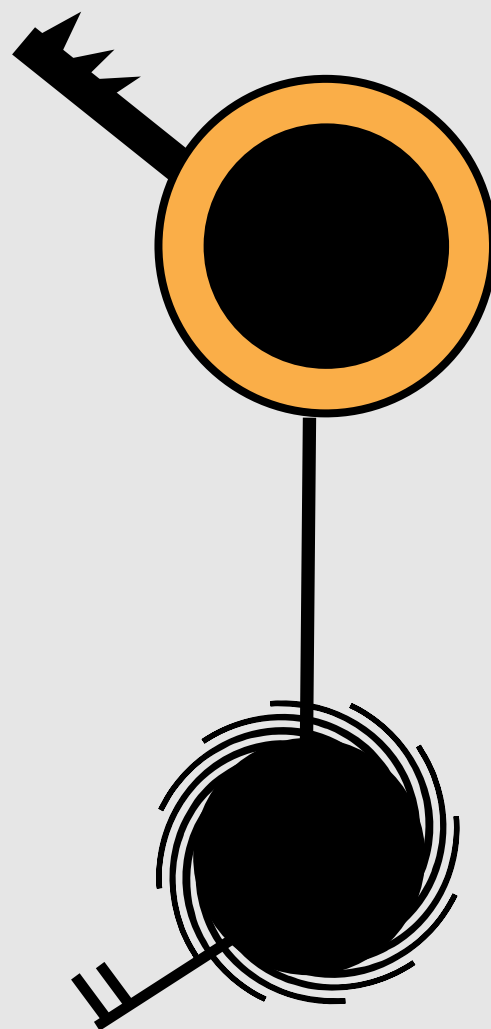


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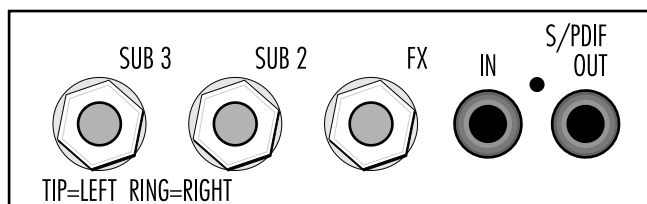


# Effects

## ESI TURBO

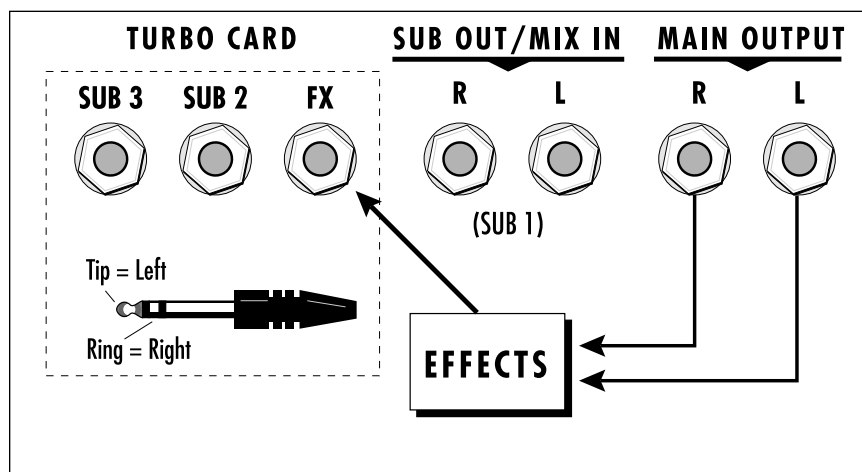
The ESI Turbo option adds exciting new capabilities to your ESI including: two 24-bit stereo digital effects processors with over 70 effect algorithms; S/PDIF digital I/O for interfacing with other digital equipment; and two additional pairs of submix outputs which allow external processing of specific sounds.

The rear panel of the Turbo option contains five jacks.



The three phone jacks are the FX and Submix outputs. These are Stereo jacks. The Left channel is on the Tip of the jack and the Right output is on the Ring conductor. Use a stereo “Y” cable to access both channels of these outputs. One stereo Y-cable is included with the Turbo option. Additional Y-cables are available from Radio Shack or from your local electronics supplier.

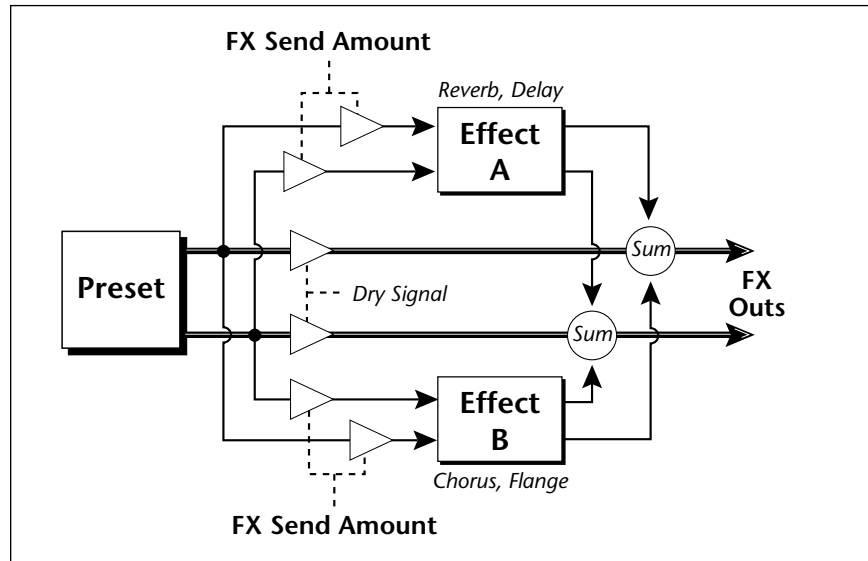
The FX Output is a copy of the Main Output run through the effects processors. When MIDI channels or Zones are programmed to “Main,” they appear at both the FX and Main outputs. The submix outputs incorporate “plug sensing” which reroutes signals to the FX outputs if a plug is not inserted into the submix jack.



The S/PDIF Input and Output allows the ESI to transfer digital audio back and forth with other digital devices equipped with S/PDIF digital I/O. Keeping the signal in the digital domain is desirable to keep the signal to noise level as high as possible. Using the digital input, you can sample directly from a DAT recorder or external A/D converter. The digital output reflects the data at the FX output and is always active.

## Dual Effects Processors

The ESI Turbo option contains two stereo effects processors which serve the entire machine. When playing presets one at a time, the two processors can be programmed as part of the preset. When in multimode, a global effects assignment is used. The diagram below shows how the effects are integrated into the signal path using a parallel effects send/return model, similar to a mixing console.



Effects processor “A” contains Reverb and Delay effects and Effects processor “B” contains Chorus, Flange and Distortion effects. There are 44 “A” effects and 32 “B” effects. In addition to the effect type there are user adjustable parameters for each effect. The “A” effects have user programmable Decay Time and High Frequency Damping. The “B” effects have user programmable Feedback, LFO Rate and Delay Time.

❑ **Note:** Unlike a mixing console, the dry signal begins to be attenuated as the Send Amount is increased beyond 50%. This allows a mix of 100% effect.

## The Effects Sends

On a mixing console you can control the amount of signal each channel Sends to the effects bus. This allows each channel to be placed in a slightly different “sonic space” which can create an airy, open sound.

ESI uses this basic concept, but works in a slightly different manner. There are 4 effects busses: Main, Sub 1, Sub 2, and Sub 3. Zones or MIDI channels (you determine which), can be directed to one of the four busses. Each effects processor contains four Send Amounts which allow you to set the wet/dry mix on each of the four busses going into the effect. A setting of 0% is completely dry (no effect). A setting of 50% contains an equal mix of effected and dry signal.

Dynamic Processing,  
Channel Assignment (9).

### CHANNEL ASSIGNMENT

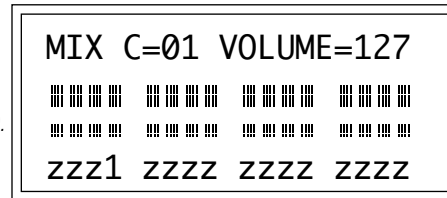
AssignGroup:Poly All  
Submix: main

**! Caution:** You must be in Multimode in order to change channels in the MIDI Mix screen.

The submix bus selection can be programmed by Zone in the Dynamic Processing, Channel Assignment screen. These settings can be overwritten in the Master by changing the submix setting from “Z” (Zone) to “Main, Sub 1, 2 or 3” which routes the preset on that MIDI channel to the selected submix bus.

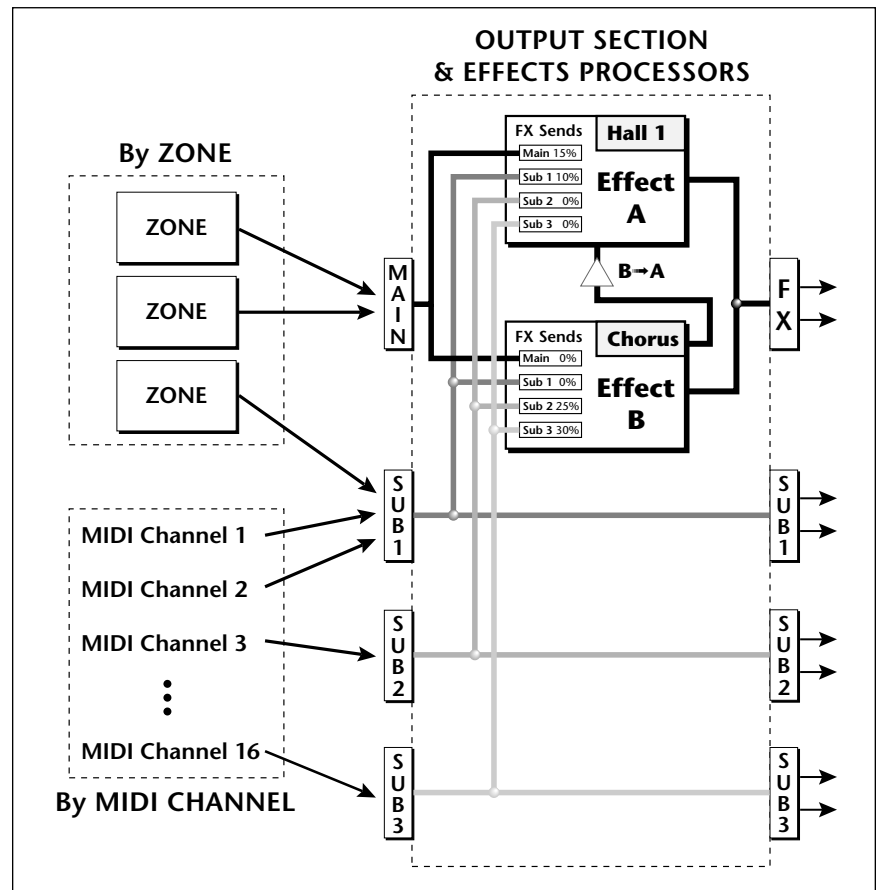
In the screen below, MIDI channel 4 is programmed to the submix 1 bus. MIDI channels 2, 3 and 5 obey the submix routing as programmed in each zone.

Master/Global,  
MIDI (9), MIDI Mix (1).



The submix bus routings are also available at the Submix jacks on the rear panel. Note that these outputs contain only Dry signal. The Effects Processors are ONLY connected to the FX Outputs.

If a plug is inserted into a Sub Output jack, the dry signal from that bus is removed from the effects processor. This feature allows you to have three dry mixes from the Sub Outputs and an “Effects Only” mix from the Main Outputs.



The diagram above shows how individual voices or MIDI channels can be routed to the four busses. Note that the signal lines represent stereo signals.

## Three-way Effects Control

The effects processor controls are very flexible. Effects can be controlled three ways to suit your personal preference and to adapt to different situations. The diagram below illustrates the three types of effect control.

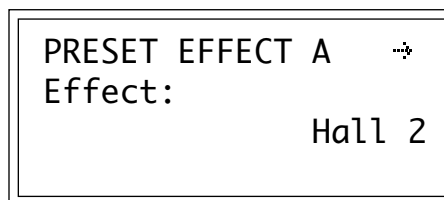
1. Programmed as part of the preset when playing single presets (Omni or Poly Modes).
2. Programmed from the Master Effects Section when playing either single presets (preset Effect Type set to “Master”) or when in Multi Mode.
3. Programmed from the designated control preset when in Multi Mode. This allows effects to be changed using MIDI program change commands.

## Effects Programmed in the Preset

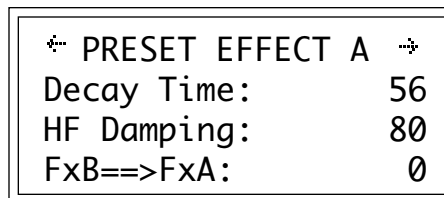
When playing single presets (Omni or Poly mode) the effects are normally programmed as part of the preset. This allows the effects to be programmed as part of the preset. Because there are only two effects processors for the entire machine, each preset cannot have its own effect in Multimode where up to 16 presets can be played at once.

### ► To Program the Effects as part of the Preset:

1. Press the Preset Definition key. The LED illuminates and the Preset Definition screen appears.
2. Select the Effects submenu (9). The Effects menu will appear.
3. Select Effects A (0) or Effects B (1).
4. Select an Effect using the Data Entry Control or INC/DEC keys. Do not use the “Master Effects” setting as this will cause the Master effects settings to be used.



5. Press the Right Cursor key. The Effect Parameters screen will appear. Set the Decay Time and HF Damping parameters to your preference.



■ **Note:** Effect parameters are described later in the appendix beginning on page 231

6. Press the Right Cursor key again to go to the Effect Sends screen.
7. Set the effect sends amounts to your preference.

PRESET EFFECT A			
Sends:			
Main:	15%	Sub2:	0%
Sub1:	0%	Sub3:	0%

8. Press the Escape key to go back to the main Effects screen. If you want to adjust the Effect B settings, select Preset Effect B (1) and adjust just as you did for the “A” effect.

9. **Save the bank.** The programmed effects setting will be saved along with the preset.

## Master Effects

You might want the effects to be programmed on a global basis in Omni and Poly modes. You could choose your favorite reverb, for example, and have it applied to every preset you select

### ► To Program the Effects Globally for all Presets:

1. Press the Preset Definition key. The LED illuminates and the Preset Definition screen appears.
2. Select the Effects submenu (9). The Effects menu will appear.
3. Select Effect A (0).
4. Set the Effect to “Master Effects” using the Data Entry Control or INC/DEC keys.
5. Press the Escape key, then select Effect B (1).
6. Set the Effect to “Master Effects” using the Data Entry Control or INC/DEC keys.
7. Press the Master/Global key. The Master/Global menu will appear.
8. Select Effects (4). The main Effect screen will appear.
9. Select Master Effect A (0). The following screen will appear.

MASTER EFFECT A	
Effect:	Warm Hall

10. Press the Right Cursor key. The Effect Parameters screen appears. Set the effect parameters to your preference.

■ **Note:** Effect parameters are described later in the appendix beginning on page 231

✧ MASTER EFFECT A ✧	
Decay Time:	40
HF Damping:	64
FxB==>FxA:	0

11. Press the **Right Cursor** key again to go to the Effect Sends screen. Set the effect sends amounts to your preference.

✧ MASTER EFFECT A			
Sends:			
Main:	20%	Sub2:	0%
Sub1:	0%	Sub3:	0%

12. Press **Enter** to save the system.

If you want to adjust the Effect B settings, press the **Escape** key to go back to the main Effects screen. Select Master Effect B (1) and adjust just as you did for the “A” effect.

## Using Master Effects Settings in Multi Mode

In Multi Mode, the two effects processors can be controlled from the Master Effects settings, or they can follow the effects settings of the preset on a special MIDI channel. In this example, the Master Effects will be used. Use this setting if you don't need to change the effects during the song.

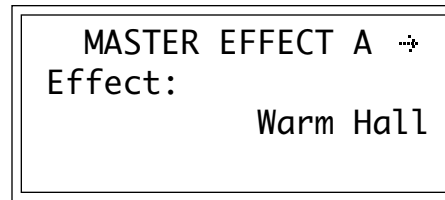
### ► To Use the Master Settings in Multimode

1. Press the **Master/Global** key. The Master/Global menu appears.
2. Select **Effects (4)**. The main Effect screen will appear.
3. Select **Effects Setup (2)**. The following screen will appear.

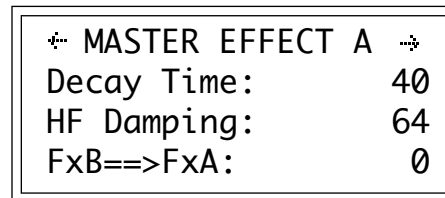
EFFECT SETUP	
Effects:	Enabled
Multimode Control:	master settings

4. Select “**master settings**” from the “Multimode Control” field. This causes the Master effects settings to be used.
5. Press **Enter** to lock in the change.
6. Select **Effects (4)** again to adjust the Master Effects. The main Effect screen will appear.
7. Select **Master Effect A (0)**. The following screen will appear.

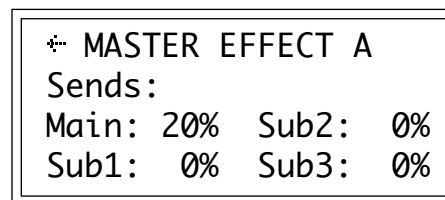




8. Press the Right Cursor key. The Effect Parameters screen will appear. Set the effects parameters to your preference.



9. Press the Right Cursor key again to go to the Effect Sends screen. Set the Effect Send amounts to your preference.



10. If you want to adjust the Effect B settings, press the Escape key to go back to the main Effects screen. Select Master Effect B (1) and adjust just as you did for the “A” effect.

11. Press Enter to save the system.

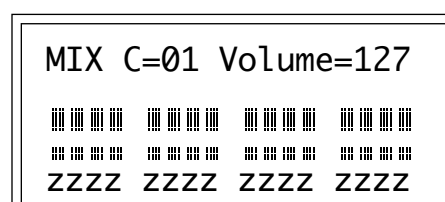
### ► To Assign MIDI Channels to the Main Output or to a Submix Bus

★ **Tip:** Refer to the routing diagram on page 217.

In Multimode each MIDI channel can be assigned to the main outputs or to one of the submix busses. If a plug is inserted into a Sub Output jack, the dry signal from that bus is removed from the effects processor. This feature allows you to have three dry mixes from the Sub Outputs and an “Effects Only” mix from the Main Outputs.

This lets you to program a different effect amount for several presets using the same effect. For example, you might want just a touch of reverb on the piano and more on the drums.

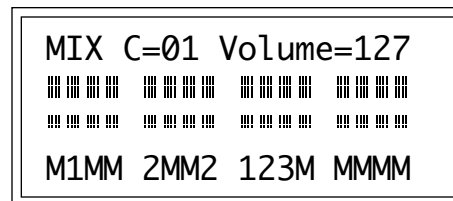
1. Select the MIDI submodule (9) from the Master/Global module.
2. Select MIDI Mix (1). The following screen will appear.



**! Caution:** You must be in Multimode in order to change channels in the MIDI Mix screen.

3. Use the left/right cursor keys to select a MIDI Channel. Use the Up/Down Cursor keys to select Volume, Pan or Submix output for each MIDI channel. For now move the cursor to the lower line. Each column represents a MIDI channel from 1 to 16, left to right.

4. Use the Data Entry Control or INC/DEC keys to select a submix bus (Main, 1, 2, or 3) for each channel. The amounts for each bus are adjusted in the Master, Effects menu.



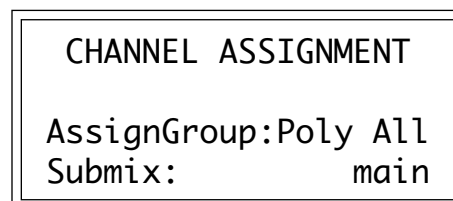
The submix busses can also be programmed by keyboard zone. Using this feature you could assign a different effect to each half of the keyboard or change the effect amount as you play up the keyboard. On a preset containing a drum set, you could have four different effect mixes to assign to each drum. A zone can be any range of keys.

#### ►To Program Submix Busses by Zone

- Set the submix bus to “z” using the Data Entry Control or INC/DEC keys. Now the submix bus will be determined by the zone assignments in the preset assigned to that MIDI channel.

#### ►To set up Submix Assignments in the Preset's Zone:

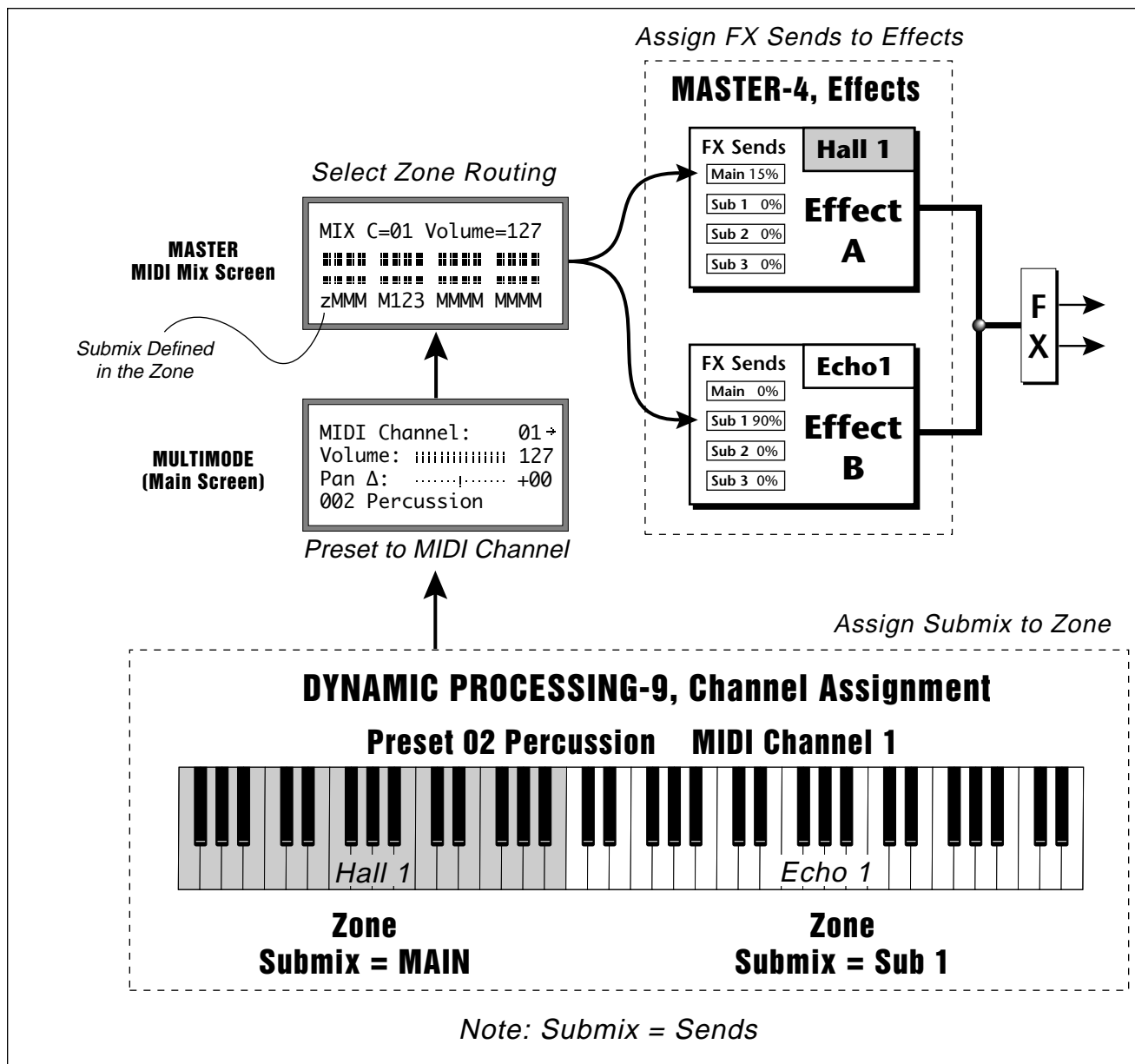
1. Exit the Master module.
2. Select the Preset assigned to the channel you set to “Zone” (z).
3. Press the Dynamic Processing key. The LED will illuminate and the Dynamic Processing screen will appear.
4. Select a Zone (0). Define a range of the keyboard by pressing the low key when prompted and then the high key of the range you want.
5. Select the Channel Assignment submodule (9). The following screen will appear.



6. Move the cursor to the lower line and select one of the submix busses using the Data Entry Control or INC/DEC keys.

7. To assign another zone, press Escape and go back to the “Select Zone” screen to select a new zone. Then change the submix assignment for the new zone.

8. Save the Bank!

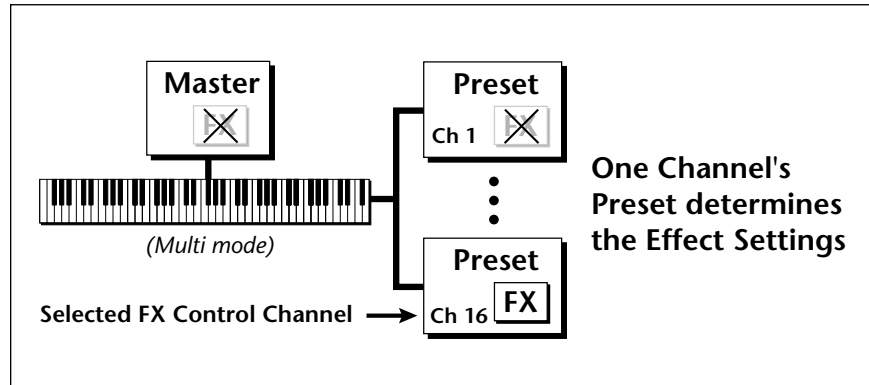


This diagram shows the controls and modules used to assign the effects by keyboard Zone. In this example, the keyboard is split with Reverb on the lower section and an Echo effect on the upper section.

## Using the Effects Channel Settings in Multi Mode

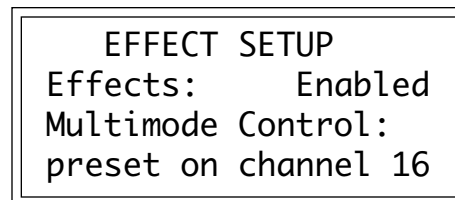
In Multi Mode, the effects settings can follow the effects settings of the preset on a special MIDI channel. You designate one MIDI channel as the “Multimode Effects Control Channel.” When this is done, the effects processors follow the effects setting made in the preset assigned to this MIDI channel. This powerful feature allows you to change effects during a sequence simply by changing the preset on the control channel.

**Tip:** You can create special presets without samples to be used as “Effects Presets”. By assigning these effects presets to the Multimode Effects Control Channel, you can use Program Change commands to switch between effects during a sequence.



### ► To Set the Effects Control Channel:

1. Press the Master/Global key. The LED illuminates and the Master/Global menu appears.
2. Select Effects (4). The main Effect screen will appear.
3. Select Effects Setup (2). The following screen will appear.



4. Move the Cursor down to the “Multimode Control” field. Select “preset on channel X.”
5. Set the channel to the MIDI channel you want to be the effects control channel. The Effects settings programmed in the Preset on this selected channel will be used for ALL the other MIDI channels.
6. Press Enter to save the Master Settings.

## Effects Bypass

This control bypasses the effects, turning them off. This feature is useful if you are using external effects at the mixing console and want to turn the effects Off for all presets.

### ► To Bypass the Effects:

1. **Press the Master key.** The LED illuminates and the Memory Statistics screen appears.
2. **Select Effects (4).** The main Effect screen will appear.
3. **Select Effects Setup (2).** The following screen will appear.

**EFFECT SETUP**  
Effects:        Enabled  
Multimode Control:  
preset on channel 16

4. **Set Effects to “Disabled”** using the Data Entry Control or INC/DEC keys.
5. **Press Enter** to save the Master settings.

# Effect Descriptions

## A EFFECT TYPES

Room 1-3  
Hall 1 & 2  
Plate  
Delay  
Panning Delay  
Multitap 1  
Multitap Pan  
3 Tap  
3 Tap Pan  
Soft Room  
Warm Room  
Perfect Room  
Tiled Room  
Hard Plate  
Warm Hall  
Spacious Hall  
Bright Hall  
Bright Hall Pan  
Bright Plate  
BBall Court  
Gymnasium  
Cavern  
Concert 9  
Concert 10 Pan  
Reverse Gate  
Gate 2  
Gate Pan  
Concert 11  
Medium Concert  
Large Concert  
Large Concert Pan  
Canyon  
DelayVerb 1-3  
DelayVerb 4-5 Pan  
DelayVerb 6-9

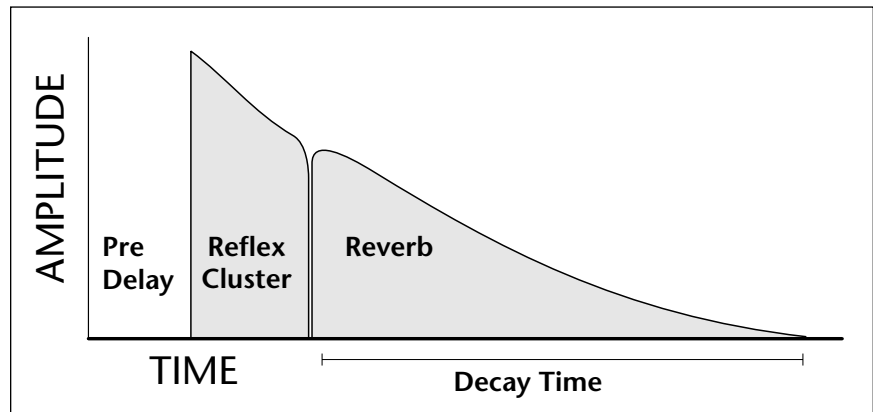
## B EFFECT TYPES

Chorus 1-5  
Doubling  
Slapback  
Flange 1-7  
Big Chorus  
Symphonic  
Ensemble  
Delay  
Delay Stereo 1 & 2  
Panning Delay  
Delay Chorus  
Pan Delay Chorus 1 & 2  
Dual Tap 1/3  
Dual Tap 1/4  
Vibrato  
Distortion 1 & 2  
Distorted Flange  
Distorted Chorus  
Distorted Double

## Reverb

Reverberation is a simulation of a natural space such as a room or hall. The reverb effects simulate various halls, rooms and reverberation plates. In addition, there are several other reverb effects such as Gated Reverbs, Multi Tap (early reflections), Delay and Panning effects. There are two adjustable parameters on the reverb effects, Decay Time and High Frequency Damping.

Decay Time is the time it takes for the reflected sound from the room to decay or die away. The diagram below shows a generalized reverberation envelope.



After an initial pre-delay period, the echoes from the closest walls or ceiling are heard. These first echoes, or the early reflection cluster, vary greatly depending on the type of room. Roughly 20 milliseconds after the early reflection cluster the actual reverberation begins and decays according to the time set by the Decay Time parameter.

High frequency energy tends to fade away first as a sound is dissipated in a room. The High Frequency Damping parameter allows you adjust the amount of High Frequency Damping and thus change the characteristics of the room. Rooms with smooth, hard surfaces are more reflective and have less high frequency damping. Rooms filled with sound absorbing materials such as curtains or people have more high frequency damping.

## General Descriptions

**Room** programs simulate small rooms with high frequency absorption caused by drapes and furniture.

**Plates** simulate plate type reverbs with their tight, dense early reflections and sharp reverb buildup.

**Hall** programs recreate the open, spacious ambience of large concert halls.

**Gated Reverbs** add ambience only while the original signal is still sounding. As soon as the signal falls below a threshold, the reverb is automatically cut off.

**Delay** programs can be used to create echo and doubling effects.

**Multi Tap** programs consist of the reflection cluster only without the reverb decay.

## Chorus

The function of a chorus device is to thicken the sound or to make one voice sound like many. This effect is achieved by mixing one or more delayed versions of the signal in with the original. The delay times used are too short to be perceived as an echo, but long enough so that comb filtering does not occur. In addition, the delay time is varied via a low frequency oscillator to simulate the random differences that occur when multiple instruments are playing together. A slight amount of feedback improves the effect by creating multiple images of the sound as it recirculates again and again.

All the choruses are true stereo using two separate delay lines controlled by a single set of controls. The delay times are slightly different for each channel and the LFO phase is inverted on one channel to help contribute to the overall chorus effect. The LFO Rate and Depth settings are critical to achieving a realistic effect with faster LFO rates generally requiring less LFO amount and vice-versa.

## Doubling

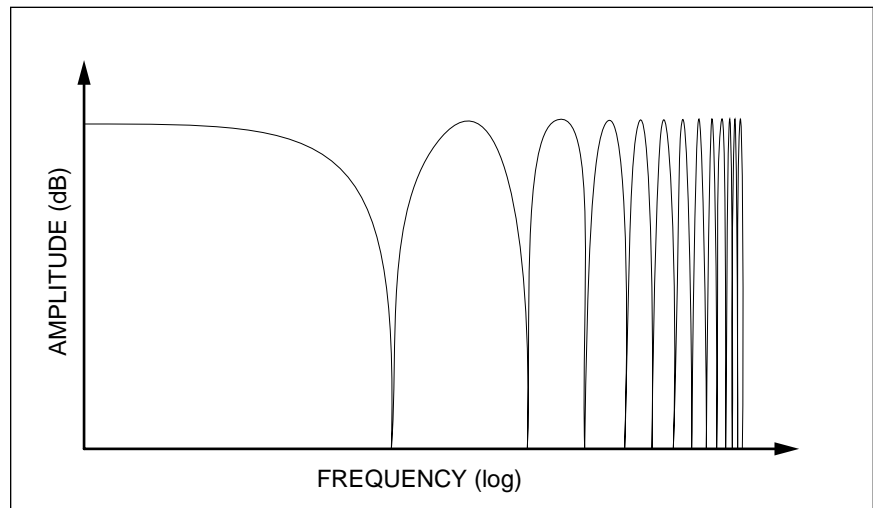
When a copy of a sound, delayed by about 26 milliseconds, is added back with the original, two audio images can be perceived by the brain. When the delayed image is slightly varied or modulated, the illusion of two voices is created.

## Slapback

Slapback is a single short echo in the range of 50-60 milliseconds. A sound delayed by this length of time is perceived as a discrete and separate image which is useful for a thickening effect or as a pre-delay for reverb simulating a hard, reflective surface such a gymnasium wall.

## Stereo Flanger

A flanger consists of a short audio delay line whose output is mixed together with the original signal. Mixing the delayed and original signals results in multiple frequency cancellations called a comb filter. Since the flanger is a type of filter, it works best with harmonically rich sounds.





Flanging was originally created using two tape recorders playing identical recordings. By exactly synchronizing the two decks and then slowing the speed of one by grasping the tape reel flanges, the flanging effect was born.

The flanger is a stereo device consisting of two separate delay lines controlled by a single set of controls. A Low Frequency Oscillator (LFO) varies this initial delay setting, changing the frequency of the notches and adding animation to the sound. LFO Rate controls the rate of change and LFO Depth controls how much the LFO changes the delay.

The Feedback control sends some of the delayed signal through the delay line again. When feedback is used the comb filter notches are deepened.

## **Delay**

Delay is an effect which can be used for doubling, reverb pre-delay, or echoes.

Delay Time is variable from 0-635 milliseconds (mS) and controls the time between echoes and Feedback controls how long the echoes continue sounding. “Infinite” delay effects are possible without the risk of runaway because of an automatic gain control in the feedback path.

## **Stereo Delay**

Similar to delay except that the delay line outputs a stereo signal from the mono input. The two output signals are a few milliseconds apart to create a stereo image. The delay times is variable from 0-635 mS.

## **Panning Delay**

A panning delay is similar to the normal delay lines except that the echoes bounce back and forth between the two stereo speakers.

## **Dual Tap**

These are delay lines where the signal is “tapped off” at two unevenly spaced locations. When feedback is used, multiple complex echoes are produced. The fraction in the name (i.e. 1/3, 1/4) refers to the distance between the taps.

## **Vibrato**

Basically, this is a delay line modulated by an LFO, but with none of the original signal added in. The LFO modulation creates a Doppler shift and a resultant cyclical pitch shift. The vibrato created in this manner sounds very different than vibrato created by frequency modulating the sample.

## **Distortion**

Distortion uses a technique called “soft-clipping” to create additional harmonics in the signal. As the level increases, the top of the waveform becomes somewhat squared. As the level increases further, it transforms into a true square wave.

# Effect Parameters

The Effect parameters allow you to control the most important aspects of the effect. The parameters for the “A” effects are: Decay Time, High Frequency Damping and Effect B through Effect A. The parameters for the “B” effects are: Feedback, LFO Rate and Decay Time.

The effects parameters are located in both the Master and Preset Definition menus. The settings used depend on whether you are using Preset Effects or Master Effects. In the following descriptions we will assume you are using the Preset Effects.

## Decay Time

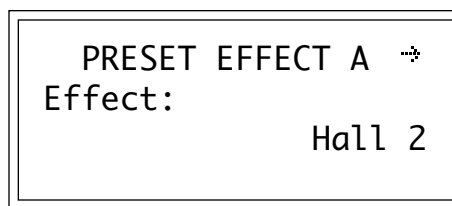
This parameter sets the length of time it will take an effect to fade away. In the case of reverb, decay time controls the room size and the reflectivity of the room. On a delay effect, decay time controls how many echoes are produced or how long the echoes will last.

■ **Note:** If the Preset Effects settings are currently selected, a pop up warning screen will inform you of this fact and ask if you wish to switch to Master effects.

1. **Press the Preset Definition key.** The LED illuminates and the Preset Definition menu appears.

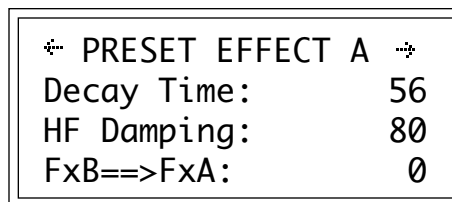
2. **Select Effects (9).** The main Effect screen appears.

3. **Select Preset Effect A (0).** The following screen appears.



4. **Select one of the effects** using the Data Entry Control or INC/DEC keys.

5. **Press the Right Cursor key.** The Effect Parameters screen appears.



6. **Adjust the Decay Time** as desired.

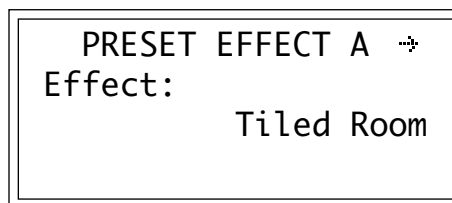
7. **Press the Preset Definition key** to return to the main menu.

# FX A Parameters

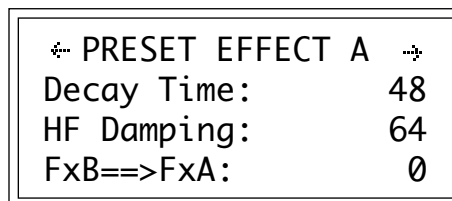
## HF Damping

High frequency energy tends to fade away first as a sound is dissipated in a room. This parameter allows you adjust the amount of high frequency damping and thus change the characteristics of the room. Rooms with smooth, hard surfaces are more reflective and have less high frequency damping. Rooms filled with sound absorbing materials such as curtains or people have more high frequency damping.

1. **Press the Preset Definition key.** The LED illuminates and the Preset Definition menu appears.
2. **Select Effects (9).** The main Effect screen will appear.
3. **Select Preset Effect A (0).** The following screen appears.



4. **Select one of the effects** using the Data Entry Control or INC/DEC keys.
5. **Press the Right Cursor key.** The Effect Parameters screen appears.



6. Move the Cursor down to the second line and **adjust the High Frequency Damping** as desired.
7. **Press the Preset Definition key** to return to the main menu.

## Effect B Into Effect A

The output of effects processor B can be routed into effects processor A. This connects the effects in series instead of their normal parallel configuration. Two effects connected in a series sound very different than the same two effects in parallel. For example, a chorus patched through reverb can turn a bland string section into a lush wall of sound. The B→A amount can also be controlled for even more flexibility.

### ► To Send the Output of Effect B through Effect A:

In this example, 100% of Effect B will be sent into Effect A.

1. **Press the Preset Definition key.** The LED illuminates and the Master screen appears.
2. **Select the Effects submenu (4).** The Effects menu will appear.
3. **Select Master Effects A (0).**

4. **Select an Effect** using the Data Entry Control or INC/DEC keys. Do not use the “Master Effects” setting as this will cause the Master effects settings to be used.

PRESET EFFECT A ↕

Effect:

Room 1

5. Press the Right Cursor key to go to the second screen.

6. Cursor down to the third line of the display and **set the FxB->FxA amount to 127.**

↕ PRESET EFFECT A ↕

Decay Time: 40

HF Damping: 96

FxB==>FxA: 127

7. Press the Right Cursor key **again** to select the Send Amount screen.

8. **Turn the Send Amounts down to zero** since we only want to hear the two effects in series.

↕ PRESET EFFECT A

Sends:

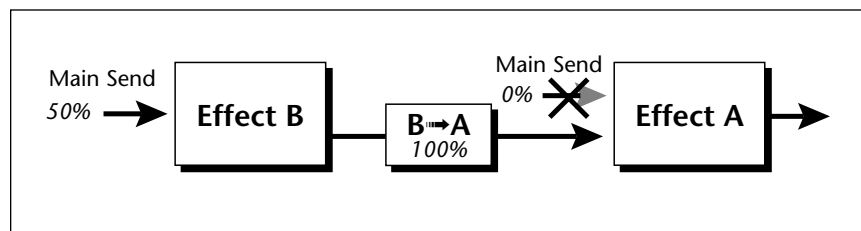
Main: 0%	Sub2: 0%
Sub1: 0%	Sub3: 0%

9. Press the ESCAPE key to return to the Effects submenu.

10. Press the Right Cursor key to select Master Effect B.

11. Select an effect as before, then adjust the Main FX A Send percentage as desired.

■ **Note:** Because the amounts are Sends, we want to open the Main Send to Effect B, turn B→A up full and turn the Main Send to Effect A down to zero. This sends ALL of Effect B through Effect A.



12. **Play the keyboard** and you should hear the B Effect running through Effect A. This patch is shown in the illustration above.

# FX B

## Parameters

### Feedback Amount

The Chorus and Flange effects have a controllable feedback loop after the delay element. Feeding back a small amount of the signal intensifies the effect by creating multiple cancellations or images.

1. **Press the Preset Definition key.** The LED illuminates and the Preset Definition menu appears.
2. **Select Effects (9).** The main Effect screen appears.
3. **Select Preset Effect B (1).** The following screen appears.

PRESET EFFECT B	→
Effect:	Flange 1

4. **Select one of the effects** using the Data Entry Control or INC/DEC keys.
5. **Press the Right Cursor key.** The Effect Parameters screen appears.

← PRESET EFFECT B	→
Feedback:	88
LFO Rate:	3
Delay Time:	---

6. Move the Cursor down to the second line and **adjust the Feedback** as desired.
7. **Press the Preset Definition key** to return to the main menu.

### LFO Rate

Chorus and Flange effects use a Low Frequency Oscillator (LFO) to animate the effect. An LFO applied to a chorus effect creates the slight changes necessary for a realistic choral effect. Applied to a flanger, the LFO moves the comb filter notches and adds animation to the sound.

1. **Press the Preset Definition key.** The LED illuminates and the Preset Definition menu appears.
2. **Select Effects (9).** The main Effect screen appears.
3. **Select Preset Effect B (1).** The following screen appears.

PRESET EFFECT B	→
Effect:	Symphonic

4. **Select one of the effects** using the data entry control or INC/DEC keys.
5. **Press the Right Cursor key.** The Effect Parameters screen appears.

PRESET EFFECT B	
Feedback:	48
LFO Rate:	24
Delay Time:	---

6. Move the Cursor down to the third line and **adjust the LFO Rate** as desired.
7. **Press the Preset Definition key** to return to the main menu.

## Delay Time

Flanging, chorus and echoes are all based on a delay line where the signal is delayed by some time period and mixed back together with it's un-delayed signal. This parameter varies the length of the delay or "how much time" passes before you hear the delayed signal. On some effects, this parameter is not adjustable, indicated by a dash in the field.

1. **Press the Preset Definition key.** The LED illuminates and the Preset Definition menu appears.
2. **Select Effects (9).** The main Effect screen appears.
3. **Select Preset Effect B (1).** The following screen appears.

PRESET EFFECT B	
Effect:	
	Delay Stereo 2

4. **Select one of the effects** using the Data Entry Control or INC/DEC keys.
5. **Press the Right Cursor key.** The Effect Parameters screen appears.

PRESET EFFECT B	
Feedback:	32
LFO Rate:	0
Delay Time:	400ms

6. Move the Cursor down to the third line and **adjust the Delay Time** as desired.
7. **Press the Preset Definition key** to return to the main menu.

## FX Amounts

The Effects Amount controls the percentage of effected (wet) signal to un-effected (dry) signal. This function would be analogous to the effects return on a mixing console. The effects amount for each of the four stereo submix outputs can be individually controlled.

1. **Press the Preset Definition key.** The LED will illuminate and the Preset Definition menu will appear.
2. **Select Effects (9).** The main Effect screen will appear.
3. **Select Preset Effect A or B** as desired (0 or 1).
4. **Press the Right Cursor key twice** to access the Sends screen. The Effect Send screen will appear..

⚙ PRESET EFFECT B			
Sends:			
Main:	10%	Sub1:	30%
Sub2:	20%	Sub3:	40%

5. **Adjust the Effect Sends** as desired.
6. **Press the Preset Definition key** to return to the main menu.

# Using SCSI

SCSI (pronounced skuzzy) stands for Small Computer System Interface. SCSI is an industry standard hardware and software specification that allows high-speed data transfers between different pieces of equipment. SCSI devices can include hard disks, tape drives, optical disks and other types of digital equipment.

## Why Use SCSI?

- **SCSI is fast!** SCSI is a parallel interface which transmits eight bits of information at a time at high speed over the SCSI cable. MIDI, in comparison, is a serial interface which can only send one bit of information at a time over its line.
- **Compatibility:** Since SCSI is an industry standard, equipment from many different manufacturers can be linked to work together.
- **Expandability:** Up to eight SCSI devices can be linked together (the ESI counts as one SCSI device on the chain).

★ **Tip:** Use the "Mount Drives" utility (Master/Global, Disk Utilities, 1) whenever an external SCSI device does not appear in the list of available devices.

## The SCSI Bus

You may have noticed that the rear panel of most external storage devices have two SCSI connectors. This is because SCSI devices are connected together in a chain arrangement. The wires that connect the different pieces of equipment are called the SCSI bus.

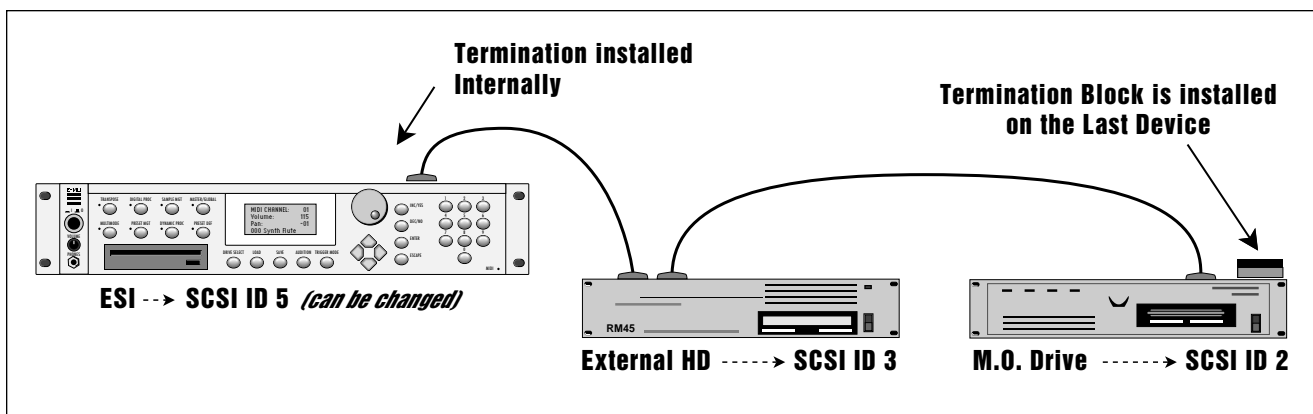
## ID Numbers

Each device on the SCSI bus has its own ID number so that it can distinguish its data from data meant for another device. If data is being saved to a device with ID-2 for instance, all the other devices on the SCSI bus will ignore that data. If two devices have the same ID number, the system will not work. Each device must have its own unique ID number.

! **Caution:** Make sure that no two devices have the same ID number since this can corrupt the startup directories of the Macintosh or the ESI.

The SCSI ID number of the Macintosh is fixed at ID-7 and cannot be changed. The SCSI ID numbers of most other devices can be changed.

Many SCSI devices have hardware defined ID numbers, which means that they have a switch on the front or the back of the unit which allows the ID number to be easily identified and changed.





The following is a list of the default SCSI ID numbers:

ID - 7 (fixed)	Macintosh
ID - 6	Unassigned
ID - 5	ESI (this number can be changed)
ID - 4	Unassigned
ID - 3	Unassigned
ID - 2	Internal Iomega 100MB Zip Drive (if installed)
ID - 1	Unassigned
ID - 0	Internal Macintosh HD (if installed)

## Types of SCSI Cables

There are two basic types of SCSI cables in use: DB25 and 50-pin Centronics. The two types of cable can be identified by their connectors, which are quite different. When buying SCSI extension cables, it is important to choose ones with the right type of connectors, since the two types will not interconnect without a special adapter. The type of SCSI connectors on the Macintosh are DB25 connectors. These are the type commonly found on the back of personal computers. The SCSI connector on the optional SCSI port is the 50-pin Centronics type. Use only high quality shielded cables that have all the pins connected. Many cables only have some of the pins wired.

★ **Tip:** Always use 50-pin Centronics-type cables with the ESI. These cables have much better electrical characteristics and have fewer problems. Additionally, make sure that all 50 pins of the cables are actually wired. Some SCSI cables have only half of the pins wired.

! **Caution:** Turn all devices OFF whenever you change the SCSI cable. Serious damage to the ESI may result from connecting and disconnecting SCSI cables with the power on.

In addition, devices left on when the cable is unplugged may not respond properly until powered off and on.

## Terminating SCSI Cables

The total length of the SCSI chain should not exceed 15 feet. A general rule for SCSI cables is: **The Shorter the Better!**

Terminating resistors or terminators are special resistor packs that are installed on the **first and last device in the SCSI chain**. Terminators are used to reduce line echoes or standing waves on the SCSI bus. An analogy in an audio system would be impedance matching.

Terminators can either be hidden inside a SCSI device or they can take the form of termination blocks which can simply be plugged into the SCSI port.

Terminators apply power to an array of resistors which ensure a full 5 volt swing between high and low levels on the SCSI line. The host system is required to provide **Termination Power**. Termination power has its own wire in the SCSI cable and supplies power to the termination block. On external hard disk drives, SCSI terminator power is almost always turned Off and the drives are left un-terminated.

The ESI is shipped with termination power On with the termination resistors left in place. This assumes that the ESI will be placed at one end of the SCSI chain. **The ESI has an automatic system which ONLY supplies terminator power when it is NOT being supplied by another device.** Therefore, you don't need to worry about terminator power when connecting the ESI.

The more devices you have connected to SCSI and the longer your cables are, the more it becomes important to have the cables properly terminated.

★ **Tip:** You can check the "Memory Available" screen when downloading samples via SMDI to keep track of how much RAM you have left.

! **Caution:** When using Alchemy, you must add **one** to the sample number you want transferred.

! **Caution:** You cannot transfer to or from sample 000 (the clipboard).

## Using ESI and a Computer on the SCSI Bus

The ESI can now be connected to the SCSI along with another ESI an EIIIIX, or a personal computer. Multiple "Master" devices on the SCSI bus is not normally allowed by the standard SCSI protocol. This is only possible because of ESI's advanced SCSI and **SMDI** (or **SCSI Musical Data Interchange**) implementation. The ESI's SMDI implementation allows sample data to be exchanged over the SCSI bus in a way similar to the MIDI Sample Dump Standard, except **MUCH** faster.

The computer should normally be positioned at one end of the chain and the ESI at the other. The SCSI chain is properly terminated at each end by the computer and the ESI. Devices in the middle of the chain should not have termination resistors installed.

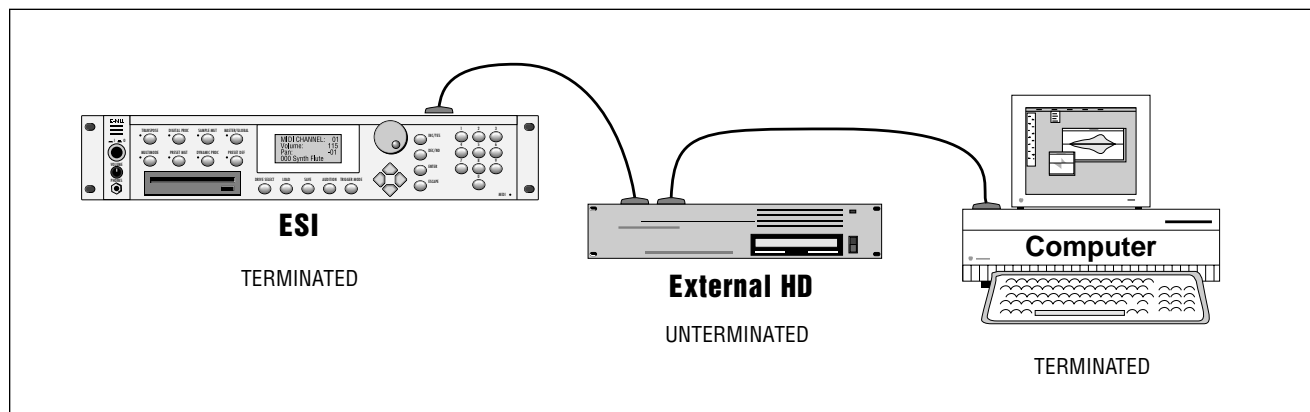
**PC Compatibles** - The ESI has been tested with IBM PC compatible computers using the Adaptec model 1542C SCSI option card. Sound files can be transferred between a PC computer and the ESI using Sonic Foundry's Sound Forge™ or other sample editing software.

**Macintosh** - Sound files can be transferred between a Macintosh computer and the ESI using Passport's Alchemy™ or other digital sample editing software. The ESI is able to access approved Macintosh internal CD-ROM drives with CD-ROMs containing ESI compatible files. Similarly, a Macintosh can access an internal ESI Zip drive with a cartridge that has been formatted for the Macintosh.

- The ESI is strictly a "Slave Device" when using SMDI, meaning that it CANNOT initiate SMDI transfers. This should not normally present a problem however, since a computer based editor will always have a facility for initiating SMDI transfers.

★ **Caution:** A sample transferred into the ESI is automatically placed across the entire keyboard, overwriting the current preset's sample placement. Create a new empty preset before downloading via SMDI to avoid trashing the current preset.

- Besides the raw sample data, additional information about the sample is included in a SMDI file.
  - Sample name and number (samples 1-999)
  - Multichannel/Stereo/Mono status
  - Sample length plus one set of loop begin/end points
  - Sample rate, pitch and bit resolution
  - Sample key placement (an E-mu extension to SMDI)

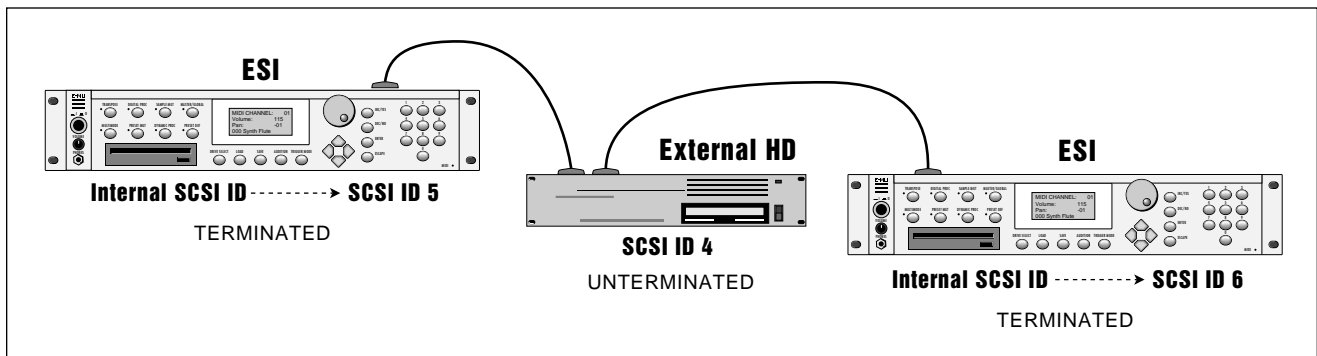


## Using Multiple Samplers on the SCSI Bus

ESI version 2.0 software adds arbitration to the SCSI protocol so that multiple “Master” devices can share the bus without a system crash. Two ESI's (an EIIIIX, an e-64, or an E-IV) can share the same sound library, without having to duplicate the storage media.

When connecting your system for use with multiple ESI's, be sure to observe the following rules:

- **NEVER try to write to two devices at the same time or write to one device while loading from another.** Designate one unit as the Master which is the *ONLY* unit allowed to write. Turn Undo Off on all units except the Master. Simultaneous reads are OK.
- Keep SCSI cable lengths as short as possible (Under 12 feet total).
- Make sure that each SCSI device has its own unique ID number. (Remember that the ESI and EIIIIX each use up an ID number in addition to their internal hard disks.)
- Make sure the system is correctly terminated - The ESI's should normally be on the ends of the SCSI chain.



## SCSI Problems

In diagnosing SCSI problems the first rule is: Don't panic, *Experiment!* If you have several SCSI devices hooked up, try disconnecting one of the devices and maybe change the order of the units on the line. The following checklist may help you find the solution to your unique SCSI setup.

**! Caution:** Use the *Install File System* option #8 (see *Master, Format*) when formatting **lomega Zip** drive cartridges. The normal format procedure will not work and corrupts the disk.

1. **Make sure the drive is mounted.** Mount the drives using the Mount Drive utility (Master/Global, Disk Utilities, 1).
2. **Check the SCSI ID numbers.** No two numbers can be the same.
3. **Read the documentation again.** Learn all you can about your peripheral devices. The answer may be right in front of you.
4. **Play with the order in which devices are powered up.** Normally the “Big Bang” method works best (turn everything on at once), but another order may work better in your unique system.
5. **Always suspect the cable when something doesn't work on the SCSI bus.** Remember: The shorter the cables are, the better.
6. **Simplify the situation.** Disconnect one or more drives until you get the system to work.
7. **Are the ends of the SCSI bus terminated?**
8. **If all else fails, call us** at 408-438-1921. Telephone support hours are 9:00 to 5:00 PST, Monday through Friday.

# Disk Drive Compatibility Chart

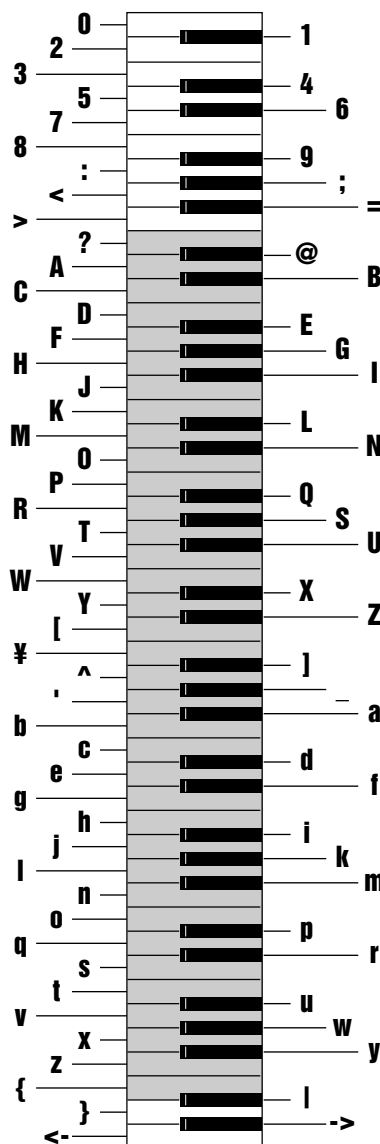
This chart lists the hard disk drives, CD-ROM Drives and Magneto-Optical drives that are compatible for use with the ESI (as of 5-1-95). A current list of compatible disk drives is available on E-mu's web site: (<http://www.emu.com>). If a drive you wish to use is not listed, adhere to the rule, "Try before you buy!". Be sure to check the revision number on the drive in question to make sure it will work with the ESI. A listed drive with a lower revision number than the one shown may not work.

Type	Brand	Model No.	Rev.	Capacity	Type	Brand	Model No.	Rev.	Capacity
HD	Conner	CFA270S	909	270 MB	CDROM	Chinon	CDS-525	V11	650 MB
HD	Conner	CFP1060S	2035	1 GB	CDROM	Matshita	CR 8004		650 MB
HD	Conner	CFP1080S	3939	1 GB	CDROM	Matshita	CR 8005	2.0d	650 MB
HD	Conner	CFP2105S	2847	2.1 GB	CDROM	Plextor	6Plex PX6XCS	1	650 MB
HD	Conner	CFP4207S	2847	4.1 GB	CDROM	Sony	CDU-541		650 MB
HD	DEC	DSP3107LS	X441	1 GB	CDROM	Sony	CDU-8003A	1.9a	650 MB
HD	Fujitsu	M1606S-5	6218	1 GB	CDROM	Toshiba	XM-3101BME		650 MB
HD	Fujitsu	M26848-512		500 MB	CDROM	Toshiba	XM-3501TA	3054	650 MB
HD	Fujitsu	M2915S-512	127	2 GB	CDROM	Toshiba	XM-5201TA	3254	650 MB
HD	IBM	94G3187		1 GB	CDROM	Toshiba	XM-5401TA	3115	650 MB
HD	IBM	DPES 31080 lt	S31K	1 GB	CDROM	Toshiba	XM3601		650 MB
HD	Micropolis	1936-21MZ1007503	MV10.	3.6 GB	CDROM	Toshiba	XM3701TA		650 MB
HD	Micropolis	1991-27SC21020AV	SN05	9 GB	MO	Fujitsu	M2512A		230 MB
HD	Micropolis	2217-15MQ1005101	vx0d	1.7 GB	MO	IBM	0632CHX !F		1.3 GB
HD	Micropolis	4110-09N		1.05 GB	MO	Maxoptix	T3-1304	1.1C	2.1 GB
HD	Quantum	Capela VP32210		2.1 GB	MO	Most	RMD-5200-S	136	250 MB
HD	Quantum	ELS127S	4302	127 MB	MO	Pinnacle	OHD-1300		1.3 GB
HD	Quantum	Empire 1080S	1220	1 GB	MO	Pinnacle	Tahoe 230		230 MB
HD	Quantum	Fireball(SCAM OFF)	1Q09	1 GB	MO	Ricoh	RO-5031E	AO	600 MB
HD	Quantum	Lightning 365		365 MB	MO	Sony	SMO-C501-00	2.07	600 MB
HD	Quantum	Lightning 730S	241E	730 MB	MO	Sony	SMO-C501-00E		600 MB
HD	Quantum	LP240S		240 MB	MO	Sony	SMO-F521-00		1/3 GB
HD	Quantum	LPS270S	5909	270 MB					
HD	Quantum	LPS525S		525 MB					
HD	Quantum	Maverick 540S	905	540 MB					
HD	Quantum	PD1225S		1.2 GB					
HD	Quantum	TRB850S	403	850 MB					
HD	Quantum	XP34301 Grand Prix		4.1 GB					
HD	Seagate	ST-11200N		1 GB					
HD	Seagate	ST15150N	11	4.1 GB					
HD	Seagate	ST31230N	12	1 GB					
HD	Seagate	ST32430N	300	2 GB					
HD	Seagate	ST32550N	16	2 GB					
HD	Seagate	ST410800N	18	9 GB					
HD	Seagate	ST5660N	483	520 MB					
HD RM	Iomega	Zip 100	L.27	100 MB					
HD RM	Iomega	Jaz 1 GB	G.54	1 GB					
HD RM	Syquest	SQ3105		105 MB					
HD RM	Syquest	SQ3270S	1_14	270 MB					
HD RM	Syquest	SQ5110	N5A	88 MB					
HD RM	Syquest	SQ5200C	AOL	200 MB					
HD RM	Syquest	SQ555		44 MB					

If a drive you wish to use is not listed on this chart, be sure to adhere to the rule, "Try Before You Buy". The chart only represents those drives which have been tested by E-mu Systems, Inc. Many others will also work.

# Keyboard Character Map

★ **Tip:** The shaded area represents a standard five octave keyboard range.



*AVAILABLE CHARACTERS. Banks, drives, samples and presets can be named or renamed using these characters. Select the characters using the ten key pad, data entry knob, and keyboard. You can also use the up cursor to insert spaces and the down cursor to delete spaces. There are also additional characters (not shown above) which are only available through use of the data entry knob or increment/decrement buttons.*

# ESI Menu Map

DYNAMIC PROCESSING
0. Select Zone
1. Analog Setup
2. VCA
3. VCF
4. LFO
5. Auxiliary Envelope
6. Velocity To
7. Keyboard Mode
8. Realtime Control En
9. Output Channels

PRESET DEFINITION
0. Realtime Controls
1. Load Zone
2. Edit Assignment
3. Erase Zone
4. Copy Zone
5. Crossfade/Switch
6. Vel Switch/Link
7. Pitch Bend Range
8. Portamento/Attack

DIGITAL PROCESSING
0. Select Sample
1. Setup
2. Loop
3. Truncation
4. Copy Section
5. Cut Section
6. Paste Section
7. Digital Tools I
8. Digital Tools II
9. Undo

PRESET MANAGEMENT
1. Load Preset
2. Rename Preset
3. Erase Preset
4. Copy Preset
5. Create Preset
6. Preset Size
7. Merge Presets

SAMPLE MANAGEMENT
0. Select Sample
1. Load Sample
2. Rename Sample
3. Erase Sample
4. Copy Sample
5. Sample Setup
6. Place Sample
7. Arm Sampling
8. Force Sampling
9. MIDI Sample Dump

MASTER/ GLOBAL
1. Master Tune
2. Rename Bank
3. Erase Bank
4. Dynamic Allocation
5. Save as EIII Bank
6. Memory Available
7. Disk Utilities
8. Special
9. MIDI
0. Import Options

Disk Utilities
0. SCSI Setup
1. Mount Drives
2. Rename Disk Bank
3. Erase Disk Bank
4. Lock Bank & Drive
5. Disk Status
6. Format Disk
7. Backup & Restore

Special
1. Recalibrate
2. Contrast
3. Headroom
4. Output Format
5. Software Version
6. View Channels
7. Trigger Buttons
8. RAM Test

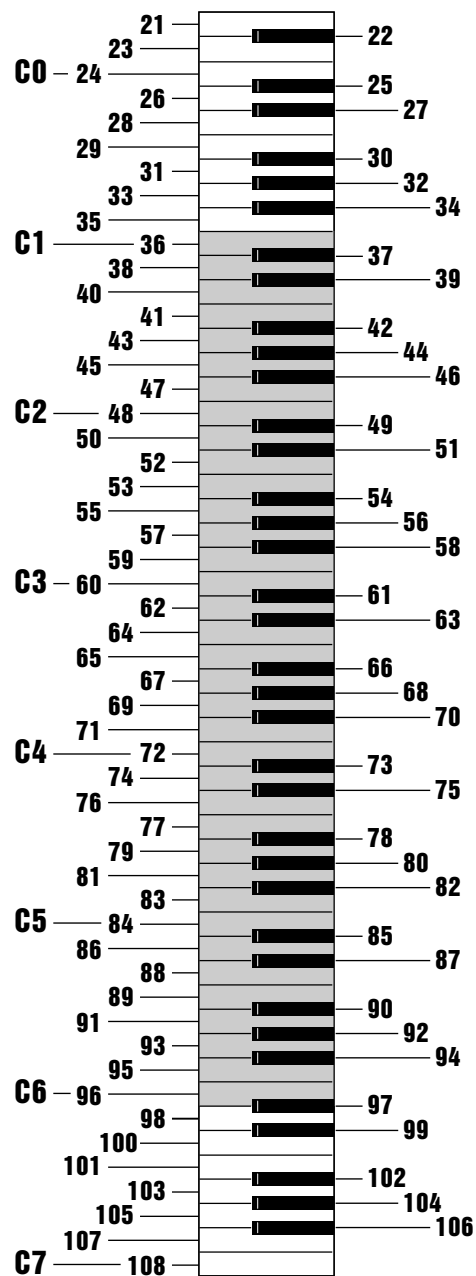
MIDI
1. MIDI Mix
2. MIDI Globals
3. MIDI Load Bank
4. MIDI Volume Pedal
5. MIDI Volume & Pan
6. Multimode Enable

Basic Channel
MIDI Mode
Cont. Controllers

Digital Tools I
0. Sample Calculator
1. Taper
2. Gain Change
3. Reverse Section
4. Stereo <-> Mono
5. Left <-> Right
6. DC Filter
7. Sample Integrity

Digital Tools II
0. Sample Rate Cvt
1. Digital Tuning
2. Digital Compressor
3. Parametric EQ
4. Time Compression
5. Pitch Change
6. Transform Mult.
7. Doppler/Pan

# MIDI Key Numbers



MIDI KEY NUMBERS. The shaded area represents a standard five octave keyboard range.

# MIDI Implementation Chart

Function...		Transmitted	Recognized	Remarks
<b>Basic Channel</b>	<b>Default Changed</b>	No No	1 1-16	<b>Memorized</b>
<b>Mode</b>	<b>Default Messages</b>	No	No	
<b>Note Number</b>	<b>True Voice</b>	No No	21-108 (A-1 thru C7) 21-108 (A-1 thru C7)	
<b>Velocity</b>	<b>Note ON Note OFF</b>	No No	Yes v=1-127 No	
<b>After Touch</b>	<b>Keys Channels</b>	No No	No Yes	
<b>Pitch Bender</b>		No	Yes	
<b>Control Change</b>		No	Yes	0-31    64-79
<b>Bank Select</b>		No	Yes	<i>See note below</i>
<b>Program Change</b>	<b>True Number</b>	No No	Yes 0-127 Yes 0-127	
<b>All Sound Off</b>		No	Yes	
<b>All Notes Off</b>		No	Yes	
<b>Reset All Controllers</b>		No	Yes	
<b>System Exclusive</b>		No	No	
<b>MIDI Sample Dump</b>		Yes	Yes	Also xmit/recv SMDI
<b>System Common</b>	<b>:Song Pos :Song Sel :Tune</b>	No No No	No No No	
<b>System Real Time</b>	<b>:Clock :Commands</b>	No No	No No	
<b>Aux Messages</b>	<b>:Local On/Off :Active Sense :Reset</b>	No No No	No No No	
<b>Notes:</b> Pan    0=hard left    127=hard right  <b>Bank Select:</b> Bn 00 00 20 bb Cn pp    (n= MIDI channel, bb = bank#, pp = program in bank)				



# Specifications

■ **Note:** Use only 72-pin, low profile SIMMs in the ESI (4 MB, 16 MB or 64 MB). If different size SIMMs are used, the larger SIMM **MUST** be installed towards the rear of the unit (socket B). The smaller SIMM will be divided in half (you get only half the memory of the smaller SIMM).

Because there are lethal voltages present inside the ESI enclosure, additional sample memory should be installed only by your E-mu dealer or a qualified technician.

Number of Voices .....	64 mono, 32 stereo
Memory .....	4 MB standard, 128 MB maximum
Outputs .....	4 individual 1/4" unbalanced, polyphonic 6 additional with Turbo Option
Output Level .....	-10 dbm nominal, max 6 volts p-p
Output Impedance .....	1K $\Omega$
Data Encoding .....	Input: 16 bit Output: 18 bit
Digital I/O (Turbo Opt.) .	S/PDIF format, RCA connectors
SCSI .....	50 pin connector, advanced links
Sample Rates .....	44.1 kHz, 22.05 kHz
Frequency Response .....	20 Hz to 20 kHz at 44.1 kHz sample rate
THD + N .....	Less than 0.05%
THD .....	Less than 0.03%
Signal/Quiescent Noise ...	Better than 100 dB
Stereo Phase .....	Phase Coherent $\pm 1^\circ$ at 1 kHz
Weight .....	10 lbs (4.5 kg)
Dimensions .....	<b>W</b> - 17.125" (43.5cm), <b>H</b> - 3.5" (8.9cm), <b>L</b> - 9.75" (23.7cm)
Power .....	100-240 VAC, 50/60 Hz, auto-switching supply, less than 30 watts consumption

# Error Codes

This section explains some of the error codes you might possibly encounter while working with the ESI. This listing covers only the error codes whose meaning might be confusing or unclear. Most of the error codes explanations in the ESI are readily apparent.

## **Drive Not Formatted!**

Trying to access a hard drive that has not been formatted for the ESI.

## **FD Data Lost Error!**

Bad disk or floppy drive.

## **FD Data CRC Error!**

Bad disk or floppy drive.

## **FD Data Save Error!**

Bad disk or floppy drive.

## **Floppy Disk Error!**

Bad disk or floppy drive.

## **Floppy Seek Error!**

Bad disk or floppy drive.

## **Insert Unlocked FD!**

Floppy disk is locked.

## **Loop Start (End) Zero!**

Sample header is corrupted and needs to be repaired using the "Fix Samples" function.

★ **Tip:** If the Error Code has the word "Zero" anywhere in it, use the "Fix Samples" utility to repair it.

## **Mono Start (End) Zero!**

Sample header is corrupted and needs to be repaired using the "Fix Samples" function.

## **No Samples in Preset!**

No samples mapped to any zones.

## **No Samples Exist!**

No samples in bank.

## **No Presets Exist!**

No presets in bank.

## **No Valid Drives!**

1) Conflicting SCSI devices. 2) No SCSI termination at each SCSI cable end. 3) SCSI cable too long. 4) Reboot entire system after changing SCSI cables or ID numbers.

**Not Enough Memory**

Trying to load in a bank that is too large.

**Preset Memory Full!**

Not enough preset memory for the operation.

**Sample Memory Full!**

Not enough sample memory for the operation.

**Sample Overload!**

A/D converter headroom has been exceeded.

**SCSI Bank Locked!**

Trying to write to a locked bank.

**SCSI Hardware Error!**

No HD, Cable, No power, Wrong SCSI ID number.

**SCSI Media Error!**

Media defect on the hard disk.

**Wrong Floppy Number!**

Wrong disk in loading sequence.

**Wrong Floppy Type!**

Sound disk <-> Software Disk.

# Troubleshooting

This section explains some of the problems you might possibly encounter while working with the ESI. Before assuming that your ESI is faulty, check the following list which details the corrective action you can take yourself without having to call a service center. If you have any doubts or questions, get in touch with your nearest E-mu dealer or call the E-mu customer service department at (408) 438-1921, between the hours of 8:30 am and 5:30 pm Monday through Friday.

## The ESI seems dead

If the ESI seems dead, first disconnect any external SCSI devices and try again.

**Problem:** The unit is completely dead. No lights no sound.

**Cause:** The power supply may be damaged.

**Solution:** Consult your dealer or authorized E-mu service center.

## Audio Problems

**Problem:** The ESI powers up normally, but does not make any sound.

**Cause:** Proper audio connections may not have been made.

**Solution:** Try listening directly to the stereo output using headphones to verify that the ESI is at fault. Check that proper audio connections have been made.

**Problem:** The ESI powers up normally, but does not make any sound.

**Cause:** The front panel volume control may need recalibration.

**Solution:** Recalibrate the volume control using the Recalibrate function located under Special in the Master/Global module.

**Problem:** The ESI powers up normally, but does not make any sound.

**Cause:** Proper MIDI connections may not have been made.

**Solution:** Try using the trigger buttons to play the ESI. Check MIDI activity LED. Verify that proper MIDI connections have been made.

**Problem:** The digital audio output level is too low when a single channel is played.

**Cause:** Because of the nature of sampling instruments, each additional channel played adds +3 dB to the headroom requirement. A single channel on the ESI comes out about -6 dB down.

**Solution:** Make sure the Master Volume control is at maximum. Set the headroom adjustment (Master/Global, Special, 3) to 0 dB. All volume adjustments in the ESI affect the digital output level.

- Problem:** Certain sounds do not play polyphonically.  
**Cause:** The zone may be in solo mode, or only assigned to one output channel.  
**Solution:** Disable solo mode and check output channel assignment.
- Problem:** Certain sounds cut off prematurely.  
**Cause:** More than 64 mono, or 32 stereo channels are playing. Or, if specific output channels are assigned, two sounds may be “ripping each other off”.  
**Solution:** Check output channel assignment (Dynamic Processing, 9). Try turning Dynamic Allocation (Master/Global, 4) on. Set release times on VCA to a shorter setting.
- Problem:** Stereo samples are only heard out of one side.  
**Cause:** Disable side function is turned on.  
**Solution:** Turn disable side function (Dynamic Processing, 1) off in the zone.
- Problem:** Audible hum in system when ESI is connected.  
**Cause:** There is a ground loop present in the audio system.  
**Solution:** Find and eliminate the ground loop.

## Functional Problems

- Problem:** Added RAM SIMMs don't fit with the Turbo Option Kit..  
**Cause:** Using high-profile SIMMs.  
**Solution:** Use only low-profile SIMMs when adding additional memory to your system.
- Problem:** Front panel buttons double trigger.  
**Cause:** Buttons need cleaning.  
**Solution:** Consult your dealer or authorized E-mu service center.
- Problem:** Looping only works while in the Digital Processing module.  
**Cause:** Disable Loop function is turned on.  
**Solution:** Turn disable loop function (Dynamic Processing, 1. Setup) off in the zone.
- Problem:** Controllers (wheels, pedal, pressure) do not work at all.  
**Cause:** Controllers are not assigned in the preset.  
**Solution:** Assign the controllers to the desired destinations (Preset Definition, 0. Realtime Controls).

**Problem:** Controllers (wheels, pedal, pressure) do not work at all and are assigned correctly.

**Cause:** Controllers are disabled in Realtime Control Enable section.

**Solution:** Enable realtime controllers for the selected zone (Dynamic Processing, 8. Realtime Control Enable).

**Problem:** The footpedal or LFO has little or no effect when assigned to VCA.

**Cause:** The initial VCA level is set at 100%.

**Solution:** Lower the initial VCA setting as desired.

## MIDI Problems

Since MIDI setups can be quite complex, make sure that you have all the MIDI parameters (on the ESI and external MIDI devices) set correctly before you become daunted. On the ESI, MIDI parameters are located in the Master/Global module, (9. MIDI, 2. MIDI Globals).

**Problem:** The ESI does not respond to the MIDI parameters as programmed.

**Cause:** MIDI Globals are turned off.

**Solution:** Turn on MIDI Globals (Master/Global, 9. MIDI, 2. MIDI Globals).

**Problem:** The ESI does not respond to the modulation wheels or pressure from an external MIDI controller.

**Cause:** MIDI controllers are not assigned in the MIDI Globals or Realtime Control submodules.

**Solution:** Assign proper controller channel numbers to Left Wheel, Right Wheel, Pedal, Pressure, MIDI A and B, then assign MIDI A and B to desired destinations (Master/Global, 9. MIDI, 2. MIDI Globals). Check Realtime Control routings (Preset Definition, 0. Realtime Controls).

## Hard Disk Problems

**Problem:** The ESI does not recognize an external hard disk or other SCSI device.

**Cause:** The external hard disk or SCSI device was powered-up after the ESI.

**Solution:** Mount the drives using the Mount Drive function located under Disk Utilities, 1 in the Master/Global module.

- Problem:** The ESI display reads “Disk Not Formatted” and an external SCSI device is connected.
- Cause:** The hard disk may have crashed, the SCSI cable may be too long or two devices may have the same SCSI ID number.
- Solution:** Try using a shorter SCSI cable (maximum cable length is about 12 feet) and check that no two devices have the same ID number.
- 
- Problem:** The ESI display reads “SCSI Error!”. There is an external device connected to SCSI.
- Cause:** Two SCSI devices may have the same ID number or an external SCSI device does not have power.
- Solution:** Make sure all external SCSI devices have power. Change one of the SCSI ID numbers. If this fails, try another SCSI cable or another SCSI device if possible.
- 
- Problem:** Data from an external SCSI device is being scrambled or lost.
- Cause:** The SCSI cable may be too long, or the device may not be terminated correctly.
- Solution:** Try using a shorter SCSI cable (maximum cable length is about 12 feet) or check that the last device in the SCSI chain has termination resistors installed. See “Using SCSI” in this manual.
- 
- Problem:** Iomega Zip cartridges are not being correctly formatted.
- Cause:** Zip drives have a unique type of formatting.
- Solution:** Use the Install File System option #8 (*see Master, Format*) when formatting Iomega Zip drive cartridges. The normal ESI format procedure will not work and corrupts the disk's low level formatting.

# Warranty

*Please read this warranty, as it gives you specific legal rights.*

## **Length of Warranty**

Your ESI warranty covers all defects in materials and workmanship for a period of one year (90 days for disk drives) from the date of purchase by the original owner, provided that the Warranty Registration Card is filled out and returned to E-mu Systems within 14 days from the date of purchase. Cases may arise where E-mu's Service Department or one of E-mu's authorized service centers will ask for a copy of your sales receipt to facilitate warranty service. Please keep your purchase receipt in a safe place.

## **E-mu Systems does not cover:**

Damages due to improper or inadequate maintenance, accident, abuse, misuse, alteration, unauthorized repairs, tampering, or failure to follow normal operating procedures as outlined in the owner's manual. Deterioration or damage of the cabinet. • Damages occurring during any shipment of the ESI for any reason. • An ESI that has in any way been modified by anyone other than E-mu Systems, Inc.

## **Limitation of Implied Warranties**

No warranty is expressed or implied. E-mu Systems specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

## **Exclusion of Certain Damages**

E-mu Systems' liability for an ESI found defective is limited to repair or replacement of the unit at E-mu's option. In no event shall E-mu Systems Inc. be liable for damages based on inconvenience, whether incidental or consequential, loss of use of the unit, loss of time, interrupted operation or commercial loss, or any other consequential damages.

Some states do not allow limitation of the duration of implied warranties or the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

## **How To Obtain Warranty Service**

All E-mu products are manufactured with the highest standards of quality. If you find that your instrument does require service, it may be done by any authorized E-mu service center. If you are unable to locate a service center in your area, please contact E-mu Systems Service Department at (408) 438-1921. They will either refer you to an authorized service center or ask that you return your ESI to the factory. When returning an ESI to the factory, you will be issued a Return Merchandise Authorization number (RMA). Please label all cartons, shipping documents and correspondence with this number. E-mu suggests you carefully and securely pack your ESI for return to the factory. *(Do not send the power cord or operation manual.)* Mark the outside of the shipping carton clearly with your RMA number. Send to E-mu Systems, Inc. 1600 Green Hills Road, Scotts Valley, California, 95066. You must pre-pay shipping charges to E-mu Systems. E-mu will pay return shipping fees. You will be responsible for any damage or loss sustained during shipment in any direction

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## E-MU SYSTEMS INC. WARRANTY REGISTRATION

Please take the time to fill out this warranty card so that we can keep you informed of upgrades and updates for your new E-mu System's product. In addition, if you should require technical support or warranty service in the future we will require that your product be registered in our system. You can also register on-line at [www.emu.com](http://www.emu.com), by phone at (408) 438-1921 or by fax at (408) 439-0389. We look forward to hearing from you today!!

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Model Number:  Serial Number:

DATE PURCHASED: \_\_\_\_\_ DEALER'S NAME: \_\_\_\_\_

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2. What influenced your decision to buy this particular E-mu product (i.e. recommendation, price, features, sounds, etc.)?
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4. What are the most important features to you on this product? The least important?
5. Briefly describe your studio or setup. Do you own a computer that you will be using with this piece of gear, if so, what brand?
6. We value your input very highly. Do you have any suggestions on how we can make this product better? Is there anything else that you require from E-mu Systems?

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