

Roland D-70 Super L/A Synthesizer

By Robert Rich

Roland's sample-based L/A synthesis has evolved to a new level with this lean, clean, music-making machine.

Following the explosive era of the MIDI revolution, the watchwords in synth technology today are consolidation and progressive refinement. This phase is typified by Roland's newest flagship instrument, the D-70. Good-sounding, easy to program, and a joy to play, the D-70 is hardly revolutionary, but it represents culmination of trends in modern instrument design.

The D-70's voice architecture uses an extensive base of acoustic and synthetic samples in ROM, including percussion. These may be expanded using U-110-compatible sample cards or a new type of card designed especially for the D-70. Sample-based voices are subject to extensive filtering, enveloping, and modulation. The ability to layer up to four voices at one time provides a considerable degree of freedom in the

performance editing, 76-note velocity- and aftertouch-sensitive keyboard, and 30-note polyphony with 5-part multi-timbral capabilities (plus a rhythm part). With its ability to control up to four MIDI channels from different keyboard zones, the D-70 makes an excellent master keyboard.

In comparison with some of the competition, the D-70 lacks a few features, but the instrument makes up for it with a solid overall design. It has neither a disk drive, nor a built-in sequencer, and its effects don't respond to MIDI controllers. It sends and recognizes channel aftertouch, but only recognizes polyphonic aftertouch. The instrument's strength is a clean, smooth sound. The effects are quiet, and the timbres have little of the graininess that has plagued some other digital synths. The D-70's sound is by no means perfect—some samples cause occasional clicking noises, and the filter distorts easily at full resonance—but the bass is punchy, and the highs are crystal clear without being piercing. The string sounds are fat and silky, and the "analog" sounds are almost organic.

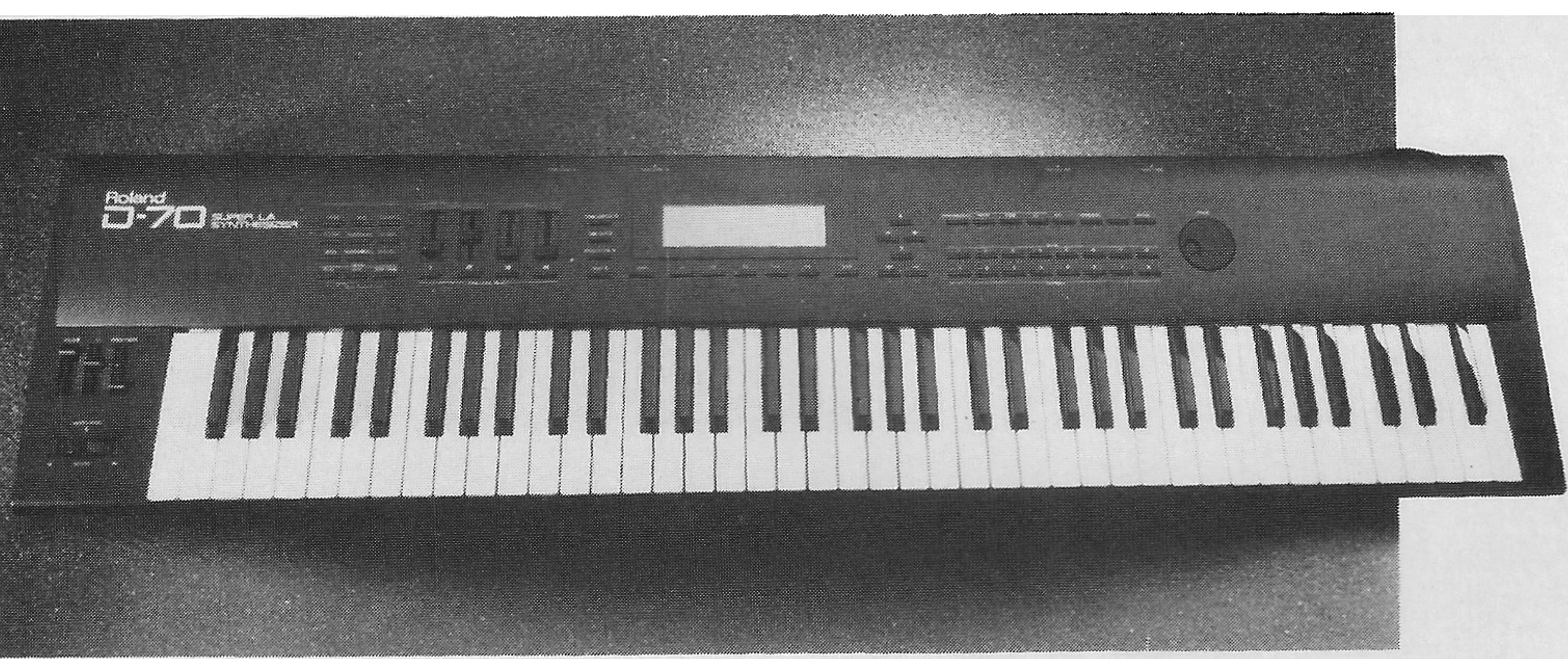
LONGER, YET Milder

At a glance, the D-70's 6-octave keyboard sets it apart from most other synthesizers on the market. The keyboard is weighted, but not much, with a synth-type action that is more substantial than, say, a VFX keyboard, but not as deep as most "weighted" actions. It feels good, and the extra octave is a major asset for piano repertoire or multi-instrument splits.

To the left of the keyboard lies Roland's standard pitch bend/modulation lever, along with three sliders placed conveniently above the lever. The first slider controls volume (and sends MIDI controller 7 messages). The middle slider, labeled "C1," can be

creation of new sounds. The sound resources are rounded out by a respectable set of internal effects.

Operationally, the assets of the D-70 are a large, backlit liquid crystal display (LCD), function keys and special navigation buttons for easy editing, assignable front panel sliders for real-time



● ROLAND D-70

assigned (along with an expression pedal), to control voice parameters such as filter cutoff, LFO depth, or portamento time. The Brightness slider on the right acts as an overall filter-cut-off control (to the delight of old analog junkies like me).

The front panel sports a big, backlit, 40-character by 8-line LCD, a nicety that is becoming common on the newest synths from Japan. Displays like this can help make programming a pleasure and may save you from spending extra money on patch-editing software (assuming you don't need the librarian features such software usually offers). Five function keys and an Exit key under the display help you navigate menus, and a programmable User key lets you jump directly to the most often-used edit screens.

GET REAL(TIME)

To the left of the display lies the Tone Palette and a number of buttons dedicated to real-time timbral control. Each of the four sliders corresponds to one of four Tones in a Patch (more on the voice hierarchy later). By pressing one of the buttons to the left of the sliders, you can select a group of parameters for the sliders to modify. Parameters include Tone level, pan, tuning, filter cutoff and resonance, and envelope attack and release. Buttons in this section also let you select Solo (i.e., monophonic) mode and Portamento, as well as Play, Edit and PCM Card modes. Edits in the Tone Palette affect only the patch you are working on at the time, whereas edits in the Tone Edit menu affect all patches in which that Tone is used. When you press the Play and Edit buttons at the same time, the D-70 will send out individual note-off messages for every note on every MIDI channel. I wish every piece of MIDI gear had a panic feature like this.

To the right of the display, you'll find cursor control keys and the inevitable Increment and Decrement buttons, augmented with Roland's standard data wheel for quickly spinning through values. Bank keys and Number keys let you select programs for editing or storage; as in other Roland instruments, the D-70's Tone, Patch, and Performance memories are organized into banks of eight. Another row of eight keys lets you navigate among Performances, Patches, Tones, RAM cards,

dangerous keys, Command, Write, and Enter, which let you destroy forever your precious factory presets.

Speaking of presets, if you're not happy with the D-70's internal samples (or even if you are), a glimpse at the rear panel should cheer you up. Here you will find three card slots. Two of these slots hold PCM cards for additional sample data, and the third holds a RAM card for storing patches and other programmable data. Since the D-70 can read Roland's SN-U110-series ROM cards, a large library of additional samples already exists. Roland also plans to release cards specially designed for the D-70, which will take advantage of its Differential Loop Modulation feature (more on that later).

The remainder of the back panel hides the power switch, memory-protect switch; display contrast control; MIDI in, out, and thru; three control-pedal inputs (expression, switch, and hold); and five audio output jacks. Left and right Direct outputs bypass the effects processors, left and right Mix outputs give you the whole bowl of soup, and a stereo headphone output duplicates the Mix output without disconnecting it. You can send tones separately to either the Direct or Mix outputs, which provides some flexibility.

WHAT YOU HEAR

Let's all recite the litany, "When an instrument comes with preset sounds, those sounds had better be good, because we'll be stuck with them forever." This holds true for both acoustic and electronic instruments. When a company releases a machine with ROM-based samples, the sounds it includes can make or break the machine regardless of any additional features.

Roland seems to have heeded this maxim. The samples inside the D-70 are among the best I have heard (see sidebar). Overall, they have very little hiss, a minimum of grit and grunge, good split points for the multisamples, and good loops. My only complaint is an occasional click at the end of the release stage on some sounds. I have not figured out whether this comes from the samples themselves or some other voice parameter. (I checked the envelopes, and it's not their fault.) Despite the clicks, I was impressed.

VOICE ARCHITECTURE

The D-70's architecture somewhat resembles a labyrinthine and multi-layered pyramid. Actually, its not so confusing once you figure out Roland's hieroglyphics. Among the resources provided by the D-70 are a wealth of TL/As (Three-Letter Acronyms). Understanding the D-70 primarily involves understanding its terminology: PCM, DLM, WG, TVF, TVA, Media, Tone, Tone Palette, Patch, Part, Performance, User Set, and Effect. Got it? I'll try my best to describe the hierarchy in English.

The Tone: A voice starts out as a Tone, which employs a wave generator, a pitch envelope, a filter with its own envelope and a choice of four velocity curves, an amplifier with its own envelope and velocity curves, and an LFO that can modulate any of the above with triangle, sine, square, sawtooth, or

Product Summary

PRODUCT:

Roland D-70 Super L/A Synthesizer

MAIN FEATURES:

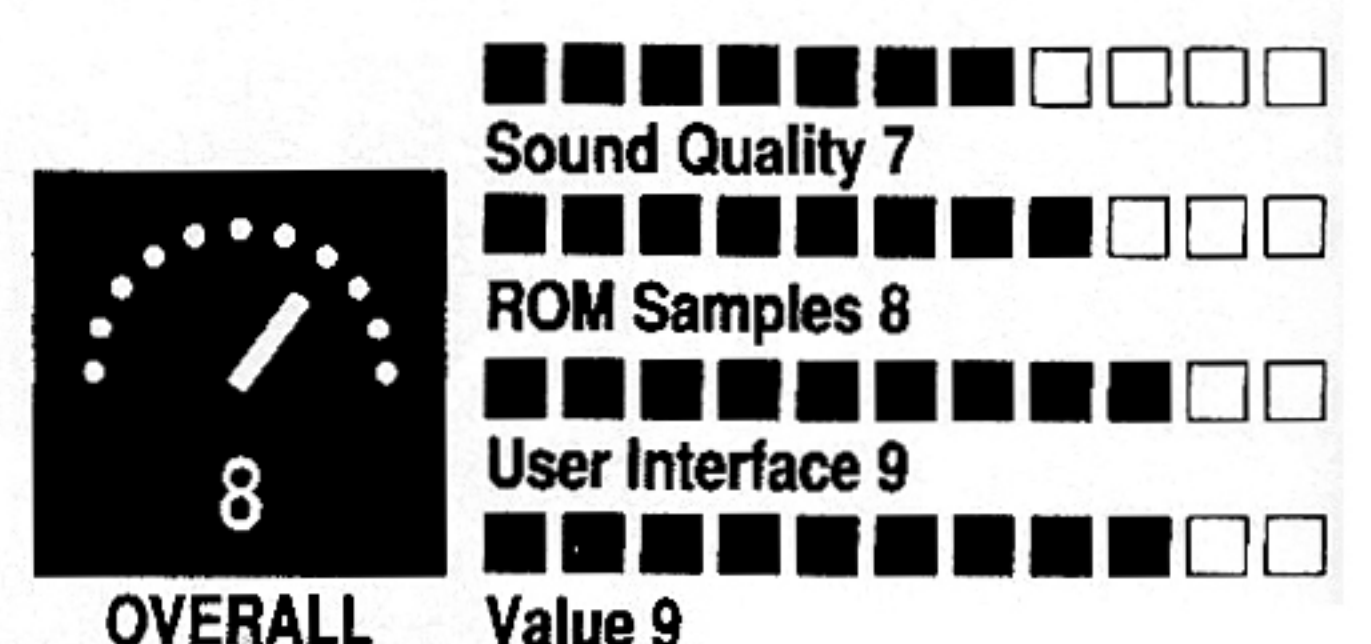
76-note keyboard with velocity (and channel aftertouch for onboard sounds); 30-voice polyphony, reduced to seven voices when four tones are layered; multitimbral (up to five Patches and one Rhythm); low/high/band pass filter with resonance; reverb, echo, chorus, flange effects; 119 internal PCM samples; 128 Tone memories, 128 Patch memories, and 64 Performance memories; RAM and PCM card expansion; accepts Roland SN-U110 PCM cards

PRICE:

\$2,395

MANUFACTURER:

Roland Corp. U.S.
7200 Dominion Circle
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● ROLAND D-70

sample/hold waveforms.

The wave generator plays a PCM sample chosen from internal memory

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or a ROM card. Nestled inside the wave generator is an interesting feature: Instead of simply playing the sample, you can select DLM, which stands for Differential Loop Modulation. To quote from the D-70 manual, "DLM does not simply loop the specified area of data, but calculates the difference between each point of the data, and creates a loop using data that corresponds to this difference." Hmmm.... I experimented quite a bit with DLM and found that it almost invariably turned a sample into digital garbage (have you ever listened to a modem or a fax machine?). On rare occasions, however, DLM created some interesting, buzzy timbres that sounded pretty good when filtered.

The Pitch parameters of a tone include LFO, pitch envelope, and Key Follow. Key Follow, also found on the D-50, lets you stretch or shrink the octave for alternate equal-tempered tunings or stretch tunings, even allowing you to reverse the keyboard so that high becomes low. I wish Roland would implement a proper microtuning feature, as Key Follow is simply insufficient for anything besides crude stretch tuning.

The D-70's Time-Variant Filter sounds excellent, with one exception. It tends to distort when near full resonance. Distortion is common when a filter resonates, but digital distortion is a lot less pretty than analog distortion. On the good side, the filter lets you select among lowpass, highpass, or band-

pass modes, which can give sounds quite a bit of expressive range.

The Patch: Once you build a Tone, you combine it with others into a Patch. Each Patch contains a Tone Palette consisting of two Lower Tones and two Upper Tones, along with information about split points, a choice of four velocity curves, output assignments, effects assignments, and such. If you choose to activate all four tones within a patch, you will reduce the D-70's polyphony from 30 voices to seven, as each voice will consist of four separate elements.

The Performance: Next up the hierarchy comes the Performance. Each Performance contains five Parts and one Rhythm setup. A Part is just a Patch that is assigned by the Performance to specific MIDI parameters. A Rhythm setup consists of a keyboard map of samples from the Rhythm presets. A Performance allows the D-70 to simultaneously play five Patches and a Rhythm track when controlled externally through MIDI. (If you are trying to play four-way, layered patches in a multitimbral performance, you will quickly use up the D-70's 30 voices.) A Performance also assigns the Expression pedal and Effects parameters, along with MIDI channel and controller assignments and output velocity curves. One interesting parameter found in the Performance menu is Analog Feel, which appears to randomize the pitch of each note to fatten the sound.

You can arrange five Performances into a User Set for quick access via function keys. There are ten User Sets. Little features like this seem aimed at making the D-70 into a great keyboard for live performance.

Effects: The D-70's effects sound great, even if they don't have the bells and whistles found in some other instruments. The D-70 has two effects modules, reverb and chorus. Individual Patches can be assigned to either, but not both. In order to get both reverb and chorus on a single sound, you must define the chorus as "pre-reverb," causing every chorused sound to get reverberated. Reverb programs include three rooms, two halls, gated reverb, and mono and stereo delay, with programmable sustain time, level, and feedback. Chorus programs include three types of chorusing, a flanger, and a short delay, with programmable level, delay, feedback, and modulation depth

and rate. Oddly, both the depth and rate controls seem to change only the rate of modulation. The effects all sound very good, with only a bit of warble on very long reverbs, and very little hiss is added to the final output.

CONCLUSIONS

A short review could never do justice to every feature listed in the D-70's 200-page owner's manual. I chose to focus on its internal sound at the expense of some of the MIDI features, which seem optimized to make the D-70 a good choice for a master keyboard controller.

What the D-70 lacks in pizzazz, it makes up for in quality. It compares quite favorably to other recent digital keyboards in both price and sonic fidelity. Its best features are its long keyboard, excellent performance interface, 30-voice polyphony, and smooth fat sound. The synth's voice architecture is simple to understand and yields musical results (once you absorb the terminology). Most of the internal ROM samples sound excellent, as do the filter and built-in effects.

Although the D-70's excellent sound quality may be its best feature, its sound is not without flaws. As mentioned, the filter distorts at extreme resonance settings, and certain sounds emit occasional clicks. I have heard similar problems on other keyboards, so don't let my complaints scare you. This is a surprisingly versatile instrument, capable of sounding bright and airy, smooth and fat, "digital" or "analog." It may not be revolutionary, but the D-70 is a very complete and professional keyboard.

Robert Rich composes electronic music. He likes strange noises, especially geological ones. His latest album, *Strata*, featuring Steve Roach, recently was released on *Hearts of Space Records*.

A Guide to the D-70's Internal Samples

In a sample-based synthesizer, the waveforms and samples in ROM represent the database of sounds available for modulation and modification. The quality of those samples is a critical element in the overall sound of the instrument. In the D-70, samples are arranged in three banks, loosely described as "acoustic," "synthesizer," and "percussion."

The so-called "acoustic" instruments include four acoustic pianos, arranged from muddy to bright. They have good split points about every fifth, and excellent loops, but the attack transients sound a bit muffled for my taste. They're great when combined. The three electric pianos are generally excellent and realistic. However, some of these were responsible for the mysterious clicking mentioned in the review. Four electric organs, arranged from smooth to percussive, proved very clean. The Reed Organ is one of the few bad ones in the bunch: it's muddy, with warbling loops. The acoustic guitar seems musical but not realistic, and the two clean electric guitars and one distorted guitar are very good. You get *nine* basses (why so many?). The five slap basses are bright and clean,

with harmonics at the high end of keyboard. The fingered, picked, fretless, and acoustic basses are generally good, but the acoustic sounds muddy.

The Choir's splits are audible but not too annoying, and it has good loops. The two string patches seem identical but are rich and fat, with excellent loops. There are lots of brass, including Soft Trumpet (fat, with a good "blat"), three trombones, Brass (bright and splatty, not to my taste), three different saxes. In general, the brass patches are very useful and realistic, even the saxophones. The flute is muddy but usable, and the shakuhachi is technically good but musically annoying. The mallet and ethnic instruments include excellent marimba, vibes, and balophone; berimbau (slightly noisy, but works great with resonant bandpass filter); kalimba (overly bright with rattles, somewhat limited); and cymbalon, i.e., hammer dulcimer (mediocre on its own, but great with reverb and filtering).

There are 44 synthesizer samples, mostly short-loop waveforms. I'll try to describe them in generic terms, with comments where applicable. One of the D-70's strongest points are its string sounds, which are

fat and silky. You get a variety of other synth sounds, including airy, D-50-like digital sounds and breathy attacks; synth bass waveforms *a la* Minimoog; pulse, triangle, and sawtooth "analog" waves; some short loops (sax, organ, etc.); several versions of white noise, most of which sound somewhat digital; bell sounds that range from fluffy to bright, some with audible loops; pizzicatos and harp attacks; and grungy digital waveforms (luckily, there are only a couple of these).

Twenty-eight percussion sounds fill out the D-70's internal sample collection, most fairly realistic, with good attack transients and clean decays. The drum kit sounds feature five snares, all very good; four kicks; two toms, big sounding, but a bit noisy; a hi-hat and two cymbals that have bad loops (these are tough to get right). Other percussion includes sticks, cabasa, cowbell, old analog percussion sounds such as TR-808, etc. Forget the handclaps, and please, spare me the orchestral hits.

Despite my occasional criticisms, I think this represents a very useful choice of samples. The emphasis tilts heavily towards traditional sounds.

Reviews: Roland D-70, Spectral Synthesis SynthCard, MIBAC Software and More

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