

SEQUENTIAL CIRCUITS

SIX-TRAK

OPERATION MANUAL



**SIX-TRAK
SYNTHESIZER/SEQUENCER
OPERATION MANUAL**

By Stanley Jungleib

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SIX-TRAK
MODEL 610

OPERATION MANUAL

by Stanley Jungleib

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About the Six-Trak

The multi-timbred Six-Trak puts in your hands a compact, affordable new musical tool with functions until now provided only by a synthesizer together with a multi-track tape recorder. In contrast to homophonic synthesizers, which program each voice with the same sound, each of the Six-Trak's voices can have a different sound. This enables the creation of complex ensembles, which are recorded on the Six-Trak's sequencer. The sequencer allows overdubbing, editing, and duplication without re-recording, splicing, or accumulating noise and distortion by "mixing-down" and "bouncing" generations of tape tracks.

The Six-Trak has a four-octave keyboard which you can use to overdub tracks, to play one or more voices live along with recorded sequences, or to play six voices live playing when in homophonic mode (polyphonic or unison). Other keyboard modes include a legato function, voice stacking, and a flexible arpeggiator.

The 800-note memory can be allocated to two sequences. Sequencer functions include overdubbing, programmable playback speed, programmable track volume, track erase, and warning of memory-full.

The synthesizer program memory stores 100 programs, each consisting of 33 voice parameters. 100 instrumental sounds and effects are factory-programmed, but the player can modify (edit) these as desired. LEDs clearly indicate the selected program, and if the program is being edited, they also display the parameter number and parameter value. Parameter values are edited with a signal knob. Programs can be copied. And the non-volatile memory is retained when power is off, thanks to a ten-year backup battery.

Each voice has a multi-waveform oscillator (or noise) as the principal sound source. The oscillator drives a resonant low-pass filter which contours the timbre, and an amplifier which contours the dynamics. There are three attack-decay-sustain-release (ADSR) envelope generators: for oscillator frequency, filter cutoff frequency, and amplifier gain. (The polarity of the first two can be inverted.) A triangle or square wave modulation low frequency oscillator (LFO) can be applied to oscillator frequency, pulse width, or filter frequency. Modulation depth can be programmed or adjusted by the MOD wheel. A second modulation route runs from the oscillator triangle output to the filter frequency. Frequency glide ("portamento") and voice volume are programmable. A PITCH wheel is provided for bending notes. Non-programmable master volume and tuning controls are provided. The TUNE switch has been eliminated by fully-automatic oscillator tuning.

The back panel has jacks for audio output (which can drive stereo headphones); a multi-purpose control footswitch; and MIDI input and output. MIDI is the link to the future. Today it allows the integration of the Six-Trak into one programmable system including SCI's new Drumtraks and Model 64 MIDI sequencer. The synchronous link to the Drumtraks adds an entire programmable rhythm section to the multi-timbred ensemble. The Model 64 sequencer offers increased sequencer storage (up to 4000 notes), program storage on cassette or disc, sequence transposition, and alternate keyboard modes, as well as forthcoming music display and editing functions.

The Six-Trak is another new concept from Sequential Circuits, the leader in affordable high-technology for the electronic musician.

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1 BASIC SETUP

WARNING! Switch power off to all equipment in use before connecting or disconnecting anything.

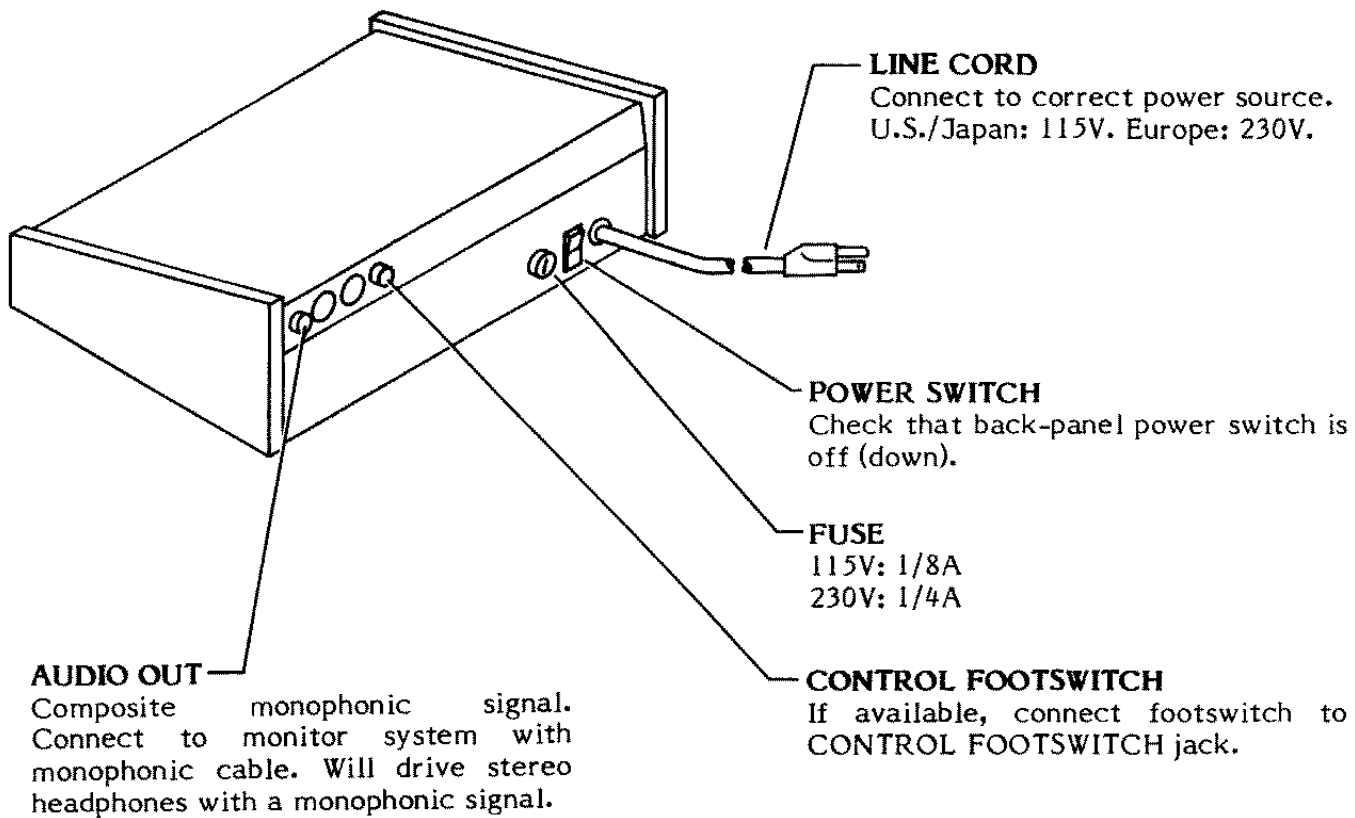


Figure 1-1
BASIC SETUP

2 BASIC OPERATION

This section covers basic operation using the factory programs.

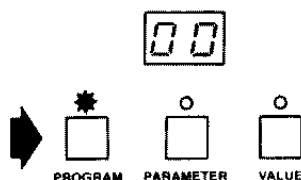
2-1 PREPARATION

Connect the Six-Trak as described on the previous page.

Switch power on.

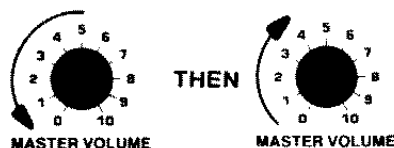


It is normal for 00 to be displayed and PROGRAM to be lit.

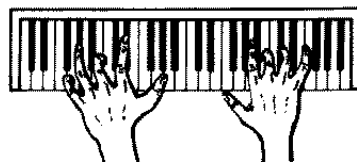


(If there is a memory error, the display will count from 1 through 6. This indicates voice tuning. Also, any sequences will be erased. See page 2-4.)

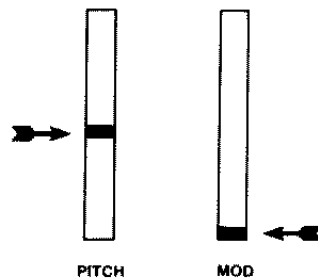
CAUTION: To protect speakers (and ears!), first lower MASTER VOLUME all the way, then raise it to desired level while playing.



Since program 00 has been pre-programmed, the keyboard will now play in this sound. The keyboard will be homophonic: all voices will be programmed with #00.



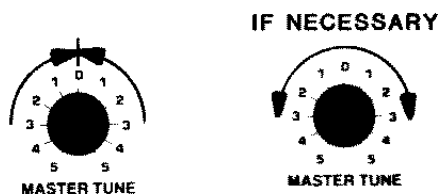
Check that PITCH wheel is centered in its detent position.



Check that the MOD wheel is fully down.

Check that MASTER TUNE is centered.

If necessary, adjust MASTER TUNE to tune Six-Trak against piano or other instrument.



2-2 PROGRAM SELECT

To select a new program:

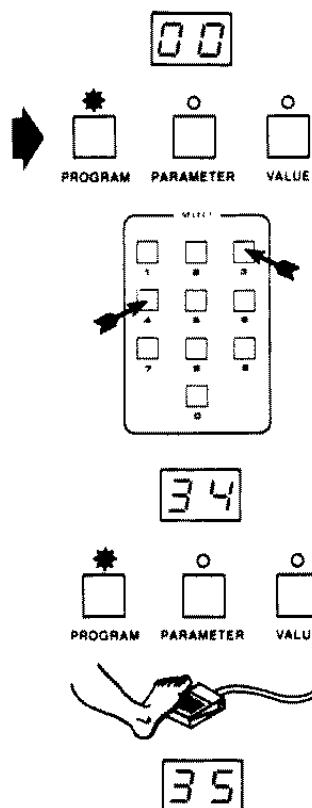
Switch PROGRAM on (if not already). This enables program changes to be made and indicates that the display is showing a program number.

When PROGRAM is lit, pressing any two digits will select a new program.

The new program takes effect when the second digit is entered.

If the sequencer and arpeggiator are off, pressing the footswitch will select the next highest program number.

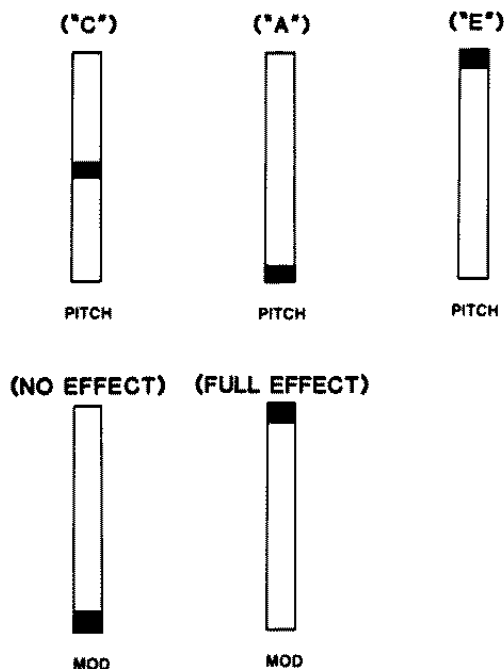
The factory programs are described at the back of this manual.



2-3 WHEELS

The PITCH wheel is normally left in its center-detent position, from which it is possible to "bend" oscillator pitch up or down by about a 3rd.

Check that the MOD wheel is down (minimum modulation). The MOD wheel sets the modulation level. When not in use, the wheel is left "down" and no modulation will occur. When the wheel is advanced fully "up," modulation is maximum.



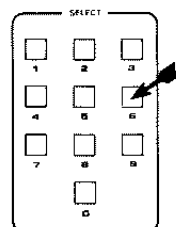
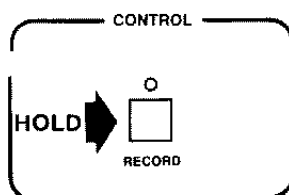
2-4 AUTOMATIC TUNING

As the Six-Trak warms up, the temperature change causes the oscillators to drift. To correct for this effect, the Six-Trak tunes itself when it is not being played. When the Six-Trak has been "standing by" for 30 seconds, it will tune one oscillator. Thirty seconds later, it will tune the next oscillator, and so on. If you need to play it while it is tuning, go ahead: playing interrupts tuning.

2-5 MANUAL TUNING

If you do not want to wait for automatic tuning to tune the six oscillators:

Hold CONTROL RECORD.
Press SELECT 6.



RECORD will remain lit while tuning is in progress. The display will count from 1 to 6, indicating which voices are tuning. When tuning is concluded, RECORD will go off and the Six-Trak will return to exactly the same state as it was in before the tuning. Even unrecorded Edit Mode changes are retained. It may be necessary to slightly readjust MASTER TUNE.

2-6 NORMAL VOICE ASSIGNMENT

Voice assignment is indicated by the TRACK LEDs (TRACK 1 equals voice 1, etc.).

While you play normally, the computer continuously assigns the six synthesizer voices to the most recently-played keys on the keyboard. You can play a maximum of six keys at once. If more than six keys are held down at the same time, the computer will reassign the earliest-used voices first. For example: playing and holding C, D, E, F, G, A, and B in succession will result in D, E, F, G, A, and B being sustained, while the C will disappear when the B is played. In other words, the Six-Trak normally operates on a "last-note priority" system: each new note played is assigned to the earliest-used voice. If the same key is struck repeatedly, the computer assigns the same voice.

2-7 UNISON

While selecting factory programs, you may have noticed the keyboard switching to Unison mode. If Unison is on in the current program, all six voices will be assigned to the lowest key played.

In Unison, if more than one key is played at once, only the lower note will be heard. The keyboard will also change from multiple- to single-triggering. This keyboard mode was popularized by the Mini-Moog monophonic synthesizer and requires--but also allows--a somewhat different keyboard technique. Instead of retriggering with each keystroke, the envelopes will only retrigger if the previous key is completely released before the new key is pressed. This requires a staccato touch. By the same token, if you play legato, the envelopes will only trigger on the first note, while the rest of the phrase will be sounded by the sustain settings of the envelopes. With practice, this system allows you to selectively accent notes by touch.

2-8 LEGATO

If UNISON is on and LEGATO is off, the keyboard operates in multi-trigger mode. If UNISON and LEGATO are on, the keyboard operates in single-trigger mode. This is also the case when the sequencer or arpeggiator is on.

2-9 GLIDE

Glide is a program parameter (#02) that affects the keyboard. Glide operates whether Unison is on (monophonic) or off (polyphonic). When programmed to 0, there is no effect: the oscillator steps instantly between specific pitches. As GLIDE is advanced, the rate at which the oscillator pitch changes is decreased. This introduces "portamento" between the notes, which can be subtle or quite extreme.

2-10 IN CASE OF DIFFICULTY

Memory

If the display counts from 1 to 6 when power is switched on, there may be a memory problem. Check your sequences and a few programs to see if they are as recorded.

If this occurs repeatedly, you may want to consult an SCI Authorized Service Center.

Control

If the keyboard or control panel "lock up," check that you are not making an operational error. If necessary, reset the computer by switching power off, then, after a few moments, back on.

If the "lock-up" occurs while using the sequencer, and you are sure that you are not making an operational error, reset the sequencer (see page 3-12).

Power

If the Six-Trak is receiving power, it will display program numbers.

If no LEDs are lit, either the Six-Trak is not switched on, power is not reaching the unit, or the fuse has blown.

Check the power source by plugging in other equipment.

Disconnect power cable and check fuse by opening fuseholder.

Examine the power cable for damage.

(see next page)

Audio

If the PROGRAM display lights but no sound can be obtained, check that MASTER VOLUME is turned up.

Check that parameter #34, VOICE VOLUME, or track volumes are not set too low.

Test the synth by simply connecting stereo headphones directly to the output.

Try substituting the audio output cable with one known to be good.

Check your amplifier by trying a high-level audio input such as another synthesizer or tape deck.

3 SEQUENCER

3-1 INTRODUCTION

The sequencer is the heart of the Six-Trak, recording the individual synthesizer timbres and tracks which result in complete orchestrations. When playing the Six-Trak live, the six voices are each programmed with the same sound (homophonic mode). Live multi-timbres are not possible because the Six-Trak cannot know which keystrokes are intended for which timbres. But the sequencer records each voice on its own track. So each voice can be overdubbed in a different program. The playback mixture of the tracks can also be programmed by individual track volume adjustment.

The sequencer capacity of 800 total notes is allotted to two "banks," SEQ A or SEQ B. (However sequence capacity can be increased to about 4000 notes through the Model 64 MIDI sequencer.)

Typically, you create multi-track sequences one track at a time. The first track recorded is referred to as the "basic" track. It determines the total length of that sequence. The basic track(s) will therefore usually be a bass or rhythm track (but can be whatever you want).

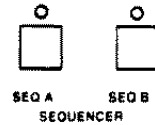
Note: As mentioned, each voice is recorded on its own track. This means, for example, that if one track is being overdubbed, only one note should be played at a time. If more than one note is played, only the last one is recorded. To record two or more voices for either the basic track or overdubbed tracks, two or more tracks need to be switched into record mode.

A previous sequence under "A" or "B" is automatically erased when a new sequence is recorded. To save them permanently, sequences can be "dumped" to the external MIDI sequencer.

3-2 PLAYBACK START/STOP

Footswitch playback instructions are on the next page. To play sequences:

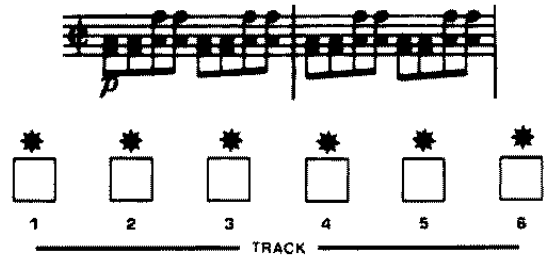
Stack mode and the arpeggiator must be off. One sequence must be stopped before the other can be started. (Both SEQ LEDs must be off.)



To start, press SEQ (A or B). If the sequence is empty, the LED will not light or will go off instantly.



Otherwise, the sequence will begin. SEQ lights, and lit TRACK LEDs indicate which tracks are in playback.



The initial playback speed of the sequence will always be the last speed at which it played.

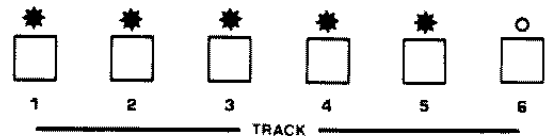


Adjust SPEED as desired.

Note: Do not turn SPEED all the way counterclockwise, as this will stop the sequencer by selecting MIDI clock input.

The sequence will repeat continuously ("loop"), until SEQ is pressed. At the end of each loop, the TRACK LEDs will blink.

If all TRACK LEDs are lit, no voices will be available for live accompaniment. (The sequencer is using all six voices.)

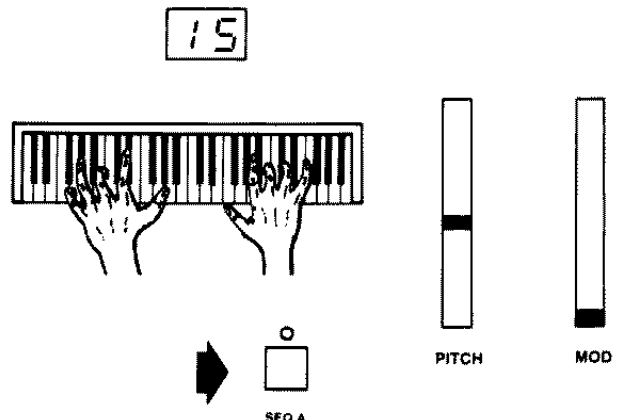


If any TRACK LED is not lit, this means at least one voice is available for live accompaniment. To play along with the sequence:

Select desired program.

Play no more keys at once than the number of available voices (non-used sequencer tracks).

Use the wheels. They will only apply to live playing, not the sequence.



To stop sequencer, press SEQ.

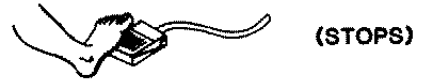
3-3 OPTIONAL FOOTSWITCH START/STOP

To control sequencer playback with the footswitch:

Start playback normally, by selecting SEQ A or B.



Stop sequence by pressing footswitch.



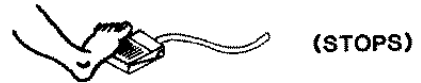
The SEQ LED will remain lit, indicating standby.



To start the sequence again, press the footswitch.



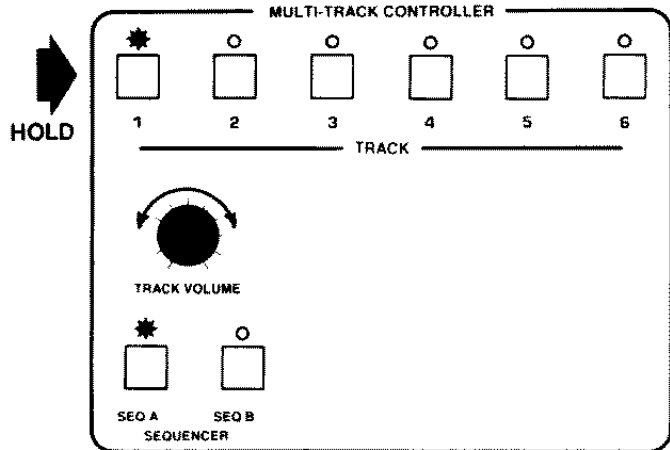
The sequence will loop until the footswitch (or SEQ) is pressed.



3-4 TRACK VOLUME

During playback, the mixture of the track volumes can be adjusted. This adjustment is remembered. Whenever the sequence is played, the track levels will be set as they were last adjusted.

With sequence playing back, SEQ and the TRACK LEDs of recorded tracks will light.



Hold desired (lit) TRACK switch.

Adjust TRACK VOLUME as desired. (It is possible to mute the track entirely.)

Release TRACK switch.

3-5 MEMORY FULL

Before recording or overdubbing, you should be aware of how "Memory Full" is indicated.

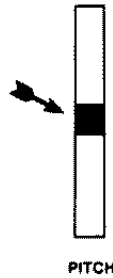
The sequencer has a capacity of about 800 notes.

When 800 notes have been recorded in both sequences, the TRACK RECORD and TRACK LEDs will start blinking rapidly. To escape this situation, switch SEQ (A or B) off. You can create more space by erasing undesired tracks in either sequence, or by erasing either sequence entirely.

If the memory full warning is ignored, excess notes will be recorded over the beginning of the current sequence, producing unpredictable results. (The other sequence is not affected.)

3-6 RECORD BASIC TRACK(S)

Check that the PITCH wheel is centered (detented).

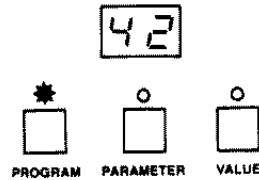


Check that the SPEED knob is centered.



SPEED

Select program desired for basic track(s).



Switch TRACK RECORD on. (If you decide to not record, you can switch RECORD off, without erasing any existing sequences.)



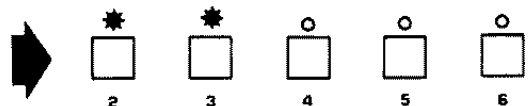
To record, switch SEQ A or B on.
Note: This erases any previous sequences in these banks.)



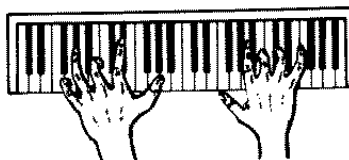
TRACK 1 will light automatically.



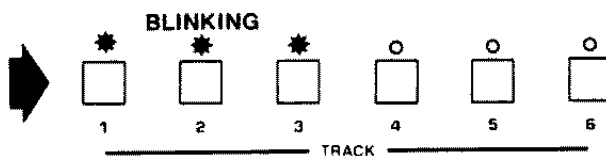
If more than one voice is needed for the basic track, switch on additional TRACK switches (2, 3, etc.).



Recording will start automatically when you begin to play.



When recording starts, the selected TRACK LEDs will blink.

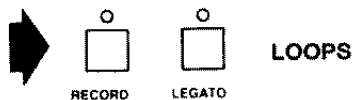


While the sequencer is recording, the PITCH and MOD wheels are locked out.



To stop recording, in time with the desired ending, either:

Switch RECORD off. The recorded basic track(s) will playback and loop. (If the playback is transposed, the PITCH wheel was not centered before recording.)



OR

or, Switch SEQ off. The sequence will not playback.



3-7 RECORDING USING THE OPTIONAL FOOTSWITCH

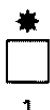
Switch TRACK RECORD on.



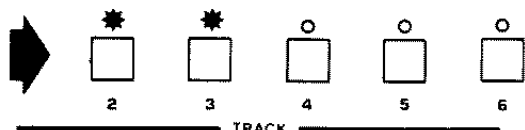
Select SEQ A or B.



TRACK 1 will light automatically.



If desired, select additional tracks.



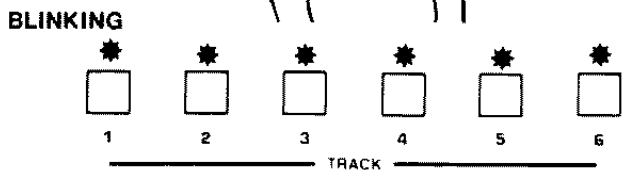
If you press the footswitch, recording will begin with a rest.



Or, recording will start automatically when you begin to play.



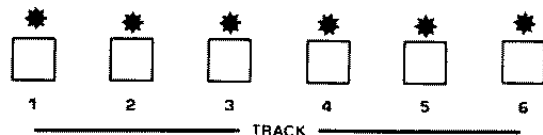
The TRACK LEDs will blink.



To stop recording, press the footswitch in exact time with the desired ending.



The recorded basic track(s) will playback and loop. The LEDs for tracks recorded will remain lit during playback.



To stop playback, press the footswitch again. SEQ will remain lit.



Pressing the footswitch again will start the sequence.



3-8 BASIC OVERDUBBING

If not already playing back, start playback of basic track(s), by pressing SEQ.



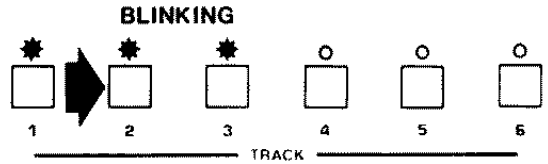
While playing live, select program desired for this overdub.



Switch TRACK RECORD on. It will blink.



Switch on desired overdub tracks. These TRACK LEDs will blink, indicating the tracks are ready to record. (It is possible--but not recommended--to overdub on a track which already is recorded.)

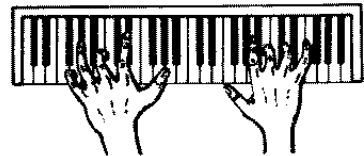


During this first loop, while both RECORD and TRACKs are blinking, anything played on the keyboard will be ignored.

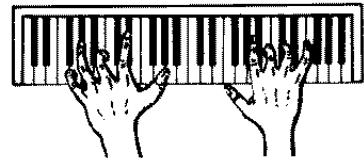
← **NOTE**

(Before playing, you can switch RECORD off without affecting anything already recorded on that track. RECORD will continue to blink "ready" through this loop. Then it will go off.)

HOLD OPENING NOTES

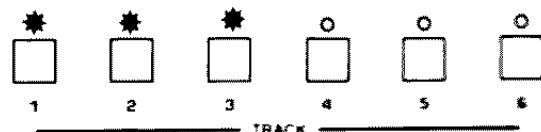


If desired, play notes intended for the first overdub beat, just before the end of this first loop. At the end, RECORD will light solidly. If any notes are being held when this occurs, they will be recorded exactly on the first beat of the sequence.



If no notes are held, during the next loop when RECORD is lit, overdubbing starts whenever you play on the keyboard.

Overdub as desired. When the end of the sequence is reached, RECORD will go off, and all recorded tracks will play back.

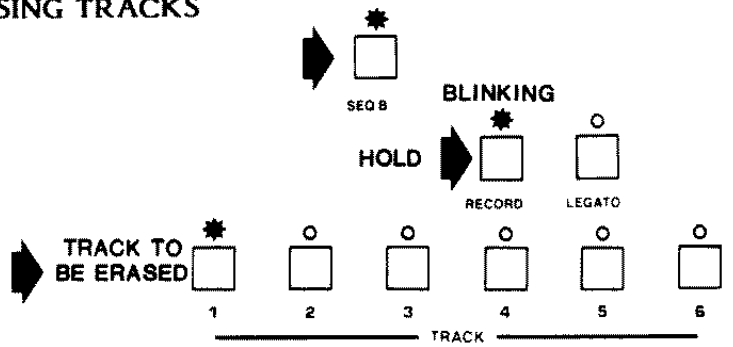


3-9 ERASING TRACKS

Start playback by pressing SEQ.

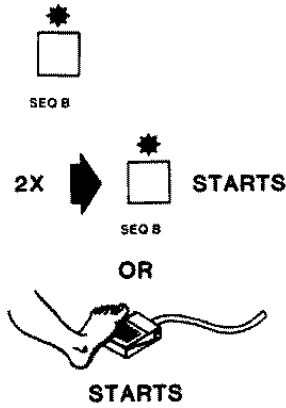
Hold TRACK RECORD. It will blink.

Press lit TRACK switch of track to be erased.



The sequence will stop and SEQ will be lit. The track is erased.

To restart, press SEQ twice, or the footswitch once.



(To erase another track, it is not necessary to restart. Tracks can be erased when the sequence has been stopped while SEQ A or B is still lit. In this case the TRACK LEDs will not be lit.)

Note: To erase an entire sequence, just re-record. Do not erase all tracks.

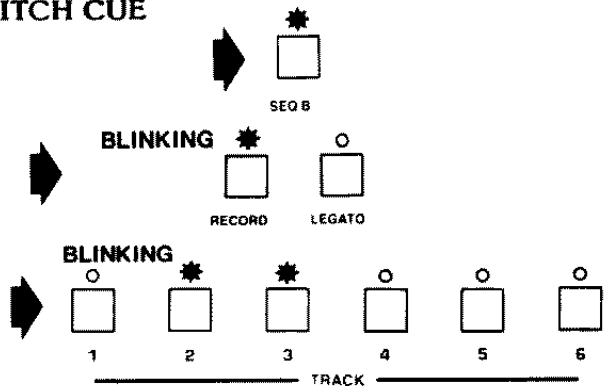
3-10 FOOTSWITCH CUE

Press SEQ to start playback.

Switch TRACK RECORD on.

Switch on desired overdub tracks.

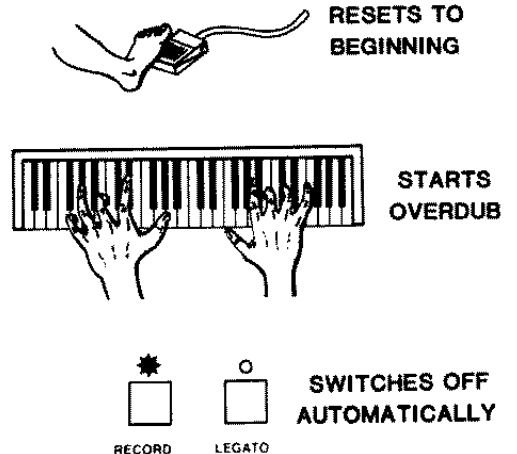
The RECORD and TRACK LEDs will blink. (After one loop, RECORD will light solidly.)



Press footswitch. This will reset the sequence to its beginning. (You will hear nothing. The sequence is ready to start.)

Now, anything you play will automatically start overdub mode and be recorded as opening notes.

At the end of the loop, RECORD will automatically switch off.



3-11 EDIT TRACK PROGRAM

To change a track's program:

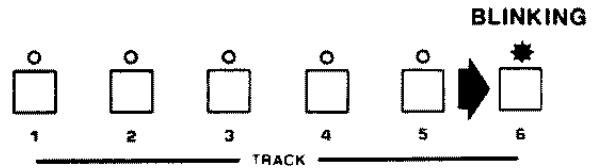
Start playback by switching SEQ (A or B) on.



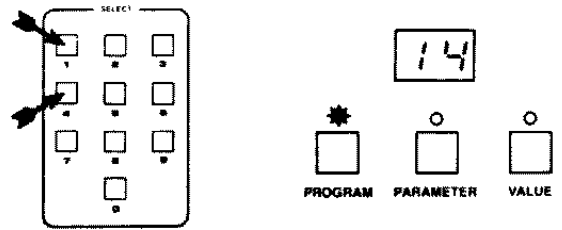
Switch TRACK RECORD on.



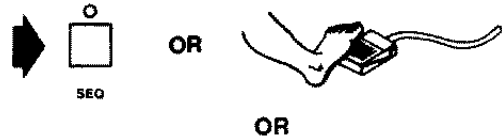
Press TRACK switches of track(s) to be reprogrammed. The LED(s) will blink.



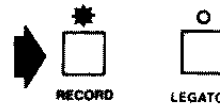
Select desired program.



To stop, press SEQ or the footswitch.



To return to normal playback without stopping, press TRACK RECORD.



3-12 MULTI-TRACK/MULTI-TIMBRE EXAMPLE

For example, multi-track an instrumental version of a 12-bar blues:

Decide the basic arrangement for up to six voices.

For this example, we'll use voice 1 for the bass program and voices 2 - 4 for a comping organ part. This leaves two voices for thematic lines. Voice 5 will be recorded, while Voice 6 will be left for live play.

Decide the programs.

Voice/Track	Program
1	13
2	00
3	00
4	00
5	09
6	live

Check that the PITCH wheel is in center detent position.

If the wheel is not centered, the sequence will playback transposed, because the sequencer ignores the PITCH wheel during playback.

Check that the SPEED knob is approximately centered.

This gives the central control range of running speed, from approximately 1/4 to 4X real-time (recording speed). If--while recording the basic tracks--the SPEED knob is set almost fully counterclockwise (slow), then the playback rate will only be able to be increased, from 1/1 to 8X real time. If it is fully clockwise (fast), only a decrease, from 1/1 to 1/8, will be possible.

Select program for basic track.

The basic track is the first one laid down in a sequence, which establishes the basic length. It is fairly natural to lay down the bass line first, so we select that program:

PROGRAM must be on.
Select 13.

Switch TRACK RECORD on.

If you decide to not record, you can switch RECORD back off at this point, without erasing any existing sequences.

Switch SEQ A or B on.

This selection erases any sequences in these banks.
TRACK 1 will light automatically.

If more than one voice is needed for the basic track, switch on additional TRACK switches (2, 3, etc.). All selected tracks will record with the same program; however, each track program can be changed later.

If desired, start metronome for basic track. Or use Drumtraks! (See section 9.)

At this point SEQ A, RECORD, and TRACK 1 are lit.

Play the bass line.

When you play the first note, the TRACK 1 LED will start blinking, to indicate that recording has begun.

Stop recording at the right time, with RECORD or footswitch.

To record an accurate loop, press the footswitch or the RECORD switch exactly in time with the first beat of the next measure.

If you made a mistake in the bass line, just switch SEQ off, then start over.

With the basic track playing (SEQ A and TRACK 1 on), select program #00, for overdubbing the comping part.

If you want to change the pace, adjust the SPEED control.

Switch on TRACK RECORD and TRACKS 2, 3, and 4. They will all blink until the end of this first loop.

The sequencer is playing through the loop to give you time to get ready to record. If you hit the keyboard while the LEDs are blinking, nothing will be recorded. But if any keys are played or held at the end of this loop, they will automatically be recorded exactly on the first beat on the new recording loop. (This autocorrect downbeat recording only is possible on the first loop. On following loops, be sure to play overdub notes just after the start of the sequence.)

At the end of the first loop, the RECORD LED will go solid to indicate that playing will be recorded.

Again, recording does not begin until you begin to play. You can "preview" the loop as often as necessary.

Record the comping part. Play only three voices maximum.

When the sequence end is reached, RECORD will go off and all four tracks will play back.

Suppose you make a mistake on this recording.

You can erase just the track which contains the mistake, or erase all of the overdubbed parts, and re-record the whole part. What you do at this point depends on how you like to work.

Erase undesired tracks.

Hold TRACK RECORD. It will blink.
Press lit TRACK switch of track to be erased.
The sequence will stop and SEQ will be lit.
Restart and repeat for each track to be erased.

Overdub Correct Parts.

Switch to Program 09 and overdub a theme on track 5.

Select program 09.
Press SEQ A to start sequence.
Switch TRACK RECORD on.
Switch TRACK 5 on.
While RECORD blinks, hold opening note of solo.
When the next loop starts, RECORD will light solidly and recording will begin.
When the loop has finished, RECORD will go off.

Select another solo program and play, accompanied by the sequence. The wheels can be used.

3-13 IN CASE OF SEQUENCER PROBLEMS

Control

If the keyboard or control panel "lock up," check that you are not making an operational error. If necessary, reset the computer by switching power off, then, after a few moments, back on.

Sequencer

If while recording, the TRACK and TRACK RECORD LEDs start blinking rapidly, the sequencer memory is full. To escape, switch SEQ A or B off. Create more space by erasing undesired tracks.

If sequences have been lost and the sequencer is not functioning ("locked-up"), it can be reset. Be sure you are not making an operational error, because resetting will erase anything you have recorded under both sequences.

To reset the sequencer:

Hold both RECORD switches.
Press SELECT 0.

4 ARPEGGIATOR

4-1 INTRODUCTION

The arpeggiator is a very useful keyboard memory feature with two basic modes: UP/DOWN and ASSIGN. In either mode you can "latch" the arpeggiator, so it continues to play even when you remove your hands from the keyboard.

The arpeggiator uses voice 6 only. For either UP/DOWN or ASSIGN modes, the arpeggiator will recognize a maximum of sixteen held keys.

4-2 UP/DOWN

With UP/DOWN on, the Six-Trak sequences between any held keys according to their position, from low to high and back down. For example, C E G B G E C E G...

To arpeggiate:

Switch UP/DOWN on.

Hold desired keys.

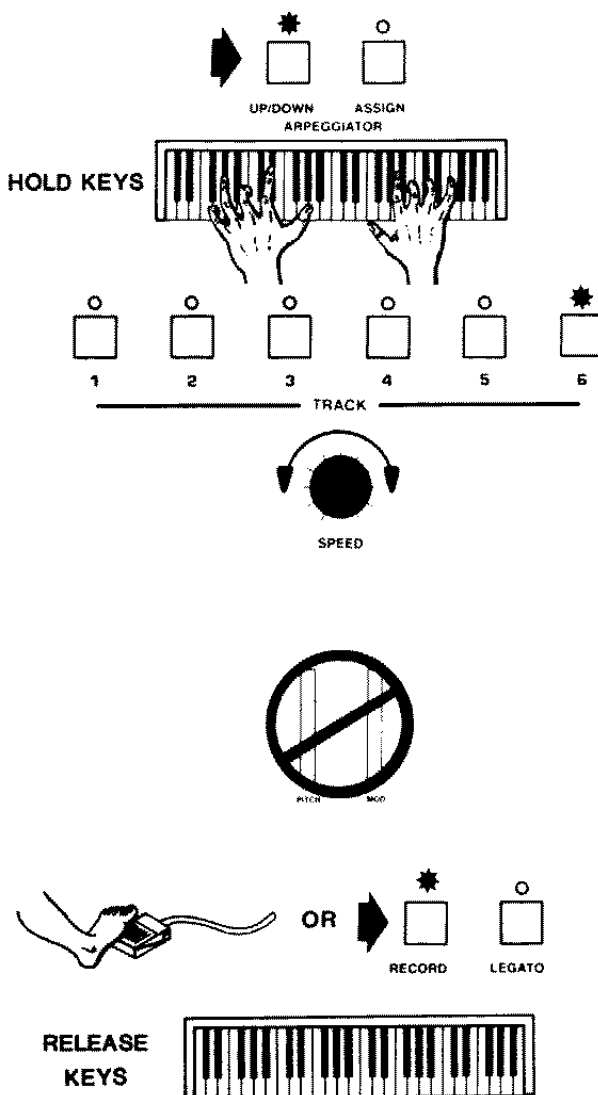
The arpeggiator will play, using Voice 6.

Adjust SPEED as desired.

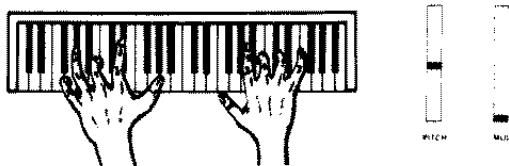
If only one key is held, there will be no arpeggiating. Monophonic lines can be played normally, with the arpeggiator brought in only when more than one key is held down simultaneously.

The PITCH and MOD wheels will not operate.

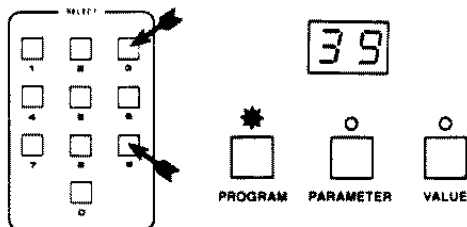
To latch, press the footswitch or TRACK RECORD while you hold down keys. You can then remove your hand(s) and the notes will continue to arpeggiate.



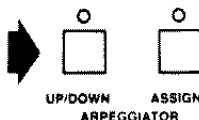
While the arpeggiator is latched, you can play along with up to five more keys, which will not be arpeggiated or latched. The wheels will operate on these live voices.



If desired, select program desired for the five play-along voices. (This can be a Unison program.)



To stop, switch UP/DOWN off.



4-3 ASSIGN

ASSIGN sequences between keys according to the order they are played. For example, C G E B C G E B. This allows you to create intense riffs, without necessarily having to play them.

ASSIGN operation is the same as UP/DOWN, except you press keys in the order you want them to be played.

4-4 FOOTSWITCH NOTES

Once an arpeggiator sequence has been entered, it is possible to set up the arpeggiator to advance either by single presses of the footswitch, or in response to an external clock connected to the FOOTSWITCH jack:

Turn the SPEED knob fully counterclockwise. The arpeggiator will stop.

Tap the footswitch quickly.

Or, if desired, connect a 5-15V clock source, preferably a square wave. The maximum useful frequency will be 10 - 15 Hz. (Note that for the Six-Trak computer to recognize the clock pulse, the pulse must be at least 20 milliseconds long--both high and low. Note also that a satisfactory pulse can be obtained from the Drumtraks METRONOME OUT jack. This allows the Drumtraks to control the arpeggiator speed according to the drum pattern beat note.)

5 STACK MODE

In the Six-Trak, a stack consists of up to six different timbres (programs) assigned to one note played on the keyboard. Two separate stacks (A and B) can be created. Intervals can be stacked, usually by simply adjusting the OSCILLATOR COARSE FREQUENCY parameter (#00) for the various programs. This enables the creation of very complex sounds.

To create a stack:

Switch STACK (A or B) on.

To change the program for a voice:

Select desired program.

Switch TRACK RECORD on.

Press desired TRACK switch.

RECORD will switch itself off.

Repeat as required to assign programs to desired voices.

To adjust voice volume:

Hold desired TRACK switch.

Adjust TRACK VOLUME as desired.

To delete the voice from the stack:

Adjust voice/track volume to 0.

If LEGATO is off, the keyboard will play as in Unison mode, with multi-triggering and low-note priority. (The Unison program parameter is ignored.)

If LEGATO is on, the keyboard will play with single-triggering.

To see the program assigned to each track, simply press the desired TRACK switch. The program number for that track will be displayed.

6 PROGRAMMING THE SYNTHESIZER

6-1 INTRODUCTION

Basic operation with the factory programs has already been covered. You can use the Six-Trak solely with the factory programs. However, as good as they are, the musician is bound to feel that some are more useful than others in specific musical contexts. This is why you want to be able to create your own custom programs.

There are several aspects to programming custom sounds: knowing the Six-Trak's modes of operation and accompanying switch functions, knowing what the synthesizer parameters do in a functional sense, and knowing how to use the parameters for musical purposes.

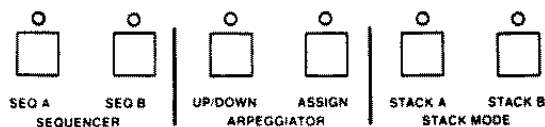
The modes and switch functions are explained in this section. The parameters are explained in the next section. The use--the art--is your part. To exploit the Six-Trak's sonic possibilities fully, learn as much about it as you can by studying the parameters (see Section 7) and the factory programs (see Section 14). Seeing exactly how these programs are constructed will make it easier for you to begin to create your own programs. At first, practice synthesizing by editing the factory programs. For many, this will be the best way to learn exactly how the parameters on the Six-Trak operate. Then try creating programs "from scratch" (see page 6-6.)

Be advised that in the excitement of creation, new and interesting programs tend to escape if not documented. Program parameter forms are provided for this purpose following the factory program listings.

For more information, see also "Editing" in the Details section.

6-2 EDITING A PROGRAM

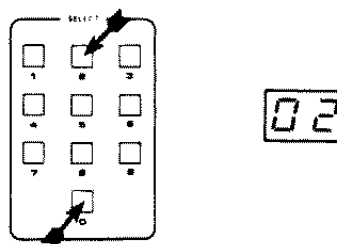
If they are on, switch the sequencer, arpeggiator, or stack mode off. If any of these are on, the PARAMETER switch will not light.



Switch PARAMETER on. PROGRAM will switch off and the current parameter number will be displayed.



Enter two digits for the parameter to be edited. (For parameter codes, see front panel.)



To edit the parameter value, turn the VALUE knob. (To edit, it is not necessary to switch VALUE on.)



To display the current parameter value, switch VALUE on.



6-3 RESTORING A PROGRAM

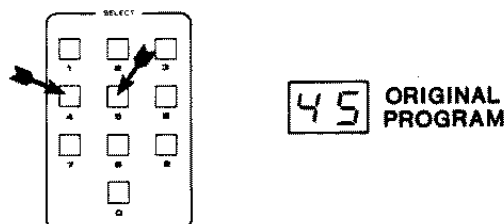
To cancel all edits and restore the original program:



Switch PROGRAM on.



Re-enter the program digits.



6-4 AN EDITING EXAMPLE

For example, suppose you want to change oscillator waveforms from sawtooth to pulse, change the LFO-modulation rate, and you prefer a brighter tone in the program:

Switching Waveforms

Switch **PARAMETER** on.

Enter two digits for **SAWTOOTH** parameter (10).

Switch **VALUE** on. If the sawtooth is currently on, the value will be 1.

To switch off the sawtooth, turn the **VALUE** knob counterclockwise.

The displayed value will be changed to 0, indicating the sawtooth is off.

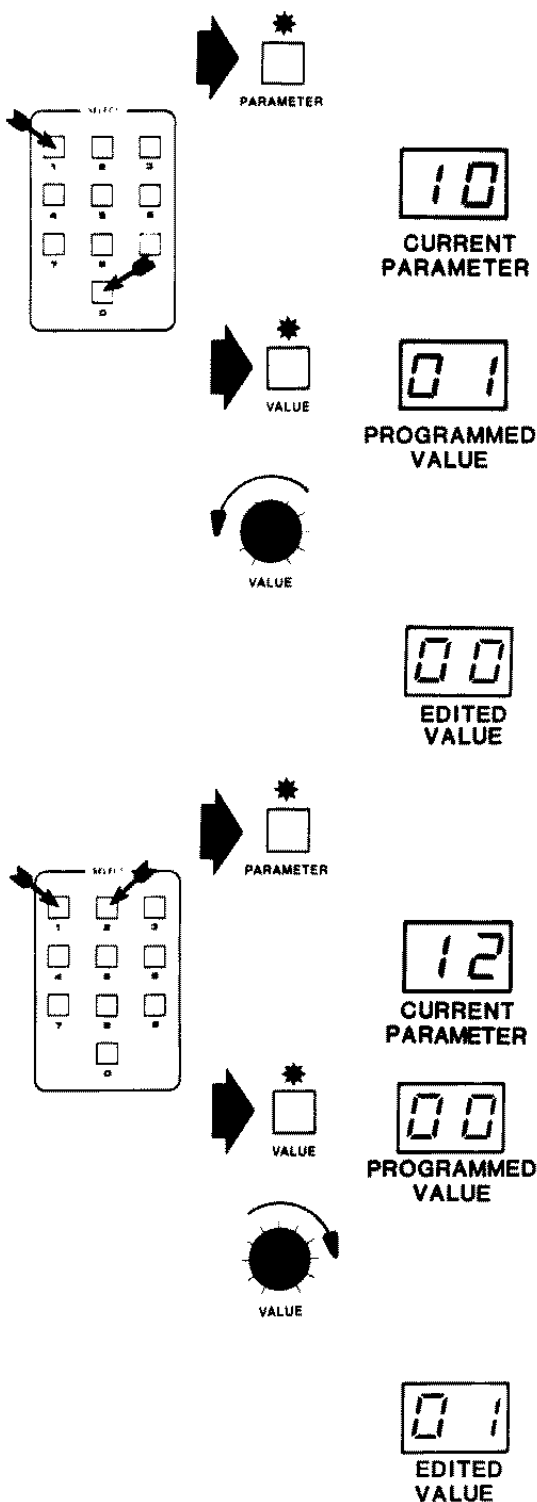
Switch **PARAMETER** back on.

Enter 12 for **PULSE** parameter.

Switch **VALUE** on. If the pulse is off, the current value will be 0.

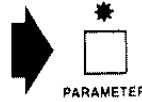
To switch on the pulse, turn the **VALUE** knob clockwise.

The displayed value will be changed to 1, indicating the pulse is on.



Editing Modulation Rate

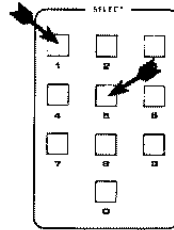
Switch PARAMETER on.



If you hit any SELECT numbers while VALUE is on, PARAMETER will be selected automatically. This feature saves time when doing extensive editing.



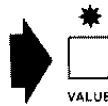
Enter 15 for LFO FREQUENCY.



15

CURRENT
PARAMETER

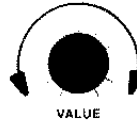
Switch VALUE on. A number from 00 to 15 will be displayed. This is the current programmed value.



09

CURRENT
VALUE

While observing the display, turn the VALUE knob across its full range.



While playing, adjust the VALUE knob for desired modulation rate.

00

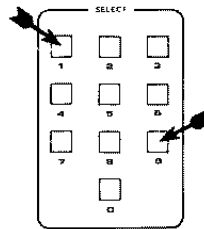


15

EDITED
VALUES

Editing Brightness

Enter 19 for FILTER CUTOFF FREQUENCY parameter.



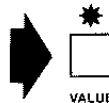
19

CURRENT
PARAMETER

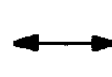
Adjust VALUE knob for desired brightness.



The knob will work even though the VALUE switch is not on. If you want to display the cutoff value, switch VALUE on.



00



127

(Note that only the CUTOFF parameter has a value range from 0 to 127, and that the "1" representing hundreds is not displayed.)

6-5 RECORDING A PROGRAM

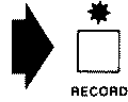
To record an edited program or copy an existing one:

PROGRAM must be on.



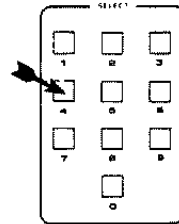
CURRENT
PROGRAM

Switch CONTROL RECORD on. (Do not hold it, or you may accidentally activate "hidden functions". See Section 8.)



Select the first digit of the program number being recorded.

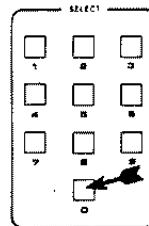
(If the original program is to be saved, use the number of an unneeded program. If the original program is to be replaced by the edited version, use that number.)



If you somehow made a mistake, you can exit record mode at this point by merely switching RECORD off. The program memory will not be affected.



Press the second digit, and the program will be recorded in that location.



RECORDED
PROGRAM

Note: be sure to hit the correct SELECT digit or you may erase a program you wanted to keep.

When the second digit is entered, the RECORD LED will go off.



GOES OFF
AUTOMATICALLY

6-6 USING THE BASIC PATCH

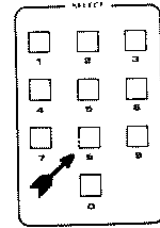
When creating programs it is often convenient to begin with a basic sound instead of just editing an existing program. Starting over from a basic patch can also free you from your existing sounds to find new ones.

Rather than having to manually check and edit all of a program's parameters, a function is available which clears all parameters to 0, except for the minimum needed to produce a basic sound. To switch to this basic patch:

Hold RECORD.



Press SELECT 8.



This will set all parameters to 0, except:

#10 SAWTOOTH	1 (on)
#19 CUTOFF	127
#28 FILTER KEYBOARD	2 (full)
#32 AMP SUSTAIN	15
#34 VOICE VOLUME	15

The keyboard will now play with a basic sound.

If desired, the basic patch can be recorded as a program.

Switch to other parameters and edit their values.

7 SYNTHESIZER PARAMETERS

7-1 INTRODUCTION

This section describes the Six-Trak's programmable voice parameters.

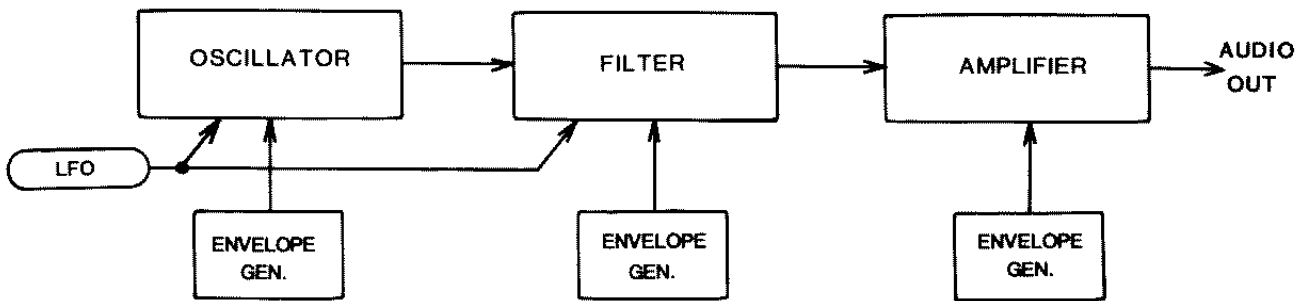


Figure 7-1
SIX-TRAK GENERAL VOICE DIAGRAM

The Six-Trak actually contains six synthesizers, termed "voices." Figure 7-1 diagrams one of these voices at a very general level. The Six-Trak fits into the tradition of voltage-controlled analog synthesizers. To understand these instruments it has proven useful to identify three basic functions: controllers, audio sources, and modifiers (filters and amplifiers). Each voice contains several of each type of function, which are represented on the block diagram, Figure 7-2.

Basically, controllers provide the control voltages (CVs) which determine the pitch of the audio sources, or the filtering or attenuation effects of the modifiers. Controllers can be mechanical devices such as keyboards and wheels. For example, as the CV from the keyboard to the oscillator (audio source) is increased, the oscillator frequency increases. Or controllers can be electronic, such as the LFO or the three envelope generators. For example, as a rapidly-decreasing CV from an envelope generator sweeps down the the filter cutoff frequency, it imparts a "pluck" to the voice. Other controllers include The MASTER TUNE knob and PITCH wheel, which in effect provide two CVs which control all of the oscillators.

There are three audio sources: the oscillator, the noise source, and the filter, if it is adjusted for self-resonance.

The mixer, filter (when not in self-resonance), and amplifier are modifiers.

A more detailed examination of the voice parameters follows. Parameter numbers are indicated by a "#."

7-2 OSCILLATOR

The oscillator is an audio-frequency source always under control of #00 COARSE and #01 FINE FREQUENCY, the keyboard, PITCH wheel, and MASTER TUNE. Oscillator frequency can be modulated by the LFO and by the envelope generator. PULSE-WIDTH (PW) can also be modulated by the LFO.

If no waveshape parameter is on, the oscillator will have no audio output. If two or three waveshapes are on, they are mixed at full level and supplied as the oscillator's output to the MIXER.

#00 COARSE FREQUENCY

Value Range: 00-48

00= lowest octave

12= one octave up

24= two octaves (middle C)

36= three octaves

48= four octaves

Adjusts oscillator pitch in semitones, over a four-octave range. To this is added the four-octave keyboard, for a total range of eight octaves.

Note that to keep programs in tune, this parameter should normally be adjusted to the octaves (00, 12, 24...).

Exact oscillator pitch should be fine-tuned with MASTER TUNE, with #01 FINE at a value of 0.

#01 FINE FREQUENCY

Value Range: 00-31

32= one semitone

Normally this parameter is set to 0, while oscillator pitch is adjusted with MASTER TUNE. This parameter adjusts oscillator frequency by up to just less than a semitone. This allows detuning of the oscillator, usually for use only in SEQUENCER or STACK modes.

#02 GLIDE RATE

Value Range: 00-15

0= no glide

15= maximum glide (four octaves in approximately ten seconds)

When set to 0, the keyboard CV, which controls the oscillator pitch, instantly steps between notes. As GLIDE is raised, the CV does not step between the notes, but begins to slide. This introduces "portamento" between notes. Usually used with #35 Unison on, because polyphonic (Unison off) use is difficult to predict--but can produce interesting effects.

#03 LFO FREQUENCY MODULATION

Value Range: 00/01

00= Off

01= On

This enables LFO modulation to the oscillator frequency, according to the level set by #16 LFO AMOUNT and the MOD wheel. This produces a vibrato or trill, according to the value of #17 LFO SHAPE.

#04 OSCILLATOR ENVELOPE AMOUNT

Value Range: 00-15

This parameter controls the depth of oscillator envelope modulation.

Each voice contains three independent ADSR envelope generators: one (#05-09) controls oscillator frequency; one (#22-26) controls filter cutoff frequency; and one (#30-33) controls the amplifier gain. The following comments on the ADSR envelope generators are valid for all three.

An "envelope" changes value over time at a rate adjusted by the ATTACK, DECAY, and RELEASE parameters. As the envelopes are generated with each keystroke, they "contour" the voice intonation, timbre, and dynamics, animating the otherwise raw waveshapes which come from the mixer.

The contour pattern is initiated when a key is struck. This "triggers" the envelope generator(s) to proceed through their attack and decay periods. These periods can each range from zero to about 11 seconds. The envelope voltage rises to its full value, then falls (decays) to the level set by the sustain parameter, where it remains until the key is released. When the key is released, the gate goes off and the envelope voltage drops to zero at a rate set by the release parameter.

#05 INVERT

Value Range: 00/01

00=Normal

01=Invert

This turns the oscillator envelope upside down. When normal, the envelope will drive the oscillator sharp. If inverted, the oscillator will be driven flat.

#06 ATTACK

Value Range: 00-15

8= 1 second

15= 11 seconds

Adjusts the length of time for the envelope to go from zero level (when key is initially depressed) to maximum level.

#07 DECAY

Value Range: 00-15
8= 1 second
15= 11 seconds

Adjusts the length of time for the envelope to go from maximum level to sustain level. If sustain is set at maximum then the decay parameter value is irrelevant, because level is already maximum.

#08 SUSTAIN

Value Range: 00-15

Adjusts the sustain level from zero to maximum. This is a level control, not a time control. Sustain time is the period between the end of the decay period and the beginning of the release period. This is the length of time the key is held after attack and decay.

#09 RELEASE

Value Range: 00-15

Adjusts the length of time for the envelope to go from sustain level to zero. If the key is released before the attack or decay periods have elapsed, release controls the time taken for the envelope to drop to zero from whatever its level when the key was released. If the attack and decay periods have elapsed and sustain is set to 0, then the release value is irrelevant, because the level is already minimum.

#10 SAWTOOTH WAVE

Value Range: 00/01
00= Off
01= On

Enables full-level waveshape containing all harmonics. This basic shape is often described as "brassy."

#11 TRIANGLE WAVE

Value Range: 00/01
00= Off
01= On

Enables full-level triangle wave, containing little harmonic energy, thus having a dull tone.

#12 PULSE WAVE

Value Range: 00/01

00= Off

01= On

Enables full-level waveshape whose harmonic content, thus timbre, depends on the value of #13 PULSE WIDTH and LFO modulation. If switching this on produces no sound, try adjusting #13 to a value between 2 and 60.

Note: If all three waveshapes are on (#10, 11, 12), and the filter is on well open (#19 and #28), some distortion may occur when several keys are played simultaneously. If this occurs, compensate by simply reducing VOICE VOLUME.

#13 PULSE WIDTH

Value Range: 00-63

01= 1%

15= 25%

31= square wave

47= 75%

63= 99%

Adjusts the harmonic content of the pulse wave by varying its duty cycle from approximately 1 to 99%. At the extreme parameter values (00-02 and 60-63) the pulses may be barely audible. A 50% duty-cycle pulse (having only odd harmonics), also called a square wave, can be selected (approximately value 31).

This parameter is only effective if #12 PULSE is on. This parameter has no effect on the sawtooth or triangle waves.

#14 PULSE-WIDTH LFO-MODULATION

Value Range: 00/01

00= Off

01= On

Applies LFO-modulation to oscillator pulse width.

7-3 LFO

"Modulation" refers to a periodic or consistent (as opposed to accidental) aural change which is interesting or musically useful. Modulation is created by electronic controllers when it is not possible to adjust a mechanical controller with the required speed or precision. Modulation systems thus free the hands for playing the keyboard.

Modulation involves a signal-generating source and a modulated destination. The Six-Trak contains two modulation systems in each voice: LFO-MOD and FREQUENCY-MOD. FREQ-MOD has one source, the oscillator, and one destination, the filter. For more information see #29 OSC TRIANGLE MODULATION AMOUNT.

LFO-MOD has a low-frequency oscillator (LFO) as a source, but has three selectable destinations. The LFO frequency, waveshape, and basic output level are adjusted by parameters #15-18. To this modulation level will be added any contribution of the MOD wheel. Total modulation is applied by LFO switches #03, 14, and 27 to three destinations.

#15 FREQUENCY

Value Range: 00-15

Adjusts LFO frequency from about ¼ to 20 Hz.

#16 PROGRAMMED AMOUNT

Value Range: 00-31

Programs modulation depth independently from the MOD wheel.

#17 TRIANGLE/SQUARE WAVE

Value Range: 00/01

00=Triangle

01=Square

Selects a triangle wave for vibrato, or a square wave for trills.

7-4 FILTER

The FILTER section contains parameters of the filter itself and of its ADSR envelope generator. The envelope generator is identical to the oscillator envelope generator, discussed above (see #04-09).

#18 OSC/NOISE MIXER

Value Range: 00-31

00= maximum oscillator level

15= even mixture

31= maximum noise level

Adjusts the ratio of the oscillator and noise source input to the filter.

#19 CUTOFF FREQUENCY

Value Range: 00-127

(The "hundreds" digit is not displayed. For example, value 127 is displayed as 27.)

Adjusts cutoff frequency of the 24 dB/octave (4-pole) low-pass filter. This parameter is rather like a tone control. "Cutoff" is the frequency below which all elements of the mixer's output signal are let through. The higher-frequency components of the input signal (that is, all those above the cutoff frequency) are suppressed. The higher the parameter value, the higher the frequencies are which pass through the filter. Thus, the "brighter" the sound.

In addition to this parameter, overall cutoff frequency is the result of all the filter modulation parameters (#21-29).

#20 RESONANCE

Value Range: 00-63

43= approximate oscillation point (may vary by voice)

Adjusts the amount of filter resonance. As the value is increased from 0, the amount of resonance ("emphasis," "regeneration," or "Q") applied to those signal components at the cutoff frequency will increase. As resonance increases, frequencies lower than the cutoff will become decreasingly audible in comparison with those nearer the cutoff. As the parameter value is increased, the filter breaks into oscillation, acting like a sine-wave audio source whose pitch is determined by #19 CUTOFF FREQUENCY (and the various filter modulation sources).

#21 ENVELOPE AMOUNT

Value Range: 00-15

00= no envelope modulation

The filter cutoff may be varied over time by the filter envelope generator. This parameter adjusts the depth of filter envelope modulation (similar to #04).

#22 INVERT

Value Range: 00/01
00=Normal
01=Invert

When normal, the envelope will drive the filter cutoff positively. If inverted, the filter cutoff contour will be reversed.

#23 ATTACK

Value Range: 00-15

Same as #06.

#24 DECAY

Value Range: 00-15

Same as #07.

#25 SUSTAIN

Value Range: 00-15

Same as #08.

#26 RELEASE

Value Range: 00-15

Same as #09.

If filter release produces no effect, check that #33 AMPLIFIER RELEASE is set to approximately the same value.

#27 LFO

Value Range: 00/01
00= Off
01= On

This parameter switches LFO-modulation to the filter, which normally produces a vibrato effect.

#28 KEYBOARD

Value Range: 00-02

00= Off

01= Half

02= Full

When Full, the KEYBOARD control voltage (CV) is applied to the filter's cutoff frequency just as it is normally applied to the oscillator. With the filter thus "tracking" the keyboard, cutoff frequency is maintained at a constant point relative to the notes being played. This results in a consistency of timbre over the whole keyboard range. When KEYBOARD is off, notes played higher on the keyboard will have a duller timbre. Obviously, the 1/2 value selects the midrange between these two effects.

If #20 FILTER RESONANCE is set for self-oscillation, setting KEYBOARD on Full will allow the filter to be played from the keyboard. However, since the filters in resonance are not precisely tuned, there will be considerable error from the normal keyboard scale. (Unless a complex effect is desired, #21 ENVELOPE AMOUNT will in this case normally be set to 0, to maintain a steady frequency from voice to voice).

If the KEYBOARD parameter is toggled while holding keys down, the effect will not be heard until the key is restruck.

#29 OSC TRIANGLE MOD AMOUNT

Value Range: 00-63

This parameter controls **FREQ-MOD**. Increasing this parameter applies the oscillator triangle waveform as a control voltage to the filter cutoff frequency. This high-frequency modulation is used to create "ring" modulation and bell effects.

This parameter operates regardless of whether #11 OSCILLATOR TRIANGLE is switched on.

7-5 AMPLIFIER

The sole amplifier controls are the envelope generator attack, decay, sustain, and release parameters, which shape the envelope applied to the VCA. These parameters control the note dynamics.

#30 ATTACK

Value Range: 00-15

Same as #06.

#31 DECAY

Value Range: 00-15

Same as #07.

#32 SUSTAIN

Value Range: 00-15

Same as #08. Unless this parameter is turned up slightly, nothing will be heard after the attack and decay periods have elapsed.

#33 RELEASE

Value Range: 00-15

Same as #09.

#34 VOICE VOLUME

Value Range: 00-15

15= maximum signal-to-noise ratio

Programmable voice volume is a convenient way to balance the loudness of programs so you aren't always fiddling with MASTER VOLUME. Use it after the program is basically recorded.

7-6 UNISON

#35 UNISON

Value Range: 00/01

00= Off

01= On

When off, the keyboard plays polyphonically with six voices. When on, all voices are assigned to the lowest note played. If LEGATO is off, the keyboard will be in multiple-trigger mode: every new keystroke triggers an attack/decay. If LEGATO is on, the keyboard will be in single-trigger mode; playing legato--connected--will not retrigger notes (see "Unison" under Basic Operation).

8 HIDDEN FUNCTIONS

Note: All hidden functions are performed by using the listed control switches simultaneously. While holding the RECORD switches, press the indicated SELECT switch. CONTROL RECORD is on the right. TRACK RECORD is on the left.

8-1 GENERAL

<u>Manual Tune</u>	CONTROL RECORD/SELECT 6
<u>Basic Patch</u>	CONTROL RECORD/SELECT 8
<u>Sequencer Reset</u>	Hold both RECORDs/SELECT 0 (Erases any sequences.)

8-2 MIDI

Modes

<u>Mode 1--Omni On/Mono Off</u>	TRACK RECORD/SELECT 1
<u>Mode 3--Omni Off/Mono Off</u>	TRACK RECORD/SELECT 3
<u>Mode 4--Omni Off/Mono On</u>	TRACK RECORD/SELECT 4

Dumps

<u>Dump Current Sequences and Stacks</u>	CONTROL RECORD/SELECT 0.
<u>Dump Current Program</u>	CONTROL RECORD/SELECT 2.
<u>Dump 100 Programs</u>	TRACK RECORD/SELECT 9.

Control Options

Select Double Mode TRACK RECORD/SELECT 2.
For 610/610 or 610/210. Enables wheel changes, voice-to-voice program changes and note information (Mode 4). Selects Channel 11 if set to higher. All Notes Off.

Select MIDI Clock Input Turn SPEED knob fully (counterclockwise).

Enable/Disable Program Change CONTROL RECORD/SELECT 1.
This toggles Program Change over MIDI, send and receive. On power-up, Program Change is disabled.

Enable/Disable Wheels and Parameters CONTROL RECORD/SELECT 4.
This toggles PITCH and MOD wheel send/receive and Parameter changes (receive only) over MIDI. On power-up, wheel and parameter changes are disabled.

Local On TRACK RECORD/SELECT 7.
Enables the 610's keyboard.

Local Off TRACK RECORD/SELECT 8.
Disables the keyboard. Ignored when either the sequencer, arpeggiator, or stack mode are on.

8-3 FOR SERVICE USE ONLY

CAUTION: Operators should not attempt to use these functions.

Center PITCH Wheel. CONTROL RECORD/SELECT 3.

Zero DAC CONTROL RECORD/SELECT 7

Tune Test Toggle CONTROL RECORD/SELECT 9.

9 USING THE SIX-TRAK WITH DRUMTRAKS

Connect Drumtraks MIDI OUT to Six-Trak MIDI IN.

Create a looping pattern or short drum song on Drumtraks.

Switch Six-Trak RECORD on.

Select SEQ A or B.

Start Drumtraks.

Record basic track(s) on Six-Trak, after one loop.

When basic track(s) are done, stop recording on Six-Trak in time with end of Drumtraks pattern or song.

(For convenience, stopping the Drumtraks will stop the Six-Trak as if it were stopped with its own footswitch.)

On the Six-Trak, turn SPEED knob fully counterclockwise, to select MIDI clock input from Drumtraks for playback.

To overdub more tracks, repeat this same basic process.

A second Six-Trak can be connected in series so both Six-Traks will sync to one Drumtraks:



Figure 9-1

Note: If Six-Trak OUT is connected to Drumtraks IN, lowest Six-Trak keys will play certain Drumtraks instruments. (For more information, see the Drumtraks Operation Manual.)

10 USING MIDI

This section will present practical instructions on how to use the 610 with other instruments. When power is switched on, the MIDI system is set up for basic use. However, numerous control options are available for less conservative applications. For programming details, see the MIDI implementation data near the back of this manual.

10-1 CONNECTING TWO SIX-TRAKS

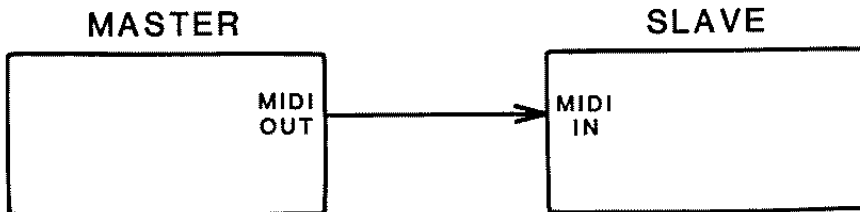


Figure 10-1
DUAL SIX TRAKS

Switch power off!

This is done to establish a common starting point.

Connection

Connect MIDI OUT of master unit to MIDI IN of the slave.
Connect AUDIO OUT of both units to monitor system.

Switch power on.

At power on, some of the features or options described below are enabled, while others are disabled.

Select usable programs on both Six-Traks.

These programs should probably not be transposed. (In other words, playing a C should produce a C.)

Check that both PITCH wheels are centered, and MODs are down.

Tune the two Six-Traks.

On the master, center MASTER TUNE and hold a key. The same key on the slave will be played (by MIDI). Adjust the slave's MASTER TUNE.

10-2 BASIC MIDI OPERATION

Keyboard playing on the master is duplicated by the slave.

On power-up, keyboard information is sent and received. As you play on the master, the same notes will be played on the slave.

Wheel changes on the master have no effect on the slave.

Program changes on the master have no effect on the slave.

You must select programs separately on the master and slave.

When the master's sequencer or arpeggiator is on, the slave will not play the sequenced or arpeggiated notes.

However, the slave will play any notes that you play on the keyboard while the sequencer is running or the arpeggiator is latched.

10-3 DUMP OPERATIONS

If you want to send a specific program from the master to the slave, on the master only, hold CONTROL RECORD and press SELECT 2. (Then, on slave, re-select program number.)

For example, on the master, program 33 is selected. You hold CONTROL RECORD and press SELECT 2. Program 33 on the slave will now have the master's program. To activate this new program, select the new 33 (on the slave).

If you want to send all 100 programs from the master to the slave, on the master only, hold TRACK RECORD (on the left) and press SELECT 9. (Then, on slave, re-select program number.)

RECORD will remain lit for a moment while the data dump occurs.

The master's programs will be copied into the slave.

The slave's current program will not change by itself. Select desired new program(s).

If you want to send the sequences and stacks from the master to the slave, on the master only, hold CONTROL RECORD and press SELECT 0.

RECORD will remain lit for a moment while the data dump occurs.

The master's sequences and stacks will be copied into the slave.

Check that the slave's SPEED knob is not set fully counterclockwise.

10-4 CONTROL OPTIONS

To select Double Mode, on both units, hold TRACK RECORD and press SELECT 2.

When this is done, the slave will become an exact double of the master. It will respond to all notes, live or sequenced, following all voice-to-voice program changes, and wheel changes.

To make the master switch the slave's programs, on both units, hold CONTROL RECORD and press SELECT 1.

Now, for example, when you select program #45 on the master, the slave will automatically switch to its program #45.

To disable program changes, repeat CONTROL RECORD/SELECT 1, on both.

To make wheel changes on the master also apply to the slave, on both units, hold CONTROL RECORD and press SELECT 4.

To disable wheel changes, repeat CONTROL RECORD/SELECT 4, on both.

To have the master sequencer play the slave, select Mode 4 on both units by holding TRACK RECORD and pressing SELECT 4.

To disable this control, select Mode 1 by TRACK RECORD/SELECT 1, on both.

If it is desired to disable the slave's keyboard and wheels, on the slave only, hold TRACK RECORD and press SELECT 8.

Don't do this when either the slave's sequencer, arpeggiator, or stack mode are on. It will be ignored.

To enable keyboard and wheels, do TRACK RECORD/SELECT 7.

Note: MIDI is an evolving system. We encourage you to experiment with various instrument configurations and let us know what, if any, other control options would be useful to you.

10-5 A SIX-TRAK AND PROPHET-T8

This paragraph gives a basic example which should be applicable to many other synthesizers.

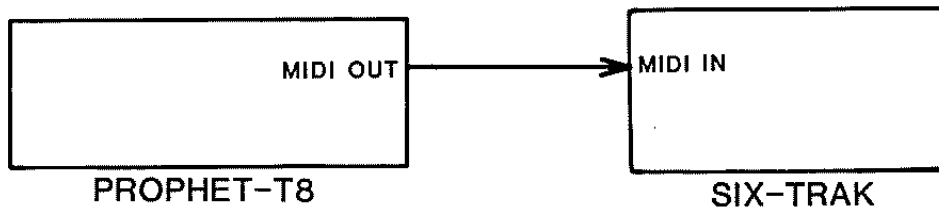


Figure 10-2
PROPHET-T8/SIX-TRAK CONNECTION

Switch power off!

Connection

Connect MIDI OUT of master unit to MIDI IN of the slave.
Connect AUDIO OUT of both units to monitor system.

Switch power on.

Select usable programs on both synthesizers.

These programs should probably not be transposed. (In other words, playing a C should produce a C.)

Check that both PITCH wheels are centered, and MODs are down.

Tune the two synths.

Tune the -T8 to its A-440 reference. Tune the Six-Trak to the -T8.

The Six-Trak is controlled by the lower five octaves (C-C) of the T-8's keyboard, including the sequencer.

This is regardless of keyboard mode (SINGLE, SPLIT, DOUBLE).

If the Six-Trak sequencer is on, the Six-Trak will still try to play the most-recently received notes from the -T8.

To enable -T8 wheel changes to control the Six-Trak, on both units, perform (CONTROL) RECORD/SELECT 4.

If, on the -T8, ENABLE WHEELS is programmed or edited to off on both sides, remote wheel control will be disabled.

To enable -T8 program changes to control the Six-Trak, on both units, perform (CONTROL) RECORD/SELECT 1.

100 of the -T8's LEFT and RIGHT programs correspond to the Six-Trak program numbers, as indicated by the following abbreviated table:

<u>-T8</u>	<u>Six-Track</u>	<u>-T8</u>	<u>Six-Track</u>
L11	00	R11	64
L12	01	R12	65
L21	08	R21	72
L31	16	R31	80
L41	24	R41	88
L51	32	R51	96
L61	40	R54	99
L71	48	R55 and up	not recognized
L81	56		
L88	63		

If you want to disable the Six-Trak's keyboard and wheels, hold TRACK RECORD and press SELECT 8.

Don't do this when either the slave's sequencer, arpeggiator, or stack mode are on. It will be ignored.

To enable keyboard and wheels, do TRACK RECORD/SELECT 7.

11 DETAILS

Arpeggiator: The arpeggiator can be advanced either by:

- The internal clock which is set by the SPEED knob.
- When latched, by the footswitch. (Set SPEED to 0.)
- By an external clock into the footswitch jack. (Set SPEED to 0.)

The arpeggiator cannot be advanced by the MIDI clock.

Editing: All PARAMETERS listed on the front panel are programmable (subject to setting by the computer), while the two wheels, for example, are non-programmable. Generally, the programmable parameters are crucial to establishing the characteristic sound of a program, while the non-programmable wheels are for performance. However, this does not mean that the programmable parameters are unalterable.

Except when the sequencer, arpeggiator, or stack mode is on, the programmable parameters can be altered at any time and each alteration will influence the sound. Adjusting the programmable parameters is called editing.

Edit Mode is a powerful tool that allows you to experiment with program changes by selectively adjusting each front panel parameter. The original program remains unchanged and can be restored at any time. Edited programs can be recorded into the original location if the original program is not desired, or into a program location which contains an undesired program.

Edit Mode is entered when PARAMETER is switched on. The current parameter number will be displayed and can be changed. When the VALUE knob is turned, the parameter will be adjusted. (To edit the current parameter, VALUE does not have to be switched on.) To check the current parameter value, switch VALUE on.

Footswitch: In STACK MODE, the footswitch is ignored.

Glide: Because the six voices are assigned to each new note in rotation, polyphonic glide (Unison off) is not easy to predict. The amount of voice glide is the difference between the last and next note to which it is assigned. For example, if GLIDE is turned up and all voices have been assigned to the bottom of the keyboard (by virtue of six different low notes having been played there), and you then play notes each in the middle and high ranges, the middle notes will "arrive" before the higher notes.

Homophony: Same-sounding. When the sequencer or stack mode isn't on, the Six-Trak voices are homophonic.

Low-note priority: When parameter #35 UNISON is on, all voices are assigned to one key. When two keys are pressed, only the lower note is voiced.

Polyphonic: Many-voiced. Applied to the Six-Trak, this means that up to six different notes can be played simultaneously. The Six-Trak is polyphonic unless #35 UNISON is on.

Program: A program is the set of all parameter values which create a specific sound.

RECORD: There are two RECORD switches. On the left is TRACK RECORD, for the sequencer, arpeggiator, and stack functions. On the right is PROGRAM RECORD, for recording and copying programs.

Value: Parameter value can only be adjusted when PARAMETER or VALUE is on.

Wheels, PITCH/MOD: The wheels do not operate on sequence tracks, nor upon voice 6 when it is being played by the arpeggiator.

The PITCH and MOD wheels to the left of the keyboard are performance tools which may take some practice to master. The wheels are monophonic. That is, both wheels affect all voices uniformly: all voices are pitch-bent by the same interval and modulated to the same depth. An integral part of playing is using the wheels for expression through pitch and timbral variations.

The PITCH wheel is normally left in its center-detent position, from which it is possible to "bend" oscillator pitch up or down by about a 3rd.

The MOD wheel sets the modulation level, in addition to the programmed LFO AMOUNT (parameter #16). When not in use the wheel is left "down" and no modulation will occur. When the wheel is advanced fully "up," modulation is maximum.

12 MODEL 610 SIX-TRAK SPECIFICATIONS

General Description

Six-voice multi-timbral hybrid analog synthesizer with six-track sequencer.
Homophonic capability.
Four-octave keyboard.
Non-volatile memory (backup battery).
100 user-programmable instrument programs

Synthesizer Functions

Preset mode
Program edit and record
Displays program number, parameter number,
and parameter value
One knob adjusts parameter values
Legato
Autotuning
Pitch wheel
Modulation wheel
Master Volume
Master Tune
Copy Program

Program Parameters

SYNTHESIZER PARAMETERS

OSCILLATOR

00 COARSE FREQUENCY
01 FINE FREQUENCY
02 GLIDE RATE
03 LFO
04 ENVELOPE AMOUNT
05 INVERT
06 ATTACK
07 DECAY
08 SUSTAIN
09 RELEASE
10 SAWTOOTH WAVE
11 TRIANGLE WAVE
12 PULSE WAVE
13 PULSE WIDTH
14 LFO

LFO

15 FREQUENCY
16 PROGRAMMED AMOUNT
17 TRIANGLE/SQUARE WAVE

FILTER

18 OSC/NOISE MIXER
19 CUTOFF FREQUENCY
20 RESONANCE
21 ENVELOPE AMOUNT
22 INVERT
23 ATTACK
24 DECAY
25 SUSTAIN

- 26 RELEASE
- 27 LFO
- 28 KEYBOARD
- 29 OSC TRIANGLE MOD AMOUNT
- AMPLIFIER
- 30 ATTACK
- 31 DECAY
- 32 SUSTAIN
- 33 RELEASE
- 34 VOICE VOLUME
- UNISON
- 35 UNISON

Controller Functions

- Stack mode
- Arpeggiator Modes Up/Down, Assign, Latch
- Two sequences (SEQ A, SEQ B)

Sequencer Functions

- Capacity 800 notes
- Six tracks, one per voice
- Variable playback speed
- Record Basic Track(s)
- Play
- Overdub
- Erase Track
- Edit Track Program
- Program Track Volume
- Memory full warning

Inputs

- Footswitch ¼-inch phone TS. Starts and stops recording and playback
- MIDI 5-pin DIN

Outputs

- Audio ¼-inch phone TRS. Can drive stereo headphones.
- MIDI 5-pin DIN

MIDI Functions

- External program storage
- External sequence storage (4000 notes with SCI Model 64)
- Sequence synchronization to MIDI clock
- Alternate keyboard modes

Other

- 1 year warranty
- Power 110-125V or 220-240V
- Dimensions
 - Height 4-½ in.
 - Width 28 in.
 - Depth 12 in.
- Weight 17.5 lbs

610 SIX-TRAK MIDI IMPLEMENTATION

December 28, 1983

Unless otherwise specified, status/data bytes are given in binary, while numbers in descriptions are in decimal.

TRANSMITTED DATA

<u>Status</u>	<u>Second</u>	<u>Third/Other</u>	<u>Description/Notes</u>
---------------	---------------	--------------------	--------------------------

ROUTINE

9NH 1001 nnnn	K 0kkk kkkk K = 36(C0) - 84(C4)	40H 0100 0000	Note On.
------------------	---------------------------------------	------------------	-----------------

9NH 1001 nnnn	K 0kkk kkkk	00H 0000 0000	Note Off.
------------------	----------------	------------------	------------------

F8H 1111 1000	--	--	Timing Clock. Sent whenever a timing clock status byte (F8H) is received.
------------------	----	----	---

FCH 1111 1100			Stop Song Sent whenever a Stop Song status byte (FCH) is received.
------------------	--	--	--

CONTROL

BNH 1011 nnnn	01H 0000 0001	M 000m mmmm	Mod Wheel Amount. Only sent when enabled. Wheel values are only sent when a change of position is detected.
------------------	------------------	----------------	--

CNH 1100 nnnn	P 0ppp pppp P = 00 - 99		Program Change. From front panel. Only sent if enabled (see page 9).
------------------	-------------------------------	--	--

ENH 1110 nnnn	VI 0vvv vvvv LS byte	Vm 0vvv vvvv MS byte	Pitch Wheel Change. Wheel Center: LS = 0, MS = 64 Only sent if enabled.
------------------	----------------------------	----------------------------	--

TRANSMITTED DATA

Status Second Third/Other Description/Notes

SYSTEM EXCLUSIVE

F0H	01H	N5H	P	D	F7H	
1111 0000	0000 0001	nnnn 0101	0ppp pppp	data	1111 0111	Program Data.
(SYS EX	SCI ID	610 ID	Program #		EOX)	
			(00-99)			

Sent by request only. Data is 16 bytes of program data, sent as 32 four-bit nibbles, right justified, LS nibble sent first.

For bit packing positions, see Table 1.

If P=127, SEQ A and B, and STACK A and B are transmitted.

F0H	01H	7BH	0NH	F7H	Double Mode
1111 0000	0000 0001	0111 1011	0000 nnnn	1111 0111	
SYS EX	SCI ID	SEL CH	channel#	EOX	

Set Basic Channel to new channel N (nnnn). Also enables wheels, program change, and parameter change send/receives and selects Mode 4 (Onmi Off/Mono On). Sent with TRACK RECORD/2.

F0H	01H	7FH	F7H	Pattern Marker.
1111 0000	0000 0001	0111 1111	1111 0111	

Sent whenever a pattern marker sequence is received.

RECOGNIZED RECEIVE DATA

<u>Status</u>	<u>Second</u>	<u>Third/Other</u>	<u>Description/Notes</u>
<u>ROUTINE</u>			
8NH 1000 nnnn	K 0kkk kkkk	V 0vvv vvvv V is ignored	Note Off. The status bytes need not be sent every event.
9NH 1001 nnnn	K 0kkk kkkk	V 0vvv vvvv V ignored, except V = 0, Note Off	Note On. If K is outside of the range 36-96, it will be transposed to the nearest octave inside this range.
CNH 1100 nnnn	P 0ppp pppp P = 0 - 99, program number		Program Change. If enabled and with Omni Mode On, changes all six voices to program P (ignore channel number).
ENH 1110 nnnn	Vls 0vvv vvvv V = LS byte	Vms 0vvv vvvv V = MS byte	Pitch Wheel Change. (if enabled) Goes to all 6 voices. For reference, bit 12 = one semitone in the 610. Successive Pitch Wheel changes can be received without repeating the Status byte.
F8H 1111 1000			Timing Clock. Can be received at any time, including between any other message. Used to sync internal sequencer to Model 400 Drumtraks. <u>Note:</u> During record the 610 senses Timing Clocks from the 400 automatically, between the time RECORD is selected and when the first note is played. During playback the MIDI clock is enabled by setting the SPEED knob to zero.
FCH 1111 1100			Stop Song If sequence A or B is active, receiving this code will act like the footswitch was pressed.

RECOGNIZED RECEIVE DATA

<u>Status</u>	<u>Second</u>	<u>Third/Other</u>	<u>Description/Notes</u>
<u>CONTROL</u>			
BNH 1011 nnnn	C 0ccc cccc C = Parameter #	V 0vvv vvvv V = Parameter Value	Parameter Change (if enabled). For valid parameter numbers and values, see Table 2.
BNH 1011 nnnn	01H 0000 0001	M 000m mmmm	External Modulation Amount (if enabled). Goes to all 6 voices. This amount added to MOD wheel and programmed initial modulation amount. Successive Mod Wheel changes can be received without repeating the Status byte.
BNH 1011 nnnn	7AH 0111 1010	00H 0000 0000	Select Local Control Off. When Local Control is Off, the keyboard, wheel, and program change information is only sent over MIDI and the six voices are only controlled by MIDI. This enables elaborate keyboard modes via external controllers. Also selects parameter mode. This should not be sent to the 610 when its sequencer, arpeggiator or stack mode is on. It will be ignored.
BNH 1011 nnnn	7AH 0111 1010	7FH 0111 1111	Select Local Control On. When Local Control is On (normal), the 610's keyboard, wheels, and program changes will directly play and assign the six voices.
BNH 1011 nnnn	7BH 0111 1011	00H 0000 0000	All Notes Off.
BNH 1011 nnnn	7CH 0111 1100	00H 0000 0000	Omni Mode Off, All Notes Off. (Mode 3)
BNH 1011 nnnn	7DH 0111 1101	00H 0000 0000	Omni Mode On, All Notes Off. (Mode 1)

RECOGNIZED RECEIVE DATA

<u>Status</u>	<u>Second</u>	<u>Third/Other</u>	<u>Description/Notes</u>
BNH 1011 nnnn	7EH 0111 1110	00H 0000 0000	Mono Mode On/Poly Mode Off, All Notes Off. (Mode 4)
BNH 1011 nnnn	7FH 0111 1111	00H 0000 0000	Poly Mode On/Mono Mode Off, All Notes Off. (Mode 3)

RECOGNIZED RECEIVE DATA

<u>Status</u>	<u>Second</u>	<u>Third/Other</u>	<u>Description/Notes</u>
<u>SYSTEM EXCLUSIVE</u>			
F0H 1111 0000 (SYS EX	01H 0000 0001 SCI ID	00H 0000 0000 REQUEST Program #	F7H 1111 0111 EOX) Program Dump Request. Initiates Program Dump. If ID wrong, message ignored. P = 0 - 99 If P=127, SEQ A and B, STACK A and B.

F0H 1111 0000 (SYS EX	01H 0000 0001 SCI ID	05H 0000 0101 610 ID Program # 00-99	F7H 1111 0111 EOX) Program Dump Receive.
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If either ID wrong, message ignored.

If P=127, SEQ A and B, STACK A and B.

Sent by request only. Data is 16 bytes of program data, sent as 32 four-bit nibbles, right justified, LS nibble sent first.

For bit packing positions, see Table 1 (page 10).

F0H 1111 0000 SYS EX	01H 0000 0001 SCI ID	7BH 0111 1011 SEL CH	0NH 0000 nnnn channel#	F7H 1111 0111 EOX	Select Double Mode
----------------------------	----------------------------	----------------------------	------------------------------	-------------------------	---------------------------

Set Basic Channel to new channel N (nnnn). Also enables wheels, program change, and parameter change send/receives and selects Mode 4 (Onmi Off/Mono On).

F0H 1111 0000 SYS EX	01H 0000 0001 SCI ID	7CH 0111 1100 ENABLE	0NH 0000 nnnn voice#	F7H 1111 0111 EOX	Wheel Enable
----------------------------	----------------------------	----------------------------	----------------------------	-------------------------	---------------------

If Mode 4, enables wheels on voice N (nnnn).

F0H 1111 0000 SYS EX	01H 0000 0001 SCI ID	7DH 0111 1101 DISABLE	0NH 0000 nnnn voice#	F7H 1111 0111 EOX	Wheel Disable
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If Mode 4, disables wheels on voice N (nnnn).

RECOGNIZED RECEIVE DATA

<u>Status</u>	<u>Second</u>	<u>Third/Other</u>	<u>Description/Notes</u>
F0H 1111 0000 (SYS EX	01H 0000 0001 SCI ID	7EH 0111 1110 ENABLE	F7H 1111 0111 EOX)
Enable All MIDI Send/Receives. This forces all send/receives to be enabled, including wheels, program changes, and parameter changes.			
F0H 1111 0000 (SYS EX	01H 0000 0001 SCI ID	7FH 0111 1111 PM	F7H 1111 0111 EOX)
Pattern Marker. Sent by Drumtraks immediately after the first Timing Clock of each pattern, except at the start, when it is not sent. The 610 uses this marker during sequence recording to auto-correct the start and stop timing of the sequence.			

MODE NOTES

The 610 powers-up in Omni Mode (Mode 1). The Channel Number can be changed from the front panel (see Parameter #36, under CODED FUNCTIONS). The Channel Number is ignored while in Omni On Mode, except for the Omni Off command. Mono On commands are ignored in Omni On mode (i.e., Mode 2 is not recognized). On power-up, only Note On/Off and Program Dump messages are sent and received. Wheel changes and program changes can be enabled from the front panel (see CODED FUNCTIONS).

When Omni Off is selected (Mode 3), all messages without the Basic Channel number are ignored.

When Omni Off and Mono On (Mode 4), the 610 will assign one each of its six voices to channels N to N+5, where N is the current basic channel. Note that this will normally mean channels 3 - 8 ($n = 2 - 7$). Note also that the basic channel must not be set above 11, to allow room for six voices. When Mode 4 is selected, it will automatically be set to 11 if the channel is higher.

If Omni On is selected while Mono is On, Poly On/Mono Off will automatically be executed.

Basic Channel number can be changed by selecting PARAMETER #36, and adjusting for a value for 1 - 16. The channel number is non-volatile--it will remain as selected even through power off. The Basic Channel is set to 3 at the factory.

Note that the Basic Channel number is sent with transmitted data.

CODED MIDI FUNCTIONS

While holding the RECORD switches, press the indicated SELECT switch. CONTROL RECORD is on the right. TRACK RECORD is on the left.

Modes

Mode 1--Omni On/Mono Off
TRACK RECORD/SELECT 1

Mode 3--Omni Off/Mono Off
TRACK RECORD/SELECT 3

Mode 4--Omni Off/Mono On
TRACK RECORD/SELECT 4

Dumps

Dump Current Sequences and Stacks
CONTROL RECORD/SELECT 0.

Dump Current Program
CONTROL RECORD/SELECT 2.

This sends 16 bytes of the program data of the program currently displayed.

Dump 100 Programs
TRACK RECORD/SELECT 9.

Control Options

Change Channel #
Select PARAMETER #36. Switch VALUE on and adjust VALUE knob to select desired channel (1 - 16). Note that in Mode 4, channel 11 is the maximum usable channel. Channel number can also be changed remotely by a Select Double Mode command over MIDI.

Select Double Mode
TRACK RECORD/SELECT 2.

For 610/610 or 610/210. In the master instrument, enables wheel changes, voice-to-voice program changes and note information (Mode 4). Selects Channel 11 if set to higher. Sends SYS EX 7B Double Mode Command to slave, to effect similar changes.

Select MIDI Clock Input
Turn SPEED knob fully counterclockwise.

Enable/Disable Program Change
CONTROL RECORD/SELECT 1.

This toggles Program Change over MIDI, send and receive. On power-up, Program Change is disabled.

Enable/Disable Wheels and Parameter Changes
CONTROL RECORD/SELECT 4.

This toggles PITCH and MOD wheel send/receive and Parameter changes (receive only) over MIDI. On power-up, disabled.

Local On
TRACK RECORD/SELECT 7.

Enables the 610's keyboard, switches, and wheels. Enabled on power-up.

Local Off
TRACK RECORD/SELECT 8.

Disconnects the keyboard, wheels, and switches from the sound-generating circuitry. The information will be sent over MIDI, but only MIDI received data will play the 610. This code will be ignored when the sequencer, arpeggiator, or stack mode is on.

Table 1
610 SIX-TRAK PROGRAM BIT MAP

16 bytes of program data

BYTE	MS BIT						LS BIT	
	B1	B0	A5	A4	A3	A2	A1	A0
0	D0	C3	C2	C1	C0	B4	B3	B2
1	F0	E3	E2	E1	E0	D3	D2	D1
2	H0	G3	G2	G1	G0	F3	F2	F1
3	I4	I3	I2	I1	I0	H3	H2	H1
4	K2	K1	K0	J3	J2	J1	J0	I5
5	M0	L4	L3	L2	L1	L0	K4	K3
6	N1	N0	M6	M5	M4	M3	M2	M1
7	O3	O2	O1	O0	N5	N4	N3	N2
8	Q3	Q2	Q1	Q0	P3	P2	P1	P0
9	S3	S2	S1	S0	R3	R2	R1	R0
A	U1	U0	T5	T4	T3	T2	T1	T0
B	W1	W0	V3	V2	V1	V0	U3	U2
C	Y1	Y0	X3	X2	X1	X0	W3	W2
D	Z5	Z4	Z3	Z2	Z1	Z0	Y3	Y2
E	-	-	ZB	ZA	Z9	Z8	Z7	Z6

POT BITS/RESOLUTION

- A= OSC FREQ/6
- B= FINE/5
- C= GLIDE/4
- D= OSC ENV AMOUNT/4
- E= OSC ENV ATTACK/4
- F= OSC ENV DECAY/4
- G= OSC ENV SUSTAIN/4
- H= OSC ENV RELEASE/4
- I= PULSE WIDTH/6
- J= LFO FREQ/4
- K= LFO AMOUNT/5
- L= MIXER/5
- M= FILTER CUTOFF/7
- N= RESONANCE/6
- O= FIL ENV AMT/4
- P= FIL ENV ATTACK/4
- Q= FIL ENV DECAY/4
- R= FIL ENV SUSTAIN/4
- S= FIL ENV RELEASE/4
- T= OSC TRI AMOUNT/6
- U= VOICE VOLUME/4
- V= AMP ENV ATTACK/4
- W= AMP ENV DECAY/4
- X= AMP ENV SUSTAIN/4
- Y= AMP ENV RELEASE/4

SWITCH BITS

Z0	OSC SAW	Z6	LFO SHAPE (1= TRI)
Z1	OSC TRI	Z7	LFO OSC
Z2	OSC PULSE	Z8	LFO PULSE
Z3	OSC ENV INVERT	Z9	LFO FILTER
Z4	FIL ENV INVERT	ZA	FIL HALF (Only one of
Z5	UNISON	ZB	FIL FULL these can be on.)

Table 2
610 PARAMETER TABLE
 (MS bytes only sent)

#	Function	# of Bits	Maximum	
		Resolution	Value	Format
1	MOD WHEEL	5	31	x00m mmmm
Mod Wheel data is right-justified in the least-significant five bits of a seven-bit number.				
All remaining data is left-justified to the correct number of digits of a seven-bit number (value 0 - 127), as shown.				
2	OSC COARSE FREQUENCY	6	48	0FFF FFFx
3	OSC FINE FREQUENCY	5	31	0fff ffx
4	OSC GLIDE RATE	4	15	0ggg gxxx
5	OSC LFO	1 (off/on)	1	0Lxx xxxx
6	OSC ENVELOPE AMOUNT	4	15	0aaa axxx
7	OSC ENV INVERT	1	1	0ixx xxxx
8	OSC ENV ATTACK	4	15	0aaa axxx
9	OSC ENV DECAY	4	15	0ddd dxxx
10	OSC ENV SUSTAIN	4	15	0sss sxxx
11	OSC ENV RELEASE	4	15	0rrr rxxx
12	OSC SAWTOOTH WAVE	1	1	0sxx xxxx
13	OSC TRIANGLE WAVE	1	1	0txx xxxx
14	OSC PULSE WAVE	1	1	0pxx xxxx
15	OSC PULSE WIDTH	6	63	0ppp pppx
16	OSC PULSE LFO-MOD	1	1	0Lxx xxxx
17	LFO FREQUENCY	4	15	0FFF Fxxx
18	LFO PROG AMOUNT	5	31	0aaa aaxx
19	LFO TRI/SQUARE WAVE	1	1	0wxx xxxx
20	OSC/NOISE MIXER	5	31	0mmm mmxx
21	FILT CUTOFF FREQUENCY	7	127	0FFF FFFF
22	FILT RESONANCE	6	63	0rrr rrrx
23	FILT ENVELOPE AMOUNT	4	15	0aaa axxx
24	FILT ENV INVERT	1	1	0ixx xxxx
25	FILT ENV ATTACK	4	15	0aaa axxx
26	FILT ENV DECAY	4	15	0ddd dxxx
27	FILT ENV SUSTAIN	4	15	0sss sxxx
28	FILT ENV RELEASE	4	15	0rrr rxxx
29	FILT LFO-MOD	1	1	0Lxx xxxx
30	FILT KEYBOARD AMOUNT	2 (off/half/on)	2	0kkx xxxx
31	FILT-OSC TRI MOD AMT	6	63	0rrr rrrx
32	AMP ATTACK	4	15	0aaa axxx
33	AMP DECAY	4	15	0ddd dxxx
34	AMP SUSTAIN	4	15	0sss sxxx
35	AMP RELEASE	4	15	0rrr rxxx
36	VOICE VOLUME	4	15	0vvv vxxx
37	UNISON	1	1	0uxx xxxx

14 Factory Programs

The Six-Trak is shipped "ready-to-play," with 100 factory programs. These present a wide range of instrumental and sound effects. Most were programmed by SCI's Product Specialist, John Bowen, with some contributions from the SCI staff.

On the following two pages the programs are listed by number. Following that are lists of the parameter values for each factory program. Use these values for guidance in creating your custom programs.

As you invest time in custom programs, back them up through storage to an external MIDI sequencer. (For more information, see the sections on MIDI use).

FACTORY PROGRAM LIST

- | | | | |
|----|-------------------------------|----|--------------------------|
| 00 | Percussive Organ 1 | 50 | Percussive Organ 3 |
| 01 | Brass 1 | 51 | Grok brass |
| 02 | String 1 | 52 | Marlboro Strings |
| 03 | Synth with Resonance 1 | 53 | George Frederick |
| 04 | Piano 1 | 54 | Jan 2 - unison |
| 05 | Ariel | 55 | Full synth |
| 06 | Vocalings | 56 | Twang |
| 07 | Plucky 1 | 57 | Clavet |
| 08 | Son of Org - unison | 58 | Bezmod |
| 09 | Miridium | 59 | Plucky 2 |
| 10 | Percussive Organ 2 | 60 | Pleides |
| 11 | Brass 3 | 61 | Synth with Resonance 3 |
| 12 | Strings 2 | 62 | String with Filter sweep |
| 13 | Synth with Resonance 2 | 63 | Echo |
| 14 | Synth-clav | 64 | Synth B |
| 15 | Cut-bass | 65 | Hose Pose |
| 16 | Lead 1 with release | 66 | Powerpack |
| 17 | Polyglide | 67 | Lead 2 - unison |
| 18 | Res-bass | 68 | Pulse-width mod 1 |
| 19 | Loris 1 | 69 | Flute |
| 20 | Organ Flutes | 70 | High Organ Flutes |
| 21 | Slow attack brass | 71 | Digi-Horn |
| 22 | Strings 3 | 72 | Angelic |
| 23 | Release Filter | 73 | Flutey Pose |
| 24 | Piano 2 | 74 | Pulse-width mod 2 |
| 25 | Synth A | 75 | Harpsichord |
| 26 | Muted Clav-type | 76 | Synth with resonance 4 |
| 27 | Sustained lead sound - unison | 77 | Acoustic Piano - part 1 |
| 28 | Synthbass 1 - unison | 78 | Celestial |
| 29 | Harp | 79 | Golliwog Jr. |
| 30 | Donald Duck organ | 80 | Electronic Percussion |
| 31 | Cornet | 81 | Meow |
| 32 | Strings (brugel) 4 | 82 | Wind |
| 33 | High Josef | 83 | Inverted Clangorous |
| 34 | Electric Piano | 84 | Musical Orgs |
| 35 | Obiechords | 85 | UFO |
| 36 | Clav-like w/ slight release | 86 | Square wave spacey |
| 37 | Synthbass 2 - unison | 87 | SFX 1 |
| 38 | Synthbass detuned - unison | 88 | Acoustic Piano - part 2 |
| 39 | Inverted pluck | 89 | Chirp-dive |
| 40 | Unison organ. | 90 | Puce |
| 41 | Brassy vibrato | 91 | Thudmon |
| 42 | String swell | 92 | Percussive noise |
| 43 | Seraphim | 93 | Ascending release |
| 44 | Jan 1 | 94 | 4ths drop with release |
| 45 | Pennywhistle | 95 | Josef's Cousin |
| 46 | Loris 2 | 96 | Percussive wind - unison |
| 47 | Lucky Man | 97 | Percussion 3 - unison |
| 48 | Cut-bass 2 - unison | 98 | Alien - unison |
| 49 | Clav 3 | 99 | Alien wind - unison |

FACTORY PROGRAM #:	00	01	02	03	04	05
NAME:	Permissive Organ 1	Piano 1	String 1	String with Resonance 1	Piano 1	Arp'd
MOD-WHEEL:						
NOTES:						
PARAMETERS	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE
(Values are 00 unless otherwise noted)						
OSCILLATOR						
00	COARSE FREQUENCY	12	24	12	24	24
01	FINE FREQUENCY					
02	GLIDE RATE					97
03	LFO	01	01	01		01
04	ENVLOPE AMOUNT					
05	INVERT					
06	ATTACK					
07	DECAY					
08	SUSTAIN					
09	RELEASE					
10	SAWTOOTH WAVE	01	01	01	01	01
11	TRIANGLE WAVE					
12	PULSE WAVE					
13	PULSE WIDTH	52	52	21	21	59
14	LFO	01	01			01
LFO	FREQUENCY		08			08
15	PROG AMOUNT		02			02
16	TRI/SQUARE WAVE					
17						
FILTER						
18	OSC/NOISE MIXER					
19	CUTOFF FREQUENCY	78	105			84
20	RESONANCE					05
21	ENVLOPE AMOUNT	15				01
22	INVERT					
23	ATTACK	02				07
24	DECAY	03				13
25	SUSTAIN	06				04
26	RELEASE	03				
27	LFO					
28	KEYBOARD					
29	OSC TRI MOD AMT	01	02	01	02	02
AMP						
30	ATTACK		03			03
31	DECAY		13			06
32	SUSTAIN		06			06
33	RELEASE		10			19
34	VOICE VOLUME	13				
35	UNISON					

FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	PARAMETERS	VALUE
56	Vocalings				
57	Puckly 1				
58	5th of Ork - unison				
59	Marsidipm				
19	Recursive Organ 2				
11	Beass 3				
PARAMETERS (Values are 00 unless otherwise noted)					
00	COARSE FREQUENCY	36			
01	FINE FREQUENCY	01			
02	GLIDE RATE	01			
03	LFO	01			
04	ENVELOPE AMOUNT	01			
05	ATTACK	01			
06	DECAY	02			
07	SUSTAIN	08			
08	RELEASE	01			
09	SAWTOOTH WAVE	01			
10	TRIANGLE WAVE	01			
11	PULSE WAVE	01			
12	PULSE WIDTH	03			
13	LFO	03			
14	LFO	01			
15	FREQUENCY	11			
16	PROG AMOUNT	03			
17	TRI/SQUARE WAVE				
18	OSC/NOISE MIXER				
19	CUTOFF FREQUENCY	63			
20	RESONANCE	03			
21	ENVELOPE AMOUNT	01			
22	INVERT	02			
23	ATTACK	02			
24	DECAY	07			
25	SUSTAIN	08			
26	RELEASE	03			
27	KEYBOARD	02			
28	KEYBOARD	02			
29	OSC TRI MOD AMT	22			
30	AMPLIFIER				
31	ATTACK	01			
32	DECAY	15			
33	SUSTAIN	02			
34	RELEASE	08			
35	VOICE VOLUME	08			
36	VOICE VOLUME	10			
37	VOICE VOLUME	10			
38	VOICE VOLUME	10			
39	VOICE VOLUME	10			
40	VOICE VOLUME	10			
41	VOICE VOLUME	10			
42	VOICE VOLUME	10			
43	VOICE VOLUME	10			
44	VOICE VOLUME	10			
45	VOICE VOLUME	10			
46	VOICE VOLUME	10			
47	VOICE VOLUME	10			
48	VOICE VOLUME	10			
49	VOICE VOLUME	10			
50	VOICE VOLUME	10			
51	VOICE VOLUME	10			
52	VOICE VOLUME	10			
53	VOICE VOLUME	10			
54	VOICE VOLUME	10			
55	VOICE VOLUME	10			
56	VOICE VOLUME	10			
57	VOICE VOLUME	10			
58	VOICE VOLUME	10			
59	VOICE VOLUME	10			
60	VOICE VOLUME	10			
61	VOICE VOLUME	10			
62	VOICE VOLUME	10			
63	VOICE VOLUME	10			
64	VOICE VOLUME	10			
65	VOICE VOLUME	10			
66	VOICE VOLUME	10			
67	VOICE VOLUME	10			
68	VOICE VOLUME	10			
69	VOICE VOLUME	10			
70	VOICE VOLUME	10			
71	VOICE VOLUME	10			
72	VOICE VOLUME	10			
73	VOICE VOLUME	10			
74	VOICE VOLUME	10			
75	VOICE VOLUME	10			
76	VOICE VOLUME	10			
77	VOICE VOLUME	10			
78	VOICE VOLUME	10			
79	VOICE VOLUME	10			
80	VOICE VOLUME	10			
81	VOICE VOLUME	10			
82	VOICE VOLUME	10			
83	VOICE VOLUME	10			
84	VOICE VOLUME	10			
85	VOICE VOLUME	10			
86	VOICE VOLUME	10			
87	VOICE VOLUME	10			
88	VOICE VOLUME	10			
89	VOICE VOLUME	10			
90	VOICE VOLUME	10			
91	VOICE VOLUME	10			
92	VOICE VOLUME	10			
93	VOICE VOLUME	10			
94	VOICE VOLUME	10			
95	VOICE VOLUME	10			
96	VOICE VOLUME	10			
97	VOICE VOLUME	10			
98	VOICE VOLUME	10			
99	VOICE VOLUME	10			
100	VOICE VOLUME	10			

FACTORY PROGRAM #:	12	13	14	15	16	17
NAME:	Strings 2	Synth with Resonance 1	Synth-clav	Cur-bass	Lead with release	Polyside
MOD-WHEEL:						
NOTES:						
PARAMETERS	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE
(Values are 00 unless otherwise noted)						
OSCILLATOR	00	00	00	00	00	00
COARSE FREQUENCY	24	12	24	36	36	24
FINE FREQUENCY	01	01	01	01	01	01
GLIDE RATE	01	01	01	01	01	01
LFO	03	03	03	03	03	03
ENVELOPE AMOUNT	04	04	04	04	04	04
INVERT	05	05	05	05	05	05
ATTACK	06	06	06	06	06	06
DECAY	07	07	07	07	07	07
SUSTAIN	08	08	08	08	08	08
RELEASE	09	09	09	09	09	09
SAWTOOTH WAVE	10	10	10	10	10	10
TRIANGLE WAVE	11	11	11	11	11	11
PULSE WAVE	12	12	12	12	12	12
PULSE WIDTH	13	13	13	13	13	13
LFO	14	14	14	14	14	14
LFO	15	15	15	15	15	15
FREQUENCY	08	11	10	10	10	07
PROG AMOUNT	01	01	01	01	01	01
TRI/SQUARE WAVE	17	17	17	17	17	17
FILTER	18	18	18	18	18	18
OSC/NOISE MIXER	19	19	19	19	19	19
CUTOFF FREQUENCY	30	43	25	47	127	21
RESONANCE	20	28	17	08	08	22
ENVELOPE AMOUNT	12	10	11	08	22	13
INVERT	21	21	21	21	21	21
ATTACK	22	22	22	22	22	22
DECAY	23	23	23	23	23	23
SUSTAIN	24	03	05	01	24	11
SUSTAIN	25	06	10	11	25	08
RELEASE	26	06	10	11	26	08
LFO	27	27	27	27	27	27
KEYBOARD	01	01	02	02	02	02
OSC TRI/MOD AMT	29	29	29	29	29	29
AMPLIFIER	30	30	30	30	30	30
ATTACK	31	13	13	13	31	15
DECAY	32	32	32	32	32	32
SUSTAIN	33	33	33	33	33	33
RELEASE	34	34	34	34	34	34
VOICE VOLUME	09	11	12	08	08	10
UNISON	35	35	35	35	35	35

FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:				
30	Donald Duck organ			31	Cornet			32	Strings (brnied) &			33	High Jonef			34	Electric Piano			35	Obiecloards		
PARAMETERS (Values are 00 unless otherwise noted)				PARAMETERS (Values are 00 unless otherwise noted)				PARAMETERS (Values are 00 unless otherwise noted)				PARAMETERS (Values are 00 unless otherwise noted)				PARAMETERS (Values are 00 unless otherwise noted)							
00	COARSE FREQUENCY	24		00	COARSE FREQUENCY	36		00	COARSE FREQUENCY	24		00	COARSE FREQUENCY	36		00	COARSE FREQUENCY	36		00	COARSE FREQUENCY	24	
01	FINE FREQUENCY			01	FINE FREQUENCY			01	FINE FREQUENCY			01	FINE FREQUENCY			01	FINE FREQUENCY			01	FINE FREQUENCY		
02	GLIDE RATE			02	GLIDE RATE			02	GLIDE RATE			02	GLIDE RATE			02	GLIDE RATE			02	GLIDE RATE		
03	LFO			03	LFO			03	LFO			03	LFO			03	LFO			03	LFO		
04	ENVELOPE AMOUNT			04	ENVELOPE AMOUNT			04	ENVELOPE AMOUNT			04	ENVELOPE AMOUNT			04	ENVELOPE AMOUNT			04	ENVELOPE AMOUNT		
05	INVERT			05	INVERT			05	INVERT			05	INVERT			05	INVERT			05	INVERT		
06	ATTACK			06	ATTACK			06	ATTACK			06	ATTACK			06	ATTACK			06	ATTACK		
07	DECAY			07	DECAY			07	DECAY			07	DECAY			07	DECAY			07	DECAY		
08	SUSTAIN			08	SUSTAIN			08	SUSTAIN			08	SUSTAIN			08	SUSTAIN			08	SUSTAIN		
09	RELEASE			09	RELEASE			09	RELEASE			09	RELEASE			09	RELEASE			09	RELEASE		
10	SAWTOOTH WAVE			10	SAWTOOTH WAVE			10	SAWTOOTH WAVE			10	SAWTOOTH WAVE			10	SAWTOOTH WAVE			10	SAWTOOTH WAVE		
11	TRIANGLE WAVE			11	TRIANGLE WAVE			11	TRIANGLE WAVE			11	TRIANGLE WAVE			11	TRIANGLE WAVE			11	TRIANGLE WAVE		
12	PULSE WAVE			12	PULSE WAVE			12	PULSE WAVE			12	PULSE WAVE			12	PULSE WAVE			12	PULSE WAVE		
13	PULSE WIDTH			13	PULSE WIDTH			13	PULSE WIDTH			13	PULSE WIDTH			13	PULSE WIDTH			13	PULSE WIDTH		
14	LFO			14	LFO			14	LFO			14	LFO			14	LFO			14	LFO		
LFO	FREQUENCY	12		LFO	FREQUENCY	11		LFO	FREQUENCY	08		LFO	FREQUENCY	09		LFO	FREQUENCY	15		LFO	FREQUENCY	03	
15	PROG AMOUNT	03		15	PROG AMOUNT			15	PROG AMOUNT	02		15	PROG AMOUNT	06		15	PROG AMOUNT			15	PROG AMOUNT	31	
16	TRI/SQUARE WAVE			16	TRI/SQUARE WAVE			16	TRI/SQUARE WAVE			16	TRI/SQUARE WAVE			16	TRI/SQUARE WAVE			16	TRI/SQUARE WAVE		
17				17				17				17				17				17			
18	OSC/NOISE MIXER			18	OSC/NOISE MIXER			18	OSC/NOISE MIXER			18	OSC/NOISE MIXER			18	OSC/NOISE MIXER			18	OSC/NOISE MIXER		
19	CUTOFF FREQUENCY	04		19	CUTOFF FREQUENCY	07		19	CUTOFF FREQUENCY	104		19	CUTOFF FREQUENCY	126		19	CUTOFF FREQUENCY	47		19	CUTOFF FREQUENCY	03	
20	RESONANCE			20	RESONANCE			20	RESONANCE			20	RESONANCE			20	RESONANCE			20	RESONANCE		
21	ENVELOPE AMOUNT			21	ENVELOPE AMOUNT			21	ENVELOPE AMOUNT			21	ENVELOPE AMOUNT			21	ENVELOPE AMOUNT			21	ENVELOPE AMOUNT		
22	INVERT			22	INVERT			22	INVERT			22	INVERT			22	INVERT			22	INVERT		
23	ATTACK			23	ATTACK			23	ATTACK			23	ATTACK			23	ATTACK			23	ATTACK		
24	DECAY			24	DECAY			24	DECAY			24	DECAY			24	DECAY			24	DECAY		
25	SUSTAIN			25	SUSTAIN			25	SUSTAIN			25	SUSTAIN			25	SUSTAIN			25	SUSTAIN		
26	RELEASE			26	RELEASE			26	RELEASE			26	RELEASE			26	RELEASE			26	RELEASE		
27	LFO			27	LFO			27	LFO			27	LFO			27	LFO			27	LFO		
28	KEYBOARD			28	KEYBOARD			28	KEYBOARD			28	KEYBOARD			28	KEYBOARD			28	KEYBOARD		
29	OSC TRI MOD AMT			29	OSC TRI MOD AMT			29	OSC TRI MOD AMT			29	OSC TRI MOD AMT			29	OSC TRI MOD AMT			29	OSC TRI MOD AMT		
30	AMPLIFIER			30	AMPLIFIER			30	AMPLIFIER			30	AMPLIFIER			30	AMPLIFIER			30	AMPLIFIER		
31	ATTACK			31	ATTACK			31	ATTACK			31	ATTACK			31	ATTACK			31	ATTACK		
32	SUSTAIN			32	SUSTAIN			32	SUSTAIN			32	SUSTAIN			32	SUSTAIN			32	SUSTAIN		
33	RELEASE			33	RELEASE			33	RELEASE			33	RELEASE			33	RELEASE			33	RELEASE		
34	VOICE VOLUME			34	VOICE VOLUME			34	VOICE VOLUME			34	VOICE VOLUME			34	VOICE VOLUME			34	VOICE VOLUME		
35	UNISON			35	UNISON			35	UNISON			35	UNISON			35	UNISON			35	UNISON		

FACTORY PROGRAM #:	36	37	38	39	42	41
NAME:	Clav-like w/light release	Synthbass 2 - unison	Synthbass detuned - unison	Inverted pluck	Unison organ	Brassy vibrato
MOD-WHEEL:						
NOTES:						
PARAMETERS	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE
(Values are 00 unless otherwise noted)						
OSCILLATOR						
00	FINE FREQUENCY 24	FINE FREQUENCY 12	FINE FREQUENCY 36	FINE FREQUENCY 36	FINE FREQUENCY 36	FINE FREQUENCY 36
01	FINE FREQUENCY	FINE FREQUENCY	FINE FREQUENCY	FINE FREQUENCY	FINE FREQUENCY	FINE FREQUENCY
02	GLIDE RATE	GLIDE RATE 10	GLIDE RATE 01	GLIDE RATE 01	GLIDE RATE 01	GLIDE RATE 01
03	LFO	LFO	LFO	LFO	LFO	LFO
04	ENVLOPE AMOUNT	ENVLOPE AMOUNT	ENVLOPE AMOUNT	ENVLOPE AMOUNT	ENVLOPE AMOUNT	ENVLOPE AMOUNT
05	INVERT	INVERT	INVERT	INVERT	INVERT	INVERT
06	ATTACK	ATTACK	ATTACK	ATTACK	ATTACK	ATTACK
07	DECAY	DECAY	DECAY	DECAY	DECAY	DECAY
08	SUSTAIN	SUSTAIN	SUSTAIN	SUSTAIN	SUSTAIN	SUSTAIN
09	RELEASE	RELEASE	RELEASE	RELEASE	RELEASE	RELEASE
10	SAWTOOTH WAVE	SAWTOOTH WAVE 01	SAWTOOTH WAVE 01	SAWTOOTH WAVE 01	SAWTOOTH WAVE 01	SAWTOOTH WAVE 01
11	TRIANGLE WAVE	TRIANGLE WAVE 01	TRIANGLE WAVE 01	TRIANGLE WAVE 01	TRIANGLE WAVE 01	TRIANGLE WAVE 01
12	PULSE WAVE	PULSE WAVE 01	PULSE WAVE 01	PULSE WAVE 01	PULSE WAVE 01	PULSE WAVE 01
13	PULSE WIDTH	PULSE WIDTH 01	PULSE WIDTH 01	PULSE WIDTH 01	PULSE WIDTH 01	PULSE WIDTH 01
14	LFO	LFO	LFO	LFO	LFO	LFO
LFO						
15	FREQUENCY	FREQUENCY 11	FREQUENCY 10	FREQUENCY 10	FREQUENCY 13	FREQUENCY 11
16	PRG AMOUNT	PRG AMOUNT	PRG AMOUNT 31	PRG AMOUNT 01	PRG AMOUNT	PRG AMOUNT 02
17	TRISQUARE WAVE	TRISQUARE WAVE	TRISQUARE WAVE	TRISQUARE WAVE	TRISQUARE WAVE	TRISQUARE WAVE
FILTER						
18	OSC/NOISE MIXER	OSC/NOISE MIXER	OSC/NOISE MIXER	OSC/NOISE MIXER	OSC/NOISE MIXER	OSC/NOISE MIXER
19	CUTOFF FREQUENCY 102	CUTOFF FREQUENCY 117	CUTOFF FREQUENCY 116	CUTOFF FREQUENCY 113	CUTOFF FREQUENCY 09	CUTOFF FREQUENCY 42
20	RESONANCE	RESONANCE 12	RESONANCE 08	RESONANCE 11	RESONANCE 22	RESONANCE 19
21	ENVLOPE AMOUNT	ENVLOPE AMOUNT	ENVLOPE AMOUNT	ENVLOPE AMOUNT	ENVLOPE AMOUNT 15	ENVLOPE AMOUNT
22	INVERT	INVERT	INVERT	INVERT	INVERT	INVERT
23	ATTACK	ATTACK	ATTACK	ATTACK 02	ATTACK	ATTACK 03
24	DECAY	DECAY	DECAY 02	DECAY	DECAY	DECAY 09
25	SUSTAIN	SUSTAIN	SUSTAIN 09	SUSTAIN 02	SUSTAIN 11	SUSTAIN 09
26	RELEASE	RELEASE 15	RELEASE 09	RELEASE 08	RELEASE 09	RELEASE 02
27	LFO	LFO	LFO	LFO	LFO	LFO
28	KEYBOARD	KEYBOARD	KEYBOARD 01	KEYBOARD 02	KEYBOARD	KEYBOARD
29	OSC TRI MOD AMT	OSC TRI MOD AMT	OSC TRI MOD AMT	OSC TRI MOD AMT	OSC TRI MOD AMT	OSC TRI MOD AMT
AMPLIFIER						
30	ATTACK	ATTACK	ATTACK	ATTACK	ATTACK	ATTACK
31	DECAY	DECAY	DECAY 01	DECAY	DECAY	DECAY 15
32	SUSTAIN	SUSTAIN	SUSTAIN	SUSTAIN	SUSTAIN 15	SUSTAIN
33	RELEASE	RELEASE	RELEASE 01	RELEASE 05	RELEASE	RELEASE 01
34	VOICE VOLUME	VOICE VOLUME 09	VOICE VOLUME 15	VOICE VOLUME 15	VOICE VOLUME 11	VOICE VOLUME 11
35	UNISON	UNISON	UNISON	UNISON	UNISON	UNISON

FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:				
60	Flies			61	Synth with Resonance 3			62	String with Filter sweep			63	Echo			64	Synth B			65	Hose Pose		
PARAMETERS (Values are 00 unless otherwise noted)				PARAMETERS (Values are 00 unless otherwise noted)				PARAMETERS (Values are 00 unless otherwise noted)				PARAMETERS (Values are 00 unless otherwise noted)				PARAMETERS (Values are 00 unless otherwise noted)				PARAMETERS (Values are 00 unless otherwise noted)			
07	OSCILLATOR			07	OSCILLATOR			07	OSCILLATOR			07	OSCILLATOR			07	OSCILLATOR			07	OSCILLATOR		
08	FINE FREQUENCY	24		08	FINE FREQUENCY	22		08	FINE FREQUENCY	24		08	FINE FREQUENCY	48		08	FINE FREQUENCY	24		08	FINE FREQUENCY	12	
09	GLIDE RATE			09	GLIDE RATE			09	GLIDE RATE			09	GLIDE RATE			09	GLIDE RATE			09	GLIDE RATE		
10	LFO			10	LFO			10	LFO			10	LFO			10	LFO			10	LFO		
11	ENVELOPE AMOUNT	15		11	ENVELOPE AMOUNT	04		11	ENVELOPE AMOUNT			11	ENVELOPE AMOUNT			11	ENVELOPE AMOUNT			11	ENVELOPE AMOUNT	15	
12	INVERT			12	INVERT			12	INVERT			12	INVERT			12	INVERT			12	INVERT		
13	DECAY			13	DECAY	01		13	DECAY			13	DECAY			13	DECAY			13	DECAY		
14	SUSTAIN			14	SUSTAIN	15		14	SUSTAIN			14	SUSTAIN			14	SUSTAIN			14	SUSTAIN		
15	RELEASE	13		15	RELEASE	03		15	RELEASE			15	RELEASE			15	RELEASE			15	RELEASE		
16	SAWTOOTH WAVE			16	SAWTOOTH WAVE			16	SAWTOOTH WAVE			16	SAWTOOTH WAVE	01		16	SAWTOOTH WAVE			16	SAWTOOTH WAVE		
17	TRIANGLE WAVE	01		17	TRIANGLE WAVE	01		17	TRIANGLE WAVE	01		17	TRIANGLE WAVE	01		17	TRIANGLE WAVE			17	TRIANGLE WAVE		
18	PULSE WAVE	01		18	PULSE WAVE	01		18	PULSE WAVE	01		18	PULSE WAVE	01		18	PULSE WAVE			18	PULSE WAVE		
19	PULSE WIDTH	01		19	PULSE WIDTH	01		19	PULSE WIDTH	40		19	PULSE WIDTH			19	PULSE WIDTH			19	PULSE WIDTH	24	
20	LFO			20	LFO			20	LFO			20	LFO			20	LFO			20	LFO		
21	FREQUENCY	08		21	FREQUENCY	07		21	FREQUENCY	12		21	FREQUENCY			21	FREQUENCY			21	FREQUENCY	11	
22	PROG AMOUNT	06		22	PROG AMOUNT	11		22	PROG AMOUNT	13		22	PROG AMOUNT			22	PROG AMOUNT			22	PROG AMOUNT		
23	TRI/SQUARE WAVE			23	TRI/SQUARE WAVE			23	TRI/SQUARE WAVE			23	TRI/SQUARE WAVE			23	TRI/SQUARE WAVE			23	TRI/SQUARE WAVE		
24	OSC/NOISE MIXER			24	OSC/NOISE MIXER			24	OSC/NOISE MIXER			24	OSC/NOISE MIXER			24	OSC/NOISE MIXER			24	OSC/NOISE MIXER		
25	CUTOFF FREQUENCY	31		25	CUTOFF FREQUENCY	37		25	OSC/NOISE MIXER			25	CUTOFF FREQUENCY	43		25	OSC/NOISE MIXER			25	CUTOFF FREQUENCY	31	
26	RESONANCE			26	RESONANCE	15		26	RESONANCE	49		26	RESONANCE	04		26	RESONANCE			26	RESONANCE		
27	ENVELOPE AMOUNT	13		27	ENVELOPE AMOUNT	10		27	ENVELOPE AMOUNT	13		27	ENVELOPE AMOUNT	04		27	ENVELOPE AMOUNT			27	ENVELOPE AMOUNT	13	
28	INVERT			28	INVERT			28	INVERT			28	INVERT			28	INVERT			28	INVERT		
29	ATTACK			29	ATTACK	01		29	ATTACK			29	ATTACK	02		29	ATTACK			29	ATTACK		
30	DECAY	10		30	DECAY	07		30	ATTACK	06		30	DECAY			30	DECAY			30	DECAY	06	
31	SUSTAIN	13		31	SUSTAIN	06		31	DECAY	06		31	SUSTAIN			31	SUSTAIN			31	SUSTAIN	19	
32	RELEASE	13		32	RELEASE	06		32	RELEASE	11		32	RELEASE			32	RELEASE			32	RELEASE		
33	KEYBOARD	03		33	KEYBOARD	02		33	LFO			33	KEYBOARD	02		33	KEYBOARD			33	KEYBOARD		
34	OSC TRI MOD AMT	39		34	OSC TRI MOD AMT			34	OSC TRI MOD AMT	02		34	OSC TRI MOD AMT			34	OSC TRI MOD AMT			34	OSC TRI MOD AMT		
35	AMPLIFIER			35	AMPLIFIER			35	AMPLIFIER			35	AMPLIFIER			35	AMPLIFIER			35	AMPLIFIER		
36	ATTACK			36	ATTACK			36	ATTACK			36	ATTACK			36	ATTACK			36	ATTACK		
37	DECAY	11		37	DECAY	13		37	DECAY			37	DECAY			37	DECAY			37	DECAY		
38	SUSTAIN			38	SUSTAIN			38	SUSTAIN			38	SUSTAIN	15		38	SUSTAIN			38	SUSTAIN		
39	RELEASE	05		39	RELEASE	01		39	SUSTAIN	15		39	RELEASE	05		39	RELEASE			39	RELEASE		
40	VOICE VOLUME	08		40	VOICE VOLUME	11		40	RELEASE	10		40	VOICE VOLUME	11		40	VOICE VOLUME			40	VOICE VOLUME	10	
41	UNISON			41	UNISON			41	VOICE VOLUME	10		41	UNISON			41	UNISON			41	UNISON		

FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:
66	Powerpack			67	Lead 2 - unison			68	Pulse-width mod 1		
69				69	Flute			70	High Organ Flutes		
71				71				71			
PARAMETERS (Values are 00 unless otherwise noted)											
01	OSCILLATOR	COARSE FREQUENCY	36	01	OSCILLATOR	COARSE FREQUENCY	36	01	OSCILLATOR	COARSE FREQUENCY	36
02	FINE FREQUENCY			02	FINE FREQUENCY			02	FINE FREQUENCY		
03	GLIDE RATE			03	GLIDE RATE			03	GLIDE RATE		
04	ENVLOPE AMOUNT			04	ENVLOPE AMOUNT			04	ENVLOPE AMOUNT		
05	INVERT			05	INVERT			05	INVERT		
06	ATTACK			06	ATTACK			06	ATTACK		
07	DECAY			07	DECAY			07	DECAY		
08	SUSTAIN			08	SUSTAIN			08	SUSTAIN		
09	RELEASE			09	RELEASE			09	RELEASE		
10	SAWTOOTH WAVE			10	SAWTOOTH WAVE			10	SAWTOOTH WAVE		
11	TRIANGLE WAVE			11	TRIANGLE WAVE			11	TRIANGLE WAVE		
12	PULSE WAVE			12	PULSE WAVE			12	PULSE WAVE		
13	PULSE WIDTH			13	PULSE WIDTH			13	PULSE WIDTH		
14	LFO			14	LFO			14	LFO		
15	FREQUENCY			15	FREQUENCY			15	FREQUENCY		
16	PRCG AMOUNT			16	PRCG AMOUNT			16	PRCG AMOUNT		
17	TRI/SQUARE WAVE			17	TRI/SQUARE WAVE			17	TRI/SQUARE WAVE		
18	FILTER			18	FILTER			18	FILTER		
19	OSC/NOISE MIXER			19	OSC/NOISE MIXER			19	OSC/NOISE MIXER		
20	CUTOFF FREQUENCY			20	CUTOFF FREQUENCY			20	CUTOFF FREQUENCY		
21	RESONANCE			21	RESONANCE			21	RESONANCE		
22	ENVLOPE AMOUNT			22	ENVLOPE AMOUNT			22	ENVLOPE AMOUNT		
23	INVERT			23	INVERT			23	INVERT		
24	ATTACK			24	ATTACK			24	ATTACK		
25	DECAY			25	DECAY			25	DECAY		
26	SUSTAIN			26	SUSTAIN			26	SUSTAIN		
27	RELEASE			27	RELEASE			27	RELEASE		
28	LFO			28	LFO			28	LFO		
29	KEYBOARD			29	KEYBOARD			29	KEYBOARD		
30	OSC TRI MOD AMT			30	OSC TRI MOD AMT			30	OSC TRI MOD AMT		
31	AMPLIFIER			31	AMPLIFIER			31	AMPLIFIER		
32	ATTACK			32	ATTACK			32	ATTACK		
33	DECAY			33	DECAY			33	DECAY		
34	SUSTAIN			34	SUSTAIN			34	SUSTAIN		
35	RELEASE			35	RELEASE			35	RELEASE		
36	VOICE VOLUME			36	VOICE VOLUME			36	VOICE VOLUME		
37				37				37			
38				38				38			
39				39				39			
40				40				40			
41				41				41			
42				42				42			
43				43				43			
44				44				44			
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70				70				70			
71				71				71			

FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:				
72	Argelic			73	Fluicy Page			74	Pulse-width mod 2			75	Harpichord			76	Smith with resonance 4			77	Acoustic Piano - part 1		
PARAMETERS VALUE				PARAMETERS VALUE				PARAMETERS VALUE				PARAMETERS VALUE				PARAMETERS VALUE							
(Values are 00 unless otherwise noted)				(Values are 00 unless otherwise noted)				(Values are 00 unless otherwise noted)				(Values are 00 unless otherwise noted)				(Values are 00 unless otherwise noted)							
00	OSCILLATOR			00	OSCILLATOR			00	OSCILLATOR			00	OSCILLATOR			00	OSCILLATOR			00	OSCILLATOR		
01	COARSE FREQUENCY	48		01	COARSE FREQUENCY	43		01	COARSE FREQUENCY	29		01	COARSE FREQUENCY	28		01	COARSE FREQUENCY	36		01	COARSE FREQUENCY	36	
02	FINE FREQUENCY	12		02	FINE FREQUENCY			02	FINE FREQUENCY			02	FINE FREQUENCY			02	FINE FREQUENCY			02	FINE FREQUENCY		
03	GLIDE RATE	01		03	GLIDE RATE			03	GLIDE RATE			03	GLIDE RATE			03	GLIDE RATE			03	GLIDE RATE		
04	ENVELOPE AMOUNT			04	ENVELOPE AMOUNT	01		04	ENVELOPE AMOUNT			04	ENVELOPE AMOUNT			04	ENVELOPE AMOUNT	1		04	ENVELOPE AMOUNT		
05	INVERT			05	INVERT			05	INVERT			05	INVERT			05	INVERT			05	INVERT		
06	ATTACK			06	ATTACK	01		06	ATTACK			06	ATTACK			06	ATTACK			06	ATTACK		
07	DECAY			07	DECAY	02		07	DECAY			07	DECAY			07	DECAY			07	DECAY		
08	SUSTAIN			08	SUSTAIN	03		08	SUSTAIN			08	SUSTAIN			08	SUSTAIN			08	SUSTAIN		
09	RELEASE			09	RELEASE	03		09	RELEASE			09	RELEASE			09	RELEASE			09	RELEASE		
10	SAWTOOTH WAVE			10	SAWTOOTH WAVE			10	SAWTOOTH WAVE			10	SAWTOOTH WAVE			10	SAWTOOTH WAVE			10	SAWTOOTH WAVE		
11	TRIANGLE WAVE			11	TRIANGLE WAVE	01		11	TRIANGLE WAVE			11	TRIANGLE WAVE			11	TRIANGLE WAVE			11	TRIANGLE WAVE		
12	PULSE WAVE			12	PULSE WAVE	01		12	PULSE WAVE			12	PULSE WAVE			12	PULSE WAVE			12	PULSE WAVE		
13	PULSE WIDTH	56		13	PULSE WIDTH	13		13	PULSE WIDTH	56		13	PULSE WIDTH	01		13	PULSE WIDTH			13	PULSE WIDTH		
14	LFO	01		14	LFO	01		14	LFO	01		14	LFO	01		14	LFO			14	LFO		
15	FREQUENCY	11		15	FREQUENCY	08		15	FREQUENCY	06		15	FREQUENCY			15	FREQUENCY	11		15	FREQUENCY		
16	PROG AMOUNT	03		16	PROG AMOUNT	17		16	PROG AMOUNT	31		16	PROG AMOUNT			16	PROG AMOUNT			16	PROG AMOUNT		
17	TRISQUARE WAVE			17	TRISQUARE WAVE			17	TRISQUARE WAVE			17	TRISQUARE WAVE			17	TRISQUARE WAVE			17	TRISQUARE WAVE		
18	FILTER			18	FILTER			18	FILTER			18	FILTER			18	FILTER			18	FILTER		
19	OSC/NOISE MIXER			19	OSC/NOISE MIXER	76		19	OSC/NOISE MIXER	33		19	OSC/NOISE MIXER			19	OSC/NOISE MIXER			19	OSC/NOISE MIXER		
20	CUTOFF FREQUENCY	76		20	CUTOFF FREQUENCY	03		20	CUTOFF FREQUENCY	55		20	CUTOFF FREQUENCY	103		20	CUTOFF FREQUENCY	63		20	CUTOFF FREQUENCY	63	
21	RESONANCE	32		21	RESONANCE	03		21	RESONANCE			21	RESONANCE	26		21	RESONANCE	22		21	RESONANCE	22	
22	ENVELOPE AMOUNT	01		22	ENVELOPE AMOUNT	03		22	ENVELOPE AMOUNT	05		22	ENVELOPE AMOUNT	01		22	ENVELOPE AMOUNT	10		22	ENVELOPE AMOUNT	10	
23	INVERT			23	INVERT			23	INVERT			23	INVERT			23	INVERT			23	INVERT		
24	ATTACK	07		24	ATTACK	07		24	ATTACK	06		24	ATTACK	01		24	ATTACK	11		24	ATTACK	11	
25	DECAY	13		25	DECAY	07		25	DECAY	06		25	DECAY	06		25	DECAY	11		25	DECAY	11	
26	SUSTAIN	06		26	SUSTAIN	06		26	SUSTAIN	05		26	SUSTAIN	15		26	SUSTAIN	01		26	SUSTAIN	01	
27	RELEASE	06		27	RELEASE	01		27	RELEASE	05		27	RELEASE			27	RELEASE	06		27	RELEASE	06	
28	KEYBOARD			28	KEYBOARD	02		28	KEYBOARD	02		28	KEYBOARD	02		28	KEYBOARD	02		28	KEYBOARD	02	
29	OSC TRI MOD AMT			29	OSC TRI MOD AMT	02		29	OSC TRI MOD AMT	02		29	OSC TRI MOD AMT	63		29	OSC TRI MOD AMT	02		29	OSC TRI MOD AMT	02	
30	AMPLIFIER			30	AMPLIFIER			30	AMPLIFIER			30	AMPLIFIER			30	AMPLIFIER			30	AMPLIFIER		
31	ATTACK	56		31	ATTACK	09		31	ATTACK			31	ATTACK			31	ATTACK			31	ATTACK		
32	DECAY	06		32	DECAY	09		32	DECAY	15		32	DECAY	19		32	DECAY			32	DECAY		
33	SUSTAIN	06		33	SUSTAIN	06		33	SUSTAIN	06		33	SUSTAIN	06		33	SUSTAIN			33	SUSTAIN		
34	RELEASE	06		34	RELEASE	04		34	RELEASE	06		34	RELEASE	02		34	RELEASE			34	RELEASE		
35	VOICE VOLUME	10		35	VOICE VOLUME	11		35	VOICE VOLUME	11		35	VOICE VOLUME	15		35	VOICE VOLUME	15		35	VOICE VOLUME	15	
36	UNISON			36	UNISON			36	UNISON			36	UNISON			36	UNISON			36	UNISON		

FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:
75	Celestial			79	Colliswood Jr.			83	Inverted Clamorous			83	Inverted Clamorous			32	Wind		
76				80	Electronic Percussion			31	Wow			31	Wow			32	Wind		
77				81				32				32				33			
78				82				33				33				34			
79				83				34				34				35			
80				84				35				35				36			
81				85				36				36				37			
82				86				37				37				38			
83				87				38				38				39			
84				88				39				39				40			
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86				90				41				41				42			
87				91				42				42				43			
88				92				43				43				44			
89				93				44				44				45			
90				94				45				45				46			
91				95				46				46				47			
92				96				47				47				48			
93				97				48				48				49			
94				98				49				49				50			
95				99				50				50				51			
96				100				51				51				52			
97				101				52				52				53			
98				102				53				53				54			
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107				111				62				62				63			
108				112				63				63				64			
109				113				64				64				65			
110				114				65				65				66			
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112				116				67				67				68			
113				117				68				68				69			
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120				124				75				75				76			
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122				126				77				77				78			
123				127				78				78				79			
124				128				79				79				80			
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126				130				81				81				82			
127				131				82				82				83			
128				132				83				83				84			
129				133				84				84				85			
130				134				85				85				86			
131				135				86				86				87			
132				136				87				87				88			
133				137				88				88				89			
134				138				89				89				90			
135				139				90				90				91			
136				140				91				91				92			
137				141				92				92				93			
138				142				93				93				94			
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142				146				97				97				98			
143				147				98				98				99			
144				148				99				99				100			
145				149				100				100				101			
146				150				101				101				102			
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148				152				103				103				104			
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155				159				110				110				111			
156				160				111				111				112			
157				161				112				112				113			
158				162				113				113				114			
159				163				114				114				115			
160				164				115				115				116			
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162				166				117				117				118			
163				167				118				118				119			
164				168				119				119				120			
165				169				120				120				121			
166				170				121				121				122			
167				171				122				122				123			
168				172				123				123				124			
169				173				124				124				125			
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172				176				127		</									

FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:	FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	NOTES:
84	Musical Orgs			85	Acoustic Piano - part 2			86	Square wave spacey			87	SFX 1		
88	Chirp-like														
PARAMETERS VALUE															
(Values are 00 unless otherwise noted)															
OSCILLATOR															
00	COARSE FREQUENCY	24		00	COARSE FREQUENCY	24		00	COARSE FREQUENCY	24		00	COARSE FREQUENCY	24	
01	FINE FREQUENCY			01	FINE FREQUENCY			01	FINE FREQUENCY			01	FINE FREQUENCY		
02	GLIDE RATE			02	GLIDE RATE			02	GLIDE RATE			02	GLIDE RATE		
03	ENVELOPE AMOUNT	01		03	ENVELOPE AMOUNT	01		03	ENVELOPE AMOUNT	01		03	ENVELOPE AMOUNT	01	
04	INVERT			04	ENVELOPE AMOUNT	01		04	ENVELOPE AMOUNT	01		04	ENVELOPE AMOUNT	01	
05	ATTACK			05	INVERT			05	INVERT			05	INVERT		
06	DECAY			06	ATTACK			06	ATTACK			06	ATTACK		
07	SUSTAIN			07	DECAY			07	DECAY			07	DECAY		
08	RELEASE			08	SUSTAIN			08	SUSTAIN			08	SUSTAIN		
09	SAWTOOTH WAVE			09	RELEASE			09	RELEASE			09	RELEASE		
10	TRIANGLE WAVE			10	SAWTOOTH WAVE			10	SAWTOOTH WAVE			10	SAWTOOTH WAVE		
11	PULSE WAVE			11	TRIANGLE WAVE			11	TRIANGLE WAVE			11	TRIANGLE WAVE		
12	PULSE WAVE			12	PULSE WAVE			12	PULSE WAVE			12	PULSE WAVE		
13	PULSE WIDTH	38		13	PULSE WIDTH	38		13	PULSE WIDTH	38		13	PULSE WIDTH	38	
14	LFO	01		14	LFO	01		14	LFO	01		14	LFO	01	
15	FREQUENCY	01		15	FREQUENCY	01		15	FREQUENCY	01		15	FREQUENCY	01	
16	PROG AMOUNT	24		16	PROG AMOUNT	24		16	PROG AMOUNT	24		16	PROG AMOUNT	24	
17	TRI/SQUARE WAVE			17	TRI/SQUARE WAVE			17	TRI/SQUARE WAVE			17	TRI/SQUARE WAVE		
FILTER															
18	OSC/NOISE MIXER			18	OSC/NOISE MIXER			18	OSC/NOISE MIXER			18	OSC/NOISE MIXER		
19	CUTOFF FREQUENCY	101		19	CUTOFF FREQUENCY	127		19	CUTOFF FREQUENCY	77		19	CUTOFF FREQUENCY	68	
20	RESONANCE	40		20	RESONANCE	15		20	RESONANCE	48		20	RESONANCE	63	
21	ENVELOPE AMOUNT	15		21	ENVELOPE AMOUNT	11		21	ENVELOPE AMOUNT	11		21	ENVELOPE AMOUNT	05	
22	INVERT			22	INVERT			22	INVERT			22	INVERT		
23	ATTACK			23	ATTACK			23	ATTACK			23	ATTACK		
24	DECAY			24	DECAY	13		24	DECAY	06		24	DECAY	03	
25	SUSTAIN			25	SUSTAIN	12		25	SUSTAIN	05		25	SUSTAIN	05	
26	RELEASE			26	RELEASE	12		26	RELEASE	09		26	RELEASE	05	
27	LFO	01		27	RELEASE	13		27	RELEASE	09		27	RELEASE	05	
28	KEYBOARD	02		28	KEYBOARD	02		28	KEYBOARD	02		28	KEYBOARD	02	
29	OSC TRI MOD AMT	63		29	OSC TRI MOD AMT	34		29	OSC TRI MOD AMT	63		29	OSC TRI MOD AMT	02	
AMPLIFIER															
30	ATTACK			30	ATTACK			30	ATTACK			30	ATTACK		
31	DECAY	03		31	DECAY	03		31	DECAY	03		31	DECAY	11	
32	SUSTAIN	15		32	SUSTAIN	03		32	SUSTAIN	15		32	SUSTAIN	03	
33	RELEASE	04		33	RELEASE	14		33	RELEASE	10		33	RELEASE	03	
34	VOICE VOLUME	07		34	VOICE VOLUME	08		34	VOICE VOLUME	08		34	VOICE VOLUME	06	
35	UNISON			35	UNISON	01		35	UNISON			35	UNISON		

FACTORY PROGRAM #:	90	91	92	93	94	95
NAME:	Puce	Thudmen	Percussive noise	Ascending release	h/va drop with release	Josef'n Coughs
MOD-WHEEL:						
NOTES:						
PARAMETERS:	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE
(Values are 00 unless otherwise noted)	(Values are 00 unless otherwise noted)	(Values are 00 unless otherwise noted)	(Values are 00 unless otherwise noted)	(Values are 00 unless otherwise noted)	(Values are 00 unless otherwise noted)	(Values are 00 unless otherwise noted)
OSCILLATOR	OSCILLATOR	OSCILLATOR	OSCILLATOR	OSCILLATOR	OSCILLATOR	OSCILLATOR
00 COARSE FREQUENCY	00 COARSE FREQUENCY	00 COARSE FREQUENCY	00 COARSE FREQUENCY	00 COARSE FREQUENCY	00 COARSE FREQUENCY	00 COARSE FREQUENCY
01 FINE FREQUENCY	01 FINE FREQUENCY	01 FINE FREQUENCY	01 FINE FREQUENCY	01 FINE FREQUENCY	01 FINE FREQUENCY	01 FINE FREQUENCY
02 GLIDE RATE	02 GLIDE RATE	02 GLIDE RATE	02 GLIDE RATE	02 GLIDE RATE	02 GLIDE RATE	02 GLIDE RATE
03 LFO	03 LFO	03 LFO	03 LFO	03 LFO	03 LFO	03 LFO
04 ENVELOPE AMOUNT	04 ENVELOPE AMOUNT	04 ENVELOPE AMOUNT	04 ENVELOPE AMOUNT	04 ENVELOPE AMOUNT	04 ENVELOPE AMOUNT	04 ENVELOPE AMOUNT
05 INVERT	05 INVERT	05 INVERT	05 INVERT	05 INVERT	05 INVERT	05 INVERT
06 ATTACK	06 ATTACK	06 ATTACK	06 ATTACK	06 ATTACK	06 ATTACK	06 ATTACK
07 DECAY	07 DECAY	07 DECAY	07 DECAY	07 DECAY	07 DECAY	07 DECAY
08 SUSTAIN	08 SUSTAIN	08 SUSTAIN	08 SUSTAIN	08 SUSTAIN	08 SUSTAIN	08 SUSTAIN
09 RELEASE	09 RELEASE	09 RELEASE	09 RELEASE	09 RELEASE	09 RELEASE	09 RELEASE
10 SAWTOOTH WAVE	10 SAWTOOTH WAVE	10 SAWTOOTH WAVE	10 SAWTOOTH WAVE	10 SAWTOOTH WAVE	10 SAWTOOTH WAVE	10 SAWTOOTH WAVE
11 TRIANGLE WAVE	11 TRIANGLE WAVE	11 TRIANGLE WAVE	11 TRIANGLE WAVE	11 TRIANGLE WAVE	11 TRIANGLE WAVE	11 TRIANGLE WAVE
12 PULSE WAVE	12 PULSE WAVE	12 PULSE WAVE	12 PULSE WAVE	12 PULSE WAVE	12 PULSE WAVE	12 PULSE WAVE
13 PULSE WIDTH	13 PULSE WIDTH	13 PULSE WIDTH	13 PULSE WIDTH	13 PULSE WIDTH	13 PULSE WIDTH	13 PULSE WIDTH
14 LFO	14 LFO	14 LFO	14 LFO	14 LFO	14 LFO	14 LFO
LFO	LFO	LFO	LFO	LFO	LFO	LFO
15 FREQUENCY	15 FREQUENCY	15 FREQUENCY	15 FREQUENCY	15 FREQUENCY	15 FREQUENCY	15 FREQUENCY
16 PROG AMOUNT	16 PROG AMOUNT	16 PROG AMOUNT	16 PROG AMOUNT	16 PROG AMOUNT	16 PROG AMOUNT	16 PROG AMOUNT
17 TRI/SQUARE WAVE	17 TRI/SQUARE WAVE	17 TRI/SQUARE WAVE	17 TRI/SQUARE WAVE	17 TRI/SQUARE WAVE	17 TRI/SQUARE WAVE	17 TRI/SQUARE WAVE
FILTER	FILTER	FILTER	FILTER	FILTER	FILTER	FILTER
18 OSC/NOISE MIXER	18 OSC/NOISE MIXER	18 OSC/NOISE MIXER	18 OSC/NOISE MIXER	18 OSC/NOISE MIXER	18 OSC/NOISE MIXER	18 OSC/NOISE MIXER
19 CUTOFF FREQUENCY	19 CUTOFF FREQUENCY	19 CUTOFF FREQUENCY	19 CUTOFF FREQUENCY	19 CUTOFF FREQUENCY	19 CUTOFF FREQUENCY	19 CUTOFF FREQUENCY
20 RESONANCE	20 RESONANCE	20 RESONANCE	20 RESONANCE	20 RESONANCE	20 RESONANCE	20 RESONANCE
21 ENVELOPE AMOUNT	21 ENVELOPE AMOUNT	21 ENVELOPE AMOUNT	21 ENVELOPE AMOUNT	21 ENVELOPE AMOUNT	21 ENVELOPE AMOUNT	21 ENVELOPE AMOUNT
22 INVERT	22 INVERT	22 INVERT	22 INVERT	22 INVERT	22 INVERT	22 INVERT
23 ATTACK	23 ATTACK	23 ATTACK	23 ATTACK	23 ATTACK	23 ATTACK	23 ATTACK
24 DECAY	24 DECAY	24 DECAY	24 DECAY	24 DECAY	24 DECAY	24 DECAY
25 SUSTAIN	25 SUSTAIN	25 SUSTAIN	25 SUSTAIN	25 SUSTAIN	25 SUSTAIN	25 SUSTAIN
26 RELEASE	26 RELEASE	26 RELEASE	26 RELEASE	26 RELEASE	26 RELEASE	26 RELEASE
27 LFO	27 LFO	27 LFO	27 LFO	27 LFO	27 LFO	27 LFO
28 KEYBOARD	28 KEYBOARD	28 KEYBOARD	28 KEYBOARD	28 KEYBOARD	28 KEYBOARD	28 KEYBOARD
29 OSC TRI MOD AMT	29 OSC TRI MOD AMT	29 OSC TRI MOD AMT	29 OSC TRI MOD AMT	29 OSC TRI MOD AMT	29 OSC TRI MOD AMT	29 OSC TRI MOD AMT
AMP LIFER	AMP LIFER	AMP LIFER	AMP LIFER	AMP LIFER	AMP LIFER	AMP LIFER
30 ATTACK	30 ATTACK	30 ATTACK	30 ATTACK	30 ATTACK	30 ATTACK	30 ATTACK
31 DECAY	31 DECAY	31 DECAY	31 DECAY	31 DECAY	31 DECAY	31 DECAY
32 SUSTAIN	32 SUSTAIN	32 SUSTAIN	32 SUSTAIN	32 SUSTAIN	32 SUSTAIN	32 SUSTAIN
33 RELEASE	33 RELEASE	33 RELEASE	33 RELEASE	33 RELEASE	33 RELEASE	33 RELEASE
34 VOICE VOLUME	34 VOICE VOLUME	34 VOICE VOLUME	34 VOICE VOLUME	34 VOICE VOLUME	34 VOICE VOLUME	34 VOICE VOLUME
35 UNISON	35 UNISON	35 UNISON	35 UNISON	35 UNISON	35 UNISON	35 UNISON

FACTORY PROGRAM #:	NAME:	MOD-WHEEL:	PARAMETERS	VALUE
96	Perclusive wind - unison			
97	Percussion 3 - unison			
98	Alien - unison			
99	Alien wind - unison			
NOTES:				
PARAMETERS (Values are 00 unless otherwise noted)				
OSCILLATOR				
00	COARSE FREQUENCY	48		
01	FINE FREQUENCY		41	
02	GLIDE RATE	03		15
03	ENVLOPE AMOUNT	02		
04	INVERT	01		01
05	ATTACK	01		01
06	DECAY	02		12
07	SUSTAIN	11		
08	RELEASE	07		12
09	TRIANGLE WAVE	01		
10	PULSE WAVE	01		
11	PULSE WIDTH	26		
12	LFO			
13	FREQUENCY		08	
14	PROG AMOUNT			06
15	TRI/SQUARE WAVE			
FILTER				
18	CUTOFF FREQUENCY	18		
19	RESONANCE	38		69
20	ENVLOPE AMOUNT	03		63
21	INVERT	01		
22	ATTACK	02		
23	DECAY	02		
24	SUSTAIN	09		
25	RELEASE	26		
26	LFO		01	
27	KEYBOARD			01
28	OSC TRI MOD AMT	63		
AMPLIFIER				
30	ATTACK	05		
31	DECAY	15		15
32	SUSTAIN	15		15
33	RELEASE	15		15
34	VOICE VOLUME	12		09
35	UNISON	01		01

15 YOUR PROGRAMS

NUMBER NAME/DESCRIPTION

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SCI SIX-TRAK

PROGRAM NUMBER:

DESCRIPTION:

MOD-WHEEL:

NOTES:

<u>PARAMETERS</u>	<u>VALUE</u>
<u>OSCILLATOR</u>	
00 COARSE FREQUENCY	_____
01 FINE FREQUENCY	_____
02 GLIDE RATE	_____
03 LFO	_____
04 ENVELOPE AMOUNT	_____
05 INVERT	_____
06 ATTACK	_____
07 DECAY	_____
08 SUSTAIN	_____
09 RELEASE	_____
10 SAWTOOTH WAVE	_____
11 TRIANGLE WAVE	_____
12 PULSE WAVE	_____
13 PULSE WIDTH	_____
14 LFO	_____
<u>LFO</u>	
15 FREQUENCY	_____
16 PROGRAMMED AMT	_____
17 TRI/SQUARE WAVE	_____
<u>FILTER</u>	
18 OSC/NOISE MIXER	_____
19 CUTOFF FREQUENCY	_____
20 RESONANCE	_____
21 ENVELOPE AMOUNT	_____
22 INVERT	_____
23 ATTACK	_____
24 DECAY	_____
25 SUSTAIN	_____
26 RELEASE	_____
27 LFO	_____
28 KEYBOARD	_____
29 OSC TRI MOD AMT	_____
<u>AMPLIFIER</u>	
30 ATTACK	_____
31 DECAY	_____
32 SUSTAIN	_____
33 RELEASE	_____
34 VOICE VOLUME	_____
35 UNISON	_____

SCI SIX-TRAK

PROGRAM NUMBER:

DESCRIPTION:

MOD-WHEEL:

NOTES:

<u>PARAMETERS</u>	<u>VALUE</u>
<u>OSCILLATOR</u>	
00	COARSE FREQUENCY _____
01	FINE FREQUENCY _____
02	GLIDE RATE _____
03	LFO _____
04	ENVELOPE AMOUNT _____
05	INVERT _____
06	ATTACK _____
07	DECAY _____
08	SUSTAIN _____
09	RELEASE _____
10	SAWTOOTH WAVE _____
11	TRIANGLE WAVE _____
12	PULSE WAVE _____
13	PULSE WIDTH _____
14	LFO _____
<u>LFO</u>	
15	FREQUENCY _____
16	PROGRAMMED AMT _____
17	TRI/SQUARE WAVE _____
<u>FILTER</u>	
18	OSC/NOISE MIXER _____
19	CUTOFF FREQUENCY _____
20	RESONANCE _____
21	ENVELOPE AMOUNT _____
22	INVERT _____
23	ATTACK _____
24	DECAY _____
25	SUSTAIN _____
26	RELEASE _____
27	LFO _____
28	KEYBOARD _____
29	OSC TRI MOD AMT _____
<u>AMPLIFIER</u>	
30	ATTACK _____
31	DECAY _____
32	SUSTAIN _____
33	RELEASE _____
34	VOICE VOLUME _____
35	UNISON _____