AKAI professional

S1100

STEREO DIGITAL SAMPLER

Operator's Manual

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with the arrowhead symbol superimposed across a graphical representation of a person, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure; that may be of sufficient magnitude to constitute a risk of electric shock.

The exclamation point within an equilateral triangle is intented to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

AKAI S1100 Software Version 1.0 Manual

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1 Introduction

We at AKAI, and in particular the S1100 development team, would like to thank you for buying the Akai S1100, and hope that you will remain an AKAI player and user for a long time. As each unit is thoroughly tested and inspected before it leaves our factory, we are confident that you will enjoy years of service from this instrument.

Though we have taken great care in the manufacture of your AKAI sampler, any product which uses this level of technology may require servicing occasionally. The warranty below outlines your rights and responsibilities, and also mentions certain limitations and exclusions. Please read this warranty section carefully.

About this Manual

This manual has been arranged in an order which we hope will be useful in your initial experiments with the S1100, and then for future use afterwards, as you learn more functions. Since the bottom row of buttons under the display (SELECT PROG, EDIT SAMPLE, etc) correspond to logical operations within the S1100's software, the manual has been arranged for the most part in sections matching these buttons.

There are two major exceptions to this rule: this first section, "Introduction", which is both an introduction to the features and terminology of the S1100, and a guide to the operation of SELECT PROG — in other words, how to get your S1100 playing pre-recorded sample programs. Please take the trouble to read this section, as it explains basic terminology, operational concepts and shortcuts which you may not discover for yourself.

The second section, "Sampler Functions", covers the sampling and sample editing processes (EDIT SAMPLE), as well as the program editing functions (EDIT PROG). This chapter has been written from the "bottom up", *ie* from the process of recording a sample, through editing a sample, to putting together a program.

Other sections contain information on the use of disks, setting up drum settings with the Akai ME-35T, and the use of cue lists on the S1100 played from timecode.

At the end of this manual there is an index. If you can't find what you want in the Table of Contents, try the index. Most major entries are cross-referenced in a number of ways, for instance, "Velocity crossfading" may also be looked up under "Crossfading, Velocity".

As a final point, this manual assumes that you have a basic knowledge of MIDI and synthesizer terminology (*eg* you know what is meant by an "ADSR envelope" or a "Program Change message"). If you don't, there are many excellent books on the market which will guide you into the world of MIDI instruments and synthesizers. Get hold of one of these and read it before going much further with your S1100 — things will make a lot more sense after you've done this.

Introduction

WARRANTY

AKAI Electric Co. Ltd warrants its products, when purchased from an authorized AKAI dealer, to be free from defects in materials and workmanship for a period of 12 (twelve) months from the date of purchase. Warranty service is effective and available to the original purchaser only, and only on completion and return of the AKAI Warranty Registration Card within 14 days of purchase.

Warranty coverage is valid for factory-authorized updates to AKAI instruments and their software, when their installation is performed by an authorized AKAI Service Center, and a properly completed Warranty Registration has been returned to the factory.

To obtain service under this warranty, the product must, on discovery of the defect, be properly packed and shipped to the nearest AKAI Service Center. The party requesting warranty service must provide proof of original ownership and date of purchase of the product.

If the warranty is valid, AKAI will, without charge for parts or labor, either repair or replace the defective part(s). Without a valid warranty, the entire cost of the repair (parts and labor) is the responsibility of the product's owner.

AKAI warrants that it will make all necessary adjustments, repairs and replacements at no cost to the original owner within 12 (twelve) months of the purchase date if:

1   The product fails to perform its specified functions due to failure of one or more of its components.

2   The product fails to perform its specified functions due to defects in workmanship.

3   The product has been maintained and operated by the owner in strict accordance with the written instructions for proper maintenance and use as specified in this Operator's Manual.

Before purchase and use, owners should determine the suitability of the product for their intended use, and the owner assumes all risk and liability whatsoever in connection therewith. AKAI shall not be liable for any injury, loss or damage, direct or consequential, arising out of the use, or inability to use the product.

The warranty provides only those benefits specified, and does not cover defects or repairs needed as a result of acts beyond the control of AKAI, including, but not limited to:

1   Damage caused by abuse, accident or negligence. AKAI will not cover under warranty any original factory disk damaged or destroyed as a result of the owner's mishandling.

2   Damage caused by any tampering, alteration or modification of the product: operating software, mechanical or electronic components.

3   Damage caused by failure to maintain and operate the product in strict accordance with the written instructions for proper maintenance and use as specified in this Operator's Manual.

4   Damage caused by repairs or attempted repairs by unauthorized persons.

5   Damage caused by fire, smoke, falling objects, water or other liquids, or natural events such as rain, floods, earthquakes, lightning, tornadoes, storms, etc.

6   Damage caused by operation on improper voltages.

IMPORTANT NOTE: This warranty becomes void if the product or its software is electronically modified, altered or tampered with in any way.
AKAI shall not be liable for costs involved in packing or preparing the product for shipping, with regard to time, labor or materials, shipping or freight costs, or time and expenses involved in transporting the product to and from an AKAI Authorized Service Center or Authorized Dealer.

AKAI will not cover under warranty an apparent malfunction that is determined to be user error, or the owner's inability to use the product.
THE DURATION OF ANY OTHER WARRANTIES, WHETHER IMPLIED OR EXPRESS, INCLUDING BUT NOT LIMITED TO THE IMPLIED CONDITION OF MERCHANTABILITY, IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY HEREIN.

AKAI hereby excludes incidental or consequential damages, including but not limited to:

1   Loss of time

2   Inconvenience

3   Delay in performance of the Warranty

4   The loss of use of the product

5   Commercial loss

6   Breach of any express or implied warranty, including the Implied Warranty of Merchantability, applicable to this product

Copyright notice

The AKAI S1100 is a computer-based instrument, and as such contains and uses software in ROMs and disks. This software, and all related documentation, including this Operator's Manual, contain proprietary information which is protected by copyright laws. All rights are reserved. No part of the software or its documentation may be copied, transferred or modified. You may copy the operating software and any samples, programs, etc contained on disks for your own personal use. All other copies of the software are in violation of copyright laws. You may not distribute copies of the software to others, or transfer the software to another computer by electronic means. You may not modify, adapt, translate, lease, distribute, resell for profit or create derivative works based on the software and its related documentation or any part thereof without prior written consent from AKAI Electric Co. Ltd, Tokyo, Japan.

Introduction

WARNING

Power requirements for electrical equipment vary from area to area. Please ensure that your S1100 meets the power requirements in your area. If in doubt, consult a qualified electrician.

120V @ 60Hz for USA and Canada

220V - 230V @ 50Hz for Europe (excluding UK)

240V @ 50Hz for UK and Australia

Protecting yourself and the S1100

- Never touch the plug with wet hands.

- Always disconnect the S1100 from the power supply by pulling on the plug, not the cord.

- Allow only a qualified professional engineer to repair or reassemble the S1100. Apart from voiding the warranty, unauthorized engineers might touch live internal parts and receive a serious electric shock.

- Do not put, or allow anyone to put any object, especially metal objects, into the S1100.

- Use only a household AC power supply. Never use a DC power supply.

- If water or any other liquid is spilled into or onto the S1100, disconnect the power, and call your dealer.

- Make sure that the unit is well-ventilated, and away from direct sunlight.

- To avoid damage to internal circuitry, as well as the external finish, keep the S1100 away from sources of direct heat (stoves, radiators, etc).

- Avoid using aerosol insecticides, etc near the S1100. They may damage the surface, and may ignite.

- Do not use denatured alcohol, thinner or similar chemicals to clean the S1100. They will damage the finish.

- Make sure that the S1100 is always well-supported when in use (either in a specially-designed equipment rack, or a firm level surface).

- When installing the S1100 in a 19" rack system, always allow 1U of ventilated free space above it to allow for cooling. Make sure that the back of the rack is unobstructed to allow a clear airflow.

UK customers

Important safety notice — The flex supplied with this machine has three wires, as shown in the illustration.

WARNING: THIS APPLIANCE MUST BE EARTHED

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Green-and-yellow — earth

Blue — neutral

Brown — live

As the colours of the wires in the flex may not correspond to the colour markings in your plug, make sure that wires are connect in the following way. The green-and yellow wire should be connected to the terminal marked "E" or marked with the safety earth symbol (⏚); the blue wire is connected to the terminal marked "N", or coloured black. The brown wire should be connected to the terminal marked "L", or coloured red. Make sure all terminal screws are tightened and there are no loose strands of wire.

Green/yellow (earth)

E

Blue (neutral)

N

L

Brown (live)
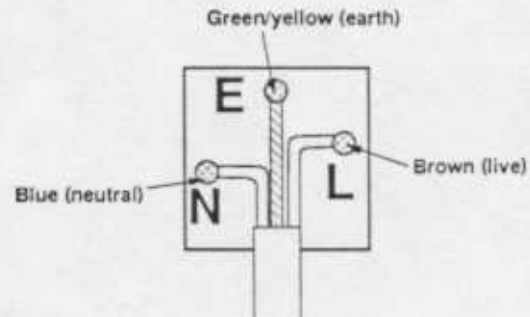
FCC warning

This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Avis pour les acheteurs canadiens du S1100

Le présent appareil numérique n'émet pas des bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada

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FÜR KUNDEN IN DER BUNDESREPUBLIK DEUTSCHLAND

Bescheinigung von AKAI

Hiermit wird bescheinigt, daß das Gerät AKAI

S1100

in Übereinstimmung mit den Bestimmungen der

Amtsblattverfügung 1046/1984

funkentstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berichtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

AKAI ELECTRIC CO., LTD

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Features

The AKAI S1100 is a high-quality digital sampler. With a sampling rate of 44.1kHz, and 16-bit resolution, the S1100 is capable of recording and replaying samples literally of CD quality, and the basic unexpanded unit has a total sample time of over 23 seconds (mono). Memory may be added using 2Mbyte and/or 8Mbyte boards (EXM005 and EXM008) to a total of 32Mbytes.

Diskette and MIDI data is, naturally, compatible between all models in the industry-standard S1000 range (excepting effects settings and cue-lists, for which the S1000 series is not equipped) as well as with the S1000KB sampling keyboard.

16-note polyphony allows complex passages to be played with the full sample time. The samples may be edited with full trimming facilities, looped at up to 8 loop points per sample (with tuning of the loop), spliced to other samples, filtered and sent through two independent ADSR envelope generators. Full velocity, positional and looping crossfading is possible. Basic synthesizer waveforms (sine, triangle, etc) are available on disk for synthesizer/sampler sounds.

In the studio, eight separate outputs allow maximum flexibility in mixing and adding effects. However, stereo operation is possible from just two outputs.

Digital effects are also integrated into the S1100, allowing you to send pre-effected samples, freeing up your effect sends on the mixing desk. The parameters of the effects (reverb, echo and time modulation) are under user control and may be stored on disk together with samples and programs. An internal digital "mixer" is also integrated into the software and hardware of the S1100, allowing flexibility in the way that the sound is transmitted from the stereo outputs.

In addition to analog stereo outputs, an XLR connector is provided for digital transmission of stereo audio data in the AES/EBU format. The S1100 can therefore be connected directly to any recorder (audio or video) or mixing desk capable of accepting such digital signals.

The S1100 is capable of editing samples digitally — "stretching" or "squeezing" samples without changing the pitch in order to fit them into a specific time slot. Resampling can be done at any frequency (higher or lower than the original).

The stereo facility is ideal for sampling portions of prerecorded program material (making it an ideal tool for "house", "hip-hop" etc productions), as well as for sampling ambient acoustic sounds.

Naturally, a full MIDI implementation is built in — multi-timbral capabilities making the S1100 perfect for use with a sequencer such as the AKAI MPC-60 or ASQ-10.

Special functions for remote operation of the AKAI ME-35T Audio/MIDI trigger unit (1 or 2 can be controlled), together with a single-trigger monophonic mode make the S1100 into a real-time percussion tone generator.

For A/V post-production work, the integral SMPTE/EBU timecode generator and reader allows the S1100 to record and play timecode-based sequences (cue lists) of sound effects, etc, eliminating the need for SMPTE/MIDI convertors, etc.

Introduction

The S1100 is capable of processing up to 200 samples, 100 programs, or a combination of up to 400 samples + programs + keygroups. The internal 3.5" floppy disk drive provides a quick easy method of storing and retrieving data (samples, programs and other settings).

Hard disks may be used by the S1100 when using the integral IB-103 SCSI interface board, and any SCSI-compatible drive (including magneto-optical disks such as are used on the Akai DD1000) may be used up to a capacity of 510Mbytes. The hard disk may be divided into partitions and volumes, and individual volumes may be automatically loaded in response to MIDI Program Change commands. The SCSI interface may also be used for fast transmission of sample data to SCSI-equipped computers for editing, etc.

The optional IB-104 digital interface board provides coaxial and optical digital links, for direct digital sampling at rates of up to 48kHz, and hard disk archive/restore to DAT for quick and easy storage of data.

The industry-standard sampler prior to the introduction of the S1000 and S1100 was the AKAI S900, and hundreds of sample disks were produced for this machine. You'll be pleased to know that the S1100 is capable of reading these samples and the associated programs from disk, converting them, and replaying them.

Glossary

Every new technology invents its own terms to describe new techniques. Digital music is no exception, unfortunately. However, a glossary such as this can help introduce you to the vocabulary and concepts involved. We assume you have a basic knowledge of MIDI, but if the S1100 is your first excursion into MIDI and sampling, we suggest you get hold of an introductory MIDI book, and read it before proceeding much further with your S1100.

Button

In this manual, the word "button" will generally be used to refer to a push-button switch on the front panel. This is to distinguish them from the keys on a musical piano-type keyboard. There are two major exceptions to this convention: the use of the terms "number keypad", and "soft key", which come from computing, and are so well-engrained in technical language that to insist on using the terms "number button pad" and "soft button" would be pointless.

Crossfading

On the S1100, *crossfading* is the term used to describe the setting of the relative volume of two samples which are played at the same time. For instance *velocity crossfading* is used to describe the relative balance between two samples played by the same key, when the key is played at different velocities. *Positional crossfading* refers to relative balance between samples in different *keyspans* (see *Multisampling*). Additionally, the S1100 allows *loop crossfading* — the ability to fade samples inside themselves to allow for smooth looping.

Cursor

On the S1100, the *cursor* is the highlighted (reverse) part of the display which is moved by the CURSOR knob and indicates the parameter which may be changed by the DATA knob and/or the number keypad.

Field

On the S1100, a *field* is the portion of a *page* containing a *parameter*. Only fields (ie those portions of a page which may be altered) will be highlighted by the cursor as the CURSOR knob is turned to go through a page.

Key

In this manual, the word "key" will be generally used to refer to a key on a piano-type keyboard to distinguish these from *buttons* on the front panel.

Keygroup

The term for a collection of a number of parameters of up to four samples — their name, *keyspan*, filtering, envelopes, etc.

Keyspan

On the S1100, a *keyspan* is the range of the keyboard on which a sample can be played.

LFO

Low Frequency Oscillator - an oscillator which operates at too low a frequency to produce an audible tone, but is used to modulate such parameters as pitch, pan position, etc. The S1100 has a number of LFOs implemented in software.

Looping

In sampling, *looping* refers to the process of taking a portion of a sample and repeating it. The S1100 allows eight such loops to be present in a sample, allowing incredibly subtle variations on the basic sampled sound.

Multisampling

When sampling a sound, replaying it at a radically higher or lower pitch will produce strange and unnatural effects. To overcome this problem, samples should be taken from across the pitch range of an instrument and assigned to different *keyspans* across the keyboard. This is known as *multisampling*.

Operating system or Operating software

Without a computer program to send signals through the maze of chips and circuitry which make up the hardware of the S1100, the machine would be useless. The program which contains the instructions to respond to MIDI messages, buttons and controllers, and display messages, etc on screen (as well as to record and play back sounds) is known as the *operating system*. This is automatically loaded when the S1100 is powered up, either from chips inside the S1100, or, if a disk containing a later version of the operating system has been placed in the drive, from disk.

Page

On the S1100, a *page* is the set of information and *parameters* shown at any one time on the display screen. Pages can be entered by pressing the named buttons (SELECT PROG), (MIDI), etc), or the *soft keys* whose legends are displayed at the bottom of a page.

Parameter

A value which can be changed (for instance length, tuning, upper limit of a *keyspan)* as displayed on the screen of the S1100.

Positional crossfading

See *Crossfading.*

Program

The term for a collection of *keygroups* which will all be selected together when the *program* is selected. Different programs can be assigned to different MIDI channels, so that when a sequencer is connected to the S1100, multi-timbral output is possible.

Sample

Usually in the manual, the word *sample* will refer to a sound which has been recorded, digitized and edited, and can then be added to a *keygroup* (you might like to think of it as a "waveform" in analog synthesizer terms). However, when editing one of these sounds, the length and position inside this sample is also measured n *samples*. This latter meaning refers to the digitized "snapshot" image of the sound for one cycle of the sampling process. A sample recorded at 44.1kHz and lasting for exactly one second therefore contains 44,100 samples! It will usually be clear in this manual, however, what meaning of the word *sample* is meant at any one time. *To sample,* by the way, means "to record a sound on a sampler and make a sample of it".

Soft key

On the S1100, a *button* with no predefined function. The current state of the S1100 determines the function, which is displayed on the bottom line of the page.

Splicing

The process of joining samples to each other (analogous to tape splicing). However, this is much easier electronically than when using razor blades and splicing tape, and many more effects are possible. To take an extreme example, the sound of a string section could be spliced to the sound of a bottle breaking, and the resulting sample then spliced to the reversed sound of the string attack.
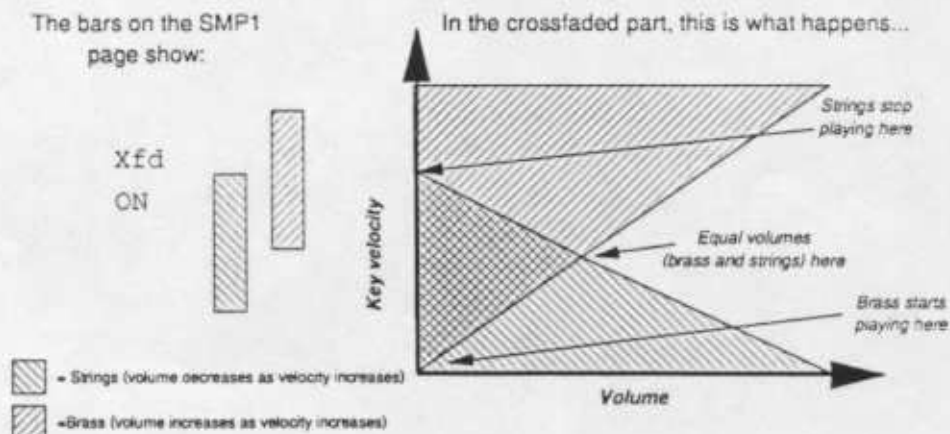
Timecode

Sometimes referred to as "SMPTE" (pronounced "simpty"), or "SMPTE/EBU", timecode is a way of recording and transmitting absolute time values in terms of hours, minutes, seconds, frames and bits. Since the standard was developed by the American SMPTE (Society of Motion Picture and Television Engineers) and by the EBU (European Broadcasting Union), it is intended for use when synchronising audio to video signals, and much of the terminolgy comes from this field. The number of frames in a second varies according to the standard used. For NTSC television monochrome work, 30 frames/second is the standard. Because of the peculiar nature of NTSC colour, a frame must be "dropped" every so often, resulting in the notorious "30-drop" SMPTE standard, at 29.97 frames/second average. In European television (PAL and SECAM), 25 frames/second is standard for both monochrome and colour, and films are usually synchronised at 24 frames/second.

Velocity crossfading

See *Crossfading* and *Velocity zones*.

Velocity zones

On the S1100, a sample can be programmed to play only when a key is pressed between certain velocities. The range of these is known as a *velocity zone*. Up to four samples may be assigned in each keygroup, and if desired, each can be assigned to a different velocity zone. In this way, a finger-style electric bass sample could be assigned to lower velocity zones, and a slap or pull bass to higher ones, with a *velocity crossfade* added so that there is an intermediate range. The result, when played, will provide a highly expressive bass instrument.

The bars on the SMP1 page show:

Xfd
ON

In the crossfaded part, this is what happens...

Strings stop playing here

Equal volumes (brass and strings) here

Brass starts playing here

Key velocity

Volume

▨ = Strings (volume decreases as velocity increases)

▨ = Brass (volume increases as velocity increases)

Volume

As well as being the output level from the S1100, *volume* has another meaning —
a collection of programs, samples and drum settings which can be stored together
on a diskette, on a hard disk or in memory. One volume can be stored in memory
or on each diskette, and up to 128 volumes can be stored on a hard disk.

Front panel controls

This section describes the function of the controls on the front panel, and the general principles of operating the S1100. Reading this section now, and understanding the principles of the software user interface of the S1100 will probably save you a lot of time later on when you come to use the machine in earnest.
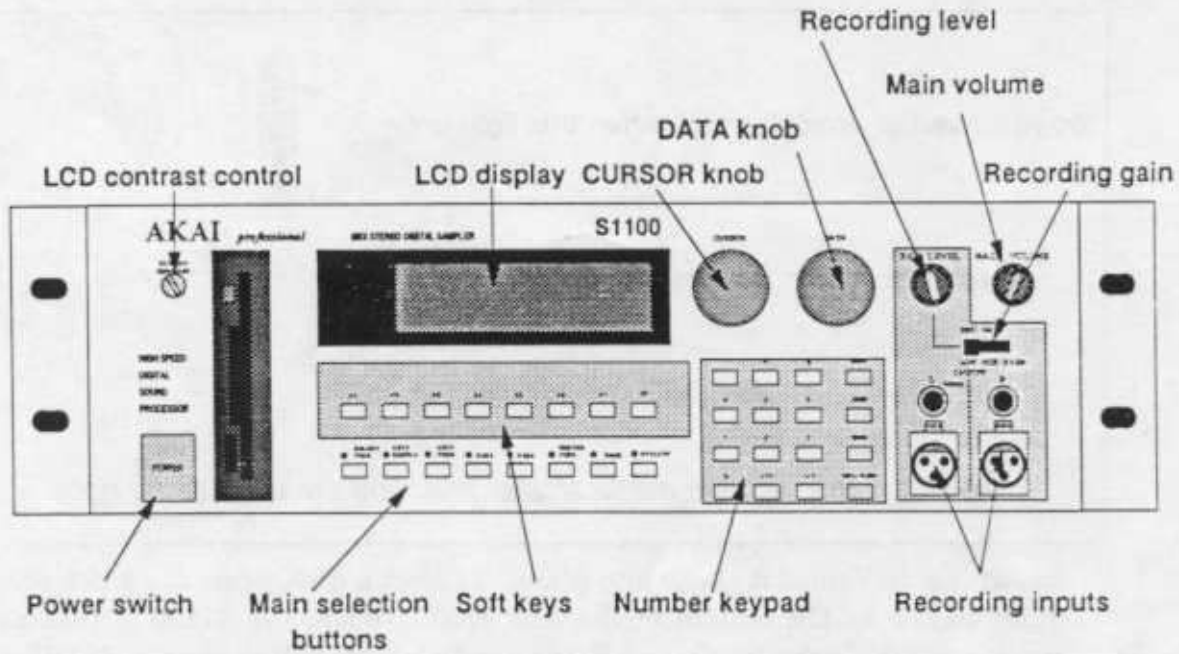
S1100 front panel

Though the S1100 is a highly sophisticated sampler, you may feel that there are surprisingly few controls. However, each button on the front panel serves more than one function, and together with the 40 character x 8-line LCD display (also used for graphic displays), allow you to perform a wide variety of editing and other commands easily.

Disk drive

Since the S1100 is a sampler with 2Mbyte of RAM (as standard), sample data and programs will be lost when the power is turned off. The cost of backing up so much memory with batteries would make the S1100 a prohibitively expensive instrument. Using diskettes to store sample, program and other data is a cost-effective way of overcoming this problem, as well as providing an easily-transportable storage medium for commercial and "home-grown" samples. An additional advantage is provided in the easy way you can upgrade the operating system.

A complex hardware/software combination such as the S1100 is always capable of being improved with new features. We have designed the hardware to be ready for such software features, and these can be added simply by turning on the S1100 with a disk containing the latest version of the operating system in the drive. Normally, the S1100 will "boot" the operating system from its own internal

ROM, but if a disk containing a later version is inserted at power-on, this version will be loaded. This eliminates the need for troublesome and time-consuming ROM changes.

At the left of the unit (near the POWER switch) is a slot for 3.5" diskettes. When inserting a diskette, make sure the label is facing to the right, and the metal shutter is pointing towards the back of the S1100.

Do not insert or remove a disk when this light is on

Press this button to eject the disk

Insert the disk with the metal shutter first, and the label to the right
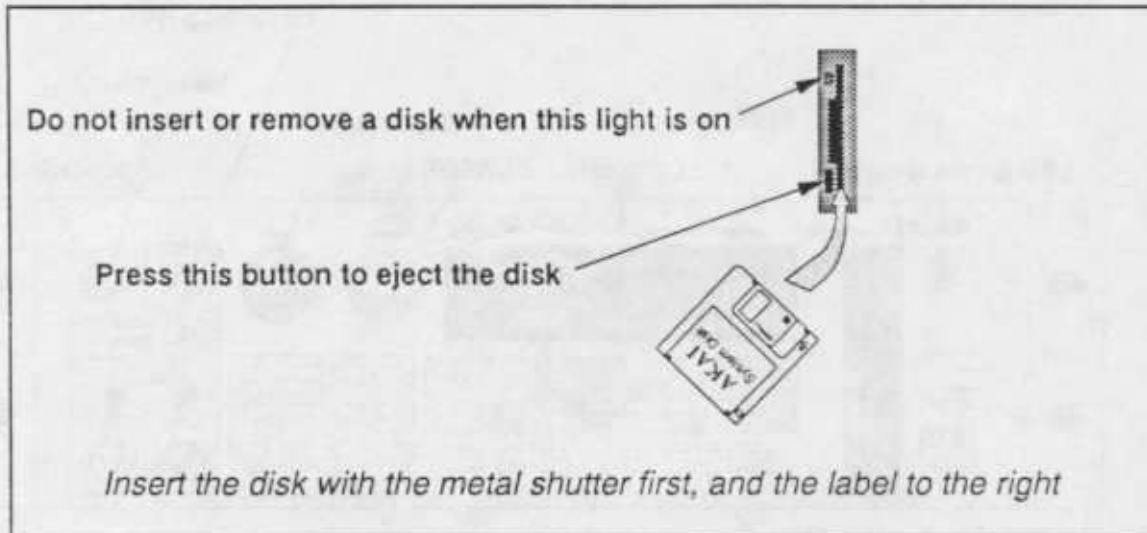
Insert the disk until it clicks into place. To eject a disk, press the black rectangular button at the bottom of the disk drive. When the S1100 is reading or writing a disk ("accessing"), an LED on the disk drive will show this. NEVER try to insert or remove a disk while this light is on! You may damage the drive and/or the data on the disk if you do this.

When buying blank 3.5" disks for use with the S1100, you can use either MF2DD (these are low-density disks, cheaper, but don't hold as much data), or MF2HD high-density disks (more expensive and capable of holding more data). Format disks for use with the S1100 using the (HIGH) or (LOW) options in the disk formatting page of the (DISK) menu. No harm is done by formatting high-density disks as low-density (though it's a waste of a high-density disk), but you probably won't be able to format MF2DD disks as high-density. It's better not to try this.

You can prevent accidental erasure or overwriting of a disk by opening the small tab in the corner of the disk. It is a good idea to keep this small tab open all the time, unless you are sure that you want to write to, erase, or overwrite a disk.

MAKING A COPY OF YOUR OPERATING SYSTEM DISK

If you destroy the data on any *Operating System* disk supplied as a future upgrade, this is a) annoying, and b) expensive. Unfortunately we must make a charge for replacement operating system disks, and, of course, it takes time for us to deliver them to you. You can save yourself this potential inconvenience by making a copy of the operating system, as described below. These instructions are not a full guide to disk operations — see the relevant section for full details.

1) Insert the *Operating System* disk in the drive and turn on the power to the S1100.

2) The S1100 will automatically load the operating system from disk.

3) Wait until the disk drive light goes off, remove the *Operating System* disk, and store it in a safe place. Insert a new disk (MF2DD or MF2HD).

4) Press the DISK button (the DISK LED will light), and the S1100 will inform you that the disk is unformatted. Press the **FORM** soft key (F6) once to remove the "unformatted disk" message, and once again to display the formatting menu.

5) Press the START HIGH — F7 (for MF2HD) or LOW — F8 (for MF2DD) soft key. The disk will be formatted, a process taking just over a minute. All existing data on the disk will be erased.

6) Now press the **SAVE** soft key (F2). Move the cursor (using the CURSOR knob) so that it covers the field below the "type of save:-" message (usually this will read "ENTIRE VOLUME"). Now change the message to read "OPERATING SYSTEM", using the DATA knob.

7) Press GO (F8). A message will be displayed saying that this will wipe the memory of the S1100. Since you've just turned it on, there are no samples or programs in memory — press GO (this time it's F7).

8) The S1100 will save the operating system to disk. When the disk drive light has gone out, eject the disk, slide the write-protect tab so that the small square hole is open (this will prevent you overwriting or erasing the disk accidentally), and label the disk clearly.

9) Just to check everything's gone smoothly, turn off the S1100, insert your new copy of the operating system, and turn on the power. The S1100 should automatically load the disk version of the operating system. If it doesn't, something's gone wrong. Repeat the process again using another new disk, and if all else fails, call your AKAI dealer.

MAIN VOLUME

This rotary control adjusts the overall output level of the LEFT/MONO, RIGHT and headphone outputs.

REC GAIN

This is a 3-position slider switch (LOW, MID, HIGH) used for matching the level of the input source to the recording amplifier of the S1100. Fine adjustment should be carried out with the REC LEVEL control on the front panel. Ideally, you should set the REC GAIN so that the REC LEVEL is set about 2 o'clock.

Remember that unlike analog devices, digital devices produce distortion which is particularly unpleasant, and "soft clipping" and the effect of saturation cannot be obtained by digital recording. You should always allow sufficient headroom for transient peaks when making a sample.

REC LEVEL

This rotary control is used when recording samples, to control the level of the signal fed into the S1100's recording section.

REC IN

Two parallel pairs of stereo balanced connectors are provided for connection of sound sources to be sampled. One pair is a pair of ITT-Cannon XLR-31F connectors (wired in accordance with American standards — 1=shield, 2=cold, 3=hot), and the other pair is a pair of balanced 1/4" phone connectors.

Unbalanced sources can, of course, be connected to the inputs. If a mono source is used for sampling, use only either the LEFT (MONO) XLR or phone connector.

POWER SWITCH

Turn on the S1100 with the power switch on the left of the front panel (press for on, and press again for off). On power-on, the display will indicate the initial SELECT PROG page, and the LED by the [SELECT PROG] button will light.

Editing controls

While most of the features described so far are those you might expect to find on any top-quality keyboard, all other controls on the panel are connected in one way or another with the display and operations specific to the S1100.

The display

The display is a backlit LCD display which usually displays white against a blue background. When displaying characters, 8 lines of 40 characters each can be displayed. The display is also capable of displaying graphic information, such as a volume vs time display of a sample, envelope shapes and a "MIDI PPM" for checking MIDI input to the S1100. The contrast of the display can be adjusted using the LCD CONTRAST control at the bottom right of the screen.

The bottom line of the display will always contain a row of up to eight or fewer "soft key" legends. These indicate the current function of the buttons immediately below the display ([F1] — [F8]). These buttons have no predefined function — their use at any one time is defined by software — hence "soft keys". (When writing a button name as shown on the front panel, it will be written in this way: [MIDI]). Soft key legends may be of three types:

"Selected" (white on blue). When a soft key legend is displayed in this way, it means that this function has been selected. In this manual, this type of legend will be displayed like this: TUNE.

"Function" (blue on white). A soft key legend like this means that pressing the appropriate button will bring up another page of the display. In this manual, this type of legend and the soft key pressed to access this function will be represented like this: LOAD .

"Action" (white on blue, in a box) — These soft key legends allow specific actions within a page on a display. These legends, and the button to press when performing these actions, will be represented like this: ⌐ GO ⌐
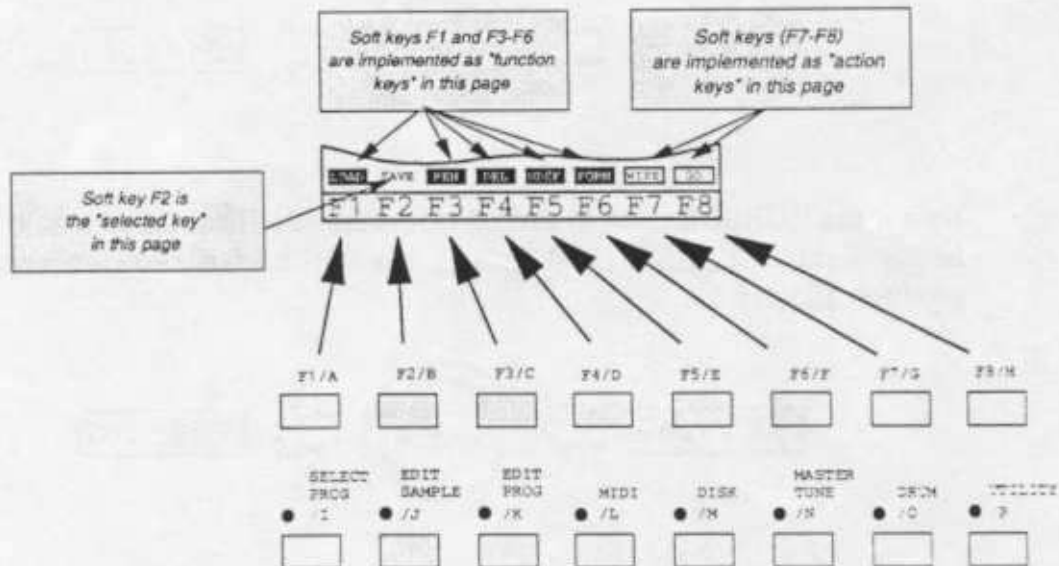
The CURSOR knob

Since the LCD display is capable of showing so much information, many parameters can be displayed and altered in one page. To choose which parameter will be altered, turn this CURSOR knob (in either direction). The cursor (the indicator showing which parameter may be altered — a reversed box) will move around the page as you turn the knob. Only those values and parameters highlighted by the cursor can be altered.

The DATA knob

When the CURSOR knob has been used to highlight a parameter, the value of the parameter may altered using this DATA control. Turning it clockwise increases numeric values, and turning it counterclockwise decreases these values. For non-numeric values, turning the knob will display all the options in order. Normally, there is no other entry procedure — simply displaying the correct value of a parameter using the DATA knob selects and stores it into the S1100's memory.

When editing numeric parameters, some of the values can be quite large, and it would be necessary to turn the DATA knob thousands of times (literally) in order to go through the whole range if the value was only changed by 1 for every click of the DATA control. There is an alternative to turning the knob thousands of times, though. As you move the cursor with the CURSOR knob onto a numeric field, you will notice that not all the digits are covered by the cursor immediately. Instead, they are highlighted one at a time from the left.

If a number such as 12345.67 is displayed, and the CURSOR knob is turned so that only the first three digits are highlighted (we'll use underlining here to represent highlighting here), thus: 12345.67 . Turning the DATA knob clockwise by one step now will increase the value of the last highlighted digit, so: 12445.67 .

12345.67 ⟹ (DATA) ⟹ 12445.67

Now if the CURSOR knob is turned clockwise one click, the first four digits will be highlighted: 12445.67, and turning the DATA knob one click clockwise will produce: 12455.67.

12445.67 ⟹ (CURSOR) ⟹ 12445.67

12445.67 ⟹ (DATA) ⟹ 12455.67

If you turn the DATA knob more than ten clicks, of course, the value of the whole parameter will be incremented or decremented by the number of clicks. In this way, with very little effort, fast accurate editing of numbers can be achieved using only the two control knobs. The best way to learn how this works is to practise; after a short time, it should become second nature.

The number buttons

As an alternative to turning the knobs, you can also press the number buttons for direct entry of data. Use the +/← button to position the cursor at the left of a numeric field, and the -/→ button to highlight digits to the right, one at a time. Pressing a number on the number keypad will enter that number at the rightmost highlighted position and move the cursor one position further to the right. When you know the exact number you want to enter (eg a program number), this can be faster than using the CURSOR and DATA knobs, but when experimenting (eg setting loop points), the knobs may be faster than the number keypad. You'll probably discover quickly what method works best for you in each situation.

Remember, when selecting programs, you must press the ENT/PLAY button to confirm your selection.

The eight soft keys

As explained in the section describing the display, these buttons have no pre-defined function, but perform different jobs depending on the current state of the S1100. Common assignments for these soft keys are **SLCT** (usually F1), which takes you back to the previous page, GO (usually F7), YES and NO.

SELECT PROG

This button is used to enter the main Program Selection page of the S1100. Turning the CURSOR knob brings the programs currently loaded in memory into view, and the DATA knob is used to select them. When in this mode, the LED on the button lights (as with all the buttons on this row when the appropriate button is pressed), to remind you of the currently-selected mode.

EDIT SAMPLE

This button is used to enter the main page for editing (including recording) samples.

EDIT PROG

This button is used to enter the main page for editing keygroups and programs.

MIDI

This button enters the main MIDI parameter page. A number of different MIDI-related settings can be made here.

DISK

Though some disk operations can be carried out from other pages, this button enters the page where most disk operations are carried out.

MASTER TUNE

Allows transposition and master tuning of the whole keyboard, as well as allowing a user-defined temperament to be set up.

DRUM

When used with one or two AKAI ME-35T audio/MIDI trigger units, the S1100 is capable of controlling them, making the S1100 the basis for a very sophisticated electronic percussion setup.

UTILITY

This button is used to access the timecode-based cue list facilities of the S1100.

MARK/JUMP

These two grey buttons to the right of the number keypad are used in conjunction with each other. If you are carrying out editing operations which require changing display pages a lot, these can save a lot of time and effort. Pressing the MARK button when the cursor is on a field will cause the S1100 to remember the position of the cursor, and pressing JUMP will take the cursor back to the MARKed position from any other page. Pressing JUMP again will take you back to the page you were at before you JUMPed.

You can reset the MARKed position at any time. This position is lost when the power is turned off. At power-on, this position defaults to the program select field in the initial SELECT PROG page.

NAME

When samples, programs or drum input settings are changed, they should be given a name for easy reference. Pressing the (NAME) button in certain pages will enable you to name the data. Letters (uppercase only) are entered by pressing the front panel buttons. Each button has a letter following its primary function (eg (DISK/M), (2/X)), and when entering names, pressing the (NAME) button will switch the function of the number buttons between letters and numbers. The CURSOR knob moves the cursor around inside the name field when naming a sample or program.

As an example, after positioning the cursor on a name field, the following buttons should be pressed to enter the name "BASS2": (NAME) (F2/B) (F1/A) (9/S) (9/S) (NAME) (2/X) (ENT/PLAY). When entering names in letter mode, the (+/+) and (-/+) buttons work as backspace and spacebar buttons respectively (when in number mode, they enter the "+" and "-" characters, and the (MARK) and (JUMP) keys enter "#" and "." respectively). The last button enters and confirms the name, as described below.

ENT/PLAY

This is a dual-purpose button. When naming samples, programs, etc, pressing this button will end the naming process. When editing samples, however, pressing this button will play back the sample at its current stage of editing, without your having to set up a keyspan for the sample and find the correct key on a keyboard. The default note played when this button is pressed will be C3 (middle C) at a velocity of 127, but this can be altered in the MIDI TRAN page.

This concludes the tour of the front panel. It may seem rather brief, but bear in mind that many buttons have many functions, and interact with each other in different display pages. We have judged it better to give this brief description here, and concentrate later on the function of each button in context.

The Rear Panel

By comparison with the front panel, the rear panel is refreshingly uncomplicated, consisting mainly of input and output connectors.
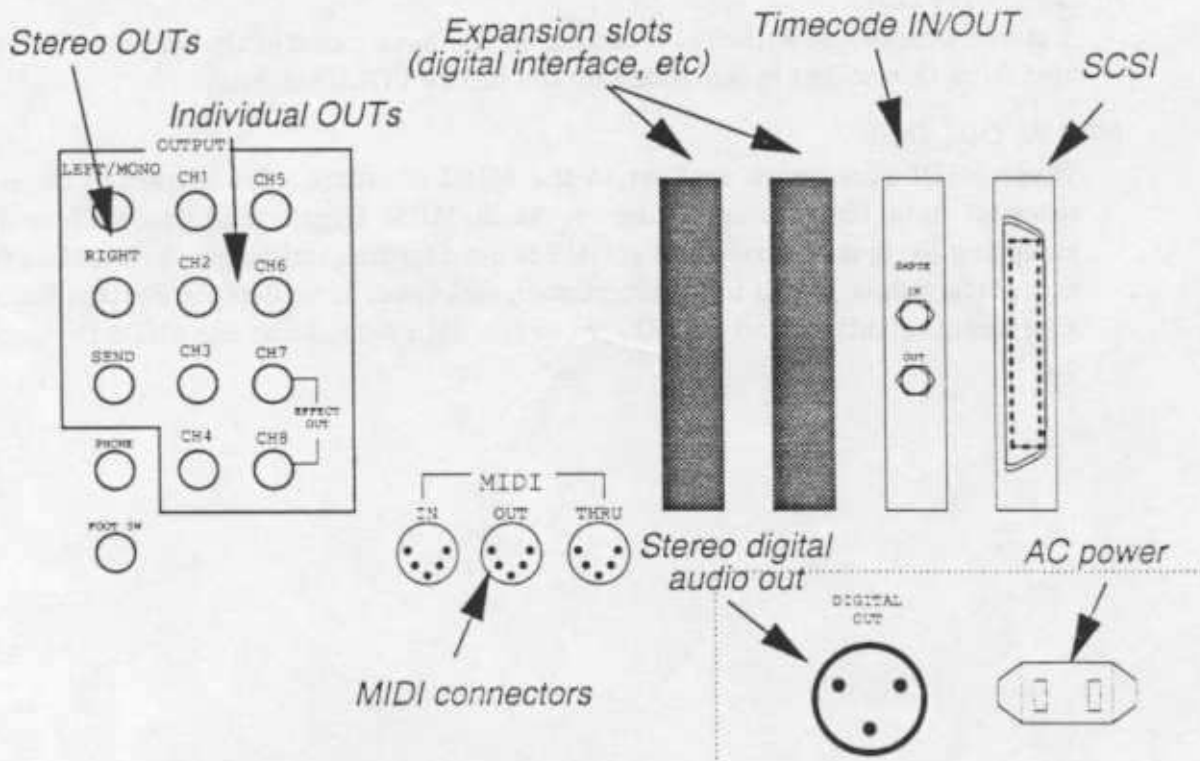
Audio OUTPUT connections

There are ten audio connectors provided (all unbalanced 1/4" phone). The simplest way to connect the S1100 to a mixer or amplification system is to use the LEFT/MONO and RIGHT stereo connectors (if you want to make mono connections, use the LEFT/MONO connector only).

Use of the channel connectors (CH1 through CH8) allows much more flexibility and control (but of course, this will take up more input channels on the mixing console). Programs can be assigned to any one of these output channels (stereo programs should be assigned to the stereo OUTs for the full stereo effect) and effected separately.

You will note that when the internal effects are switched on, individual outs 7 and 8 are used to send the effected signal and so only outputs 1-6 are available to send programs through. If you need to use individual outputs 7 and 8 then the internal effects must be switched off.

EFFECT SEND

A mono effect send (unbalanced 1/4" phone) is provided for use with an external signal processor such as the AKAI AR900 digital reverb processor. A global ambient reverb could be added to "dry" drum samples prior to sending them to the mixing desk, for example. The effect send can be switched ON or OFF for each sample in a program (the hi-hat could be left "dry", and the toms set up to be "live", for example).

FOOT SW

The FOOT SW connection is used for a press-to-close (non-latching) footswitch which may be used to start the recording process when sampling.

HEADPHONES OUT

A stereo headphone socket is provided on the back panel of the S1100. The volume from this socket is controlled by the MAIN VOLUME knob.

MIDI IN, OUT, THRU

These MIDI connectors confirm to the MIDI standard. IN is used to receive external data (from a sequencer or audio/MIDI trigger unit) as well as for accepting System Exclusive data, OUT is used for transmitting Note On/Note Off and performance (pitch bend, aftertouch, etc) data, as well as for System Exclusive communication, and THRU echoes the data received at the MIDI IN terminal.

Setting up the S1100

This short section tells you how to get the S1100 "up and running" fast. For full details of other operations, refer to the appropriate explanation in this manual.

Connections

Start by placing the S1100 on a firm level surface or in a 19" equipment rack. Remember to leave adequate space for airflow above and behind the S1100 if putting it in a rack (a 1U space above the S1100 is adequate).

For now, you'll probably want to connect a MIDI controller, such as the AKAI MX76 master keyboard. Connect a MIDI OUT of the controller to the S1100's MIDI IN connector. The power-on default of the S1100 is OMNI ON, so you can leave setting MIDI channels till later. However, unless you want to play through headphones, make some audio connections. Using the LEFT/MONO and RIGHT stereo outputs will probably be sufficient at this stage, so connect these to two channels of a mixing console, and set the gain appropriately (the standard output level is -3dBv and the impedance is 600Ω). Set the pan pots for the channels to hard right and hard left so that you get the full benefit of the stereo capabilities of the S1100. Connect the power lead to the AC supply and to the S1100.

> ### DO NOT SWITCH ON THE S1100 YET!!

The S1100 produces a definite power-on "thump", so make sure that the channel faders, master faders, or amplifier controls are set to the minimum level before turning on the S1100. In addition, before switching on, if you are loading a later version of the operating system from disk, take the *Operating System* diskette and insert it in the drive so that the latest version of the operating system will be loaded when you turn the power on. Now you can turn the power on.

2 Sampler functions

This section deals with the sampler functions of the S1100. If you are unfamiliar with the terminology used by AKAI for their samplers, or the general method of operation, and you have not read the *Glossary* or descriptions of the controls, go back and read these sections now. It will save you a lot of time later on.

SELECT PROG

Unlike a synthesizer, you cannot play the S1100 straight away — you must load samples, keygroups and programs from disk first.

Getting started and checking out — playing supplied factory samples

When the operating system message has cleared from the bottom line of the display, you will be in the main SELECT PROG page (the [SELECT PROG] LED will be lit) and you will see the following display:

```
┌──────────────────────────────────────────────┐
│ PROGRAMS  IN  MEMORY (vol: NOT NAMED        ) │
│ *  1 SNARE              5 Program(s)           │
│ *  1 KICK               5 now active           │
│ *  1 HATS               PROGRAM NUMBER:  ▮1▮   │
│ *  1 TOMS               DATA knob to select    │
│ *  1 BASS              <CURSOR knob to view     │
│ ┌────────────────────────────────────────────┐│
│ │SLCT RNUM MIDI MIX DISK DEL FX MUTE         ││
│ └────────────────────────────────────────────┘│
└──────────────────────────────────────────────┘
```

This page is where you can do many things, such as select programs to play, set up multi-timbral configurations, renumber programs, layer programs, delete programs and set up effects. Before you can do any of this, however, you need some sounds to work on so insert one of the supplied sample disks. Now press the **DISK** button ([F5], not the [DISK] button on the bottom row). After a short time, the words "LOAD FROM DISK" should be displayed at the top left hand corner of the page. A list of all the programs and samples on the disk will be displayed on the left side of the page, which extends below the bottom of the screen. You can scroll through the list (for information) using the CURSOR knob.

To load the entire contents of the disk, you will have to use one of the soft keys — in this case [VOL] ([F8]). When you press this button, you will be asked to confirm this (press [F8] — YES) — the disk drive LED will come on, and you can see the bottom line of the display showing the programs and samples being loaded. All samples and programs currently in memory will be erased. When the disk drive light has gone off, eject the disk, and keep it with the rest in a safe place (not near magnetic fields such as speakers, power supplies, TVs or transformers, and away from where some careless person can spill coffee over it!!).

Now press the **SLCT** button ([F1]). Underneath the "PROGRAMS IN MEMORY" at the top of the page, you will see a list of the programs you have just loaded from the disk. As the page tells you, you can see them all by scrolling through with the CURSOR knob, and select one by using the DATA knob (the number on the right

side of the page changes, and an asterisk is displayed next to the selected program). Alternatively, use the number buttons to make a direct selection, followed by ꞏENT/PLAYꞏ.

Now play the keyboard and listen. Remember, what you're hearing are edited samples — if you don't like these programs, you can go back to the raw samples, trim them, add loops, resample at different frequencies, and then using the EDIT PROG mode, add filter, aftertouch modulation, alter the EG settings, add in other samples, etc ..

This is where your creativity comes in. The hard work of assembling a string section in a top studio and recording them playing one note has been done for you.

A powerful (and useful) feature of the S1100 is its ability to continue sounding a sustained note of a program, even when another program has been selected. With most synthesizers and samplers, changing a patch or program automatically stops the sound from the machine until a key is pressed. The S1100, however, continues to sound the release or sustained portion of a program during and after program changes. This makes for "seamless sound" when sequencing with a lot of Program Change messages.

Renumbering

On the S1100, program numbers correspond to patch numbers on a synthesizer. When a MIDI Program Change message is received, the appropriate program is selected. However, to match S1100 programs with the patch numbers on your synthesizer, you may want to renumber the programs, so that selecting a brass sound on the S1100 will call up a similar (or complementary) patch on a remote synthesizer module. To do this, press the **RNUM** button. As the screen informs you on this page, you select the program to be renumbered using the CURSOR knob, and alter the current number to the new number using the DATA knob. You can also use the number pad for this, setting the program number to a value of between 1 and 128 (these are MIDI specification limits). When you have altered the number, press ꞏGOꞏ. The programs in memory will be resorted according to the new number. Carry on renumbering programs until you are happy with the final result, and then press **SLCT** to return to the main SELECT PROG page.

Programs with the same number

Most synthesizers do not allow you to assign the same number to different patches. However, the S1100 allows you to have many programs with the same number. This is not an oversight, but is a way of allowing you to select more than one program simultaneously with one selection procedure or Program Change command. Each program could be set to a different MIDI channel for multi-timbral work with a sequencer, for instance, or different programs could be split over the keyboard or layered for live work. Bear this in mind when renumbering — it's a very powerful feature of the S1100.

Mixing sounds on the S1100

The S1100 is equipped with a 'virtual mixer' - that is, you can set up mixes of programs with any number of mixer 'channels'. This is done in the MIX page of SELECT PROG. To access this, press **MIX** — ((F3)) and you will see the following display:

```
MIX    Prog no:    1        LEU  O/P  STE  PAN  FXS
*1  SNARE                    80  OFF   99  MID  14%
*1  KICK                     80  OFF   99  MID  14%
*1  HATS                     80  OFF   35  L44  OFF
*1  TOMS                     80  OFF   78  MID  29%
*1  BASSGUITAR               80  OFF   87  MID  OFF
 SLCT  RNUM  MIX  MIDI  DISK  DEL  FX  MUTE
```

On this page you may set, from left to right across the screen:

prog no:

This shows the number of the program selected in the main SELECT PROG page although you may select another program or group of programs in this field.

LEV:

This sets the overall level for the program as it appears at the stereo output AND the individual output and could be regarded as similar to the gain control on a mixer. Please note, however, that if this parameter is set to 99, then you will lose control over velocity sensitivity of loudness. The default is set to 80 which gives a healthy output level and a good degree of velocity sensitivity.

O/P:

This allows you to assign any program to an individual output should you wish to mix the program using an external mixer. This output is a "base" number which may be altered in the SMP2 page of EDIT PROGRAM so the results may not be exactly what you expect.

STE:

This sets the level of the program as it appears at the left/right stereo outputs of the S1100. This is normally be used to mix the levels of different programs and is the equivalent of a mixer's fader control. It is possible to send programs to individual outputs but, by mixing them out of the stereo outputs by setting this parameter to 00, you remove them from the main mix. In this way, for example, you could send individual drums to separate channels of an external mixer for more elaborate level and tonal control whilst other instruments appear only at the stereo outputs of the S1100. In this way, very complex mixes can be set up. Another method may be to send, say, snare, kick and hi-hats to individual outputs (but take them out of the stereo mix) and just have toms and percussion in a stereo image coming out of the main stereo mix. In this way, you save channels

on your external mixer as well as freeing up the S1100's other individual outs for maybe piano, bass or whatever other instruments you may have in a multi-timbral setup.

PAN:

Fairly self-explanatory - this sets the pan position of the program in the stereo outputs and the range is L50 through MID (00) to R50.

FXS:

This abbreviation of "effects send" allows you to set the level of the program going to the internal effects or to an external effects unit via the effects output jack. This parameter is set in seven steps expressed as a percentage and the range is OFF, 14%, 29%, 43%, 57%, 71%, 86% and MAX.

You will note that this parameter above is a pre-fade effects send and so, even if you set the STE parameter described above to 00, the program will still be sent to the effects. If you wish to turn down the stereo level AND effects send, change the LEV parameter.

All these parameters are available for each and every program and in a layered or multi-timbral setup, you can set levels and effects sends very precisely and the only difference between the S1100's mixer and a 'proper', external mixer is that the S1100's mixer does not have any EQ facilities for affecting the tone. If you feel this is necessary, then you may use the individual outputs to send certain programs to an external mixer for more elaborate level and tone control and, of course, it is possible to use a combination of the external mixer and the internal mixer using the individual outputs in conjunction with the main stereo output.

MIDI

Pressing F4 — MIDI will display the following screen:

```
┌──────────────────────────────────────────────┐
│ MIDI  Prog no:  1 CHA   RANGE    POL PRI OCT   │
│ •1 SNARE          1  C_0 G_8  16 NORM  +0      │
│ •1 KICK           1  C_0 G_8  16 NORM  +0      │
│ •1 HATS           1  C_0 G_8   1 NORM  +0      │
│ •1 TOMS           1  C_0 G_8  16 NORM  +0      │
│ •1 BASSGUITAR     1  C_0 G_8  16 NORM  -1      │
│ SLCT  RNUM MIDI MIDI  DISK DEL  FX  MUTE       │
└──────────────────────────────────────────────┘
```

This may be regarded as a 'MIDI mixer' as it follows a similar layout to the MIX page described above. This page allows you to set various MIDI parameters for every program. The parameters are:

prog no:

This shows the number of the program selected in the main SELECT PROG page although you may select another program or group of programs in this field.

CHA:

This allows you to set the MIDI channel for any program and the range is OM (omni) through 1-16. This parameter allows you layer programs together (i.e. set two or more programs to the same program number and set the MIDI channels the same) or allows you to set up sophisticated multi-timbral configurations (i.e. set several programs to the same program number and assign different MIDI channels to each program). You may also layer two or more programs within a multi-timbral configuration of course.

RANGE:

When two programs are given the same program number, it is possible to set up sophisticated keyboard splits by setting the note range of the programs. This parameter ignores each program's keygroups settings and simply imposes a range on the whole program. In this way, you can quickly set up very complex keyboard splits and layers without having to concern yourself with the intricacies of setting keygroups within a program itself.

POL:

This is an abbreviation of POLYPHONY and allows you to limit the polyphony of a program. This is sometimes desirable in certain types of programs such as hi-hats, for example, where you want a closed hi-hat to shut off an open hi-hat. In this case, you would set the polyphony to 1. Similarly, you may wish a mono-phonic bass part to have a restricted polyphony.

PRI:

This is an abbreviation of PRIORITY and allows you to set how notes will be 'stolen' by other programs if the 16 voice polyphony is exceeded at any time. There are four settings: LOW, NORM, HIGH and HOLD. If the program is set to LOW priority, then notes from this program will be stolen first. If set to HIGH, then notes from other programs with lower priority will be stolen first before they are stolen from this program. NORM is, of course, normal priority and sets standard dynamic voice allocation and note stealing will take place with no particular priority. If a program's priority is set to HOLD, then notes can only be stolen from this program by the same program.

If you are playing a complex piece of music using many programs in a multi-timbral configuration, it is a good idea to set important programs to HIGH or HOLD and less important, background programs to LOW. If the piece of music is not overly complicated and polyphony is not going to be exceeded, you may prefer just to leave the priority at the default setting of NORM.

OC:

This is an abbreviation of OCTAVE and sets the basic octave range for the program. The range is -2 to +2

Deleting programs

Programs and their associated samples may be deleted from memory in this page, which is accessed by pressing the `DEL` button. When this page is displayed, the cursor will highlight a program. Highlight the program you want to delete using the CURSOR knob. There are three soft key actions that you can take, all concerned with deleting programs: `PROG`, `PNUM` and `ALL!`.

```
DELETE  PROGRAMS  FROM  MEMORY
*  1 TEST PROGRAM            Programs:    2
   2 NEW PROG
                               free:     94%

                             ⌐ delete ⌐
SLCT RNUM RESP DEL  DISK PROG PNUM ALL!
```

NOTE: If you delete a program from memory, make sure that you really do not need that program in the future, or that you have saved it to disk first. In some cases, as explained below, deleting a program will also delete samples. Make sure these really are unwanted, or have been saved to disk before proceeding.

Pressing (PROG) will ask you if you want to delete one program ? Either GO or ABORT the deletion procedure. If the program is the only one in memory using a particular set of samples, you will be asked whether you want to delete those samples at the same time. Press the appropriate soft key if you are sure that you want to delete the program and its associated samples.

The (PNUM) button will delete all programs which have the same number as the highlighted program. You will be asked if you want to proceed with the bulk program delete !?. If these programs are the only ones using particular samples, you will be asked if you want to delete the samples as well.

(ALL!) is, of course, the most drastic of these three options. If you answer GO and YES to the question regarding released samples, then all programs, except for an S1100-generated program (TEST PROGRAM) and samples will be deleted. Deleting samples and rearranging memory space will take a little time, so be patient while this takes place. Obviously, this is an option to be used with some caution.

Sampler functions

Using the S1100's multi-effects

The S1100 is the first sampler to feature internal multi-effects. These days, effects are as important a feature of a sound as the filter settings or envelope settings on a synthesiser, and when you load a sound from disk, you don't want to spend hours looking for the correct reverb or delay on an external effects unit. Also, once you have created the right effect for the sound, you want to be able to recall it with the sound every time you load it. The internal effects of the S1100 allow you to do this, without the nuisance of external effect processors.

When you turn on the S1100, you have 50 preset effects from which to choose, made up of four basic effect types. These are:

REVERB - there are several types of reverb available, from long spacious halls to small tight rooms, plus plate reverb simulations and these can be used to add ambience to any sound.

CHORUS/FLANGE - this is one all-purpose effect that covers every type of modulated delay effect from mild, shimmering chorus to outrageous flanging effects. The algorithm used for these effects is very complex and uses four delay lines that are modulated by a low frequency oscillator (LFO) but the modulation phase angle for each delay line is different. This allows you to create rich, swirling stereo effects and also eliminates the unpleasant cyclic repetition you get with chorus and flange units that use only one delay with one LFO. A totally separate delay is also used to add echo effects to the chorus and flange effects you create.

PITCH SHIFT - this is a stereo pitch shifter that allows you to transpose a sound up or down by as little as .01 of a semitone for subtle detune effects to 50 semitones. There are two pitch shifters and each one has a delay line in the feedback loop allowing many interesting special 'spiral' and arpeggio effects to be created.

ECHO - this is a three tap delay line. In other words, instead of having just one delay setting as most units do, you have three, and each delay can be set separately each with its own feedback and pan position. This allows you to create a wide range of delay and echo effects from straight single delays to ping-pong echo through to complex multi-tap echoes that can simulate the echo effects only offered by older tape echo devices (but without the wow and flutter and tape hiss, of course!).

Each effect also has its own level control, EQ control, pan position and width control to add a flexibility offered only by patching in sophisticated external multi-effects devices.

The effects processor in the S1100 works in a slightly different way to other instruments that have built in effects. On other units, the effects are inextricably tied to the sound program and it is often difficult to use your favourite effect on another program without having to re-program the effect especially. On the S1100, you have what is called an "EFFECTS FILE" and this contains 50 effects. These effects can be freely assigned to any program number so that one effect can be used on several different programs. For example, you may have a strings program, a brass program and a piano program with the program numbers 1,2 and 3 and you may wish them all to share the same reverb effect. In this case, all you need to do is assign the appropriate reverb effect to programs 1, 2 and 3. Of course, every program can have its own unique effect if you wish.

Similarly, a group of programs sharing the same program number may share the same effect so that in a layered, split or multi-timbral setup, you may assign an effect to all sounds 'globally' and each program can use the effect at a different level using the FXS parameter described in the mixer section above.

This method of effects assignment makes the internal effects unit behave more like an external unit where effects can be freely assigned to any program and you can mix and match your effects to programs as you like. If you don't like any effect, simply select another until you find one that matches the sound exactly (or, of course, create your own). Furthermore, it is possible to 'grab' an effect off another disk and assign it to any program.

As if this wasn't enough, you may also use the effects on external sound sources and the S1100 can be used as a stand-alone effects unit. It is also possible to route internal programs AND an external sound source through the effects simultaneously. This could be invaluable in a multi-timbral setup where the S1100's programs AND an external synthesizer that maybe doesn't have any effects built in could be routed through the S1100's effects. In a post-production situation, the actuality track can share the same ambient reverb as the atmos and effects created by the S1100. In a live situation, you could even run a microphone through the S1100 so that your vocals share the same effect as your sequenced backing track. The possibilities are enormous.

To access the multi-effects, press �F7 - **FX** - and you will see the following screen display:

```
FX (Prog:      1= 1) no: 1 LONG HALL      INT
      type: LARGE  HALL            output: 99
     decay: 2s                        pan: MID
   HF damp: 40                     HF cut: 38
     delay: 11                      width: 99
   diffuse: 30                 stereo mix: ON
  SLCT RNUM MIDI MIX DISK DEL  FX  MUTE
```

The fields across the top of the screen are as follows:

prog:

This field allows you to assign any effect to any program. This is done by selecting the appropriate program (this would normally be done in the main SELECT PROG screen but can be changed here if you wish by changing the first numeric field) and then assigning the effect you require. In other words, if the display reads:

(Prog: 3= 4)

then program number 3 has effect number 4 assigned to it. You can change the effect assignment by changing the effect number and, as you do this, the name of the effect shown alongside will also change.

no:

This shows the currently selected effect number. You can change this to audition other effects without necessarily changing the effects assignment set in the PROG NO: field described above. If you prefer the effect assigned in this field, you can then assign that effect in the PROG NO: field. This field also allows you to assign another effect temporarily, but this will not be retained when you select another program.

EFFECT NAME

Although not labelled as such, this field shows the name of the selected effect. You may create your own name by pressing NAME and typing in a name from the front panel and then pressing ENT/PLAY. Names of up to 11 characters can be used. As you select different effects in the PROG NO: or NO: field, the name shown here will change.

INT:

This field allows you to select whether the source of the sound for the effects processor is from the internal programs or from an external source. You may also select that the internal programs and an external sound source are passed through the effects or you may also switch the effect off altogether. The options therefore are: INT, EXT, I+E and OFF.

> **IMPORTANT NOTE:** As soon as you enable any effect in this field, the effect signal is automatically assigned to individual outputs 7 and 8 and these outputs are then not available for routing programs through. With this field set to OFF, you may use the individual outputs 7 and 8 in the usual way.

The rest of the screen depends on the effect chosen in the type field described in a moment but our designers have kept many parameters constant between different effects to make programming that much easier for you.

Let us first examine the reverb effects' screens:

Reverb effects

```
FX (Prog:    1= 1) no: 1 LONG HALL      INT
       type: LARGE   HALL        output: 99
      decay: 45                     pan: MID
  HF damp: 40                   HF cut: 38
     delay: 11                    width: 99
  diffuse: 30            thru: 00 mix: ON
  SLCT RNUM MIDI  MIX  DISK DEL  FX  MUTE
```

type:

This allows you to select the type of effect and you have a choice of various reverb types plus the chorus/flange, pitch shift and echo effects, though right now we are only concerned with the reverb effects. There are 6 reverb types available, all of which offer different densities and decay times. The reverb types available are:

LARGE HALL - this is a big, spacious reverb effect that emulates the characteristics of a large concert hall or cathedral environment. It is well suited to strings and other orchestral instruments, choir, church organ or any other instrument that needs to 'placed' in a big acoustic environment.

MEDIUM HALL - this emulates a slightly smaller acoustic environment such as a concert hall although this has a slightly less diffused reflective quality than the large hall selection and is slightly brighter. Again, this is ideal for strings, orchestral instruments, choir, etc. It is also effective for creating huge, ambient drum sounds.

LARGE ROOM - this has the characteristics of a big, reflective room. Its decay characteristics are such that discrete echoes can be heard slightly. This is ideal for drums and percussion, guitars, piano or, in fact, any sound that needs to be placed in a more 'intimate' acoustic environment.

SMALL ROOM - this has highly coloured reflective qualities such as you experience in a small, reflective room. This reverb type is ideal for adding 'space' but without the 'wash' of a longer reverb type and so is effective on drums and percussion, bass, guitar and keyboard sounds. The room size is probably too small to fit an orchestra in but try it if you wish!!

PLATE 1 - this is a highly reflective, bright metal plate reverb simulation and is well suited to drums and percussion although most instruments will benefit from this effect.

PLATE 2 - this is a richer plate reverb sound with less high frequency content. This is a smoother sound and, again, is well suited to a variety of instruments.

There are no hard and fast rules as to the type of reverb you choose for any one sound. It could be that one type of reverb that sounds bad on one sound will sound great on another, so just experiment. Many arresting productions have been created by breaking "the rules" (such as they are) on the use of effects.

decay:

This sets the decay time for the reverb effect and the range is 00-99 although, within each reverb type, certain limits have been imposed so that, for example, you cannot obtain a 20 second decay from a small room reverb type. The range of decay times is, therefore, appropriate to the type of reverb selected above.

HF damp:

This sets the amount by which high frequency signals will decay in proportion to the main decay. In natural reverberant settings, high frequencies commonly decay before lower frequencies because high frequency components have less energy than low ones and so are absorbed more quickly in the reflective process. This control allows you set this decay rate (or 'absorption rate', if you like) of the high frequencies to suit the type of acoustic environment you you are trying to emulate. The rule of thumb is that for reflective environments (a stone cathedral, for instance) set a low HF damp factor and for less reflective reverb types (ie for an acoustic environment that maybe has many 'soft' fixtures such as drapes, curtains, audience etc) set a higher HF damping factor.

Sampler functions

delay:

This allows you to set the delay between the direct signal and the onset of the reverb decay. In very large acoustic environments, it is common that there will be a delay between the direct sound occurring and the onset of the reverberation. This is known as 'pre-delay' and is set by this parameter.

diffuse:

This parameter allows you to set the 'smudge factor' of a reverb effect. Some acoustic environments are extremely reflective and you may hear discrete echoes. Other environments cause the reflections to be more erratic and so smooth out discrete echoes. The diffuse parameter allows you to set how reflective or smooth the reverb pattern is during its decay. Low settings of diffuse create a more reflective environment where echoes can be heard and higher settings smooth out these reflections into more of an ambient 'wash'.

The next set of parameters are more or less constant for every effect.

output:

This sets the output level of the effect.

pan:

This sets the pan position of the effect.

HF cut:

This is a pre-EQ that limits the amount of high frequency component going to the effect. This allows you to filter out high frequencies and so create smoother effects.

width:

This allows you to set the stereo 'spread' of the effect. All effects are stereo and give wide, spacious effects but there may be occasions where you don't want that width (for instance, a flanged bass constantly moving between the speakers can be distracting). This control allows you to limit this. 99 represents full stereo width and 00 gives you a totally monaural effect and you may set a value anywhere in between to obtain the right effect.

thru:

This allows you to switch the direct signal from an external source through to the stereo outputs and it is possible to set level here as well although level is also controlled by the REC LEVEL control on the front panel.

mix:

This allows you to switch the effect to the stereo output on or off.

Chorus/Flanging effects

The next range of effects on the S1100 are modulated delay line effects, otherwise known as chorus and flanging. The principle behind such effects is that a short delay line is modulated by a low frequency oscillator (LFO) and this has the effect of creating pitch and tonal variations that can be used to add richness and depth to a sound.

The chorus/flange effects are selected in the TYPE field. Selecting this effect gives you the following screen:

```
FX  (Prog:        1= 1)  no:  1  LONG  HALL        INT
          type: CHORUS/FLAN              output:  99
speed:  10  depth:  50                      pan:  MID
feedback:  50                            HF cut:  38
    delay:  00                            width:  99
delay FB:  00                      thru:00  mix:  ON
 SLCT  ANUM  MIDI  MIX  DISK  DEL   FX   MUTE
```

The parameters are as follows:

speed:

This sets the LFO rate for the effect. The LFO rate can be set between 01 and 99 and at 00 it is off. When switched off, the depth control, in conjunction with the feedback control, allows you to set the chorus or flange effect manually and you can use this to add interesting, non-harmonic metallic overtones to sounds.

depth:

This sets the depth of modulation from the LFO and the range is from 00 to 99. If the LFO is set to 00 (ie off), this control allows you to 'tune' the metallic overtones to specific pitches. When depth is set to 00, no chorus or flange effect will be heard but the delay can be used as a simple echo unit if you wish.

feedback:

This sets the amount of output signal that is fed back into the input stages of the chorus/flanger. Increasing this creates a more dramatic effect. It is most useful in flanging effects although small amounts of it will accentuate certain chorus effects. Be careful when using this control as it is possible on certain sounds to introduce harmonic instability - in other words, it may accentuate a certain frequency in the sound and cause loud peaks. In certain circumstances, these peaks will be re-circulated and may create undesired 'howl round'.

delay:

This sets an pre-echo effect that delays the onset of the chorus or flange effect. On chorus, with short delay settings, this can be used to create rich automatic double tracking (ADT) effects. On longer delay settings, many interesting echo effects can be produced.

delay FB:

This sets the feedback for the delay parameter described above and it is threfore possible to set multiple repeats.

The other parameters are as described above in the section on reverb except that the HF cut parameter described above is replaced with a simple two band pre-EQ:

lo:

This allows you to cut or boost the low frequency signal going to the chorus/flanger and the range is -50 (cut) to +50 (boost).

hi:

This allows you to cut or boost the high frequency signal going to the chorus/flanger and again the range is -50 (cut) to +50 (boost).

Pitch shifter

The S1100 contains a stereo pitch shifter and it is possible to set separate pitch shifts for the left and right outputs. Furthermore, you may set delays within the pitch shifter's feedback loop to create a variety of interesting arpeggio effects.

Selecting PITCH SHIFT in the TYPE field calls up the following screen:

```
FX  (Prog:    1= 1) no:  1  LONG  HALL     INT
      type: PITCH  SHIFT ...       output: 99
             LEFT     RIGHT           pan: MID
      tune:+04.00  +07.00          HF cut: 38
feedback:    00       00            width: 99
FB delay:    00       00     thru:00  mix: ON
SLCT RNUM MIDI  MIX  DISK DEL  FX  MUTE
```

As you can see, there are separate controls for the left and right pitch shift. These are:

tune:

This sets the pitch shift and is variable between 00.01 of a semitone to 50 semitones up or down.

feedback:

This control sets the amount of signal that is re-circulated back into the pitch shift. Be careful because with certain sounds and certain pitch shifts you may get instability and 'howl around'.

FB delay:

This control sets a delay time for the feedback parameter. At higher settings, the signal feeding back will be delayed and so, using this parameter, it is possible to create a wide range of arpeggio and other effects. With the tune parameters set to a wide interval and feedback set to, say, 60, you can create rising and falling arpeggios. With the tune controls set to a smaller interval, you can create interesting echo effects where there is a slight pitch shift on the repeats.

These parameters are identical between the left and right pitch shifters although they are totally separate.

The other parameters are the same as for the reverb.

Delay (Echo)

The delay in the S1100 is considerably more complex and versatile than many other delays found in multi-effects units and a block diagram is shown below.
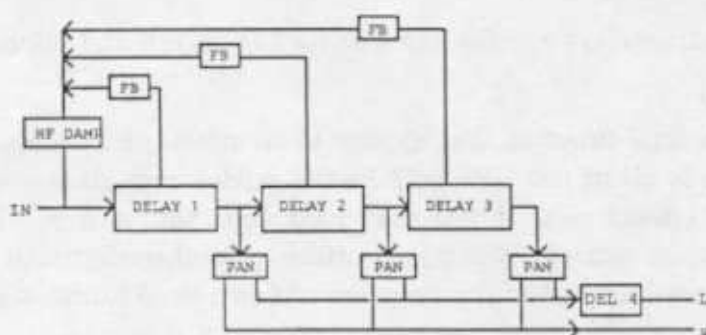
There are three delay lines that feed each other in series. Delays 1 - 3 are capable of up 360mS of delay whilst delay 4 is capable of 180mS of delay and, in total, you have 1260mS of delay. Each delay has its own feedback loop and pan position control and repeat echoes have the effect of 'flying' round the stereo image. These parameters allow you to create a wide range of echo effects that emulate the warmth and density of tape delay units with their complex, multi-head echoes.

To further assist in the simulation of natural echo and tape echo, there is a high frequency damping parameter that gradually reduces high frequency components so that multiple repeats get slightly duller with each repeat. There is also a delay on the left output.

When you select ECHO in the 'type' field, you get the following display:

```
FX (Prog:      1= 1)  no:  1  MULTI-TAP      INT
      type: ECHO  .    .            output: 99
        D1> D2> D3    Dleft           pan: MID
del:  200 200 200        10 mS     HF cut: 38
fbk:   00  00  00     hfd:50        width: 99
pan:  MID MID MID          thru:  00 mix:  ON

SLCT RHUM MIDI MIX DISK DEL  FX  MUTE
```

and the parameters are as follows:

del:
This sets the delay time for each of the delay lines 1 to 4. The range for delays 1 to 3 is 0-360mS each and for delay 4, the range is 0-180mS.

fbk:
This sets the amount of feedback for each delay.

pan:
This sets the pan position for each of the delay lines.

HF cut:
This sets the high frequency damping.

Others

The other parameters are the same as for the reverb and pitch shift effects.

MUTE (bypass)

There is one final function that applies to all effects and that is [F8] - [MUTE]. This is available is all of the SELECT PROG modes and allows you to temporarily disable the effects so that you may hear your sound 'dry'. This is invaluable especially when setting up complex multi-timbral configurations. This parameter is not stored as part of the program and is a local function only.

Normally, this soft key will display [MUTE]. To mute the effects, press [F8] and you will see [>><<] in this 'soft box' and the effects will be muted. Pressing it again will restore the MUTE message and the effects will be switched back on.

Copying and moving effects around

In the FX mode, it is possible to move one effect to another location using the SAVE and COPY soft keys ([F5] and [F6]). Select the effect you wish to move and press [SAVE] ([F6]). The effect is placed in a small 'clipboard' and the cursor will automatically be placed on the No: field and you may now select the effect number in which you wish to place this effect. When you change this number, the effects selection changes to show you which effect you will be overwriting. When you have found the required location, press [SAVE] - [F6] - and the effect will be copied.

You may also take effect from another disk using this function. Ensuring that you save your current effects file first, load the required effects file from a disk. When the effects file has loaded (it will only take a second or two), select the the effect you wish to use and save it. Now remove the disk and load up the original effects file and choose a location and copy it. In this way, effects from any disk can be loaded into the S1100 and used with any program you wish.

Disk operations

Pressing **DISK** ([F5]) in the SELECT PROG mode gives you a choice of two options: loading a program and its associated samples ([P+S]) or loading the entire contents of the disk ([VOL]).

If you have inserted a disk, pressing **DISK** will bring up a list of all programs stored on that disk. If you have inserted the wrong disk, press the [F5] button again (it now says DISK) after you have changed disks. If you want to wipe out all programs and samples in memory and load the contents of the disk, press [VOL]. You will be asked if this is what you really want to do. Make sure that you either do not want the programs and samples in memory, or that they are saved safely to disk before you proceed.

```
LOAD  FROM  DISK   FLOPPYL  vol:NOT  NAMED
TEST   PROGRAM
DTH PROG                    Programs:      2
                           (samples:      6)
                           free mem:     94%
                                    r LOAD┐
 SLCT RNUM RESP DEL  DISK        P+S  VOL
```

The other option, P+S, allows you to load a program and all associated samples (free memory permitting). To do this, highlight a program using the CURSOR knob, and press P+S. The program, and its associated samples, will be loaded into memory. If the samples required by this program already exist in memory, they will be loaded anyway, but they will overwrite the memory samples. If there is not enough memory to load a program and its samples, the message "!! insufficient waveform memory !!" will be displayed. In this case, you will have to delete some existing programs and/or samples to free up some memory space.

Other disk operations, like saving and formatting disks, are performed in the DISK mode, not from this page.

Conclusion

So far, we have seen the enormous possibilities offered simply by loading some sounds off disk, renumbering them, mixing them and playing around with the multi-effects. There are even more exciting possibilities open to the adventurous musician when we enter the realms of sampling and creating programs and this is the real joy of owning a sampler. The next section covers all this so, if you're ready.....

Sampler functions

Recording samples

When you start sampling, you must have a clean area of memory to do it, and enough memory to work in. In sampling, it is better to start with too much memory space than too little. You can always "top and tail" a sample later on, but you cannot create memory out of thin air.

```
┌─────────────────────┬────────────────────────────┐
│ SAMPLES IN MEMORY   │ sample: SYNTOM    1        │
│ name:  SYNTOM   1   │ size:        52608         │
│        *existing Samp*│ Free:   360000= 34%      │
│ (REN to rename)     │ samples in mem:  16        │
│ (COPY  to  duplicate)│ monitoring   program:-    │
│                     │         MONITOR            │
├─────────────────────┴────────────────────────────┤
│ SLCT  REC1  REC2  ED.1  ED.2  COPY │ REN │ DEL    │
└───────────────────────────────────────────────────┘
```

Restart your S1100. Press the [EDIT SAMPLE] button, and you are in a position to start recording and editing a blank sample, whose name defaults to "NEW SAMPLE". The first thing to do is to name the sample. Give it a meaningful name of up to 12 characters for a mono sample — 10 characters for stereo (press [NAME] and use the other buttons to enter a name [ENT/PLAY] when done). A name such as "HUGHS SAMPLE" will mean nothing in a month's time, while "HUGHS BASS" will at least tell you what kind of instrument the sample refers to. The reason why 2 fewer characters are allowed in a stereo sample is that the S1100 automatically adds "-L" and "-R" to the two sample names when creating a sample, and any characters you add in the 11th and 12th positions will automatically be overwritten. Now [COPY] the NEW SAMPLE to your work area with the name you've just entered.

The "monitoring program" can be set to either MONITOR or a program name. This enables you choose what sound will be heard when you press the [ENT/PLAY] button. Usually, you should set this to MONITOR.

While we're in this page, let's look at the other facilities provided. In addition to access the **REC1**, **REC2**, **ED.1** and **ED.2** pages (of which, more later), you can also copy, rename, or delete the chosen sample (as displayed on the top line) from memory.

Note that these three last operations do not affect the samples as stored on disk. If you delete a sample from memory, this will not delete it from disk. Of course, if you have not previously stored a sample to disk before deleting it from memory, that's the end of your sample! To copy a sample to another area of memory, use the [NAME] button to enter a new name (and then confirm it with the [ENT/PLAY] button). Then press the [COPY] button. A copy of the original sample will now be stored in memory under the new name. If there is not enough memory to store the new copy, the display will show this when you press the [COPY] button. Renaming follows the same procedure — enter a new name, and then press the [REN] button. The original sample will still be there in the same place in memory, but under a new name. Pressing the [DEL] button will delete the sample from memory. When you press the [DEL] button, you will be prompted to either GO ahead with the operation, or ABORT it. This is a "safety-net" to help you avoid accidental deletion of precious samples.

Now is a good time to connect your sample source. Turn the REC LEVEL down to the minimum level. If it's a mono source, use either of the L connectors (the XLR connectors are balanced, but you can sample unbalanced sources using the 1/4" phone sockets), otherwise make appropriate connections to the L and R inputs. If you use the phone connectors, the XLR connectors are automatically disabled. Set the REC GAIN switch on the front panel to match your source (line, mic or other). The three positions are: HIGH = -58dBm, MID = -38dBm, and LOW = -18dBm.

Press (REC1) to enter the first recording page. The name of your sample is displayed at the top, and the cursor is displayed over the MONO/STEREO parameter.

STEREO or MONO?

At this point it is worth looking into some of the pros and cons of stereo vs mono sampling. However miraculous the S1100 may seem, it can't perform the magic trick of turning a mono sample into a stereo sample. Stereo samples use up twice as much memory as mono samples, but if you have a good stereo sound source, it seems a shame to waste it and convert it into mono. It's up to you to choose; think what the sample's going to be used for before you record.

REC1 parameters

The parameters in this page are (in the order that the cursor finds them):

mode

as explained above, either STEREO or MONO.

(V)iew

When making a mono sample, this will remain at LEFT, but when making a stereo sample, you can choose either LEFT or RIGHT. It refers to which volume/time graph is produced for viewing when recording.

start

There are three ways in which you can start sampling: INPUT LEVEL, MIDI NOTE and FOOTSWITCH1. The usual method is INPUT LEVEL — when the signal input to the S1100 goes above the level that you have set up, sampling will begin automatically. However, if you are trying to sample one sound or passage from the middle of a piece of prerecorded music, you will need to initiate the recording process manually, either by a MIDI NOTE ON message, or by pressing the footswitch connected to the FOOT SW connector on the back panel.

monitor

The "monitor" parameter allows you to choose how you will listen to the recorded source as it is passed through the S1100 ("audio THRU"). Setting this parameter to OFF will never allow the sound to be passed through the S1100 to the outputs (if you're recording with a microphone and want to avoid feedback). Setting it to AUTO will enable the input signal to be passed through only when recording a sample or preparing to do so (in the REC2 page).

Under the "monitor" parameter is a message telling you how much memory is free, both as a number of 16-bit words, and as a percentage of total memory available. If you have followed the instructions so far, this will read "1048064=100%". 1048064 words are equal to 2 megabytes for obscure computer-based reasons which are too tedious to explain here. These values cannot be changed.

sample name

If you want to select or enter an existing sample name for re-recording, you can do it here with the DATA knob or the (NAME) button and letter/number buttons. This field will not allow you to rename the sample.

bandwidth

Either 10kHz or 20kHz. These figures refer to the audio bandwidth of the completed sample — not the sampling frequency, which is either 44.1kHz or 22.05kHz (for the technically minded, Nyquist's theorem[1] applies here). Sampling at the lower frequency will give you more memory, but filter out the top octave. For some sampled sounds this may not matter — like the choice between stereo and mono, it's up to you, and the final use of your sample.

orig.pitch

(original pitch) — default is C_3. Incidentally, if you prefer to work with MIDI note numbers rather than key names, press the REC1 key again to display the MIDI note number. This feature is available in all pages which use note names and note numbers. Make this parameter equal to the pitch of the sample source. For unpitched sounds, of course, this can be any value.

record tim:

(recording time). Once the S1100 starts sampling it will carry on until it runs to the end of the time set here (you can set this field to one-hundredth of a second precision). As you alter the value here, you will see the figures underneath change, showing you the amount of memory that this time represents, in bytes, and as a percentage of total memory available.

SOFT KEYS

(SLCT)

The (SLCT) button takes you back to the opening page of the EDIT SAMPLE section. Any soft key labelled in this way will usually take you back one level of page.

REC1

Pressing this button toggles between MIDI note number and key name display.

(REC2)

Enters the second recording page — where the actual recording of a sample takes place.

(ED.1)

Enters the first sample editing page.

(ED.2)

Enters the second sample editing page.

---

1 Nyquist's theorem (sometimes known as Shannon's sampling theorem) is a mathematical statement that a digital-analog or analog-digital conversion process needs a digital data rate of more than twice the highest analog frequency in order to convert data with no distortion. The nature of the low-pass filtering employed affects the exact ratio.

DIGI

When fitted with the optional digital interface board (IB-104), the S1100 is capable of recording and transmitting samples through a digital interface, either optical or electrical. However, unless this board has been fitted, there is little point in your using this button (unless you want to see what you're missing by not having a digital interface!).

The REC2 page

```
RECORD MONO     V:LEFT   SYNTOM  1      34%F
-20dB  Ptch:C_3  tim:    1.00s=   44100=  1%
□




SLCT REC1 REC2 ED.1 ED.2 METR Moff ARM
```

This page is the page where the actual recording takes place. Most of the parameters you can alter here are the same as the ones in the REC 1 page — from the position of the cursor when the page is first entered, they are:

MONO/STEREO

If you've changed your mind about whether the sample's going to be a mono or stereo sample, now's the time to change the setting on the S1100.

V (view)

(View) — either the left or right input on this graphical representation of the sample.

Sample name

Change this if you want to change the selection of an existing sample over which you are about to record.

-20dB (level)

This is the default value for the "trigger level" — the level above which the S1100 will start sampling if you have previously chosen INPUT LEVEL for the start of sampling. As you change this parameter, watch the hollow box on the left of the page expand and contract. The input signal is represented by a solid bar (starting from the bottom of the page), which gets higher as the signal level increases and actsas a PPM. You should set the trigger level to be just below the signal level at which sampling should begin.

ptch: (pitch)

(Pitch) — the original pitch of the sample source.

tim: (time)

(Time) Again, you can choose the total amount of time for your new sample. This field can be set to the nearest one-hundredth of a second, and the number of bytes and the percentage of total memory used will be changed accordingly.

Sampler functions

SOFT KEYS

The soft keys in this page are how you actually perform sampling. Two soft keys, (METR) and (Moff), allow you to turn the LCD graphic PPM (at the left side of the page) on and off. As the signal is input to the S1100, you will see the solid bar go up and down in accordance with the level of the signal. Use these keys to "preview" before a "take", so that you can adjust the recording level, gain and input trigger appropriately. As with all recording processes, setting the level high will increase the final signal-to-noise ratio, but remember that digital clipping is an extremely unpleasant effect, and once recorded, cannot be eliminated.

Recording

To start the recording process, press the (ARM) button. Only two soft keys will be active now: GO and EXIT. The GO button can be used as a manual override for whatever start setting you selected in the REC1 page (ie recording will start when this is pressed, rather than when the footswitch is pressed, a MIDI note is received, or the signal goes above the trigger level). However, normally you should wait for the S1100 to begin recording automatically. The EXIT button is useful as a panic button — if you suddenly notice you've set something up wrongly, or you're about to record the wrong sound.

Once the recording process is started (or you press the GO key), there is no way you can stop the recording process, which will continue inexorably till it reaches the end of the selected recording time. As the signal is input, a graph of the logarithmic value (decibel value) of the signal level versus time is displayed.

Use the (ENT/PLAY) button to replay your recorded sample. The pitch and velocity are determined in the MIDI TRAN page (default C3, velocity 127). If you have too much blank time at the end — don't worry, you can trim this off. Likewise, if you pushed the GO button too early, but you still have all your sample, you can trim off the unwanted beginning later on. If you're not satisfied with your sample, re-record it, otherwise:

NOW SAVE YOUR SAMPLE TO DISK!

Remember Murphy's Law: "Anything that can go wrong, will". (The Law of Murphy the Elder states: "Things that cannot go wrong, will".) Once you've made that perfect take, there will be a power cut, someone will trip over a cable, or you'll press the wrong button (we all do at one time or another — no-one's perfect). Seriously, though, saving raw samples to disk as soon as you've made them is good standard operating procedure — you lose less sleep that way. Also, if you make a mistake in the editing process, you can go back to where you started from.

Press the (DISK) button. If you already have a blank formatted disk (prepared for use with the S1100) insert it, otherwise format the disk by inserting a new disk and pressing **FORM**. Choose either (HIGH) or (LOW) density format. When formatting is finished, you can carry on.

Press the **SAVE** button and select CURSOR ITEM ONLY for "type of save:". Then move the cursor over the sample you've just made, and press (GO). The sound will be safely stored on disk.

If you're doing multisampling of one source, or making a lot of samples at one time, carry on recording and saving to disk. Otherwise, it's time to start editing your samples.
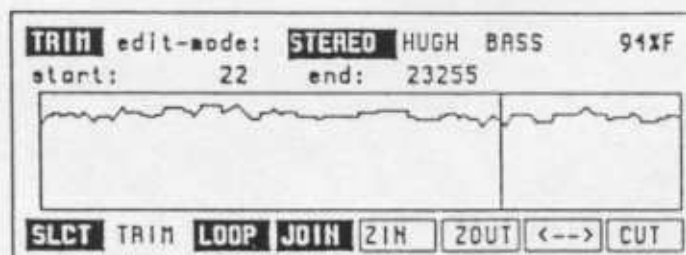
Editing samples

```
┌─────────────────────────────────────────────┐
│ TRIM  edit-mode: STEREO  HUGH  BASS    91%F   │
│ start:        22   end:   23255               │
│ ┌─────────────────────────────┬─────────────┐ │
│ │ ╱╲╱╲╮╱╲╱╲╮╱╲╮    ╱╲╮╱╲╮     │             │ │
│ │                             │             │ │
│ │                             │             │ │
│ └─────────────────────────────┴─────────────┘ │
│ SLCT  TRIM  LOOP  JOIN  ZIN   ZOUT  <-->  CUT  │
└─────────────────────────────────────────────┘
```

This is where things really start to get interesting. From the main `EDIT SAMPLE` page, press the **ED.1** button to get to the first editing page. This is the TRIM page, where you can cut off unwanted parts of your sample. If you've made a stereo sample, make sure that the "mode:" field at the top reads "STEREO". This means that you are working on two samples simultaneously — half as much work! If you want different effects for the left and right samples, or you're working on a mono sample, choose "MONO".

This is the actual attack portion
of the sample. Start from here.

Trim out this decay part. It can
be simulated with ADSR envelopes
and filtering later on.
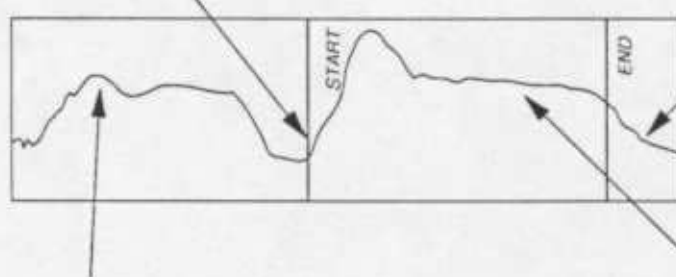
Someone coughed here, just before
the note was played. You can trim this out, if
the rest of the sample was OK

This part can be used for creating
a looped sustain

The start and end positions of the sample are given in the second line of this page. As you move the cursor to cover these fields and then alter the values (using the DATA knob and/or number keys) you will see a vertical line moving across the screen, giving you an idea of where the start and end points will be set in relation to the whole sample. By pressing the `ENT/PLAY` button, you can hear the effect of setting the start and end points. However, these changes will not be stored permanently until you press the `CUT` button. When you do this, if you have trimmed off a substantial portion of the sample, you will notice the "percentage free" display in the top right of the screen change, showing that memory has been released. Once you have made a trim, there is no way of getting the trimmed portion back, except by reloading the "raw" sample from disk.

To further assist you, there are a number of soft keys assigned which are also found in other pages. This is a good time to examine the function of the (ZIN) (zoom in) and (ZOUT) (zoom out) buttons. As you press the (ZIN) button repeatedly, you will notice the volume/time display become higher and higher resolution until it eventually is displayed at individual sample level. Usually, the S1100 will attempt to keep the start or end point within the "window" currently being viewed. If you lose this vertical line, try turning the DATA knob to bring it into view, or use the (ZOUT) button to get a bigger overview. The (F7) button changes its function with every press — from ⊕ to ⊕, and will allow you to change the area you are viewing between the start and end points of the sample.

LOOPING

This is probably one of the most delicate operations in sampling — allowing you to specify parts of a recorded sample to be repeated, for special effects, or so that a smoothly sustained note can be produced. The S1100 allows you an incredible amount of flexibility in these operations — up to eight looping points can be specified.

For example, in the illustration below, the vocal phrase "Pump up the house" has been recorded. When it is to be replayed, we want a "stutter" effect on the first part of the word "pump", and the final "s" of the word "house" to be looped as long as the key is held down, and then to fade out. We achieve this by setting two loop points — one for a finite time, which gives us four repetitions of the "pu" sound, and the last loop is set to "HOLD" (an infinite time) to give us the effect we want.

From the TRIM page, press the **LOOP** button to access the looping control page. Again, you will see a display of the sample's volume against time, in the left part of the display, together with a magnified display of the point where the loop rejoins the original sample sound. You can use the (ZIN) and (ZOUT) keys to zoom in or out of this window, but the display of the whole sample remains at a constant magnification.
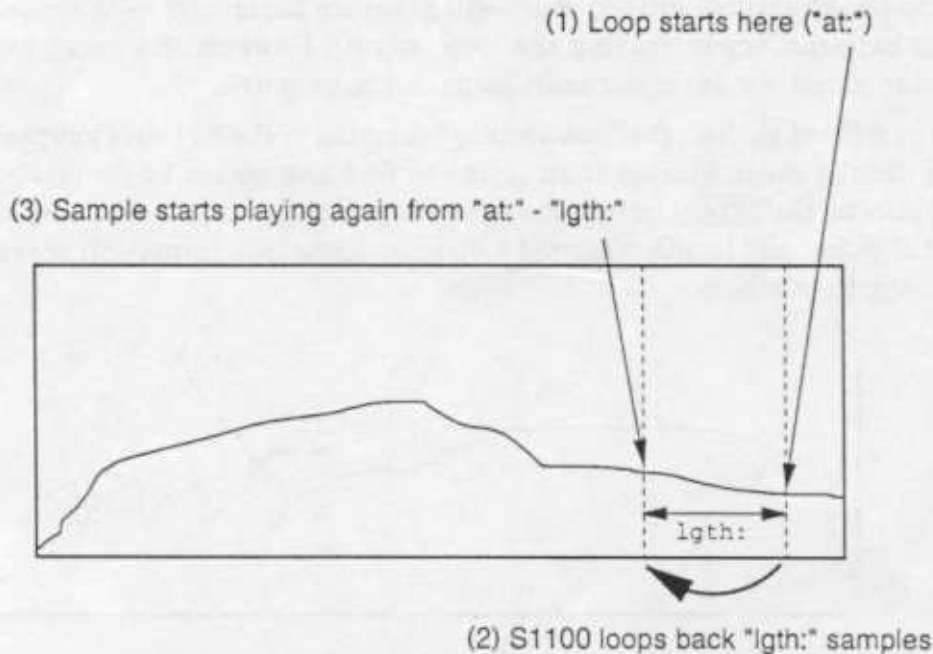
Pump up the house

→→   →←→

Loop 1 (500ms)   *Loop 2 (HOLD)*

PuPuPuPump up the housssss....

↷   ↷
↶   ↶

Loop 1 is repeated four times

*Loop 2 is repeated until
the key is released, and
the sound decays*

```
LOOP  1    time:HOLDmS   HUGH BASS    91%F
at:   45192  lgth:   3168.562  Xfd:        0

  ^^^‾^^‾^^‾^^‾‾^^‾    /\/\     /\/\
                      /    \/\ /    \/\
                     /       \/       \

SLCT  TRIM  LOOP  JOIN  ZIN   ZOUT  FIND  X-FD
```
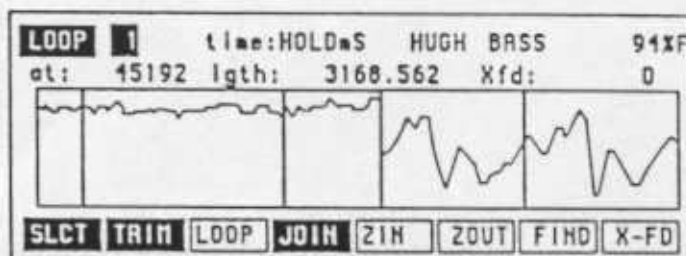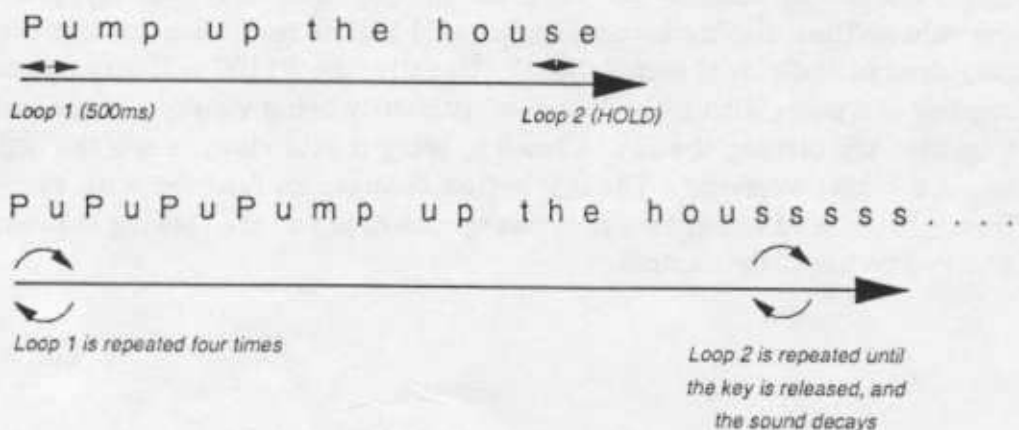
LOOP: First select the loop number that you want to set (top left). Unless you set the loop time to HOLD, loops will be repeated in numerical order. It is not possible to set a loop inside a loop.

time: Next, set the time (in milliseconds) that you want the loop to repeat for. Values below "1" will be treated as OFF — ie the loop will have no effect, and values of 10 seconds or over will be treated as "HOLD" — the loop will continue as long as the key remains depressed. A loop will repeat for the greatest whole number of times possible within the loop time set here. For instance, if the total loop time is set to 250mS, and the length of the loop is actually 175mS, the loop will only repeat once, not 1.428 times. This can save you a lot of calculation when you've set the loop length and you want a particular "stutter" effect or repeated drum beat.

Next on the top line is the sample you are working on. If you press the ⌈ENT/PLAY⌉ button and an unexpected sound comes out, select the sample you want in this field. After the selected sample name, the amount of memory space free (expressed as a percentage) is displayed.

at: Now you can select the point at which looping will begin — ie when playback reaches this point, it will go back and repeat a loop for the number of times determined by the loop time.

lgth: (length) The actual length of the looped portion (as opposed to the length of time that the loop will repeat) is set in the next field. As you adjust this parameter and the "at :" parameter, you will see two vertical lines move in the left part of the display, giving the approximate position of the start and end points of the loop.

(1) Loop starts here ("at:")

(3) Sample starts playing again from "at:" - "lgth:"

lgth:

(2) S1100 loops back "lgth:" samples

Xfd: This field determines the number of samples which will be cross-faded when the (X-FD) button is pressed (see below).

(FIND) This button starts an "autolooping" process within the S1100. It takes the length setting previously made, and starts counting down from this value every time the button is pressed, attempting to find a loop point automatically. However, since the S1100 is a computer, it's better at logical rather than intuitive or creative thinking, and the loop points that it finds may not correspond to the loop points you actually want. For all these limitations, it can save you a lot of time.

(X-FD) This button can help "hide the seams" in loop points. When a value is set in the "Xfd:" field, the S1100 will start fading out the main body of the sound and fading in the loop portion. The number set in the field determines the point at which this crossfading will start. **NOTE:** Pressing the (X-FD) button will permanently alter the sample. It's probably a good idea to press this button only if you have a copy already stored on disk.

For ordinary looping procedures (creating artificial sustain portions of a sample), usually one loop point will be sufficient. The trick here is to find a looping point which follows some of the basic rules below:

• Try to match up levels between looped portions and samples (zero crossing points), so that there are no sudden "glitch" points. The (FIND) button will help you with this.

- As well as the level being the same, the overall direction of the two curves (as shown in the right side of the display) should match (ie both should be rising or both falling).

- If you're trying to sustain a note using a loop, make sure that the pitch of the note is steady within the loop, otherwise there will be strange jumps in pitch.

- Loop lengths which are too short will generate harmonics — a "tuned buzz". If this happens, try increasing the loop length. However, for decay portions of a guitar sound, for example, short loops can be effective.

- As explained earlier, the "autolooping" function of the S1100 is not perfect — but it's usually much quicker than trying to find loop points by yourself. If, despite all efforts, the (FIND) button doesn't give you the loop you want, try moving the "at :" point, and lengthening the loop size. Some loop points will produce cleaner looping than others.
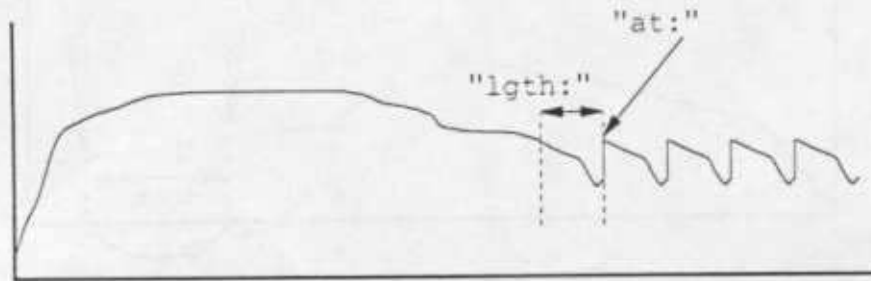
This is a poor choice of loop points. The sudden rise from the end of the loop to the beginning will cause audible "glitches"
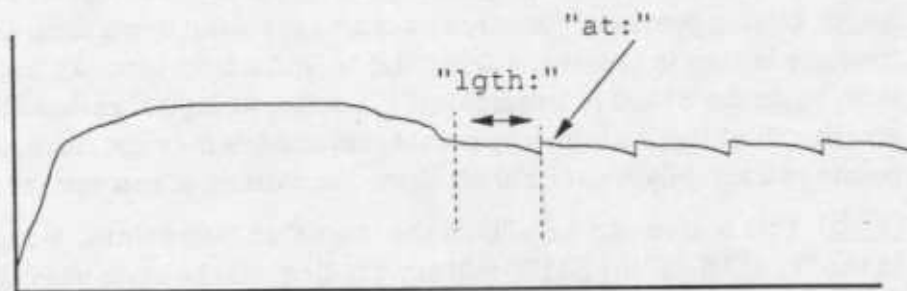
This is a much better choice of loop points. The rise from the end to the beginning will be less audible, and any "glitches" can be almost entirely eliminated using crossfading

TRIM This button will take you back to the TRIM page, where you can retrim the start and end of a sample. If, after setting loop points, the new start or end point of a sample fall within a loop, the screen will display this, and the new start or end point will be ignored. You must go back to the LOOP page and move these loops, or set them to OFF if you want the new start or end points to take effect.

JOIN

This page (accessed by pressing the **JOIN** button from the TRIM page) allows cutting, mixing or joining samples or parts of samples to each other. If the mood takes you, it is possible to join a chord from a Beethoven symphony onto the end of a reversed cymbal sample. Other, more practical, examples will no doubt suggest themselves.

The samples to be joined together are known here as A and B, and the resulting JOINed sample is called J. Though A and B can be the same sample, the resulting (J) sample cannot be the same as either A or B. Press (NAME) to enter a new sample name for J. Existing samples can be overwritten and therefore can be used for J.

As mentioned earlier, this page has three basic functions: to copy a part of a sample to another sample ((A->J)), to splice a sample (or part of a sample) to another sample ((SPLI)) or to mix two samples (or parts of samples) together ((MIX)). In addition, other pages can be accessed using the other soft keys (**SLCT**, **TRIM**, **LOOP** and **ED.2**).

The principles behind these three operations are similar, and so the operations common to all of them will be described together.

Select the A and B samples, using the DATA knob or the (+/+) and (-/+) buttons. You must then choose a name for the J sample. This can either be the name of an existing, unwanted sample, or you can enter a new name using the (NAME) button.

Now you should select the portions of the A and B samples which are to be combined ("first" and "last"). You may want to splice the attack portion of A to the sustain portion of B, or mix parts of two samples together. If you want to hear exactly what part of a sample you are going to use, you can set the first and last points of A, and then press (A->J) so that only the relevant part of A will be played when you press the (ENT/PLAY) button (you can overwrite J later, and you've done no permanent damage to A if you get things wrong).

Notice how the figures at the bottom alter as the lengths of samples A and B are changed. The figure before the "spli" is the total length of the selected portions of the two samples (minus the X-fade length — see below), and the figure before the "mix" is the length of the longest sample portion to be included.

X-fade over To avoid a sharp break in sounds when you splice ((SPLI)) them together, one sound can be faded into another for a certain number of samples. The crossfading will start before the "last" point of A, the time at which crossfading starts depending on the number of samples set in this field. Crossfading has no effect, of course, on mixing samples together.

```
JOIN   A then B --> J   Free: 360000= 34%
                       first      last    scale
A: SYNTOM   1           233      22557   +00db
B: CLAP               . 1044     28412   +00db
J: SYNCLAP            .X-fade over:       7089
   - new name -       42836 spli   27368 mix
SLCT TRIM LOOP  JOIN ED.2 A->J SPLI MIX
```

J (joined sample)

*This is an example of two samples being spliced together
with no crossfading. There will be a sudden jump in the sound
at the splicing point.*

This portion crossfades
between the two samples

J (joined sample)

*In this example, two samples are spliced together using crossfading
to make a smooth join between samples.*

You can adjust the relative volumes of A and B by ±25dB, using the "scale" parameters. However, if you put these too high, you may get a distorted sound, so use these with care.

When you've set up the start and end points for both samples, you can ⌈MIX⌉ them together or splice them (⌈SPLI⌉). Press the appropriate button. If sample J already contains data, you will be asked if you want to overwrite it (GO or ABORT). Now wait, as the process will take a few seconds (depending on the length of the samples, and the amount of crossfading). When the operation is complete, you can listen to the new sound by pressing the ⌈ENT/PLAY⌉ button. If you're happy with the new sound, save it to disk, otherwise carry on joining and mixing till you get the sound you want.

Of course, any loops which were present in the original samples (A and B) will not be played back when you play back J. You must reset loops in J if you want them.

Though the process of creating the sound you want may take some time, it's possible you may discover some new sounds along the way which weren't quite what you were expecting, but could find a place in later compositions.

ED.2

The ED.2 page (accessed from the EDIT SAMPLE SLCT or JOIN page) allows you to perform some further sophisticated editing functions. On the PARAMETERS page (the first one you access when you press the ⌈ED.2⌉ button), the first parameter is the name of the sample you want to edit. This may be changed with the DATA knob or the ⌈+/◄⌉
and ⌈–/►⌉ buttons.

The next parameter allows you to alter the original pitch at which the sample was recorded, so that when you replay it on the keyboard, it will come out at the correct pitch. Further fine tuning (in semitones and cents) can be done with the next parameter.

The next parameter determines the way in which the sample will be played back. There are four options available here.

The first is LOOP IN RELEASE. This means that when a key is pressed, the sample will play through all the loops until the first HOLD loop is reached. When the key is released, the HOLD loop will continue to play as the release falls away.

LOOP UNTIL RELEASE is slightly different. Again, the sample will play, with all loops, until the first HOLD loop is reached. However, when the key is released, the loop will end, and the remaining portion of the sample (if any) will be played. This is a useful setting for sounds which have a definite attack, an indefinite sustain period (set with the loop), and a definite release characteristic.

The next setting, NO LOOPING, does what its name suggests — it plays the sample through without loops for as long as the key is held down. As soon as the key is released, the sound will start to decay.

PLAY TO SAMPLE END is useful for drum trigger units such as the ME-35T and the like. Like the previous setting, no loops are played, but an instantaneous trigger signal or key press will play the whole of the sample (the key does not have to be pressed for the whole length of the sample).

The last parameter, "loop tune offset" allows you set a pitch shift for a HOLD loop by ±50 cents (one semitone). This shift will only occur once on the first occurrence of the loop. Subsequent loops will be replayed at the shifted pitch of the first loop, *ie* this tuning offset is not an incremental process.
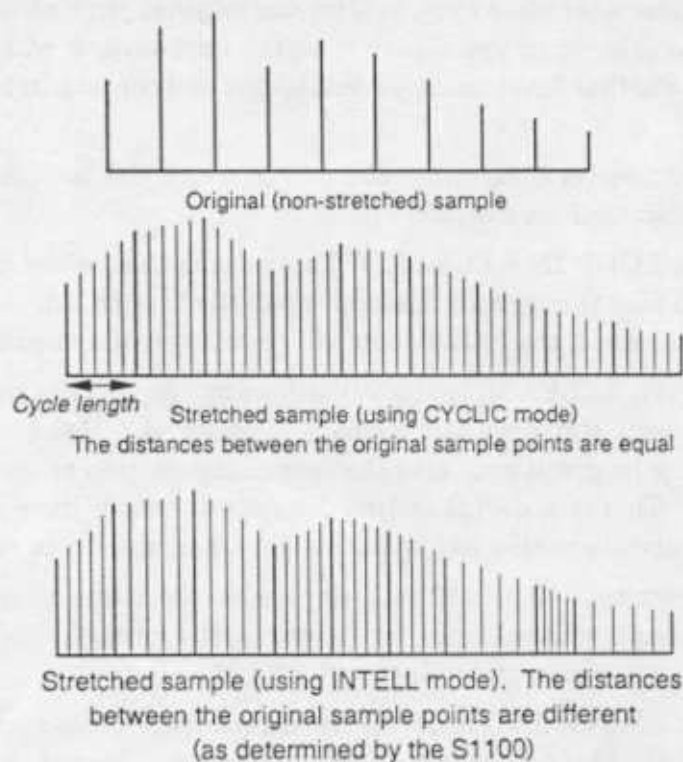
There is one "action" button — REV. When this soft key is pressed, the sample will be reversed. Pressing REV again will reverse the sample back to its original form. Note that any loop points you have set will stay in the same absolute positions, and will not be reversed with the sample.

TIME

Pressing the **TIME** button from the ED.2 page enters the TIME-STRETCH page. This enables you to lengthen or shorten a sample or a selected part of a sample from 25% of its original length to 2000% (twenty times). Since this operation can take a lot of memory, it's as well to delete unwanted samples from memory (after you've made sure that they're saved to disk).

Uses for time-stretching include: altering the length of a sampled rhythm passage to fit in with the rest of the track without altering the pitch, maintaining the same vibrato speed for a number of "multi-samples" created from one original sample, and fitting sound effects, vocal phrases, etc to video soundtracks for precise timing. Two modes are available for stretching: CYCLIC, in which a fixed interpolation rate is maintained throughout the whole of the sample (suitable for individual instrument samples), and INTELL, in which the S1100 "intelligently" varies the interpolation rate according to the sample content (suitable for speech and music).

Sampler functions

Original (non-stretched) sample

Cycle length Stretched sample (using CYCLIC mode)
The distances between the original sample points are equal

Stretched sample (using INTELL mode). The distances
between the original sample points are different
(as determined by the S1100)

Select the sample to be stretched on the top line of the page, and then move down a line to select the part of the sample that you want stretched ("stretch zone" and "to").

When you have selected the part of the sample to be stretched, you can listen to this part of the sample by pressing the (ZONE) button. This will replay this part of the sample stretched at the set cycle length (but only if you are using CYCLIC mode).

Since you cannot stretch a sample to itself, you must find another name for the new sample. Use the (NAME) button to enter a new sample name. You can use an existing sample name for this (but make sure that you don't want this sample any more, or you have a copy saved to disk).

There are two ways in which you can stretch a sample ("stretch mode") — either by picking a fixed cycle time at which the S1100 will stretch (CYCLIC), or by allowing the S1100 to make its own decisions as it proceeds with the stretching (INTELL). Be warned, though — although the intelligent mode will produce better results, the time taken for this operation is much longer than when the CYCLIC mode (up to several minutes).

If you decide to use the CYCLIC mode, you can set the cycle length (in samples) in the "Cycle length" field. The soft key (autC) can be used to help you find the right sample length. As with autolooping, the S1100 applies software logic to the sample to calculate what it believes is the right answer. Again, like autolooping, what the S1100 calculates will often help you, but it is not always infallible.

The next parameter to set up is the time factor by which the original sample is to be stretched (from 25% to 2000%). As this is altered, the length and time of the new stretched sample (and the percentage of memory it will occupy) are displayed. Make sure that these figures do not exceed the amount of memory available. These figures also vary, of course, according to the length of the portion of the original sample which is to be stretched.
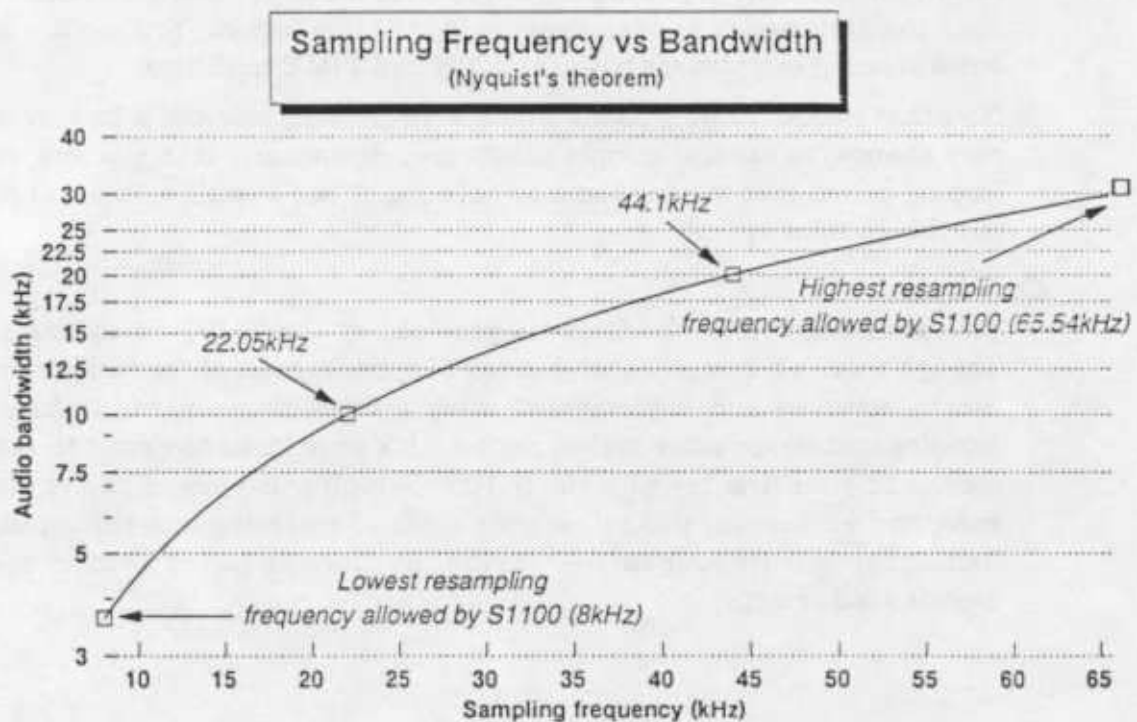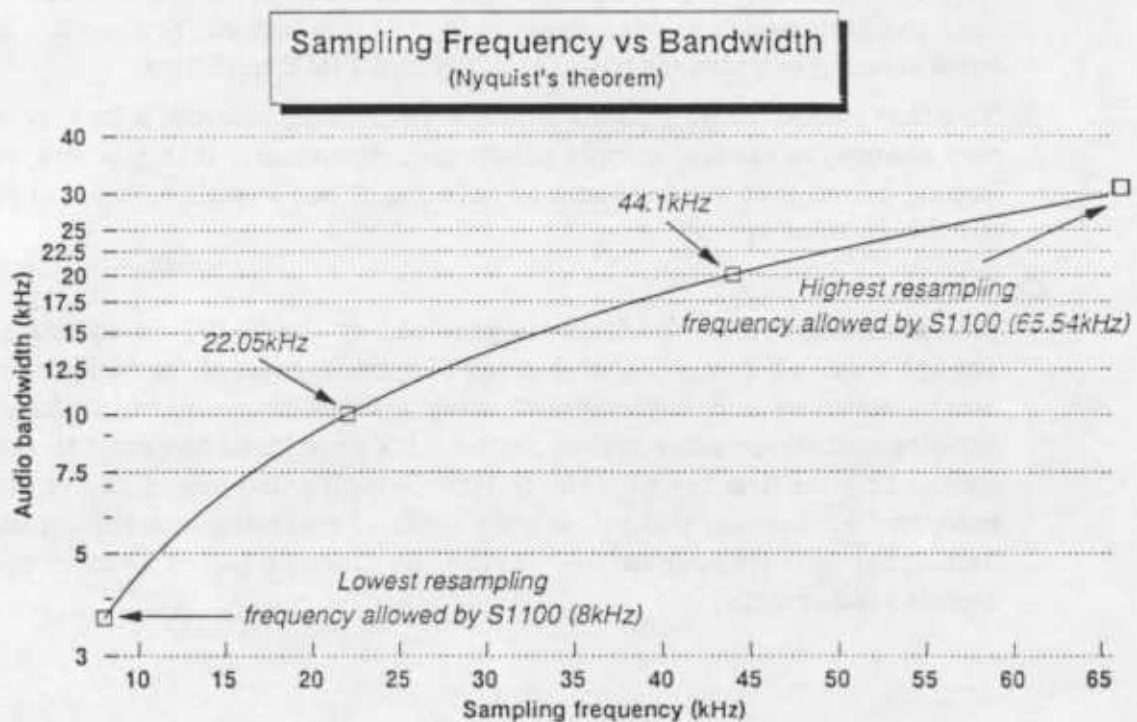
The "quality" (the time that the S1100 spends determining cycle lengths) and the "width"of stretch crossfading in the final stretched sample may also be altered from 01 to 99. This only applies to the INTELL mode.

When you are ready, press (GO). You can abort the operation by holding down (F8), for a few seconds, otherwise the process may take a few minutes (depending on the length of the sample being stretched). The display will display a message showing that the time-stretch is in progress, and will also show you how much processing time remains before finishing.

When the sample has been stretched, the "in progress" message will be replaced by the soft key legends, and you can replay the stretched sample with the (PLAY) soft key. Pressing the (ENT/PLAY) key will replay the original sample — not the stretched sample. If you are happy with the sound of the stretched sample, you can proceed to edit, trim and loop it, just as if it was a freshly-recorded sample.

Re-sampling

From the ED.2 or TIME page, press **RATE** in order to enter the re-sampling page. In this page, the existing samples are resampled at a lower rate in order to conserve memory space (or they can be sampled at a higher rate, though there's little practical use for this!).

Sampling Frequency vs Bandwidth
(Nyquist's theorem)

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Sampling Frequency vs Bandwidth
(Nyquist's theorem)

Sampler functions

First select the sample to be re-sampled using the DATA knob or the ⊞ and ⊟ buttons. You cannot resample a sample to itself, so you must give the resampled data a new name, using the (NAME) button.

Next, select the new rate at which resampling is to be done. The default value is one-half of the original sample rate, for example, a sample made at 44100Hz will have the default value set to 22050Hz. If you adjust this value, ("new sample rate"), the fields below this will change: the length of the new sample, together with the amount of memory space it will take up, and the amount by which the new sample will be detuned, relative to the old sample ("tune offset"). By simple mathematics, you can work out that if a sample is resampled at half the frequency of the original, but the original time of the sample is maintained, there will only be half as many sample points as before, and the overall pitch will be dropped by one octave.

In addition to the new sampling frequency, a filter can be chosen to prevent aliasing or "glitching" in the new sample. There is a choice of four different filter types (Filter 1 being the highest-frequency filter, and Filter 4 being the lowest-frequency), in addition to an "autoF" facility, which lets the S1100 pick the most appropriate filter for the resampling being done.

Two specially-configured soft keys, (3/4) and (2/3), allow you to resample at 0.75 or 0.67 of the original sample rate. These will drop the pitch by 5 or 7 semitones respectively. Simply press either of these soft keys in order to perform resampling at these rates.

If you are not using these pre-defined resampling rates, press (GO). After a while, the "re-sampling in progress" message will disappear, and you can press the (PLAY) soft key to listen to the resampled sound (pressing (ENT/PLAY) will give you the original sound). If you are not happy with the new, resampled sound, you can alter the parameters and try again using the (GO) button. You can always overwrite existing samples (as with the JOIN and TIME facilities).

Note that smooth looping points which were carefully selected prior to resampling may change, as critical sample points may disappear. If this occurs, reset the looping points (but moving them by only one or two sample points will generally put things right again).

Conclusion

This ends the tour of the facilities provided by the S1100 for editing samples. Though there's a comprehensive array of options, most of the facilities provided can be accessed and implemented using a little common-sense. As with any complex system, practice makes perfect. It's unrealistic to expect to get perfect results on your first try with the S1100. Sampling is more of an art than a science, and experience will refine your skills of recording and editing sampling. Remember to trust your ears — they're the ultimate test of whether something sounds good or not.

EDIT PROG

When you press the [EDIT PROG] button, you are now in the PROGRAM EDIT main page. This is where you set up the way in which the samples you have recorded, trimmed, looped, etc, will be replayed from a keyboard or other MIDI controller.

```
┌──────────────────────────────────────────────────────┐
│ PROGRAM EDIT    PROGRAM: TEST PROGRAM     0%           │
│ name:   TEST PROGRAM        keygroups:     1           │
│         *existing prog*       samples:     4           │
│      (REN to rename)       (DEL to delete)             │
│    (COPY for new prog)     Progs in mem:   2           │
│                               free mem:  34%           │
│ SLCT  KGRP  MIDI  OUT   PTCH COPY  REN   DEL           │
└──────────────────────────────────────────────────────┘
```

You can set layer samples, create velocity splits, keyboard splits, and assign envelopes and filtering to the basic sounds. In some ways, you can treat this section as if the S1100 were a multi-timbral synthesizer module, except that the waveforms you use are not preset, but are digital samples.

The first page of the EDIT PROG section allows you to change only one parameter — the program which is to be edited. However, you can use the [NAME] button to enter a new name and then copy or rename ([COPY] or [REN]) the program to this new name. You can also delete the selected program ([DEL]). Once you have selected the program you will be working on, the next stage is to edit the keygroups ([KGRP]).

Keygroups

As explained in the Glossary, keygroups are the way in which samples are combined and parameters assigned so that they can be played from a keyboard. When you press the [KGRP] button from the initial EDIT PROG page, the KEY-GROUPS page will be displayed.

Up to 99 keygroups can be assigned to a program. The first parameter on this page allows you to decide which keygroup will be edited. This number cannot, of course, be greater than the number of keygroups which are currently assigned to the program. This number is displayed directly below the number of the keygroup to be edited.

Another way to select a keygroup for editing is to press and hold down the [EDIT PROG] button. While holding down the button, press the key on the MIDI keyboard which will play the keygroup you want to edit. This will automatically select the keygroup. If the key plays more than one keygroup, the first keygroup will be selected, and successive presses of the key will cycle through all appropriate keygroups. This method of holding down the [EDIT PROG] button and pressing a key works for all sub-pages in the KEYGROUP page.

NOTE This number ("change number of KEYGROUPS") can be changed, but only by using the [+/*] and [-/*] buttons, not by using the DATA knob or the number pad.

To save you work when editing a program with a large number of keygroups, the next parameter allows you to specify whether editing changes to the keygroups will take place over all keygroups, or just the one which has been selected. If you choose ALL in a multi-sample program, it is then relatively easy to go back and "fine-tune" individual keygroups.

The "overlapping group CROSSFADE" parameter may be set ON or OFF. If ON, then any keygroups whose keyspans overlap will automatically be crossfaded at the overlap points, giving a smoother sound for multisampled programs.
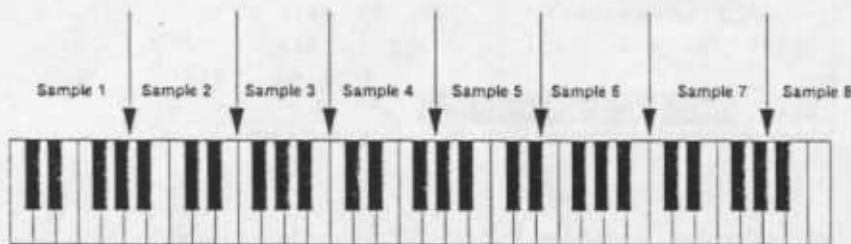
In this multi-sample program, there is no keyboard crossfading, so there may be audible "jumps" between samples.
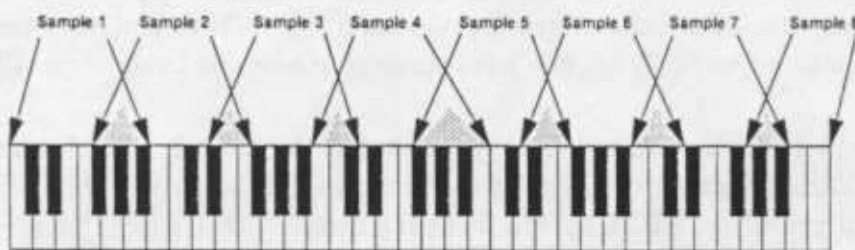
In this multi-sample program, keyboard crossfading has been implemented. The gray triangles represent areas of crossfading, where two samples overlap, and a smoother transition is achieved at these points.

The last parameter on this page "note-on sample COHERENCE" requires a little explanation. When the sampler portion of the S1100 receives information from an external MIDI source which requires it to play a number of samples simultaneously, a finite amount of time is taken to perform the calculations necessary to play each sound. When playing a note which plays a number of percussive samples, it is possible that you may hear a slight "staggering" of the notes in the chord. To avoid this, set this COHERENCE parameter to ON. In that way, the S1100 will wait until the data for all notes in the chord is ready, and then play all notes simultaneously. There may be a slight processing lag, but in the normal run of events, this should be unnoticeable. Your sequencer may allow you to correct the timing, in any case. It is suggested that you use this parameter to ON when using stereo samples, or velocity or keygroup crossfading.

SPAN

```
┌─────────────────────────────────────────────────────┐
│ ▌KEYSPAN▐  edit:ONE  KG  LOW  HIGH  TUNE  BEAT       │
│ ................................  ▌1▐  C_0  G_8  +00.00  +00  │
│ ................................   2  A*1  C_8  +00.00  +00  │
│                                                      │
│                                                      │
│ ▌SLCT▐ ▌KGRP▐ SPAN ▌FILT▐ ▌ENV1▐ ▌ENV2▐ ▌SMP1▐ ▌SMP2▐ │
└─────────────────────────────────────────────────────┘
```

The ▌SPAN▐ button allows you to set the keyspan of any keygroups in the program. On the left of this page are up to four diagrams of a keyboard with a keyspan underneath the keyboard (represented by a horizontal bar), and to the right of this are displayed the corresponding keygroups with their HIGH and LOW ranges. These may be displayed either as MIDI note numbers or as note names. Press SPAN once again to toggle between note names and numbers. You can then select the keygroup number you want (place the cursor on a field in the KG column, and use the DATA knob to select the keygroup) before altering the HIGH and LOW limits of the keygroup. Note that if you are editing using the note names, placing the cursor over the whole note name will alter the value by an octave for each click of the DATA knob. Alternatively, place the cursor on the "LOW" field of the first keyspan and play the appropriate key on the MIDI keyboard. The cursor will move to the next note value field (the high value of the same keyspan, or the low value of the next), ready for you to play the next note.

In this page, you can also alter the tuning (TUNE) of the samples played in this keyspan in semitones and cents (useful if you have a split keyboard setup, and you want each half of the split to sound at the correct pitch).

The other parameter in this page is BEAT, which is used to create a fixed offset to the original pitch. Unlike the TUNE parameter, this tuning offset is constant, no matter what the played pitch of the sample. You may like to use this to create a "chorus" effect, by adding a small amount of fixed offset to one of two otherwise identical samples.

Sampler functions

FILTER

The FILTER page (**FILT**) allows you to apply a 18dB/octave low-pass filter to modify the sound of samples within a keygroup. Essentially, the parameters on this page are what you would expect to find on an analog synthesizer (though the S1100's filter is digital). The top line of the page allows you to select the keygroup number and ALL/ONE, or to alter the program which is currently being edited.

```
FILTER  KG: 1 ED:ONE   TEST PROGRAM   0%
 frequency: 99         velocity > freq:  +00
 key follow:+12        pressure > freq:  +00
                       envelope-2 > freq: +00
------------------------------------------------
 vel>loud offset:+00    env-2 >pitch:  +00
 SLCT  KGRP  SPAN  FILT  ENV1  ENV2  SMP1  SMP2
```

The next line allows you to adjust the cutoff frequency of the filter. At its highest value (99), the filter lets all the sound through, and at its lowest, (00) no sound passes through. Unlike the filters on some synthesizers, however, there is no resonance control, and the filter cannot go into self-oscillation.

The next parameter, "key follow", sets the amount (from 00 to 24) by which the position of the key played will affect the cutoff frequency of the filter. When this is set to a positive value, the higher the key played, the brighter the sound (negative values reverse this effect). This parameter sets the amount of this tracking. This can be used to simulate the effect of natural acoustic instruments.

"velocity > freq" allows you to affect the cutoff frequency, depending on the velocity with which a key is pressed. The value can be set from values of +99 to -99. A positive value will make the sound brighter, the faster the key is depressed, and a negative value will make the sound duller, when the key is pressed faster.

The next parameter, "pressure > freq", allows the cutoff frequency of the filter to be altered by the amount of aftertouch (Channel Pressure). Again, this value is variable from +50 to -50, and positive values will increase the brightness of the sound when aftertouch is applied; negative values will make the sound duller.
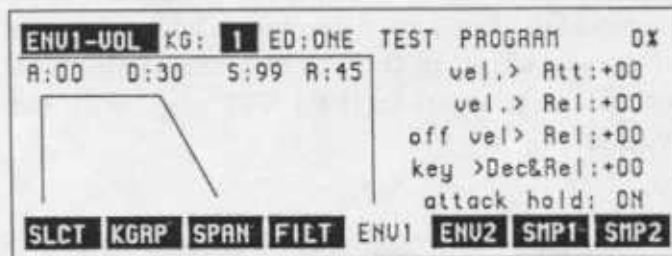
"envelope-2 > freq" determines the effect of the second ADSR envelope generator on the frequency of the filter. Variable from +50 to -50, a positive value will produce a "wah" effect, and a negative value will produce an "inverted wah".

At the bottom of the page are two parameters which are not strictly related to the filter, but are related to the control parameters transmitted from the keyboard and the way in which they affect the sound of the keygroup. The first is "vel>loud offset" (+50 to -50). This controls the overall volume of the keygroup as determined by the velocity of the key pressed, and is an offset added to (or subtracted from) individual sample levels. Positive values will make the keygroup louder the faster the key is depressed. Negative values will have the opposite effect.

"env-2 >pitch" allows the pitch of the samples in this keygroup to be altered according to the values of the second ADSR envelope (+50 to -50). A positive value will make the pitch rise with the attack, fall with the decay, etc, and a negative value will do the reverse.

ENV-1

Pressing the **ENV-1** button will bring up this page. Here you can set various parameters relating to volume. The first line allows you to pick the keygroup, ALL/ONE and the program to be edited.

```
ENV1-VOL KG: 1 ED:ONE  TEST PROGRAM      0%
A:00    D:30    S:99 R:45      vel.> Att:+00
                               vel.> Rel:+00
                          off vel> Rel:+00
                          key >Dec&Rel:+00
                          attack hold: ON
SLCT KGRP SPAN FILT ENV1 ENV2 SMP1 SMP2
```

The next parameters above the graphic representation of the envelope shape allow you to alter the attack rate, delay rate, sustain level and release rate of this envelope. As you change the values, the shape of the envelope will change correspondingly. As the legend in the top left of this page shows, this envelope controls the volume of the samples in this keygroup.

Once the basic envelope has been set up, other factors can be used to affect the speed of the envelope. These are all on the right of the graphic envelope. The first, "vel.> Att", is variable from +50 to -50, and determines the amount by which the attack speed will be changed depending on the Note On velocity. A positive value will increase the attack time if the key is pressed fast, while a negative value will slow down the attack rate if the key is pressed fast. This parameter is useful for imitating the characteristics of some acoustic instruments (for instance, most wind instruments have a faster attack rate when played loudly).

The next parameter, "vel.> Rel" is used to vary the release rate relative to the Note On velocity value (+50 to -50). Again, a positive value will increase the release rate relative to the Note On velocity, and a negative value will shorten the release time.

However, the parameter below this, "off vel.> Rel" (+50 to -50) is possibly more relevant to natural-sounding playing. The MIDI specification allows for Note Off velocity as well as Note On velocity. Though many keyboards do not accept or transmit this, assuming a mean value of 64, all AKAI keyboards provide a full implementation of this function. The speed with which the key is <u>released</u> can be used here to affect the release rate (positive values mean that a fast release lengthens the release rate, and *vice versa*). This allows more expressiveness and realism, but demands a slight relearning of keyboard technique (similar to an acoustic piano).
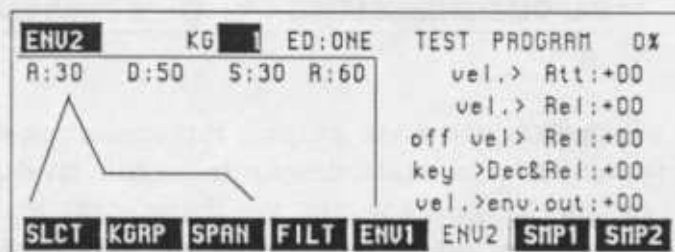
The "key >DEC&REL" parameter (+50 to -50) allows you to control the amount by which the key position affects the decay and release rates. Setting this to a negative value means that the higher the note played on the keyboard, the shorter the decay and release times (similar to most acoustic instruments). Setting this to a positive number will reverse this effect.

The final parameter on this page, "attack hold" can be set to ON or OFF. When ON, the attack portion of the envelope will be held until looping begins, and when OFF, the envelope will continue along the set values, regardless of loop settings.

ENV2

The second ADSR envelope is used primarily, but not exclusively, for altering the cutoff frequency of the low-pass filter dynamically. It can also be used for altering the pitch of the sound (set in the FILTER page, above). All the parameters here are identical to the ones set in the ENV1 page, with the exception of the last: "vel.>env.out"


```
ENV2        KG  1  ED:ONE   TEST PROGRAM    0%
A:30    D:50    S:30  R:60      vel.> Att:+00
                                vel.> Rel:+00
      /\                     off vel> Rel:+00
     /  \                    key >Dec&Rel:+00
    /    \____               vel.>env.out:+00
___/          \____
 SLCT  KGRP  SPAN  FILT  ENV1  ENV2  SMP1  SMP2
```

This parameter (+50 to -50) determines the absolute amplitude of the envelope relative to the velocity of the key. When this is set to a positive value, a higher key velocity will produce a higher attack level, etc (the rate will be unaffected). Setting this to a negative value will have the reverse effect.

Choosing the samples for a keygroup

The last three pages, **SMP1**, **SMP2** and **SMP3** all refer to the samples which will be included in a keygroup. The last page, **SMP3**, is only accessible from the second sample page.

SMP1


```
C_0-G_1   KG:  1  ED:ONE   BASS VEL        94%
zn      sample      V-lo  V-hi  Pitch
1 BASS                0   127  TRACK  Xfd
2 THUD BASS           1    45  TRACK   ON
3 SINE          ?     1     0  TRACK
4 PULL BASS          60   127  TRACK        1 2 3 4
 SLCT  KGRP  SPAN  FILT  ENV1  ENV2  SMP1  SMP2
```

Pressing the **SMP1** button will bring up the samples to be included in a keygroup. As with other pages in the EDIT PROG mode, the top line of the page allows you to specify the keygroup number, ONE/ALL or the name of the program being edited. Additionally, the first line also allows you to specify the keyspan of this sample. Up to four samples can be allocated to each keygroup (if you feel you want more, create more keygroups for the program, overlapping each other).

Within a keygroup, these four samples can be set to play at different velocities. The tonal characteristics of acoustic instruments can vary radically from loud to soft (a classic example of an instrument which does this is the Japanese end-blown flute, the *shakuhachi*), and so you may want to take a few samples of the same instrument being played at different volumes, as well as different pitches. Alternatively, you may wish to incorporate a velocity switch as a special effect — a keygroup could be set to produce only the sound of a string section when played softly, but change to or add the sound of a brass section when played at a higher velocity.
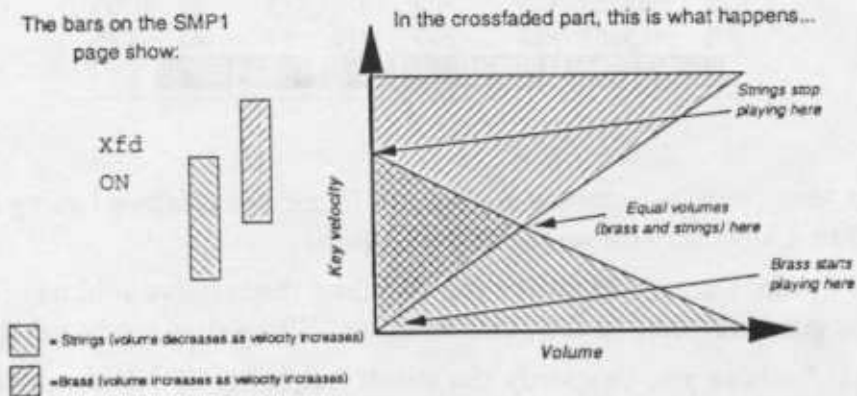
The next parameter is "Xfd" (crossfade) which may be either ON or OFF. If ON, any note which has a velocity which falls within two velocity zones will play both samples, the relative volume being adjusted accordingly.

To select a sample to include in a keygroup, move the cursor to the sample field and select a sample. If the sample has been previously selected as part of an existing program, but has not yet been loaded into memory, a question mark will be shown by the sample name. Note that a SINE "sample" is given as a default for a new program.

On some of the supplied program disks, the "samples" SINE, SQUARE, SAW-TOOTH and PULSE are included. This enables you to create "synthesizer" sounds by adding these regular waveforms to sampled sounds.

Next, select the "velocity window" within which the sample will be played. MIDI Note On velocity values can be from 0 (ppp) to 127 (fff), so if you want the sample to be played all the time, set "V-lo" to 0, and "V-hi" to 127. Otherwise, set the velocity windows accordingly.

There is one other parameter for each keygroup - the CONST/TRACK parameter. When set to "TRACK", the keyboard will produce pitched notes corresponding to the key being struck. If set to "CONST", however, the pitch of the sample will

remain at the constant pitch of the edited sample, no matter what key is pressed. This can be useful if you want to add a constant pitch percussion sound to a pitched instrument, for instance.

The second sample page (SMP2)

In the second sample page, (**SMP2**), you can set further parameters relating to each sample in a keygroup. The top line allows you to set the keyspan of the keygroup, the keygroup to be edited, the ALL/ONE parameter and the program currently being edited. Each of the other parameters in this page can be applied to each velocity zone (sample) individually.

```
C_0-G_1   KG: 1 ED:ONE   BASS VEL        94%
zn  sem.cnt  loud  filt  Pan   out     Playback
1   +00.00  +00    +00   MID   +0      AS SAMPL
2   +00.00  +00    +00   MID   +0      AS SAMPL
3   +00.00  +00    +00   MID   +0      AS SAMPL
4   +00.00  +00    +00   MID   +0      AS SAMPL
SLCT  KGRP  SPAN  FILT  ENV1  ENV2  SMP1  SMP2
```

The "sem.cnt" parameter allows you to set the relative tuning of each sample within a keygroup (in semitones and cents).

The "loud" parameter allows you to adjust the relative volume of each sample in a keygroup relative to the other samples. This value can be set from -50 to +50.

"filt" allows you to specify the cutoff frequency of the low-pass filter for each sample relative to the other samples in the keygroup.

When a program is being played through the stereo outputs, the stereo position of each sample in a keygroup can be set using the "pan" parameter. The values here can range from L50 (panned hard left) through MID (the signal is sent equally to the left and right channels) to R50 (panned hard right).

The "out" parameter requires a little explanation. If a program is assigned to be played through one of the eight individual output channels, an "offset" can be added to each sample in the program which is added to the basic output channel to determine the output channel from which the sample will eventually be output. For example, if a program is assigned to be played through channel 3, and four sample "out"s are set in this page to be 0, +1, +1 and +2, these samples will be played through channels 3, 4, 4 and 5 respectively. If value of the basic output channel added to the offset here goes above 8, the number "wraps round". In this way, if the basic out channel is 6, and the offset value set here is 6, the total is 12. This will be automatically changed to 4 (12 - 8).

The last parameter on this page allows you to set up the way the sample is to be played back, overriding the settings made in the ED.2 page of the EDIT SAMPLE mode, if you want. There are five values which are allowed. AS SAMPLE plays back the sample exactly as set up in the ED.2 page (loops included). LP in R is the same as the LOOP IN RELEASE mode of the ED.2 page, and "LP til R" is the same as LOOP UNTIL RELEASE. NO LOOPS is self-explanatory, and TO END

is the same as the ED.2 PLAY TO SAMPLE END. The ability to reset the play-back parameters of a sample allows you a lot of flexibility - the same sample can be used in different ways in different programs.

The third sample page (SMP3)

```
C_0-G_1   KG: 1 ED:ONE   BASS VEL       94%
zn  vel>smp  start
1   +0000
2   +0000
3   +0000
4   +0000
SLCT- KGRP  SPAN FILT ENV1 ENV2 SMP1 SMP2
```

This page is only accessible from the SMP2 page (press SMP3), and has only one parameter, which allows you to determine the way in which velocity affects the playback starting point for each sample in a keygroup. This figure is variable from +9999 to -9999. The higher the positive number, the earlier in the sample playback will start relative to the key velocity (ie, a high key velocity will start playback earlier in the sample). A negative number has the opposite effect (a high key velocity will start playback later in the sample than a low key velocity). This effect is particularly useful for simulating percussion instruments (try it with a bass drum).

MIDI in the EDIT PROG mode

To enter the MIDI page in the EDIT PROG mode, press SLCT to get to the opening EDIT PROG page, and then press the MIDI button. The top line of this page contains a field which allows you to change the sample currently being edited.

```
MIDI  RESPONSE  (COMMON)  TEST PROGRAM   2%
Program number:   1              PLAY RANGE
   MIDI channel:   1              low  high
     Polyphony: 16               C_0   G_8
       Priority:NORM   octave shift:  +0
       reassignment:OLDEST
SLCT  KGRP MIDI  OUT- PTCH
```

The next field allows you to set the program number of the program. This is the number which will be called up on receipt of a MIDI Program Change message, and corresponds to a patch number on a synthesizer. Unlike a synthesizer, though, the S1100 allows different programs to share a patch number, so when a Program Change message is received, all programs with the corresponding number will be selected simultaneously.

The next parameter allows you to change the MIDI channel on which this program will receive information (OMN, 1-16).

NOTE that the channel on which Program Change information is received may be selected in the MIDI mode to be OMNI or any other channel, so that program changes can be made independently of this MIDI channel setting.

The S1100 is capable of playing up to sixteen notes (samples) at one time. If a keygroup is set to use four samples which will all be played when one key is pressed, then only four notes of that keygroup can be played simultaneously. If it only uses one sample, then 16 notes of this keygroup can be played at one time. Remember that velocity crossfading may use two samples simultaneously from one key, which will reduce the polyphony of the program using this feature. The next parameter, "polyphony", allows you to select how many notes (1 to 16) can be played at a time by this particular program. If the program allows a large number of notes to be played, but other programs are playing other notes, more notes may be "stolen" from this program or from the other programs (see the "PRIORITY" parameter below).

The "PRIORITY" parameter allows you to specify how notes will be "stolen" by other programs if this is necessary. There are four settings: LOW, NORM, HIGH and HOLD. If a program is set to LOW priority, then notes from this program will be "stolen" first. If set to HIGH, then notes from other programs with lower priority will be "stolen" before they are stolen for this program. NORM is, of course, normal priority. If you are playing a complex piece of music using many programs, it is a good idea to set important, "lead-line" programs to HIGH, and less important background programs to LOW. HOLD is a special priority. If a program's priority is set to HOLD, notes from this program can only be "stolen" by the same program.

The notes which will be "stolen" are determined by the "reassignment" parameter - either the OLDEST note will stop playing, or the QUIETEST one.

The keyboard range is the next parameter on this page, and setting here will override any keygroup range settings made in the keygroup SPAN page. Remember that pressing the soft MIDI button will redisplay this page, toggling between MIDI note numbers and note names.

Finally, on this page, the pitch of the program can be shifted by ±2 octaves (which allows you to adjust for the actual playing position on the keyboard).

OUT

By pressing the OUT button from the main EDIT PROG, the EDIT PROG MIDI or EDIT PROG PTCH page, you can control the audio output of the program from the S1100. The first line of this page allows you to choose the program whose OUT parameters are to be edited.

```
 OUTPUT (COMMON)      TEST PROGRAM          2%
                   mono  out:OFF      PAN  MOD.
loudness:  80    efct  out:OFF       speed:  50
vel>loud:  20    ster.lev:  99       depth:  00
key>loud:+00     ster.pan:MID        delay:  50
prs>loud:+00       key>pan:+00       modwhl:+00
 SLCT  KGRP  MIDI  OUT  PTCH
```

The next parameter allows you to set the overall volume of the program (00 to 99) relative to any other programs being played.

The three parameters following affect the volume of the sound as controlled by three keyboard parameters: velocity, key position, and aftertouch (pressure).

The first, "vel>loud", can take values from +50 to -50. If this value is positive, the higher the velocity, the louder the sound produced, and a negative value will produce a quieter sound with a high key velocity. Setting two programs in the same keyrange, one with this value set positive, and one with it set negative, can produce a velocity cross-fading effect.

The next parameter, "key>loud", determines the volume of the sound depending on the key being played. When this parameter is positive, the higher the key, the louder the sound, and when negative, the higher the key, the quieter the sound (like most acoustic instruments).

Finally, in this column, "prs>loud" allows you to specify the effect of aftertouch on program volume. Positive values will increase the volume as aftertouch is applied, and negative numbers will reduce the volume when aftertouch is applied.

"mono out" specifies the output channel (OFF or 1 to 8) from which the program is played. Note that this setting interacts with the "out" parameter in the SMP2 page of the keygroup setting, and is used as the "base" number to which offsets set up in the SMP2 page are added. If this value is set to OFF, then the program will only be output from the stereo connectors. It is also possible to set a base working level for these outputs and the range is -6dB, 0dB and +12dB. This allows you to boost or cut the level of each individual output for increased signal to noise ratios on external mixers.

efct out:

As mentioned in the guide to the rear panel, programs can be sent through the S1100's own effects loop prior to output. This parameter is also used to send a program to the S1100's internal effects. The "efct out." parameter can be set with seven level settings which are expressed as a percentage. The range is OFF, 14%, 29% 43% 57%, 71%, 86% and MAX and these can be set individually for each program. If you are playing a large number of programs simultaneously, then you might consider using the EFFECT OUT as an extra individual output channel.

The "ster.lev" parameter allows you to set the level of the program from the stereo outputs. It has no effect on the level from individual outputs. This parameter interacts with all other volume settings you have made for this program, notably the "loudness" parameter. If the loudness parameter is set to 00, no sound will be produced from the stereo outputs, even if the "ster.lev" parameter is set to 99. It is possible to boost the overall output level by +6dB if you wish to obtain better signal to noise ratios on a mixer, especially professional desks that run at +4db.

"ster.pan" controls the overall pan position of the program in the stereo image, interacting with the individual pan settings in the SMP2 page. This parameter can take values from L50 through MID to R50. Of course, this parameter will have no effect on the output from individual outputs.

The last parameter in this column, "keyspan" can be used to create a pseudo-stereo sample from a mono sample. It can take values from +50 to -50. When set to positive values, the higher the key being played, the further to the right the program will be placed in the stereo image. Negative values will reverse this effect. Useful, perhaps, for a piano sample, to give the illusion of "keyboard spread" between the speakers or to spread a single tom sample played on a range of keys across the image. This parameter has no effect on the output from the individual outputs.

The last column of this page is concerned exclusively with the control of the pan position of the program from the stereo outputs. The first three parameters control an LFO which is used for autopanning. The "speed" and "depth" parameters (both 00 to 99) do exactly what you'd expect: the "depth" parameter providing the greatest amount of panning when set to high values, and the "delay" parameter is used to set the delay time between the key being pressed and the LFO taking full effect.

The last parameter on this page, "modwhl", allows you to use a modulation wheel or any controller which has been assigned the MIDI controller number 1 to affect the pan position of the sound. Setting this to a positive value will start the sound in the left half of the image, and moving the modulation wheel will send it to the right. A negative value will have the opposite effect. Try setting up two identical programs, but with this parameter positive on one and negative on the other. Moving the modulation wheel will produce some interesting effects!

Pitch

The PITCH button will bring up the PITCH and MOD page, allowing you to specify the parameters for a pitch modulation LFO, the amount by which the depth of this LFO can be increased by keyboard parameters, and parameters affecting pitchbend. In addition, the overall tuning of the program and synchronisation of the LFOs can be set here.

```
PITCH-MOD    (COMMON)        TEST  PROGRAM  94%
    LFO    KEY    EXTRA DEPTH   PITCH-BEND
 speed:50  +00   modwheel:30   bendwheel:  2
 depth:00  +00   Pressure:00   Pressure:+00
 delay:50  +00   velocity:00
       tuning:+00.00           LFO  desync:OFF
 SLCT KGRP MIDI        PTCH
```

The pitch modulation LFO has three parameters — "speed", "depth" and "delay", which work as you would expect on a synthesizer LFO. The "delay" parameter specifies the time from the key press to the LFO taking full effect. The "key" parameters vary the amount of LFO parameter applied, depending on the key position (positive numbers increase the values for high keys).

The depth of the pitch modulation LFO can be affected by three real-time performance parameters: the modulation wheel ("modwheel"), the aftertouch ("pressure") applied to the keyboard, and the speed ("velocity") with which the key is hit. All these parameters can take values from 00 to 99 — the higher the number, the greater the depth of the pitch modulation LFO when these performance parameters increase.

The amount of pitchbend (in semitones) that can be effected using the pitch bend wheel is set by the "bendwheel" parameter. If set to 0 (minimum), no pitchbend will take place when the wheel is moved. The maximum value is 12 (one octave) up or down from the center position when the pitch bend wheel is moved appropriately.

Aftertouch ("pressure") can also be used to affect the pitch of the program. This parameter is variable from +12 to -12 (semitones). When set to positive values, the pitch will increase as aftertouch is applied (to a maximum of +12 semitones — one octave). If this is a negative value, the pitch will decrease as aftertouch is applied (to a maximum of -12 semitones — one octave).

The "tuning" parameter allows final adjustment of the program's pitch by ±50 semitones in semitone/cent steps.

Finally, the "LFO desync" parameter when ON, sets all the pitch modulation LFOs for different notes to a slightly different frequency. This mimics the effect of (say) a string ensemble, where each player produces vibrato at a slightly different rate from the other players. When OFF, each LFO will be set to the same frequency.

Conclusion

As you can see, setting up programs on the S1100 is not radically different from setting up patches on a multi-timbral synthesizer. The same principles of envelope shape, filter and LFOs apply to both. The main difference is that you start with sampled waveforms, rather than generated or prerecorded PCM waveforms, giving you an almost infinite flexibility in the sounds you can create.

3 MIDI

The MIDI mode allows you to set up various parameters relating to the S1100. Of course, MIDI receive channels, etc, can be set up from the EDIT PROG mode, but this mode gives you control over some more "global" parameters.

BASIC MIDI

When you first press the (MIDI) button, the BASIC MIDI CHANNEL CONTROL page is entered. This selects a number of parameters which affect the MIDI response of the whole instrument.

```
BASIC  MIDI · CHANNEL · CONTROL
            Program select enable:  ON
            Program select channel:   1
            OMNI for Program select:  ON
            selected Program number:  1
OMNI  override for Play input: OFF
CHAN  FILT PPMs RCVE TRAN EXCL SCSI KBD
```

The first parameter is the "program select enable" parameter. This can be set ON or OFF to enable or disable Program Change commands. Disabling Program Change commands can be important when controlling the S1100 from an external sequencer, as it will stop nonexistent programs being selected accidentally, with the resulting embarrassing periods of silence.

However, if you decide to enable Program Change, the next parameter allows you to specify the MIDI channel on which the S1100 will accept these messages. Note that S1100 starts numbering its programs at 01, as opposed to some MIDI devices, whose programs start at 00.

You can override the Program Change channel by switching the Program Change OMNI to ON. This does not mean that notes will be received and played on any channel, but only Program Change messages.

The currently selected program number is displayed and may be changed underneath this. Remember that a program number on the S1100 does not mean that a single program has been selected — instead it means that all programs with that number are selected.

Finally, the "OMNI override for play input" does what its name implies — playing data (Note On/Off, etc) will be accepted from any MIDI channel, which means that when you are testing and editing a program, you don't have to worry about setting the keyboard or any MIDI source to the right channel number. Of course, when performing from a keyboard and/or a sequencer (using a MIDI merge), you can turn this off to take full advantage of the multi-timbral capability of the S1100.

FILT

This is another filter, but this one has no effect on the sound. Instead, it filters out specific MIDI information. When you enter this page, the cursor will be at the top left of a grid of "+" signs, in a long rectangular box. As you turn the CURSOR knob, the cursor will move to the right and then go down a line.

```
┌─────────────────────────────────────────────────────────┐
│ MIDI RECEIVE FILTERS        +on   -off                   │
│ CHAN:1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16 all  │
│   ON:┌─ +  +  ■  +  +  +  -  +  +  +  +  +  +  +  -─┐<    │
│ WHLS:└─ +  +  +  +  +  +  -  -  +  +  +  +  +  -  -─┘<    │
│ PRES:- -  -  -  -  -  -  -  -  -  -  +  -  -  -  -  <     │
│ LOUD:- +  +  +  +  +  +  -  +  +  +  +  +  +  -  -  <     │
│ CHAN FILT PPMs RCVE TRAN EXCL SCSI    KBD                │
└─────────────────────────────────────────────────────────┘
```

In this grid, the columns represent MIDI channels (1-16), and the rows represent MIDI information which the S1100 will accept or filter. The first row, "ON", affects the S1100's receive capabilities for all information on that channel, the next, "WHLS", refers to the pitch and modulation wheels, the third ("PRES") refers to aftertouch, and the last, "LOUD", refers to an external MIDI volume control (controller 7). The last column in each row, "all", will affect the appropriate information for all MIDI channels. "+" signs mean that the S1100 accepts this information, "-" mean that this information is filtered out.

If you turn the DATA knob counterclockwise, the "+" which the cursor covers will change to a "-". If you make this change on the top row, all "+" signs underneath will change to a "-", and if you make this change in the "all" column, the parameter for all MIDI channels will be changed. The top right corner of the display ("ON"/"all") is a special case — all parameters will be changed.

By using this filter, you can control the response of the S1100 to MIDI events. By filtering out aftertouch on a percussion program where it is not needed, for instance, you can improve the response of the S1100 when a lot of MIDI data is received.

PPMs

```
┌─────────────────────────────────────────────────────────┐
│ MIDI NOTE PPM DISPLAY                                    │
│                    ┌─────────────────────────────────┐   │
│  ON-velocity       │ █   █                            │   │
│                    │ █  ██                            │   │
│       channel:- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 │ │
│ CHAN FILT PPMs RECV TRAN EXCL SCSI    KBD                │
└─────────────────────────────────────────────────────────┘
```
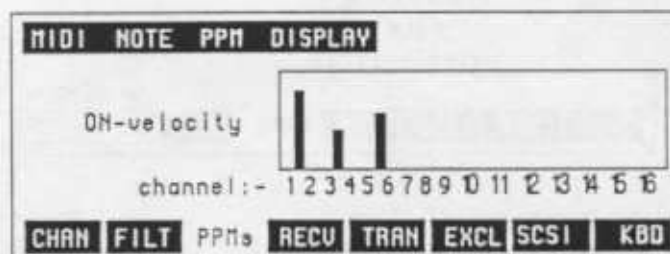
This page (accessed with the **PPMs** button), has no parameters. Instead, it provides a real-time display of all Note On information received on the 16 MIDI channels. The higher the bar on the display, the greater the velocity of the received note. This page is called "PPMs" because it simulates the behavior of audio bar-graph Peak Program Meters.

Receive Monitor

In this page (press **RCVE**), you can monitor the MIDI information received by the S1100. This is especially useful if you are faultfinding on your MIDI system — you're convinced that you're transmitting note information on a certain channel, but the S1100 isn't responding. Information from the MIDI IN is displayed, and a channel filter may be set at the top of the screen (OMNI or 1 to 16).

```
MIDI RECEIVE MONITOR      CHAN:  OMNI
                                    dot
                                    means
                                    running
                                    status
 latest  >
CHAN FILT PPMs RCVE TRAN EXCL SCSI   KBD
```
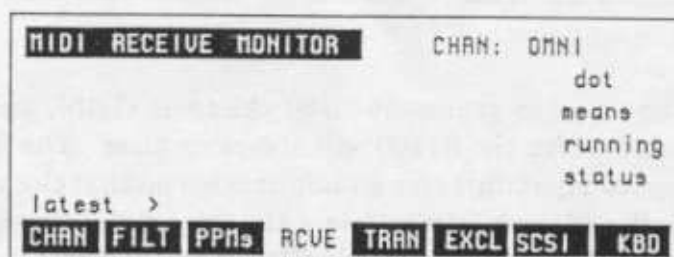
If the information is not displayed on this monitor, the information is not reaching the S1100. Check your connections or the output channel of the transmitting equipment. If the information appears to be correct, but no sound or unexpected sounds are being produced, then the fault may lie in the MIDI setting of the program(s). You may discover that the piano track of the sequencer is playing the drum samples, for example.

TRAN

```
MIDI NOTE TRANSMIT TEST

          channel:  1
             note:  60
         velocity:127
                                  ┌ SEND ┐
CHAN FILT PPMs RCVE TRAN EXCL  ON    OFF
```
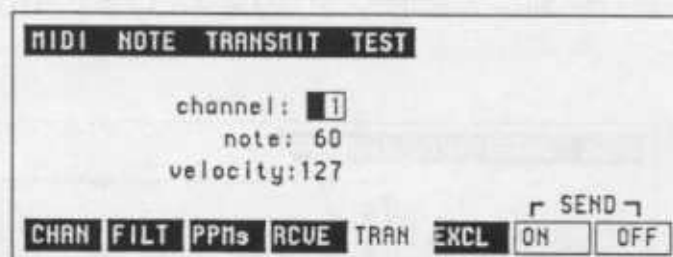
In this page, you can produce a test transmission of a MIDI note, and set the channel, key and velocity of the note to be transmitted, using the "SEND" ON and OFF buttons. This key value and velocity will also be used by the ENT/PLAY key when testing samples and programs.

MIDI data dumps

Samples can be transferred between the S1100 and other samplers via MIDI. If you do this, you must make a MIDI loop (MIDI OUT of the S1100 connected to MIDI IN of the other sampler, and vice versa). This is necessary because of the way in which MIDI sample dumps are performed (in computer terms, a handshake protocol with error detection/correction).

Though the S1100 is a 16-bit sampler, it can accept samples from other samplers, including those from other manufacturers which use a lower bit resolution, padding low bits with zeroes. If transmitting to another sampler which uses fewer bits, it simply truncates the low bits. Instead of another sampler, samples can be transmitted to and accepted from other devices (such as computers) which are capable of storing and/or editing sample data. However, in this section we will always refer to the other device as a "sampler".

```
MIDI EXCLUSIVE channel:    1  (tran & rec)
      type of transmission: ALL PROGRAMS
            sample Protocol: STANDARD
             single Program: TEST PROGRAM
             single sample:
sample number override:      3
CHAN FILT PPMs RCUE TRAN EXCL  SCSI SEND
```

The first parameter, "channel", does not refer to a MIDI channel, but a "logical channel" used in System Exclusive protocol. Both samplers must be set to the same channel for transfer to take place.

The "type of transmission" refers to what will actually be transmitted over MIDI. This can be ALL PROGRAMS, ALL SAMPLES, SINGLE PROGRAM, SINGLE SAMPLE, and DRUM SETTINGS. The meanings of these values are self-explanatory.

Two protocols for sample transfer are available, "STANDARD", which conforms to the MIDI sample dump standard, and "S1000", which is a superset of the MIDI sample dump standard. Use the "S1000" setting only if you are transferring data between two S1000-compatible machines (this includes the S1100, S1000, S1000KB, S1000HD, and the S1000PB).

If you have selected SINGLE PROGRAM transmission, the next parameter, "single program", allows you to specify the program which will be transmitted.

If you have selected SINGLE SAMPLE transmission, the next parameter, "single sample", allows you to specify the sample which will be transmitted.

You can override the default sample number (based on the order in which samples appear in the S1100's memory) with the last parameter, "sample number override".

When all the parameters are set up, press the (SEND) button to initiate transmission. Once the handshake protocol has been successfully initiated between the two devices, data transfer will take place. A new soft key, (ABORT), will appear. Press this if you want to terminate the transmission prematurely.

There is no receive key, as reception of bulk data will automatically take place once a remote device initiates the dump protocol.

SCSI

On this page you can enable or disable MIDI bulk data transmission along a SCSI bus, rather than the MIDI connections, and set the SCSI IDs for both the S1100 and the other SCSI device. The other SCSI device can be another of the S1100 series or a personal computer (equipped with the appropriate software). Values for SCSI device IDs can be from 0 to 7. The two values must be different, otherwise no communication will take place.

```
┌─────────────────────────────────────────────┐
│ SCSI COMMUNICATION                          │
│                                             │
│          MIDI via SCSI: OFF                 │
│          S1100 SCSI ID: 6                   │
│          remote SCSI ID: 6                  │
│                                             │
│ CHAN FILT PPMs RCVE TRAN EXCL SCSI          │
└─────────────────────────────────────────────┘
```

4 Disk operations

The (DISK) button allows you to perform a number of disk-related operations, over and above those which you can perform from the SELECT PROG mode.

Loading from disk

The S1100 allows you to load samples, programs, programs together with their associated samples, drum settings and operating systems from disk. This flexibility helps you pick and choose the sounds you need for a session or performance with the minimum of trouble.

```
LOAD · FROM · DISK: FLOPPYL    vol:NOT  NAMED
free memory: 94%        TEST PROGRAM    P    0%
type of load:-          DARKPARANOIA    P    0%
  ENTIRE VOLUME         KEIKOS      -L  S    3%
(GO to load or CLR      KEIKOS      -R  S    3%
to clear mem/load)      SINE            S ·  0%
LOAD SAVE REN  DEL · HOSK FORM CLR   GO
```

After inserting a disk with data on it, press the (DISK) button (if you haven't inserted a disk, the screen will display "!! NO DISK !!"). A diskette can only contain one volume, and may be formatted as high or low density. If the density (high or low) is different from the density of the last disk inserted, the S1100 will try an alternative density. The density of the disk currently inserted will be displayed as "FLOPPYH" or "FLOPPYL" at the top of the screen.

If you have a hard disk fitted, you can select "HARD" at the top of the screen. Hard disks can be divided into partitions (see the section on formatting — "FORM" for full details of how partitions are arranged), and the partition letter can be selected following the selection of "HARD". Note that there will be a slight delay after choosing a partition, while the partition is selected and read by the S1100. A partition on a hard disk can contain up to 128 volumes, and you can select the volume from which you want to load data in the next parameter field.

A list of all files (programs, samples and drum settings) will be displayed on the right side of the page. Programs have a "P" beside their name, samples have an "S", and drum input settings have a "D". Beside the type of file on the disk, there is also a percentage number, which gives the amount of space that this file will take when loaded into memory.

If you insert a diskette containing S900 samples and programs, the 12-bit S900 samples will have a "9" beside them, and the S900 programs will have a "⋆". The bottom line of the S1100 display will also inform you that the diskette is a diskette for the S900, which is to be used for reading only.

If you cannot see the file you want to load, move the cursor to the list of files and scroll up and down to display all the files on the disk. If the file you want is not on the disk, insert another disk and press LOAD to re-read the disk. If you have a hard disk fitted, then you can choose another volume to read. When you know that you have the right disk or volume, you can proceed.

type of load:

The parameter under the "type of load:-" message can take a number of values. These are described below. When you have selected the appropriate value, you can press (CLR) or (GO). (CLR) will delete all programs and samples from memory, and then load the chosen file(s) from disk.

(GO) will try to load the chosen file(s) into memory without deleting anything first. It is possible that the chosen file(s) will occupy more memory space than is actually available, in which case the loading process will be halted. Any files which have been completely loaded into memory prior to the "out of memory" message will remain in memory, however.

Even if a file exists in memory with the same name as a file on disk, the disk file will still be loaded.

ENTIRE VOLUME

This will load the entire contents of the disk into the memory (programs, samples, drum settings, cue lists, effects file and operating system).

ALL PROGS+SAMPLES

As the name suggests, all programs and samples on the disk will be loaded into memory. Any other files will not be loaded (drum settings, effects file, operating system, etc).

ALL PROGRAMS ONLY

Only programs (those files marked with a "P" in the display) will be loaded.

ALL SAMPLES

All samples (files marked with an "S" in the display) will be loaded.

CURSOR PROG+SAMPS

After selecting this parameter, move the cursor to a program file, and press (GO) or (CLR). The selected program will be loaded, and then the S1100 will examine the program to see what samples are used by the program. These samples will then automatically be loaded.

CURSOR ITEM ONLY

After selecting this parameter, move the cursor to any file (program, sample, drum setting, cue list or effects file), and press (GO) or (CLR). The highlighted file will then be loaded into memory.

OPERATING SYSTEM

If the disk contains an operating system, you can load the system from disk. Usually, however, if you follow our recommendation, you will have booted up the S1100 with the latest version of the operating system.

S900 samples and programs

No special command is provided for S900 samples. Simply select "ENTIRE VOLUME", "ALL PROGRAMS ONLY", "ALL SAMPLES", "CURSOR PROG+SAMPS" or "CURSOR ITEM ONLY" and proceed as above. The S1100 display will inform you when a sample for the S900 is being read, and after each S900 sample has been successfully read, an additional message, "unscrambling S900 sample" will appear, as the S1100 converts S900 to S1100 format (12-bit to 16-bit).

Auto-loading

If you turn on the S1100 with a diskette in the drive, the contents of the disk will be loaded into memory. If the disk contains a copy of the operating system, and this operating system is a higher version number than the ROM version, this will be loaded.

If a hard disk is fitted, and the operating system is loaded on the first volume, the operating system will be automatically loaded from this, if it is a higher version than the ROM version, and no diskette is in the drive at power-on.

We strongly recommend that you make a copy of any *Operating System* diskettes for your S1100 and always turn on the S1100 with the copy (not the original) inserted in the drive.

If you have not made a copy of the operating system, **DO SO NOW!**, following the instructions in the first section of this manual.

Further updates to the operating system may become available. We suggest that you keep in touch with your AKAI Professional dealer to find out when these updates are available and what benefits you will get from them.

Saving to disk

> **REMEMBER!** When you turn off the S1100, all samples, programs and drum settings are lost. Save your work to disk if you want to keep it for another session.

By pressing the **SAVE** button from the main DISK page, you can save your edited programs and samples to disk. Make sure that you have enough unprotected formatted disks available before you press **SAVE**.

```
SAVE TO DISK  : FLOPPY   vol:NOT NAMED
free blocks: 253        TEST PROGRAM P     1
type of load:-          DARKPARANOIA P     1
  ENTIRE VOLUME         KEIKOS      -L S 235
(GO to save or WIPE     KEIKOS      -R S 235
to wipe disk/save)      SINE           S   1
LOAD SAVE REN  DEL  HDSK FORM WIPE  GO
```

The process of saving to disk is much the same as loading from disk. There are two major differences, however:

1) Disk space is measured in blocks - not percentage free space. One formatted MF2DD disk contains 796 blocks, and one MF2HD disk contains 1595 blocks.

2) The unexpanded S1100 is capable of holding more data than will fit onto a single MF2DD or MF2HD diskette. If you try to save an entire volume with many programs and samples, you will have to use more than one disk.

3) Disk volumes have a limit to the number of files which may be stored on them (samples, programs, drum settings, etc). It is unlikely that you will exceed this limit (64 files), but it is possible (for instance, a Latin percussion setup may use many samples, and have many different multi-timbral programs associated with it). Be aware of this limit when creating complex setups.

When you first press **SAVE**, all programs, samples and drum settings in memory are displayed on screen, together with the amount of space in blocks that they will take up on disk. Select the option to save: ENTIRE VOLUME, ALL PROGS+SAMPLES, ALL PROGRAMS ONLY, ALL SAMPLES, CURSOR PROG+SAMPS, CURSOR ITEM ONLY, or OPERATING SYSTEM in the same way as for loading.

If you choose one of the "CURSOR" items, move the cursor to the sample or program in memory that you want to save. Saving "CURSOR PROG+SAMPS" will automatically save any samples associated with the highlighted program. If the samples already exist on disk with the same name, they will be overwritten. Be careful if you are using samples which have been slightly modified between programs; give them different names to avoid overwriting what may represent hours of work.

If you want to check the files already on disk, you can press **LOAD** to view files on disk and then return to **SAVE**.

When you have made your selection press (WIPE) or (GO) to save your work. (WIPE) will erase all data already on the disk, and save the selected file(s), and (GO) will simply save the files in addition to any already on disk. If you are saving to diskette, and there are more files to be saved than will fit on a single diskette, you will be prompted to insert a new diskette.

Saving to hard disk follows the same procedure as saving to diskette. Note that if the hard disk is divided into partitions, you can load data from one partition, select another partition on the SAVE page, and save it into the newly-selected partition. It is not possible to transfer data directly between partitions — it must be done through memory, saving to diskette, or DAT backup (with the digital interface).

REN

In this page, you can rename individual files on disk, or rename a volume on disk (a diskette can contain only one volume, but a hard disk can contain many volumes). If you have a hard disk fitted or attached, select the partition, and the volume to be renamed, or the volume containing the file(s) to be renamed, otherwise, insert a diskette which contains data to be renamed. Press the (NAME) button to enter a new name.

```
RENAME ON DISK :   FLOPPY1  vol:NOT NAMED
new name:-              TEST PROGRAM  P    0X
  NEW NAME              DARKPARANOIA  P    0X
vol load number        KEIKOS       -L S   3X
(rename VOLume or       KEIKOS       -R S   3X
  selected FILE)        SINE            S   1
 LOAD  SAVE  REN    DEL   HDSK  FORM  VOL    FILE
```

When you have entered the new name, press (VOL) to rename the volume (or diskette), or highlight a file with the CURSOR knob, and press (FILE) to rename the highlighted file.

With a hard disk fitted, , MIDI Program Change messages may be used to load volumes. Use the "vol load number" parameter on this page to assign a number from 1 to 128 for the current volume, or set this value to OFF. On receipt of a Program Change message, the S1100 will scan all the hard disk volumes for a number set in this page which corresponds to the Program Change number in the MIDI message. The volume will then be loaded (the currently-selected program number will change to 1, and program number 1 of the volume which has just been loaded will be selected). It is possible to assign the same number to more than one volume. In this case, the first volume encountered (starting at the next volume after the current volume) with this number will be selected. In this way, automatic loading of data can be performed by a sequencer without the need for manual intervention.

NOTE: To rename a diskette or a file on a diskette, write-protection must be off.

DEL

In this page, you can delete a file or files from a diskette or hard disk. If you have a hard disk fitted, select the volume using the parameter field on the first line. There are a number of options that you can pick to determine what file(s) will be deleted.

```
DELETE      disk: -FLOPPYL  vol:NOT NAMED
free blocks: 253         TEST PROGRAM P     1
type of delete:-         DARKPARANOIA P     1
  CURSOR ITEM ONLY       KEIKOS      -L S 235
(GO to delete)           KEIKOS      -R S 235
                         SINE           S   1
LOAD SAVE REN  DEL   HDSK FORM          GO
```

CURSOR ITEM ONLY, as its name suggests, deletes only that file which is highlighted by the cursor. ALL PROGRAMS ONLY deletes all programs, but not their associated samples. ALL SAMPLES deletes all samples on the current volume, and ENTIRE VOLUME is the most drastic, erasing all data on the volume. There is another option, OPERATING SYSTEM, which simply removes the operating system from the volume.

NOTE: In order to delete a file or files from a diskette, write-protection must be off.

HDSK

When **HDSK** is pressed, three parameters are displayed, and two new options appear on the bottom line of the display (**BACK** and (PARK)). The three parameters allow you to set the ID number of the hard disk, and the SCSI ID number of the S1100.

Note that if a magneto-optical disk (such as the one fitted to the Akai DD1000) is used, there is a partition limit of 40Mb. The (SKIP) key may need to be pressed several times at power-on.

```
HARD  DISK  CONTROL
        Atari  drive  number:  0
             SCSI  drive  ID:  5
             S1100  SCSI  ID:  6

Press  PARK  to  set  heads  to  safe  position
LOAD SAVE REN   DEL   BACK FORM        PARK
```

When using the IB-103 interface board, SCSI (Small Computer Systems Interface) numbers may be from 0 to 7, and the two numbers for the S1100 and the hard disk must be different. If an internal hard disk is fitted, the number of this hard disk will be set to 5, and the SCSI ID of the S1100 for use when accessing from an external initiator will be set to 6 (this number can be changed).

The **BACK** key allows you to use the optional digital interface board (IB-104) to back up the contents of a hard disk (or the current volume in memory) to a DAT using the digital interface board. Use the EDIT SAMPLE **DIGI** page to set up digital transmission and either optical or electrical transmission. The transmission rate should be selected (either 48.0kHz or 44.1kHz) to match the data rate of the DAT. Select either "MEMORY" or "HARD DISK" as an option.

If you are backing up the volume in memory, you can change the volume name for further reference (use the [NAME] procedure). Start recording on the DAT, and press [SAVE] on the S1100. It will take about 30 seconds to save a volume. Samples will be saved in normal sample format, but sample headers, programs, etc will be saved in a special format. Both channels' data will be saved, but on restoration, only the L channel will be read.

Backing up the contents of the hard disk is a similar process. However, due to a time gap inserted between each data block, each volume will take about 100 seconds to save. All volumes on the hard disk will be saved.

Restoring data is a similar process. If you want to restore one volume into memory, enter the name of the previously-saved volume, set the "backup type" to "MEMORY", and press [LOAD] after setting the DAT to PLAY. If you wish to restore a hard disk, all volumes will be restored. It is not possible to make a partial restoration of data (one volume) from tape.

As saving and restoration progresses, the number of samples, programs and total volumes will be displayed on screen.

> **NOTE** Though digital tape streaming offers many advantages in terms of speed, convenience, and price of media, AKAI does not guarantee the integrity of data backed up in this way. It is therefore strongly recommended that for archive copies of your data, you use diskettes.

PARK is a very important operation if you have a hard disk fitted, and should be performed every time you end a session with a S1100 with a hard disk fitted. If you do not have a hard disk fitted, this does not apply to you. The PARK procedure makes the hard disk safe for transportation. If you neglect to do this, you stand the chance of losing the data on the hard disk and the hard disk itself if the S1100 is roughly handled. Press PARK. If, for some reason, the heads on the hard disk are not parked properly, a message will tell you to try again. If you keep retrying and this message continues to appear, contact your AKAI dealer. Head parking is not a luxury — it is a necessity if you intend moving your S1100.

FORM

Before you can use a diskette, it must be formatted. MF2DD disks should be for-matted as low-density, and MF2HD disks should be formatted as high-density. As explained earlier in this manual, these different types of diskette can be formatted in the other way, but it is not recommended that you do this.

```
FORMAT FLOPPY OR HARD DISK : FLOPPYL
                  BLOCKS     HARD PARTITIONS
  track:    good:           size:60mb
   side:     bad:

choose HIGH or LOW density:->   ┌ START┐
LOAD SAVE REN  DEL  HDSK FORM HIGH LOW
```

Formatting a diskette will permanently remove all data previously recorded on it. Only format new diskettes or ones which contain data that you are sure you don't need any more.

Insert the diskette in the drive, select "FLOPPY" at the top of the screen, and press HIGH or LOW, depending on the density of the diskette to be formatted. The process will take about a minute, and the track and side number of the diskette will be dis-played as the operation proceeds.

Hard disks can and should also be formatted before use. The maximum size of hard disk which can be formatted and used with the S1100 is 510Mbytes. If any larger hard disk is attached to the S1100, data above this size will not be recognized or used. For convenience, large hard disks should be split into partitions, which are named A, B, C, etc (if you are used to MS-DOS systems, these partitions are analogous to "logical drives" on a hard disk). All partitions must be the same size, which you can select with the "HARD PARTITIONS size" parameter to be 30, 40, 50 or 60Mbytes. The last partition on a hard disk takes up all the remaining space on the disk (eg on a 120Mbyte disk divided into 50Mb partitions, A and B will both be 50Mbytes, and C will be 20Mbytes). However, note the following partition sizes for the AKAI-supplied hard disks (80Mbytes), and other disks of the same size, when they are divided into two or three partitions. Sizes are given in blocks, where one block is 8kbytes.

80Mbyte hard disk				
Partition size as indicated on display	30Mbytes	40Mbytes	50Mbytes	60Mbytes
Partition A	3837	5117	6397	7677
Partition B	3837	5117	3846	2566
Partition C	2556	—	—	—

Select "HARD" at the top of the screen, and press either (FORM) or (ARR), depending on the action you want to take. Formatting and arranging will both destroy all data on the hard disk — arranging being a faster operation than a full format (it simply initializes directories into a format suitable for use by the S1100). Make sure that there is no data which is only stored on the hard disk which you want to keep. When you press either (FORM) or (ARR), you will be asked if you are sure that you want to delete all data on the hard disk. Answer "NO" if you have had second thoughts, otherwise answer "YES". Formatting will take a few minutes, followed by the arrange process. Bad blocks will be automatically "swapped out" in a verification procedure. You can bypass this verification process by pressing (SKIP), but it is suggested that you let it run its course — it will end up safer in the long run.

When you have initialized the hard disk, save the currently-loaded operating system to Volume 001 of the hard disk, using the (DISK), **SAVE**, "OPERATING SYSTEM" options. When you turn on the S1100, this operating system will automatically be loaded from hard disk (quicker and more convenient than having to use a copy of the system diskette every time). You can use the Volume **REN** function to rename Volume 001 to "Boot Volume" or similar.

5 MASTER TUNE

The (MASTER TUNE) button accesses a few basic jobs, primarily concerned with tuning.

Tuning and transposing

```
┌─────────────────────────────────────────────────┐
│  TRANSPOSE    ≈≈≈≈≈≈≈≈≈  FINE TUNE ≈≈≈           │
│    (cursor  knob)         (data  knob)           │
│  -7  -4  0  +4 +7    -50      0     +50          │
│  └┴┴┴┴┴┴┴┴┴┴┴┴┘     └─────────┴───────┘          │
│                                                  │
│      SEMI-TONES           CENTS                  │
│                                      ┌ tone ┐    │
│  TUNE TEMP SOFT  ┌──┐ ┌──┐ ┌──┐  ON   OFF        │
└─────────────────────────────────────────────────┘
```
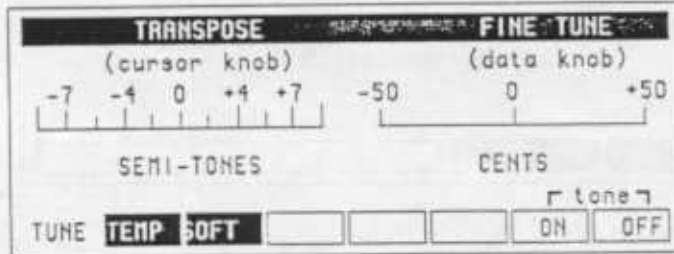
The S1100 can be transposed by ±9 semitones and fine tuned by ±50 cents (one semitone) to enable easy playing in difficult keys and to match tuning with other instruments. When you first press the (MASTER TUNE) button, two scales indicate the current transposition and tuning. Use the CURSOR knob to transpose up or down (one click of the knob equals one semitone), and the DATA knob to provide fine tuning (one click of the knob equals one cent). These transposition and tuning settings will be lost when power is turned off.

There are two action soft keys (ON) and (OFF). These will turn an audio signal on and off to the stereo output connectors (and the headphones).

There are two sub-pages: **TEMP** and **SOFT**.

TEMP

```
┌─────────────────────────────────────────────────┐
│ TEMPERAMENT  cents    Program TEST PROGRAM       │
│  C.  C#  D.  D#  E.  F.  F#  G.  G#  A.  A#  B.  │
│  +00+00+00+00+00+00+00+00+00+00+00+00            │
│                                                  │
│                                                  │
│ TUNE  TEMP  SOFT  ┌──┐ ┌──┐ ┌──┐ ┌──┐           │
└─────────────────────────────────────────────────┘
```
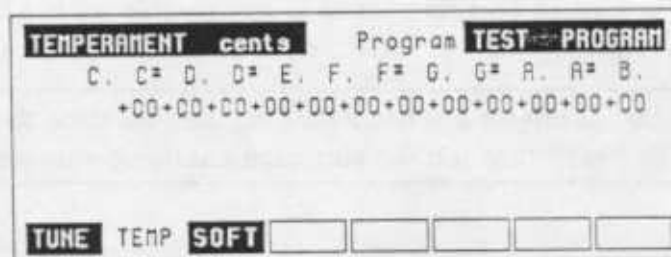
Pressing the **TEMP** button allows you to set up different tuning temperaments for each program, if desired. If you are playing a percussive sample (say congas) in one program, which you do not want to correspond to standard Western chromatic equal temperament tuning, this is where you can alter things. Select the program whose temperament is to be altered on the top line of this screen. Use the CURSOR knob to select the note on the keyboard octave which will be retuned, and use the DATA knob to alter the tuning away from equal temperament by ±25 cents (one quarter-tone). If you are retuning the C# key, for example, all notes played with the C# keys on the keyboard will be detuned by the amount you have set.

SOFT

```
SOFT   PEDAL   RESPONS Program:TEST   PROGRAM

     loudness  reduction:10
        attack  stretch:10


TUNE  TEMP SOFT
```

This page contains two parameters which affect the way when a "soft pedal" (MIDI controller 67) is depressed, and a Note On command is received. The first parameter determines how the volume will be affected (0-99). The higher the number, the greater the amount of volume reduction. The second number determines how the attack will be stretched or "softened" when the controller is pressed. On an acoustic piano, the attack is not stretched when the soft pedal is depressed, but many other acoustic instruments have a slower, softer attack when played quietly. This parameter (0-99) allows you to simulate this.

Real-time digital stereo output

The S1100 is equipped with a real-time digital output that allows you to play audio digitally to a DAT or any other piece of equipment that features a digital input. Furthermore, using F4 in the MASTER TUNE MODE, it is possible to set the level of this digital output to -6dB, 0dB (ie no level change) and 12dB. This is useful for matching levels as this is not normally possible on most units that have digital inputs.

The digital audio format on this output is compatible with AES/EBU and SPDIF digital audio formats.

> **NOTE** The internal effects are not heard on the real-time stereo digital output. They can only be heard through the standard analogue outputs.

6 DRUM

The S1100 is capable of acting as a highly sophisticated percussion synthesizer, using the AKAI ME-35T audio/MIDI trigger interface unit to produce MIDI trigger signals from a variety of sources. Two such units may be connected, and programming of them may be carried out from the S1100 rather than on the more limited displays and controls of the ME-35Ts. For such programming to take place, a MIDI loop must be set up, from IN to OUT and OUT to IN.
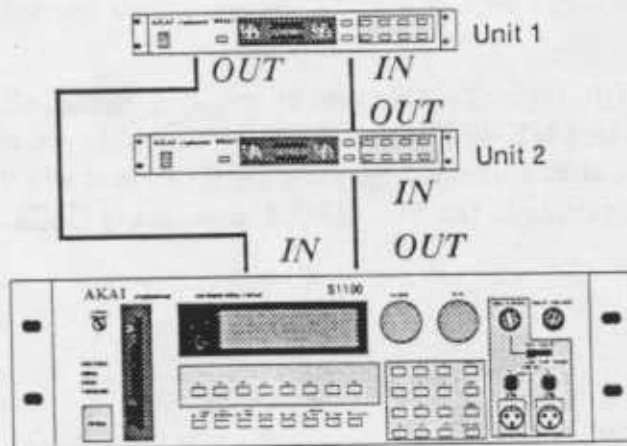
Use the S1100 to set the OUTs of the ME-35Ts to a "soft THRU" - first Unit 1, then Unit 2

Since this is a manual for the S1100, full details of the operation of the ME-35T will not be given here. Refer to the ME-35T manual for operational details. However, note that to set up the MIDI Exclusive channel on the ME-35T, the MIDI CH and MIDI NOTE buttons on the ME-35T should be pressed simultaneously. The following parameters on the ME-35T may be set up from the S1100:

The name of the drum input settings may be altered using the NAME procedure.

Either one of two ME-35Ts may be selected for parameter editing ("unit").

ALL inputs may be globally edited to rough values, and then individual (1-8) inputs may be selected for fine adjustment. This method of working can save you a lot of time.

The "chan" (1-16) and "note" (C0-G8) of the selected input(s) can be selected, as can the sensitivity and trigger levels of the inputs (both can be varied from 0 to 99). Note that as the trigger levels are adjusted, they are displayed graphically on the right of the screen.

The capture, recovery and on-time of the inputs can be adjusted, The capture and recovery times are variable from 0mS to 20mS, and the on-time is variable from 0 to 999mS.

One of eight velocity response curves may be chosen — see the ME-35T manual for details of these curves.

The second page of the DRUM mode, accessed by pressing **CONT**, allows you to set up MIDI parameters for up to two ME-35T units. Parameters which you can set are: operation (ON or OFF), exclusive channels for programming (1-16) and enable of MIDI THRU operation (ON or OFF). To return to the first DRUM page, press **EDIT**.

7 UTILITY (cue-list)

One common application of samplers is to use them for dubbing sound effects in audio/visual productions. Unfortunately, in the past, the only way to trigger these sound effects was to use a MIDI keyboard or sequencer. Most audio/visual post-production suites do not employ MIDI and use timecode (SMPTE and/or EBU) to synchronise equipment and trigger sound effects. The S1100 features an internal timecode reader/generator and the ability to create sophisticated cue lists making it ideal for audio/visual post production. These facilities are available in the UTILITY pages and pressing the UTILITY button found to the far right of the bottom row of gives you this display:

```
QPLAY    CUE LIST 1    time    :   :   :
██  00:00:01:00.0   GUNSHOTS   ON   C_3   127
    00:00:02:00.0   GUNSHOTS   ON   C_3   127
    00:00:03:00.0   FOOTSTEPS  ON   C_3   127
    00:00:04:00.0   FOOTSTEPS  ON   C_3   127
    00:00:05:00.0   GUNSHOTS   ON   C_3   127
PLAY EDIT SMPT GRAB Pext Pint Cint STOP
```

This is the QPLAY mode where you may play, create and edit cue lists. Only one cue list can reside in the S1100 at any one time and the maximum number of events in a cue list is 250.

The basic premise is that you specify a code-based time for an event and this sends a MIDI note to one (or more) of the S1100's internal programs. Any MIDI note may be specified at any MIDI velocity to trigger any sound in any program in the S1100. Unlike other modes of the S1100, it is not necessary to specify program numbers for each of the programs as the S1100's cue list simply 'looks' at the program specified for the event and plays the appropriate note in that program. In other words, if you set the following for an event:

```
00:00:12:00.0   GUNSHOTS   ON   C_3   127
```

the S1100 will send a MIDI note ON event to play a gunshot sound effect on C3 in the GUNSHOT program at 12 seconds with a MIDI velocity of 127. You may have any number of programs in one cue list and these programs can contain any number of samples in keygroups on specific note numbers. You may layer two or more samples on top of each other within any one keygroup and these will be played simultaneously when the appropriate MIDI note number is sent from the cue list.

You may use the cue list in several ways. You could set up a program that contains all the sound effects for your production and assign these to different MIDI notes in their respective keygroups. In the cue list, you would simply assign the one program to every event and then specify the appropriate MIDI note numbers for each event. Alternatively, you could create a number of programs that contain just one sample in each program and these could be triggered by the cue list. Another method is a mixture of both techniques. You could have several programs, each with sound effects assigned to different MIDI note

numbers. For example, you could put all your gunshot sound effects in one program, all your footsteps in another, all your traffic noises in another and set the cue list to play the appropriate sound effect (ie the MIDI note number) from the required program.

As you have already discovered in EDIT SAMPLE, there are many different ways you can play back a sample in the S1100. A sound can be looped or it can simply play to the end of the sample. If the sound has no looping set in it, then it is not necessary to set a MIDI note OFF command to it when it is triggered in the cue list and so all that is required is a MIDI note ON event for such samples. If, however, the sample has a loop set in it, then it will be necessary to sent a MIDI note OFF in order to stop it sounding at the required moment although you will note that if the cue list is stopped during playback of a looped sample, the sample will automatically be stopped and you will not be left with a 'hanging' drone.

The 16 voice polyphony of the S1100 effectively gives you 16 tracks of audio available through the stereo outputs and/or the 8 individual outputs. Of course, you may also assign effects to the sounds although, please bear in mind that every program would have to share the same program number as it is not possible to have different programs with different effects sounding simultaneously.

Before we look at the different modes within the cue list pages, let us first examine some of the functions of the cue list as these are very important in the creation and editing of cue lists.

Blocks

All editing of the cue list is done using 'blocks'. A block can be just one single event or a group of events and there are dedicated soft keys for identifying the start and end of a block which work in conjunction with the numeric keypad which functions as a cursor control in the cue list mode. When you identify a block, a highlighted box appears to the left of the selected event(s).

The cursor

The cursor can be moved around the cue list in the usual way using the CURSOR wheel but there is also a highlighted vertical field running down the side of the cue list called the 'scroll bar' and there is a pointer cursor that indicates the current position of the cursor in the cue list. This pointer cursor can be placed above or below an event and this is used to mark events for copying, insertion or deletion. You may also use this cursor to play the cue list from any point. In the cue list edit mode, there is an indicator at the top of the screen to show the current event number the cursor is placed on.

Getting around the cue list - using the numeric keypad

When you are in the cue list, the numeric keypad has a slightly different function to the other modes in the S1100 as it allows you to move the cursor up and down the cue list scroll bar.

Pressing ⓪ always takes you to the start of the cue list.

Pressing +/< takes you to the end of the cue list.

Pressing any of the number keys moves you down the list by the same number of steps as the number key you pressed. In other words, pressing ① moves you down the list one event at a time, pressing ② moves you two steps at a time, pressing ③ takes you three steps at a time, etc.

By pressing the ⊂-/>⊃ key AND a number key simultaneously, you can move up the list. For example, pressing ⊂-/>⊃ and ⑥ will take you six steps backwards in the list.

Pressing the ⊂+/<⊃ key AND the ⊂-/>⊃ key simultaneously takes you to the start of the block.

If you are on a field in the cue list (ie the cursor is not in the scroll bar), you may move to the scroll bar instantly by pressing the ⊂ENT⊃ key. When the cursor is on the scroll bar and pointing to an event, you may press the ⊂ENT⊃ key to play that event.

If the cursor is on a numeric field in the cue list, the numeric keypad functions in the normal way and this cursor control facility only ever works when the pointer cursor is on the scroll bar.

Cue list modes

There are three basic modes in UTILITY for playing, creating, editing and setting up cue lists which are accessible through soft keys ⊂F1⊃, ⊂F2⊃ and ⊂F3⊃. These are:

PLAY

This is where you play a cue list and this mode has several 'transport' controls for a variety of different playback functions.

EDIT

This is where you can edit and/or create a cue list.

SMPTE

This where you set the S1100 SMPTE receive/transmit parameters.

Editing cue lists

Let us now create a cue list so press **EDIT** (⊂F2⊃) to take you to the cue list edit page; you will see this display:

```
┌─────────────────────────────────────────────────┐
│ ■2    at:+00:00:00:00.0  ol:+00:00:00:00.0      │
│■■ 00:00:01:00.0   GUNSHOTS   ON   C_3   127      │
│   00:00:02:00.0   GUNSHOTS   ON   C_3   127      │
│▐  00:00:03:00.0   FOOTSTEPS  ON   C_3   127      │
│▐  00:00:04:00.0   FOOTSTEPS  ON   C_3   127      │
│▐  00:00:05:00.0   GUNSHOTS   ON   C_3   127      │
│PLAY EDIT MARK BLCK  INS  DEL SLIP SORT           │
└─────────────────────────────────────────────────┘
```

The fields across the top of the screen are:

To the far left of the screen is a highlighted numeric field that is inaccessible to the user. This shows the current event number and, as the cursor is moved up and down the scroll bar, this number changes to indicate the event number in the list.

mt

This sets a master offset time for the cue list and data is input using the data wheel or the numeric keypad. The whole cue list can be offset forwards by pressing the ⊞/< key when the cursor is in this field or backwards by pressing the ⊟/> key when the cursor is in this field.

sl

This allows you to set the time by which you want to slip a block of events in time and data is input using the data wheel or the numeric keypad. You may slip a block of events forwards using the ⊞/< key when the cursor is in this field or backwards using the ⊟/> key when the cursor is in this field. This facility works in conjunction with the SLIP soft key (F7) described below.

Before we look at the other fields on this screen, let us first examine the function of the soft keys as these play an important part in the creation of a cue list.

MARK - F3

Pressing this key sets the start mark of a block as set by the position of the pointer cursor in the scroll bar.

BLCK - F4

Pressing this soft key sets the end mark of a block as set by the position of the pointer cursor in the scroll bar.

To mark a block, move the cursor to the event you wish to set and press mark. Now move the cursor down the list using the numeric keypad as described earlier and press BLCK at the point you wish to mark as the end. It is possible just to mark one event and this is done by pressing only MARK at the event you wish to set and not pressing BLCK.

INS - F5

This allows you to copy and insert a marked event or block. To insert an event, place the pointer cursor at the event you wish to copy and press MARK. Now move the cursor using the numeric keypad to the position at which you wish to insert this event and press F5 - INS. The marked event will be inserted at the point indicated by the pointer cursor. You may now edit this event if you wish.

You may also copy and insert blocks in the same way. Place the cursor at the point at which you wish to set the start of the block and press MARK. Now, using the numeric keypad, move the cursor to the point you wish to set as the end of the block and press BLCK. You may now move the cursor to the position at which you wish to insert this block and press INS. The marked block will be inserted at the point indicated by the pointer cursor. You may now edit the cues in that block if you wish.

DEL - F6

This deletes the marked event(s)

SLIP - F7

This allows you to move a marked event or block of events backwards or forwards in time. This is most useful on blocks of cues that need to be shifted very slightly. When you press SLIP, the cursor will automatically be placed on the 'sl:' (slip time) field at the top right of the screen and you may set this field accordingly. After that, pressing SLIP - F7 - will slip the marked event(s) by the amount set in the 'sl:' field.

SORT - F8

This allows you to sort a cue list's events into chronological order. The S1100 will play events in the right sequence even if they appear out of time on the screen but, to make things clearer for yourself, you may want to place them in strict time order so that they follow consecutively on the screen display.

When you first enter the EDIT CUE page, you will always be presented with one cue. This is a MIDI note ON cue set at 00:00:00:00.0 with no program assigned. The default MIDI note is C_3 (note number 60) and the default velocity setting is 127. You may use this as the basis for your cue list using the various copy and insert functions.

To create a number of cues, simply press F5 - INS - a few times to create some new cues. Now, simply set the appropriate SMPTE times and assign the relevant program(s) and MIDI note number(s). You may also specify the velocity setting for the cue(s) if you wish to affect a cues loudness or volume. You will note that a SMPTE time other than 00:00:00:00.0 HAS to be specified for any cue as this SMPTE time effectively represents 'no time' and so the cue will not sound.

If the sound has no looping (ie in EDIT SAMPLE, it is either set to "PLAY TO SAMPLE END" or no loop has been set) then it is not necessary to specify a MIDI note OFF for every event - only when a sample has a loop set in it is it necessary to specify a MIDI Note Off or, if a long sample needs to be shut off before it reaches the end of its duration. If you wish, you may specify a Note Off command at any time to cut a sample short without having to edit its end point in EDIT SAMPLE.

Playing the cue list

You may now copy and insert either single events or blocks of events as you wish until the cue list is complete. At any time, to hear the results of your efforts, press F1 - PLAY - to take you to the cue play screen. You will see this display:

```
QPLAY    CUE LIST 1    time   :   :   :
██  00:00:01:00.0  GUNSHOTS   ON   C_3   127
    00:00:02:00.0  GUNSHOTS   ON   C_3   127
    00:00:03:00.0  FOOTSTEPS  ON   C_3   127
    00:00:04:00.0  FOOTSTEPS  ON   C_3   127
    00:00:05:00.0  GUNSHOTS   ON   C_3   127
PLAY EDIT SMPT GRAB Pext Pint Cint STOP
```

UTILITY (cue-list)

This page allows you to play the cue list from any point and there are several 'transport' controls that do this.

F5 - **Pext:**

This is an abbreviation for PLAY EXTERNAL and plays the cue list but only when it is receiving incoming SMPTE from an external source. If the external source stops, then the S1100 will stop. If the external source is 'rewound' (either physically, as in the case of an audio or video tape deck, or 'virtually', as in the case of a hard disk recorder such as the Akai DD1000, or a EDL editor) to another location, the S1100 will pick up the new timecode position and re-commence playback from that point although you should note that if playback recommences at a point that is halfway through a sample, that sample will not play. If no timecode is present at the SMPTE IN socket, then of course nothing will happen when Pext is pressed! When the cue list is playing, the cue list will scroll through the cue list and a small highlight appears to the left of the cues to indicate that the event has played. The current cue playing is always the middle cue in the screen except when playing the first three cues at the start of a cue list.

F6 - **Pint**

This is an abbreviation for PLAY INTERNAL and will play the cue list from its own internal SMPTE generator. It will also transmit SMPTE timecode through the SMPTE OUT socket on the rear of the S1100 allowing you to control external devices using the S1100 as the master timecode clock source. When the cue list is playing, the cue list will scroll through the cue list and a small highlight appears to the left of the cue to indicate that the event has played. The current cue playing is always the middle cue in the screen except when playing the first three cues at the start of a cue list.

F7 - **Cint**

This is an abbreviation of CONTINUE INTERNAL and pressing this after pressing STOP (see below) will play the cue list from the current position of the pointer cursor. This also transmits SMPTE timecode through the SMPTE out socket from the point at which playback is re-commenced. You can freely move the pointer cursor to any location in the cue list to commence playback from any point using this key. When the cue list is playing, the cue list will scroll through the cue list and a small highlight appears to the left of the cues to indicate that the event has played. The current cue playing is always the middle cue in the screen except when playing the first three cues at the start of a cue list.

F8 - **STOP**

Not surprisingly, this stops playback of the cue list in all play modes. It also stops transmission of timecode from the SMPTE out socket.

In this page, it is also possible to name a cue list. To do this, press NAME and type in the name (up to 12 characters)-followed by pressing ENTER. The 'time:' field to the right of the name display shows the current time of either the internal or external timecode.

Grabbing times

One other soft key that is available for use in the QPLAY mode is the `GRAB` function found on soft key `F4`. This allows you to input cues in real time as the cue list is playing (this can be an empty cue list). To do this, press either `Fext` (`F5`) or `Pint` (`F6`) and, as the cue list is playing, press `F4` at appropriate moments. This will input empty cues at the end of the cue list. You may edit these and assign the relevant programs, MIDI notes and velocity levels in EDIT and pressing SORT in EDIT will place them in their correct chronological order. This method of inputting cues is well suited for creating cue lists 'on the fly' - that is, watching the visuals whilst entering cues in real-time. You may use this function to add cues to an existing cue list or to create a cue list 'from scratch'.

Another way to do this is to use the numeric keypad whilst the cue list is playing. This will insert programs 1 to 9 in realtime as the cue list plays according to the key press and you will hear the sound as you do this. Naturally, it is important that your programs are numbered correctly 1-9 if you are to achieve the right results using this facility. Also, if no programs are assigned to any keys that are pressed, no input will be made.

The keys will normally insert the appropriate program on MIDI note C3 with a velocity of 127 but this may be changed by changing the parameters set in the TRANS page of the main MIDI mode (please refer to Section 3 - MIDI - for more details on this function).

For either way of inputting cues in real-time, the `GRAB` soft key has two functions. If you press `GRAB` while the S1100 is NOT playing, a 'G' appears at the top of the screen next to the 'time' field. When this is displayed and any of the PLAY functions are used, you can input cues in real-time (using the GRAB function or by 'playing' the programs from the keypad) but the cues will not be displayed as you input them. This allows a far faster response time for 'grabbed' cues. You may still input cues in real-time using either method without pressing `GRAB` first and you will see the cues entered as you 'play' them but please note that the response time is slightly slower because, as the screen display changes, so some of the S1100's execution speed is used up and it is possible in such a situation, especially when inputting really fast cues, that some cues may be missed. It is recommended, therefore, that you press GRAB before putting the S1100 into play if you need to input a very fast series of cues in real-time. If you wish to cancel the 'G', press `STOP` (`F8`) and this will put you back to the normal GRAB modes.

You may not access any other fields in this mode as these are for display only although the cursor wheel and the numeric keypad can be used to scroll through the cue list. If you wish to edit the cue list, press `F2` to return to the EDIT screen.

SMPTE page

This page is where you set up the parameters for the S1100's internal timecode reader/generator. Pressing F3 - **SMPT** - will give you this display:

```
┌──────────────────────────────────────────────────┐
│ SMPTE               H  M  S  F      f/s            │
│      receive time:-    :  :  :                     │
│                                                    │
│    transmit start:- │ 00:00:00:00.0 │   25         │
│  current transmit:-    :   :   :                   │
│                            ┌ tran ┐                │
│ PLAY EDIT SMPT      │ RCVE STRT CONT STOP │         │
└──────────────────────────────────────────────────┘
```

The receive time field shows the current time being fed to the timecode reader from an external source. It will also detect the frame rate used on the external source and this is displayed underneath the f/s field shown in the top right hand corner of the screen.

The transmit start field allows you to set the time at which you want the SMPTE time to start. To the right of this field is another that allows you to set the frame rate for the transmitted timecode and the options are 24 fps (SMPTE film), 25 fps (EBU for PAL and SECAM), 30 fps (SMPTE for mono NTSC and audio-only) and 30 drop fps (SMPTE for colour NTSC). It is important that this be set to match incoming external timecode otherwise you may find that certain cues 'misfire'.

The 'current transmit' field shows the SMPTE time currently being sent.

There are four soft keys associated with the reception and transmission of SMPTE. These are:

F4 - RCVE

This switches the S1100's reader/generator to receive external SMPTE/EBU timecode. When this is switched on and external timecode is sent to the S1100, the 'receive time' field shows the current external timecode position and the 'f/s' field shows the the external timecode's frame rate.

F5 - STRT

This generates timecode from the S1100's internal generator from the point set in the transmit start field.

F6 - CONT

This generates timecode from the point at which the timecode transmission was stopped.

F7 - STOP

This stops transmission of timecode from the S1100's internal generator.

Saving cue lists

You may save a cue list and its programs and samples by selecting ENTIRE VOLUME as the save type - this will save all the programs, samples and effects file associated with the cue list to disk.

It is also possible to save any number of cue lists to disk. To do this, go to the DISK page and select CURSOR ITEM ONLY. Place the cursor on the cue list file you wish to save press [F2] - [SAVE] - and then press [F8] - [GO]. This will save the cue list to disk and the suffix 'Q" will be shown alongside the file. Any number of cue lists can be saved to a disk although only one can exist in the S1100 at any one time.

Loading cue lists

When a disk is inserted into the S1100's disk drive on power up, the cue list file will be loaded along with the the programs and samples. This also applies if ENTIRE VOLUME is specified as the load type.

Loading an individual cue list is done by going to the DISK and selecting CURSOR ITEM ONLY and placing the cursor on the cue list file you wish to load. Pressing [F8] - [GO] - will load the selected cue list into the S1100.

APPENDICES

The following pages contain information that, while not essential to the operation of the S1100, nonetheless may be useful as reference.

Technical Specifications

Display	Backlit 320 characters/240 x 640 graphic LCD	
Diskette drive	3.5" dual density drive, 2Mbyte capacity (2HD), 1Mbyte capacity (2DD)	
Size (maximum dimensions)	483 x 133 x 425(mm) (19 x 5.25 x 16.75(in)) (W x H x D) (EIA 3U size)	
Weight	10.1kg (22.2lbs)	
Power requirements/consumption	120VAC, 60Hz (USA, Canada) 220 - 230VAC, 50Hz (Europe, except UK) 240VAC, 50Hz (UK, Australia)	
Sampling rates	44.1kHz, 22.05kHz (20Hz-20kHz, 20Hz-10kHz audio bandwidth)	
Data format	16-bit linear encoding	
Memory	2Mbyte standard, expandable to 32Mbyte	
Sampling time (unexpanded memory)	23.76 seconds — mono @ 44.1kHz 47.52 seconds — mono @ 22.05kHz 11.88 seconds — stereo @ 44.1kHz 23.76 seconds — stereo @ 22.05kHz	
Maximum number of samples	200	
Maximum number of programs	100	
Pitch shifting	±2 octaves (1 cent steps) interpolation and decimation 24-bit algorithm, using custom VLSI circuit	
Filter	Digital moving low-pass filter (-18dB/octave)	
Envelope generators	2 x digital ADSR	
Connectors		
REC IN	2 x XLR (balanced) 2 x 1/4-inch phone (balanced)	
STEREO OUT	2 x 1/4-inch phone (unbalanced)	-5dBm, 600Ω
AES/EBU OUT	1 x XLR (AES/EBU digital audio output)	RS-422 level
ASSIGNABLE OUTS	8 x 1/4-inch phone (unbalanced)	-5dBm, 600Ω
EFFECT SEND	1 x 1/4-inch phone (unbalanced)	-5dBm, 600Ω
HEADPHONES	1 x 1/4-inch stereo phone	
SMPTE IN/OUT	2 x 1/4" phone (balanced)	
FOOTSWITCH	1 x 1/4-inch phone	
MIDI	IN, OUT, THRU	
REC GAIN	HI -58dBm, MID -38dBm, LO -18dBm	
OPTIONS		
EXM005	2Mbyte memory expansion board	
EXM008	8Mbyte memory expansion board	
IB-104	AES/EBU digital interface	
BL1000	3.5 inch blank diskettes (MF2HD)	
For details of internal hard disks, please consult your AKAI dealer		

MIDI IMPLEMENTATION CHART for S1100

FUNCTION		TRANSMITTED	RECOGNIZED	REMARKS
Basic Channel	Default Changed	x x	o 1 o 1 - 16	without disk memorized (disk)
Mode	Default Messages Altered	x ************	Mode 3 Mode 1-4 OMNI On/Off, P/M x	without disk memorized (disk)
Note Number:	 True Voice	x ************	24 -127 24 - 127	
Velocity	Note On Note Off	x x	o 9n V=1-127 o 8n V=1-127	Release Velocity
After- touch	Keys Chs	x x	x o	
Pitchbend		x	o	0-12 semitone steps (8-bit resolution)
Control Change	1 7 64 67	x x x x	o o o o	Modulation wheel Volume Sustain pedal Soft pedal
Program Change 	 True #	x *******	1-128	by Preset number value
System Exclusive		o	o	AKAI ID 47h S1100 48h *1
System Common	Song Pos Song Sel Tune	x x x	x x x	
System Real time	Clock Command	x x	x x	
Aux Messages	Local On/Off All Note Off Active Sense Reset	x x x x	x o (123) x x	

MODE 1: Omni On, Poly   MODE 3: Omni On, Mono
MODE 2: Omni Off, Poly   MODE 4: Omni Off, Mono

*1 Full details of System Exclusive data formats can be obtained by contacting your AKAI dealer.

S1100 PROGRAM CHART

*(This chart is provided as an example of how to record the program settings you create for the S1100.
Feel free to make copies of this page for your own use)*

Disk Name	Sequence disk
Date	Size
Session	Producer
Piece	Artist

Program name	Samples	Keygroup	Keyspan		Pan	Out	Tuning	MIDI channel
			LOW	HIGH				

Index