

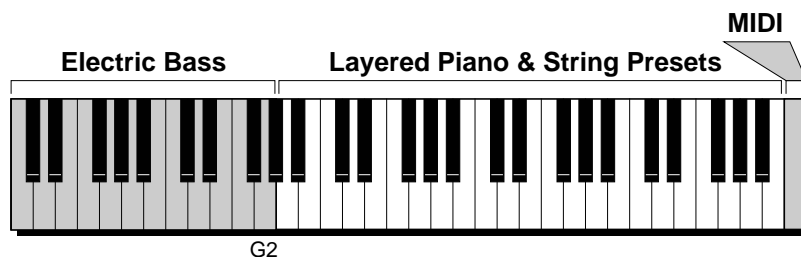
PROGRAMMING BASICS

PROGRAMMING EXAMPLES

Now for a Guided Tour of the Performance Edit and Preset Edit menus. We'll also explain the concept of Proteus Synthesis, and give you a few specific programming examples and tips.

PROGRAMMING A SPLIT KEYBOARD

The Performance section of the Proteus allows you to easily create keyboard “splits” and layers. Suppose for example you wanted to have electric bass on the lowest twelfth, with a piano and a string preset layered on the rest of the keyboard except for the last note which will be used to trigger a special effect on an external sampler via MIDI.



- 1) Press the Performance Edit button.
- 2) Press the Increment button until the following screen appears.

KEY1 Z1 C-2 ->G8
000 Grand Piano

- 3) “KEY1” refers to Quick Key 1. When Quick Key 1 is pressed, your split keyboard will be called up. “Z1” refers to the first keyboard zone, in this case the zone containing the electric bass preset. The keyboard can be divided with up to four zones. “C-2 ->G8” is the keyboard range where the preset will be assigned. The lower line contains the preset assigned to Zone 1.
- 4) Move the cursor underneath C-2 and play the lowest key on the keyboard. The lowest key changes to C1. Move the cursor underneath G8 and play G2 as shown in the diagram above.
- 5) Press the cursor button again to move it underneath the preset number. Use the data entry knob to select the electric bass preset.

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- 6) Move the cursor so that it is underneath Z1. Press the increment button once and Z2 (zone 2) will be selected. (The preset and keyboard assignments will change.)
- 7) Change the keyboard assignments for zone 2 as you did for zone 1. This zone should extend from G#2 ->B5. Change the preset to a piano.

KEY1 Z2 G#2 ->B5
000 Grand Piano

- 8) For zone 3, set the keyboard range G#2 ->B5 (just like zone 2). Change the preset to a string sound. Assigning two presets to the same range layers the two presets.
- 9) We're almost finished. Select zone 4 and set the range: C6->C6. Set the preset to "099 -default". The default preset prevents internal sounds from playing on that channel. Press Enter, then press the increment button once to move to next screen which looks something like this:

CH:1	2	3	4	← Zone Number
01	02	03	06	← MIDI Channel Number

- 10) Move the cursor to the lower line and set the MIDI channel on zone 4 to the same channel as your hypothetical sampler containing the sound effect. When the highest note is pressed, the sampler will play whatever sound you have assigned to that note.
- 11) Now that everything is just the way you want it, it's time to SAVE! Press the Save/Copy button. The Enter light will be flashing. Select a Performance Map location using the numeric keys, then press Enter. Your work is saved.

To call up this Quick Key assignment again:

- a) Select the proper Performance Map. (Hold Performance Select and press the numeric key.)
- b) Turn Quick Key On and select the Quick Key (in this case: 0) using the numeric keys. That's it!

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EDITING PRESETS

The easiest way to make a preset is to edit an existing preset. This is also an excellent way of becoming familiar with Proteus. If you don't like what you hear, simply change the preset and Proteus reverts back to the original sound. Changes are not made permanent until you *Save* them using the "SAVE/COPY" function. (Press Save/Copy from within the Preset Edit menu, choose the new preset location and press Enter.) Let's experiment and modify a few parameters of an existing preset. We'll start with functions that have an obvious effect on the sound like Instrument select, Coarse Tuning, Chorus, and Reverse Sound. First, choose a preset that strikes your fancy and press the Preset Edit button.

CHANGING THE INSTRUMENT

This is probably the easiest way to modify existing presets. Scroll through the Edit menu functions until you come to:

INSTRUMENT pri
IXXX Instr Name

Move the cursor down to the bottom line (using the cursor button) and change the primary instrument with the data entry control. Play the keyboard as you scroll through the various instruments. When you find an interesting instrument, move the cursor back up to the first line and select:

INSTRUMENT sec
IXXX Instr Name

Repeat the process for the secondary instrument. Find an instrument that sounds good when combined with the first one you selected. You can probably see that with all these great instruments to work with, you really can't go wrong. Now let's play with the tuning.

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CHANGING THE TUNING OF AN INSTRUMENT

Scroll through the Preset Edit menu functions until you come to:

TUNING coarse
pri:+00 sec:+00

If the numbers are “00” as in the example above, it means that the instruments are tuned to concert pitch (A=440 Hz). Each whole number in coarse tuning represents a semitone interval. To tune one or both of the instruments up an octave, move the cursor to the number (using the cursor button) and set the number to +12 using the data entry control. Try tuning one of the instruments to a perfect fifth above the other. Simply set the coarse tuning to +7.

DOUBLE+DETUNE

This is an easy one. With the cursor on the top line of the display, turn the data control until you find DOUBLE+DETUNE. Doubling can be turned on or off for each of the primary and secondary instruments. In addition, the amount of detuning (which thickens the sound) is adjustable from 0 (no detuning) to 15 (maximum detuning). Try it.

DOUBLE+DETUNE
pri:0ff sec:07

REVERSING THE SOUND

A simple concept. The instrument sounds can be played in reverse. This will normally make an instrument sound quite a bit different. It also virtually doubles the number of raw instruments you have to work with, and it's fun.

REVERSE SOUND
pri:0ff sec:0ff

You're probably getting the idea by now. Remember not to change presets or the preset will return to its un-edited state.

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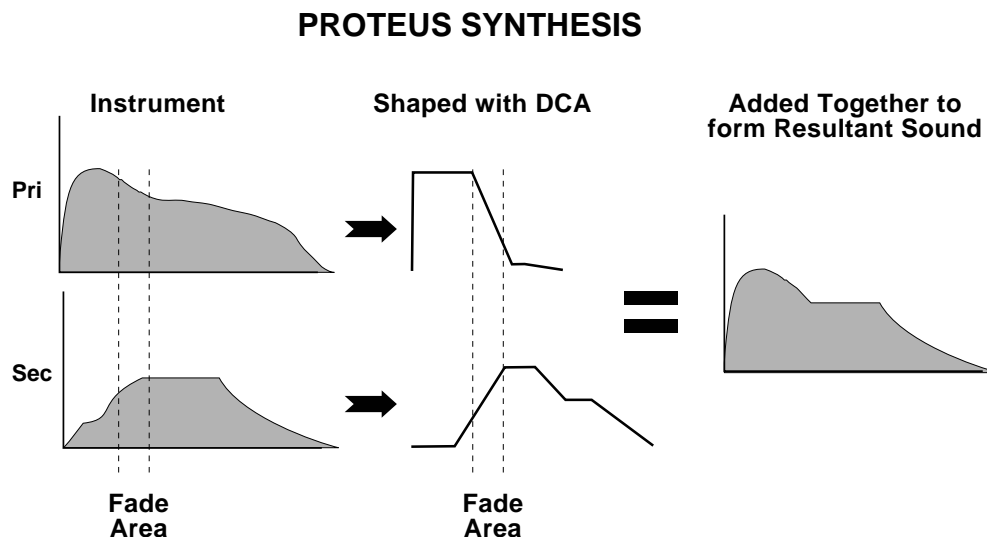
If you want to save your creation, press the Save/Copy button, select the new preset location and press Enter. That's all there is to it.

The previous examples were offered solely to pique your curiosity. By all means, go ahead and experiment with any of the other functions. Some of the best sounds have been discovered by accident. If it sounds good ... Do it!

PROTEUS SYNTHESIS

Oh, no! Not another form of synthesis to learn.
Relax. It's easy.

Proteus Synthesis is actually just a form of additive synthesis. Only, instead of building a sound from simple sine waves, Proteus starts with complete sampled sounds or complex waveforms and combines all or part of these together to form a new sound. The process is illustrated below.



Portions of two sounds are dynamically crossfaded in order to produce a new sound containing elements of both.

The envelope generators controlling the DCAs (digitally controlled amplifiers) can be used to fade between two instruments (primary and secondary) during the course of a note. This powerful technique allows

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you to combine elements of different instruments together to form completely new sounds. These new sounds are totally natural, because they are based on natural sounds. Proteus also contains many digitally generated waveforms that can be combined with other digital waves or with sampled instruments in order to change the character of the sound, perhaps to add a digital “edge” or add more bottom. In addition to the envelope generators, parameters such as Delay, Sound Start, and Cross-fade allow you to further control the blend of primary and secondary instruments.

As an example, let's combine the electric guitar and a synthesized waveform to create a new instrument. Refer to the Preset Edit menu parameters in the chart below. The Electric Guitar is the basic sound and is augmented by a chorused, synthesized wave which adds a digital sheen. Note that the guitar has a slower attack, which completely changes its character. Basically, the attack of the guitar has been replaced by the synthesized wave. In addition, the guitar is tuned up one octave and the two sounds have been panned to different positions in the stereo field.

Primary	Secondary
Instrument: Oct. 7 All	Instrument: El. Guitar
Alt Envelope: On	Alt Envelope: On
A H D S R 00 00 51 00 36	A H D S R 05 05 27 88 44
Volume: 45	Volume: 88
Chorus: On	Chorus: Off
Tuning: +00	Tuning: +12
Pan: +2	Pan: -2

ANOTHER EXAMPLE

As another example, we'll use the attack portion of the Soft Flute and the sustain portion of the Tenor Sax as raw material. This time we will use the Delay and Sound Start parameters as well as the Alternate Envelopes to blend the two instruments. The attack portion of the secondary instrument is removed using the Sound Start parameter and then delayed slightly so it will sound only after the flute attack portion begins to decay.

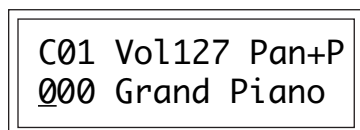
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The alternate envelopes are used to “fine tune” the splice. Furthermore, the flute attack has been detuned a bit sharp so the composite sound will start sharp and fall into correct pitch. Continue your experiments using this example, but changing the primary and secondary instruments. When you have found a good combination, fine tune the delay, sample start, volume and envelope parameters. Feel free to play with the modulation parameters as well.

Primary	Secondary
Instrument: Soft Flute	Instrument: Tenor Sax
Alt Envelope: On	Alt Envelope: On
A H D S R 04 02 16 00 16	A H D S R 06 00 38 85 40
Volume: 109	Volume: 83
Fine Tuning: +05	Fine Tuning: +00
Tuning: +12	Tuning: +12
Delay: 000	Delay: 002
Sound Start: 000	Sound Start: 040

USING PROTEUS WITH A SEQUENCER

The Proteus was designed from its conception with multi-timbral sequencing in mind. Just take a look at the main screen (or the 14th screen in the Performance Edit menu). Each Performance Map can store a different multi-mode setup for all 16 MIDI channels.



■ The main screen and the 14th screen in the Performance Edit menu are identical.

In order to respond to multiple MIDI channels, Proteus must be in Multi-Mode.

Multi-Mode is enabled by pressing the Multi button on the front panel. When the Multi LED is lit, Proteus will respond to multiple MIDI channels.

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The preset for each MIDI channel is selected from this screen. Press the cursor button to move the cursor up so that it is underneath the channel number.

C01 Vol127 Pan+P
 000 Grand Piano

Turn the data entry control and you will see that every MIDI channel has a preset assigned to it. Just select a preset for each of the MIDI channels. It's simple! (The multi-mode selection screen is also available in the second screen of the Performance Edit menu.) If you wish to reserve certain channels for other MIDI synthesizers, set the preset to "099-default". Volume and Pan position can also be adjusted for each channel.

The following ROM presets use only one output channel:

007 Sweet n' Saxy
 011 Metal Cables
 013 Acoustic Guitar
 024 Solo Trumpet
 027 Latin Drums
 028 Latin Perc.
 044 Solo Trombone
 053 Underground
 065 Rock Drums
 098 Machine Snare

USING THE 32 CHANNELS

The Proteus has 32 independent audio channels which are utilized dynamically. With 32 channels and 300 presets, you have a universe of sonic textures at your disposal. Some Proteus presets utilize linked presets or use the double+detune function to make them sound fatter. While this is fine when the preset is played solo, you may begin to run out of channels when Proteus is played multi-timbrally. Linking and doubling cause twice as many channels to be used by the preset. Learn to "budget" your output channels for maximum efficiency.

CHANNEL RIPOFF

When Proteus uses up all its 32 channels and needs more, it steals a channel from the key that has been held the longest. This is commonly known as channel ripoff. You will most commonly encounter this ripoff when using Proteus in multi-timbral mode. Since the Proteus dynamically allocates channels as needed, to eliminate ripoff you must either, play fewer notes, use simpler sounds, or turn off doubling (pri/sec, or linked presets).

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INSTRUMENT DEFINITION

If your sequence has a instrumental section using numerous chords, it may be advantageous to use a basic preset without links or doubling. A preset will sound much different alone than when combined with an ensemble. Try to resist the temptation to make every sound as fat as possible or you can wind up with “MIDI Soup”; a huge, stifling sound with every possible audio frequency filled. Each voice in your composition should have it’s own identity. Save the monster sounds for solos or dramatic effects.

PRE-SEQUENCE SETUP

One way to keep everything neat and tidy is to centralize everything at the sequencer (patch changes, continuous controllers, etc.). This is especially easy if you have a “full-featured” sequencer which allows you to store and edit continuous controller messages. The advantage of storing everything in the sequence is that all the data will be in one place and changing a performance map in the Proteus won't cause the sequence you wrote two weeks ago to play the wrong presets or effects.

The basic idea of a pre-sequence setup is to send out MIDI information just before the start of the song. This MIDI information will select all the proper presets, adjust the mix and pan positions of each preset.

Note: Proteus setup information should be transmitted from the sequencer *before* the song actually starts, perhaps during a lead-in measure or countdown. DO NOT send setup information just before the first beat of the song or MIDI timing errors could result.

USING EFFECTS IN MULTI MODE

It would be nice if there was a separate effect for each MIDI channel. Unfortunately, there isn't! There are only two effect processors so you have to “budget” them in your multi-timbral sequence. Effects *can* be changed during a sequence either by selecting a new performance map or by using the realtime MIDI control numbers shown on pages 140 and 141. To avoid nasty pops and glitches, sound must **not** be playing through the effect while it is being changed.

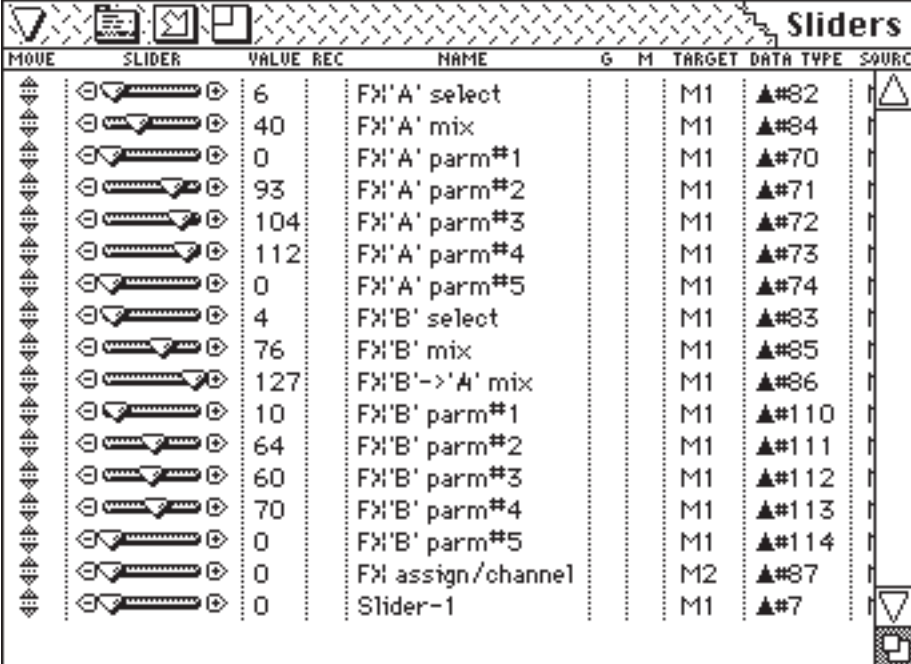
REMEMBER...

In Multimode, the effects settings in the Performance Map are used.

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REALTIME EFFECTS CONTROL

Special continuous controller messages can be set up to control the effects parameters as shown in the Performer™ sequencer screen below.



MOVE	SLIDER	VALUE	REC	NAME	G	M	TARGET	DATA	TYPE	SOURCE
		6		FX'A' select			M1	▲#82		
		40		FX'A' mix			M1	▲#84		
		0		FX'A' parm#1			M1	▲#70		
		93		FX'A' parm#2			M1	▲#71		
		104		FX'A' parm#3			M1	▲#72		
		112		FX'A' parm#4			M1	▲#73		
		0		FX'A' parm#5			M1	▲#74		
		4		FX'B' select			M1	▲#83		
		76		FX'B' mix			M1	▲#85		
		127		FX'B' -> 'A' mix			M1	▲#86		
		10		FX'B' parm#1			M1	▲#110		
		64		FX'B' parm#2			M1	▲#111		
		60		FX'B' parm#3			M1	▲#112		
		70		FX'B' parm#4			M1	▲#113		
		0		FX'B' parm#5			M1	▲#114		
		0		FX assign/channel			M2	▲#87		
		0		Slider-1			M1	▲#7		

In the Performer screen above, the Proteus effect parameters have all been programmed and named so that they can be adjusted during the sequence. Labelling everything helps to reduce the confusion factor. One caution however. The effects parameters have not been “de-zipped”, meaning that there may be slight glitches in the sound if an effect is being used while its parameters are being changed. The MIDI continuous controller numbers for all the effect parameters are listed on pages 140 and 141 of this manual.

MIDI BANK SELECT

Another function you may want to access over MIDI is preset bank select. To change Proteus preset banks send:

- 1) Controller 0 Value 00
- 2) Controller 32 Value 00 = ROM, Value 01 = RAM, Value 02 = Card
- 3) Send Program Change (Program Change MUST be sent to change bank.)

This patch sheet can be photocopied and used to keep written records of your favorite Proteus sounds.

PROTEUS Patch Sheet

part 1

Pri INSTRUMENT	
Sec INSTRUMENT	
KEY RANGE	
Pri KEY RANGE	
Sec KEY RANGE	
Pri VOLUME	
Sec VOLUME	
Pri PAN	
Sec PAN	
Pri COARSE TUNE	
Sec COARSE TUNE	
Pri FINE TUNE	
Sec FINE TUNE	
Pri DOUBLE+DELAY	
Sec DOUBLE+DELAY	
Pri DELAY	
Sec DELAY	
Pri SOLO	
Sec SOLO	
Pri SOUND START	
Sec SOUND START	
Pri EFFECT ASSIGN	
Sec EFFECT ASSIGN	
A EX AMOUNT	
B FX AMOUNT	
B->A FX AMOUNT	
Pri REVERSE	
Sec REVERSE	
Pri ALT. ENVELOPE	
Sec ALT. ENVELOPE	

Pri ATTACK	
Pri HOLD	
Pri DECAY	
Pri SUSTAIN	
Pri RELEASE	
Sec ATTACK	
Sec HOLD	
Sec DECAY	
Sec SUSTAIN	
Sec RELEASE	
XFADE MODE	FD Xsw
XFADE DIRECTION	→
XFADE BALANCE	
XFADE AMOUNT	
SWITCH POINT	
LFO 1 SHAPE	
LFO 1 AMOUNT	
LFO 1 RATE	
LFO 1 DELAY	
LFO 1 VARIATION	
LFO 2 SHAPE	
LFO 2 AMOUNT	
LFO 2 RATE	
LFO 2 DELAY	
LFO 2 VARIATION	
AUX ENV AMOUNT	
AUX ENV DELAY	
AUX ENV-ATTACK	
AUX ENV-HOLD	
AUX ENV-DECAY	
AUX ENV-SUSTAIN	
AUX ENV-RELEASE	

KEY/VELOCITY CONTROL	
1 >	
2 >	
3 >	
4 >	
5 >	
6 >	
REALTIME MOD. CONTROL	
1 - →	
2 - →	
3 - →	
4 - →	
5 - →	
6 - →	
7 - →	
8 - →	
FOOTSWITCH CONTROL	
LOCAL →	
2 →	
3 →	
P-BEND RANGE	
CONTROLLER AMOUNT	
CONTROLLER MOD	
CONTROLLER B	
CONTROLLER C	
CONTROLLER D	
PRESSURE AMT.	
VEL. CURVE	
KYBD CENTER	
KYBD TUNING	
LINK 1 →	
LINK 2 →	
LINK 3 →	

PROTEUS Patch Sheet

part 2

"A" EFFECTS

DELAY X-DELAY ECHO	
R DELAY TIME	
R TAP LEVEL	
L DELAY TIME	
L TAP LEVEL	
FEEDBACK	

REVERB EFFECTS	
REVERB TYPE	
DECAY TIME	

STEREO EQ A	
FREQUENCY 1	
BANDWIDTH 1	
BOOST/CUT 1	
FREQUENCY 2	
BANDWIDTH 2	
BOOST/CUT 2	

CHORUS	
LFO RATE	
LFO DEPTH	
MIN DELAY	
FEEDBACK	
MIX	

PHASER FLANGER	
LFO RATE	
LFO DEPTH	
MIN DELAY	
FEEDBACK	

"B" EFFECTS

RING MODULATOR ☐

DELAY X-DELAY	
R DELAY TIME	
R TAP LEVEL	
L DELAY TIME	
L TAP LEVEL	
FEEDBACK	

PHASER FLANGER	
LFO RATE	
LFO DEPTH	
MIN DELAY	
FEEDBACK	

CHORUS	
LFO RATE	
LFO DEPTH	
MIN DELAY	
FEEDBACK	
MIX	

STEREO EQ B	
FREQUENCY L	
BANDWIDTH L	
BOOST/CUT L	
FREQUENCY R	
BANDWIDTH R	
BOOST/CUT R	

FUZZ 1 FUZZ LITE	
INPUT FILTER	
OUTPUT FILTER	
OUTPUT LEVEL	