



O P E R A T I N G M A N U A L
F O R T H E

EVS-1

A N D E D I T O R / L I B R A R I A N
S O F T W A R E

EVS-1 MULTITIMBRAL SYNTHESISER MODULE

USER HANDBOOK

IMPORTANT

PLEASE DO NOT SWITCH UNIT ON AND OFF QUICKLY. UNIT MUST BE SWITCHED ON FOR AT LEAST 10 SECONDS TO ALLOW FOR CORRECT INITIALISATION.

INTRODUCTION

Congratulations on your purchase of the EVS-1. It is a highly sophisticated electronic MIDI synthesiser, but in order to ensure correct and safe operation, please take note of the following points.

Only use the EVS-1 with the power unit supplied and ensure that the mains voltage requirement shown on the power unit matches that of your area. Unplug the power unit from the mains when the unit is to be left unused for any length of time.

There are no user serviceable parts inside the EVS-1 and any unauthorised repairs or tampering will invalidate the warranty. In case of difficulty, contact your dealer or authorised service centre.

Should the EVS-1 require cleaning, use only a damp cloth with a drop of washing-up liquid - do not get the unit wet and do not use thinners or solvents of any kind as these will attack the finish.

As with any electronic equipment, try to avoid using the unit in excessively dusty environments and avoid contact with moisture.

OVERVIEW

The EVS-1 is a 16-voice, multitimbral synthesiser expander module capable of playing up to 8 different synthesiser sounds simultaneously including the on-board PCM drum sounds.

Each of the 8 parts, termed Banks, may be set to respond to a different MIDI channel or you may group two or more Banks to the same MIDI channel to achieve sound layering. Alternatively, you can create a whole series of GROUPS and step through these using MIDI program changes.

The maximum polyphony is 16 notes, though a cascade function is included allowing two or more EVS-1s to be linked to give upwards of 32 note polyphony. There are also alternative Key Modes which determine how the unit will respond when the maximum polyphony is exceeded.

At the heart of the system is a very sophisticated digital signal processing system which enables the EVS-1 to generate 16-bit sounds with a 44.1 kHz sampling rate - the same high specification as compact disk. Control is possible only via MIDI which is used both for performance and editing. Standard MIDI In, Out and Thru sockets are provided on the rear panel.

The unit contains 100 sound memories or patches, the first 20 being programmable and the last 80 being factory presets. Programming of the user sounds is achieved using the enclosed Atari sound editing and librarian software which provides a low cost means of storing an indefinite number of patches.

This will run on any Atari ST series computer, the 1040ST being the most popular for music software applications. Included on the editor disk is a further selection of library

sounds which may be used as they are or further modified. Software is also available for the Apple Mac and IBM PC, and for these machines, a MIDI interface is required.

In order to maintain the maximum flexibility, the EVS-1 is entirely software driven and offers the advantage of algorithmic synthesis using a variety of methods including FM (Frequency Modulation), PM (Phase modulation), WM (Width Modulation) and Ring Modulation, often in combinations impossible with other types of synthesiser. This open-ended approach frees the EVS-1 from the tonal limitations of single-method synthesis and gives it the ability to emulate the sounds of both modern digital synthesisers and traditional analogue instruments.

CONTROL

Any MIDI keyboard may be used to control the EVS-1, although to make full use of all the exciting possibilities the EVS-1 has to offer, it should be velocity sensitive, have both bend and modulation depth controllers, and should transmit aftertouch information. Of course the EVS-1 will work with less sophisticated keyboards, but it must be understood that it can only respond to the MIDI information it receives; if your keyboard doesn't transmit aftertouch, for example, then the EVS-1 won't be able to use the aftertouch function in any of its patches.

Using the EVS-1 with a MIDI sequencer unlocks its true potential allowing it to play several musical parts at the same time. The eight Banks are arranged into Groups where each Bank may be assigned to any MIDI channel. Bank sounds set up within a Group may be changed remotely from the sequencer using MIDI program change messages.

Alternatively, a series of Groups can be created and then

selected remotely, again using MIDI program change commands. Also user programmable is the pan position and level of the eight individual parts so your EVS-1 doesn't just synthesise sounds, it mixes them too!

The PCM drum and percussion sounds are pre-panned to realistic positions within the mix and mapped out to keyboard notes in a manner corresponding with the mapping of major drum machine manufacturers. The drum sounds are stored as synth patches 98 and 99, the second patch containing an alternative mapping system that allows a choice of tunings for the individual drums. The pan positions may be modified by the user if wished.

MIDI

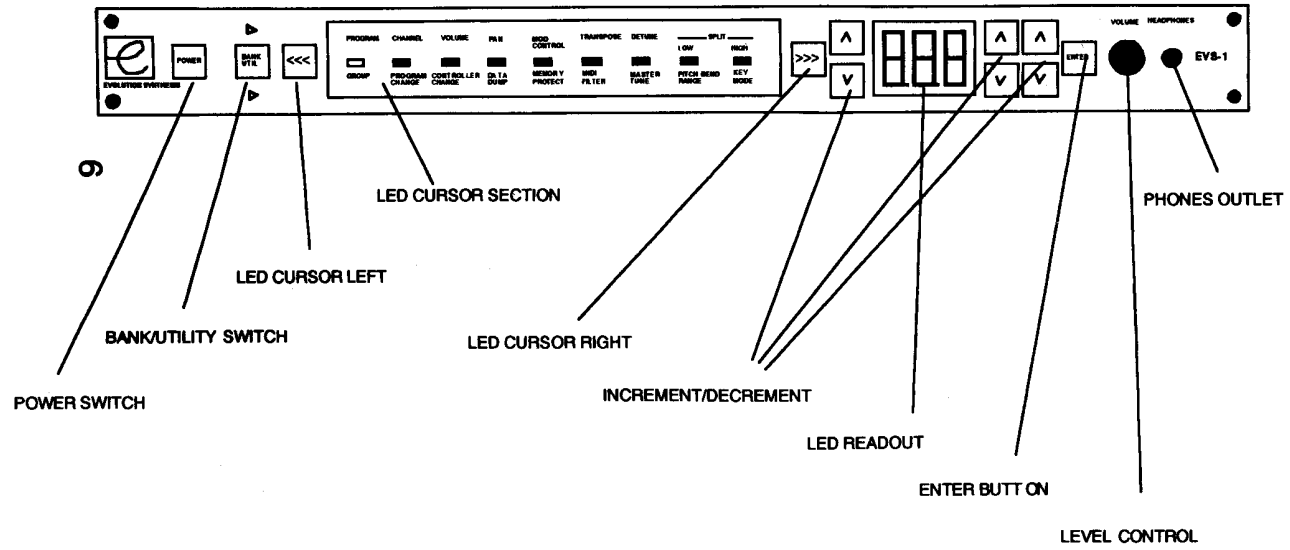
The EVS-1 has the full MIDI complement of In, Out and Thru sockets for use in performance and editing. The MIDI In socket should be connected to the MIDI Out of the controlling keyboard or sequencer.

MIDI Thru is used to pass the incoming MIDI data to any other synthesisers, samplers, drum machines or MIDI controlled effects that you may wish to use in your system. This so-called 'daisy chaining' of units is suitable for small MIDI systems but chains of more than four units linked in this way may cause corrupted data which will result in erratic behaviour such as stuck or missing notes. In such cases, a MIDI Thru box is to be recommended with either individual units or short chains of MIDI equipment connected to each output.

CONTROL PANEL

The control panel of the EVS-1 has been designed with simplicity in mind and the use of multi-function buttons has been reduced to an absolute minimum.

FRONT PANEL LAYOUT



Different operational modes are indicated by the nine status LEDs, and the functions are arranged into two sets: one printed above the LEDs and the other below. To switch from one set to the other, the Bank/Util key is used and the arrow LEDs above and below this button indicate whether the upper or lower set has been selected. An arrow key is provided at each end of the row of status LEDs allowing the modes to be stepped through in either direction. This is a very intuitive system designed to minimise reliance on the manual.

FRONT PANEL CONTROLS

POWER Turns the EVS-1 on and off

BANK/UTIL Switches between Bank Mode and Utility Mode. The functions above the status LEDs refers to Bank mode and the functions below to the Utility mode.

<<< Moves LED cursor (to denote parameter) left

>>> Moves LED cursor (to denote parameter) right

INC/DEC Inc/Dec keys for left LED digit

INC/DEC Inc/Dec keys for centre LED digit

INC/DEC Inc/Dec keys for right LED digit

ENTER Stores certain Data entries and confirms functions

The EVS-1 has 2 arrow shaped LEDs above and below the BANK/UTIL button. These LEDs show whether the EVS-1 is in Bank or Utility Mode and therefore which row of parameters to refer to. The BANK/UTIL button toggles between these two modes.

On the right of the EVS-1 front panel is the main volume knob which controls the overall volume on both the stereo outputs and also the headphone jack situated to its right.

REAR PANEL

The rear panel of the EVS-1 accommodates the MIDI sockets, the two output jacks and the power adaptor input socket.

- OUTPUTS** The two 1/4" mono jack sockets marked Left/Mono and Right are the signal outputs used to feed a mixer or amplifier. To use the EVS-1 in mono, use the Left/Mono jack socket only.
- MIDI** The MIDI sockets are labelled OUT, IN and THRU. These are standard 5 pin MIDI sockets and carry the MIDI information to and from the EVS-1.
- POWER** The socket for the power adaptor. This is designed to accept 9v AC at 7VA and should only be used with the power supply provided.

OPERATION

The EVS-1 is best visualised as 8 separate MIDI synthesisers in one box. These 8 separate synthesisers are referred to as BANKS and are numbered 1-8. When in Bank mode, the current BANK number is always displayed on the left of the LED display.

Bank mode on the EVS-1 is signified by the red arrow shaped LED above the BANK/UTIL button. If this LED is not illuminated press the BANK/UTIL button once to return to BANK mode. The parameters that can be altered within a BANK are as follows:

- SOUND** Selects the sound patch to be used by the BANK in the range 0 to 99. Patches 0 to 19 are programmable using the Atari editing software while patches 20 to 99 are presets and cannot be changed. Patches 98 and 99 give access to the PCM drum and percussion sounds.
- CHANNEL** Sets MIDI channel 1 to 16. 0=Omni
- VOLUME** Sets volume of selected sound in the range 0 to 99.
- PAN** Sets the pan position of the sound in the overall mix when the stereo outputs are used. If the mono output is used, the pan setting is irrelevant. The pan range is from -7 Hard left, 0 Centre to 7 Hard right.
- MOD CONTROL** Allows the available MIDI control functions to be switched on or off.

- TRANPOSE** Allows the sound to be transposed by up to one octave in either direction in one semitone steps.
The range is from -12 to 12.
- DETUNE** Detunes the sound for fine tuning or chorus effects when layering with other sounds. The range is from -19 to 19.
- LO SPLIT** Sets lower note limit in the range C0 to F#6.
- HI SPLIT** Sets upper note limit in the range C0 to F#6.

To select a parameter within a bank, ensure that the EVS-1 is in BANK mode, then use the <<< left and >>> right cursor keys to move the LED cursor to its far left position beneath the word SOUND. The EVS-1 display should now show the BANK number in the left hand window and the program number of the sound in the right hand two windows.

The INC/DEC keys to the left of the LED display are used to change Bank number. The INC/DEC keys to the right of the LED display are used to change the parameter value - the leftmost of the two in increments of ten, the right in units. These buttons may be used to access any of the EVS-1's 100 sounds.

MIDI CHANNEL

To change the MIDI channel used to control the currently selected BANK, use the >>> right cursor key to move the LED cursor to beneath the word CHANNEL. The EVS-1 display now shows the BANK number to the left of the display and the MIDI channel to the right. The INC/DEC keys may be used to select any MIDI channel in the range 0 to 16. Selecting 0 puts the bank in Omni mode which means that it will respond to all incoming MIDI channels.

For sequencer use, it is most logical to assign a different MIDI channel to each of the eight BANKS, though some BANKS may be set to the same MIDI channel in order to allow sounds to be layered. Sounds may be assigned to the BANKS at this stage but may be changed remotely by sending new MIDI program changes from the sequencer. These must be sent on the MIDI channel corresponding to that of the BANK you wish to change.

VOLUME

To change the level of sound, use the >>> right cursor key to move the LED cursor to beneath the word VOLUME. The EVS-1 display now shows the current BANK in the left of the display and the volume level (0 to 99) to the right. The INC/DEC keys may be used to change the volume setting at this time.

PAN

Moving the LED cursor to PAN enables the sound to be panned to any position in the stereo output mix. The left hand side of the display shows the currently selected bank and the right hand numerals show the pan value which can be set in the range -7 to 7 where -7 is hard left and 7 is hard right. A value of 0 places the sound in the centre of the mix.

MOD CONTROL

Moving the LED cursor to CONTROL allows various MIDI controlled parameters to be turned on or off. The centre character of the display is used to display the modulation parameter currently selected and the options are:

U	Velocity
n	Mod Wheel
C	Controllers
A	Aftertouch
b	Pitch bend
L	LFO Output

These abbreviations have been made as obvious as possible within the limitations of the design format and they should take little remembering.

The right digit of the LED display shows the status of the selected Controller where 0= OFF and 1= ON.

The left pair of INC/DEC keys is used to scroll through the modulation sources.

For example; when the velocity is ON (1) the selected sound is touch sensitive. When OFF (0) the sound is no longer touch sensitive.

This is the same for all the modulation sources available. This parameter becomes very useful in split keyboard situations where you have, for example, a piano on the upper keys and a bass on the lower keys. It is possible to disable the Mod wheel and Pitch bend from the piano so these controllers only effects the bass voice. This way, the piano can sound normal while you add pitch bend and modulation to the bass voice.

TRANSCOPE

Moving the LED cursor to TRANSCOPE allows the sound to be transposed in semitone steps over a range -12 to 12 semitones. The left hand side of the display shows the BANK you are working on while the TRANSCOPE range is indicated by the right hand pair of digits.

DETUNE

Moving the LED cursor to DETUNE allows fine detuning of the sound. The Detune parameter is similar to the Transpose parameter but works in much finer steps. The INC/DEC buttons to the right of the LED display enables the selected sound to be detuned over 19 steps up or down. This parameter is very useful in fattening up voices when playing two sound together with a slight detune on one sound. The effect can be further enhanced by panning the two sounds hard left and hard right to produce a stereo effect.

SPLIT

Use of the SPLIT facility allows note ranges to be set for different sounds enabling the user to set up a keyboard split where two or more sounds may be allocated to different sections of the keyboard. For example; a simple two-way split might have bass on the lower two octaves of the keyboard and a melody sound on the higher octaves.

Selecting first LOW SPLIT, The display shows the currently selected BANK to the left and the lowest note that will be played in that bank to the right. In this mode a dot between the note letter and note number denotes a sharp. The INC/DEC keys increment through the notes from C0 to F#6 where the left pair of INC/DEC keys increment in octaves and the right in semitones.

HIGH SPLIT works in exactly the same way but sets the highest note that the BANK will play. Splits may be set up in any way desired by the user which includes overlapping sections, multi-way splits and so on.

GROUPS

Once one or more BANKS have been set up, these may be stored as part of a GROUP. Essentially, a GROUP can hold up to 8 BANKS and may be selected over MIDI using a single program change command on the System channel chosen in the Utility page menu. THE EVS-1 can hold up to 20 GROUPS.

The first display character resembles a letter G to indicate that the EVS-1 is in GROUP mode and the rightmost two digits denote the GROUP number from 0 to 19. The INC/DEC keys are used to select the GROUP number in which the previously edited bank is to be stored. Pressing ENTER will store the BANK in the currently selected GROUP and will overwrite any previous settings for that BANK.

At this point, the EVS-1 will return to Bank mode ready for you to set up a second Bank. Store each BANK in the GROUP by pressing ENTER which will return the unit to GROUP mode. The GROUP display always reverts to the same number making it very quick to load BANKS into GROUPS.

BANKS may be set up one at a time and then loaded into the desired group or you can set up all 8 BANKS first, then transfer them to a GROUP in quick succession. The latter approach is probably quickest.

The EVS-1 front panel makes checking your Bank set-ups very simple. Because the left digit on the LED display always shows the Bank number it is very easy to either

use the <<< left and >>> right cursor keys to step through all the parameters of one Bank or, use the INC/DEC keys to the left of the LED display to scroll through all eight Banks. This is a quick way of checking, for example, that the MIDI channel assignments and other parameters are correct for each BANK.

Should you wish to amend a parameter within a group, simply go to the parameter you wish to change in the correct Bank, change the value and press ENTER. The display will change to the Group Mode with the last selected Group number in the display. Use the INC/DEC keys to select the correct group number and press ENTER again which will store the information and return you to BANK Mode.

UTILITIES

The lower row of parameters are the Utilities and cover:

GROUP
PROGRAM CHANGE
CONTROLLER CHANGE
DATA DUMP
MEMORY PROTECT
MIDI FILTER
MASTER TUNE
PITCH BEND RANGE
KEY MODE

The lower row of parameters are accessed by pressing the BANK/UTIL button to illuminate the red arrow shaped LED below the button. All the parameters in this mode are Global; they affect all Banks within the EVS-1.

GROUP

The loading of BANKS into GROUPS has already been covered, but each GROUP has further parameters which require setting up. When GROUP is selected using the LED cursor, the INC/DEC buttons are used to select GROUP 0 to 19. The left hand INC/DEC buttons are inoperative in this mode.

PROGRAM CHANGE

THE EVS-1 contains a Program Change Table which allows incoming patch changes to be assigned to different internal patches. This is extremely useful when you have two synths MIDI'd up and you need to choose sounds from the EVS-1 to layer with those of the controlling synth. Without a program table facility, you'd have to move all the sounds around in one of the synths so that they corresponded to the program changes in the other - clearly tedious.

Moving the cursor to PROGRAM CHANGE, the display will read OFF if the Program Change Table is switched off. In this case, incoming patch changes will call up the corresponding sounds as expected. For example, if a program change number of 45 is sent, the EVS-1 will go to Sound 45 in the currently selected Bank.

The Program Change Table enables you to send a program change command of one number and the EVS-1 to select a different numbered Sound. You may, for example, send a program change command of 45 but want the EVS-1 to select Sound 10 or even Group 10. The EVS-1 enables this to be achieved very simply.

On first selecting the Program Change Utility, the display shows the word OFF. Use the INC/DEC keys to select the program change number the EVS-1 will receive from your keyboard or sequencer. When you have done this press

the ENTER button. The display will now change to S xx, where S denotes Sound and xx is the sound number you selected. You can now use the INC/DEC keys to the right of the LED display to choose the EVS-1 sound you want your program change number to address. The INC/DEC keys to the left of the LED display enable you to toggle between S for Sound and G for Group. In Sound mode, the 8 BANKS are controlled individually, just as though they were eight independent synths. In GROUP mode, a single patch change can be used to select any one of the 20 groups allowing all the BANKS to be changed at once.

When you have selected either a Sound or a Group number, press the ENTER key again to store this information. The EVS-1 display will return to the program change number you last selected in readiness for you to enter another number.

With the Program Change Table ON, all Sounds and GROUPS initially default to their corresponding program change number. In other words, you do not have to specify a Sound for every incoming Program Change command if you only want to re-address one Sound. Program Change numbers 100-127 refer back to Sounds 0-27.

CONTROLLER CHANGE

By selecting Controller Change with the LED cursor, it is possible to assign any keyboard controller to the Modulation Matrix in the EVS-1. This matrix is simply a flexible routing system that allows a variety of modulation sources (such as LFOs, envelopes, velocity, aftertouch and so on), to be routed to various parameters within the current sound patch such as vibrato depth, envelope amplitude and so forth. These parameters and their creative potential will become more apparent when you

explore the editing software. The INC/DEC keys are used to select the controller number in the value range 0 to 127.

For example; setting the value to 6 will assign controller 6 (Data Slider) to the Modulation Matrix in the EVS-1. If you refer back to the CONTROL parameter in Bank Mode, you will remember that one of the parameters that can control modulation within the EVS-1 is a Controller. The Controller Change utility enables the user to specify any incoming Controller.

DUMP

Moving the LED cursor to DATA DUMP enables information to be dumped from one EVS-1 to another or to a data storage device, via MIDI. The S on the left of the LED display shows we are currently in Sound Dump mode and the number to the right indicates the sound to be dumped. The options available in this utility are:

S xx SINGLE SOUND DUMP
S AL BULK DUMP OF ALL SOUNDS
G xx SINGLE GROUP DUMP
G AL BULK DUMP OF ALL GROUPS
C xx SYSTEM CHANNEL

The INC/DEC keys to the left of the LED display enables scrolling through the Sound and Group options while the INC/DEC keys to the right of the LED display allow selection of a Sound or Group number when in Single Dump Mode. Pressing the ENTER key initiates the selected dump. The System Channel within this utility makes it possible to give the EVS-1 a specific channel to send and receive its dump information on. This is very useful in setups where there is more than one EVS-1 expecting a MIDI data dump.

Although System Exclusive information includes a manufacturer and product identification code, it does not carry a code that makes it possible to identify one EVS-1 from another. The System Channel on the EVS-1 enables each unit to be allocated its own individual channel and it is this channel that initiates Group patch changes. The way this works is that, on the receipt of a program change command, the EVS-1 first checks to see if any banks are assigned to the incoming message's channel. If not, this is read as a Group patch change if it is on the System channel. If a Bank channel is set to the same number as the System channel, then the command is read as a sound number selection for that Bank.

MEMORY PROTECT

Selecting MEMORY PROTECT causes the display to read either YES or NO. Any of the three sets of INC/DEC buttons may be used to toggle between yes and no. When Memory Protect is ON, the EVS-1 will not store Bank parameters and incoming MIDI data dumps will be ignored. When using the EVS-1 editing software, the Memory Protect must be OFF to save edited voices back into the EVS-1.

MIDI FILTER

Selecting MIDI filter enables the user to filter out certain incoming MIDI information causing the EVS-1 to ignore it. The types of data that can be filtered are displayed as follows:

U VELOCITY
P PROGRAM CHANGE
C CONTROLLERS
A AFTERTOUCH
b PITCH BEND
S SYSTEM EXCLUSIVE

The INC/DEC keys to the left of the LED display enable you to scroll through the types of data to be filtered. The filter status is displayed as 0=filtered, 1=unfiltered. The INC/DEC keys to the right of the LED display toggle between 1 and 0.

MASTER TUNE

On selecting MASTER TUNE, the EVS-1 shows a display of 0 when the EVS-1 is at its normal pitch of A3 = 440Hz. This may be changed using the INC/DEC keys to the right of the LED display from -19 to 19. This effects all notes played on the EVS-1 in all BANKS.

PITCH BEND RANGE.

Selecting PITCH BEND RANGE allows the user to set the sensitivity of the pitch bend function. The display shows the range (in semitones) of the Pitch Bend and this can be changed using the INC/DEC buttons to the right of the LED display. The range is from 0 (no effect) up to 12 (one octave pitch bend).

KEY MODE

Selecting KEY MODE enables the user to decide how the EVS-1 will respond when asked to play music that exceeds its 16-note polyphony.

The options are displayed as:

Ln1
Ln2
Fn1
Fn2
CAS

Ln1 gives last note priority and does not steal notes from other Banks.

Ln2 uses the oldest note played no matter which Bank it is from.

Fn1 steals the most recent note played from the current Bank.

Fn2 steals the most recent note from any Bank.

CAS is a cascade function where notes exceeding the 16 note polyphony of the EVS-1 are sent out of the MIDI Out port where they can be received by a second EVS-1.

SOUND GENERATION

The EVS-1 creates its sounds using a variety of digital signal processing techniques to manipulate the waveforms stored in its memory bank. There are 32 waves in all including basic waves such as sine, square and sawtooth, electronically generated waves and single waves sampled from real instruments.

Each sound is based around one of the internal algorithms which can be thought of as a collection of oscillators, and envelope amplifiers patched together in specific ways. By changing the envelope and oscillator parameters, a huge variety of sounds may be produced from each algorithm.

Some algorithms make use of FM or Frequency Modulation where one oscillator is used to modulate the pitch of another. The degree of modulation will change according to the envelope and modulation depth of the modulating oscillator, and it is possible to create harmonically rich sounds using this method of synthesis. Early FM synthesisers allowed only the use of basic sine waves, but many of the EVS-1 algorithms allow any of the available waves to be used giving a much wider scope for sound creation.

Also available is phase modulation where one oscillator is used to modulate the phase of another. In subjective terms, the result is not dissimilar to that of FM except that the harmonic structures are more controllable and less likely to produce dissonant overtones.

In addition to these powerful techniques and their combinations, there are several algorithms unique to the EVS-1, each of which has been specially developed to exploit a particular facet of the synthesis system. These algorithms include such processing techniques as

feedback, ring modulation, waveshaping and width modulation. The easiest way to explore these algorithms is to select existing sounds that use the algorithm you wish to explore and then experiment with the parameters.

For beginners, algorithm 13 is the easiest to start with as it simply adds three different waves, each of which may be treated with a different envelope and detuned. This is a useful patch for creating rich pad and typically 'analogue' sounds.

Sounds can only be edited using the software provided, but don't worry about messing up the user sounds while you get to know the machine. All the original sounds can be recalled whenever you wish by means of the initialisation procedure shown below. This also causes the machine to enter the self test mode which produces diagnostic information for the benefit of the service engineer.

INITIALISATION

The EVS-1 may be fully initialised by holding down the <<< key and BANK/UTIL button while switching on the power. At this stage, all the LEDs will flash. The EVS-1 can be returned to normal mode at this point by powering off and on again at which point the factory default sounds will be reinstalled. Otherwise, the test sequence will continue.

The EVS-1 will step through all the LEDs in turn to check for proper operation and pressing the ENTER key will put the EVS-1 in TEST mode.

Pressing ENTER again initiates the KEY TEST mode and the numeric display will read 10. As you depress the ten keys on the front panel, excluding ENTER and POWER, the display will count down from 10 to 0. An audio signal is produced at the output as each key is pressed.

Pressing ENTER again gives the display value 16 and produces triangle wave from each of the 16 voices. This enables a test engineer to ensure that all 16 voices are functioning.

Pressing ENTER again gives the display value Sin and produces a sine wave. This enables a test engineer to check for distortion.

Pressing ENTER again puts the unit into MIDI TEST mode and to complete this test, you must connect a MIDI lead from the MIDI In socket of the EVS-1 to its MIDI Out. A display of 0 is shown until the message sent from the Out socket is received at the In socket at which point the display will change to 85.

Pressing ENTER again returns the unit to normal operation.

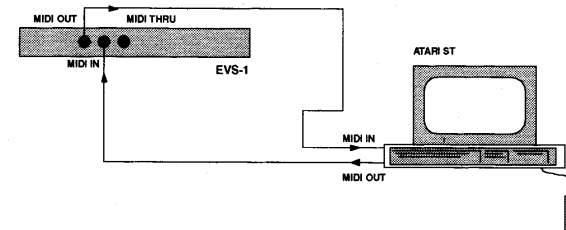
ERROR MESSAGES

Er1	ROM fault.
Er2	CPU RAM fault.
Er3	Sound chip RAM fault.
Er4	Sound chip crystal slow.
Er5	Sound chip crystal fast.
Er6	Waveform data corrupted.
Er7	Unrecognised serial input.

SOUND EDITING

In order to edit the sounds in the EVS-1, you will require an ATARI ST 520, 1040 or Mega computer and two MIDI leads. Sounds may then be auditioned using the Atari keyboard simply by pressing ALT and number keys 1 to 7. Number keys 8 and 9 play a major and minor cord respectively while key 0 switches all notes off.

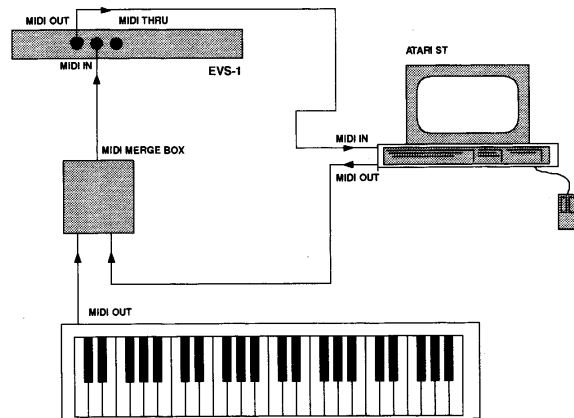
The MIDI Out of the ATARI computer must be connected to the MIDI In of the EVS-1 and the MIDI Out of the EVS-1 to the MIDI In of the computer. The MIDI Thru on the EVS-1 is not used at this point. The accompanying diagram shows this wiring arrangement.



EDITING WITHOUT A KEYBOARD

If you have access to a MIDI Merge box, Then you can audition the sounds using your master keyboard. The MIDI In of the EVS-1 is fed from the MIDI Out of the Merge Box and the MIDI Out of the EVS-1 is connected to the MIDI In of the computer. The MIDI Out from the computer feeds one input of the Merge Box while the MIDI Out from the computer feeds the other. This setup is illustrated in the accompanying diagram.

Note: Some MIDI Merge Boxes are unable to cope with System Exclusive data and may be unsuitable for this application.



EDITING USING A THRU BOX

PAGE SYSTEM

The editing system not only allows the 20 user sounds to be modified or re-created from scratch, it also incorporates a sound library and the ability to set up groups without recourse to the front panel of the EVS-1. There are nine pages in all including the Help page which may be called up at any time. This displays information relevant to the page currently in use including keyboard shortcuts. The following section will cover loading the program, using the mouse to select and change parameters, and an overview of each page.

LOADING AND OPERATION

The computer disk provided with your EVS-1 contains the editing program and a library containing sample sounds. To use the editing software, it is assumed that you have a basic working knowledge of your computer and are familiar with the use of the mouse.

Insert the program disk, label side up, into your computer either before switching on or immediately after switching on. Double clicking on disk icon A will show the disc contents window which can be opened up to full size by clicking on the icon in its top right hand corner if so desired. Double clicking on the EVS12.PRГ box will load the program.

During the loading, you will see a message informing you that the computer is communicating with the expander. If your MIDI connections are correct and the EVS-1 is powered up, this will shortly be replaced by the Sound page. In the event of an incorrectly connected system, an error message will be shown to inform you that communication was unsuccessful. This includes an option to retry communication. If you are still unsuccessful at this point, recheck your MIDI connections and ensure that the MIDI cables are functional.

The display loads up as white on black, but if you prefer black on white, simply hit the Space bar on your computer.

Using the program is fairly intuitive once the basic operating philosophy is understood. Any function or parameter can be selected using the left mouse button at which point it is hi-lited to show that it is ready for adjustment. Pressing the left mouse button will cause values to count down while pressing the right button will cause them to count up. It is impossible to exceed the range of values allowed so just keep the mouse depressed in order to see how far up or down a certain parameter will go. Note that some parameters also allow negative values to be entered simply by counting down below zero. Selecting a new parameter deselects the previous one.

Menus selected using the left mouse button can be dismissed using Escape, and all nine program pages are displayed along the top bar of the current page. Pages may be changed by clicking on a page or by keying in the first letter of the page name. Entries which require names to be typed in must be confirmed by hitting Return. If selected by mistake, these may be dismissed without change by hitting Return.

Quitting the program is achieved by hitting Q or selecting Quit from the menu bar, at which point a dialogue box appears asking if you are sure you want to quit. If you wish to quit, press Y for yes, otherwise press N for no at which time the program will resume from where you left off.

Some operations require the memory protect function on the EVS-1 to be turned off. If it is not turned off, a dialogue box will appear asking you whether you would like to ignore it in which case it will be temporarily turned off. Answer Y to continue or N to leave the protection on in which case the transfer will be aborted.

Function key 5 allows any changes to the sound to be undone and function key 6 allows an edited sound to be compared with the original.

SOUND PAGE

Page 1 is the Sound page which is used in conjunction with page 2 for selecting and editing sounds. It allows you to choose an algorithm and set all the LFO parameters. It also contains the Modulation Source/Destination Matrix and the Node list which allows envelope levels to be set, oscillators to be transposed and detuned, and so forth.

Sound									
Envelope		Group		Utility		Library		Dump	
Program		Remote		Quit		Help			
Sound 0 SynthBrass				Evolution Synthesis					
Algorithm				Node		Value 1		Value 2	
				Osc1		Detune		3 Detone BR	
				Osc2		Detune		-3 Detone 12R	
				Amp1		Level		0	
				Amp2		Level		0	
				FB1		Level		0	
				FB2		Level		0	
				Wave1		Wave		22	
				Wave2		Wave		0	
23 FEEDBACK 1				Transpose		0			
LFO				Modulation		Destinations			
				Sources		Amp1		FB1	
						C 0>		C 0>	
						C 0>		C 0>	
Wave				Sine		Sine			
Delay				11		8			
Speed				26		8			
Node1				Osc1		Osc2			
Depth1				3		2			
Node2				Osc2		FB2			
Depth2				0		5			
				Key Break					
				Key Depth					
				Velocity		100		10 90	
				Aftertouch					
				Controller					
				Mod Wheel				50	

SOUND

At the top left hand corner is the Sound box which shows which sound is currently active. Selecting the number will show a list of all 20 sounds, any one of which can be selected by pointing and clicking with the mouse. Clicking on the sound name in the Sound box allows the sound to be renamed after which you must press Return.

ALGORITHM

The Algorithm box shows a block diagram of the algorithm currently in use. Clicking anywhere in this box will bring up a full list of the available algorithms from which any one may be selected.

If you are unfamiliar with FM synthesis, it is recommended that you start by examining library patches and trying the effects of various parameter changes. Algorithm 13 is the easiest to work with as it uses simple additive synthesis where any three waveforms can be combined and treated with separate envelopes.

LFO

The LFO box in the lower left hand corner of the Sound page allows the LFO waveform to be selected for each of the two LFOs. Each of these may feed two different nodes - for example: feeding the LFO to the oscillators is used to create vibrato effects, whereas routing it to an amplifier will cause a tremolo effect where only the level fluctuates up and down. Depending on the algorithm chosen, other nodes may become active so do step through all the choices to see what is available.

To create vibrato on an FM patch, the LFO must be routed to all oscillators. LFO can be applied to individual oscillators, but in this case, the harmonic structure will change - you will not get a simple vibrato effect.

NODE

The upper right hand corner of the screen is occupied by the Node box which is used to set transpose and detuning values for the oscillators, levels for the envelope amplifiers, and waveforms for the oscillators where the current algorithm allows a choice.

Transposition is set using the Detone values and each of these is normally followed by a letter R to show that the oscillator is responding to the keyboard pitch. Clicking on the letter R will change it to F which causes the tuning to stay fixed regardless of what key is pressed. Detone allows the oscillators to be tuned by plus or minus 63 semitones in semitone steps.

The Amp level parameters are irrelevant on this page and serve only to show what nodes are available. Amplifier levels would normally be changed on the Envelope page using the Depth parameter.

Wave selection allows the user to select a waveform from the 32 available if the current algorithm permits. These are listed later in the manual and it is worthwhile exploring them all, especially the ones derived from 'real' samples. Because these are simply single cycles taken from a complex sound, they have a unique timbre which often allows their use in the creation of sounds totally unrelated to their origin.

If you find that you are unable to change the waveform selected, it is because the current algorithm requires specific waveforms to work properly.

MODULATION SOURCES

The bottom right hand box shows the modulation destinations along the top and the possible sources up the left hand side. If no connection is made, then a dot will

show at the intersection of the matrix corresponding to a value of zero.

Holding either mouse button down while pointing at either a dot or an existing value will cause the value to scroll up or down.

The Key Break sources allow sounds to be created that change with playing position on the keyboard. The Key Break note sets the limit points on the keyboard while the Key Depth value determines how much change there will be from the top to the bottom of the keyboard. The arrow symbol denotes which end of the keyboard the limit value applies to.

A common application is to use the Key Break facility to allow a bright sounding source to become more predominant at higher keyboard positions with, perhaps, another set to bring in a more mellow sound at lower registers. This simulates the natural behaviour of many acoustic instruments.

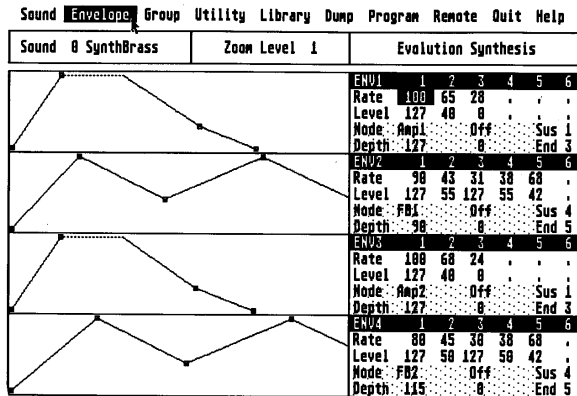
ENVELOPE PAGE

Moving to the Envelope page gives access to four separate envelope generators, each of which may have up to six steps. The number of steps are set by selecting the desired End and Sustain points. Each envelope may control up to two destinations, the most useful being amplifier level or oscillator frequency.

Because the envelopes can be used to set up modulation levels in FM patches, it is possible to set end values that don't return to zero. If you find that you have created a sound where the notes drone on forever, check that you haven't got level envelope that finishes in mid air! When assigned to an oscillator, the level value 64 corresponds to no pitch change. Higher values cause the pitch to increase and vice versa.

Rate sets the speed at which each section of the envelope progresses where the highest Rate value gives the fastest speed. Level sets the target level for each section of the envelope while Depth acts as a kind of master control scaling the whole envelope up or down.

The envelope graphics will reflect any change in value you make and may also be dragged into shape using the mouse. To do this, click on the box you wish to drag and then move to its new position. Clicking the mouse again will release the box. Once a sound has been edited, it may be stored to disk or directly into the EVS-1 using the Dump page. The sound should be named before saving.



GROUP

The Group page is a simple method of setting up Group parameters without using the EVS-1 front panel controls. This is fairly self explanatory as it follows the same system as the front-panel programming but without the need to step through the parameters.

The column labelled MOD actually shows which controllers the sound will respond to. These are abbreviated as: V Velocity, M Modulation Wheel, C Controllers, A Aftertouch, b Pitch Bend and L LFO Output. These may be selected or deselected by clicking on the corresponding abbreviations in the MOD column where upon the parameters at the bottom of the page will show the status of the Bank being worked on.

Sound Envelope Group **Utility** Library Dump Program Remote Quit Help

Group 8 Test Group

Bank	Sound	Chan	Volume	Pan	Mod	Transpose	Detune	Lo Split	Hi Split
1	0 SynthBrass	1	99	0	VNCABL	0	0	C 0	F# 6
2	1 BrassyOne	2	99	0	VNCABL	0	0	C 0	F# 6
3	2 Plinkety	3	99	0	VNCABL	0	0	C 0	F# 6
4	3 SynthL	4	99	0	VNCABL	0	0	C 0	F# 6
5	4 Vocal	5	99	0	VNCABL	0	0	C 0	F# 6
6	5 BrighBells	6	99	0	VNCABL	0	0	C 0	F# 6
7	6 Waves Bell	7	99	0	VNCABL	0	0	C 0	F# 6
8	7 MetalBrass	8	99	0	VNCABL	0	0	C 0	F# 6
Bank 1		Velocity	ON	Modulation Wheel	ON	Controller	ON		
Mod Control		Aftertouch	ON	Pitch bend	ON	LFO Output	ON		

UTILITY

The Utility page allows easy access to the MIDI Filter section of the EVS-1 and the Global Controls. The filter section comprises On/Off selection of MIDI data where Off causes it to be filtered out and ignored.

Global Controls allows values to be set for the parameters listed by clicking to select them and again to change their values.

Sound Envelope Group **Utility** Library Dump Program Remote Quit Help

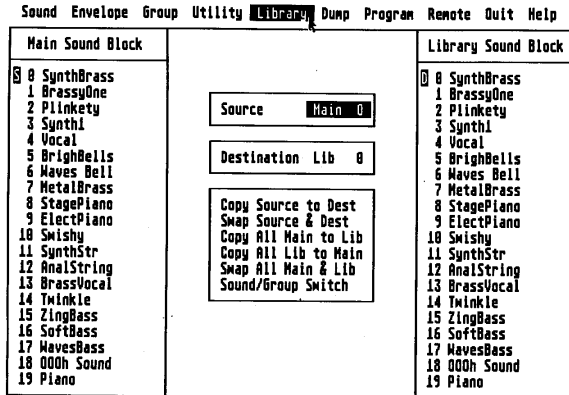
MIDI Filters		Global Controls	
Velocity	ON	Controller	6
Program Change	ON	System Channel	Omi
Controllers	ON	Master Tune	8
Aftertouch	ON	Pitch Bend Range	1
Pitch Bend	ON	Key Mode	Lnl
System Exclusive	ON	Memory Protect	ON

LIBRARY

The library facility of the EVS-1 allows the user to compile blocks of new or edited sounds which can be saved using the Dump page. By setting the S/D Source/Destination switches as desired in the Main Sound Block and Library Sound Block boxes, sounds may be transferred to and from the EVS-1 to the computer. When the Main Sound Block is set up as desired, it may be saved using the Dump page facilities.

Source and destination numbers are set up in the dialogue boxes in the centre of the screen - a first number of 1 in the source box makes the Main Sound Block the source while entering 2 makes the Library Sound Block the source. Sounds or Groups may also be selected with the mouse buttons where the left selects the source and the right the destination.

It is possible to place both the source and destination cursors in one block to allow sounds to be exchanged. Selecting any action shown in the lower centre dialogue box causes it to happen without the need to press Return.



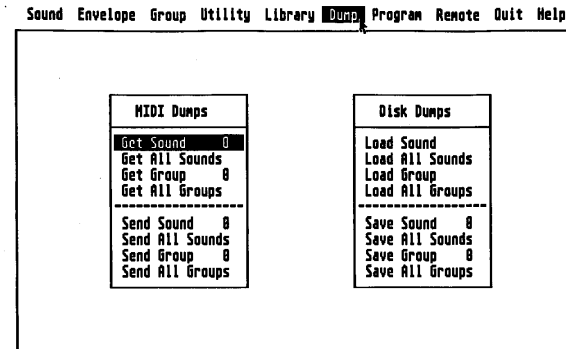
38

DUMP

The Dump page contains two dialogue boxes: one for MIDI Dumps and the Other for Disk Dumps. These facilities allow the sending and receiving of Sounds of Groups either as complete sets or individually. MIDI Dump is used to send and receive data stored on the computer, MIDI disk or a sequencer, while Disk Dumps uses the computer's own disk drive to store or retrieve the sound or Group information.

When a single sound is loaded into the EVS-1, it is loaded into the user memory position last selected. When Select All is used, all the user sounds are replaced. When selecting load or save to disk, the computer file menu comes up allowing new files to be named and existing ones to be selected. The same logic applies to saving and loading Groups.

Note that sounds or groups stored as single files can't be directly loaded using the Load All command - this is used purely to load sounds or groups that have been stored in sets.



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PROGRAM

The Program page shows a table of the internal patch numbers and the external MIDI program change number that will call them up. Setting the table up is a simple matter of scrolling through the Internal values using the mouse buttons until the desired table is created. The prefix S or G may be set to denote Sound or Group.

Sound Envelope Group Utility Library Dump **Program** Remote Quit Help

Program Change Table

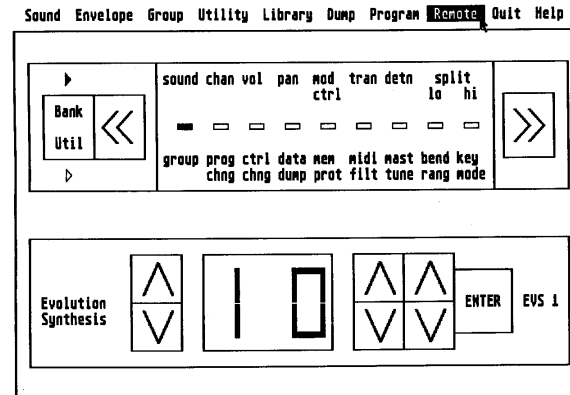
MIDI no.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Internal	S 0	S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8	S 9	S10	S11	S12	S13	S14	S15
MIDI no.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Internal	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31
MIDI no.	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
Internal	S32	S33	S34	S35	S36	S37	S38	S39	S40	S41	S42	S43	S44	S45	S46	S47
MIDI no.	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
Internal	S48	S49	S50	S51	S52	S53	S54	S55	S56	S57	S58	S59	S60	S61	S62	S63
MIDI no.	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Internal	S64	S65	S66	S67	S68	S69	S70	S71	S72	S73	S74	S75	S76	S77	S78	S79
MIDI no.	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
Internal	S80	S81	S82	S83	S84	S85	S86	S87	S88	S89	S90	S91	S92	S93	S94	S95
MIDI no.	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
Internal	S96	S97	S98	S99	S 0	S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8	S 9	S10	S11
MIDI no.	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
Internal	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27

REMOTE

Remote is simply a duplicate of the EVS-1 front panel excluding the Level control. Clicking on the switches will cause the EVS-1 to respond as though the actual front panel controls were being used.

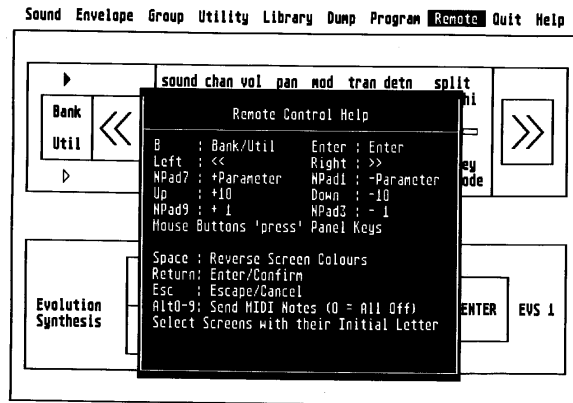
QUIT

Selecting Quit will cause a dialogue box to appear at the bottom of the page giving the choice of quitting (Y) or not quitting (N).



HELP

Selecting Help will bring up an information box in the middle of the screen which explains the basic commands and keyboard shortcuts relevant to the page you are working on. Clicking again or hitting Escape dismisses this screen.



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APPENDIX
DRUM MAPPING
ALGORITHMS
WAVEFORM LISTING

EVS 1 DRUM MAP.

Program 98

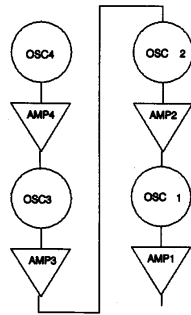
Note	Drum	Pan	Note	Drum	Pan
C1	Tightkik	0	G4	Tompad 2	0
C# 1	Clave	0	G#4	Tompad 2	2R
D1	Brufdsnr	0	A4	Tompad 2	3R
D#1	Clap	5L	A#4	Clave	0
E1	Swoonsnr	0	B4	Bell	0
F1	Tompad 2	7L	C5	PhilCkik	0
F#1	Deephath	2R	C#5	Tightkik	0
G1	Tompad 2	5L	D5	Rocksnr	0
G#1	HHO 2	2R	D#5	Brufdsnr	0
A1	Tompad2	3L	E5	Swoonsnr	0
A#1	HHO 2	6R	F5	Tompad 2	5L
B1	Tompad 2	0	F#5	Deephath	2R
C2	Tompad 2	3R	G5	Tompad 2	0
C#2	HH02	2R	G#5	Deephath	2R
D2	Tompad 2	3R	A5	Tompad 2	5R
D#2	Deephath	2R	A#5	HH02	2R
E2	Tambrine	0	B5	Tompad 2	5L
F2	Tambrine	0	C6	Tompad 2	0
F#2	Clap	3R			
G2	Clap	3L			
G#2	Locowbel	1R			
A2	Locowbel	1L			
A#2	Rocksnr	0			
B2	Bell	2L			
C3	Tompad 2	5L			
C#3	Tompad 2	5R			
D3	Opencnga	4R			
D#3	Opencnga	0			
E3	Opencnga	4L			
F3	Clap	0			
F#3	Clap	0			
G3	Hlagogo	3R			
G#3	Hlagogo	0			
A3	Hlagogo	3L			
A#3	Woodtimb	4L			
B3	Woodtimb	2L			
C4	Woodtimb	2R			
C#4	Woodtimb	4R			
D4	Opencnga	4R			
D#4	Opencnga	0			
E4	Opencnga	4L			
F4	Tompad 2	3L			
F#4	Tompad2	2L			

EVS 1 DRUM MAP.

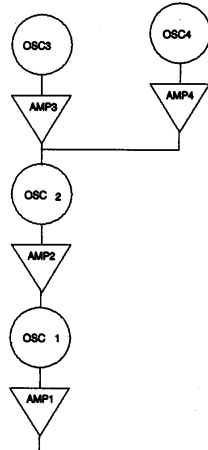
Program 99

Note	Drum	Pan	Note	Drum	Pan
C1	Tightkik	0	G4	Tompad 2	3L
C# 1	Deephath	2R	G#4	Bell	3R
D1	Brufdsnr	0	A4	Tompad 2	3L
D#1	Deephath	2R	A#4	Bell	6R
E1	Rocksnr	0	B4	Tompad 2	0
F1	Tompad 2	3L	C5	Tightkik	0
F#1	HHO 2	2R	C#5	Woodtimb	1R
G1	Tompad 2	3R	D5	Brufdsnr	0
G#1	HHO 2	3	D#5	Woodtimb	1L
A1	Tompad2	3L	E5	Rocksnr	0
A#1	HHO 2	6R	F5	Tompad 2	6L
B1	Tompad 2	0	F#5	Clave	2R
C2	Tightkik	0	G5	Tompad 2	3L
C#2	Tambrine	2L	G#5	Clave	3R
D2	Brufdsnr	0	A5	Tompad 2	3L
D#2	Tambrine	2L	A#5	Clave	6R
E2	Rocksnr	0	B5	Tompad 2	0
F2	Tompad 2	6L	C6	Tompad 2	0
F#2	Hlagogo	2R			
G2	Tompad 2	3L			
G#2	Hlagogo	3R			
A2	Tompad 2	3L			
A#2	Hlagogo	6R			
B2	Tompad 2	0			
C3	Tightkik	0			
C#3	Clap 0	0			
D3	Brufdsnr	0			
D#3	Clap	0			
E3	Rocksnr	0			
F3	Tompad 2	6L			
F#3	Locobel	2R			
G3	Tompad 2	3L			
G#3	Locobel	3R			
A3	Tompad 2	3L			
A#3	Locobel	6R			
B3	Tompad 2	0			
C4	Tightkik	0			
C#4	Opencnga	1R			
D4	Brufdsnr	0			
D#4	Opencnga	1L			
E4	Rocksnr	0			
F4	Tompad 2	6L			
F#4	Bell	2R			

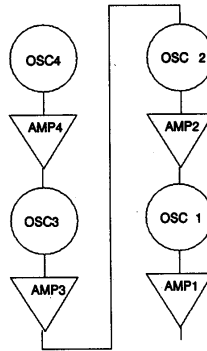
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FM1



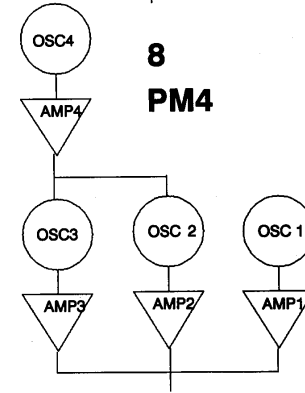
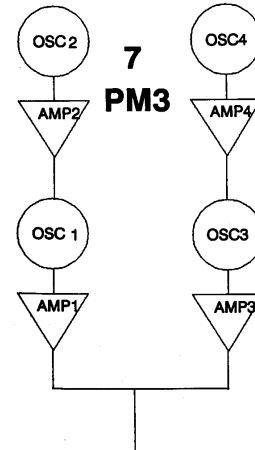
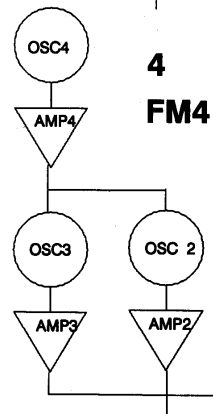
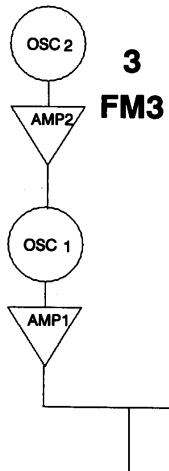
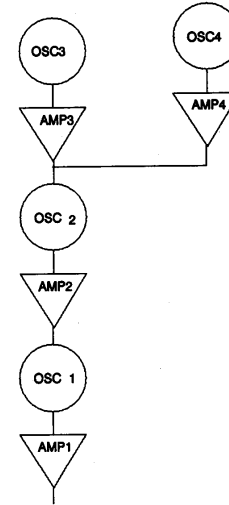
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FM2

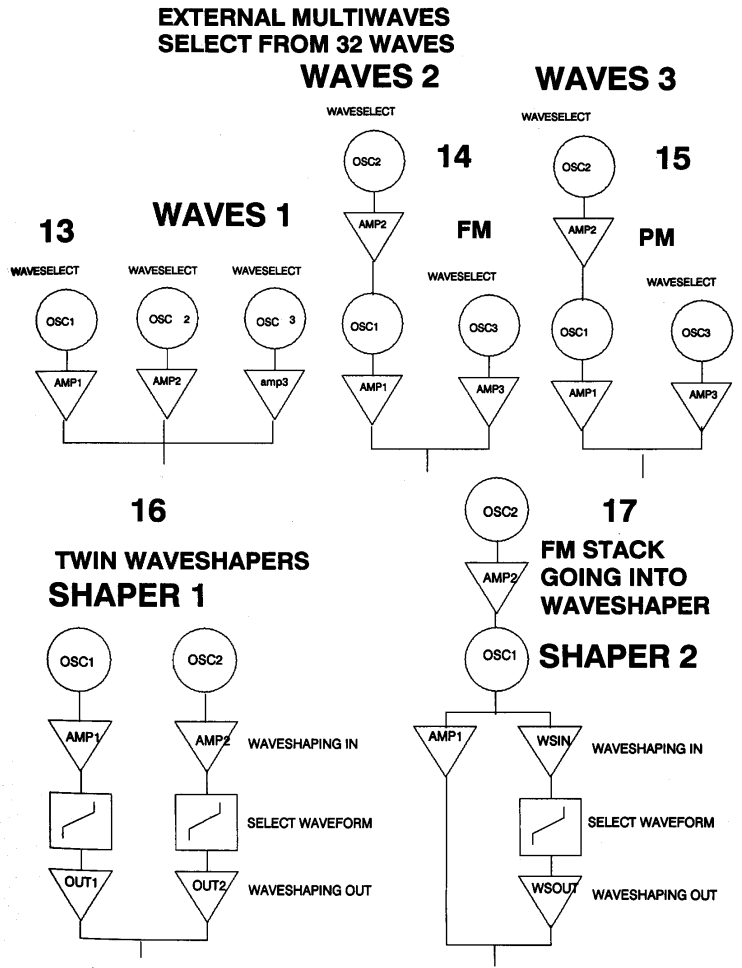
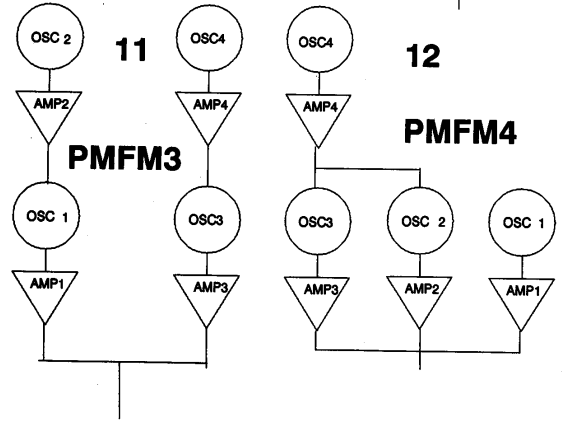
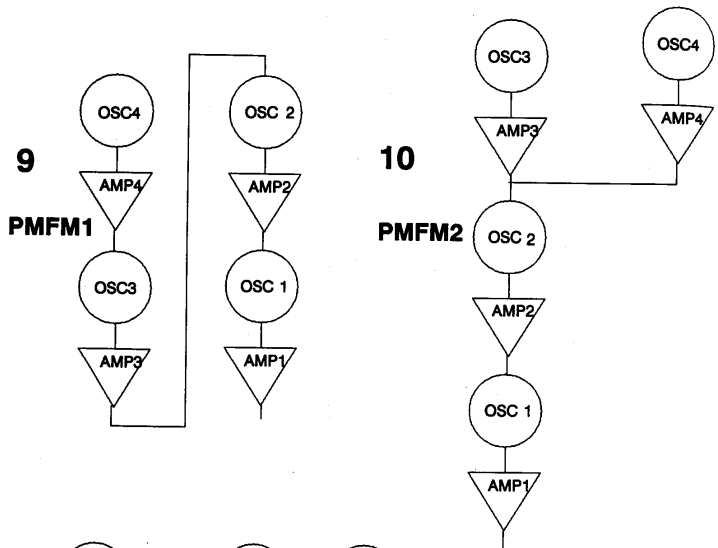


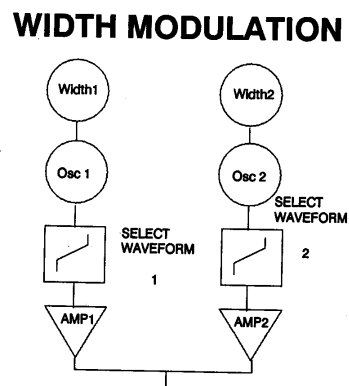
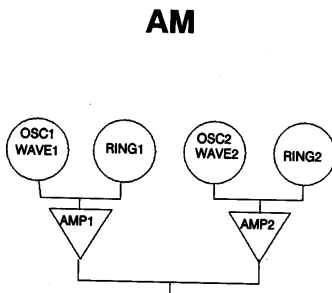
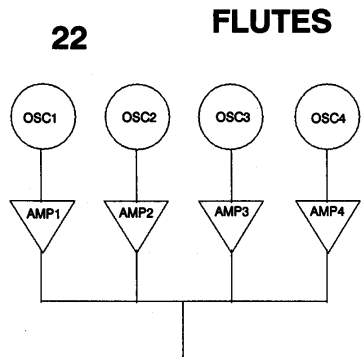
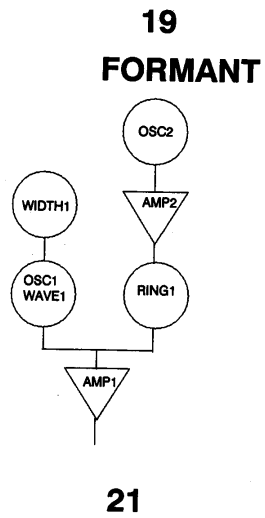
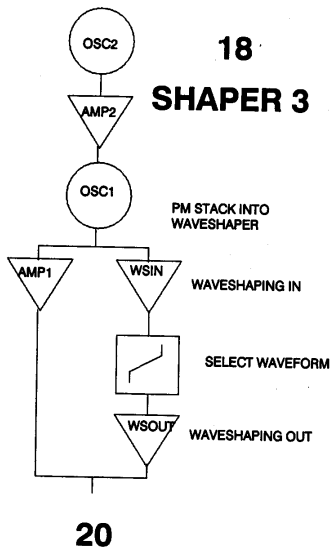
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PM1



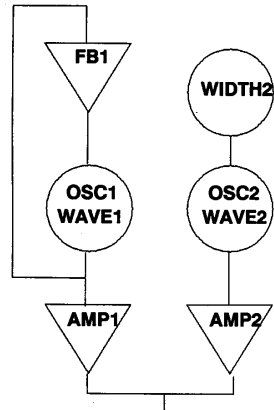
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PM2



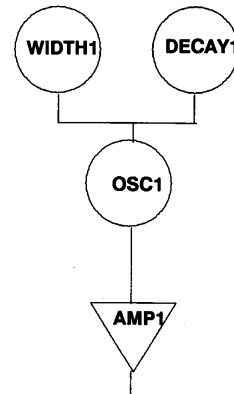




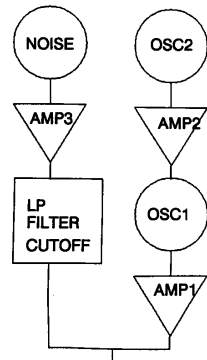
25
FB + WIDTH MOD



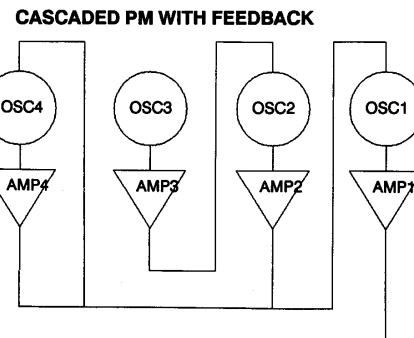
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VOSIM



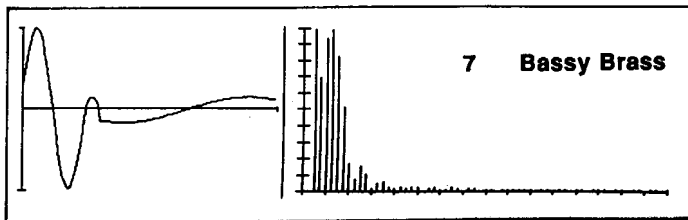
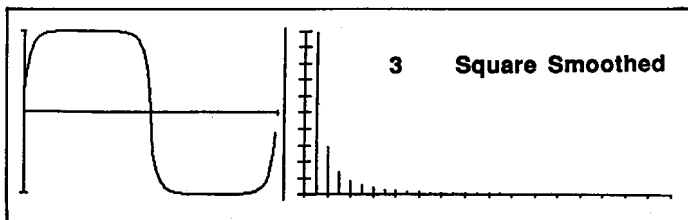
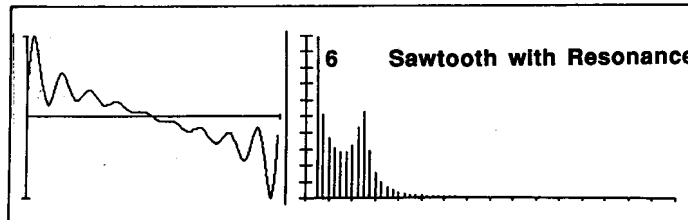
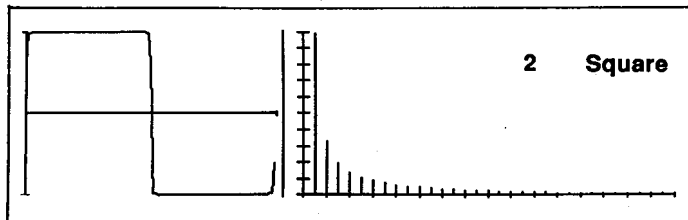
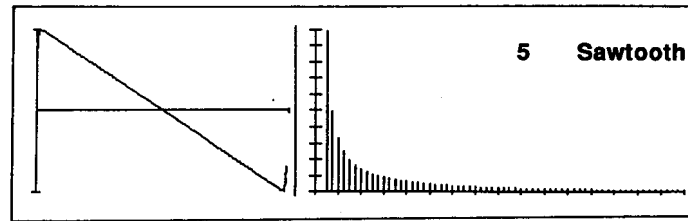
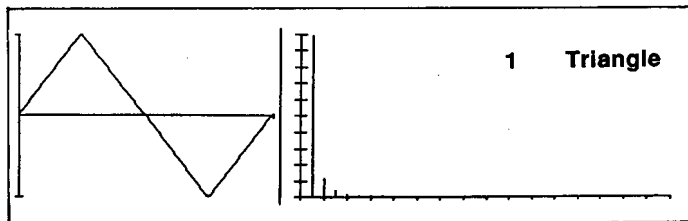
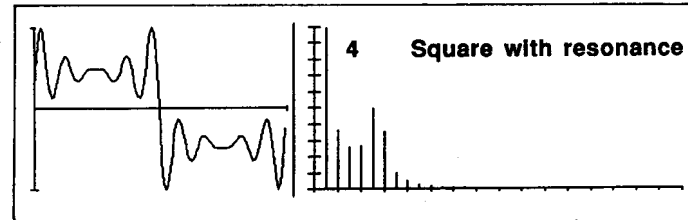
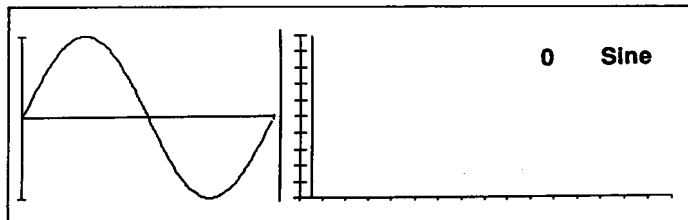
27
PM + NOISE



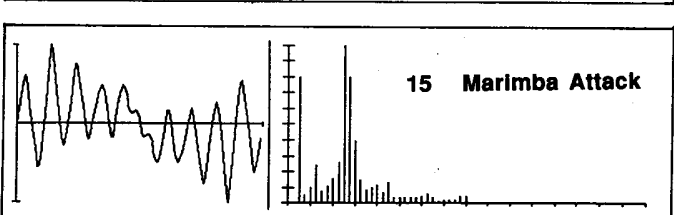
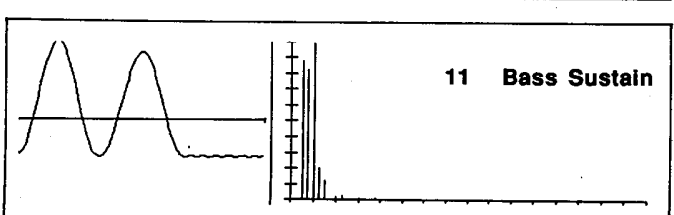
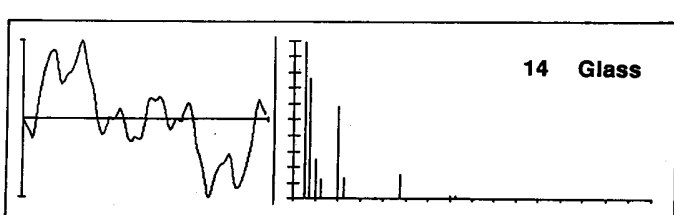
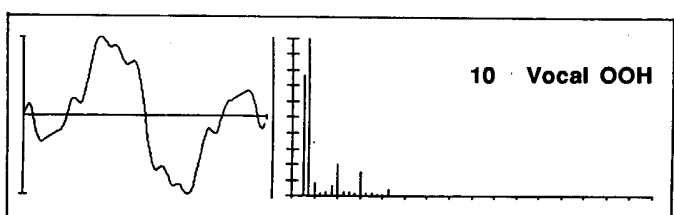
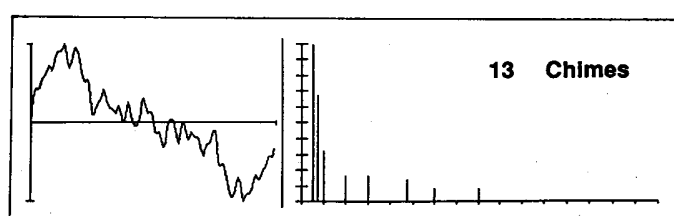
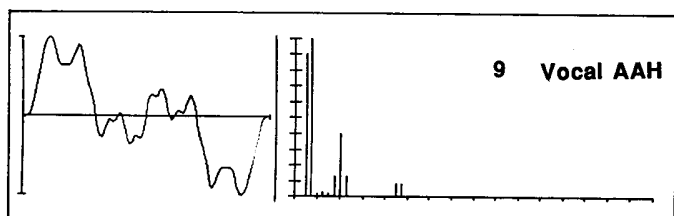
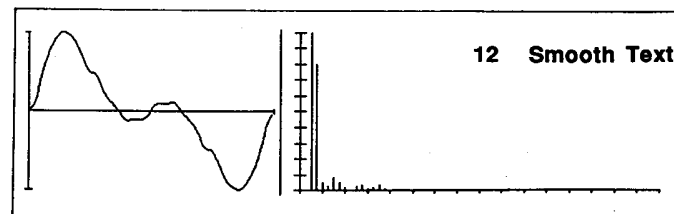
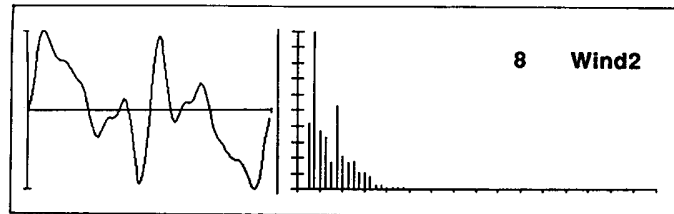
28
PMFB



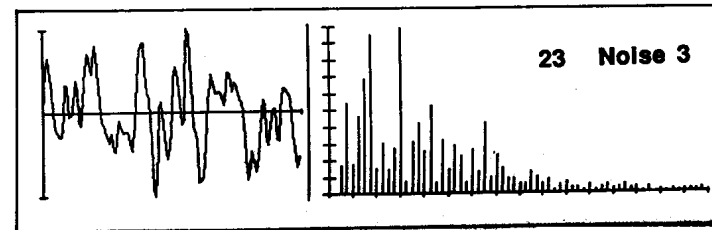
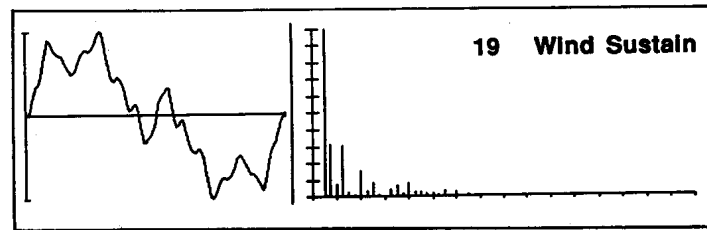
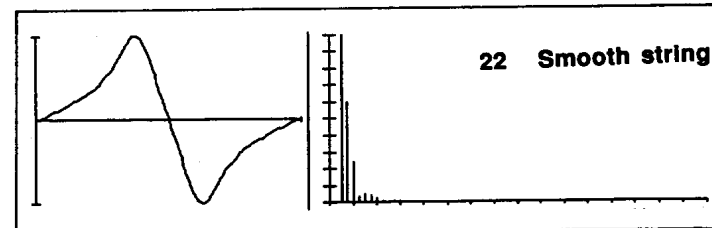
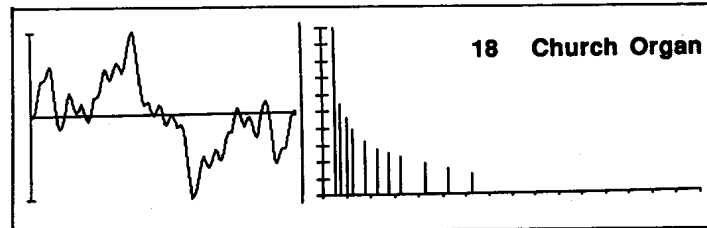
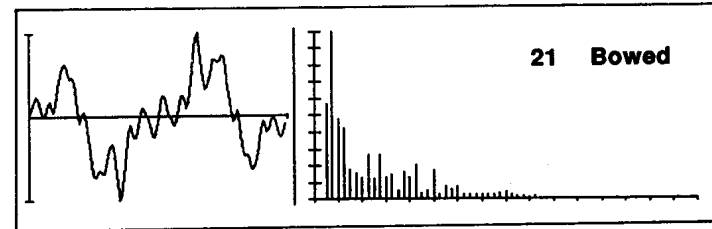
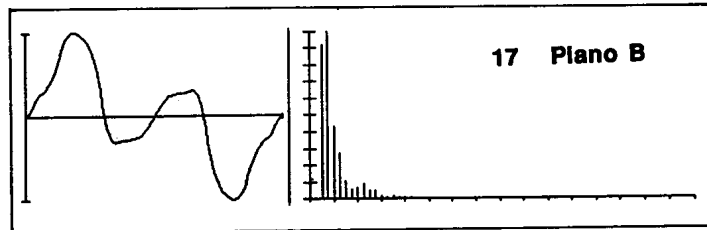
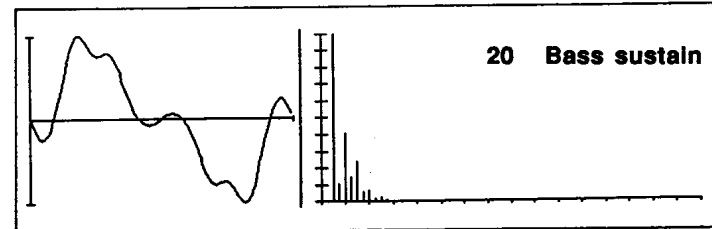
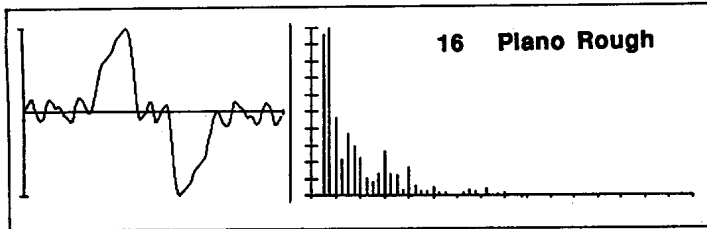
Wave Names and Numbers



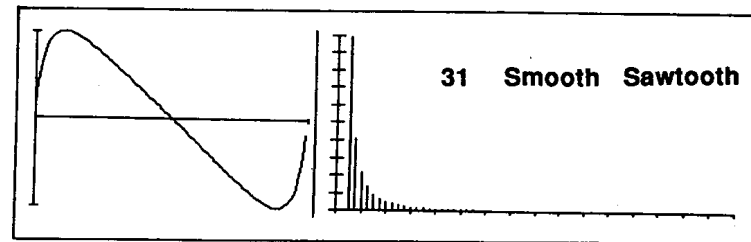
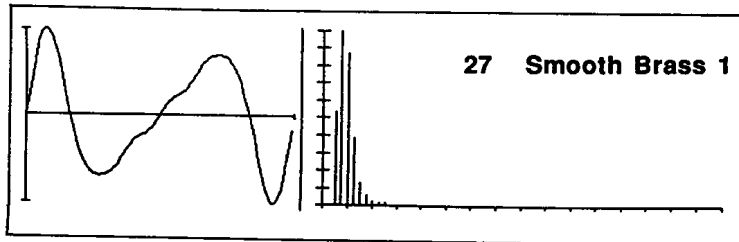
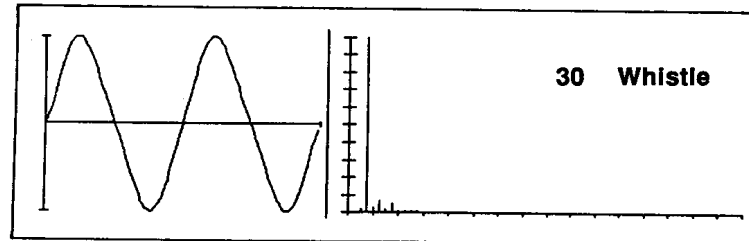
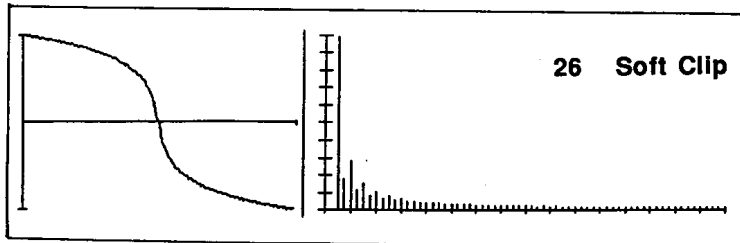
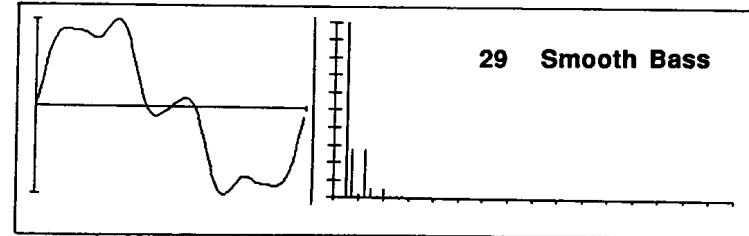
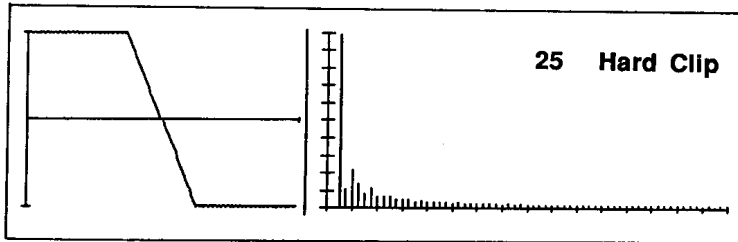
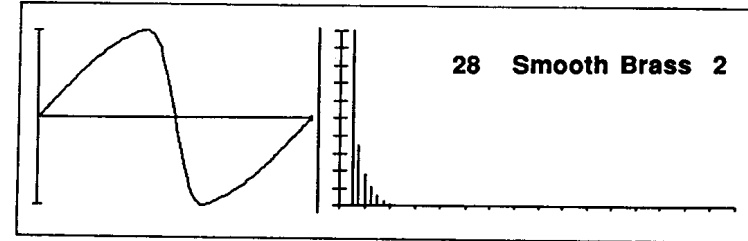
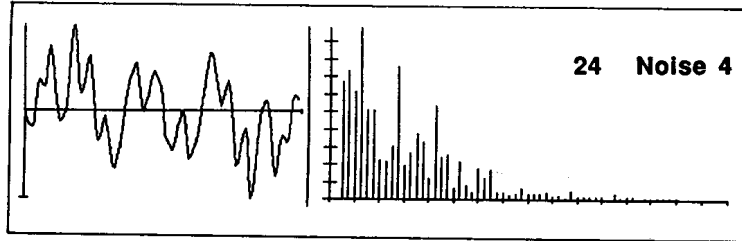
Wave Names and Numbers



Wave Names and Numbers



Wave Names and Numbers



Important - EVS-1 software update/ voice library registration

Thank you for choosing the EVS-1 and we hope you will enjoy using this synthesiser.

It is very important for you to register your ownership with us, as we may release new versions of the software and in particular we would like to make new voice libraries available to you.

Please complete the following form or the postcard and post it back to us. We will keep you informed on new developments and new sounds for your EVS-1.

Date purchased: _____
Where purchased: _____
Ser no: _____
Computer owned: _____

Your name: _____
Address: _____

Post code: _____
Country: _____

For service information please contact the Evolution Synthesis dealer or distributor in your area.

Evolution Synthesis Ltd
Maxet House, Liverpool Road, Luton, LU1 1RS, England.