit is performed).

Combining tones is slightly different—instead of superimposing one atop the other, this operation joins two waveforms together at the start and end points you specify. Wave data for the first tone will be discarded at the point where it is joined to the second tone.

Setting loops is a real pleasure on the S-50. Loop start and end points are displayed next to each other in a window as on the most copied window in visual editordom: Blank Software's Sound Lab looping window. You can scroll through the waveform until the points match up closely enough to eliminate audible bumps and clicks. A zoom function magnifies the displayed waveform, and a function so far unique to the S-50 lets you tune the loop. We're really excited by this feature and hope other manufacturers will adopt it on their instruments before long. If you're really lazy, there's an autoloop function too, where the instrument will help you find loops automatically.

The filtering is digital in the machine, which means you can't adjust the cutoff frequency or resonance while listening to its effect at the same time. You make your adjustment, then listen to it. The S-50 does not have an envelope to control the filter, which means its main application is for get-

ting rid of unwanted high- or low-frequency noise (the filter has two modes: lowpass and highpass) in your sample—aliasing, rumble, hiss, and so on.

The amplitude envelope is fairly complex. Eight levels and rates and a sustain segment can be set. Visual display of this envelope is provided. Normally, the points and levels are set using the cursor and the alpha dial/numeric keypad; however, an optional digitizing tablet will let you grab break points and reset them. The same digitizing tablet is used for drawing waveforms. It's great for drawing out pops and glitches in a sample. We wish the tablet could be used to move the cursor around mouse-style.

Other editing functions allow you to map tones to the keyboard (ranges are entered by playing the notes the tone will appear on), set relative output levels, adjust pitch-bending, after-touch, and modulation depth (the LFO will only do vibrato), detune samples relative to each other, and set the key mode. The latter determines how many voices are sounded when you play a key. In normal mode, all 16 voices play one tone each. In unison mode, the unit is 8-voice polyphonic, with keys sounding one tone layered with itself (this is where detuning samples relative to each other comes in handy). Other key modes include velocity switches (where playing over a variable threshold will cause a second tone to sound), velocity cross-fades (where the balance between two layered tones will be determined by how fast you play the note), and velocity mixes (sort of like cross-fades, but the relative volume of the layered tones corresponds to a level curve, of which there are nine possible).

Sampling. What about doing your own sampling? The sampling input jack is a 1/4" input, with a rotary pot to select between line- and mike-level. This works in conjunction with a slider located just above the pitch-bend lever to set the record level. Visual indication of clipping is supplied by the display in the form of a bar graph which meters the input signal.

Sampling can be triggered manually, or set to automatic when the input signal crosses a variable threshold. A pre-trigger setting starts recording 10, 50, or 100 milliseconds before the threshold is crossed—a function that's useful for making sure you actually record the very beginning of your sound. Any excess can be truncated out later. Another function allows you to capture a sound that was fed into the instrument before you started sampling. This is possible because the S-50 continuously samples whatever it sees at the input and loads it into whatever memory is free. When you hit the enter key, that 'previous' sample is saved. It's useful if you're sampling a TV show while viewing it, although in that case we would prefer to record the audio onto tape first and then download samples to the S-50.

There are two sample rates: 15kHz and 30kHz. Memory can be allotted in various increments of .4 seconds up to a maximum of 7.2 seconds per bank with a 30k sampling rate (14.4 at 15k).

MIDI. If you're planning to use the S-50 in conjunction with a sequencer, you'll want to know that you can address four patches or tones on different MIDI channels. Program numbers can be mapped, and a number of controller messages (including pitch-bend, after-touch, volume, and modulation) can be toggled independently for each channel.

Our only real disappointment with the instrument was that it does not have dynamic voice allocation. Instead, there are eight different ways the 16 voices can be divvied up polyphonically among the four individual outputs. In addition, if the instrument sees that no plug is present at an output, the voices normally assigned to it are routed to an adjacent jack. For example, if no plug is inserted in the fourth output, the two voices assigned to output four will come out output three.

Conclusions. We liked the S-50 quite a lot. The keyboard feels great, although we're sure many will opt for the S-550 rack version (we'll tell you why in a second). Having 16 voices is wonderful, especially when you want to take full advantage of velocity switches and cross-fades. The sampling library is one of the best we've heard. And the built-in visual editing software will definitely make your life a lot simpler, saving time—you won't be exiting your sequencing program to boot your visual editing software all the time. If you've already got a computer, you'll be able to dedicate it to things other than visual sample editing. And if you're wondering about the S-50 being a couple of hundred bucks more than other 12-bit machines, bear in mind how much extra you'd have to pay for a visual editing package and the computer to run it on.

What's missing? We wish the instrument had dynamic voice allocation. We wish cutting and pasting sounds could be done with a mouse or the digitizing tablet. We would have liked to see velocity control of the filter cutoff (although that would be impossible because the filter is a non-real time function) and sample start time. Cross-fade looping would be nice, too, as would a memory expansion offered along with a SCSI port for connecting a hard disk. And someone is bound to miss having some of the functions of Sound Designer—FFT displays, digital EQ, digital gain controls.

But Roland apparently noticed those things, since the S-550 rack version (which we're told will be available by the time you read this) has 1.5Meg of memory and will hold 64 tones, 32 patches (!), and 28.8 seconds of samples at 30kHz. It also features D-50-style time-variant filters with eight-stage envelopes to drive them, cross-fade looping, eight individual outputs, a remote control, and a SCSI port. It may also have dynamic voice allocation to the individual outputs, although at press time Roland US wasn't absolutely certain of this.

Need we say more? The S-50 is a hell of a sampler. It will do everything you could ask a sampler to do and it will do it well. But it sounds like the keyboardless S-550 (which carries an identical list price) is the 12-bit sampler of doom. We've got our checkbooks ready. ■

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