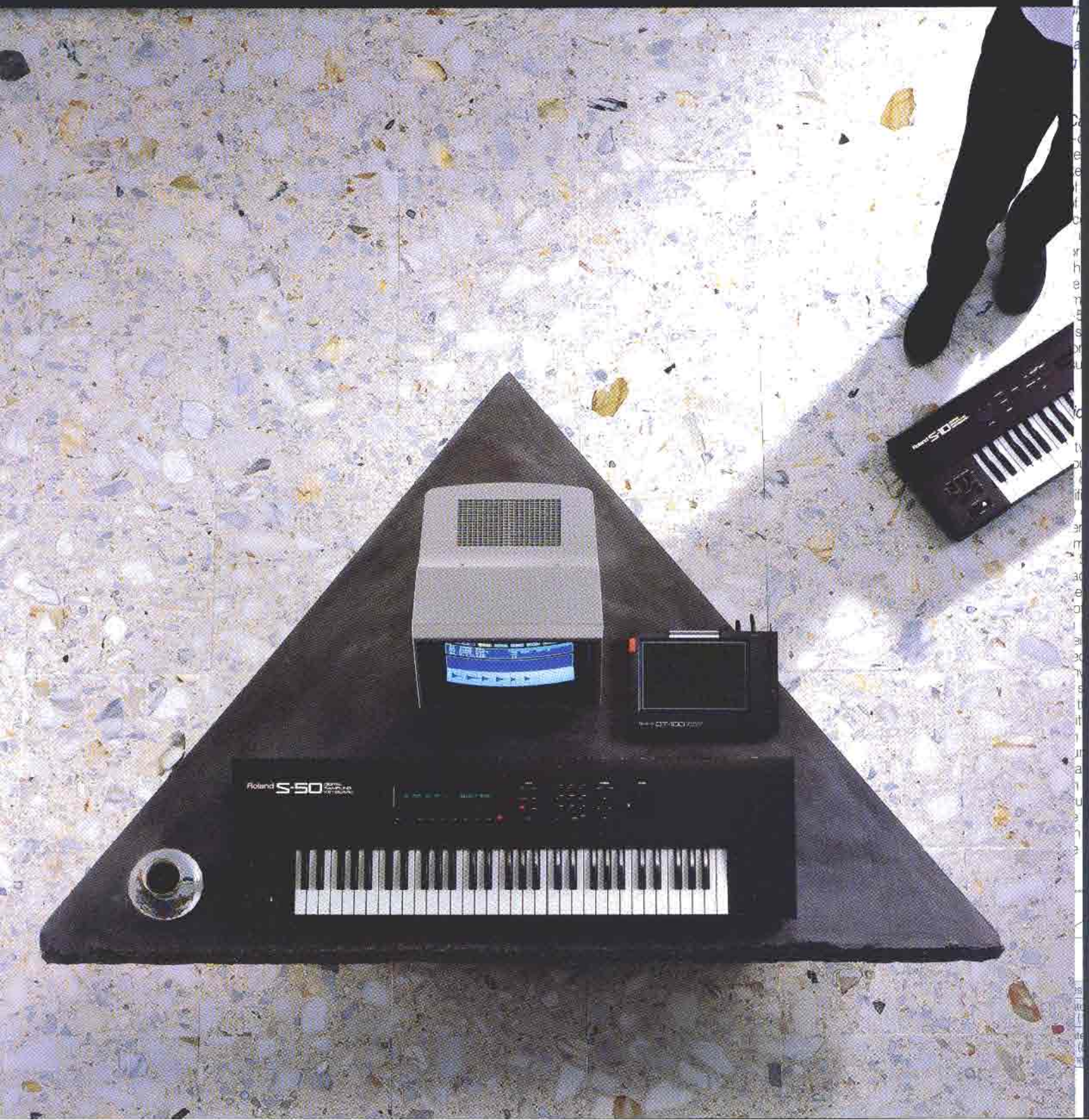
Roland

S-50/S-10

DIGITAL SAMPLING KEYBOARD

ELECTRONIC MUSICAL INSTRUMENTS

The Latest Musial Weapon with Unlimited Creative Potential



DIGITAL SAMPLING KEYBOARD S-50/S-10

Roland's S-Series Sampling Keyboards—Sky-High Sound Quality at a Down-to-Earth Price plus Flexible Sound Editing Capability

The digital sampler is one of the most indispensable and sought-after electronic instruments in music today. Initially, samplers became popularized through the use of certain special effects sounds, such as the "orchestra hit." But what really attracts so many musicians and sound engineers to samplers is the unlimited expression they make possible. Samplers give you the power to utilize virtually any audible sound for the creation of music!

Until now, however, digital samplers providing sufficient sound quality and control functions have been incredibly expensive. Today, through Roland's advanced technology, samplers are within the reach of every musician. Explore the creative possibilities of digital sampling with Roland's new "S" series of Digital Sampling Keyboards.

Unparalleled Sound Fidelity

A sampler is basically a digital recorder/player with additional sound modification capabilities. Any sound you record with it can be used as a basic sound source. Roland has condensed its vast experience and know-how from years of electronic instrument manufacturing in the design of the S-series Sampling Keyboards which will faithfully reproduce any sound, capturing all the unique and subtle nuances of the original, with flexible, easy-to-use sound modification capabilities. And to minimize any unwanted sound coloration or deterioration usually associated with analog circuitry, Roland's S-series Sampling Keyboards employ the latest advancements in digital technology.

Two kinds of digital sound filters are featured on each S-series Sampling Keyboard. As shown in Figure 1, one is a hardware filter located within the Digital Signal Processor (DSP), and the other is a software filter within the Central Processing Unit (CPU).

The DSP digital filter is used to eliminate alias noise which is produced during playback in the digital-to-analog conversion process. (See Figure 2.) All digital samplers produce some alias noise, and to eliminate it, ordinary samplers use an analog filter which has a rather smooth response (typically −24dB/octave). Consequently, when an analog filter is set to completely eliminate alias noise, part of the sampled sound is cut out (response slope 1). When set to retain the entire sampled sound, part of the alias noise is also audible (response slope 3). Roland's DSP digital filter completely eliminates all alias noise without affecting the sampled sound by providing a signal response of −96dB/octave. In addition, the CPU digital filter is used to tailor the tone color of a sample by digitally processing the waveform data for a sound within the CPU.

The S-series Sampling Keyboards offer twelve-bit sampling resolution. The sampled waveform is then processed by sixteen-bit digital circuitry together with performance and edit parameter data.

Roland also provides musicians with a variety of high-quality, digitally recorded sounds for the S-series Sampling Keyboards in the form of exciting sound library disks.

Fig. 1

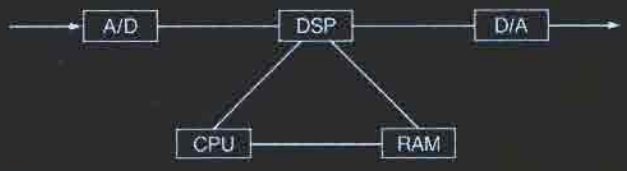
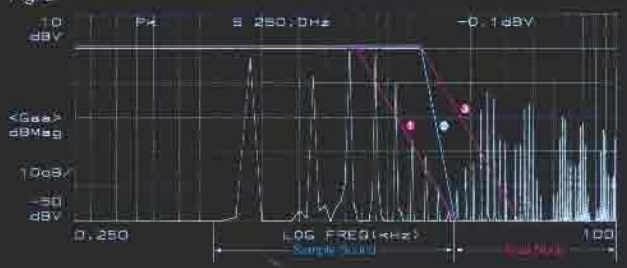


Fig. 2



Sound Modification for Greater Creativity

Along with their high sound quality, the S-series Sampling Keyboards provide superb sound modification capabilities. Two methods are offered for altering sampled sounds. In one method, the waveform data itself is not modified per se; instead, the sound output is modified by the way the data is read from the unit's memory, which is different than the method used to read the sound when it was originally sampled. In the other method, waveform data stored in memory is itself processed, and then restored in memory. An extensive variety of parameters are provided for modifying sampled sounds in this way. And unlike conventional samplers, Roland's S-series Sampling Keyboards do not require external devices, such as a computer, to modify sampled sounds.

In addition, the S-series Sampling Keyboards feature keyboard splitting (with sixty split points on the S-50 and three split points on the S-10), versatile performance control functions, extensive MIDI implementation, and much more. You get all these superb features normally found in incredibly expensive sampling keyboards at a price comparable to that of an ordinary keyboard synthesizer!

The New Standard for Affordable Sampling Keyboards

S-10 DIGITAL SAMPLING KEYBOARD

With the S-10, any sound you hear can become part of your musical vocabulary, and at an affordable price! Get your hands on the S-10 at your Roland dealer and discover the creative potential of digital sampling.

Four Digital Wave Memory Banks

The S-10 is a MIDI-compatible, eight-voice polyphonic digital sampling keyboard. With four 32K-word wave memory banks (a total of 128K-word memory), the S-10 offers a sampling time of four seconds at a sampling rate of 30kHz (one-second sample per wave memory bank), or a sampling time of eight seconds at a sampling rate of 15kHz (two-second sample per wave memory bank). It also features a built-in disk drive for 2.8-inch Quick Disks. The S-10 has a forty-nine key, velocity-sensitive keyboard with up to three split points, allowing you to expressively play any sound sampled by you or sounds from Roland's sound library disks.

The four wave memory banks (A, B, C, and D) can be used in a variety of combinations and can be freely assigned to the split points of the keyboard by changing the Sampling Structure (see the chart below). You can use an individual bank to store four different sampled sounds, or combine banks to store longer samples.

●SAMPLING STRUCTURES

Structure	Mode	Assignment for Keyboard (sampling time at 30 kHz sampling rate)			
		Lower		Upper	
A B C D	Individual	A (1 s) B (1 s) C (1 s) D (1 s)			
AB CD ABCD	Link	A to B (2 s) C to D (2 s) A to B to C to D (4 s)			
A/B C/D	Split	A (1 s) C (1 s)		B (1 s) D (1 s)	
AB/CD	Split Link	A to B (2 s)		C to D (2 s)	
A/B/C/D	Multi Split	A (1 s)	B (1 s)	C (1 s)	D (1 s)

Thanks to its sophisticated sampling function, the S-10 allows you to sample any desired sound by simply selecting a Sampling Structure and inputting the sound into the S-10. A microphone or other audio equipment can be directly connected to the S-10. Once a sound is sampled, waveform data can be saved or loaded instantly with the built-in disk drive. On each side of the 2.8-inch Quick Disk, data for a single memory bank may be stored. In addition to waveform data, Sampling Structure data and other data for the S-10 operation can also be stored on the Quick Disk.

The S-10 comes with six sound disks. By simply inserting a disk into the disk drive, you can easily play strings, choir, bass drum, snare drum, tom-tom, hi-hat, electric bass guitar, trumpet, orchestra hit, or special effects (hand cymbal).

Wave Parameter Edit

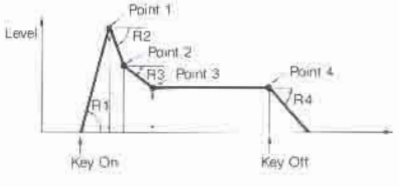
The S-10 has a special Wave Parameter Edit function, which determines how waveform data in memory is read, without affecting the waveform data itself. You can easily select a variety of editing functions to control looping, envelope setting, and more. The following chart shows the range of programmable wave parameters available. These parameters can be programmed for each Sampling Structure. It's possible to change the Sampling Structure that was used to sample a sound to a different one when the sample is played back. It's also possible to apply the Wave Parameter Edit function to waveform data loaded from the Quick Disk.

●WAVE PARAMETERS

REC KEY	C to G7	Chromatically shifts the pitch of sample sound.
BANK TUNE	–50 to +50	Adjusts the pitch of sample sound in 1-cent steps.
LOOP TUNE	–50 to +50	Adjusts the pitch of a loop within semitone.
SCAN MODE*	FWD	Waveform data is read out forward; sample sound is played back in normal manner.
	BWD	Waveform data is read out backward; sample sound is played back in reverse.
	ALT	Looped portion of waveform data is read out alternately forward and backward. Looped part of sample sound is played back alternately forward and backward.
LOOP TYPE*	1 SHOT	Makes no loop.
	MAN	Makes a loop with the loop end and loop length determined by the parameters END and LP.
	AUTO	The S-10 software program analyzes waveform data and automatically makes a loop.
ST	0.00% –	Sets the starting point where playback begins.
END	– 100%	Sets the end point where playback ends.
LP	0.01% ~	Sets the loop length.
AEN	—	Indicates the end point set by the automatic looping.
ALP		Indicates the loop length set by the automatic looping.
KEY FOLLOW*	ON/OFF	When turned off, the pitch of sample sound can't be controlled by the keyboard.
PITCH BEND*	ON/OFF	Turns pitch bend on and off.
VIBRATO*	ON/OFF	Turns both manual vibrato (controlled by bender lever) and delay vibrato on and off.
ENV V-SENS*	0 to 127	Adjusts the velocity sensitivity by which the envelope rate 1 and 2 are controlled.
ENV RATE 1* ENV RATE 2* ENV RATE 3* ENV RATE 4*	0 to 127 0 to 127 0 to 127 0 to 127	Sets the level change rate between two envelope points set by the following ENV LEVEL parameters (see the Fig. 3).
ENV LEVEL 1* ENV LEVEL 2* ENV LEVEL 3*	0 to 127 0 to 127 0 to 127	Sets the level of each envelope point (see the Fig. 3).
DYNA SENSE*	0 to 127	Sets the dynamics sensitivity to control the volume.
ABEND RATE*	0 to 127	Sets the rate at which the automatic bend changes the pitch (with the automatic bending, the sound is produced at a pitch slightly lower than the correct pitch then returns to the correct pitch).
ABEND DEPTH*	0 to 127	Sets the initial pitch of the automatic bend.

NOTE: The Wave Parameter settings marked with an asterisk can be copied to another memory bank.

Fig. 3



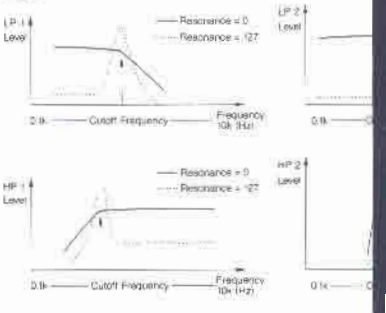
Wave Modify Edit

In addition to the Wave Parameter
a Wave Modify function is provided whi
processes the waveform data currently
function enables you to freely edit the s
data over the following parameters and
for later recall.

●WAVE MODIFY PARAMETERS

Combine	Combines two different sam data for before the start po point is eliminated.
Mix	Merges the waveform data sounds stored in two differe into one memory bank.
Copy	Copies the waveform data setting stored in a memory memory bank.
Swap	Exchanges the waveform d parameter settings stored i memory banks.
Reverse	Readdresses the waveform order.
Auto Loop	Automatically determines th the end point of the wavefo
Digital Filter LPH 1 (12dB/oct) HPF 1 (12dB/oct) LPH 2 (24dB/oct) HPF 2 (24dB/oct)	Four digital filters (see Fig. modify the waveform data and resonance are adjustab
Level Adjust	Adjusts the level of sample compressing or expanding

Fig. 4



Versatile Performance Controls

So that sampled sounds modified
edit functions can be played in a variety
provides the following Performance Par
(Performance Parameter settings can a
Quick Disk.)

A Sampling Key
Infinite Possibilit
S-50

The S-50 is currently th
priced professional keyb
be assured that in the f
standing as a leader, ha
flexibility of a system so
upgraded as needed. T
comes with the S-50 gr
a CRT monitor directly t
waveform processing, a
puts waveform drawing
command.

512K-Word Memory Ca

The S-50 is a MIDI-c
polyphonic digital sample
and pressure-sensitive ke
memory banks (a total of
provides 14.4 seconds of
sampling rate or 28.8 sec

The S-50 can store
(eight sounds per memor
memory management, th
a sampled sound can be
length of a particular sam
be located across the S-5
you to assign all sixteen s
any split keyboard part or
3-1/2 inch disk drive ensu
saving and loading.

Patch Memory Functio
Control

The S-50 provides t
modifying any sounds yo
a Roland's sound library
Edit function which modif
sampled sound, and the
function which controls e
sound parameters. A sam
functions is stored in the
to sixteen at a time. An a
enables you to play these
ways. One combination o
of Patch parameters can
S-50 can contain up to e
be stored on disk or selec
a button—especially con

The following chart
parameters provided by t
In the Key Mode, a Velocit
5) is provided in addition
Velocity Mix (Figure 7) fu
on the S-10, for the ultima
Aftertouch sensitivity can
Patch by assigning a valu
Keyboard split points are
parameters, and you can
assigned to a key on the

Fig. 5 Fig. 6

◉PATCH PARAMETERS

Naming		Names
Key Mode	NORMAL	Activate press (
	VEL SW	Activate press (are cha

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memory. This
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two sample
memory banks

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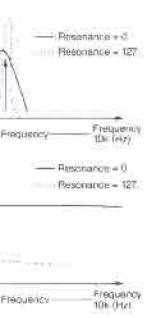
waveform data



the above two
f ways, the S-10
eters.
be saved on a

◉PERFORMANCE PARAMETERS

LFO	VIB RATE	0 to 127	Sets the speed of both manual and delay vibrato.
	M-VIB DEPTH	0 to 127	Sets the depth of manual vibrato which is controlled by bender lever.
	D-VIB DEPTH	0 to 127	Sets the depth of delay vibrato.
	D-VIB DELAY	0 to 127	Sets the time when the delay vibrato is engaged after a key is pressed.
Bender	BEND MODE	CONT	Normal bending is produced.
		CHRM	Chromatic bending is produced.
Arpeggio	ARP SYNC	EXT	Auto arpeggio is controlled by external trigger signals.
		INT	Auto arpeggio is controlled by internal clock.
	ARP RATE	0 to 127	Adjusts the auto arpeggio speed.
	ARP MODE	UP DOWN U/D RND	Selects the auto arpeggio direction upward, downward, upward and downward, or random.
	ARP RANGE	1 oct 2 oct 3 oct	Selects the auto arpeggio range one, two, or three octaves.
	ARP REPEAT	1 to 16	Determines how many times a single note is repeated by the auto arpeggio.
	ARP DECAY	1 to 10	Sets the decay of auto arpeggio volume.
Velocity Mix	V-MX THRSH	0 to 127	In the Velocity Mix mode, two sample sounds can be mixed and the volume balance between two sounds can be controlled by key touch. This parameter sets the minimum sensitivity at which one of two sounds is activated.
Velocity Switch	V-SW THRSH	0 to 127	In the Velocity Switch mode, two sample sounds can be changed by key touch. This parameter sets the velocity value at which the sounds are changed.
Detune	DTUN MODE	VEL	When the S-10 is in the Detune mode, the detune range is controlled by key touch.
		FIX	The detune range is adjusted by the following DTUN RANGE parameter.
	DTUN RANGE	0 to 127	Sets the detune range.
	ABEND DEST	BOTH	Auto bend is applied to both the normal and detuned sounds.
		HALF	Auto bend is applied to only the detuned sound.
	BEND DEST	BOTH	Manual bend is applied to both the normal and detuned sounds.
		HALF	Manual bend is applied to only the detuned sound.
Delay	DELAY TIME	0 to 127	Sets the delay time.
	DELAY LEVEL	0 to 127	Sets the level of delayed sound.
	KEY OFFSET	−12 to +12	Pitch of the delayed sound can be chromatically shifted. This parameter determines the shift interval.
External Trigger Play	TRG G-TIME	0 to 127	Determines how long a sample sound is produced when the S-10 is controlled by external trigger signal.
	EXT GATE PLAY		Assigns the note name (up to four notes) on which a sample sound is activated by external trigger signal.

MIDI Compatibility

The S-10 is MIDI compatible, enabling you to add it to your existing MIDI setup and expand your musical horizons to the limit, using any sound you hear in the music you create. Assign the S-10 to any of sixteen MIDI channels. In addition to bender, hold, and modulation messages, the S-10 transmits and receives MIDI-registered parameter messages to control the bend range. There are 123 combinations of the Sampling Structure and operation modes (detune, delay, dual, velocity mix, and velocity switch) that can be changed using MIDI Program Change messages. In addition, almost all the S-10's programmable parameters can be controlled using MIDI System Exclusive messages. A bulk dump feature enables you to transmit all data stored in the S-10's RAM (Random Access Memory). The S-10 is also perfectly suited to function as a mother keyboard in any MIDI system setup.

S-10 REAR PANEL

S-10 SPECIFICATIONS

•Keyboard: 49 Keys (4 octaves, C to C), Velocity Sensitive, 8-Voice Polyphonic •Buttons: Sampling Structure, F1/▶, F2/◀, Tune, Wave Parameter, Wave Modify, Performance, MIDI, Enter, Forward, Backward, Record, Mode, Standby, Start, Load, Save, Arpeggio •Controls: Alpha-dial, Volume, Bend Range, Record Level, Pitch Bender/Modulation Lever •Display: Illuminated 16-Digit LCD •Disk Drive: for 2.8" Quick Disks •Rear Panel Jacks (Output, Headphones, Hold/Rec Start, Input), Switches (Output Level, Input Level, Power), MIDI Connectors (In, Out, Thru) •Dimensions (w/o QD case): 945(W) × 271(D) × 77(H) mm (37-3/16" × 10-11/16" × 3-1/16") •Weight: 9.5 kg (20 lb. 15 oz.) •Accessories: Disk Case, PJ-1 Connection Cable, Sample Sound Quick Disk × 6 •Option: AB-10 Carrying Case

oard with es

DIGITAL SAMPLING KEYBOARD

leading edge in affordably ard samplers. And you can ure the S-50 will retain its ng been designed with the ware program that can be system software disk that s you the ability to connect the keyboard unit for easy d an optional system disk n a digitizer tablet at your

acity

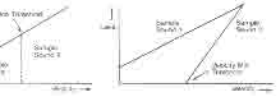
mpatible, sixteen-voice with a sixty-one key, velocity- oard. With two 256K-word 2K-word memory), the S-50 mpling time at a 30kHz ds at 15 kHz.

to sixteen sampled sounds bank.) For more efficient area in memory used to store eely adjusted according to the e. Up to sixty split points can s sixty-one keys, enabling mpled sounds in memory to individual keys. The built-in s durability of data with rapid

for Perfect Performance

edit functions for freely sample or those provided on k. One is a Wave Parameter the waveform data of a ner is a Tone Parameter Edit elope, looping, and other ed sound modified by these 50's memory as a "Tone," up itional Patch Memory function xteen Tones in a variety of he sixteen Tones and a setting stored as a "Patch." The t such Patches, which can d instantly by simply pressing nient for live performances. ows the programmable Patch Memory function, Crossfade function (see Figure Velocity Switch (Figure 6) and tions, which are also featured in keyboard expressiveness. e individually set for each ranging from 0 to 127. so assigned using the Patch asily confirm which Tone is sy-to-read display.

Fig. 7



patch (up to 12 characters)		
ore sample sound by a single key voice polyphonic).		
wo sample sounds by a single key oice polyphonic). The two sounds ed by key touch.		
Key Mode	X-FADE	Activates two sample sounds by a single key press (8-voice polyphonic). The two sounds are crossfaded by key touch.
	VEL. MIX	Activates two sample sounds by a single key press (8-voice polyphonic). The two sounds are mixed by key touch.
Velocity Switch Threshold	0 to 127	Sets the velocity value at which the velocity switching occurs.
Pressure Sensitivity	0 to 127	Sets the aftertouch sensitivity.
Bend Range	0 to 12	Chromatically adjusts the bend range.
Octave Shift	−1/0/1	Shifts the note range one octave below or above.
Output Level	0 to 127	Sets the output level of a patch.
Copy From		Copies the setting of a patch.
Split Setup		Sets the split points.
Split Confirmation		Lets the display indicate which tone is assigned to a key.
Original Key Map		Changes the key number of a tone.
Fine Tune Map	−50 to +50	Adjusts the pitch of individual tones used for a patch.
Level Map	0 to 127	Adjusts the volume level of individual tones used for a patch.
Level Curve Map	0 to 5	Assigns one of six velocity curves (see Fig. 8) to each of tones used for a patch.

Fig. 8

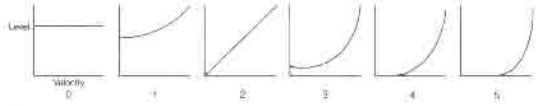
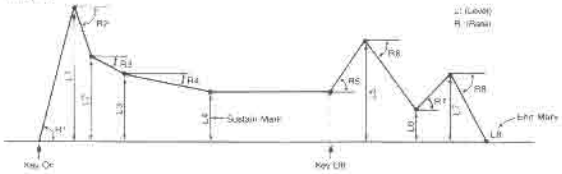


Fig. 9



Wave Data Edit and Tone Parameter Edit Functions

With two versatile edit functions, it's easy to create your own sounds by simply modifying any sampled sound.

The Wave Data Edit function (corresponding to the Wave Modify function on the S-10) enables you to modify the waveform data of a sampled sound according to the parameters listed in the following chart. With the Wave Mix function, waveform data from two different samples can be merged, and the volume level of each can be adjusted before merging to prevent unwanted distortion. The tone color of a sampled sound can be tailored to suit your taste using Roland's unique digital filtering system. Low- and high-pass filters are provided, and cutoff frequency and resonance are adjustable.

The S-50's Tone Parameter Edit function (corresponding to the Wave Parameter Edit function on the S-10) provides programmable control over looping, envelope setting, and more. The S-50's envelope generator features eight level and eight rate parameters (see Figure 9) for the creation of any complex waveform. In addition, the EG control function enables you to control envelope rate and level by velocity and key scale (key follow).

●WAVE DATA EDIT PARAMETERS

Wave Mix	Merges the waveform data for two sample sounds.
Digital Filter	Adjusts the low-pass and high-pass filters.
Truncate	Eliminate the waveform data for before the start point and after the end point.

●TONE PARAMETERS

Naming		Names or renames a tone.
Original Key Number	C0 to C8	Changes the key number assigned to a tone.
Fine Tune	−50 to +50	Adjusts the pitch of a tone.
Loop Mode	OFF	Makes no loop.
	FWD	Looped portion of the waveform data is read out forward.
	ALT	Looped portion of the waveform data is read out forward and backward alternately.
Start Point		
End Point		
Loop Point		
Loop Tune		
Copy From		
Vibrato Rate		
Vibrato Depth		
Delay Time		
Envelope Generator		
EG Control		

Directly Conn

All the pro
be controlled fr
confirmed on it
operation, the S
connecting RG
display or a reg
for a video tape
the S-50 for vis
operation, inclu
and its envelop

	Sets the start point where the playback begins.
	Sets the end point where the playback ends.
	Determines the beginning point of a loop.
to +50	Adjusts the pitch of a loop.
	Copies the tone parameter setting (waveform data is not copied).
127	Sets the vibrato rate.
127	Sets the vibrato depth.
127	Sets the delay time of delayed vibrato.
127)	Sets the envelope level (8 points).
127)	Sets the envelope rate (8 points).
ain Mark	Assigns the sustain mark to one of eight envelope level points.
Mark	Assigns the end mark to one of eight envelope level points.
Rate 127)	Sets the level of key follow which in turn controls the envelope rates.
city Rate 127)	Determines how deep the envelope rates are controlled by key touch.
city Level 127)	Adjusts the velocity sensitivity to control the envelope rates.
el Curve	Selects one of six velocity curves (see Fig. 8) which controls the envelope rates.

ctable to a Monitor Display

rammable parameters listed above can n the S-50's panel and the settings display. For even faster and easier 50 also provides connection jacks for or composite monitors. A color CRT lar television set with an input connector recorder can be directly connected to ally monitoring all information during ng the waveform of a sampled sound

Play Mode Display

Sampling Mode Display (Wave Scope)

Sampling Mode Display (Threshold)

Edit Mode Display (Truncate)

Edit Mode Display (Loop Set)

Unpredictable Expandability

Like a computer, the functions of the S-50 are controlled by software programs contained on the accompanying 3-1/2 inch disk, providing the flexibility of function expandability and software upgrades when they become available. Optional software will enable you draw waveforms and envelopes and control parameters from a digitizer tablet that's directly connected to the S-50. In addition, such software will enable you to use the S-50 as a MIDI multi-sound source unit, with four individual outputs.

S-50 REAR PANEL

S-50 SPECIFICATIONS

•Keyboard: 61 Keys (5 octaves, C to C), Velocity and Pressure Sensitive, 16-Voice Polyphonic •Memory: 8 Patches, 16 Tones (8 tones per memory bank) •Editing: Patch, Tone, Function, Name, MIDI •Buttons: Numerical Key (0 to 9, Enter), Patch Select (P1 to P8), Patch, Shift, Mode Select (Play, Function, Record, Edit, Disk, MIDI, Aux), Page (+Page, −Page), Cursor (▲, ▼, ►, ◄) •Controls: Alpha-Dial, Bender Lever Control/Bend Range, Volume, Input Gain, Record Level •Display: 32-Digit Fluorescent Display (a color or monochrome monitor display can also be used) •Disk Drive: for 3-1/2" Micro Floppy Disk (double-sided, double-density) •Rear Panel: Jacks (Mix Output, Individual Output × 4, Headphones, Input, Hold Pedal, Pedal Control × 2), MIDI Connectors (In, Out, Thru), Display Out Connectors (RGB, Monochrome), External Controller Input Connector, Switches (Output Level, Power) •Dimensions: 1,106(W) × 328(D) × 93(H) mm (43-9/16" × 12-15/16" × 3-11/16") •Weight: 13 kg (28 lb. 10 oz.) •Accessories: Connection Cable, 3-1/2" Disk × 5, Disk Case •Option: AB-50 Carrying Case

*Specifications and appearance subject to change without notice.

Roland

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