

INTRODUCTION

WHAT'S AN EMAX II? 2

INSTANT GRATIFICATION 3

CONNECTION INSTRUCTIONS 5

CONNECTION DIAGRAM 6

INTRODUCTION

WHAT'S AN EMAX II?

Emax II is a responsive, low cost, surprisingly easy-to-use musical instrument with staggering creative possibilities. It's also a composer's personal orchestra, a recording studio's chance to have hundreds of acoustic and electronic instruments "on call" at any one time, a university's research tool...but most of all, it provides the means for some truly special musical experiences. To give you a better idea of its capabilities, here are just a few of Emax II's highlights:

In addition to synthesizing sounds, Emax II digitally records ("samples") real-world sounds into its memory with 16-bit, CD quality in either mono or stereo (optional). If you want Emax to sound like a piano, sample a piano; if you want it to sound like a barking dog, sample a dog. Pre-sampled sounds can also be loaded into Emax II's memory from disks. Emax II also contains Spectrum Synthesis, a powerful additive synthesizer.

These sounds may then be modified with Emax II's synthesizer processors and/or state-of-the-art digital processors. The synthesizer-type processors include:

- Dynamic digital lowpass filters (VCF) with AHDSR envelope generators
- Digital amplifiers (VCA) with AHDSR envelope generators
- LFOs with adjustable rate, delay, and speed variation
- Two programmable wheels for real-time control over pitch, filter cutoff, AHDSR attack rate, level, LFO modulation index, etc.
- Two programmable footswitches for real-time control over sustain, release, sustenuto, "patch" change, and sequencer start/stop
- Velocity sensitive keyboard, where keyboard dynamics can control any or all of the following: VCA level, VCA attack, VCF cutoff, VCF attack, and VCF Q.

The keyboard can play up to sixteen notes simultaneously; however, *Emax II can chorus its voices or play in stereo with no loss of polyphony!* Note that like standard analog synthesizers, there is a complete set of modifiers for each note. Therefore, when we refer to the "filter", "LFO" or "VCA," we are really talking about *sixteen* filters, LFOs and VCAs.

Digital processing techniques include:

- Truncation (shortening the beginning and/or the end of the sample)
- Looping the sample (or any portion thereof)
- "Crossfade" looping for smooth, clean loops
- Digitally combining (mixing) two samples
- Sound reversal, as well as sample rate conversion and pitch conversion
- Transform Multiplication™, a powerful new DSP effect
- Splicing two or more samples together (imagine a piano that turns into a voice, that turns into a seagull...)
- Advanced split capabilities and the ability to layer four presets on a single key
- Easy doubling, plus velocity-controlled crossfading and switching between samples
- Individual tuning and attenuation for each sample
- Ultra-flexible, programmable arpeggiation
- 16 track "scratchpad" sequencer

Sounds can be stored on Emax II's built-in hard disk drive, on an external hard disk drive, or on commonly available double-sided, double-density (DSDD) 3.5 inch floppy diskettes (as used with many personal computers). Thanks to sophisticated disk management techniques, it's easy to save, organize, retrieve, rename and catalog various sounds. Perhaps best of all, Emax II is fully compatible with Emax I disks, allowing access to the huge Emax I library already in existence.

For outside world interfacing, the built-in sequencer can sync up to a 24, 48, or 96 pulses-per-quarter note clock or MIDI sync; there's also a complete complement of MIDI functions.

Despite all this flexibility Emax II is nonetheless not that hard to learn...as you will see during the course of this manual.

SEND IN YOUR WARRANTY CARD NOW!

It is vital that you send in your warranty card so that we can notify you of enhancements, new features, and software bugs (nobody's perfect) and cures. Don't miss out: Send it in now!

INSTANT GRATIFICATION!

If you just can't wait another second before hearing the Emax II, we understand. Follow the directions below EXACTLY as given and get ready to hear some great sounds. (Incidentally, in case you make a mistake or run into problems, don't worry. This process is described in greater detail later.)

1. With the Emax II unplugged, patch the rear panel Right & Left, or Right Mono jack to the input of a high quality amplification system. You can also plug stereo headphones directly into the headphone jack.
2. Check that the rear panel voltage selector is set for the correct voltage in your part of the world.
3. Plug the Emax II line cord into an AC outlet.
4. Check that no disk is currently in the drive. If so, or if the disk drive contains cardboard packing materials, push in on the disk eject button towards the bottom of the drive, remove the disks or packing materials, and put them in a safe place.
5. Turn on power; Emax II will do a drive check for a few seconds, then the display will say "Please Insert Disk" if you do not have a hard disk or "Checking SCSI 1, then Booting from SCSI 1" if you *do* have a built-in hard disk.

If you don't have a hard disk, insert one of the diskettes that came with your Emax II into the disk drive. The Emax II will begin loading software from the disk you have placed in the drive.

SELECT DRIVE

6. Press the button labeled **DRIVE SELECT** on the front panel of Emax II. Use the data slider to select "SCSI 0: Floppy", if you want to load a floppy disk; or "SCSI 1 Conner", if you have a built-in hard disk drive. Then, press **ENTER**.

LOAD FROM FLOPPY DISK

7a. Press the **LOAD BANK** button, then simply insert a floppy disk and press **ENTER**.

LOAD FROM HARD DISK

7b. Press the **LOAD BANK** button, then select one of the sound banks using the data slider. When you find one that strikes your fancy, press **ENTER**.

8. Raise the volume slider to the up position.

9. The display will show the name of the Current Preset (we'll talk more about the Current Preset concept later). Turn up the volume control and start playing the keyboard. All right!! The display will show you the ID number (P followed by two digits) and name of the sound you are playing. These sounds are called presets, for reasons which will become clear later.

10. Use the telephone-type numeric keypad underneath the display to call up different presets. Press a two-digit number; start with 01 and play the keyboard for awhile, then press 02 and play, 03, 04, etc. At some point you will run out of factory presets, and the display will say "Empty Preset."

If you want, vary the control wheels towards the left hand side of the keyboard. They may not be active with some presets, as they perform different functions with different presets.

To load another floppy disk, press **LOAD BANK**, and the display will say:

Load All Presets
And Sequences

Insert another floppy disk, then press **ENTER**. Emax II will begin loading the new bank.

Note: Some Emax II banks require two or more floppy diskettes. In this case, simply insert the diskettes in sequential order (1, 2, 3...).

To try out presets from other factory hard disk banks, locate the **LOAD BANK** button (in the group of four buttons to the right of the numeric keypad) and press it. Use the data slider to scroll through the available hard disk banks. When you find a bank that interests you, press the flashing **ENTER** button right below it. The disk drive will start making noises, and a few seconds later you will have loaded another bunch of sounds into the Emax II.

CONNECTION INSTRUCTIONS

CONNECTION TO A MIXER

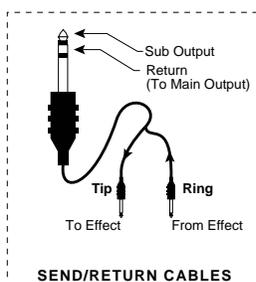
■ **STEREO:** Emax II has provisions for a variety of output connection schemes. The most common hookup will probably be for stereo operation. Once you have heard the Emax II in stereo, you will never be satisfied with mono again. Connect the left and right audio out phone jacks to the inputs of your mixer or stereo preamp. Emax II will also drive stereo headphones, which can be plugged directly into the headphone output. For maximum dynamic range, keep the front panel volume control turned up full.

■ **MONO:** If a monophonic amplifier is used, simply connect the right/mono output to the input of the amplifier. Guitar amps are not recommended because they are generally noisy and low fidelity. The output level of the Emax II is somewhere between instrument and line level. Care should be taken when connecting to an instrument amplifier so that the delicate nerve cells in your ears are not damaged.

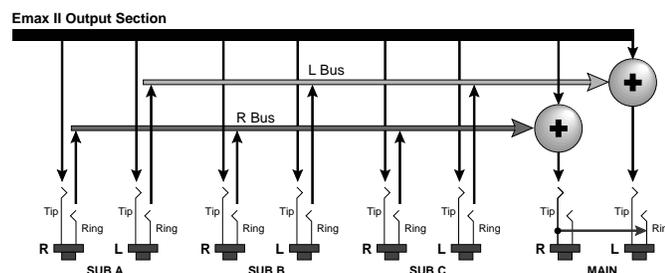
■ **SUBMIX OUTPUTS:** There may be times when different equalization or reverb settings are desired on the various instruments that have been sampled. Emax II has eight polyphonic outputs that can be used when individual processing on specific instruments is desired. Any combination of voices can be programmed to appear at any channel output. Voices are assigned to output channels using the Edit Assignment function in the Preset Definition module or in the Keyboard Mode function of the Dynamic Processing module. Each of the Sub A, Sub B, and Sub C outputs on Emax II are stereo jacks. The tip of each jack (accessed when a standard phone plug is inserted) connects to the right or left output of the group. If a stereo plug is inserted, the Ring of the stereo plug serves as a signal return, which sums into the Main outputs.

Therefore, the Sub A, B, C jacks can serve as effect sends and returns in order to further process selected voices and then return them to the main mix.

The submix send/return jacks can be used to process selected voices and return them to the main mix instead of using the effects bus on your mixing board. In a pinch, the effects returns could also be used to sum additional instruments into the main outputs of the Emax II.

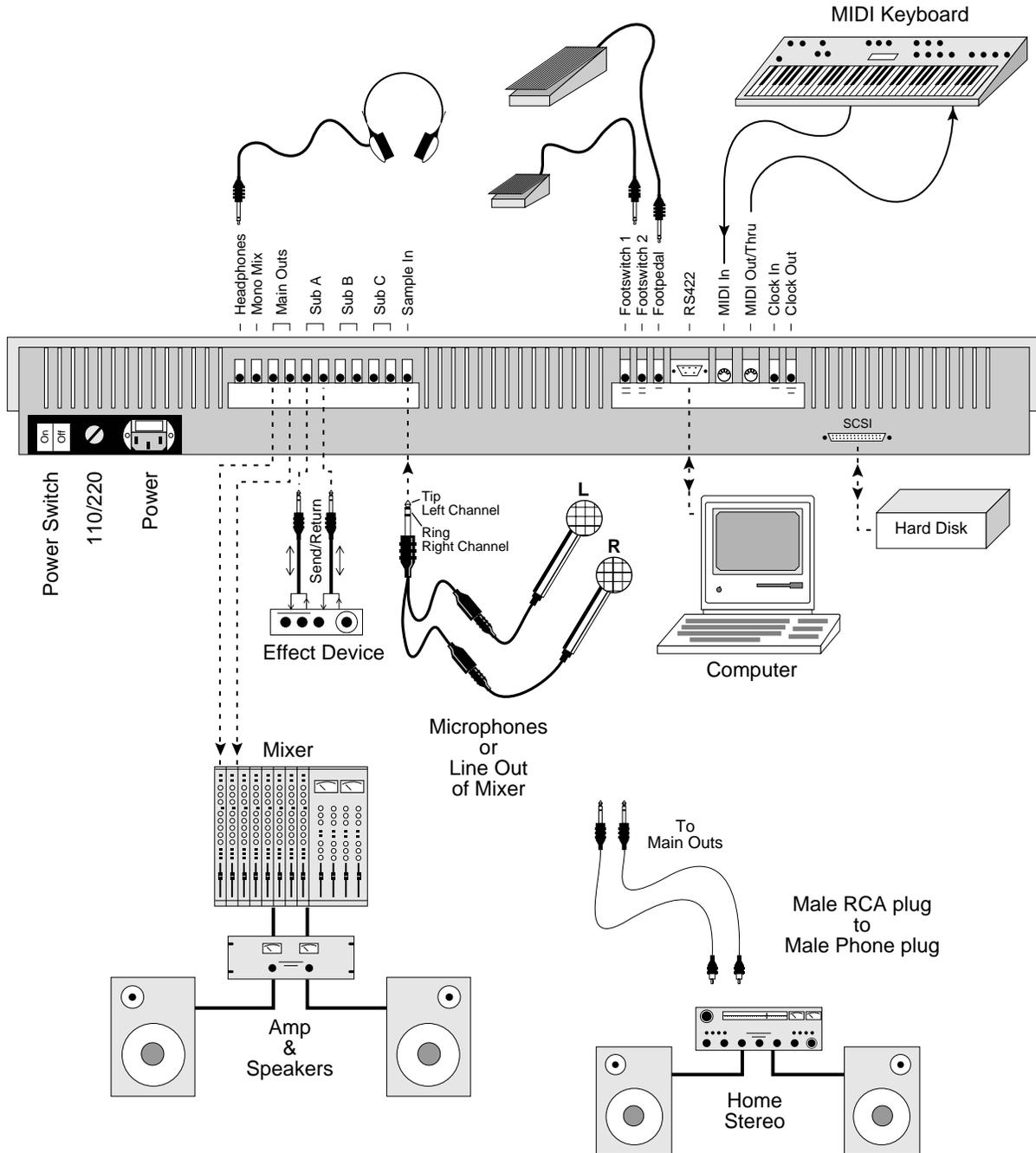


This diagram shows the type of cable used to access the Emax II submix sends and returns.



This diagram shows how the stereo jacks are used to function as effect sends and returns.

CONNECTION DIAGRAM



*This diagram shows how various pieces of equipment can be interfaced with the Emax II.
The connections to the Emax II rack are identical.*

SAMPLE IN CONNECTION

The Sample In jack can accept any signal level from microphone level to line level. The gain is adjusted with the data slider while in VU/gain mode in the sample module. The level can be read in the liquid crystal display while in this mode.

If your Emax II contains the stereo sampling option, use a stereo plug in the Sample In jack to sample in stereo. The **Tip** of the stereo plug corresponds to the **Left** channel and the **Ring** of the plug corresponds to the **Right** channel.

MIDI CONNECTION

Emax II provides a MIDI In and a MIDI Out/Thru port.

■ The MIDI In port on the Emax II is connected to the MIDI Out port of an external MIDI controller which could be a keyboard, a sequencer, MIDI drum kit or whatever. Note that the Emax II can only respond to information that your controller transmits. Therefore, if your MIDI keyboard does not have velocity and pressure sensitivity, Emax II will not respond to velocity and pressure.

■ MIDI Out can be connected to another MIDI instrument or sequencer. In MIDI Thru mode, MIDI Out will re-transmit any MIDI information that appears at the MIDI In port. In MIDI Out mode, only information from the Emax II's keyboard, sequencer or realtime controls will be transmitted, except when overflow mode is selected. Overflow mode allows a second Emax II to be connected to the MIDI Out to allow 32 channel operation. **Use cords that have been designed specifically for MIDI.** While regular 5 pin DIN cords may work, they are not shielded correctly for MIDI use and may cause ground loops between equipment.

FOOTSWITCH AND PEDAL CONNECTION

■ Two control footswitch jacks are provided for performance control of sequencer, arpeggiator, sustain, release, X-switch, and preset advance. The footswitches need not be connected for the unit to operate but they offer exciting control possibilities. The footswitches should be of the momentary contact type, but can be either normally-open or normally-closed.

■ The control pedal is used as a realtime control in the same manner as the wheels. It can be programmably routed to a destination by using the realtime control section of the preset definition module. The pedal can either be a voltage type, (which outputs a DC voltage from 0-9 volts at the tip of the jack) or a resistance type (which varies a 10K ohm resistance from the tip to ground of the jack). Both the footswitches and the pedal are available from your dealer.

CLOCK IN CONNECTION

The Clock In jack allows a non-MIDI external device such as a drum machine or sequencer to control the tempo of the sequencer or arpeggiator. Emax II can receive input clock rates of 24, 48, or 96 pulses-per-quarter note. The pulses should be at least 1 millisecond wide and have a level of 1 to 5 volts.

▼ *High level signals should **not** be present at the sample input jack when entering the sample module because the Emax II auto-calibrates the sample inputs during this time.*

CLOCK OUT CONNECTION

The Clock Out jack allows the Emax II to be the master clock and drive non-MIDI sequencers and drum machines at a rate of 24 pulses-per-quarter note. This is a 5 volt pulse which is about 6 milliseconds wide.

SCSI CONNECTION

The 25-pin connector on the rear of your Emax II is a SCSI port (pronounced scuzzy), which stands for Small Computer Systems Interface. SCSI is an ultra high-speed parallel port, normally used to connect external hard disk drives. Up to 7 external devices can be connected to the SCSI port. Each device on the SCSI bus must have its own unique ID number so that Emax II can distinguish it from the other devices. If you have an internal hard disk, it will be assigned ID #1. The floppy drive is assigned ID #0. If there are two devices on the SCSI bus with the same ID number, a SCSI error will result. Consult the operation manual of your external storage device for information on changing the ID number.

■ *Warning: All SCSI devices connected to the SCSI bus must be turned on, or Emax II will not boot.*

- Always use quality SCSI cables which are as short as practical (total length <12 ft).
- Tighten the thumbscrews on the jacks to ensure good electrical connection.
- Power up external SCSI devices *before* the Emax II.
- All SCSI devices on the bus *must* be turned on.

RS-422 CONNECTION

The RS-422 connector is a high-speed *serial* communication port which allows data to be transferred to and from an external computer at a high rate (500K baud). The connection cable to the external computer will generally be supplied with a software package (such as Sound Designer by Digidesign) and will not usually be available from your music dealer.

110V/220 V SELECTOR

The 110V/220V selector allows the Emax II to be used in either 110 volt or 220 volt environments at either 50 Hz or 60 Hz. In the USA, 110 volts is the standard. To change the voltage setting, first UNPLUG the unit; then use a flat blade screwdriver to change the setting. **WARNING:** Operating Emax II at the wrong setting may seriously damage the unit.

AC POWER CONNECTION and FUSE

The AC power connector is how the Emax II gets power (obviously). The fuse receptacle is not as obvious. It is located directly over the power receptacle. Before changing or checking a fuse, UNPLUG the power cord. To remove the fuse holder, squeeze the two tabs located on either side of the fuse holder together. The fuse holder will now pop out with its two fuses. The Emax II uses (2) 1 amp, 250 volt fast-blo mini-fuses. The Emax II should not normally blow fuses. If a fuse that has been replaced blows again, do not attempt another replacement. Have the unit serviced!