D-70

SUPER LA SYNTHESIZER

Discover the astonishing creative potential and powerful programming versatility of Advanced LA Synthesis.
With the D-70, you'll experience a new
dimension in sound generation and control capabilities
onstage or in the studio.

Roland

Advanced LA Synthesis—A New Standard of Quality



Experience Total Creative Power with Roland's D-70

The D-70 Super LA Synthesizer introduces Roland's most innovative and sophisticated synthesis method ever—Advanced LA Synthesis. Offering a huge selection of new sounds including everything from exceptionally realistic acoustic instruments to massive, warm "analog" synthesizer tones, Advanced LA Synthesis provides you with incredible expressive possibilities. The D-70's easy-to-use editing features allow you to alter sounds instantly and dramatically, letting you create unique, personalized sounds quickly and easily in the studio or even while playing live. Powerful and amazingly flexible, the D-70 gives you creative potential no other keyboard can match!

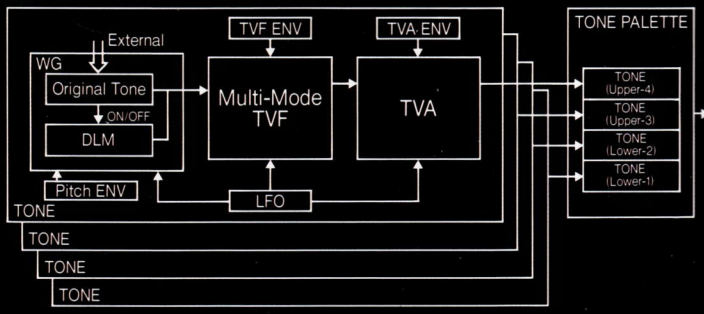
Advanced LA Synthesis—An Entirely New Synthesis Method

While based on the same Linear Arithmetic concept of the original LA Synthesis, Advanced LA Synthesis is a totally new method of synthesis that features Time Variant Filters (TVF) with three selectable modes plus Resonance and Differential Loop Modulation (DLM) which creates thousands of new waveforms. Roland's proprietary Advanced LA Synthesis technique utilizes three distinct steps which provide the D-70 with extraordinary creative potential. First, the D-70 contains high-quality PCM sounds which offer sophisticated, sampler-level realism. Second, the D-70 allows you to modify these PCM sounds using digital synthesis techniques including high-performance digital filtering. Third, the D-70 lets you combine any of these sounds to create sounds of even greater complexity. Advanced LA Synthesis conducts the entire synthesis process in a fashion that makes it easy for you to envision the results of sound editing and the D-70's easy-to-use editing features enable you to create sounds the way you imagine them.

The Advanced LA Synthesis Architecture

The basic unit of sound on the D-70 is an Original Tone which is a high-quality

■ *Sound Creation with Advanced LA Synthesis*





PCM sample that is modified using RS-PCM and DI techniques. You can also use DLM to create new waveforms from any of the D-70's internal PCM samples or those on optional Sound Cards. By modifying Original Tones or your DLM-created waveforms with TVF, TVA and other parameters, Original Tones are transformed into Tones. Next, you can combine up to four Tones using the Tone Palette and configure them into a Patch. Advanced LA Synthesis' straightforward architecture makes creative sound programming an intuitive, easy-to-understand process.

RS-PCM and DI Provide Excellent Sound Quality Right From the Start

The D-70 achieves its distinctive sound quality by combining RS-PCM (Re-Synthesized Pulse Code Modulation) and DI (Differential Interpolation) technology. RS-PCM evaluates the characteristics of each harmonic in a PCM sample then modifies the contents and the sound's overall character by adjusting each harmonic's envelope, providing an extremely natural-sounding sample that is consistent over the entire playback range. The DI process inserts data between the sampled waveform's sampling points, smoothing out its "staircase" shape to precisely duplicate the original analog waveform. These processes result in realistic and exceptionally musical sounds with sound-quality comparable to that of professional-level samplers. These sounds require no further editing, making them instantly useful for any playing situation. The D-70 offers a wide variety of high-quality instrument sounds as well as numerous synthesizer textures. Best of all, the D-70 lets you alter these sounds using synthesis techniques to create your own stunning sounds.

An Extensive Selection of RS-PCM Data for Sound Creation

A key factor of the D-70's versatility is the tremendous variety of sound data available for you to customize. This sound data consists of 119 internal PCM sounds including multi-sampled RS-PCM instrument sounds and sound elements such as white noise and sawtooth waves, sound elements from optional SN-SPLA Series Sound Element Cards for the D-70, and a huge selection of RS-PCM sounds available on optional SN-U110 Series RS-PCM Cards.

DLM Provides Unlimited Sound Creation Possibilities

DLM (Differential Loop Modulation) lets you create your own customized waveforms for synthesis. DLM's start point and loop length parameters allow you to specify the part of a waveform you want to use. Then complex looping functions using advanced interpolation technology truncate and modulate the part you select to create a new waveform. The resulting waveform includes many inharmonic partials, ideal for TVF processing or producing unique sounds such as a ring modulation effect. DLM features two modes, each with definable Start Point (0-127) and Length (1-128), giving you 32,768 different

Powerful Processing for Unlimited Sound Modification



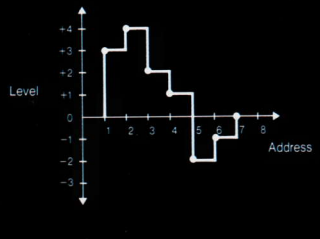
combinations of DLM parameters from a single waveform to make your sound creation possibilities practically limitless.
You can use DLM to modify any of the D-70's internal and external sounds, and by processing DLM-modified sounds with the TVF you can produce extreme tonal changes. For instance, you can turn an acoustic piano sound into a synthesized brass sound, or even a crash cymbal into a distorted guitar!

Because DLM is an intuitive and simple process, it's easy to experiment and explore the wide variety of new sounds you can create.

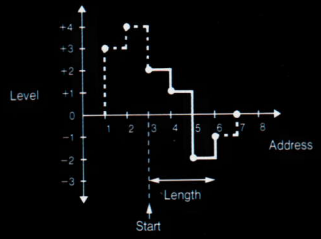
Innovative Time Variant Filtering for PCM Sounds

The D-70's digital TVF for modifying PCM sounds takes up where the Voltag Controlled Filters of analog synthesizers left off. There's selectable low-pass

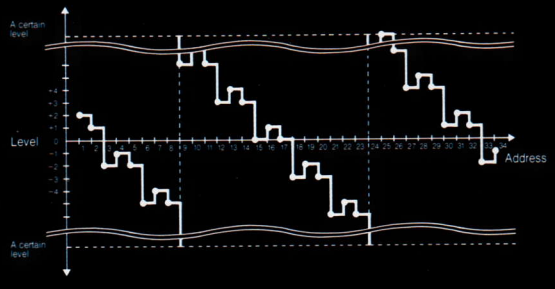
■ *How a new waveform is generated using DLM*



Original waveform.
When the wave data of an Original Tone is played back using PCM, the data is used as is, and read in order from address 1.



Specifying Start Point and Length.
With DLM, only wave data that is user-specified by the Start Point and Length is used for generation.

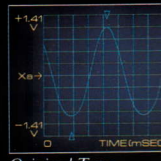


A totally new waveform results.
Sophisticated interpolation technology calculates the difference between each point of the data, then creates a loop based on this difference. At a specific level, the data loops in the opposite direction. Wave data read using DLM creates many inharmonic partials, ideal for TVF modification and creation of analog-like textures.

■ *Example of a DL created waveform*



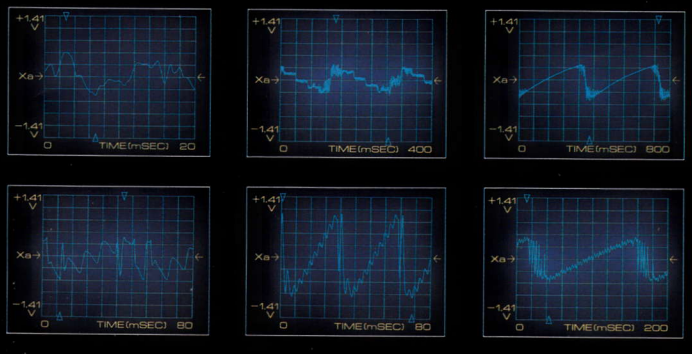
Original Tone



Original Tone



band-pass, and high-pass filters as well as resonance which you can set for virtual self-oscillation to create analog-like textures. The full-function TVF expands dynamics and velocity, enabling many exciting creative options. For example, you can change a realistic PCM trumpet sound into a synthesized trumpet sound by setting the TVF to respond dynamically to velocity, then set the Key Follow parameter so the sound becomes brighter in its higher range. You can also modify Rhythm Tones with TVF, such as changing the TVF envelope of a snare drum to create a gated effect. By using the front panel sliders to simultaneously control up to four TVF parameters, you can instantly hear the effect of every change on the overall Tone. The D-70's TVFs and four sliders make real-time sound creation easier and more effective than ever.



TVA and LFO Enhance Expressiveness

The D-70's large LCD displays a graphic representation of TVA and TVF envelopes for real-time modification using the four front-panel sliders. The LFO can modulate both TVF and TVA as well as pitch, and features five selectable wave modulation types—Triangle, Sine, Square, Sawtooth and Random. These waveforms create a natural modulation effect in pitch and brightness to complement instrument sounds and analog-like textures.

Tone Palette—A Breakthrough in Tone Editing

Each D-70 Tone is basically an independent synthesizer, but you can combine up to four Tones using the Tone Palette to create thick, full-bodied sounds that no digital synthesizer until the D-70 could achieve. The Tone Palette features four Sections—Lower 1, Lower 2, Upper 3, and Upper 4—which can each contain a Tone with an independent Zone assignment on the keyboard and other parameters such as Pan, Resonance, and Level. These four Sections combined with additional parameters such as Key Mode, Velocity Curve,

Real-Time Functions for the Performing Keyboardist



Velocity Sensitivity, Key Assign, Solo Legato, Velocity Mode and Threshold Sensitivity form a Patch. Using Key Mode, you can layer, split or assign Zones to Tones on the keyboard, and Velocity Mode and Threshold Sensitivity let you assemble expressive velocity mix configurations. The D-70's internal memory stores up to 128 Patch configurations, and you can use an optional RAM card (M-256E) to store an additional 128 Patches.

Tone Palette Sliders and Function Buttons

Four Tone Palette Sliders allow you to modify Tone Palette parameters. Tone Palette function buttons which let you select a parameter you want to modify such as Level, Pan, or TVF Cutoff are located to the left of the sliders. After you select a parameter, you can use each slider to modify that parameter for each Tone Palette Section, enabling simultaneous editing of all four Tones. The Tone Palette's easy-to-use combination of function buttons and four sliders place exceptional creative and expressive power in your hands instantly.

Creative Options Using Layer Mode

By using Layer Mode with the Tone Palette editing functions, you can create four-Tone layered sounds. The D-70's Layer mode offers many creative options. For instance, you can assign the attack portion of a sound to one Section of the Tone Palette, the sustain portion to another, and the decay and release portions to the other two Sections. Using the four sliders, you can adjust the level balance of each of these sound components in real time.

Impressive Digital Effects

The D-70 features built-in studio-quality digital reverb and chorus which each feature a variety of different selectable effect types. The effect types for Reverb include Room 1-3, Hall 1-2, Gate, Delay, and Cross Delay, and the effect types for Chorus include Chorus 1-2, FB-Chorus, Flanger, and Short Delay. The effects are digitally linked, allowing you to combine effects with no loss in

■ *Built-in Reverb Effects Mode*

Room 1 – 3	*Well-defined and spacious reverb*
Hall 1,2	*Slower reverb, with greater depth than Room*
Gate	*Gated (sharply muted) reverb*
Delay	*Conventional delay*
Cross Delay	*Delayed repeats are panned to left and right*

■ *Built-in Chorus Effects Mode*

Chorus 1	*A spacious and rich effect*
Chorus 2	*A deep ensemble effect, especially good for making strings richer*
FB-Chorus	*An effect mid-way between chorus and flanger*
Flanger	*A unique effect in which overtones change dramatically, especially effective for Tones containing many upper partials, such as HEAVY. EG*
Short Delay	*Short delayed repeats*



sound quality and 24-bit processing provides noise-free performance. You can modify effects parameters in real-time using the four front-panel sliders and store settings to a Performance.

Another D-70 Exclusive—Analog Feel Function

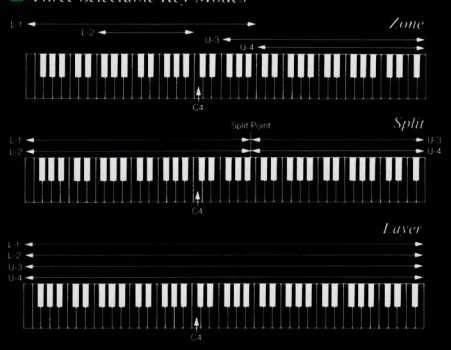
The D-70 contains a variable Analog Feel function which simulates the wavering pitch of an analog synth's oscillator. This useful feature adds analog-like warmth and enables you to create thick, textured sounds.

The D-70 Maximizes Real-Time Performance Capabilities

As a Versatile Keyboard...

The D-70 features a velocity and aftertouch-sensitive keyboard with a weighted, synthesizer action and offers maximum expressiveness when playing internal sounds or external sound sources. The keyboard's 76-note range gives you exceptional flexibility when using Split mode and the multiple Zones of the Tone Palette, making the D-70 the ideal master keyboard for any MIDI setup.

Three Selectable Key Modes



With Key Assign Modes...

The D-70 features two Key Assign modes, Poly (polyphonic) and Solo (monophonic), which determine how notes affect each other when played in succession. In Poly mode, the D-70 operates as a normal polyphonic synthesizer where the envelope of each note you play is independent. Solo mode offers two different modes—Normal Solo and Solo Legato. In Normal Solo mode, pressing a key cancels the sound and envelope of the previously played note, and in Solo Legato mode, playing notes legato cancels the previous sound but will not retrigger the envelope, similar to a monophonic analog synthesizer. To add portamento according to your playing style in Solo mode, you can select either Normal or Auto Portamento. Normal adds portamento to all notes you play, while Auto applies portamento only if you play a note while holding the previous note. This enables you to add expressive touches to instrument sounds such as duplicating a trombone slide, a sax slur, or the legato tonguing effects of brass instruments. Another real-time performance-enhancing feature is Release Velocity which affects the Release parameter of TVF or TVA envelopes depending on how quickly you release a key, providing exceptionally responsive expressive capabilities.

Flexible Control of External Sound Sources and Multi-Timbral Operation



...and Full Controller Functions

The D-70 features versatile controller options for use with internal sounds or external MIDI sound sources. Controllers include Bender, Aftertouch, Modulation, the function-assignable C1 Slider or Expression Pedal (optional EV-5/EV-10), Pedal Switch and Hold Pedal (optional FS-5L/FS-5U/DP-2/DP-6). The D-70's internal memory stores settings for Function, Value and Destination that recall how you want to use these controllers. When a Pedal Switch is connected to the D-70's Control input, you can access functions such as Performance selection or Tone editing by foot control.

■ *Functions Assignable to External Pedal Switches*

C1 Slider Exp. Pedal	*[TVF]*	*change the Cutoff Frequency*
	[TVA]	*change the Volume*
	[LFO Pitch]	*change the Pitch Modulation (vibrato)*
	[LFO TVF]	*change the Cutoff Modulation (growl)*
	[LFO TVA]	*change the Volume Modulation*
	[Pitch Bend]	*change the pitch*
	[Portamento Time]	*change the Portamento Time*
Pedal SW	*[LFO Pitch]*	*change the Pitch Modulation (vibrato)*
	[LFO TVF]	*change the Cutoff Modulation (growl)*
	[LFO TVA]	*change the Volume Modulation*
	[Octave Down]	*lower the pitch 1 octave*
	[Octave Up]	*raise the pitch 1 octave*

**The built-in C1 slider can be assigned the same functions as the Expression Pedal.*

MIDI Palette Controls External Sound Sources

The D-70's powerful keyboard controller capabilities make it especially ideal for live performance.
The MIDI Palette lets you store complex MIDI parameter configurations and recall them instantly in performance. Like the Tone Palette, the MIDI Palette features four Sections—Lower 1, Lower 2, Upper 3, and Upper 4—and each section contains parameters such as Transpose, Program Change Number, and MIDI Transmit Channel.
Using MIDI Out Key Mode, you can split, layer or zone sections of the MIDI Palette on the D-70's keyboard, opening up versatile creative possibilities using Velocity Mode and Threshold Sensitivity.

Extensive Multi-Timbral Capabilities

Using an external sequencer, you can create intricate multi-instrument arrangements with the D-70's sounds and 30-voice polyphony.
Up to five Parts and a separate Rhythm Part as well as MIDI Palette and Effects settings can be configured to a Performance and a total of 64 Performances can be stored to internal memory and another 64 on an optional RAM card (M-256E).

You can select five Performances to form a User Set, and assign each Performance to one of the five front-panel Function buttons just below the display, giving you instant access to Performances and MIDI Palette settings. The D-70's internal memory stores up to ten User Sets and you can store an additional ten on an optional RAM card.

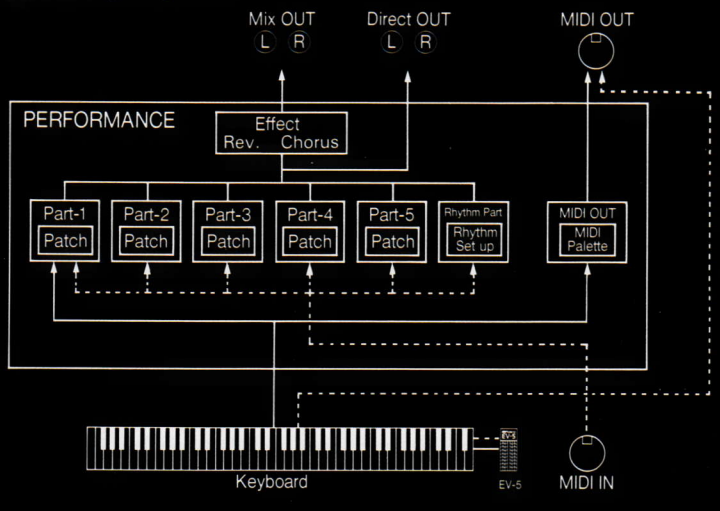
Operational Ease and Performance-Oriented Features

The D-70 offers a tremendous selection of real-time functions and fast, easy operation.
The four front-panel sliders let you modify parameters amazingly quickly and easily. The D-70's 40-digit x 8-line LCD provides ample space for graphic displays of parameters such as TVF and TVA envelopes, and a Value dial allows you to quickly scroll through parameter values and functions.
Five Function buttons corresponding to menu options listed on the display provide instant access to various functions. And for even greater ease-of-operation, the Jump function lets you assign a frequently used menu to one of the five Function buttons so you can access a desired menu from any other menu, at any time.

Hear the D-70's Potential

A built-in ROM Demo song fully demonstrates the D-70's high-quality sounds and versatile capabilities.

■ *Structure of a Performance*



Sounds and Specs for Any Professional Application



D-70 Specifications

Keyboard:	76 Keys, Weighted Synthesizer Action, Velocity and Channel Aftertouch Sensitive	
Sound Sources:	Advanced LA Synthesis	
Multi-Timbral Capability:	5 Part + 1 Rhythm Part	
Max. Polyphony:	30 Notes	
Memory:	Internal System Setup x 1 User Set x 10 Performance x 64 Patch x 128 Tone x 128 Rhythm Setup x 1 Original Tone x 119	
	External System Setup x 1 User Set x 10 Performance x 64 Patch x 128 Tone x 128 Rhythm Setup x 1 (When using optional M-256E RAM card)	
Digital Effect:	Reverb: Room 1/2/3, Hall 1/2, Gate, Delay, Cross Delay Chorus: Chorus 1/2, FB-Chorus, Flanger, Short Delay Pan: L to R in 15 increments	
Front Panel:	Controls: Bender/Modulation lever, Value dial Sliders: Master Volume, C1, Brightness, Tone Palette (1-4)	
		Buttons: Play, Edit, PCM Card, Solo, Portamento, Release, Cutoff, Resonance, Attack, Level, Pan, Tuning, Tone/Zone Select, Tone Display, MIDI Out, Effect/Ctrl, Part, User, Function (F1-F5), Exit, Cursor (▲▼◀▶), Dec, Inc, Performance, Patch, Tone, A/B, Int/Card, Command, Write, Enter, Bank (1-8), Number
		Display: 40 digit x 8 line LCD
	Rear Panel:	Switches: Power, Protect
		Controls: Contrast
		Card Slots: RAM Card, PCM Card x 2 (A, B)
		Connectors: MIDI IN/OUT/THRU
		Jacks: Direct Out x 2 (L, R), Mix Out x 2 [L(Mono), R], Expression Pedal, Pedal Switch, Hold Pedal, Headphone
	Dimensions:	1196(W) x 305(D) x 100(H)mm 47-1/16" x 12" x 3-15/16"
	Weight:	12 kg (26 lb 8 oz)
	Options:	M-256E RAM card, SN-U110 Series RS-PCM Cards, SN-SPLA Series Sound Element Cards for D-70, FS-5L/FS-5U/DP-2/DP-6 Footswitch, EV-5/EV-10 Expression Pedal, KS-5/7/8 Keyboard Stand



*Specifications and appearance subject to change without notice.



SN-SPLA Series
Sound Element Card



SN-U110 Series
RS-PCM Card



M-256E RAM Card



EV-5 Expression Pedal



DP-2 Footswitch



Original Tone List

I-1 Acoustic

1 A. PIANO 1
2 A. PIANO 2
3 A. PIANO 3
4 A. PIANO 4
5 E. PIANO 1
6 E. PIANO 2
7 BRIGHT EP
8 E. ORGAN 1
9 E. ORGAN 2
10 E. ORGAN 3
11 E. ORGAN 4
12 R. ORGAN
13 A. GUITAR
14 E. GUITAR 1
15 E. GUITAR 2
16 HEAVY. EG
17 SLAP 1
18 SLAP 2
19 SLAP 3
20 SLAP 4
21 SLAP 5
22 FINGERED
23 PICKED
24 FRETLESS
25 AC. BASS
26 CHOIR
27 STRINGS 1
28 STRINGS 2
29 SOFT TP
30 TP/TRB 1
31 TP/TRB 2
32 TP/TRB 3
33 BRASS
34 SAX 1
35 SAX 2
36 SAX 3
37 FLUTE
38 SHAKU
39 CALLIOPE
40 PAN PIPES
41 BAGPIPES
42 BALAPHONE
43 BTRIMBAO
44 KALIMBA
45 CYMBALON
46 VIB
47 MARIMBA

I-2 Synthesizer

1 FANTASYNTH
2 JP. STRINGS
3 SYN. VOX 1
4 SYN. VOX 2
5 SYNTH HARP
6 DIGI. BELL
7 FANTA BELL
8 DIST 5TH
9 SOFT SYN
10 BASS LP
11 BELL LP
12 HARP ATK
13 PIZZ
14 EP WAVE
15 CLAV WAVE
16 LITE WAVE
17 B-S WAVE
18 SAX WAVE
19 BLO WAVE
20 SYN. WAVE 1
21 SYN. WAVE 2
22 SYN. PULSE 1
23 SYN. PULSE 2
24 SYN. PULSE 3
25 SYN. SQUARE
26 SYN. TRI
27 SYN. SAW 1
28 SYN. SAW 2
29 SYN. SAW 3
30 DIGITAL 1
31 DIGITAL 2
32 DIGITAL 3
33 DIGITAL 4
34 DIGITAL 5
35 DIGITAL 6
36 DIGITAL 7
37 DIGITAL 8
38 DIGITAL 9
39 WHITENOISE
40 BREATH
41 SPECTRUM 1
42 SPECTRUM 2
43 NOISE 1
44 NOISE 2

I-3 Percussion

1 SNARDRUM 1
2 SNARDRUM 2
3 SNARDRUM 3
4 SNARDRUM 4
5 SNARDRUM 5
6 KICK 1
7 KICK 2
8 KICK 3
9 KICK 4
10 TOM 1
11 TOM 2
12 HI-HAT
13 CHINA CYM
14 CRASH CYM
15 RIDE BELL
16 SIDE STICK
17 STICKS
18 CABASA
19 CLAPS
20 COWBELL
21 808 SNARE
22 808 HI-HAT
23 808 TOM
24 ELEC TOM
25 808 CLAVES
26 CLICK
27 AGOGO
28 ORCH HIT

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