AKAI professional

S1000EX

16 VOICE POLIPHONY EXPANSION UNIT

WARNING

To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

Operator's Manual

AKAI professional

S1100EX

16 Voice Polyphony Expansion Unit

Software Version 1.0 Operator's Manual

To show our support for the protection of the earth's environment,
this manual has been printed entirely on recycled paper

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1.INTRODUCTION

Thank you for buying the Akai S1100EX. The S1100EX is a unique 16 voice polyphony expansion unit for the S1100 stereo digital sampler module allowing you to increase the number of available voices to 32 simultaneously. But there is more to it than that.
The S1100EX offers most of the same facilities such as the same complement of audio outputs, on board stereo digital effects plus, of course, all the expansion possibilities of the S1100 itself. As you can see from the front panel, there does not seem to be much to the S1100EX but behind the simple facade is virtually a complete S1100 that can be remotely controlled from a 'master' S1100.
The S1100EX operates using a combination of MIDI and SCSI (Small Computer Serial Interface). SCSI is used to control the S1100EX remotely and provide note information, while MIDI is used for all the usual 'performance' information such as pitch bend, mod wheel, etc.. Because SCSI is an extremely fast interface, operation of the S1100EX is 'transparent' and there will be no delays in operation, making the S1100EX as quick and convenient to use as using the S1100 only.
SCSI allows you to connect up to eight units total so the ultimate system you could build may be comprised of one S1100 (master) and up to six S1100EX's (slave), and one external hard disk or MO disk.
Typically, however, a large system would probably be serviced by some form of hard disk such as the removable cartridge types, fixed hard disks, or Sony Magneto Optical disk (MO disk) with which the S1100 is compatible. Furthermore, a CD ROM player may also be used. Each of these would take a SCSI ID, however, and so restrict the number of S1100EX's you could have on line at any one time.

* If the S1100 has an internal hard disk, this disk facility will also be counted as one SCSI device.

Even adding one S1100EX offers a great deal of potential, however, as we shall see during the course of this manual and in the ADVANCED APPLICATIONS section. Overall, the S1100EX is a highly cost effective method of increasing your sampling power and your creative options.

Operation of the S1100EX is extremely simple. It mostly functions exactly like a standard S1100 and so, for most of the time, you are advised to refer to the S1100's manual for specific information on operation.

S1100EX FEATURES

- 16 voice Polyphony Expansion Unit for S1100 by Remote operation
- Same high quality sampling functions and features as S1100
- 32 voice overflow polyphony between units
- DSP and DAC's for high dynamic range and S/N(signal to noise)figures
- Expansion and multi-timbral modes for different applications
- 8 assignable individual outputs and R/L outputs
- Inputs for mixing external instruments
- Real-time AES/EBU digital audio outputs
- 50 built in digital multi-effects
- Built in 'virtual' mixer with level, pan, FX send, etc. control
- Standard 2 Mbyte Internal memory expandable to up to 32 Mbytes
- Optional IB108 SMPTE reader/generator

2.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 Servece 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 Servece Center. The party requesting warranty service must provide proof of ownership and date of purchase of the product.

If the warrnty is valid, AKAI will, without charge for parts or labor, either repair or replace the defective part(s). Without a valid warraty, 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 replece- ments 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 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 connetion 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 modifecation 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 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 tobe user error, or the owner's inability to use the product.
THE DURATION OF ANY OTHER WARRNTIES, 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

WARNING

To prevent fire or shock hazard, do not expose this applicance to rain or moisture.

The lightning flash with the arrowhead symbol superimposed across a graphical representation of a person, within an equilateral triangle, is intended to alertthe 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 intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance

WARNING

Power requirements for electrical equipment vary from area to area. Please ensure that your S1100EX 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 S1100EX

- Never touch the plug with wet hands.
- Always disconnect the S1100EX from the power supply by pulling on the plug, not the cord.
- Allow only a qualified professional engineer to repair or reassemble the S1100EX. 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 S1100EX.
- 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 S1100EX, 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 S1100EX away from sources of direct heat (stoves, radiators, etc).
- Avoid using aerosol insecticides, etc near the S1100EX. They may damage the surface, and may ignite.
- Do not use denaturated alcohol, thinner or similar chemicals to clean the S1100EX. They will damage the finish.
- Make sure that the S1100EX is always well-supported when in use (either in a specially-designed equipment rack, or a firm level surface).
- When installing the S1100EX 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

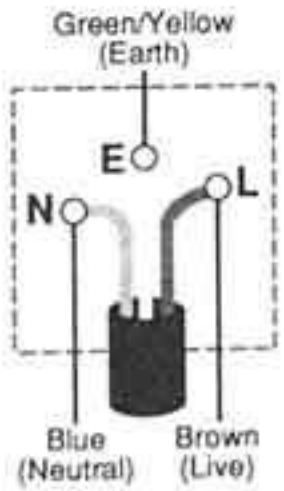
Important safety notice - The flex supplied with this machine has three wires, as shown in the illustration.

WARNING: THIS APPLIANCE MUST BE EARTHED.

IMPORTANT

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

As the colours of the wires in the flex may not correspond to the colour mardings 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.



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 S1100EX

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

FÜR KUNDEN IN DER BUNDESREPUBLIK DEUTSCHLAND

Bescheinigung von AKAI

Hiermit wird bescheinigt, daß das Gerät AKAI

S1100EX

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.

3. GETTING STARTED

Using the S1100EX is very simple and there are two mode types available which we will look at in the next section of this manual.

MODE 1 is used for multi-timbral applications and the S1100EX behaves like a normal S1100 although all editing is done remotely from the master S1100. It is possible to have several S1100EX's 'on-line' (max. of six) and each can be individually selected for editing and programming. When editing or programming the S1100EX from the S1100, the screen on the S1100 is inverted (i.e. dark lettering on a white background) to indicate that you are editing the expander. In this way, each module in the system will function independently and you may load up different sounds into each module. In such a situation, you have total flexibility for sequencing and you effectively have several independent S1100's. This is enormously cost effective both in the studio and live where huge savings can be made when several S1100's are required.

MODE 2 is used for expanding the polyphony of the S1100 so that its maximum number of voices is 32. This is particularly useful on such instrument sounds such as piano where lots of voices are needed, especially when the sustain pedal is used extensively as is typical in complex piano pieces. It is also useful on stereo samples which, on just one S1100, brings polyphony down to 8 voices. It can also be useful on programs which make extensive use of the S1100's powerful layering capabilities where several sounds are mixed together (such as is found on the SWM series of sound library disks) as this can also restrict polyphony on a single S1100, but with the S1100EX connected, such restrictions are eliminated.

CONNECTING THE S1100EX

As mentioned in the Introduction, the S1100EX is connected to the S1100 using SCSI, so, after ensuring that both units are switched OFF, take the SCSI cable supplied with the unit and connect the two units' SCSI connectors together. Now take a standard MIDI cable (a short one is recommended) and connect the MIDI THRU of the S1100 to the MIDI IN of the S1100EX as shown in Fig. 1.

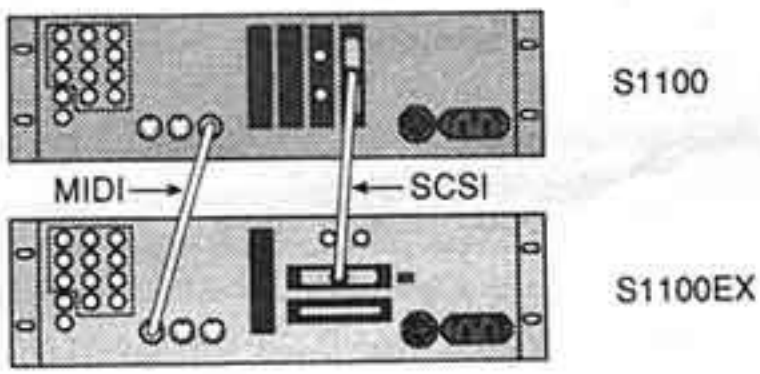


Fig. 1. Connecting SCSI and MIDI between the S1100 and the S1100EX

NOTE: *It is necessary to use Version 1.30 or more system ROM in the S1100 for the EX to be used. Please consult your dealter or an Akai Service Representative regarding system ROM.*

If you have more than one S1100EX, please refer to the section ADVANCED APPLICATIONS for more details on interconnection.

CONNECTING AUDIO

The S1100EX has the same output capabilities as the S1100. It has a R/L (mono)stereo output plus 8 individually assignable outputs (*1). This allows you to use an external mixing console to precisely adjust the levels of different parts coming from your two units. This is particularly useful when sequencing multi-timbral instruments where instruments can be assigned to the individual outputs for external EQ and effects processing, and level adjustment on a mixing console. However, this requires that you have a fairly large mixing console. If your mixer is somewhat more modest and you are short of channels, there are two audio inputs on the rear of the S1100EX that allow you to route audio through the unit. This facility is also probably better suited when using the S1100EX to simply expand the number of voices of your S1100.

To use this facility, take the R/L stereo outputs of the S1100 and route them to the MIX INPUT R/L terminal found on the rear of the S1100EX, just above the SCSI connections as shown in Fig. 2. With the R/L outputs of the S1100EX connected to a mixer or amplification system, a mix of both the S1100 and the S1100EX's audio will appear on just two channels. In this case, the overall volume of both instruments can be regulated from the S1100EX's MAIN VOLUME control. If you leave the MAIN VOLUME control of the S1100 at maximum, the levels of both will remain equal, which is very useful when using both devices in MODE 2. Please refer to the section ADVANCED APPLICATIONS for more details on interconnection.

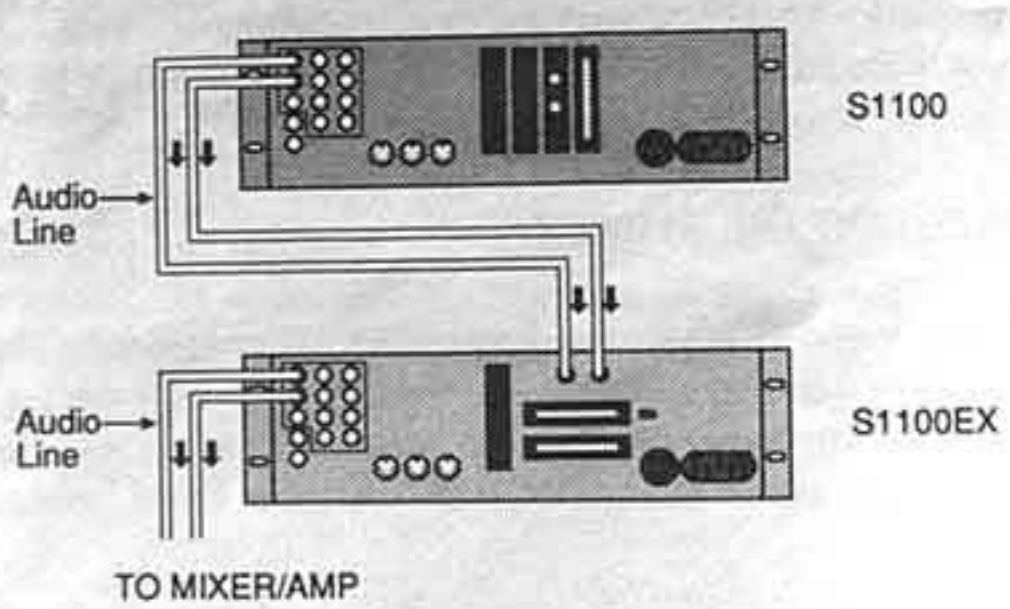


Fig. 2. Connecting S1100 R/L outputs to S1100EX MIX INPUTS

(* 1) The S1100 and S1100EX have a total of eight individual audio outputs each but if the internal effects are switched ON, outputs 7 and 8 are used as effects outputs and the effects-only signal appears at these outputs. If you wish to use all eight outputs, it is necessary to switch the internal effects OFF in the FX page (F7) of SELECT PROG. Please refer to the S1100 owners manual for more information on this.

POWERING UP THE SYSTEM

Step 1. Power up the S1100EX(s) and any other SCSI devices.

Step 2. Power up the S1100 (master).

* You can also utilize the SCSI RESET function.c See page 8 for deteiled information.

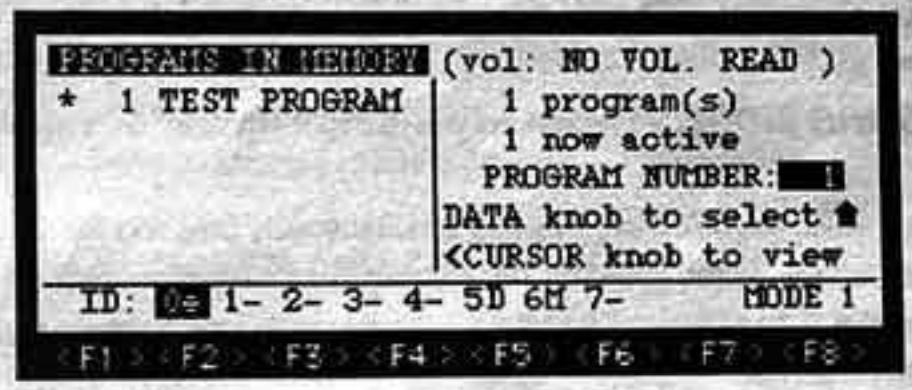
4. SETTING UP THE SYSTEM

SELECTING MODES

As mentioned in the previous section, the S1100 has two basic modes. Actually, there are three modes, the third being NORMAL MODE which allows the master S1100 to be edited alone.

MODE 1 is best suited to multi-timbral operation where several samplers are required to play back many musical parts from a sequencer. MODE 2 is better suited to voice expansion where more than 16 voices are required on just one instrument. These two modes are accessed from the master S1100 in the following way:

In any mode and at any time, hold down the MARK/# key for longer than one second and the following screen will be displayed:



Along the bottom line, the display changes to show which units are connected - this is referred to as the 'status' line in this manual. These numbers 0-7 indicate the assigned SCSI ID numbers.

If a number has an 'e' alongside it, this indicates that an S1100EX is connected. In the example shown above, the S1100EX that is connected is on SCSI ID#0. If it were on SCSI ID#1, the 'e' would be alongside the 1, naturally, and if several S1100EX's are connected, each one would be identified on this screen accordingly.

Other SCSI devices will be indicated as follows:

S1100 (Master) ..... 'M' is indicated alongside ID # (default ID=6)
Internal hard disk of S1100 ..... 'D' is indicated alongside ID # (default ID=5)
External hard disk ..... 'd' is indicated alongside ID #

- If a '+' appears alongside ID #, it indicates that some form of SCSI device is connected which the S1100 can recognise (but cannot identify).
- If the Apple Macintosh is connected, no indication will appear because it does not respond to 'SCSI searches'.
- The S1100EX's SCSI ID is set using the DIP switch on the rear panel of the instrument.

SELECTING MODE 1 (when playing back multi-timbral operations)

Holding down the MARK/# key while simultaneously pressing the +/< key will select MODE 1 and the screen will be inverted to show that you are now communicating directly with the selected S1100EX. When this is selected, the red MODE 1 LED on the S1100EX will light up and flicker very fast. This flickering indicates that the unit is actually communicating with the S1100. The screen will also show MODE 1 in the bottom right hand corner.

I.e:

In MODE 1, you may select the EX to edit separately from the S1100. This is explained in a moment. When MIDI information is received, the green MODE 2 LED will flash. If this does not happen, please check that your MIDI connections are correct.

SELECTING MODE 2 (when expanding number of voices)

Holding down the MARK/# key while simultaneously pressing the -/> key will select MODE 2 and the screen will be the same as when using the S1100 alone. When this selection is made, the green MODE 2 LED on the S1100EX will light up and the screen will show MODE 2 in the bottom right hand corner.

I.e:

Any editing you now perform will be carried out on both units simultaneously and the two units will behave like one big S1100. Please note that it is not possible to edit data in each machine separately in MODE 2 but this is as you would expect. When MIDI data is received, the green MODE 2 LED will flicker. If this does not happen, please check your MIDI connections.

IMPORTANT NOTE: *When switching from MODE 1 to MODE 2, the whole system must reset itself and all data is lost in this action, so, if you have made any changes to data in MODE 1 that you wish to keep, make sure you have saved all data before switching from MODE 1 to MODE 2.*

SELECTING NORMAL (when editing the master S1100)

There is a third mode you can select and that is by holding down the MARK/# key and simultaneously pressing the ENT/PLAY key. This will return you back to the master S1100 and will display NORMAL on the screen. Any work you now do on the S1100 will only affect the S1100 itself and will not be transferred to any connected EX units.

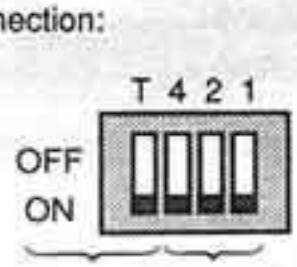
So, working in this way, it will be opposite from MODE 1 which is selected to edit the EX separately from the S1100. When in the NORMAL MODE, the Mode 1 LED of the S1100EX side only, will light in red.

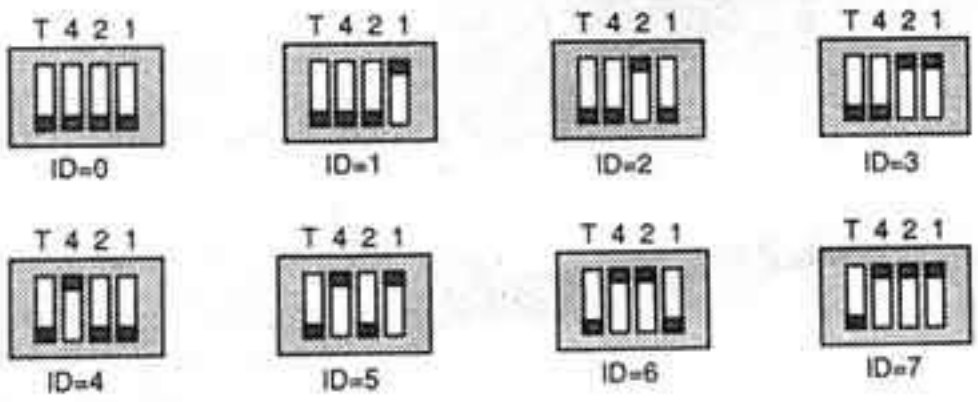
* When power is turned ON, NORMAL Mode will be selected.

IMPORTANT NOTE: *If you do any editing on the S1100 in the NORMAL MODE and you change to MODE 2, a system reset takes place and all data will be lost. Please ensure that you save all your work before switching to MODE 2.*

SETTING SCSI ID NUMBERS AND TERMINATION

The S1100EX's SCSI ID is set on the rear of the instrument. You will find a small series of DIP switches next to the SCSI connection:





IMPORTANT NOTE: *It is not possible for devices to share the same SCSI ID. Do not set the S1100EX's SCSI to the same as the SCSI disk drive ID(s) or to the same as any connected S1100, etc. Each connected SCSI device must have its own unique SCSI ID. Failure to observe this rule will cause much confusion, unpredictable results, and even damage to equipment.*

IMPORTANT NOTE: *Once the units have been powered up, it is not possible to change the SCSI ID of the S1100EX. You could change it physically but this change will not show on the Master S1100's screen. To reset the SCSI ID of the S1100EX, you will need to turn all connected units off, reset the SCSI ID, and power up again.*

If you are only using one S1100 (master) with one S1100EX, it should not be necessary to set SCSI ID's for your S1100 and S1100EX, as sensible defaults have been chosen at the factory prior to shipping, these being S1100's SCSI ID is #6 and the S1100EX is # 0. Unless you have any other SCSI devices connected to the system that use these ID's, then it is not necesaary to change SCSI ID's on any of your equipment. If you do need to set an SCSI ID #, you can choose from the remaining #'s (1,2,3,4, or 7); #5 is the default figure for the internal hard disk drive. Also, remember that once you have set your SCSI ID's, it will not be necessary to change them again unless you drastically re-configure your system.

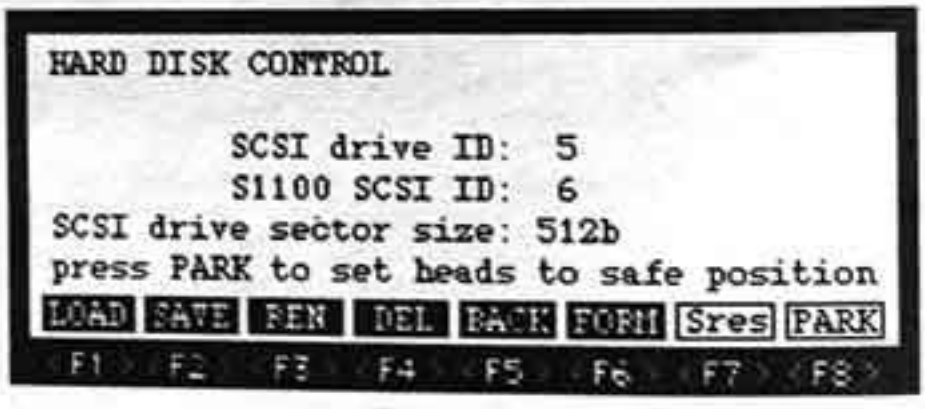
The switch T is used to switch termination ON or OFF. When multiple SCSI devices are connected (by the 'daisy chain' method), the master must be informed of the beginning and ending devices, and this is called termination.

Normally, with just one S1100 (master) and one S1100EX, this should be ON but in more advanced applications and systems, this is may or may not be the appropriate terminantion. Please refer to the section ADVANCED APPLICATIONS for information on termination.

SETTING THE S1100'S SCSI ID

Although this is not strictly necessary for normal operation (using one S1100), you may wish or need to change the SCSI ID of the S1100 itself. This would be necessary if you have several S1100's connected together. This is done in the DISK Mode.

Step 1: Press the DISK button and then press F5 (HDSK) to access the S1100's SCSI parameters. The following screen is then displayed:



Step 2: Move the cursor to the 'S1100 SCSI ID' and change as necessary.

IMPORTANT NOTE: *It is not possible for devices to share the same SCSI ID. Do not set the S1100's SCSI ID to the same as the SCSI disk drive ID(s) or to the same as any connected S1100EX's, etc. Each connected SCSI device must have its own unique SCSI ID. Failure to observe this rule will cause much confusion, unpredictable results, and even damage to equipment.*

USING VERSION 1.30 SYSTEM SOFTWARE

This software is required to use an S1100 with the S1100EX, with three additional features having been introduced:

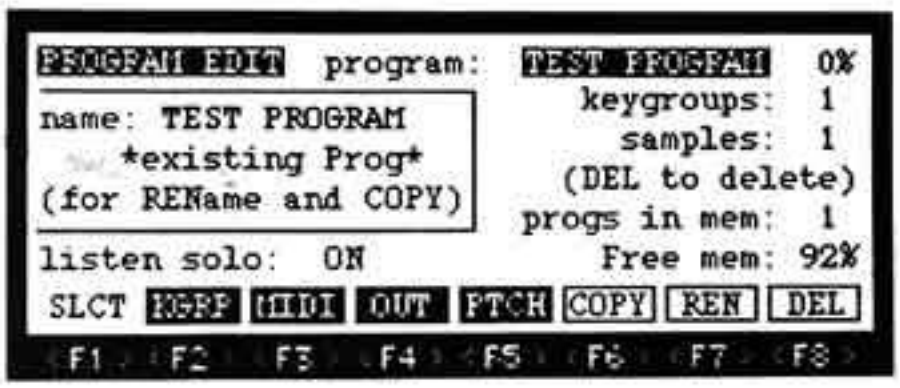
1. IN EDIT SAMPLE:

Now, whenever you make a sample and use the ENT/PLAY key to replay it, the sample will playback accurately at the pitch at which it was taken. Before, in previous software versions, the ENT/PLAY key simply sent out a MIDI note selected in the MIDI page - TRANS (F5) - and the default was C3. This resulted in samples playing back at the wrong pitch if their base pitch was something other than C3. This new feature allows you to make several samples on different pitches and check them using the ENT/PLAY key without the need for a MIDI keyboard to be connected.

2. IN EDIT PROGRAM:

In previous versions of software, whenever you entered the EDIT PROGRAM mode, only the selected program could be monitored. Usually, this works fine, but there are also many times such as when sequencing multi-timbrally, or when layering several programs together that this is highly inconvenient becuase you need to edit the program in relation to the other programs it is being used with. The Version 1.30 software offers a new facility to overcome this problem.

Pressing EDIT PROG key will display the following new screen:



The new facility LISTEN SOLO is shown in the bottom left corner of the window and this may be set to ON or OFF. With it switched to ON, only the selected program will be heard (i.e. the situation found in previous software versions). With it set to OFF, it is possible to hear the other program specified with the SELECT PROG key . This feature is extremely useful if edits have to be made relative to other instruments you may be using at the same time.

3. IN MIDI AND DISK:

In consideration of an extended system, that includes many interconnected SCSI devices, we have added an 'SCSI Reset Function'. Each SCSI device is mounted (*1) at the time the S1100 (master) is turned ON. This function allows you to change the ID #, and/or connect/dis-connect devices even with the power ON, when usually the power would need to be OFF.

You can utilize this function one of two ways, after making appropriate changes regarding the connected devices, either press F8 (Sres) in the SCSI page of the MIDI mode, or press F7 (Sres) in the HDSK Page of the DISK mode. At this time the S1100 (master) will remount the SCSI devices which are connected.

(*1) In computer language 'mount' means the 'logical' connection of devices. In contrast, the actual connection of devices using cables, etc. is termed: 'physical' connection. Even if the devices have been connected 'physically', but not 'logically', they will not be able to recognise each other.

For further details on System ROM consult your nearest "Akai professional" dealer.

5. USING THE SYSTEM

Now that you have successfully set the system up by connecting the units SCSI and MIDI, connecting the audio, and setting appropriate SCSI ID's if necessary, you are ready to use the S1100EX.

There is not much to say regarding operation as it is extremely simple - if you have used your S1100 before then you can already use the S1100EX. What follows, therefore, are some practical examples of working with the S1100EX in a few typical situations.

USING MODE 1

This is probably the most varied way of using the S1100EX in your system. When connected and set to MODE 1, you basically have two S1100's at your disposal with all operations being done on the one master S1100.

Typically, you will use MODE 1 when you have multi-timbral instruments that require sequencing although, as we shall see later, you can use it for layering and keyboard splitting techniques as well. For the moment, let us say you are sequencing some programs multi-timbrally using one S1100EX and one S1100.

EDITING MULTI-TIMBRAL INSTRUMENTS IN MODE 1

The first thing you will need to do is load some sounds using the DISK MODE. You may load the two units in any order - but, for now, we will load the S1100 first, followed by the EX.

Step 1: First, hold down the MARK/# key for more than a second until you receive the 'status' line along the bottom of the display. Now, as you continue holding the MARK/# key, simultaneously press the ENT/PLAY key. This will select NORMAL mode (i.e. you are operating the S1100 on its own).

Step 2: Now load the sample program from your floppy disk or hard disk (CD ROM). In the NORMAL mode it is possible to load the S1100.

Step 3: When that is complete, hold down the MARK/# key again until you receive the 'status' line, and simultaneously press the +/< key. This will take you to MODE 1, and the screen will invert to indicate that you are, in fact, working on the EX. In this mode it is possible to load a sample program to the S1100EX.

Having completed Steps 1 - 3, no more need be done except to press PLAY on your sequencer. Then edit as follows:

Let us now pretend that you want to edit the release of the bass guitar on the S1100EX.

First, press the EDIT PROG key and edit in the usual way - just as though you were editing your S1100 (except with an inverted screen display, of course).
If, for some reason, it is not, simply hold down the MARK/# key and simultaneously press the +/< key to return to MODE 1 (*1).

(*1) After you finished loading to the S1100EX, you should still be in MODE 1 (inverted screen). But, if you happened to hit a wrong key, etc., and accidentally enter MODE 2 (S1100's screen is displayed normally), that means the Memory has been cleared, and you must re-start loading from the beginning again. Also note that if the screen is displayed normally because you accidentally entered the NORMAL mode, the Memory has not been cleared, so you can simply return to MODE 1 and continue your work.
Having done that satisfactorily on the S1100EX, say you now wish to edit the attack of a string part on the S1100. Hold down the MARK/# key and simultaneously press the ENT/PLAY key to enter the NORMAL mode, and the screen will revert to the usual S1100 display. You may now go into EDIT PROG and edit as usual.

In this way, while in MODE 1, you may assign individual outputs, adjust levels, pan position - in fact, everything you would normally do on just one S1100. Also, because you are using two independent samplers, you may assign different effects to different instruments allowing you to have more than one effect active at one time.

If you wish to save the results of your editing, use the following steps:

Step 1: Select each unit.

S1100EX: Hold down the MARK/# key, and simultaneously press the +/< key to enter MODE 1.
S1100: Hold down the MARK/# key, and simultaneously press the ENT/PLAY key to enter NORMAL mode.

Step 2: Perform the usual routines, to save the editing results to either floppy or hard disk.

* Don't forget the new LISTEN SOLO ON/OFF function in EDIT PROG that when switched ON, allows you to listen to the selected program only, or when switched OFF, allows other programs you select using the SELECT PROG key to also be heard while you're editing.

LAYERING SOUNDS WITH THE S1100EX IN MODE 1

Although principally designed for multi-timbral applications, MODE 1 can also be used to layer sounds. This is done by loading the sounds of your choice into the appropriate instrument (S1100/S1100EX), setting them to the same program number and MIDI channel, and then playing them out. You can create rich textures in this way by layering two string sounds together or by layering, say, brass and strings, choir and strings, piano and strings, etc., and the detune can be set very quickly in the MASTER TUNE mode of each instrument. In this way, rich ensemble sounds can be created but with no loss of polyphony. It is also possible using MODE 1, to assign different effects between the units so that different sounds in the layers can have different effects.

Of course, this technique can be expanded whereby you could layer some sounds together

within each instrument and then layer those together to create multi-layered textures. Don't forget, too, that the usual multi-way keyboard splits are available to you as well as combinations of splits and layers.

If you are using more than one S1100EX in your system, the same guidelines apply for layering sounds in MODE 1, but you will have more instruments to play with. For more details on this, please refer to the section, ADVANCED APPLICATIONS.

* Don't forget the new LISTEN SOLO ON/OFF function in EDIT PROG that when switched ON, allows you to listen to the selected program only, or when switched OFF, allows other programs you select using the SELECT PROG key to also be heard while you're editing.

All other functions in the S1100EX are identical to those in the S1100 so please refer to the S1100 Owners Manual for specific information.

NOTE: *While most functions are available in the S1100, it is not possible to sample on the S1100EX directly. If you try to do so, when you enter REC 2 and press ARM, you will receive the message:*

"no function in S1100EX"

All sampling must be done in the S1100 and transferred to the S1100EX via disk operations and then edited.
Similarly, the cue list functions in UTILITY mode do not work without the optional IB108 SMPTE reader/generator board installed.

USING MODE 2

MODE 2 is even easier to use because the two units behave as one 32 voice S1100. All editing is done across the two instruments as one - in fact, you would not know that you have the S1100EX connected at all when you are using MODE 2 except for the extra polyphony available to you.

To load a sound into the two units, use the following procedures:

Step 1: First, press and hold the MARK/# key, and simultaneously press the -/> key to enter MODE 2(this will reset the two units and clear the memory).

Step 2: Now load some sounds from disk, either floppy, in the usual way from the DISK mode.

You will note that when you do this, the S1100's screen inverts to indicate that it is first loading up the S1100EX (the red MODE 1 LED of S1100EX will also flicker at a reduced speed). When it has finished, the screen will revert to its normal appearance indicating that the S1100 itself is loading (at this time the red MODE 1 LED will go OFF).

When the load cycle is complete, you may now use the two units with full 32 voice polyphony.

NOTE: *When loading from S1100's internal hard disk, the screen will remain as usual, and both units will be loaded (the red MODE 1 LED does not blink).*

EDITING IN MODE 2

This is exactly like editing just one S1100. Make any edits you wish in any of the S1100's modes and use any facility on the S1100 in the usual way and these will be simultaneously performed in the S1100EX. If you wish to save these edits, use the DISK page in the normal way, you only need to save the data once as all data is shared across the two instruments.

IMPORTANT NOTE: *It is not necessary to edit one instrument separately when using MODE 2. Although it is possible to switch to MODE 1 or switch to NORMAL MODE to edit the S1100, as soon as you revert back to MODE 2 to continue, the system will reset and all data will be lost requiring another load operation to be carried out. If you wish to retain the ability to edit each instrument independently, please use MODE 1.*

IMPORTANT NOTE : *It is essential that boad the S1100 and the S1100EX have the same memory comfiguration to work effectively.*
For example, say you wish to load a 4 meg piano into both units but the S1100EX only has 2 meg installed. During the disk load, as soon as the S1100EX's memory is full, you will receive the warning "INSUFFICIENT WAVEFORM MEMORY". Of course, you may have unequal amounts of memory in each unit so long as the maximum amount required never exceeds that of the instrument with the smallest complement of memory.

IMPORTANT NOTE : *Because the S1100EX doesn't have a recording (sampling) function, all sampling must be done in the S1100 and then saved and reloaded to the S1100EX (even when using MODE 2).*

USING MODE 2 MULTI-TIMBRALLY

Although MODE 1 is designed principally for this application, there is no reason to stop you using MODE 2 for multi-timbral applications but be aware of the advantages and the disadvantages of this.

The only advantage is that the disk load operation between both units is much easier because the two instruments load up automatically in one cycle. In other words, assuming that you have saved a multi-timbral setup to disk, the whole thing will load at one time either from one floppy or one volume of your hard disk. This could be more convenient than loading up each unit in turn.
The disadvantages of this is that you are unable to edit each unit separately but then, in this situation, you wouldn't want to. The other disadvantage (and quite a restricting one) is that you cannot have access to the same complement of individual audio outputs or the two multi-effects processors. For example, you could not route 16 instruments out of the 16 outputs. Assigning a bass guitar to output 1 on the S1100 would also assign the same sound to the same output on the EX. Likewise for other instruments. Also, you would not be able to have different effects from each instruments effects processor active at one time - the same effects file would be loaded into both instruments, all the instruments would share the same program number and so have to share the same effects from the one effects file. Again, though, this may not be a problem in certain circumstances.

One positive way of utilizing MODE 2 multi-timbrally, however, is live, on-stage. In pre-production for the concert, all your multi-timbral editing, fine tuning and programming could be done using MODE 1. Then, live on stage, you could set your system to MODE 2 and initiate complete loads more quickly and conveniently. On stage, of course, you would not do any editing so MODE 2 would not present the problems outlined above.

NOTE: *One word of warning though, there would have to be compromises made on individual output assignment and effects. For example, say you assigned a bass guitar to output 1 of the S1100 and a string sound to output 1 of the EX when using MODE 1 and saved that - if you loaded them back up using MODE 2 to play these back, each instrument would appear at both outputs because data is shared across the two units (i.e. the bass guitar and the strings would both come out of output 1 of BOTH instruments). Similarly, the same effects file would be loaded and all instruments would have to share the same effects.*

Bear this in mind, however, and live with the compromise and you should be o.k.. Besides which, typically, live (unless you are in a super-group that can afford to take a huge mixer on the road!!), it is more likely that you would use the stereo outputs of the instruments, maybe even cascaded through the S1100EX's MIX INPUTs and take advantage of the S1100's built in mixer and internal effects in which case, this needn't be a problem.

LAYERING SOUNDS IN MODE 2

It is possible to layer sounds in MODE 2 but this has different connotations to the method used in MODE 1.

In MODE 2, all the layering would take place within the one program or assigning the same program number to one or more programs - in fact, just as though you were using just the one S1100. In this case, all detunes and mixing would be done within the one unit and the 32 voice capability of the two instruments together would take care of the polyphony playback.

Again, both methods have advantages and disadvantages, depending on the circumstances.

The advantage to using MODE 2 for layering sounds is that the disk load operation is much easier and the whole thing can be loaded with just one operation. The disadvantage is that you only have access to one effect at a time.
The advantage of using MODE 1 for layering is that it is easier to change the sounds. If you use MODE 2, then selecting new sounds to layer would require extensive re-programming and possibly complicated disk management routines but using MODE 1, you can simply select a new disk with a different sound and load that into one of the instruments. A certain amount of re-programming would be necessary here but this method could be easier in certain circumstances. Again, you could use MODE 1 for setting the layered sounds up by auditioning combinations of sounds and then, when you are satisfied, you could save the whole thing onto one disk or one volume of your hard disk and load it back up in one operation using MODE 2.

As above (edit in MODE 1, playback in MODE 2), this would be useful live but there would have to be certain compromises made in effects selection, output assignment, etc..

In all circumstances, it is best to decide which mode is best for the task in hand and in that matter, only you can decide.

6. OPTIONS

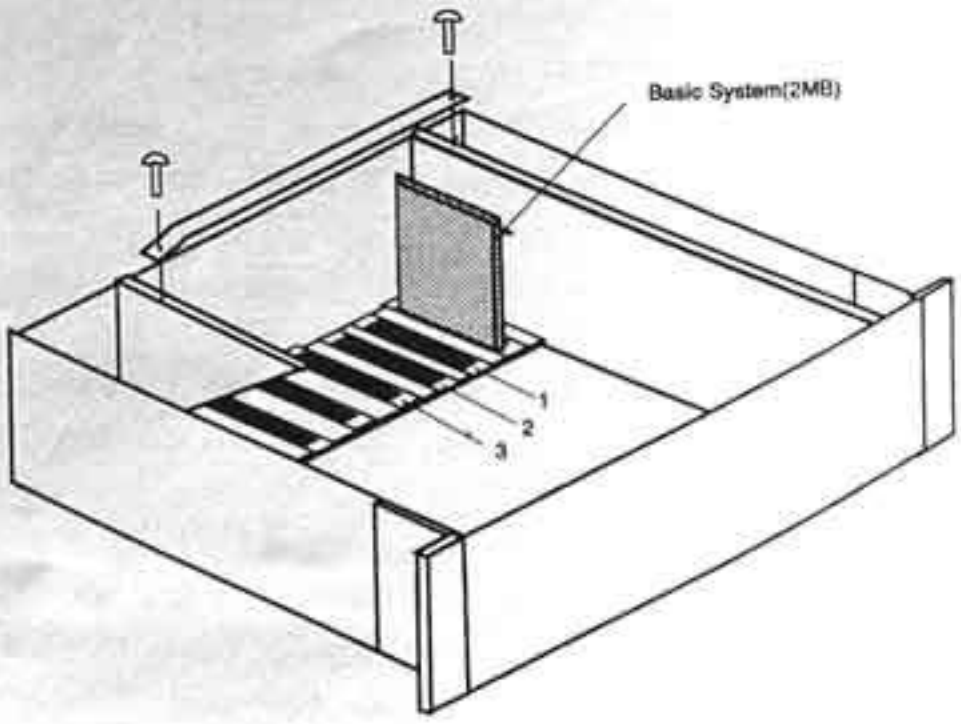
As on the S1100, the S1100EX has access to a wide range of options that can be installed to expand its capabilities further. At this time we will introduce several hardware options and explain their practical uses.

USING EXM005/008 - MEMORY EXPANSION BOARDS

The most valuable and useful option for any user is expanding the internal memory. The S1100EX has the ability to expand the memory quite substantially up to 32 megabytes, to give you a total of approximately 6 minutes of mono sampling at FS=44.1kHz (half that in stereo, of course, and twice that amount at FS=22.05kHz)

Expanding both the S1100 and the EX allows enormous creative and production possibilities, and enables you to use the S1100 for mastering and editing short singles, jingles and so forth.

Two memory boards are available - the EXM005 and the EXM008. The EXM005 contains 2 megabytes. The total capacity for memory expansion allows for three additional boards to be installed, which together with the standard equipped 2 megabyte board, would give a maximum memory capacity of 8 megabytes. The other board, the EXM008, is an 8 megabyte memory expansion board. So, if the standard 2 megabyte board is replaced, you can install a total of 4 EXM008's, allowing a maximum memory expansion of 32 megabytes of internal memory. Also, it is possible to install a combination of EX005(s) and EX008(s) into one unit.



Version

FITTING MEMORY BOARDS

When you wish to install an EXM005/008 to your S1100EX, contact your local dealer or AKAI Service Representative to arrange for installation. If the user installs the memory expansion board(s) himself and malfunctions occur, this will not be covered under the service warranty.

POSSIBLE EXAMPLE COMBINATIONS OF MEMORY BOARDS

standard equipped memory board .....(2MB)
memory expansion boards: EXM008 .....(8MB)
EXM005 .....(2MB)

slot # \ MEMORY BOARD(MB)						
Basic	2	2	2	2	2	2
1	8	8	8	8	8	X
2	8	8	8	2	X	X
3	8	2	X	X	X	X

X = Empty Slot

EXAMPLE FITTINGS FOR EXM008 - 8 MEG MEMORY EXPANSION BOARDS

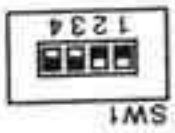
slot # \ MEMORY BOARD(MB)				
Basic	8	8	8	8
1	8	8	8	X
2	8	8	X	X
3	8	X	X	X

X = Empty Slot

AVAILABLE TOTAL SAMPLING TIME OF EXM008(S) INSTALLATIONS

MEMORY CAPACITY (MB) / AUDIO BAND	Basic System 2	1 Instillation 10	2 Installation 18	3 Installation 26	4 Installation 32
[MONO]					
20,000Hz(FS=44.1kHz)	23.76 sec.	118.8 sec.	213.84 sec.	308.88 sec.	380.16 sec.
10,000Hz(FS=22.05kHz)	47.52 sec.	237.6 sec.	427.68 sec.	617.76 sec.	760.32 sec.
[STEREO]					
20,000Hz(FS=44.1kHz)	11.8 sec.	59.4 sec.	106.92 sec.	154.44 sec.	190.08 sec.
10,000Hz(FS=22.05kHz)	23.76 sec.	118.8 sec.	213.84 sec.	308.88 sec.	380.18 sec.

- If adding one memory expansion board, it must always be fitted in slot 1.
- When adding EXM008(s), or a combination of EX005(s) and EX008(s), it is also necessary to switch the small DIP switches (SW1) found on the main circuit board just below the DSP board as shown here:
- In both cases, they must be switched exactly opposite to that of the switch positions set at the factory, with switches 1 and 2 switched toward the front of the EX and switches 3 and 4 switched to the rear panel.



NOTE: *We reccomend using Akai EXM005 and EXM008 memory expansion boards, Akai cannot guarantee your instrument if other units cause a defect.*

IMPORTANT NOTE: *It is essential that both the S1100 and the S1100EX have the same memory configulation to work effectively when using MODE 2. For example, say you wish to load a 4 meg piano into both units using MODE 2 but the S1100EX only has 2 meg installed. During the disk load, as soon as the S1100EX's memory is full, you will receive the warning "INSUFFICIENT WAVEFORM MEMORY". Of course, you may have unequal amounts of memory in each unit so long as the maximum amount required never exceeds that of the instrument with the smallest complement of memory.*

USING THE IB-108 SMPTE READER/GENERATOR

Another option that is available for the S1100EX is the IB-108 SMPTE reader/generator. This allows you to create and edit cue lists on the S1100EX with SMPTE in MODE 1 independently from the S1100.

Either unit can be slave or master as you wish or you may slave both units to external timecode from, say, VTR. Each unit can be used independently to save each cue list to separate floppy disks or hard disk volumes.

Using MODE 2 (when expanding number of voices) you can control both units' playback centrally, using the cuelist made from the S1100 (master), and you will benefit from the increased polyphony for creating complex cue lists for post production work.

Using MODE 1(when playing back multi-timbral operations) you can create separate cue lists on each instrument in turn, and control them individually to take advantage of both units' capacity. In this way, you can take advantage of the increased number of individual outputs and the two multi-effects processors. Using MODE 2, you would be restricted to using only one set of outputs and one effect - using MODE 1, you could use both units' output complement and the two effects processors which may be more convenient.

For more information on programming and setting up cue lists, please refer to the S1100's Owners Manual.

Please note that although it is possible to create cue lists on the S1100EX in MODE 1 even without the IB-108 board fitted, it is not possible to playback.

INSTALLING THE IB-108

When you wish to install an IB-108 to your S1100EX, contact your local dealer or AKAI Service Representative to arrange for installation. If the user installs the option himself and malfunctions occur, this will not be covered under the service warranty.

7. ADVANCED APPLICATIONS

So far, we have just looked at using one S1100 with an EX and a variety of basic uses, including available option installations. Now, we will introduce examples of more advanced applications and the "know-how" of sampling techniques.

SAMPLING BETWEEN UNITS (RE-SAMPLING)

One positive advantage of having two samplers, is the ability to sample samples (or: re-sample)! That is, to create interesting sounds in one instrument and sample them into the other, which greatly expands your sound creation potential.

For example, let's assume the following:

Step 1: Select MODE 1 and load several sounds into the S1100EX.

Step 2: Then use the LAYER function to create a powerful 'stacked sound' within the EDIT PROGRAM. Adding many layers, of course, eats into your polyphony so one way around this is to re-sample it. Not only is it possible to save polyphony, but you can re-sample the sound which has an effect on it, and when you play it back, add more or different effects on top of that.

Actually, there are two ways to re-sample, for more complete details please refer to the S1100 Owner's Manual.

METHOD 1 - SAMPLING USING THE OPTIONAL IB104 DIGITAL INTERFACE

If you have the IB104 Digital Interface installed in your S1100, you may do direct digital transfers of complete sounds with no degradation of audio quality, so take the digital output of the S1100EX into the digital input of the S1100.

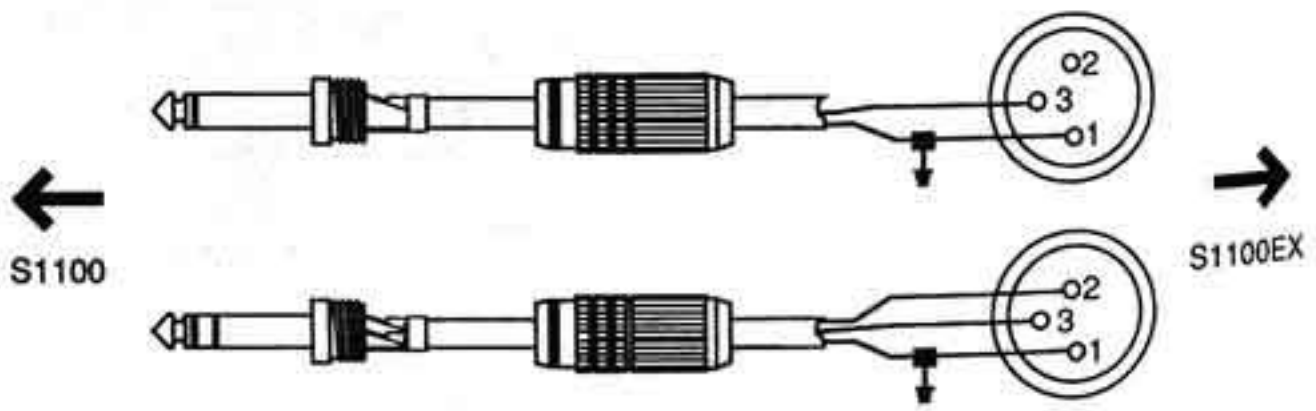
Step 3: Assuming you have created your 'stacked-sound' in the EDIT PROG mode of the S1100EX (steps 1 &2 above), go to the S1100 and enter the NORMAL mode by pressing and holding the MARK/# key, and simaultaneously press the ENT/PLAY key. Then go to the EDIT SAMPLE mode.

Step 4: While in EDIT SAMPLE mode, set REC1 to start recording using MIDI NOTE ON information. Select to use the digital input, of course, and set up any other parameters as appropriate.

Step 5: Now go to REC 2 to actually record the sound. Playing the note on the MIDI keyboard will play the EX and also initiate recording and you will sample the 'stacked' sound into the S1100. You may then edit and loop this 'stacked' sample within EDIT PROG to create a sound of several layers but without any loss of polyphony.

NOTE : *The disadvantage of this method using the digital input/output's is there is no direct level control. Normally, this should not be a problem but to obtain optimum signal to noise ratios when making a digital transfer, please experiment with the STEREO LEVEL gain boost in the OUT page of EDIT PROG on the S1100, and the DIGITAL OUTPUT scaling found in the DOUT page of MASTER TUNE on the S1100EX. These allow you to boost the signal quite dramatically and so obtain 'hotter' samples although please take care not to boost level too much and so introduce distortion!!*

NOTE : *The wiring diagram for this connection is shown below:*



Pin 2 of the XLR is 'cold' (or not in use)
Pin 3 of the XLR is 'hot'
Pin 1 of the XLR is 'ground'

Failure to observe this wiring may result in a ground loop problem and cause noise.

METHOD 2 - SAMPLING USING ANALOGUE TRANSFER

If you do not have the IB104, you may still achieve the same result by using the following procedures:

Step 3: Again, assuming you have created your 'stacked sound' in the S1100EX (steps 1&2 in the Sampling Between Units section), take it's R/L audio outputs and connect them to the S1100's XLR inputs on the front panel (or, if it is a mono sample, just connect the L output to the L input).

Step 4: Go to the S1100 and enter the NORMAL mode by pressing and holding the MARK/# key, and simaultaneously press the ENT/PLAY key. Then go to the EDIT SAMPLE mode.

Step 5: Once again, select that MIDI NOTE ON information initiates sampling and set any other parameters as necessary.

Step 6: Now go to REC 2 to actually record the sound. Playing the note on the MIDI keyboard will play the EX and also initiate recording and you will sample the 'stacked' sound into the S1100.

You may then, edit and loop this 'stacked' sample within the EDIT PROG mode.

You may also like to experiment with the following ideas:

1. Try playing chords or octaves for an even richer, fuller sound.

2. Try playing short musical phrases.

3. Try using pitch bend and/or mod wheel as you make the sample.

4. Try keyboard slides, sweeps and glissandos into the note.

These techniques allow you to create very interesting textures and effects and allow the creation of powerful drum sounds, rich bass sounds, full orchestral textures and more. There is no limit to the fantastic sounds you can produce using your imagination!

Of course, once the sound is in the S1100, there is nothing to stop you layering more sounds on top of that, anytime!!
This re-sampling technique not only saves polyphony but can also make more economical use of memory. As an example, your 'stacked sound' in the S1100EX may use 4 x five second (20 sec. total) samples yet when you transfer them to the S1100, there would only need to one sample of five seconds, which is a composite of all of the samples used in the original.

SPINNING IN RECORDINGS

Another advantage of having two samplers in your system is that one can be used in the normal way for sequencing multi-timbrally whilst the other is used for spinning in recordings such as vocals, guitar or saxophone solos, etc..

While this is possible on one S1100 alone, the recordings will eat into the available polyphony, especially if they are stereo recordings.

With the S1100 system, you can even be playing back your sequenced backing track from the S1100EX while 'overdubbing' into the S1100.

To do this, first select MODE 1 and create your sequenced backing track on the S1100EX. You can now play that back while sampling into the S1100. That sample can then be trimmed, edited and generally tidied up, placed into a program and triggered from a track of your sequencer.

Of course, things like vocals or solos are rarely performed in one take so why not do it in sections, edit and trim all the samples and assign each take to different notes on the keyboard and trigger them accordingly. In this way, you can even control the audio tracks by your MIDI sequencer.

Of course, you may take advantage of such processing techniques as TIMESTRETCH if you wish. This can be useful if you suddenly decide to change the tempo of your sequenced backing track.

Don't forget as well that you can add effects to the recordings you make and mix them into a complimentary balance within the system (between S1100 and the S1100EX). If more extensive control is required, the recordings can be assigned to the individual outputs for external processing and balancing.

A variation on this technique is to 'lift' audio from multi-track tape. This may be so that you can take some studio recordings out or whatever. Again, having the two samplers helps in this. It is probable that the master multi-track will have a SMPTE timecode track so you may like to synchronise your sequencer to that. Now, sample the audio track from the Master tape. Having done that, edited the recordings and set up a suitable program, you can add the sampled audio tracks to sequenced parts. You can now set the sequencer to free run (at the correct tempo, of course) and have a full backing track on-stage.

NOTE: *This kind of technique usually requires substantial memory expansion. If this is a problem for you, you will probably find that recording at 22.05kHz is still good enough quality, especially for vocals, guitar, etc. It is only sounds with extensive high frequency content that will suffer. Of course, with memory expansion AND recording at half bandwidth, you can really squeeze a lot of material into your S1100.*

MASTERING AND EDITING USING THE SYSTEM

This technique does not necessarily require two samplers and polyphony is not an issue here. What you can make good use of, however, is the enormous memory expansion capabilities available between the two units.

Again, MODE 1 is best suited for this. Record (sample) your material into the S1100. If the material you are sampling exceeds the size of internal memory you have, record in sections. Sample the first part and save it and then clear the memory and sample the next half. You can now load each of the halves into the S1100 and the S1100EX respectively. You may now edit this, trimming the start and end points as necessary, and then assign the samples to individuals notes on the MIDI keyboard to play them back.
A variation on this technique is for the creation of extended dance remixes or re-arrangment of songs.

Sample your song in sections - i.e. sample the intro, then sample the first verse, then the first chorus, followed by the second verse, etc., so that you have several samples, each one being a different section of the song. Naturally, you may sample smaller sections and fills, breakdowns (i.e. filtered down mixes of fewer instruments) and you can trim and edit these to perfection in EDIT SAMPLE mode, and then assign the MIDI note number. to the keyboard in the EDIT PROG mode. You may now play the sections in any order you like. You could, of course, use a sequencer as well to store the running order. In this way, you may create several different versions of one song.
Of course, because of the samplers polyphony, you may create overlaps and crossfades between sections using the envelope generators.

NOTE: *You will find it best if the samples are set to PLAY TO SAMPLE END so that you do not need to keep the note held for the whole playback of the section.*

A further variation on this is to add parts to your basic mix. For example, while a section of the song is playing, there is nothing to stop you playing parts over the top of it. For adventurous remix work, you could be sequencing one sampler while the other is playing back the song and the whole thing may be run from your sequencer. With careful planning, amazing results can be had which, while nowhere near as sophisticated as using an editing system specifically designed for such applications such as the Akai DD1000 Magneto Optical Disk Recorder/ Editor, can be very effective indeed. Naturally, though, such techniques normally require full memory expansion.

USING THE SYSTEM AS A SOPHISTICATED CARTRIDGE MACHINE

Employing similar techniques to those outlined above, you could use the S1100 and S1100EX as a highly sophisticated digital cartridge machine for use live on radio stations. By sampling your jingles into the S1100, editing, trimming and assigning them to MIDI notes, these can be replayed directly on air. You can make use of the generous output complement to assign jingles to different channels of your broadcast desk and the polyphony of the units allows you to layer voice-overs on top of music beds, etc..

You can approach this in two ways - you could have one jingle or a set of jingles on one disk and load them as they are needed, or you could have virtually an entire programs' worth loaded in the machines with extensive memory expansion, thereby having each jingle ready for instantaneous playback.

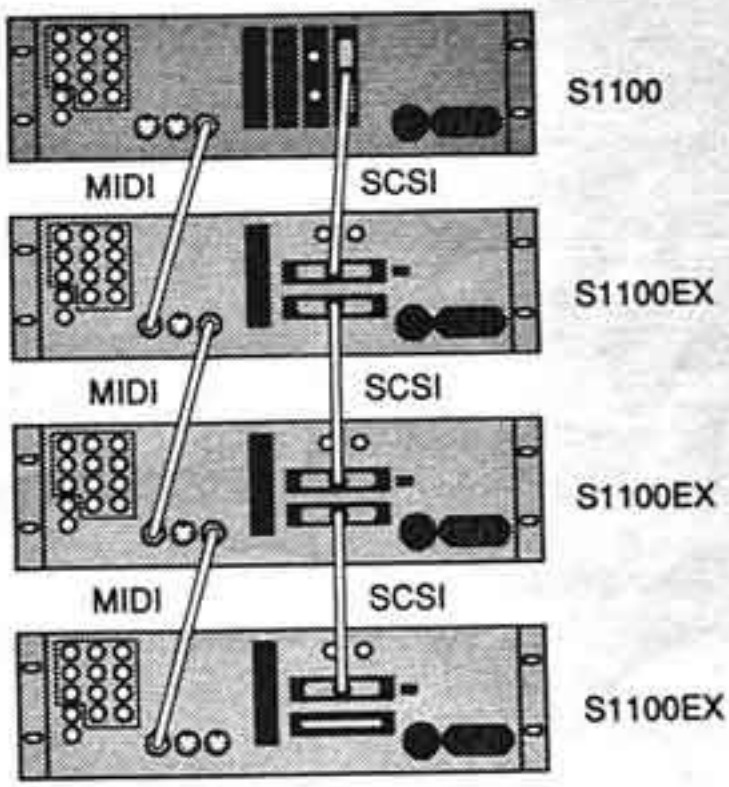
Also, you can utilize the looping facilities to create continuous music beds for live voice-overs of an indeterminate length.

A variation on this is to use the samplers to trigger sound effects either for video, film and TV production or for theatre productions.

USING SEVERAL S1100EX UNITS WITHIN ONE SYSTEM

As mentioned before, this system (S1100 & S1100EX(s)) allows you to add up to six S1100EX's by using SCSI connections. This will give you, including the S1100 itself, a maximum of 112 voice polyphony (MODE 1) over the same number of MIDI channels, 70 audio outputs, 7 multi-effects processors, and a potential memory expansion of up to 224 megabytes of internal memory. Such a system rivals, if not exceeds the power of many dedicated 'work stations' and the fact that it is modular allows you to tailor the system to your own personal requirements.

Adding more S1100EX's to the system is extremely simple and the SCSI and MIDI connections are just 'daisy-chained' from one unit to the other. Each unit must then be given its own unique SCSI ID number. All additional S1100EX's following the first one connected will operate in exactly the same manner as the the first.



IMPORTANT NOTE: *In MODE 1, you can have 16 voice polyphony x the number of units, but in MODE 2, the maximum voice polyphony is 32 because the S1100EX does not contain an overflow function. Actually, what will happen is that the first sixteen notes will be played on the S1100 and after that, all subsequent notes will be played on ALL the S1100EX's simultaneously.*

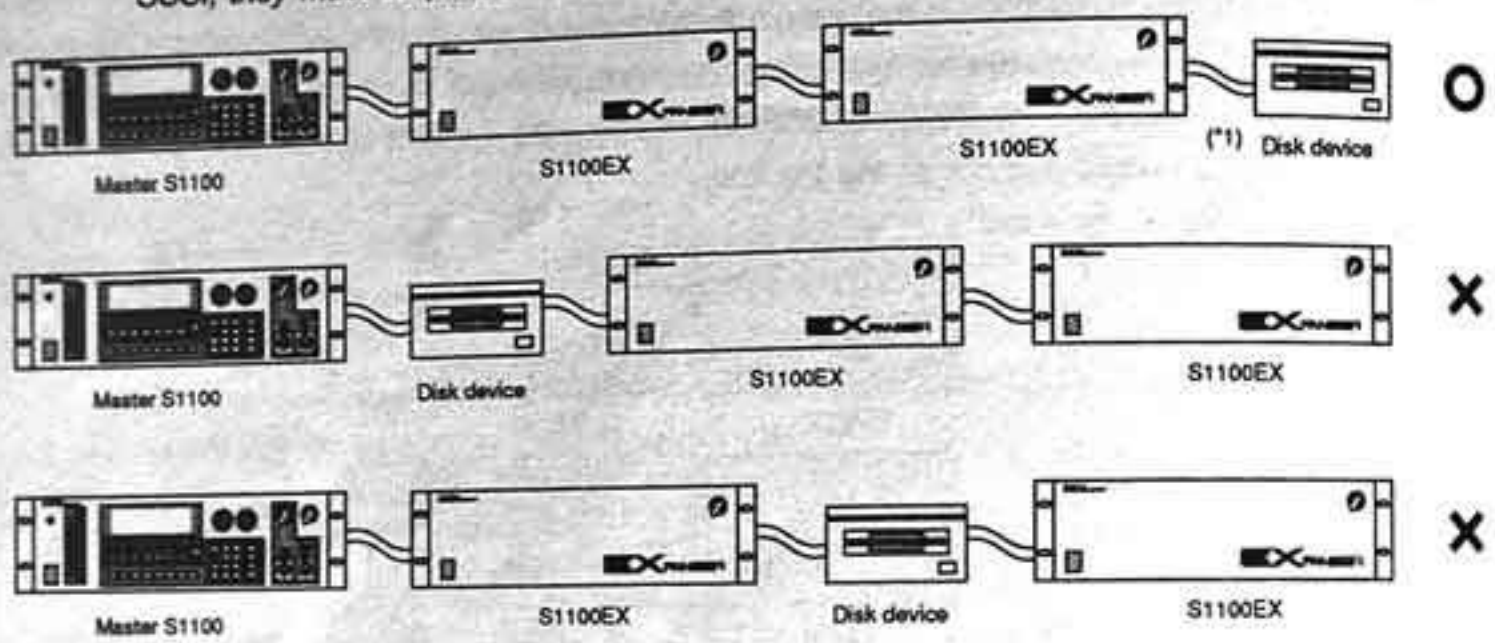
SELECTING S1100EX'S IN A LARGE SYSTEM

When two or more S1100Ex's are connected, selection of units is done as follows:
First, hold down the MARK/# key for more than a second the 'status line' appears, and then select the unit # you wish to work on by simultaneously pressing one of the numeric keys. For example, if you want to edit S1100EX#3, hold down the MARK/# key and press 3. To select unit #4, hold down the MARK/# key and press 4.
The selected unit's red MODE 1 LED will flicker quickly, then perform operations as desired.

USING OTHER SCSI DEVICES

It is also possible to incorporate other SCSI devices such as hard disks, CD-ROM players and the Apple® Macintosh™ computer into your system. Again, this is done by 'daisy-chaining' the units together. However your system is configured, it is essential that no two devices share the same SCSI ID or you will have 'SCSI chaos' resulting in unpredictable results and even damage to SCSI circuitry.

IMPORTANT NOTE: *When connecting other disk devices (hard disk, MO disk, etc.)using SCSI, they must be placed at the end of the 'daisy-chain' as follows:*



(*1) The S1100EX has both upper and lower SCSI terminals, be sure to connect the disk device to the lower terminal. Also, termination must take place at this disk device.

IMPORTANT NOTE: *If you connect disk devices in addition to EX's, you may experience noise when accessing the disk due to SCSI's cable ground loop. In this case, please consult your local dealer or Akai Service Representative to switch the SW2 located on the CPU board in the S1100EX to ' OPEN'.*

NOTE ON TERMINATION

As mentioned previously, the S1100 and the S1100EX are terminated factory direct.
It is possible to terminate the S1100EX very easily without having to open the unit up. On the rear of the instrument are the DIP switches that allows you to select SCSI ID numbers. Also on this switch is one marked T which allows you to switch termination on or off. With the switch position ON, termination is active but if the switch is positioned OFF, then termination is overridden.
For normal for use with one S1100 and one S1100EX, the switch position must be ON.

If you are at all unsure about termination, please consult with your dealer or your local Akai Service Representative about this.

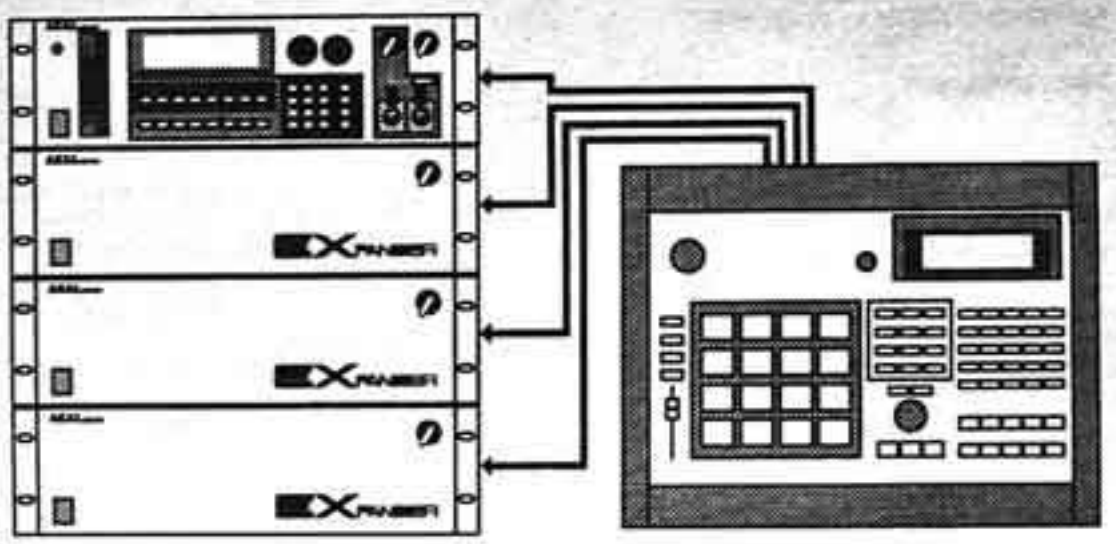
NOTE: *If you use SCSI devices in your system, please familiarize yourself with their operation manuals as well.*

ABOUT SCSI CABLES

You are recommended to always use high quality standard SCSI cables. Normally, the cable provided with the S1100EX should be sufficient for most situations but if you want or need to use longer cables, maybe for the purpose of 'remoting' the EX(s) away from your normal work area, ensure that only the highest quality SCSI cables are used to prevent corruption of data between units.
In all cases, THE MAXIMUM LENGTH OF THE SCSI CABLE SHOULD NOT EXCEED 6 METRES FOR RELIABLE OPERATION.

INCREASING THE NUMBER OF AVAILABLE MIDI CHANNELS

As mentioned previously, you would usually connect any number of S1100EX's using the MIDI THRU 'daisy chain', but, by using the OUT/IN connections to hook up a sequencer to each of the units directly, when you're in MODE 1 you can use each units' multi-timbre function fully. As shown below, the four separate MIDI outputs of the Akai MPC60 sequencer are connected to the MIDI IN of one S1100 and three S1100EX's.



In this example, using MODE 1, gives a total of 64 MIDI channels to sequence on. Some computer based systems are now able to offer more in the way of MIDI outputs via suitable interfaces.
If your sequencer allows it, in a maximum system of one S1100 and six S1100EX's, you could have as many as 112 MIDI channels!!
Also, if you're using a sequencer that provides up to 32 MIDI outputs, you can divide your system into two groups, and so in MODE 1you will be able to take full advantage of them by using the sequencer as a MIDI master.

IMPORTANT NOTE: *It is not possible to connect MIDI in this way ('DAISY-CHAINED') and use MODE 2. If you want to use MODE 2, you will have to re-patch your system and connect the MIDI THRU of the S1100 to the EX's MIDI IN. This may prove to be inconvenient so you may like to invest in a MIDI patchbay such as the Akai ME80P which allows you to change between various patching patterns.*

TECHNICAL SPECIFICATIONS

Size (maximum dimensions)	483 x 133 x 425 (mm) (19 x 5.25 x 16.75 (in.)) (WxHxD) (EIA3U size)
Weight	9.2 kg
Power requirements/consumption	120 VAC, 60Hz (USA, Canada) 220-230VAC @ 50Hz (Europe, except UK) 240VAC @ 50Hz (UK, Australia)
Sampling rates	44.1kHz, 22.05kHz (20Hz-20kHz, 20Hz-10kHz audio band width)
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 @ 44.1 kHz 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	
MIX INPUT	2 x 1/4-inch phone (balanced)
STEREO OUT	2 x 1/4-inch phone (unbalanced) -5Bm, 600
DIGITAL OUT	1 x XLR (AES/EBU type II) RS-422 level
ASSIGNABLE OUTS	8 x 1/4-inch phone (unbalanced) -5Bm, 600
EFFECT SEND	1 x 1/4-inch phone (unbalanced) -5Bm, 600
HEADPHONES	1 x 1/4-inch stereo phone
FOOTSWITCH	1 x 1/4-inch phone
MIDI	IN, OUT, THRU
STANDARD ACCESSORY	SCSI Cable x 1
OPTIONS	
EXM005	2Mbyte memory expansion board
EXM008	8Mbyte memory expansion board
IB-108	SMPTE Generator Reader

Above specifications will be changed without prior notice.

MIDI IMPLEMENTATION CHART for S1100EX

FUNCTION	...	TRANSMITTED	RECOGINIZED	REMARKS
Basic Channel	Default Changed	x x	o 1 o 1-16	without disk memorized(disk)
Mode	Default Massages Alterd	x Mode 1-4 *******	Mode 3 memorized(disk) OMNI On/Off,P/M x	without 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	Key's Ch's	x x	x o	
Pitch bend		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 S1100EX 48h (*1)
System Common	:Song Position :Song Selection :Tune	x x x	x x x	
System Real Time	:Clock :Command	x x	x x	
Aux Messages	:Local On/Of :All Notes Off :Active Sense :Reset	x x x x	x o(123) x x	

Mode1:Omni On,Poly
Mode2:Omni Off,Poly
Mode3:Omni On,Poly
Mode4:Omni Off,Poly

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

MEMO

AKAI ELECTRIC CO., LTD.
Electronic Musical Instrument Div.