

DIGITAL PROCESSING

6. After establishing the desired loop points, press **ENTER**. The display asks:

Truncate After
Loop? Y/N

Press **YES** to discard all voice data after the loop end point (this conserves memory). However, if you might want to use the same sample later with a different loop point, press **NO** to keep the entire sample intact, or save the preset containing the original sample to disk.

DIGITAL PROCESSING 4

LOOP ON, LOOP IN RELEASE, and BACKWARDS modes

■ **Loop On** turns the loop on and off for a particular voice.

■ **Loop in Release** turns on the Release Loop. Without Release Loop, the signal may cut off abruptly after you remove your fingers from the keys; with Release Loop, you can loop the final portion of the sample so that the loop will keep playing—even after you lift your finger off the key—for as long as the VCA release lasts.

■ **Backwards** reads the voice out of memory in the reverse order from which it was stored. Backwards mode uses the Sustain Loop for its release, and the Release Loop for its sustain.

Applications: Backwards tape effects simulation. Reverse attack and decay characteristics of voices.

1. Activate **DIGITAL PROCESSING 4**. Move the cursor under the parameter to be adjusted in the display. Turn the function on or off with the **ON** or **OFF** keys respectively. To adjust other parameters, move the cursor under the next parameter to be adjusted and again use the **ON** or **OFF** keys to make your selection.

2. After making your selection(s), press **ENTER**. the Emax II returns to the module identifier.

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DIGITAL PROCESSING 5

TAPER

This adds a fade-in and/or fade-out to the sample, thus smoothing out samples with abrupt beginnings or endings.

You will not hear the effects of tapering until the Enter button is pressed. Always make sure you have a backup of anything that you taper in case the taper does not turn out well.

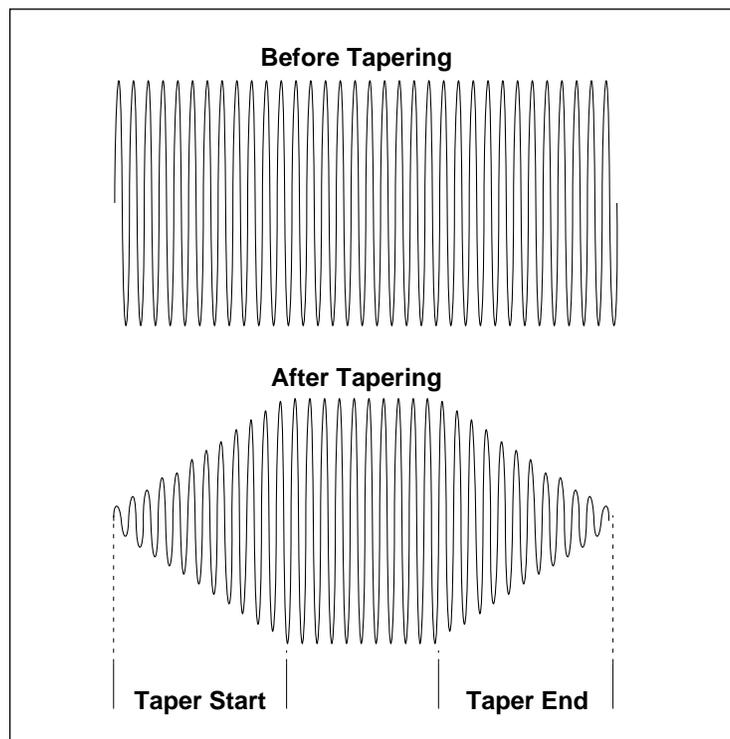
1. Activate **DIGITAL PROCESSING 5**. The display shows:

```

Taper Start End
      00ms 000ms
  
```

2. Start taper (fade-in) ranges from 00 milliseconds (ms) to 99 ms. End taper (fade-out) ranges from 000 ms to 999 ms. Use the arrow keys to position the cursor under the parameter to be adjusted. Set the value with the data slider .

3. After setting the desired taper point, press **ENTER**. The display will say "Tapering..." When tapering is complete, the Emax II will return to the module identifier and your voice will be tapered.



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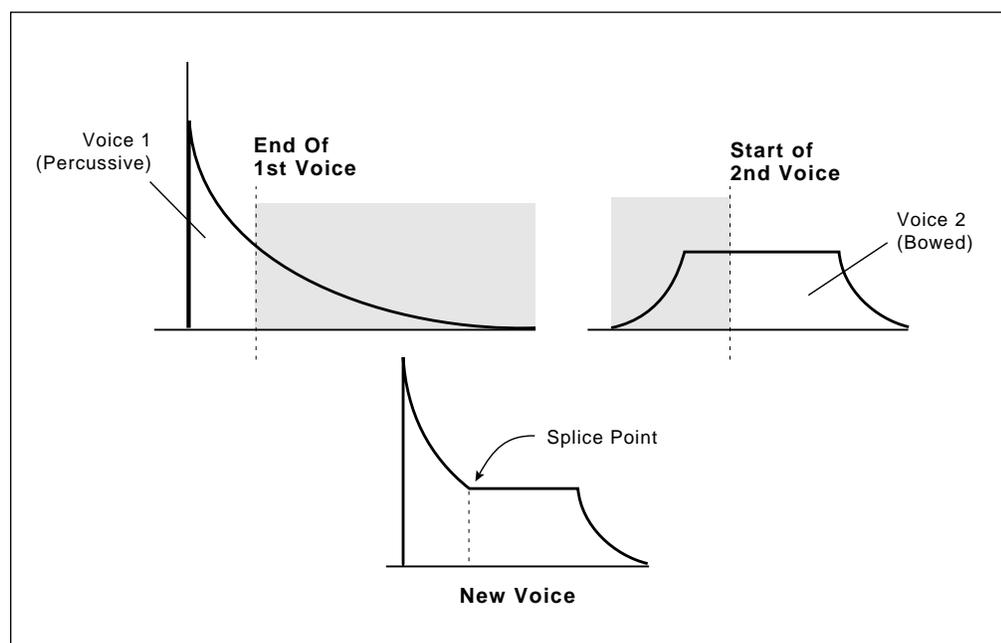
DIGITAL PROCESSING 6

SPLICE

Splicing marks an End point in one sample and a Start point in a second sample, then crossfades the end of the first sample and the start of the second sample over an adjustable length of time. Portion of the samples not used in the spliced version are discarded, and any loops are ignored.

You will not hear the effects of splicing until the Enter button is pressed. *Always make sure you have a backup of anything that you splice in case the splice does not turn out well.*

Applications: Splice an unusual attack to one sample, or unusual decay on to another.



1. Activate **DIGITAL PROCESSING 6**. This voice provides the first part of the spliced sound.
2. The display now says:

```
Splice From P XX
Select A Preset
```

...where XX is a preset number. Since there are two samples used in splicing, first the preset containing the second sample must be identified. Select the preset, then press **ENTER**.

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3. The display says:

```
Select Voice  
Play A Key
```

Play a note within the range of the desired voice, then press **ENTER**. The sample used by this voice will be spliced after the sample used by the first voice.

4. The display shows:

```
Splice  
EXXXXXX SYYYYYY
```

...where XXXXXX is the initial End point of the first sample and YYYYYY is the initial Start point of the second sample.

5. The six digits following the E indicate, in samples, the first sample's End point. Adjust the coarse value with the data slider and fine value with the increment and decrement keys, or type in a six-digit number with the keypad. Example: At the nominal sampling rate, E028000 means that the end point is located one second into the first sample. The keyboard will be inactive and you will not hear anything if you play it.

6. The six digits following the S indicate, in samples, the second voice's Start point. Adjust the coarse value with the data slider and fine value with the increment and decrement keys, or type in a six-digit number. Example: A reading of S028000 means that the Start point is one second into the second voice. When the splice points are correct, press **ENTER**.

7. The display now says:

```
Crossfade Time:  
000ms
```

Use the slider to specify a crossfade time, in 10 ms increments, between 000 and 990 ms. Crossfade provides a smooth transition between the sounds at the splice point. When set as desired, press **ENTER**.

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8. Now comes the moment of decision, as the display asks...

Make Splice
Permanent? Y/N

Answer **NO** to forget about splicing, **YES** to permanently splice the two samples together. When splicing is complete, the first sample of the splice will be replaced with the spliced sound.

Hint: Before doing a splice, copy the first voice of the splice during the voice selection process. Thus, if you make the splice permanent but don't like the results, you can always retrieve the original voices.

Note: Remember, splicing ignores all analog parameters. Take care that the original samples are compatible in terms of pitch, volume and sample rate. Level can be altered using (**DIGITAL EFFECTS 1**).

DIGITAL PROCESSING 7

COMBINE VOICES

Combining voices mixes one sample with another, thus producing a more complex voice. The combined voice ignores any looping, tuning, or level changes programmed in the individual voices; it works solely on the original digital voice information. To loop the combined voice, it is necessary to treat it as a single voice and set loop points as described in DIGITAL PROCESSING 2.

Applications: Mix octave higher voices in with a guitar's original voices to create a 12 string guitar effect. Mix synthesized drum sounds in with acoustic drum sounds. Mix synthesized strings in with real strings to add "body." Combine two voices into one voice to conserve memory.

1. The current voice selected when entering the **DIGITAL PROCESSING** module will be the voice that will be combined with the next selected voice.

2. Activate **DIGITAL PROCESSING 7**. The display now says:

Combine From PXX
Select A Preset

DIGITAL PROCESSING

...where XX is a preset number. Since there are two samples used in combining, first the preset containing the second sample must be identified. Select the preset, then press **ENTER**.

3. The display says:

Select Voice
Play A Key

Play a note within the range of the desired voice, then press **ENTER**. The sample used by this voice will be combined with the sample used by the first voice.

4. The display now asks:

Combine Changes
Data OK?

If you're having second thoughts, press **NO**. Otherwise, press **YES** to permanently combine the two samples.

5. The display will say "Combining" for as long as it takes to combine the two samples. Depending on the sample length, this can be a very long process...if you need to catch up on your reading, now is a good time. Or, you can send out for pizza.

DIGITAL PROCESSING 8

CROSSFADE LOOP

This virtually eliminates a loop's splicing glitch by crossfading the end and beginning of the loop.

1. Activate **DIGITAL PROCESSING 8**.

The display will say:

Crossfade Loop:
Changes Data!OK?

DIGITAL PROCESSING

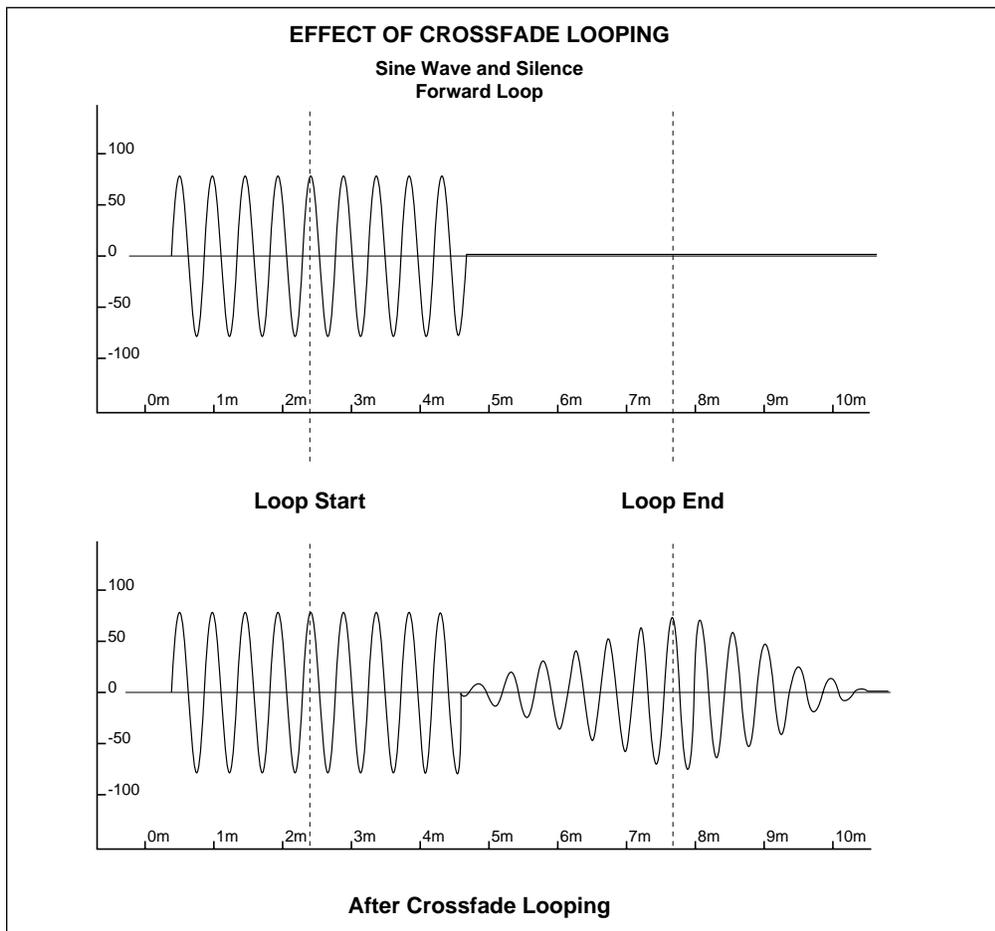
If you don't mind changing the data, press **YES**. Otherwise, press **NO** to return to the module identifier.

2. The display now asks:

Linear or EqPwr?
Linear

...where Linear is the default value. Use the data slider to select between Linear (a straight mathematical crossfade) and Equal Power (a weighted crossfade that produces no apparent level shift). After making your choice, press **ENTER**.

3. After taking a few seconds, the Emax II will ask "Truncate after Loop? Y/N. After you have made your choice, the Emax II will return to the module identifier.



Crossfade Looping takes data from around the Start Point and fades it into the data from the End Point so that the data at both loop points is identical.

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Hints: Before doing a crossfade, copy the voice whose loop is to be crossfaded to another preset. Since crossfading permanently alters the voice, keeping a copy lets you retrieve the original voice and try again.

Linear mode is useful for well-correlated data, such as a sample which has already been autolooped. Otherwise, use equal power. If distortion occurs, try reducing the sample's level (see **DIGITAL PROCESSING 9**) then crossfading it.

DIGITAL PROCESSING 9

DIGITAL EFFECTS

Activate **DIGITAL PROCESSING 9**. The display will say:



Digital Effects
(1-6) / Slider

Use the data slider or increment buttons to catalog the various options.

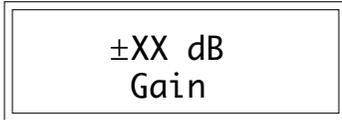
- 1 Gain/Atten
- 2 Reverse Sound
- 3 Change SmpRate
- 4 Change Pitch
- 5 Transform Mult
- 6 Spectrum Synth

■ 1 Gain/Atten

Alters the level of a voice.

1. Select with the slider and press **ENTER**, or key in 1 from the keypad.

The display shows:



±XX dB
Gain

■ The default amount of gain change shown in the display is the amount of gain needed to normalize the sample (bring the sample to full level).

...where XX is a two-digit number.

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2. Use the slider to select the desired amount of attenuation (down to -40 dB) or gain (up to +40 dB), then press **ENTER**. Emax II tells you this "Changes Data! OK?" If you can handle that, press **YES**. The display will say "Computing..." during the time the level is changed.

3. Those who enjoy ugly, fuzz-tone, or noise-like sounds are welcome to boost the gain to absurd levels.

■ 2 Reverse Sound

Permanently reverses the sample.

1. Press **ENTER** to return to the **DIGITAL PROCESSING** menu, then **9** to return to **DIGITAL EFFECTS**. This time choose **2** from the menu.

The display says:

Reverse Sound
Changes Data!OK?

2. To reverse the sound permanently press **YES**, to return to the **DIGITAL PROCESSING** menu press **NO**. The reverse sound function reverses a sample with its loop points intact, however, the loop is turned off.

Note: Reverse Sound requires memory space to perform its calculations. In some cases there may not be enough memory left to reverse the sound, in which case the display warns you.

■ 3 Change Sample Rate

Allows you to digitally resample a sound at a different sample rate.

Applications: Conserve memory space by converting a sound to a lower sample rate or convert a sound that has been digitally transferred via MIDI Sample Dump to an Emax II sample rate.

1. Press **ENTER** to return to the **DIGITAL PROCESSING** menu, then **9** to return to **DIGITAL EFFECTS**. Choose **3** from the menu. The display says:

OldRate	NewRate
XXXXXHz	YYYYYHz

▼ *Make sure to change the sample rate of both sides of a stereo voice to prevent undesirable results.*

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... where XXXXX can be any sample rate from 7000 Hz to 50000 Hz and YYYYYY can be any Emax II sample rate (20.0 kHz, 22.050kHz, 27.778kHz, 31.250kHz, 39.0625kHz)

2. When the sample rates have been selected, press **ENTER** and the display warns:

Modifies Sample&
Takes XX min.OK?

... XX being the time it take the Emax II to do the calculations for the conversion.

3. Press **YES** to convert, **NO** to return to the module identifier.

Note: The rates given in the NewRate column are the *actual* Emax II sample rates. The sample rates shown in the sample module are approximations. When doing sample rate conversions to conserve memory, be sure to use the actual Emax II rates in the OldRate column.

Sample Rate Conversion requires memory space to perform its calculations. In some cases there may not be enough memory left to convert the sound, in which case the display warns you.

■ 4 Change Pitch

Allows you to digitally change the pitch of a sound.

Application: Change the pitch of a sound in order to splice or combine it with another sound of a different pitch.

1. Select **DIGITAL EFFECTS 4** and the display will say:

Change Pitch
+00.00 semitones

The Pitch Change range is ± 35 semitones, 99 cents. Use the cursor keys to select between semitones and cents.

2. When the amount of pitch change has been selected, press **ENTER** and the display warns:

▼ Make sure to change the pitch of both sides of a stereo voice to prevent undesirable results.

DIGITAL PROCESSING

Modifies Sample&
Takes XX min.OK?

... XX being the time it takes Emax II to do the calculations for the pitch change.

3. Press **YES** to change the pitch, **NO** to return to the module identifier.

Pitch Change requires memory space to perform its calculations. In some cases there may not be enough memory left to convert the sound, in which case the display warns you.

■ 5 Transform Multiplication - A New Way to Combine Sounds.

Transform Multiplication is a digital effect that can be used to create some of the wildest new sounds that you have ever heard. Basically, two sounds are merged together in a way that frequencies common to both sounds are accentuated while uncommon frequencies are discarded. Transform Multiplication works best using harmonically rich sounds. The length of the resulting sound will be equal to the length of the current voice.

1. After selecting the current voice, select **DIGITAL EFFECTS 5** and the display will say:

TranMultWith P01
Select a Preset

2. Use the slider to select the preset containing the second voice, press **ENTER** and the display will say:

Key: XX 39kHz
Select a Voice

3. Play a key to select a voice, then press **ENTER**.

If you do not have enough sample memory in your Emax II to complete the calculations, the display will inform you that there is "Not Enough Sample Memory!" and you will be returned to the module identifier.

Sound Designers: TM is a valuable tool in your arsenal which can be used to produce weird, mood-creating sounds that have never been heard before.

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If you do have enough sample memory to complete the operation, the display will say:

Modifies Sample &
Takes XX min.OK?

... XX being the time it takes Emax II to perform the necessary calculations.

4. Press **YES** to continue, **NO** to return to the module identifier.

APPROACHING TRANSFORM MULTIPLICATION

Transform Multiplication can be thought of as a sounding board on a mechanical musical instrument. It is a kind of electronic resonator which can be used to impart characteristics of one sound onto another. Transform Multiplication is a form of synthesis that until now has only been available at large electronic music research facilities using supercomputers. Because of its obscurity, the territory of sounds produced with Transform Multiplication remains largely unexplored. As you wait for Transform Multiplication to complete its computations, you will gain an appreciation for the early Electronic Music pioneers who had to wait days to hear the results of their efforts. TM does take time to do its thing and can be considered an advanced application for those willing to take the time to come up with something completely different. Begin your experiments with short percussion sounds or the InstAttacks on the Spectrum Synthesis disk as these will give good initial results.

TRANSFORM MULTIPLICATION EXPERIMENTS and HINTS

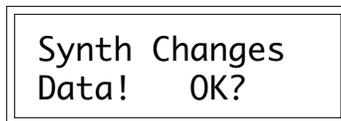
- Use speech as one of the voices, a pitched sound for the other. Via TM it is possible to "speak from within" violins, bassoons, cymbals, etc., similar to the effect of a vocoder.
- Try using the same sound for both voices.
- Use sounds created with Spectrum Synthesis as TM sound sources. Experiment with the effects different spectrums have on the result.
- Splicing silence to the beginning or ends of very short sounds can change the spectral characteristics of the result. If you truncate a sound, taper the ends to avoid spectral smearing. Splicing silence to the end of the current voice will also lengthen the final result.
- Sample a popping balloon, firecracker or handclap in a tiled bathroom (or other reverberant room). This will be the current voice. Choose any other interesting voice and perform Transform Multiplication. The current voice should sound as if it were in the room (or maybe not). This is a basic impulse response experiment. In this case, you have taken the impulse response of the room.

DIGITAL PROCESSING

■ 6 Spectrum Synth

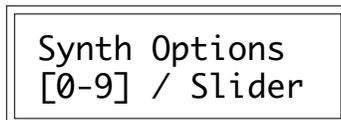
This is a full function additive synthesizer with dynamically changing spectrums and envelopes. Virtually any imaginable waveform may be created. After a sound has been created it may be spliced, combined, and processed in the same manner as a sound that has been sampled into Emax II.

1. Select **DIGITAL EFFECTS 6** and the display will say:



Synth Changes
Data! OK?

2. If it's OK to write over the current voice, press **YES**. If not press **NO** to return to the module identifier. If you pressed **YES**, the display will now say:



Synth Options
[0-9] / Slider

3. Use the slider to catalog the various options.

- 1 Freq. Spectrum
- 2 Time Slice
- 3 Ampl. Contour
- 4 Pitch Contour
- 5 Pitch/Ratios
- 6 Crossfade
- 7 Load Backup
- 8 Save Backup
- 9 Erase
- 0 Synthesize!

For complete instructions on how to use the Spectrum Synthesizer, see the Advanced Applications section of this manual.

