KURZWEIL
Music Systems

Musician's Guide

Kurzweil 1000 Series Expanders

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Section I
INTRODUCTION

1.1 About This Manual

This manual has been designed to provide you with all the basic information you'll need to set up and operate your new 1000 Series Expander.

Section I provides introductory information that is of interest to every 1000 Series owner. Section 1.3 (*Summary of Precautions*) is particularly important. We urge you to read it before you connect and operate your new instrument.

Section II shows how to connect your 1000 Series Expander. Power, audio, and MIDI connections are covered in this section.

Section III tells how to operate your new instrument. Procedures from basic program selection to creating multi-timbral polyphony with MIDI sequencers are explained in a step-by-step fashion.

Section IV presents instructions for basic program editing. Here, you will learn how to create layers, keyboard splits, and to modify existing Programs; how to add pre-programmed "compiled effects" to your presets; and how to save presets to the 1000 Expander's internal memory (RAM).

Appendix I contains technical information on interfacing your 1000 Series Expander with the "outside world." If you are making your own cables, or if you plan to use your Expander in professional performance and recording studios, you'll want to refer to this section.

Appendix II presents detailed technical specifications for Kurzweil 1000 Series Expanders.

The Kurzweil 1000 Series features the exceptional sonic quality of Kurzweil samples, coupled with the richness of digital synthesis and the flexibility of modular synthesizers. We urge you to study this manual carefully, and keep it with your instrument for reference, in order to make best use of your 1000 Expander's extraordinary musical potential. Once you've become familiar with the information in this manual, you'll be ready to move on to its companion, the *1000 Series Programming Reference*, and begin exploring the immense creative potential of your 1000 Expander.

Thank you for your purchase of a Kurzweil 1000 Series Expander.

1.2 Unpacking & Inspection

Each Kurzweil 1000 Series Expander is delivered in a single corrugated cardboard container. Upon unpacking your Expander, immediately inspect it for shipping damage. If it has been damaged in transit, you must place a claim with the carrier or with your Kurzweil dealer. Kurzweil Music Systems assumes no responsibility for shipping damage.

The carton should contain:

- Your new 1000 Series Expander
- A three-prong AC power cable
- This *Musician's Guide*
- The *1000 Series Programming Reference*
- A Warranty Registration Card

If any of these items is missing, contact your Kurzweil dealer.

When you first unpack your Expander, you'll notice that there is a strip of clear plastic tape covering the front-panel label plate. Its function is to protect the plate from scratches when the unit is being packed. You'll find that it peels off very easily.

We recommend that you save the shipping carton and protective foam inserts. For carrying and shipping, it provides the best protection short of a custom-made road case.

Section I

1.3 Summary of Precautions

- Keep this *Musician's Guide* and refer to it whenever you connect and operate your 1000 Series Expander.
- Make sure that your AC power connection conforms to the guidelines given in Section 2.1 of this manual.
- To protect against shock hazards and ensure proper operation, *never* cut or disconnect the power cable ground pin. Don't use the power cable if it appears frayed.
- If the fuse in your Expander should blow, you must replace it with another of the same physical size and current rating. *Never* use a fuse with a higher rating, and *never* attempt to bypass the fuse with a hardwired connection.
- Kurzweil 1000 Series Expanders are normally shipped ready to operate with a mains AC voltage of 100 to 120 volts. If your local AC service is 200 to 240 volts, you must either use a step-down transformer or have the unit modified for the higher voltage. This must be done *only* by an authorized Kurzweil Service Center.
- Do not open the 1000 Series Expander case. There are no user-serviceable parts inside. Refer servicing to an authorized Kurzweil Service Center.
- Do not spill liquids into or on the 1000 Expander chassis.
- Do not allow the 1000 Expander to overheat. The 1000 will operate at temperatures from 0–55° C (32–133° F). Make certain that your setup allows adequate ventilation to maintain this temperature range.
- Do not connect the audio outputs or MIDI connections to a voltage source such as a battery, power supply, mains AC source or amplifier output.
- Use only standard MIDI cables for MIDI connections. Do not use ordinary recording studio DIN cables. If you are uncertain how a cable is wired, *don't use it.*
- If you try a Hard Reset, be sure to press only the VALUE buttons, and no others, when you turn the Expander back on. Pressing any other buttons while powering up may cause the unit to lock up. Refer to Section 3.5.

1.4 Description of Features

1.4.1 The Kurzweil 1000 Series

The Kurzweil 1000 Series is an integrated line of powerful, cost-effective electronic musical instruments for live performance and recording. Combining both sample playback and digital emulation of a traditional modular synthesizer in a single unit, each 1000 Series instrument offers prodigious programming flexibility and sonic variety.

The 1000 Series comprises four rack-mounted expander modules and a keyboard model. All are multi-timbral, and are capable of responding to information on all 16 MIDI channels in any combination. The full line:

1000 PX Professional Expander — A 24-note polyphonic module featuring 120 presets ranging from Grand Piano and Strings to Choir, Organs, Acoustic Bass, Vibes, Woodwinds and Brass.

1000 SX String Expander — A 20-note polyphonic module offering 99 preset sounds, from Professional Ensemble Strings to Solo Violin, Solo Cello and Pizzicato Strings.

1000 HX Horn Expander — A 20-note polyphonic module packed with 100 presets including Trumpet, Trumpet Mutes,

Trombones, Saxophones and many others.

1000 GX Guitar Expander — A 20-note polyphonic module with a wide variety of acoustic and electric guitar timbres.

K1000 Keyboard — A 24-note polyphonic keyboard instrument combining 115 of the voice presets of the 1000PX with a weighted 76-note keyboard, dual pedal switches and three 10-location programmable memory banks.

The Kurzweil 1000 Series inherits the sonic legacy of the legendary Kurzweil 250®, the sampling keyboard whose extraordinary fidelity and realism have made it a mainstay of professional music-making. By using VLSI (Very Large Scale Integration) integrated-circuit technology, Kurzweil engineers have succeeded in packing each 1000 Series instrument with up to 120 Programs based on 16-bit floating-point digitally-sampled sounds. As a result, identical voices played on the Model 250 and on a 1000 Series instrument are virtually indistinguishable from one another.

1000 Series instruments also incorporate extensive programming features, including both Compiled Effects (pre-programmed, adjustable effects such as Chorus, Vibrato, Tremolo and Leslie) and Modular Effects (the digital equivalent of a traditional modular synthesizer, with complete user control over patch configuration and settings). User-created Programs may be stored in any of 64 RAM (Random Access Memory) locations; the RAM is battery-backed so that user programs are retained when the instrument is turned off or unplugged.* (Information on programming 1000 Series instruments is found in the *1000 Series Programming Reference.*)

Each 1000 Series instrument features a comprehensive and flexible MIDI implementation, with full user control over channel assignments, controller assignments, program change mapping and other parameters. Any of the instrument's voices may be assigned to any of the 16 MIDI channels for multi-timbral playback of sequences, and intelligent allocation of notes minimizes "note stealing." Finally, a unique, built-in MIDI-SCOPE function allows the instrument to provide a dynamic display of MIDI events as they are received, and self-diagnostic routines help to pinpoint malfunctions, should they occur.

1.4.2 Expander Structure

The Kurzweil 1000 Expander is a multi-timbral instrument which allows flexible creation of split and layered timbres in many combinations. An individual timbre, or a fully-defined split and/or layered timbre setup, is termed a **Program**.

The Expander is furnished with a large number of preset Programs which reside in ROM (Read Only Memory). Each Program has a unique name (for example, Grand Piano or Jazz Organ) and a uniquely numbered memory location. Factory Programs are stored in memory locations 001 – 063 and 128 – 192 (the number of Programs varies in different models).

Factory Programs cannot be erased; ROM is a permanent storage medium. They may, however, be modified by the user, and the modified Programs may be renamed and stored in RAM. The user RAM locations are numbers 064 – 127.

A Program may have up to four individual **Layers**. Each Layer may have its own **Soundfile**, or timbre, assigned to it, and each also may have a distinct set of **Effects** applied to that timbre.

Individual Layers can be assigned to respond to any range of keys on the MIDI controller keyboard, and the key ranges for successive Layers of a Program may or may not overlap. Programs having Layers whose key ranges do not overlap are referred to as **Split** Programs.

* You may also use ObjectMover™ software to dump Programs and other items to your personal computer. ObjectMover is available from your Kurzweil dealer.

Section I

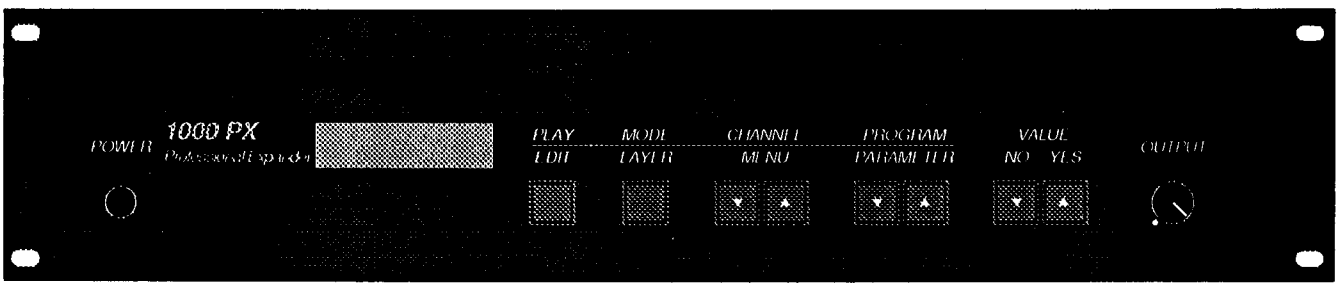


Figure 1-1 1000 Expander Front Panel

1.4.3 Front Panel Controls & Display

As the 1000 Expander front panel graphics indicate, several of the control buttons serve different functions depending upon the instrument's current operating mode. The 1000 Expander has two basic operating modes: PLAY and EDIT. For each button whose action changes with the operating mode, the upper label indicates its PLAY mode function and the lower its EDIT mode function.

PLAY / EDIT — Toggles between the two operating modes of the Expander. In PLAY mode, a single press of this button switches the instrument to EDIT mode; in EDIT mode, it selects PLAY mode.

MODE / LAYER — In PLAY mode, this button scrolls through the available MIDI modes (Omni On, Omni Off, and Multi). In EDIT mode, it scrolls through the layers in the current program.

CHANNEL / MENU — In PLAY mode, these buttons cycle through the 16 MIDI channels sequentially, wrapping at either end (for example, pressing the Down button when channel 1 is selected takes you to channel 16). In EDIT mode, they are used to access the various Edit Menus.

PROGRAM / PARAMETER — These buttons cycle through the numbered Program memory locations in PLAY mode (wrapping at either end). In EDIT mode, they select specific programming Parameters within a given Edit Menu.

VALUE — In PLAY mode these buttons have no function *unless* the Expander is set for Multi mode play; in this case, they act to enable or disable the currently displayed MIDI channel (see Section 3.3 of this manual). In EDIT mode, they are used to alter the value settings of Parameters (YES/UP increases the value, and NO/DOWN decreases it) or to respond to question prompts from the 1000 Expander (for example, "Delete Program?").

***Note** — If you press and hold a button, its action will begin repeating rapidly after a brief interval. You can use this feature to move quickly through the range of a button's action. With the three sets of dual buttons, pressing both at the same time will cause the Expander to jump to frequently-used functions, or to wrap from high to low limits of ranges. You will find more detailed descriptions of the effects of dual presses on various functions in the* 1000 Series Programming Reference. *(See also page 11 of this manual.)*

OUTPUT — The Output knob controls the signal level at the 1000 Expander audio outputs.

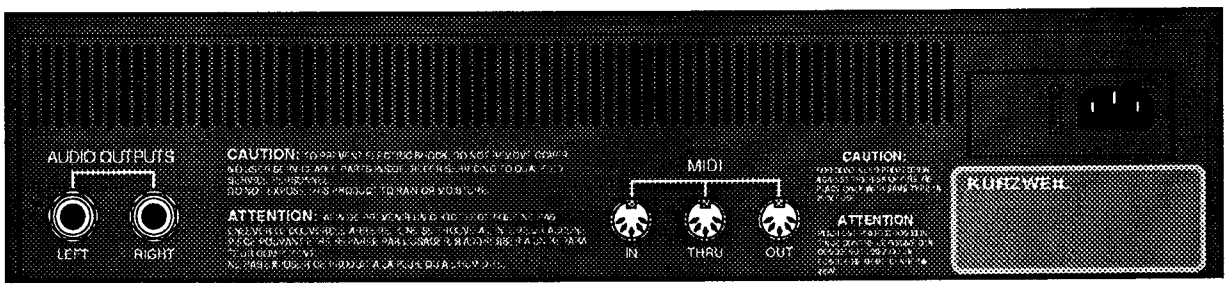


Figure 1-2 1000 Expander Rear Panel

POWER — This pushbutton switch controls AC power to the 1000 Expander.

DISPLAY — This back-lit, two-line, 32-character LCD (Liquid Crystal Display) indicates the current status of the instrument. In EDIT mode, it displays Menu choices, Parameter values and prompts. The Display also functions as an AC power indicator.

1.4.4 Rear Panel Connectors

AUDIO OUTPUTS — The Kurzweil 1000 is a stereo device, and is provided with two outputs labeled LEFT and RIGHT, respectively. The connectors are standard 1/4 - inch monophonic phone jacks.

MIDI Connectors — The 1000 Expander's MIDI ports are standard five-pin DIN-type connectors. *Use only standard MIDI cables when connecting to these ports.*

MIDI IN — This port receives data from a MIDI control source (such as a master keyboard or computer sequencer).

MIDI THRU — When MIDI data are received at the MIDI In port, the 1000 Expander echos the data exactly at the MIDI Thru port. The Thru port is used to chain MIDI devices together.

MIDI OUT — This is the 1000 Expander's output port for transmitting MIDI data to other devices. System Exclusive and Program Change commands are sent from the MIDI Out port (see the *1000 Series Programming Reference* for further information).

AC Power Inlet — This three-pin NEMA connector mates with the power cable supplied with the 1000 Expander. To ensure safety and proper operation, *do not use an ungrounded power cord with your Expander.*

Fuse Compartment — Primary protection for your 1000 Expander is provided by a 1 Amp, 125 volt fuse. To access the fuse compartment, remove the power cord from the AC inlet and gently pry the compartment cover outward with a flat-blade screwdriver.

WARNING:
Never substitute a fuse with a higher current rating, and never attempt to bypass the fuse.

Section II
CONNECTIONS

2.1 AC Power

Please read this section carefully before you set up your Kurzweil 1000 Expander. When making connections, be sure to follow the precautions given here and in Section 1.3.

The recommended sequence of steps for connecting your 1000 Expander is:

1) Plug the power cord into the AC Inlet of the 1000 Expander, then connect it to a 110 volt AC outlet.

2) Connect the Expander's audio outputs to your sound system.

3) Connect the Expander's MIDI In to the MIDI output of your master keyboard.

4) Turn on the Expander (it takes about 3 seconds to power up), then turn on your master keyboard and, last of all, your sound system.

The specific information that you need to perform these steps is given in this section. Refer to Figure 2-2 when you make your connections, and be sure to keep track of the Left and Right audio channels.

Your Expander is supplied with a three-prong power cable, and will operate best if it is connected to a grounded AC outlet. This type of outlet is standard in the United States and is now quite common, although older buildings may have simple two-prong ungrounded outlets.

If your outlet is not furnished with a ground pin, you will have to use an adapter, as shown in Figure 2-1. You can purchase adapters like this at any hardware store. Notice that the adapter's ground wire (or lug) must be attached to the outlet plate mounting screw. *Don't cut or break off the ground pin on your Expander's power cable.*

The 1000 Expander is actually a specialized computer and, like other types of computers, it is susceptible to AC power surges (these may cause it to "freeze up" unexpectedly or, in the worst case, could damage the internal circuitry). For this reason, it is up to you to make sure the unit is connected to a source of clean AC power of the proper voltage and line frequency.

Note —You can protect your Expander from power surges by purchasing and using a "surge suppressor" outlet. (Again, check with your local hardware store or a computer dealer.)

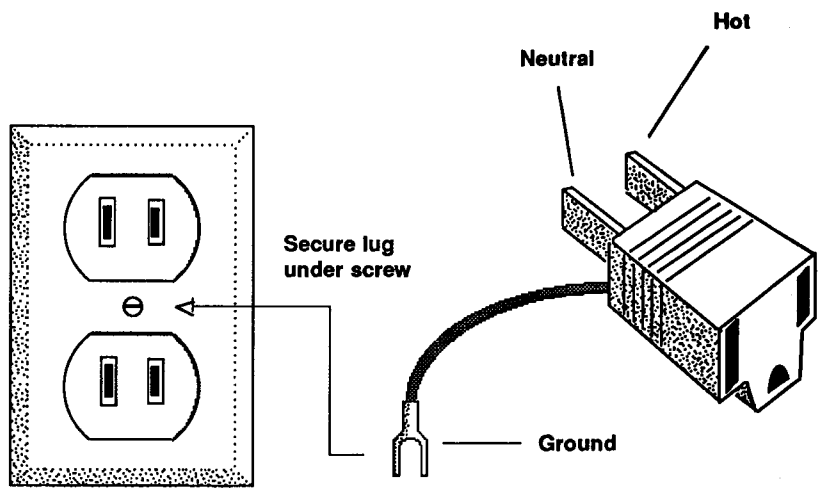


Figure 2-1 Grounding AC Adapter (Use ONLY on Ungrounded Outlets)

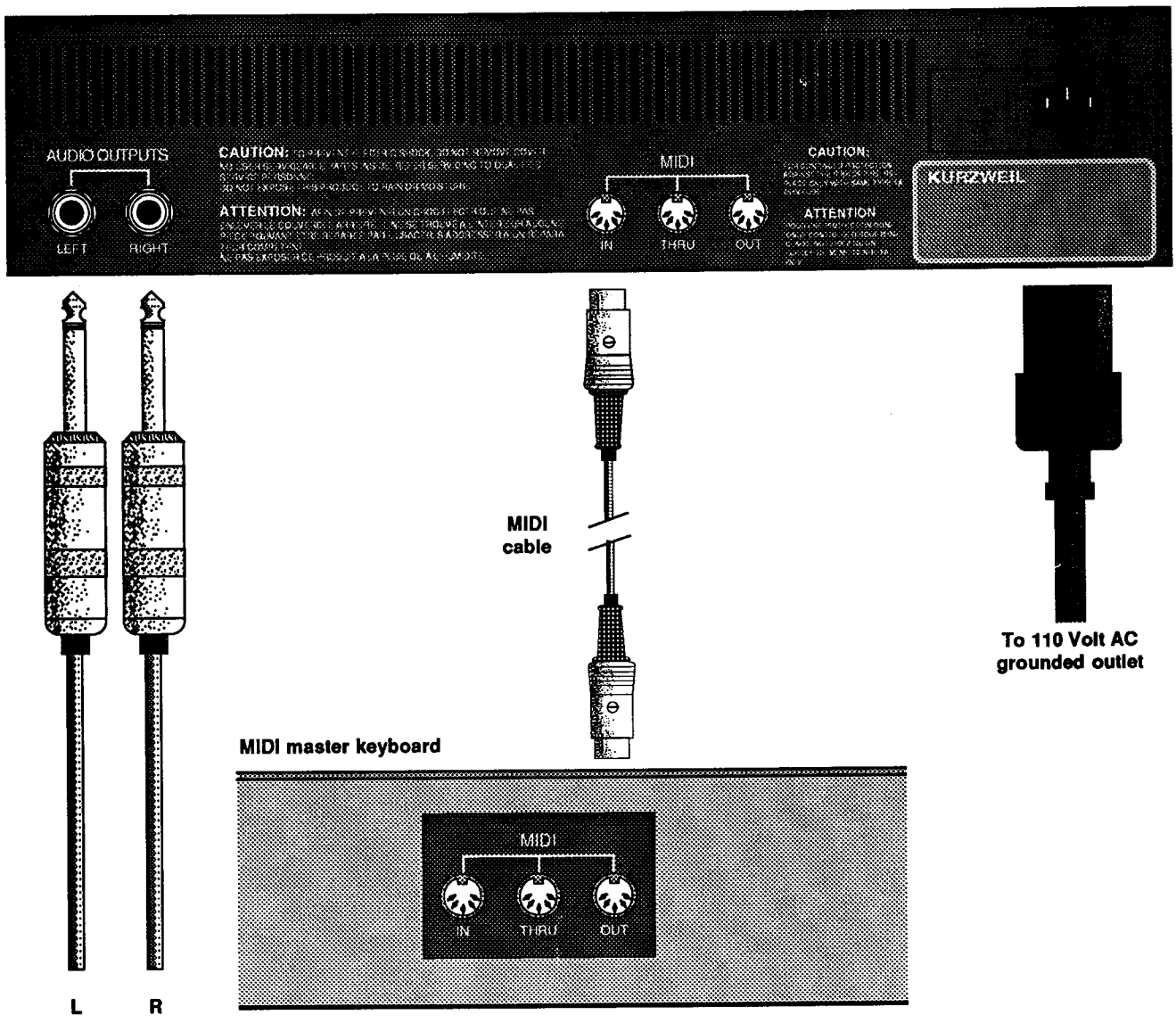


Figure 2-2 Connecting The Kurzweil 1000 Expander

Section II

2.2 Audio Outputs

To connect the Expander properly to your sound system, you'll need to know two things:

Input sensitivity — Identify the *least sensitive* input (that is, the input which "expects" the highest signal level).

Input connectors — Determine what type of connector that input requires.

The 1000 Expander delivers a line-level (-10 dBV or 0.3 volts) stereo signal, and its output connectors are standard 1/4 - inch monophonic phone jacks. Most sound systems are designed to handle this type of output directly. If yours is not, then you may need to use special cables or adapters.

This section offers guidelines for connecting to various types of systems. Look for more information in the manual for your sound system.

2.2.1 Instrument Amplifiers

Instrument amplifiers are generally monophonic, and they usually feature inputs that are designed to connect directly to a guitar or other low-level source. The input connector is invariably a monophonic 1/4 - inch phone jack.

You can connect the 1000 Expander directly to an instrument amplifier using a standard guitar cord, as shown in Figure 2-3(a). If your amplifier has dual inputs, you may connect each Expander output to one of the inputs.

If your amplifier has only one input, use a guitar cord to connect one Expander output to it (it doesn't matter which), then use Master Parameter 006 to set your instrument for mono output (see Section 4.5). ***Don't try to use a "Y" adapter to connect both Expander outputs to a single input.*** We do not recommend using coiled cords, which are less reliable and noisier than straight cords.

Be aware that, since the 1000 Expander puts out a stronger signal than a guitar does, you may have to lower the Expander's OUTPUT setting to avoid distortion.

2.2.2 Stereo Systems

Home stereos normally have several inputs designed to handle a variety of sound sources. The 1000 Expander is compatible with so-called "line level" home stereo inputs; these will be labeled LINE, AUX, TAPE, TUNER or CD IN. ***Don't use the PHONO input.***

The connector required will usually be an RCA-type male (sometimes called a "pin jack"). While you can buy adapters that will fit on the end of a normal guitar cord and mate with an RCA input, we don't recommend that you use them because they are not very reliable. You'll get much better results if you use 1/4 - inch phone to RCA cables, as shown in Figure 2-3(b).

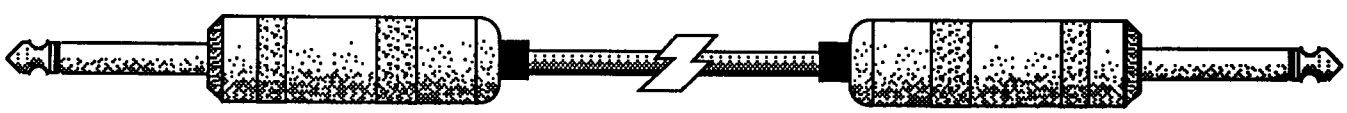


Figure 2-3(a) Standard Guitar Cable (Phone to Phone)

2.3 MIDI Connections

2.2.3 Mixing Consoles

Mixing consoles come in many shapes and sizes, with correspondingly varied capabilities and requirements. With consoles, it's particularly important to read and follow the recommendations given in the equipment's instruction manual.

Small semi-professional and DJ-type mixers usually incorporate LINE inputs with either 1/4 - inch phone or RCA-type connectors (on DJ mixers, the line-level inputs may be labeled TAPE). The 1000 Expander is entirely compatible with such inputs; use whichever of the cables in Figure 2-3 is appropriate.

Some larger home recording consoles offer a choice of using either LINE or MIC inputs for line-level sources. (You can identify such consoles by looking for a MIC pad switch and/or trim control on the input strip.) The LINE input connectors may be either 1/4 - inch phone or RCA; with consoles of this class, the MIC connectors are normally three-pin XLR-type.

In this case, you can easily connect the 1000 Expander to the LINE inputs — but sometimes there are distinct advantages to using MIC inputs. To do so, you'll need either a pair of adapters or cables with 1/4 - inch phone connectors on one end and XLR-type on the other (or you might use either a direct box or impedance-matching transformers; see Appendix I).

If your Kurzweil dealer doesn't stock the cables you need, try a home electronics store. You may not be able to find adapters or cables like this off-the-shelf, however, so you might have to get out the soldering iron. Refer to Appendix I of this manual for information on making your own cables.

Since your 1000 Expander has no keyboard of its own, you will need a MIDI controller to send information to it. The controller can be a keyboard synthesizer with a MIDI output, a dedicated MIDI master keyboard such as the Kurzweil MIDIBOARD®, or a MIDI sequencer.

For the purpose of learning to use the 1000 Expander, you may find it most convenient to work with a very simple setup consisting of a single keyboard controller and the Expander. Simply connect the controller's MIDI OUT to the Expander's MIDI IN as shown in Figure 2-2. (Be sure to use only standard MIDI cables, not other types of DIN cables.)

If you are adding the 1000 Expander to an existing multi-synthesizer setup, make certain that you have a direct MIDI Thru path from your controller(s) to the 1000 — at least while you are learning to use your new instrument.

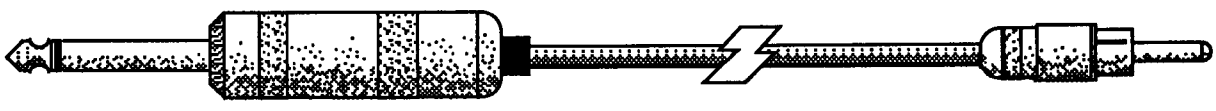


Figure 2-3(b) Adapter Cable (Phone to RCA)

Section III
OPERATION

3.1 Getting Started

Before you power up your 1000 Expander, set its OUTPUT control to minimum (fully counterclockwise, with the knob pointing to the dot). Turn on the Expander and wait for the display to come up, then turn on your master keyboard and, last, your sound system.

When you first turn on the Expander, the front-panel display should look similar to Figure 3-1. This is a typical PLAY mode display, showing the current MIDI mode and channel, the Program number and the Program name. If your display reads "No PRG Assigned," press either of the PROGRAM buttons to select a Program other than number 000.

3.1.1 Setting the Output Level

The OUTPUT knob allows you to match the level of the 1000 Expander's audio outputs to the input sensitivity of your sound system. In general, you should use the highest setting that does not overload the sound system input; this will result in the best audio quality with the least noise.

Instrument amplifiers — Most instrument amplifiers are designed to work with very low-level sources, and the 1000 Expander can easily overload them. To avoid distortion, you'll have to use a fairly low OUTPUT setting.

Starting with the Expander's OUTPUT knob at minimum, set the amplifier's volume control to about 9 o'clock (a setting of 2 or 3). Then, while playing your master keyboard, slowly bring up the Expander volume until the sound just begins to distort. (If it gets too loud, back off on the amp's volume control.) Now, reduce the Expander volume just until the sound is clear again, and use the amp's volume control to adjust for a comfortable listening level.

Home stereos — With home stereos, you normally should be able to leave the Expander's OUTPUT at maximum and set the stereo's volume control to taste. If you get distortion, try backing off on the OUTPUT control until it disappears. *Use caution; more very-high and very-low frequency energy may be created by the 1000 than by the typical recorded program. These signals can damage your loudspeakers unless you keep the volume at a modest level.*

Mixing consoles — If you are using a LINE input, set the OUTPUT control to maximum and back it off only if distortion appears at normal fader settings.

With MIC inputs, engage the pad (if there is one). Set the Expander OUTPUT to maximum, and use the input TRIM control to adjust for nominal 0VU readings when the console faders are set to the unity gain position (usually marked '0' or highlighted on the panel markings). If you can't get enough level, try switching the pad out.

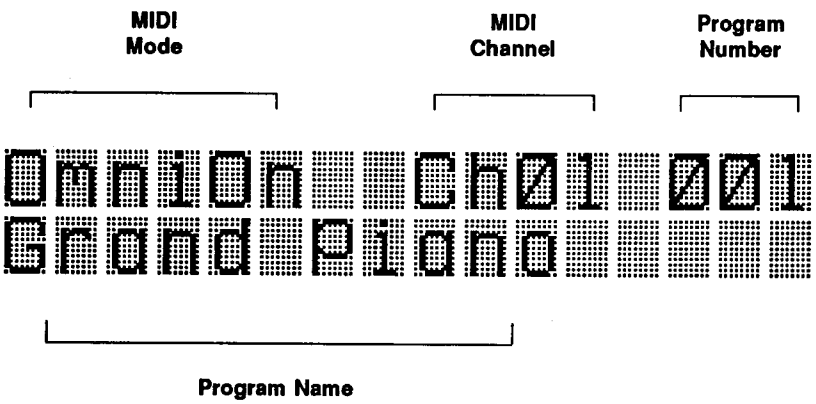


Figure 3-1 PLAY Mode Display

If you don't get sound:

- Make sure that everything is turned on (don't laugh — even the most experienced pros get caught by this one!).
- Use MIDISCOPE to see if the Expander is receiving MIDI data (see Section 3.4).
- Check your MIDI and audio connections against Figure 2-2.
- If you're using a mixing console, be sure that the correct channels are enabled and assigned, the masters (and submasters, if used) are up, and the monitor is correctly assigned and turned up.
- Be sure that you haven't selected Program 000; it's not a sound.
- Press the MODE button until the display reads "Omni On."
- Turn the Expander off, then on.
- Try replacing your MIDI and/or audio cables.
- Perform a Soft Reset (see Section 3.5.1).
- Perform a Hard Reset (see Section 3.5.2).
- Run the 1000's self-diagnostics (see Section 8.2.1 in the Programming Reference).
- Call your Kurzweil dealer.
- Call Kurzweil Music Systems at (617) 893-5900 and ask for Customer Service.

3.1.2 Exploring Programs

Now that you've got everything working, you're ready to explore the world of great sounds that your 1000 Expander offers!

Use the PROGRAM buttons to change Programs: the UP button increases the Program number, and the DOWN button decreases it. To scroll rapidly through several Programs, press and hold one of the buttons. After a brief delay, the Expander will scroll through the Program list.

You will notice that the Program list jumps in the middle, from 063 to 128. Memory locations 064 - 127 are reserved for user-created Programs, and they don't appear in the list until you have stored something in them. This avoids your having to scroll through empty memory locations.

> If you press both PROGRAM buttons at the same time, the Expander will jump to the beginning of the next memory block (the beginning locations are numbers 000, 001, 064 if something is stored there, and 128). The "dual press" technique is used in many of the Expander's functions to allow you to quickly bypass long lists or get to frequently-used elements.

3.2 MIDI Modes

MIDI (Musical Instrument Digital Interface) is an international standard of data communication between musical instruments.

Among MIDI's most basic features is that it allows one instrument to be played remotely from the keyboard of another (or from a computer sequencer). MIDI also permits transmission of a wide variety of messages and commands such as program changes, pitch bender and aftertouch information, as well as "system exclusive" messages that can be unique to a particular brand of synthesizer.

MIDI-equipped instruments may be chained together so that a single "master" control source can play several synthesizers at once. In order to allow independent control of each unit in a multi-instrument system, MIDI provides for allocating data across a total of 16 "channels" in any combination. Just like a television, a MIDI synthesizer can be set to receive information on a single channel while ignoring all other channels. This "basic channel" scheme makes it possible to carry many different streams of musical data over a single MIDI cable.

The MIDI specification includes a set of "Modes" which determine how an instrument will respond to incoming MIDI data. Normally, MIDI-equipped synthesizers are designed so that

they can be switched among three or more different standard MIDI Modes. Each Mode has separate uses in multi-synthesizer and MIDI sequencer environments.

The 1000 Expander features three different MIDI Modes: Omni On, Omni Off and Multi. In all three MIDI modes, the Expander operates *polyphonically* and *multitimbrally* (that is, it is capable of playing more than one note, and more than one sound, at a time). The polyphonic limit of the K1000 Keyboard and 1000 PX Expander is 24 simultaneous notes; all other Kurzweil Expanders are capable of producing a maximum of 20 notes.

MIDI Modes are selected by pressing the MODE switch while in PLAY mode.

3.2.1 Omni On

When the 1000 Expander is set to Omni On, it will respond to all incoming MIDI data regardless of channel assignments, and will play everything using the current voice Program.

Omni On is the simplest of the Expander's MIDI Modes. It is most useful in systems that are limited to the Expander and a single master keyboard, since it eliminates the need to worry about MIDI channels. In multi-instrument systems, setting the 1000 Expander to Omni On may not be appropriate, since it will cause the 1000 to double *all* the instruments from which it receives MIDI data.

3.2.2 Omni Off

When set to Omni Off, the 1000 Expander will recognize only MIDI data that it receives on the currently selected channel, which in Omni Off mode is the basic channel. If you change the current channel with a CHANNEL button, the basic channel will change accordingly.

Omni Off is the most useful MIDI Mode for multi-instrument systems in live performance. It allows independent control of the 1000 Expander, with full 20- or 24-note polyphony available to the currently-selected Program. When doing multitrack playback from a MIDI sequencer, you might also choose to use your Expander in Omni Off mode if it is playing only one part.

3.2.3 Multi

In Multi mode, the Expander is capable of responding to all 16 MIDI channels in any combination, *with a different Program assigned to each.* In other words, the Expander can play channel 1 notes using Grand Piano, channel 2 notes using Acoustic Bass, and channel 5 notes using Clarinet — all at the same time!

Clearly, Multi mode is extremely useful for sequenced multitrack playback, particularly if you have few synthesizers but want to create complex textures with several instrument sounds.

When the Expander is set to Multi mode, the CHANNEL buttons scroll among the 16 MIDI channels. While only one channel may be displayed at a time, the others remain active and retain their Program assignments.

The PROGRAM buttons are used to select the Program for the channel that is currently displayed. By scrolling sequentially through the channels and assigning a different Program to each, you can very quickly set up a complex multiple-instrument ensemble. No other synthesizer currently available gives this much flexibility this affordably.

While the concept of a "basic channel" has little meaning in Multi mode, the Expander nevertheless remembers its basic channel assignment if you switch to Omni Off. In the Multi mode display, the basic channel is indicated by an asterisk next to the channel number, as shown in Figure 3-2(a).

3.3 Disabling & Deassigning Channels

When operating the 1000 Expander in Multi mode, you will often find it necessary to turn off a particular channel or group of channels. The Expander offers two methods for doing this: a channel may be *disabled* or it may be *deassigned*. Each method has particular advantages in multichannel work.

Disabling Channels — To disable a channel, press one of the CHANNEL buttons until the channel that you want to disable appears in the display, then press the VALUE NO button. The display should look something like Figure 3-2(b).

A disabled channel will ignore all MIDI data including note events, program changes, and controller events. It retains its current Program assignment, however, and can be re-enabled simply by pressing the VALUE YES button when the channel is displayed.

The channel disable function is very useful when you are slaving several MIDI devices to a single controller. You can easily instruct the 1000 to ignore information on any MIDI channel simply by shutting the channel off.

Note that you cannot disable the Expander's basic channel.

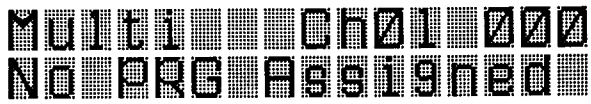
Deassigning Channels — To deassign a channel, first select the channel using the CHANNEL buttons, then press the two PROGRAM buttons at the same time until the assigned Program is number 000. The display should look like Figure 3-2(c).

A deassigned channel simply plays a "null" Program. It still responds to MIDI note and controller events, but it won't be heard, since Program 000 is not a sound. To reassign the channel, you must select a different Program for it.

The deassign function is useful when you wish to automate the turning on and off of channels over MIDI. (You might, for example, want to do this to control doublings in live performance.) To deassign a channel automatically, send it a MIDI program-change message that selects Program 000. (You'll have to use the Program Map feature of the 1000 for this, since MIDI Program Change numbers range from 1–128. See the *1000 Series Programming Reference* for further information on MIDI Program Maps.) To reassign it at the appropriate time, send it another program-change message to select the Program that you want it to play.

(a) Basic Channel

(b) Disabled Channel



(c) Deassigned Channel

Figure 3-2 Multi Mode Displays

Section III

3.4 MIDISCOPE

The 1000 Expander incorporates a convenient function, called MIDISCOPE, which allows you to see and analyze incoming MIDI events. To run MIDISCOPE from PLAY mode, press the PLAY / EDIT, CHANNEL UP and CHANNEL DOWN buttons simultaneously. The display will read:

MIDI Scope
any button quits

This message will remain until the Expander receives a MIDI event at its MIDI IN port. As soon as a MIDI event is received, the display will look something like Figure 3-3.

The upper line of the display shows the time in milliseconds since the last MIDI event, and the type of MIDI event that has been received. The lower line displays the MIDI channel (*minus 1; e.g. 4 in the display means MIDI channel 5*) over which the current event was transmitted, along with specific information about the event (in the case of note events, the key number with attack and release velocity values; for controller events, the MIDI control number and value).

Pressing any front-panel button will cause the Expander to exit MIDISCOPE and revert to PLAY mode.

Note that you will not hear any sound from your 1000 Expander while in MIDISCOPE. This is normal.

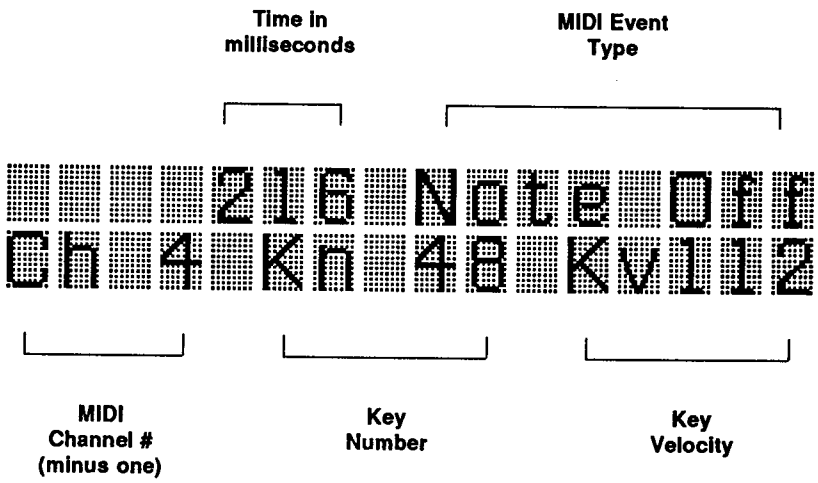


Figure 3-3 Typical MIDISCOPE Display

3.5 Resetting The 1000 Expander

On rare occasions, you may find that you will need to reset your 1000 Expander to get back in action.

A momentary power surge, for example, might "freeze up" the unit, making it unable to respond either to MIDI messages or to any of the front-panel buttons. Likewise, other unforeseen irregularities — such as SCR dimmer noise on the power line or electrical noise on the earth ground connection — may confuse the Expander's digital circuitry, resulting in unexpected behavior. The only solution to such problems may be to reset the unit.

The 1000 Expander allows two types of resets: Soft and Hard.

3.5.1 Soft Reset

A Soft Reset is a less extreme measure than a Hard Reset, so you should try it first. To perform a Soft Reset, press the VALUE NO, VALUE YES and PLAY / EDIT buttons simultaneously. The Expander should return to PLAY mode.

A Soft Reset re-initializes the Expander, but it preserves all Program and MIDI mode settings, and also leaves RAM-based user Programs intact.

3.5.2 Hard Reset

The Hard Reset is a last-resort measure, since it not only re-initializes the Expander but also resets all user-defined settings. In a Hard Reset, all RAM objects are deleted, and all Parameters of the Expander are returned to factory settings.

To perform a Hard Reset, first turn the Expander off. Then, press and hold the VALUE YES and VALUE NO buttons simultaneously. While holding them down, turn the Expander back on. The Expander will revert to PLAY mode.

Section IV
Basic Editing

4.1 Introduction

When you edit your 1000 Expander's Programs, you make the instrument truly your own by tailoring its response to your playing style and its sound qualities to your musical taste.

This section covers the basics of editing the 1000 Expander, providing the necessary foundation for personalizing your instrument. Once you are familiar with this material, you'll be ready to move on to the *1000 Series Programming Reference* and further explore the world that lies "behind the panel" of your instrument.

4.1.1 Voice Structure In The 1000 Series

Figure 4-1 illustrates the hierarchical relationships among the major programming features of the 1000 Expander.

Each voice Program originates in a digitally coded waveform, called a **Soundfile**. The Soundfile may be a sampled acoustical sound (such as Grand Piano, Trumpet, Clarinet, and so on) or a digital representation of a basic electronic waveform (a Sine, Sawtooth or Square Wave, for example). The Soundfile is the primary determinant of the timbre, or sound quality, of the Program.

Note that, since different models in the 1000 Series are optimized for specific instrumental groups (horns, guitars, strings), the available Soundfiles differ from one model to another.

Soundfiles are assembled into a Program in **Layers** (one Soundfile per Layer). Within each Layer, the assigned Soundfile is treated to add unique characteristics, or to fine-tune its timbre and playing response. Layer treatments consist of **Effects*** — which may be either **Compiled** or **Modular** — as well as a number of standard **Layer Parameters**.

A Program may have from one to four distinct, individually-programmed Layers, each of which may be defined to span any portion of the total range of a MIDI keyboard. All of the Layers of a given Program are subjected globally to a set of **Program Parameters**, which determine playing characteristics (and MIDI Program Change mapping, if any) for the Program as a whole.

Finally, every Program in the 1000 Expander's memory is subject to a set of **Master Parameters** which determine the overall playing characteristics of the instrument.

4.1.2 The Editing Process

Editing in the 1000 Expander is a process of moving among Menus, selecting Parameters within each Menu, and manipulating the Values of those Parameters.

Parameters — A Parameter is an individual programmable function of the Expander (for example, Master Tuning or Pan). Parameters are selected using the PARAMETER UP and DOWN buttons while in EDIT Mode. By pressing both PARAMETER buttons at once, you can skip to frequently-used Parameters without having to scroll through a long list.

Values — Each Parameter has a Value which determines the way in which the Expander executes the corresponding function. Most Parameter Values are numerical and, where possible, scaled to musically or technically rational units (tuning

* Compiled Effects are preset sound-modifying programs that have been developed by Kurzweil's engineers to simulate various types of standard signal processing, such as Tremolo, Chorus, and Leslie effects. Modular Effects are sound-modifying programs that you design yourself, much as you would with a modular synthesizer. Editing of Modular Effects is covered in the *1000 Series Programming Reference.*

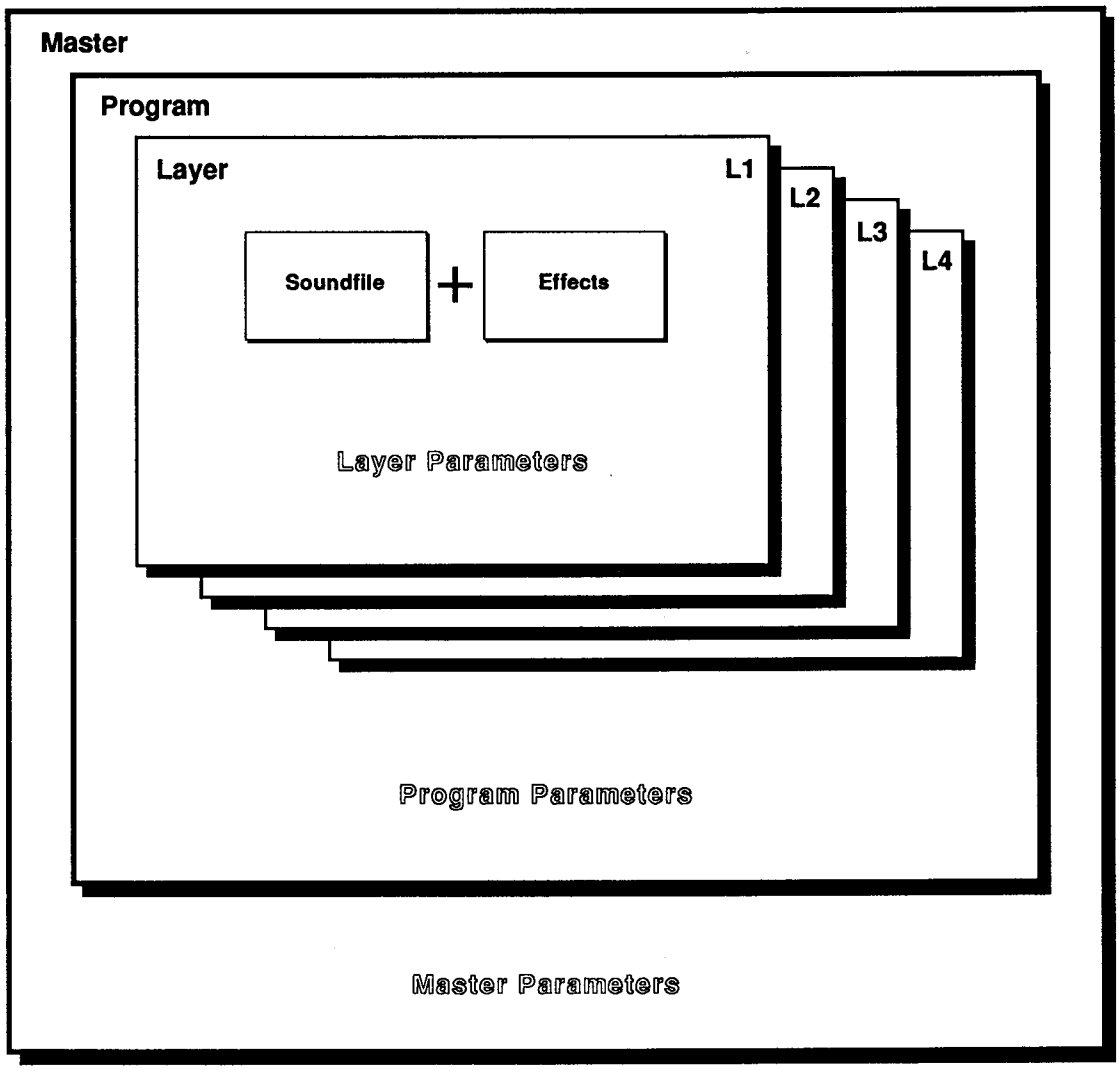


Figure 4-1 1000 Expander Programming Hierarchy

Values are in semitones, quartertones or cents, for instance). Figure 4-2 is a list of numerical Value units used by the 1000 Expander, along with their abbreviations as they appear in the Expander display.

In some cases, a Value may be expressed as a word (the name of a Soundfile, for instance), or a logical yes/no value (usually a response to a question prompt from the Expander). Values are assigned by pressing the VALUE YES and NO buttons; for numerical Values, YES increases the Value and NO decreases it.

Menus — To make the editing process as convenient and efficient as possible, Parameters with similar or related functions are organized into numbered Menus. The individual Parameters within each Menu are also numbered, and their numbering relates to the Menu number. For example, the sixth Parameter of the Master Menu (which is Menu number 000) is number 006. Similarly, the sixth Parameter of the Layer Menu (Menu number 200) is number 206.

Navigating — You might visualize the 1000 Expander's Parameters as being organized by number into a dictionary. The MENU buttons move you from one chapter to another, while the PARAMETER buttons allow you to select specific entries.

You can jump from one Menu to another at any time. If you return to a Menu, the Parameter that you selected just before you left it will reappear in the display (as long as you have stayed in Edit Mode).

Instant Feedback — The 1000 Expander remains fully functional and responsive to MIDI control while in Edit Mode. Each change in the Value of a Parameter is quickly entered, so you can hear the effect of your edits by playing your master keyboard as you change Values (provided, of course, that the Parameter you modify is assigned to affect the current Program).

None of your changes will be permanent, however, until you save the Program into RAM. Furthermore, it's impossible to erase or replace the ROM-based factory Programs. So, while you can hear the effects of all your edits, you needn't worry about being able to get the original Program back.

Feel free to experiment. When you have the sound you want, you can save it for future use.

Confirmations — Whenever you elect to make an edit that can't be undone (for example, deleting a Program), the Expander will first ask you "Are you sure?" This gives you a last chance to change your mind; answering YES will cause the edit to be executed. You may turn off the confirmation function, once you become proficient at editing, using Master Parameter 017. Refer to the *1000 Series Programming Reference for further information.*

Unit	Display
Semitone	ST
Quartertone (1/2 ST)	QT
Cent (1/100 ST)	ct
Hertz (cycles per second)	Hz
Percent	%
Decibel	dB
Second	s
Degree	deg
MIDI Velocity	vel

Figure 4-2 Numerical Value Units

4.1.3 Entering Edit Mode

To switch from PLAY to EDIT Mode, first select a Program to edit, then press the PLAY / EDIT button. The display should resemble Figure 4-3.

You are now in the Layer Menu. All of the Parameters in this Menu affect the individual Layers of a Program. The upper line of the display gives the current Layer number, the Menu name and the Parameter number. The lower line indicates the name of the current Parameter (Soundfile, in this example) and information associated with that Parameter — in this case, the name of the Soundfile assigned to this Layer.

The only time that you will not see this display upon entering EDIT mode is when you have selected Program 000, a null Program. In this case, only the Master Menu will be available.

By pressing the LAYER button, you can cycle through the Layers of the current Program and identify the Soundfile that is assigned to each one. If the Layer button appears to have no effect, then the Program has only one visible Layer (some Programs contain invisible Layers; see page 20).

The 1000 Expander's software has been designed to jump directly to Parameter 206 of the Layer menu because one of the most common (and most powerful) edits that you can make to a Program is to change its assigned Soundfile(s). You can try this now with the current Program: just press the VALUE UP or DOWN button to cycle through all of the Soundfiles. By playing your master keyboard as you change Soundfiles, you can hear the effect of your changes. In this way, you can quickly and easily create new voices.

4.2 Creating Layers & Splits

The techniques of layering voices and creating keyboard splits are among the most powerful and widely-used tools in the synthesist's repertoire. The 1000 Expander accommodates both of these techniques in a few simple editing commands, all of which are within the Layer Menu.

4.2.1 Layered Programs

Layered voices are Programs which play two or more sounds each time a key is pressed.

For example, one very popular layering combination is piano and strings: when the keyboard is played, the instrument produces the sound of a piano doubled by a string section. The effect allows a single accompanist to simulate a large ensemble. This combination is included as a factory preset on the 1000 PX and K1000; it's #20, "Piano & Slow Strings."

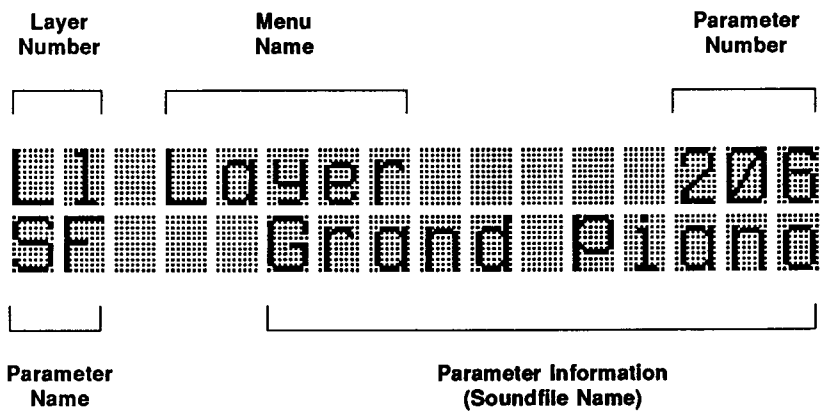


Figure 4-3 Edit Mode Display

Section IV

The Expander's software provides two basic ways to create your own layered Programs. First, you may Import a Layer, along with all of its Effects and playing parameters, from another existing Program into the one that you are editing. This procedure allows you to use some of the more complex voice setups that come with your Expander without getting deeply into Modular Effect editing. Second, you can create a new Layer from scratch.

Getting Started — To create a layered Program, begin in PLAY mode and select a base Program upon which to build. Then switch to EDIT mode and scroll through the Program's Layers with the LAYER button, so that you know how many Layers are available. (It's easiest to start with a Program having only one Layer, so that you have room to build on.)

Importing a Layer — Once you are sure that there is space to add another Layer, press the PARAMETER DOWN button to get to Parameter 203 of the Edit Menu. The screen display will read:

```
L1 Layer          203
Import Layer?
```

Answer YES to the prompt, and the display will resemble Figure 4-4.

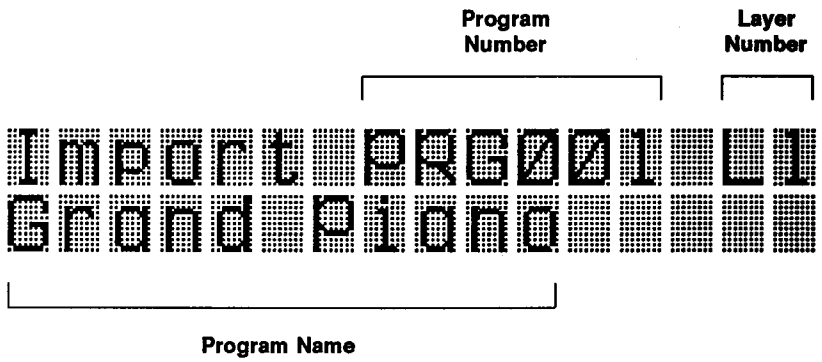


Figure 4-4 Importing a Layer

The Expander has jumped to the first Layer of Program 001, the default for importing. From here, you can use the PROGRAM and LAYER buttons to scroll through the available Programs and Layers, trying out different Layers to import. While doing so, you can play your master keyboard to hear the effect of your changes.

When you find a layered combination that you like, press YES to confirm your selection. The selected Layer will be added to your current Program, and the display will confirm the operation by showing:

```
Layer n
Imported
```

('n' will be the number of the new Layer). You've just created a layered Program. If you want to save it, turn to Section 4.4.2, *Saving Programs*. If you still have room, you may also import additional Layers (up to a maximum of four). If you have used all available Layers and you try to import another, the 1000 will tell you that no more Layers are available.

Some Compiled Effects require one or two additional "invisible" Layers in order to achieve their effect. These added Layers don't show up when you scroll through the Program with the LAYER button. In some cases, then, you may not have room for another Layer in a Program, even though it may look as though you should. This can occur either because the Program has more Layers than are shown in the display, or be-

cause the Layer that you wish to import has invisible Layers associated with it. You may be able to circumvent this restriction by selecting different Effects (see Section 4.3).

Creating a New Layer — Adding a new Layer will give you a mostly empty, "fresh" Layer to work with.

Use the PARAMETER buttons to select Parameter 201 of the Edit Menu. The display will read:

```
L1 Layer          201
New Layer?
```

Answer YES, and the Expander will add a new Layer to the current Program. The display will briefly show:

```
Layer n created
```

('n' will be the number of the new Layer). The default Soundfile for the new Layer will be Grand Piano, and the Effects Level will be set to Compiled with no Effect selected.

You may now use Parameter 206 to try out various Soundfiles, playing the keyboard to hear the results in each case. Once you have selected a Soundfile and are ready to add Effects to the new Layer, turn to Section 4.3 of this manual. To save the Program, consult Section 4.4.2, Saving Programs.

4.2.2 Split Programs

A Split Program is one in which different voices are assigned to different ranges of the master keyboard.

For example, in live performance, you might want to be able to play acoustic bass with your left hand and vibes with your right. This would require a keyboard split in which the lower keys are assigned to a bass sound and the upper keys to vibes. The 1000 Expander's design easily accommodates such splits, even when the master controller has only the most rudimentary MIDI capabilities.

To create a keyboard split, first build a layered Program incorporating the voices that you want to use. Then, use the PARAMETER buttons to select Parameter 209. The display will read:

```
L1 Layer          209
Set MIDI Range?
```

Parameter 209 allows you to assign each Layer in a Program to a specific range of keys on your MIDI controller. Use the LAYER button to select a Layer for editing, then press YES.

The display will prompt you to "Strike 1st key." Press the key on your MIDI master keyboard that corresponds to one extreme of the range that you want this Layer to cover. The display will ask you to "Strike 2nd key." Press the key corresponding to the other extreme of the desired range.

The display will return to the "Set MIDI Range?" prompt. The range of the current Layer now includes the lowest and highest keys that you struck, plus all the notes in between. (Notice that you can strike the keys in any order — lowest first, or highest first.)

You can now select another Layer with the LAYER button and assign it to the range you desire. The ranges of successive Layers can even overlap, if you wish.

Fine Tuning — You can check and adjust the MIDI key range for any Layer using Parameters 210 ("Low Note") and 211 ("High Note"). Each displays the corresponding extreme of the current Layer's key range as a musical note Value (for example, C4 for middle C). Use the LAYER button to scroll through the Layers in your Program, and the VALUE buttons to adjust the range if necessary. The VALUE buttons step in semitone increments; pressing both at the same time will step upward by octaves. In either case, you can press and hold to scroll rapidly through note Values.

Section IV

4.3 Using Compiled Effects

Effects are sound-modifying processes that add richness and character to your Programs.

In professional performance and recording, external effects units are almost always used to enhance the sound of electronic instruments. These "outboard" signal processors are powerful tools for making a track more distinctive and increasing its impact. They can also represent a substantial investment for the working musician.

The 1000 Expander incorporates a set of built-in Compiled Effects that emulate popular outboard processors. Designed by Kurzweil engineers to give you quick access to commonly-used synth effects, these Effects enable you to give your Programs the variety and complexity that contemporary music requires. Most importantly, you can apply different types of Effects separately to each Layer of your Programs — so you can achieve results that are much more complicated and subtle than those of external effects units.

4.3.1 Selecting Effects

In order to use Compiled Effects, you must make certain that the Effects Edit Level of the Layer that you're working on is set to "Compiled."

In the Layer Menu, select Parameter 215, "Effects." If the current Effects Level is Modular, the display will read:

```
L1 Layer      215
FX       Modular
```

In this case, the current Layer already employs Modular Effects. These Effects contribute to its sound quality. Remember that a single Layer may use only one type of Effect: if you change to Compiled Effects, you'll lose whatever contribution the Modular Effects provide. This may be fine — the change may not be extreme, and you might discover a new sound in the process. Just be aware that the results may be unexpected.

To change to Compiled Effects, press the appropriate PARAMETER button to select Parameter 216 and answer YES to the "Change Effects Edit Level?" prompt. The Expander will respond that the Effects Edit Level is changed to Compiled. You can now return to Parameter 215 and select an Effect.

When the current Effects Edit Level is Compiled, the display at Parameter 215 will resemble Figure 4-5. The upper line of the display shows the current Layer number, the name of the Menu (Layer) and the Parameter number (215). The lower line gives the Parameter name (FX) and the name of the currently-selected Effect. If no Effect is selected, the Effect name will be "None."

Use the VALUE buttons to scroll through the list of available Compiled Effects. While

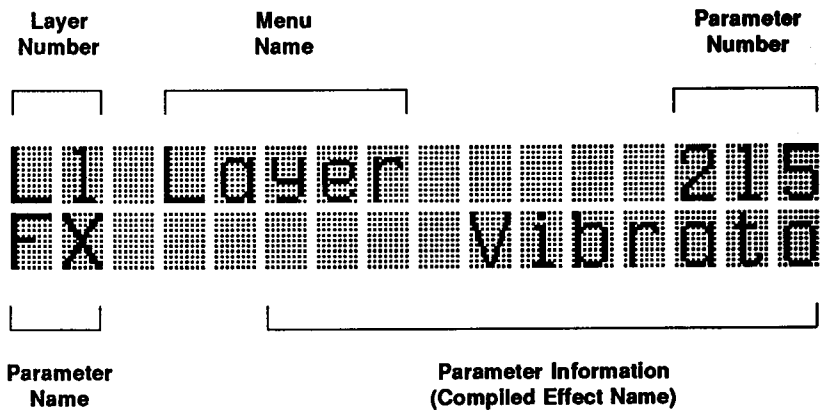


Figure 4-5 Selecting a Compiled Effect

you change Effects, you can play your master keyboard to hear the results.

When you find an Effect that you like, you can do one of three things:

- Save the current Program as it is (see Section 4.4.2)
- Press LAYER to select the next Layer of your Program and add Effects to it
- Experiment with modifying the current Effect to fine-tune your sound

4.3.2 Modifying Effects

Once you have chosen a Compiled Effect that suits your taste, you can adjust its characteristics using the Parameters in the Effects Menu (#300).

Press one of the MENU buttons to reach Menu 300, then use the PARAMETER buttons to scroll through the available Parameters. You may change the value of any Parameter with the VALUE buttons. Play your master keyboard as you change Values to hear the results.

The Effects Menu Parameter list varies depending on which Compiled Effect has been selected. Figure 4-6 summarizes the Parameters for each Compiled Effect. (See also the *1000 Series Programming Reference.)*

Vibrato

[301]	Maximum Depth
[302]	Maximum Rate
[303]	Shape
[304]	Depth Control
[305]	Rate Control

Delay Vibrato

[301]	Maximum Depth
[302]	Maximum Rate
[303]	Shape
[304]	Delay
[305]	Ramp
[306]	Rate Control

Tremolo

[301]	Maximum Depth
[302]	Maximum Rate
[303]	Shape
[304]	Depth Control
[305]	Rate Control

Delay Tremolo

[301]	Maximum Depth
[302]	Maximum Rate
[303]	Shape
[304]	Delay
[305]	Ramp
[306]	Rate Control

Leslie

[301]	Rate
[302]	Depth
[303]	Ramp
[304]	Trigger

Chorus 2*

[301]	Transpose
[302]	Detune
[303]	Delay
[304]	Enable
[305]	Pan 1
[306]	Pan 2

Tremolo 2*

[301]	Maximum Rate
[302]	Maximum Depth
[303]	Shape
[304]	Rate Control
[305]	Depth Control
[306]	Pan 1
[307]	Pan 2

Vibrato / Chorus 2*

[301]	Maximum Rate
[302]	Maximum Depth
[303]	Shape
[304]	Rate Control
[305]	Depth Control
[306]	Transpose
[307]	Detune
[308]	Delay
[309]	Enable
[310]	Pan 1
[311]	Pan 2

Phaser 2*

[301]	Maximum Rate
[302]	Depth
[303]	Ramp
[304]	Shape
[305]	Rate Control
[306]	Detune
[307]	Delay
[308]	Pan 1
[309]	Pan 2

Leslie 2*

[301]	Rate
[302]	Depth
[303]	Ramp
[304]	Trigger
[305]	Pan 1
[306]	Pan 2

Chorus 3*

[301]	Transpose
[302]	Detune
[303]	Delay
[304]	Enable
[305]	Pan 1
[306]	Pan 2
[307]	Pan 3

Echo 3*

[301]	Delay
[302]	Decay
[303]	Enable
[304]	Pan 1
[305]	Pan 2
[306]	Pan 3

*Uses additional "invisible" layers

Figure 4-6 Parameters of the Effects Menu

Section IV

4.4 Naming & Saving Programs

Once you have edited a Program to your satisfaction, you'll want to save it to a RAM location so that you can recall it when you need it.

If you've already made some basic edits and tried switching back to PLAY Mode, you know by now that the 1000 Expander automatically gives you a chance to save an edited Program when you exit EDIT Mode. The series of dialogs that it takes you through is exactly the same as that described in Section 4.4.2, *Saving Programs*. This feature is very useful if you are editing "on the fly" and want to get back into PLAY Mode quickly, but it bypasses the step of renaming the Program.

The 1000 Expander's software also offers a more thorough and orderly way of manipulating Programs in memory, allowing you to give each Program a unique name and then save it without leaving EDIT Mode. All of the commands that are involved are found in the Program Menu (Menu 100).

4.4.1 Naming Programs

While the 1000 Expander keeps track of Programs by number rather than name — and, in fact, allows you to have two or more Programs with the same name — you'll find it much easier to keep your Programs organized if you get into the habit of naming them before you save them.

Figure 4-7 Naming Programs

To name or rename a Program, press one of the MENU buttons to get to the Program Menu (100), then press the PARAMETER UP button to select Parameter 101. In answer to the prompt "Name Program?" press the VALUE YES button.

The display should now resemble Figure 4-7. The bottom line of the display shows the current Program name. An underscore cursor appears beneath the first letter of the name, indicating that the Expander is prepared to accept changes to that character.

The Expander's front-panel buttons take on special editing functions in the naming sequence, as shown in Figure 4-8.

PLAY / EDIT — Pressing the PLAY / EDIT button deletes the character above the cursor. All characters to the right of the cursor will move one position to the left.

LAYER — Pressing the LAYER button inserts a space at the cursor location. The character above the cursor (and all the characters to the right of it) will move one position to the right.

MENU UP and DOWN — The MENU buttons serve as cursor controls. MENU UP moves the cursor to the right, while DOWN moves it to the left. Pressing both MENU buttons at once advances the cursor to the first alphanumeric character after a space (or after a non-alphanumeric character, such as '!'), allowing you to jump to the next word in the name.

PARAMETER UP and DOWN — The PARAMETER buttons select characters from a fixed list. UP advances forward through the list, while DOWN scrolls backward. Pressing both PARAMETER buttons skips through sections of the list, as follows:

0 — Followed by numerals 1 through 9 and several symbols
'A' — Followed by upper case letters and assorted symbols
'a' — Followed by the rest of the alphabet in lower case
Space — Followed by an assortment of symbols

You may also use the data entry slider on your MIDI controller to scroll through the character list. If you have a programmable slider rather than one for data entry, set it to MIDI destination 6.

When you are satisfied with the name, press the VALUE YES button to confirm it. (You can also press the VALUE NO button to revert to the original name.) You will return to the "Name Program?" prompt, and the new name will be stored. You are now ready to save the Program to RAM.

4.4.2 Saving Programs

Once you have named your Program, press the PARAMETER UP button to select Parameter 102. The Expander will respond with the prompt, "Save Program?"

If you answer by pressing the VALUE NO button, the display will ask if you wish to revert to the original Program. Answering YES will erase your changes and restore the Program to its unedited state. Answering NO will return you to the "Save Program?" prompt.

If you answer YES to the "Save Program?" prompt, the Expander will search its RAM for the next available location and suggest that your Program be saved there. Answering YES will cause the Expander to save the Program in that location, and then return you to the "Save Program?" prompt. Alternatively, you may use either of the PARAMETER buttons to select a different RAM location, then press YES to save the Program there.

If you have re-edited a user-defined RAM Program, the location that the Expander suggests will be the same as the Program that you've edited. If you don't wish to replace the previous Program, use the PARAMETER buttons to select a different RAM location.

If all of the RAM locations are filled when you attempt to save a Program, then the Expander will suggest location 064 (the first RAM location). You may use the PARAMETER buttons to choose another RAM location if you wish — but, since the memory is full, you'll have to choose between losing your new Program and replacing an existing one.

Note that, if most of your Programs are very complex, you may run out of memory before you have used all 64 locations. The only solution for this, if you wish to save a new Program, is to replace an existing one.

If you have ObjectMover,™ available from your Kurzweil dealer, you can avoid running out of available memory. See Section 1.2 in the Programming Reference.

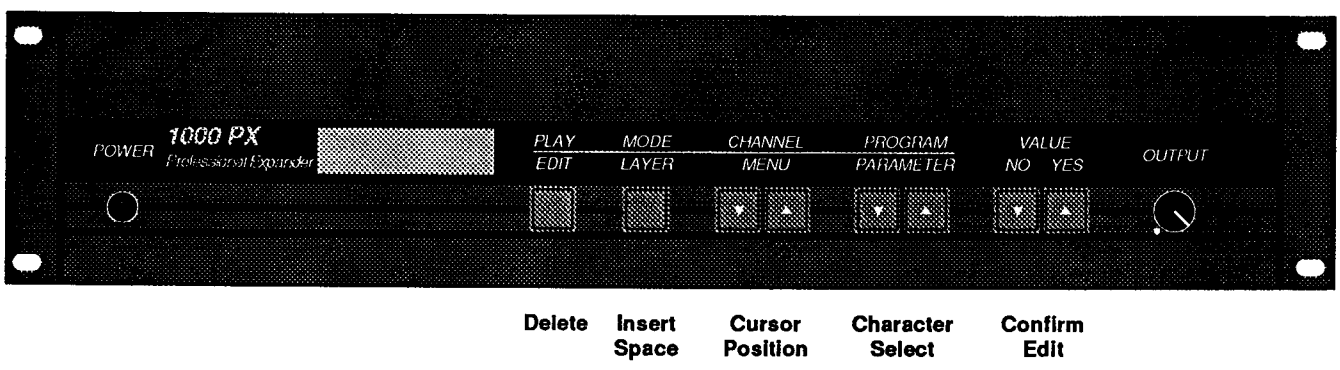


Figure 4-8 Functions of Buttons in the Naming Sequence

Section IV

4.5 Monophonic Output Setting

There may be occasions when you won't be able to take advantage of the 1000 Expander's stereo output capability.

Your present sound system may have only one input, for example. Or you might be undertaking a particularly complex project with a lot of sound sources, and need to free up every channel of your mixer that you can spare. Under these circumstances, if you connect only one of the Expander's two outputs, you will lose some proportion of the sound of every stereo Program unless you set the Expander for monophonic output.

To do so, use the MENU buttons to reach the Master Menu (number 000), then press the PARAMETER UP button to select Parameter 006, "Mono Output." The display will look like Figure 4-9.

The upper line of the display shows the current Layer number, the Menu name (Master) and the Parameter number. On the lower line is the Parameter name and default Value, OFF.

You may use either VALUE button to toggle the Value on and off. A Value of ON will cause the Expander to add its two audio channels and output the sum at both Output connectors, overriding all Pan settings of every Program. Note that this does not *erase* any Pan settings, however.

To restore stereo output capability, set this Parameter to OFF.

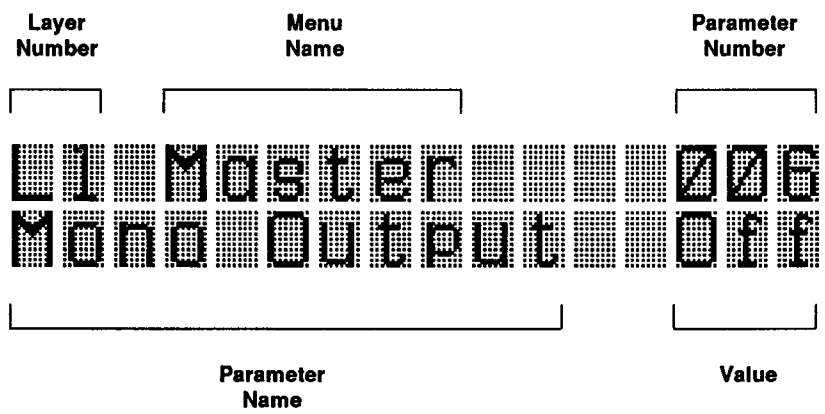


Figure 4-9 Setting the 1000 Expander for Monophonic Output

4.6 Advanced Program Editing

Now that you are familiar with the basic principles of editing — accessing Parameters within Menus, changing their Values, and saving the results as a new Program — you have the skills to begin getting into advanced editing procedures.

At the advanced level, you'll start from scratch with a digital emulation of a traditional modular music synthesizer, putting together building-block elements to create Modular Effects. (The Compiled Effects that you've been working with were actually built using this same technique, and can be studied as examples of Modular Effect editing.) Advanced editing also gives you more control over the playing response of the Expander, allows you to explore alternate tuning systems, and permits extensive control over MIDI functions.

Advanced editing is covered in the *1000 Series Programming Reference*. When you're ready to explore advanced Program editing, we recommend that you set aside some time to study the *Programming Reference* carefully. You'll find that time spent at the outset to gain a clear overview of the 1000 Expander's software will pay off later in the efficiency of your work and the quality of your Programs.

Have fun!

Appendices

Section V

APPENDIX I — INTERFACING

5.1 Audio Outputs

Like most musical instruments, the 1000 Expander features unbalanced audio outputs. The nominal output signal level is -14 dBV, a compromise chosen to be compatible with both line-level consumer equipment and instrument amplifiers. With a maximum output signal level of +17 dBV, the Expander has sufficient capability to drive most audio equipment to full power, but gain should be added (usually at the mix console input stage) when the unit is used in +4 dBm systems. The recommended load impedance for the 1000 Expander outputs is 10 kohms; do not connect it to 600 ohm (actual low-Z) inputs.

Since it employs a 16-bit floating point sampling process, the 1000 Expander is capable of very high audio quality. Care must be taken with the audio connections, particularly in recording applications, in order to preserve the inherent high fidelity of the Kurzweil samples.

5.1.1 Choosing Cables

Where the sound system input accommodates phone jacks, the Expander may be connected using guitar-type cables. Straight (rather than coiled) cords are preferred. Use only high-quality cables with good shielding and sufficient flexibility. Gold or MIL-spec brass connectors, if available, will provide the best long-term performance.

When making cables, choose highly flexible, rubber-jacketed cable with braided shielding (foil shielding is acceptable in fixed installations where the cables will not be handled or flexed). To minimize internal self-capacitance, use single-conductor (*not* dual-conductor) shielded cable.

5.1.2 Audio Connector Wiring

Figure 5-1 (next page) illustrates wiring practices for phone, RCA and XLR type connectors.

In the case of XLR connectors at balanced inputs, there is no clear standard for pin assignments: while many now advocate pin 2 "hot," a large proportion of professional audio equipment is pin 3 "hot." Depending upon the input circuit design, the choice may make virtually no difference in sound quality and signal level, but we can't guarantee that this will be the case. The best approach is to consult and follow the recommendations in the equipment's instruction manual.

The proper method for handling the unused pin at the balanced input similarly may vary dependent upon input circuit design. Some equipment will require that the unused pin be grounded; for other components, it may not matter. Again, check the instruction manual.

5.1.3 Use of Direct Boxes

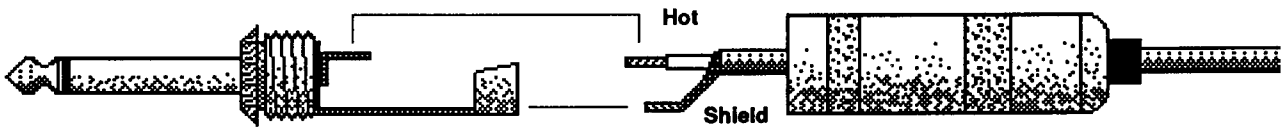
Both in the studio and in touring performance, some form of isolation may be required at the 1000 Expander output to control induced noise and hum. The most common solution is to use a "direct box."

The quality of different direct boxes varies from reasonable to downright awful, however. Many direct boxes are not designed to handle the higher signal level and broad frequency range of the 1000 Expander. With such units, you will hear a very noticeable degradation in sound quality when the box is inserted in line. Particularly in recording applications, this is usually unacceptable.

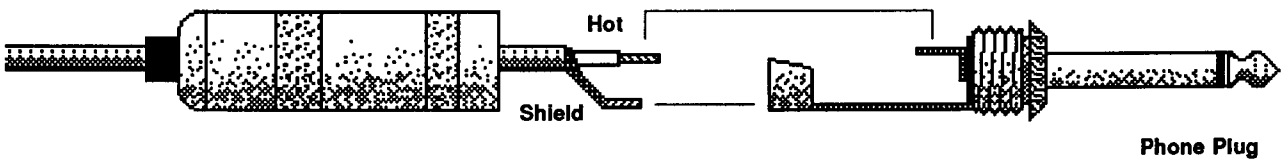
To preserve the sonic fidelity of the 1000 Expander, it is extremely important to select a high-quality direct box which is designed for line-level isolation.

For best performance in recording, in fact, a better solution is to simply use a good line transformer (10 kΩ : 10 kΩ), preferrably with dual Faraday shields. An example of such a transformer is the Jensen model JE-11P-1D. Follow the manufacturer's recommendations regarding wiring.

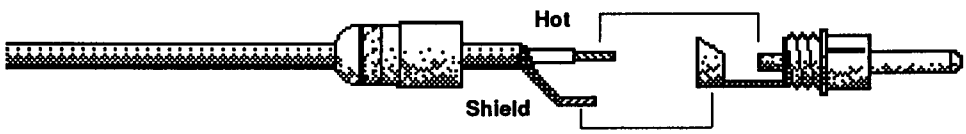
1000 Expander Output Connection:



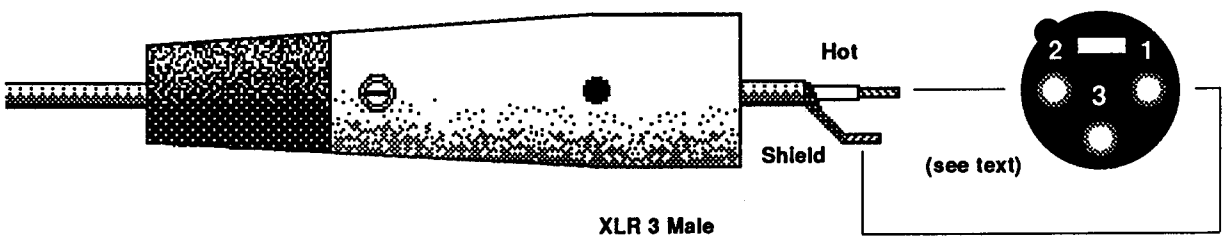
System Input Connection:



Phone Plug



RCA Plug



XLR 3 Male

Figure 5-1 Audio Connector Wiring

Section VI

Appendix II — Specifications

1000 Series Expanders

Description	Rack-mountable, MIDI-controlled, polyphonic, multitimbral digital sample player and programmable wavetable synthesizer
Models	1000 PX Professional Expander (24-note polyphonic) 1000 GX Guitar Expander (20-note polyphonic) 1000 HS Horn Expander (20-note polyphonic) 1000 SX String Expander (20-note polyphonic)

Program Memory

Factory Presets	ROM (Read Only Memory), 120 presets (PX), 99 presets (SX), 100 presets (HX), 95 presets (GX)
User-Programmable	24 kbyte RAM (Random Access Memory), 64-Program maximum capacity
RAM Battery Backup	Lithium battery, 3 – 5 years life expectancy

Audio Outputs

Type	Stereo, unbalanced
Connectors	1/4-inch tip/sleeve phone jack (x 2)
Nominal Output Level	-14 dBV
Maximum Output Level	+17 dBV
Impedance	100 Ω
Recommended Load Impedance	10 kΩ minimum
Output Noise	-86 dBV typical

MIDI Connections

Type	In, Out, Thru
Connector	Standard DIN 5-pin

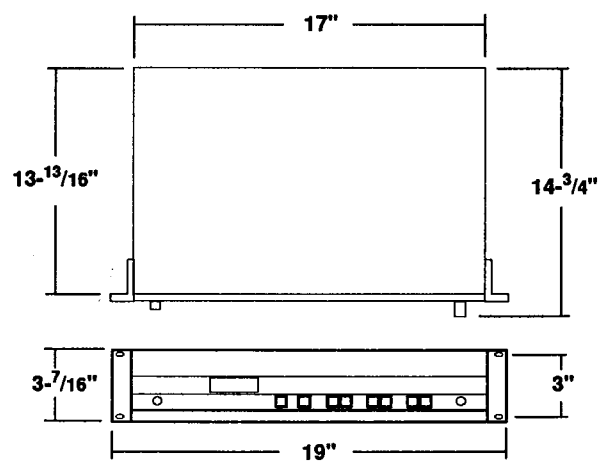
Power Requirements

Voltage	100 – 120 VAC, 50/60 Hz 200 – 240 VAC optional
Power Consumption	30 Watts
Mains Protection	AGC 1 Amp, 125 Volt fuse

Physical Dimensions 19" W x 3 7/16" H x 14 3/4" D (occupies 2 standard rack spaces)

Shipping Weight 20 lbs. (9.1 kg)

External Dimensions



Manufacturer:
Kurzweil Music Systems, Inc.

MIDI Implementation Chart

Digital Synthesizers

Model: 1000 Series Expanders

Dated: 01/01/88
Version: 2.1

FUNCTION		TRANSMITTED	RECOGNIZED	REMARKS
Basic Channel	Default		1	Memorized
	Changed		1 – 16	
Mode	Default		Mode 1*	
	Messages		Mode 1 & 3	Memorized
	Altered			
Note Number			0 – 127	Key range: C0 - C8
	True Voice		12 – 120	
Velocity	Note ON		O	
	Note OFF		O	
After Touch	Keys		O	
	Channels		O	
Pitch Bender			O	
Control Change			O 1 – 31	Controller assign-
			33 – 63	ments are program-
			64 – 95	mable
Program Change		O	O 0 – 127	May be mapped
	True #		1 – 128	
System Exclusive		O	O**	
System Common	Song Pos.		X	
	Song Sel.		X	
	Tune		X	
System Real Time	Clock		X	
	Messages		X	
Aux Messages	Local Control		X	
	All Notes Off		O	
	Active Sense		O	
	Reset		X	

Notes

* Use MULTI Mode to assign different Programs to each MIDI channel.

** Manufacturer's ID = 07. Device ID: default = 0; programmable 0 – 126

O = Yes
X = No

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

Section VII

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