

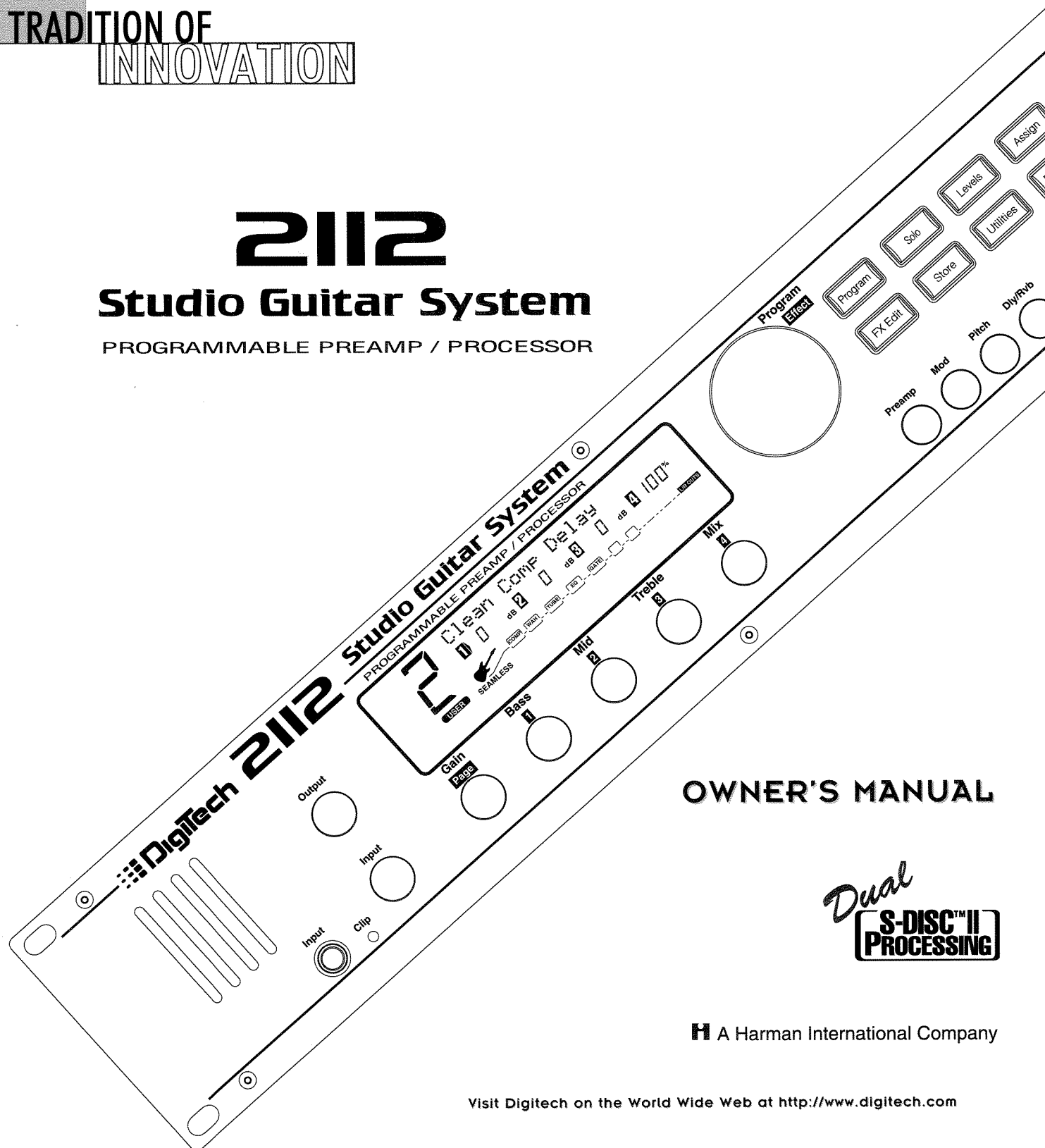


A TRADITION OF
INNOVATION

2112

Studio Guitar System

PROGRAMMABLE PREAMP / PROCESSOR



OWNER'S MANUAL



H A Harman International Company

Visit Digitech on the World Wide Web at <http://www.digitech.com>



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



ATTENTION: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE

The symbols shown above are internationally accepted symbols that warn of potential hazards with electrical products. The lightning flash with arrowpoint in an equilateral triangle means that there are dangerous voltages present within the unit. The exclamation point in an equilateral triangle indicates that it is necessary for the user to refer to the owner's manual.

These symbols warn that there are no user serviceable parts inside the unit. Do not open the unit. Do not attempt to service the unit yourself. Refer all servicing to qualified personnel. Opening the chassis for any reason will void the manufacturer's warranty. Do not get the unit wet. If liquid is spilled on the unit, shut it off immediately and take it to a dealer for service. Disconnect the unit during storms to prevent damage.

WARNING

FOR YOUR PROTECTION, PLEASE READ THE FOLLOWING:

WATER AND MOISTURE: Appliance should not be used near water (e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc). Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

POWER SOURCES: The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

GROUNDING OR POLARIZATION: Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

POWER CORD PROTECTION: Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

SERVICING: To reduce the risk of fire or electric shock, the user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

FOR UNITS EQUIPPED WITH EXTERNALLY ACCESSIBLE FUSE RECEPTACLE: Replace fuse with same type and rating only.

U.K. MAINS PLUG WARNING

A moulded mains plug that has been cut off from the cord is unsafe. Discard the mains plug at a suitable disposal facility. **NEVER UNDER ANY CIRCUMSTANCES SHOULD YOU INSERT A DAMAGED OR CUT MAINS PLUG INTO A 13 AMP POWER SOCKET.** Do not use the mains plug without the fuse cover in place. Replacement fuse covers can be obtained from your local retailer. Replacement fuses are 13 amps and MUST be ASTA approved to BS1362.

ELECTROMAGNETIC COMPATIBILITY

This unit conforms to the Product Specifications noted on the **Declaration of Conformity**. Operation is subject to the following two conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation. Operation of this unit within significant electromagnetic fields should be avoided.
- use only shielded interconnecting cables.

SAFETY INSTRUCTIONS

NOTICE FOR CUSTOMERS IF YOUR UNIT IS EQUIPPED WITH A POWER CORD.

WARNING: THIS APPLIANCE MUST BE EARTHED.

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

GREEN and YELLOW - Earth BLUE - Neutral BROWN - Live

As colours of the cores in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The core which is coloured green and yellow must be connected to the terminal in the plug marked with the letter E, or with the earth symbol, or coloured green, or green and yellow.
- The core which is coloured blue must be connected to the terminal marked N or coloured black.
- The core which is coloured brown must be connected to the terminal marked L or coloured red.

This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. If the attachment plug needs to be changed, refer servicing to qualified service personnel who should refer to the table below. The green/yellow wire shall be connected directly to the unit's chassis.

CONDUCTOR		WIRE COLOR	
L	Line	Brown	Black
N	Neutral	Blue	White
	Earth Grnd.	Green/Yel.	Green

WARNING: If the ground is defeated, certain fault conditions in the unit or in the system to which it is connected can result in full line voltage between chassis and earth ground. Severe injury or death can then result if the chassis and earth ground are touched simultaneously.

LITHIUM BATTERY WARNING

CAUTION!

This product may contain a lithium battery. There is danger of explosion if the battery is incorrectly replaced. Replace only with an Eveready CR 2032 or equivalent. Make sure the battery is installed with the correct polarity. Discard used batteries according to manufacturer's instructions.

ADVARSEL!

Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

ADVARSEL!

Lithiumbatteri - Eksplosjonsfare ved feilagtig håndtering. Utskiftning må kun ske med batteri av samme fabrikat og type. Levér det brukte batteri tilbage til leverandøren.

VAROITUS!

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

WARNING!

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikanterns instruktion.

DECLARATION OF CONFORMITY

Manufacturer's Name: DigiTech
Manufacturer's Address: 8760 S. Sandy Parkway
Sandy, Utah 84070, USA

declares that the product:

Product Name: 2112 Studio Guitar System
Product Options: All

conforms to the following Product Specifications:

Safety: EN 60065 (1993)
IEC 65 (1985) with Amendments 1, 2 & 3

EMC: EN 55013 (1990)
EN 55020 (1991)

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and EMC Directive 89/336/EEC as amended by Directive 93/68/EEC.

DigiTech
President of DigiTech
8760 S. Sandy Parkway
Sandy, Utah 84070, USA

Effective December 15, 1996

European Contact: Your Local DigiTech Sales and Service Office or

International Sales Office
3 Overlook Drive #4
Amherst, New Hampshire 03031, USA
Tel (603) 672-4244
Fax (603) 672-4246

QUICK START

For those of you who prefer to burn now and read later, we've included this Quick Start section to help you do it right the first time.

CONNECT CABLES:

Connect guitar input into the front panel and output cables to the rear jacks. Balanced (tip-ring-sleeve) or unbalanced (tip-sleeve) cables can be used with the output jacks.

CONNECT CONTROL ONE FOOT CONTROLLER (IF APPLICABLE)

Connect the output of the optional DigiTech Control One foot controller to the Foot Controller jack found on the rear of the 2112. Make sure that connection is made before applying power to the 2112.

WARNING: DO NOT CONNECT ANYTHING BUT THE OPTIONAL DIGITECH CONTROL ONE FOOT CONTROLLER TO THE FOOT CONTROLLER JACK ON THE REAR PANEL! DOING SO MAY DAMAGE THE DEVICE.

If you want to control the 2112 via MIDI, connect your MIDI controller to the MIDI In jack.

APPLY POWER:

Use the supplied AC power cord to connect the 2112 to an appropriately grounded outlet. Be sure you run all your power cables away from audio cables. This will prevent noise and stray magnetic fields from entering the signal path.

EFFECTS LOOP:

Connect any external effects devices (such as an old favorite FX pedal) to the 2112 effects send and return jacks. The FX loop level switch (located on the rear panel) allows you to either boost or cut the level by 6dB by simply pressing the switch in or out.

NOTE: Adjust external devices so that they return the same signal level to the 2112 as they receive from the 2112. This will avoid level changes when switching the effects loop in and out. This signal level relationship is called unity gain.

ADJUST INPUT:

Set the guitar to the loudest operating level that will be used. Make sure your amp is set for a clean sound, that your tone controls are all neutral (flat), and the amplifier's main volume is all the way down. At this point, use the Input knob on the front panel to adjust the Input level to the desired setting, so that the loudest guitar signal occasionally lights the clip LED indicator.

ADJUST OUTPUT:

Set the 2112 output level to the 12 o'clock position and turn up the amplifier's main volume to the desired level.

SELECT PROGRAM:

Begin playing your guitar, and choose any program using the Program/Effect wheel. User Programs 1-100 are duplicates of the Factory programs. They are user-programmable and you can modify and store them as you want. Factory Programs 1-100 are not user-programmable. Factory Programs 101-124 are Basic programs that represent the 24 effect configurations. All 124 Factory Programs cannot be overwritten.

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CONGRATULATIONS. You are now the proud owner of a DigiTech 2112, the most powerful, flexible, and easy-to-use guitar preamp/processor there is. Your 2112 is the next generation of high-performance guitar processing from DigiTech, going far beyond the expected and offering unprecedented flexibility and control over your tone and digital effect processing.

THIS OWNER'S MANUAL IS YOUR KEY to understanding the powerful world of the 2112. **READ IT** carefully. After you've had time to familiarize yourself with the unit, try experimenting with unusual effect combinations. You may get some interesting results. Good luck, and thank you for choosing DigiTech.

Your 2112 was carefully assembled and packaged at the factory. Before you proceed any further, make sure the following items are **INCLUDED**:

- (1) Owner's Manual (OK... your reading it)
- (1) DigiTech 2112 Guitar Preamp/Multi-Effects Processor
- (1) Power Cord
- (1) Rack Screws
- (1) DigiTech warranty card
- (2) Control One functions

PLEASE SAVE ALL PACKING MATERIALS. They were designed to protect the unit from damage during shipping. In the unlikely event that the unit requires service, use only the factory supplied carton to return the unit.

Your 2112 **FEATURES**:

- Full bandwidth effects (20-20kHz)
- 24-bit signal path, 48-bit internal data path
- Up to 15 effects at once
- Dual S-DISC II ® Processing
- Flexible, easy-to-use effect routing
- Effects can be repeated in a chain,
(e.g. EQ + flange + EQ + pitch shift)
- Instant module access
- Multiple dynamic effects capability
(e.g. chorus + flange+ pitch shift)
- Programmable Speaker Cabinet Emulator option
- World-class tube preamp with 8 distortion types (4 tube, 4 solid state)
- Dual Tubes (12AX7)
- DigiTech's exclusive modulation delays
- Chromatic tuner
- Digital EQ
- MIDI Merging
- MIDI program transmit and receive mapping
- All effects and parameters available for MIDI continuous control
- Optional Control One foot controller with built-in Expression Pedal for ultimate programmability and control
- Continuous Controller insertion jack to add an external CC pedal for additional CC options

INTRODUCTION

We at DigiTech are very proud of our products and back-up each one we sell with the following

WARRANTY:

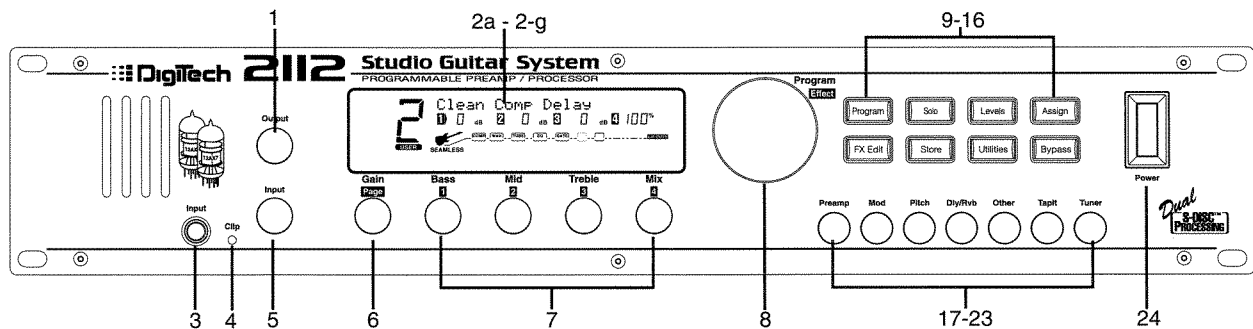
1. The warranty registration card must be mailed within ten days after purchase date to validate this warranty.
2. DigiTech warrants this product, when used solely within the U.S., to be free from defects in materials and workmanship under normal use and service.
3. DigiTech liability under this warranty is limited to repairing or replacing defective materials that show evidence of defect, provided the product is returned to DigiTech WITH RETURN AUTHORIZATION, where all parts and labor will be covered up to a period of one year. A Return Authorization number may be obtained from DigiTech by telephone. The company shall not be liable for any consequential damage as a result of the product's use in any circuit or assembly.
4. Proof-of-purchase is considered to be the burden of the consumer.
5. DigiTech reserves the right to make changes in design, or make additions to, or improvements upon this product without incurring any obligation to install the same on products previously manufactured.
6. The consumer forfeits the benefits of this warranty if the product's main assembly is opened and tampered with by anyone other than certified DigiTech technician or, if the product is used with AC voltages outside of the range suggested by the manufacturer.
7. The foregoing is in lieu of all other warranties, expressed or implied, and DigiTech neither assumes nor authorizes any person to assume any obligation or liability in connection with the sale of this product. In no event shall DigiTech or its dealers be liable for special or consequential damages or from any delay in the performance of this warranty due to causes beyond their control.

DigiTech™, S-DISCII™, Whammy™, and Silencer II™ are registered trademarks of the Harman Music Group Incorporated.

NOTE: The information contained in this manual is subject to change at any time without notification. Some information contained in this manual may also be inaccurate due to undocumented changes in the product or operating system since this version of the manual was completed. The information contained in this version of the owner's manual supersedes all previous versions.

A QUICK TOUR OF THE 2112

THE FRONT PANEL



1) Output Level Knob - Controls the overall output level of the 2112.

2) Display - This large custom display is where you get most of the information you need to move around the operating system. The display has several sections:

2a) Program Number Indicator - Three large digits in the upper left corner of the display indicate which Program is currently selected.

2b) Factory / User Indicators - Directly below the Program number, the Factory and User Program icons indicate whether the current program resides in either a Factory or User Bank.

2c) Bank / Page Indicators - Located in the bottom left corner of the display, the Bank/Page indicators display:

- the Bank number in which the current program resides in Program Mode. (This is displayed only when the Control One is connected).
- the Page which is currently selected in various Edit modes.

2d) Information Line - Row of 24 characters in the top line of the display gives more detailed information about specific functions and items, and contains things like Program names, Parameter names, and Utility or auxiliary information.

2e) Parameter Data Sections - Immediately below the Information line are four Parameter Data sections. They correspond with the <1> through <4> knobs on the front panel. Each section displays the current value of the indicated Parameter.

A CC indicator in each group tells whether the indicated Parameter is set up to be continuously controlled. When a parameter has been modified, the Changed icon will appear under the parameter that has been modified and the <Store> button will light to indicate a change has been made to the Program, but not stored.

2f) Input Level / Clip Meters - An Input Level and Clip meter is located in the bottom center of the display. This meter shows the Preamp level, and uses a peak detector action to display the highest levels at the input. The Clip indicator at the end of the meter, indicates if the the input signal is being clipped at the analog input section (pre-digital) or in the digital effects domain.

2g) Effect Routing Matrix - The Effect Routing Matrix shows the signal flow of the currently selected Program. This matrix includes boxes that represent each effect module along with lines that indicate how those effects are connected to inputs, outputs and each other. If an effect module is bypassed, a line appears through that module's box in the Matrix.

When in FX Edit mode, the box that represents the currently selected effect module will **flash**.

3) Input Jack - Plug Guitar in here.

4) Clip LED - The Clip LED Indicates that the input signal is causing input stage clipping in the 2112.

5) Input Level Knob - Controls the input level to the 2112.

6) Gain/Page Knob - Controls the Distortion Gain Parameter either locally or globally. Selection of either Global or Local mode can be found on Page 11 of the Utilities Menu. When the 2112 is in Edit mode, the Page knob is used to scroll through the pages of the selected Module.

INTRODUCTION

7) Parameter knobs - Parameter knobs <1> thru <4> are used to:

- change the gain of the EQ (<1> - <3>) and the mix between the Wet and Dry signals (<4>) in Program Mode. The EQ and Mix modes can be set to either Local or Global modes on Page 1 of the Utilities.
- change the parameters you want to edit in FX Edit mode.

8) Program/Effect Wheel - Selects Programs (in Program Mode) or changes effect modules (in FX Edit Mode).

9) Program Button - Toggles between User and Factory banks. A successive press will also return the 2112 to Program mode.

10) Solo Button - Toggles the SOLO parameter On/Off.

11) Levels Button - Exits current mode and enters Levels mode.

12) Assign Button - Initiates the Assign Program function if Control One is connected and/or allows the modifier assignments to be made.

13) FX Edit Button - Exits current mode and enters FX Edit mode. A successive press will also return the 2112 to Program mode.

14) Store Button - Initiates Store function, indicates changed status.

15) Utility Button - Exits current mode and enters Utilities mode. A successive press will also return the 2112 to Program mode.

16) Bypass Button - Toggles Bypass status (On/Off).

17-23) FX Library Buttons:

17) [PreAmp] - Exits current mode and enters FX edit mode at the Preamp module. A second press enters the FX Edit mode and selects the first module of the PreAmp section. Successive presses move to the next available module in the PreAmp section.

18) [Mod] - Exits current mode, enters FX Edit mode and selects the first available Modulation module. Successive presses move to the next available Modulation module.

19) [Pch] - Exits current mode, enters FX Edit mode

and selects the first available PitchShift or Detune module. Successive presses move to the next available PitchShift or Detune module.

20) [Dly/Rvb] - Exits current mode, enters FX Edit mode and selects the first available Delay or Reverb module. Successive presses move to the next available Delay or Reverb module

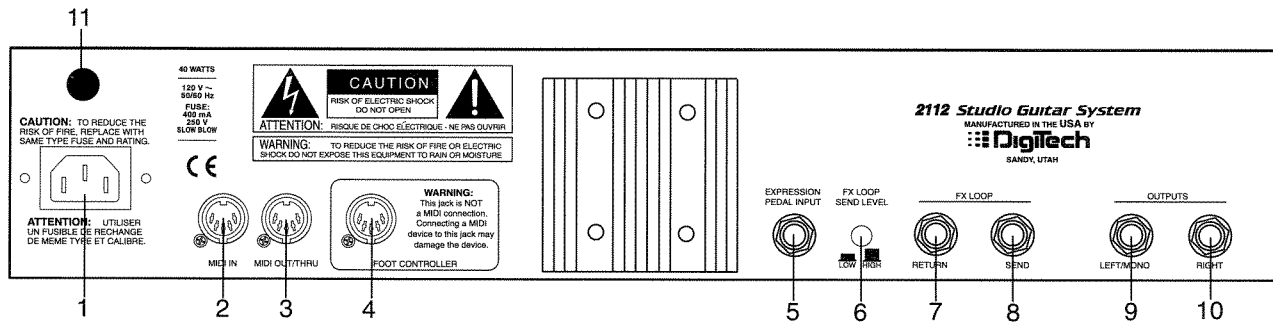
21) [Other] - Exits current mode, enters FX Edit mode and selects the first available Digital Effect Modules not included in above selections. Successive presses move to the next available Digital Effect Module until finally reaching the Master Mix Module.

22) [TapIt] - The TapIt button is used to set the delay tap tempo for precise delay time taps. To use the TapIt button, simply press the TapIt button at the desired tempo and the delay module will automatically recalibrate the delay taps.

23) [Tuner] - Exits current mode and enters Tuner mode.

24) Power Switch - Turns the unit on and off.

THE REAR PANEL



1) AC Line Input - Connect the supplied power cord here.

2) MIDI In - The MIDI In port allows the 2112 to respond to incoming MIDI messages, including Program Change, Continuous Control, and System Exclusive data.

3) MIDI Out/Thru - Sends out or passes any MIDI data generated by the 2112 to other devices.

4) Control One Input - This is a 5-pin DIN plug for connecting the optional DigiTech Control One foot controller. Connection of the Control One should be made before the 2112 is turned on.

IMPORTANT: THIS IS NOT A MIDI PORT. CONNECTING A DEVICE OTHER THAN THE DIGITECH CONTROL ONE TO THE JACK CAN DAMAGE THE UNIT.

5) Expression Pedal Input - This 1/4" input jack gives you the option of connecting external voltage controlled continuous control pedal.

***Notice:** When using the 2112 with the Control One foot controller, the 1/4 Expression Pedal input on the rear of the unit is referred to as EXP 3. When the 2112 is used alone, the Expression Pedal Input becomes known as EXP 1.

6) FX Loop Level Switch - This switch gives you the option of either standard level (switch out), or a 6 dB cut (switch in) in the fx loop level. This is great to use when inserting an FX pedal that may not have the same output level to keep the level even in the chain

7) FX Send - This is the effects loop mono send jack. Connect the input of an external effect device here.

The send gets its signal immediately following the Analog Wah module. It is a balanced-TRS connector.

8) FX Return - This is the effects loop return. It is fed back into the signal chain before the distortion section of the 2112.

9) Left/Mono Output - This is the left audio output. Use both left and right outputs when you are running in stereo mode. If you are running in mono mode, use the Left output. It is a balanced-TRS connector. Page 11 of the Utilities mode gives you the option to select either Stereo or Mono output modes.

10) Right Output - This is the right audio output for use when running in stereo mode. This is a balanced-TRS connector.

11) AC fuse receptacle - Direct access to the fuse can be reached here.

INTRODUCTION

GUITAR PREAMP

The 2112 offers world famous DigiTech Preamp tones that have become an absolute necessity in the Recording Studio or on Stage.

COMPRESSION: Every program of the 2112 has a dynamic range Compression circuit specially designed to be used in guitar applications.

DUAL DISTORTION PATHS: Now you really do have even more choices with the 2112's distortions. Within the signal path of the 2112, you can select which distortion path the signal is routed through. Along with distortion path selection, you can also run the two in parallel, and morph between the two paths. And, if having these options were not enough, the 2112 gives you the ability to combine and pan both Distortion paths to the right and the left at the same time to produce "mammoth" guitar tones.

DUAL TUBES AND EQ: When the Dual Tube distortion tube path is selected, you have two 12XA7 preamp tubes at your tone disposal, as well as a dedicated 10-band graphic EQ. After the 10-Band EQ, the Dual Tube EQ path is run into the Speaker Cabinet Emulator, which can be placed before or after the digital effects section.

SOLID STATE AND EQ: With the Solid State distortion path selected, you get the versatility of solid state distortions along with the 10-band EQ. From here, the Solid State Distortion path is run into the Speaker Cabinet Emulator.

DIGITALLY CONTROLLED ANALOG WAH: Now you can have vintage analog Wah effects at your finger tips and toes. The digitally controlled analog Wah produces true Wah tonal characteristics, while being controlled digitally, thus remaining quiet.

NOISE REDUCTION: With the Silencer II noise reduction system, you can hear a pick drop. Back ground noise in recordings will no longer be getting it's "big chance" to go to tape with noise reduction of this caliber.

PROGRAMMABLE CABINET EMULATION: The days of spending hours upon hours trying to mic' a speaker cabinet to get a good sound are now just a thing of the past with the Programmable Cabinet Emulation Module in the 2112. Whether it be live or in the studio, just about any speaker cabinet emulation is possible by simply running directly to the board, or to tape.

DIGITAL EFFECTS

When it comes to digital multi effects, Digitech's reputation is second to none. We've been perfecting this art form for almost twenty years, so you know that the 2112 is loaded to the hilt with a pristine, ultra-quiet digital effect section.

EFFECTS INCLUDE:

- Digital EQ
- Noise Gates
- Reverbs
- Choruses
- Flangers
- Intelligent Pitch Shifters
- Chromatic Pitch Shifters
- Detuners
- Digital Delays
- Long Delays (lower-bandwidth for double delay times)
- Smooth Whammy
- Phasers
- Tremolos
- Auto Panners
- Rotary Speaker Emulation

UP TO 8 DIGITAL EFFECTS AT ONCE (DUAL S-DISC II CONFIGURATIONS) When utilizing a dual S-DISC II configuration, you can link up to 8 digital effects at once from the vast effect palette.

SEAMLESS PROGRAM CHANGES (SINGLE S-DISC II ALGORITHMS): Smooth program changes are a breeze with Seamless program changes. When a program change is made, there is no apparent "drop out" of signal. Along with no signal loss, you can also program the hold and release times so program effects overlap each other in turn, producing a morphing effect. Setting and changing seamless program times can be done on Page 5 of the Master mix menu of each program in the Edit mode. Seamless program changes time range from 0.0 seconds to Infinity for both hold and Ramp times.

REAL TIME MODIFIERS: Modifiers are unique tools that can be used to dramatically alter your sound based on information from signal amplitude, the settings of a Low Frequency Oscillator (LFO) or MIDI Continuous Controller information.

Every Program in the 2112 has a set of Modifiers. Up to 16 Modifier links can be assigned to control parameters. There are three types of Modifiers that can be linked to a parameter: MIDI CCs, LFOs, and Dynamic (signal level dependent).

MIDI CCs: When you use MIDI CCs, your 2112 responds to CC numbers 0-127 and CHP (channel pressure or aftertouch).

For example, you can have a synth's modulation wheel (usually MIDI CC#1) control the level of a reverb and chorus in one program while the delay feedback may be controlled in another.

LFOs: When you use LFOs, parameter values can be controlled automatically between a defined minimum and maximum setting at a user-definable rate. Your 2112 has 2 user definable LFOs in each program that can be assigned to any Parameter.

For example, you can create an auto panner without using an auto panner module. Simply link an effect's output pan parameter to the LFO modifier and the LFO will move that parameter back and forth. This modifier can be a very useful weapon in the ongoing battle of new sound creation. There are two LFOs available in each program that can use unique speeds and waveforms.

DYNAMIC MODIFIERS: When you use Dynamic Modifiers, the Parameter values are controlled in relation to the dynamics of the input signal. The possibilities are nearly endless, and they cannot be duplicated using any other method.

For example, you could link the Dynamic Modifier of a Program to control a chorus level. It doesn't sound like much on paper, but imagine the expressiveness of this type of effect on a lead. As the dynamics of the music increase, the chorus becomes less apparent. Ease up on the solo a little and the chorus increases. ALL IN REAL TIME!

For more information on using modifiers see the "Using Modifiers" section. on page 47

THE SOLO BUTTON

How many times have you been on stage and your big solo comes up and that great Blues tone that you're using for rhythm playing just needs to be louder. Unfortunately, your trusty sound man is trying to collect phone numbers in the lobby. Well don't fret, you just kick in the **Solo Button** and you can become your own sound man.

What does this mean? The unique Solo Button feature when engaged (either via the Front panel control, or the optional Control One foot controller), will give you an additional 6dB of boost. This feature is also ideal to use in the studio (or live) to give you a little extra punch for solos.

To assign the Solo button function, simply press the <Solo> button then store. If you wish to link it to a footswitch, access can be made in Page 3 of the Master Mix menu in the Utilities menu.

INTRODUCTION

BASIC SPECIFICATIONS

1 INPUT AND 2 OUTPUTS BALANCED (TRS)

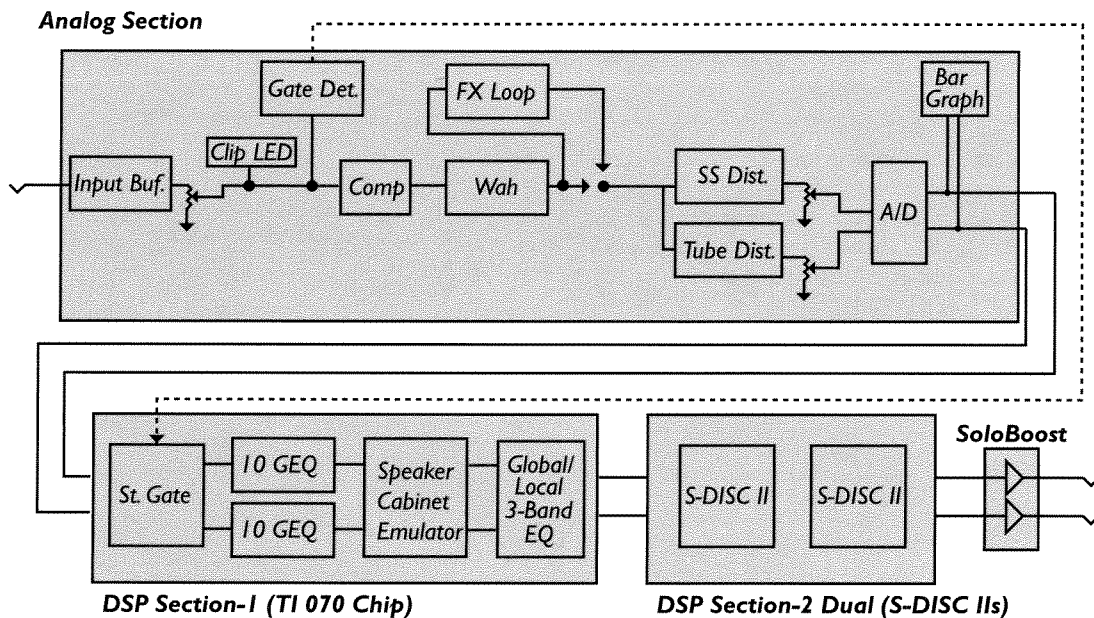
With the 2112, the input and output are set up in a mono input and stereo or mono output configurations. The input jack of the 2112 is located on the front panel of the unit. The output jacks are TRS (tip-ring-sleeve), and are a Left (mono) and Right output configuration for full stereo separation of effects.

PROGRAMMABLE MONO FX LOOP

For those of you that feel the need to add additional effects to the already extensive menu of sounds, the 2112 provides a programmable line level mono programmable FX loop. The signal leaves the unit after the Wah section of the 2112 and returns just before the Dual distortion paths. For a better representation of the FX loop, please refer to the signal flow chart below.

SIGNAL FLOW

Listed below, is a chart showing the signal flow path of the 2112. Notice that with the 2112, you have the choice of selecting either one or both of the Distortion signal paths. Also take notice that a noise reduction system is available in the Analog Preamp section and the first DSP section, making for ultra-quiet performance.

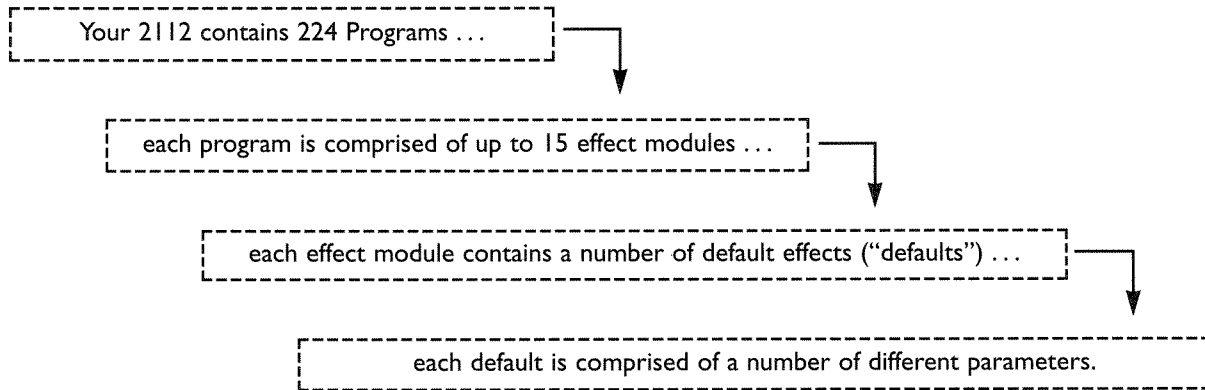


CONTROL ONE COMPATIBILITY

The 2112 is an ideal stand alone multi effects processor, but to out-do ourselves, we have made the 2112 compatible to use with the legendary Control One foot controller. The optional Control One can help you maximize the potential of your 2112. Since the Control One “talks” to the 2112 using a proprietary communication protocol. It offers better response time and capabilities not available with conventional MIDI pedalboard controllers.

The Control One includes 12 footswitches for Program and Parameter control. It also features a built-in Expression pedal. The Control also gives you the option of adding another expression control (via the external expression pedal jack which is located on the front of the Control One footcontroller). Combined with the Expression controller insert (located on the rear panel of the 2112) this gives you a grand total of 3 Expression controllers in one box!. The large 20 character display constantly feeds you important information like program names, CC info, and tuner indicators.

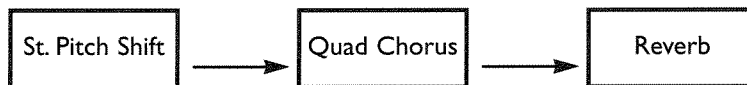
2112 ARCHITECTURE



It is **IMPORTANT** to make the distinction between parameters, defaults, modules and programs. Throughout this manual we will refer to “effects.” Depending upon the context, the word “effects” could refer to an Effects Program, an Effect Module within a Program, or the Default Effects within a Module.

EXAMPLE:

Program #4, “Electric 12-String”, is comprised of the following digital effect modules linked in series:



- Within the Stereo Pitch Shifter module, there are 10 parameters which can be set to create and define the sound of a particular Stereo Pitch Shifter.
- After having tweaked the various parameters to create a particular Pitch Shifter effect, the parameter settings can be saved off as a “Default.”
- The Stereo Pitch Shifter module contains 12 different factory created Defaults that can be dialed up quickly and easily (see page 24 for a list of all the default effects). The Default Stereo Pitch Shifter effect that “Electric 12 String” uses is #F-4, “Octave Up.”

For more information on editing parameters and creating your own Defaults and Programs see Section 3-Editing Programs and Section 4-Editing Modules.

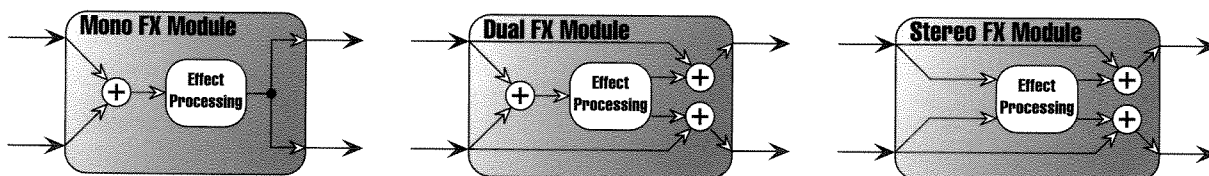
INTRODUCTION

MODULE TYPES

There are three basic types of FX Modules:

- Mono
- Dual
- Stereo

The figure below illustrates what the signals do as they enter the Module. Although all three Modules are shown with stereo inputs, they can still be used with a mono source. The mono source would just be routed to both sides of the module's inputs. Notice how the Dual FX Module maintains stereo compatibility while the mono FX Module always sums the signals together.

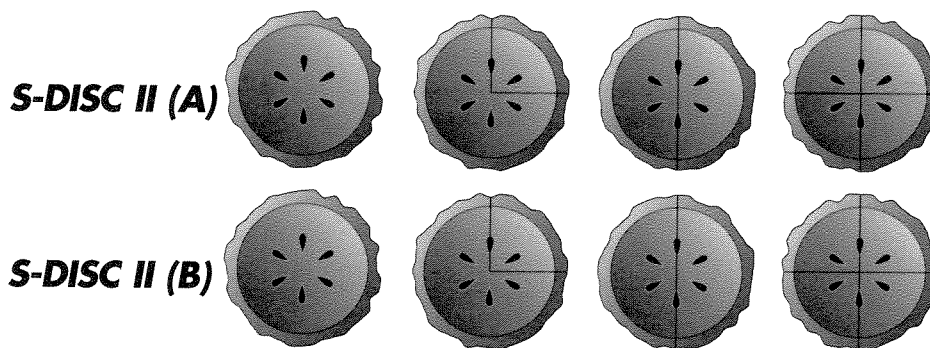


MODULE SIZES

In order to achieve the nearly endless combinations of effects and routings, we've supplied you with four different module sizes:

- Whole (module type = FULL)
- 3/4 (module type = 3-4)
- Half (module type = HLF)
- Quarter (module type = 4th)

Dividing each S-DISC II's processing power is what allows your 2112 to handle up to 15 effects at one time. The figure below represents how each S-DISC II can be divided to accommodate a wide variety of effect routing.



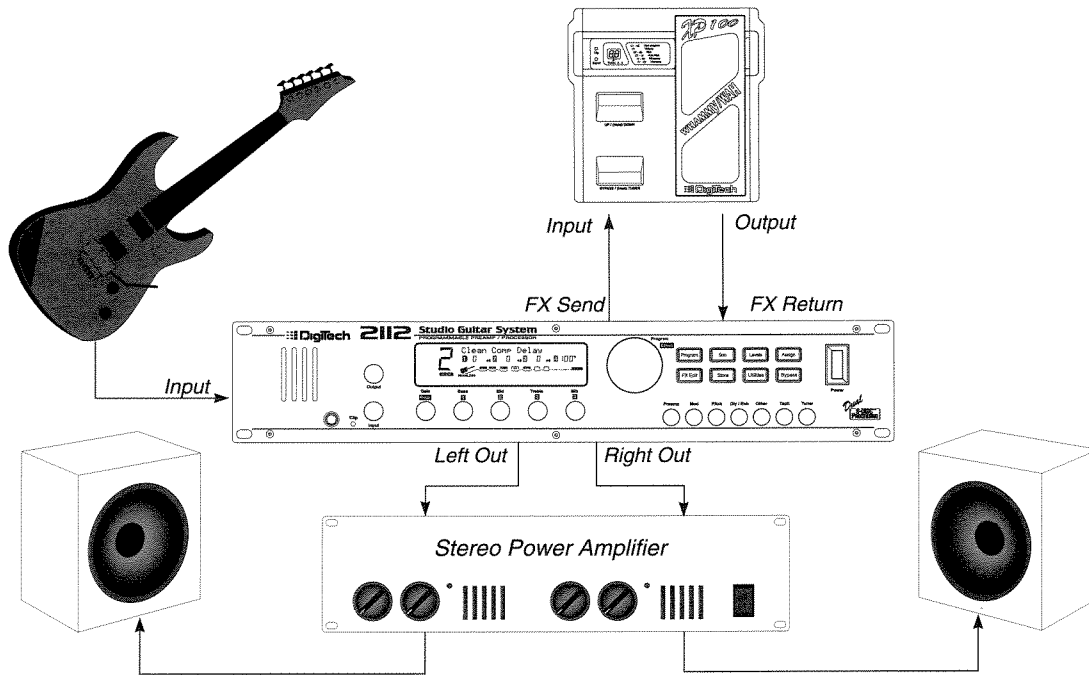
A Whole module type offers effects with more flexibility and power than the Half modules, and so on, but all four sizes of FX Modules feature very high quality effects, so you don't have to worry if you need to divide the S-DISC II pie four ways.

For a complete list of these FX Types please see Editing Modules. For a complete list of effect configurations please see Appendix on page 64.

MAKING CONNECTIONS

Because of its flexibility, your 2112 can be connected in several different ways to meet the requirements of specific applications. The following diagrams offer some ways your 2112 can be connected.

NOTE: In all the diagrams we have shown use of the external FX loop (this is of course, optional).



2112 INTO A STEREO POWER AMP

For those of you out there that feel that state of the art is a must, this is probably the 2112 set-up that would be best suited for your needs.

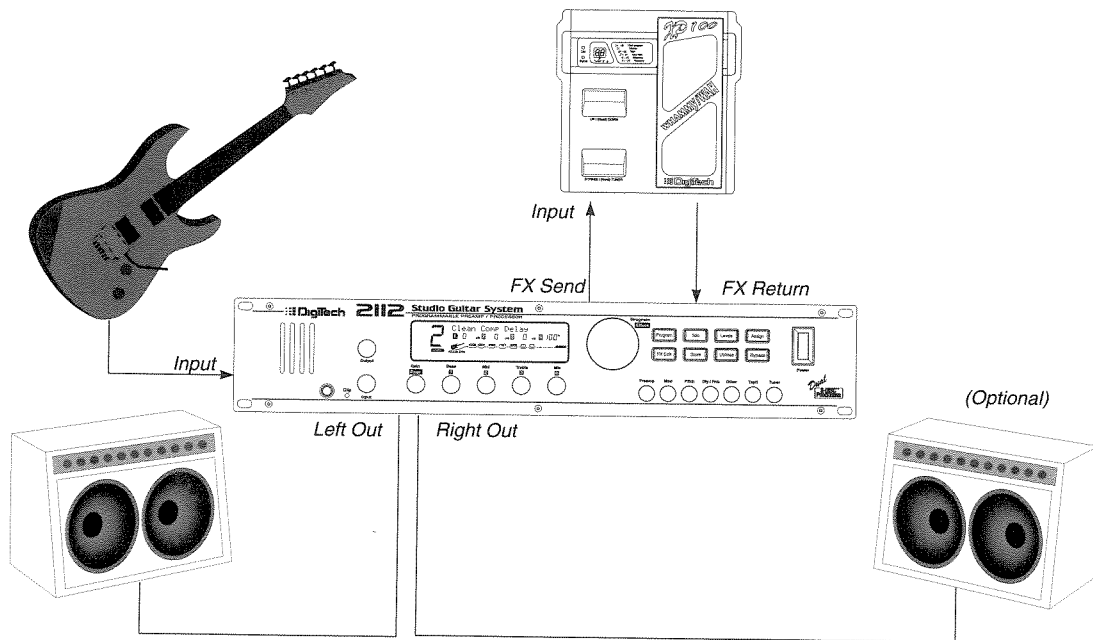
From the output jack of the guitar, run the cable into the Input jack on the front panel of the 2112. At this point (if you so choose) you can utilize the mono Fx loop of the unit by running out of the fx send of the 2112 into the desired unit being used. From there, run from the output (or send) of the chosen unit back into the Fx return jack of the 2112.

At this point, run out of both the Left and Right output jacks of the 2112 into the respective inputs of the stereo power amp. From the Stereo Power Amp, run out of the Left and Right outputs into the chosen speaker cabinets.

This is an ideal opportunity to see and hear how the Masters of Stereo Effects have outdone themselves in achieving mind-boggling stereo separation. Stereo Delays,

Phasers, Tremolos, and Auto panners will produce effects in this set-up that are simply out of this world.

When using a guitar system set-up such as this, it is always a good idea to make sure all connections are secure. Be sure to keep the levels of sending and receiving unit even so they do not have a tendency to clip (or distort) the inputs of each unit.



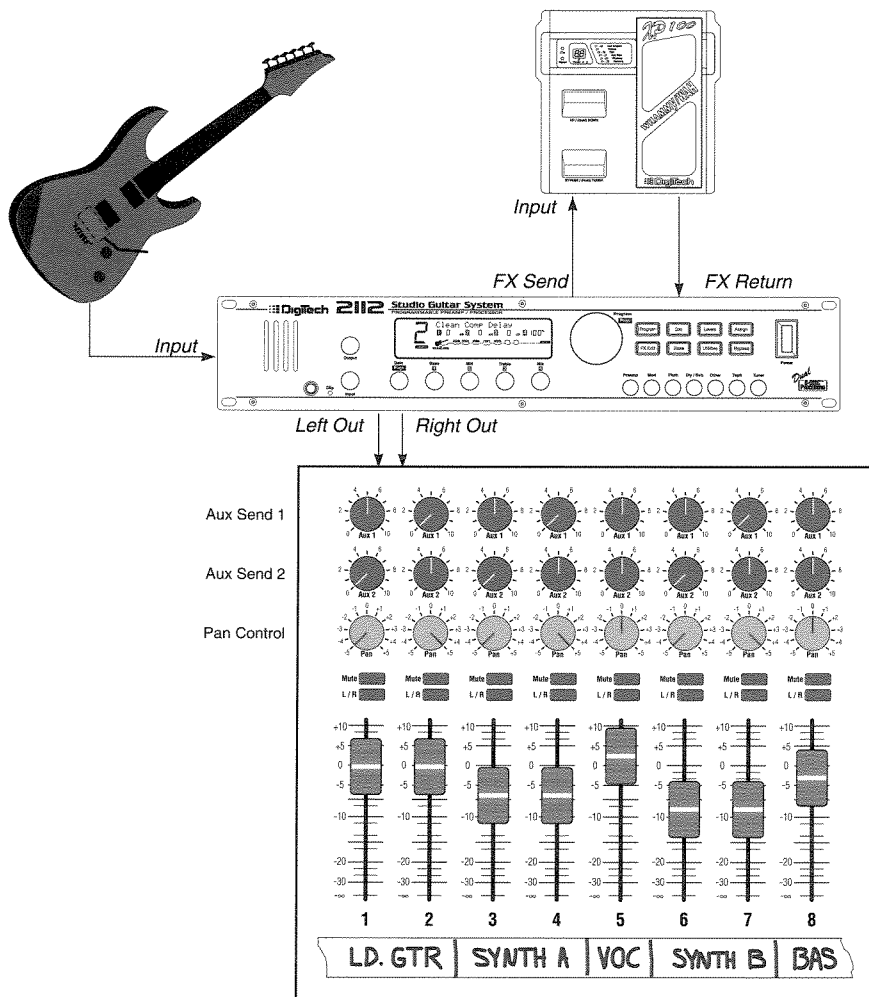
2112 INTO A PAIR OF COMBO AMPS

When vintage combo amps meet the the powerful processing world of the 2112, you just cannot help but get a great sound. More often than not, guitarists are hesitant to accept state of the art in signal processing, because they feel that they have to betray their beloved and trustworthy combo amps. With the 2112, this just simply is not the case. Using a set-up similar to the one shown above will give you the chance to optimize the potential of both the 2112 and the combo amplifiers.

The best signal route for a combination such as this one, is to first run out of the guitar output into the input jack of the 2112. Then, if you prefer to use an additional effect unit in the signal path, you can utilize the programmable mono fx loop of the 2112. In doing this, you will want to run from the fx send of the 2112 into the selected effect unit. From the chosen effect unit, run out of either its output or Fx send back into the fx return of the 2112. From the 2112, you will now want run out of both the left and right outputs of the 2112 into the input jacks of both Combo Amps.

You will be able to achieve lush, smooth stereo effects, while retaining the great amp tones of both the 2112 and the Combo Amps. So, in sense, you can have your tweed cake and eat it too.

As usual, make sure that all of the connections are good and solid when making the connections. It is also a good idea to make sure that the signal levels going from one unit to the other are even. Meaning that the output level going into the input of the receiving unit is not set so high that it distorts (or clips) the input section. Always remember that the better your rig sounds clean, the better your 2112 will sound.



2112 RUNNING DIRECT WITH THE PROGRAMMABLE CABINET EMULATOR

Now that you have the indispensable Programmable Cabinet Emulator of the 2112, chances are pretty good that you are not going to want to be spending those fun-filled hours of the past by doing the ole' Microphone Placement two-step.

To use the **Programmable Speaker Cabinet Emulator**, simply enter the Edit mode of the selected Program and scroll to Page 2 of the Master Mix menu. From here, the 2112 gives you the options of activating the Cabinet Emulator, selecting defaults and/or placing the Cabinet Emulator either Pre Digital (Preamp Only), or Post Digital (the whole signal path is included). These selections can be made by using the <2> or <3> knobs.

So let's cut out the middleman (speaker cabinet), and run from the guitar output into input jack of the 2112. From this point, you now have the option of utilizing the Programmable Mono Fx loop that is offered in the 2112.

To use the Fx loop, run from the Fx send of the 2112, into either input or Fx return of the selected effects unit. Now, run out of either the output or the Fx send of the chosen unit back into the Fx return of the 2112. At this point, you will want to run from either Left or Right outputs (or both for a stereo mix), into the selected inputs of the Mixer.

As usual, it is a good idea to check all of the cables being used when making connections to ensure that good contact is being made.

Notice that once the Programmable Speaker Cabinet Emulator is turned On, the Speaker icon will appear in the display and will appear as follows:



GETTING AROUND IN THE OPERATING SYSTEM

The menu structure of your 2112 has been specially designed to be easy to use. The display shows the information you need, but to make things even easier for you, illumination of the front panel buttons offers additional operating information.

THE FRONT PANEL BUTTONS give you information in one of two ways:

- 1 - If the button is dim, its function is **INACTIVE**. Pressing an a dim button causes it to light brightly and its function becomes the active item in the display. If the dim button doesn't light after you press it, the button is unavailable.
- 2 - If the button is bright, its function is **ACTIVE**. Pressing an active button (other than the <Program> button) reselects the already active item in the display.

PROGRAM MODE

Program mode allows you to scroll through the Factory and User Programs using the Program/Effect Wheel. When your 2112 is turned on, it sets itself to Program mode. Program mode is active when the <Program> button is lit and a Program name is present on the Information line (top line) of the display.

FX EDIT MODE

This mode allows you to edit:

1. FX Modules
2. The Modifier Module
3. The Output Mode Module of your Programs

Use the <Edit> button to enter the FX Edit mode and then to select the next module for editing.

A helpful hint: If you look at the Effect Routing Matrix while you press the FX <Edit> button, the currently selected module will flash.

Your 2112 uses "Pages" to navigate within an effect. A "Page" is a group of up to four effect Parameters that appear on the screen at one time. Use the <Gain/Page> knob to move through the Pages in the menu. Note that as you scroll through the Pages, the Page indicator in the lower left corner of the display changes to show the currently displayed Page number.

UTILITIES MODE

From the initial power-up of the unit, access to all of the menu pages of the utility mode can be made by simply pressing the <Utilities> button located on the front panel of the unit. From this point, the display will tell you that you are in the Utilities library and you can scroll through the options of the utilities menu by simply turning the <Page> knob.

LEVELS MODE

Adjustments to the Preamp (Tube or Solid State), DSP,

and Master levels can be made by simply pressing the <Levels> button to access the levels menu, then you make the adjustments until your ears and level indicators are happy.

ASSIGN MODE

Once the 2112 is in assign mode, all modifier assignments can be made from this point. Ranging anywhere from program numbers to modifier links to the Wah module. Access to this function is located on the front panel or in the utilities pages within the 2112.

OUTPUT MODULE FUNCTIONS

The Output Module of the 2112 gives you assignment control over crucial aspects of your sounds. The Menus of the Output Module include: Master Mix (Page 1), Cabinet Emulator Settings (Page 2), Solo button assignment (Page 3), Volume pedal assignment (Page 4) and Seamless Program Time changes (Page 5).

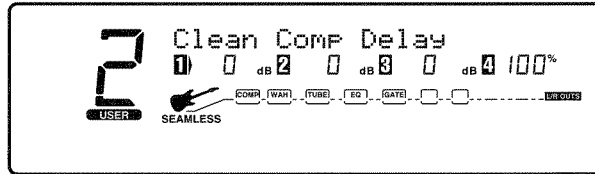
To access the Output Module of the 2112, from Program mode press either the <Edit> button and use the <Program/Effect> and turn either counter or clockwise until the shows the Master Mix Module. If you wish to cut out a step or two in this process, simply press the <Other> button until the display shows the Master Mix Module as well.

Once you are at the Master Mix Module, you simply use the <Page> knob to move to the various editing pages of the Output Module.

To leave the Output Module section, simply press the <Program> button. Always make sure to store any changes made to the selected Program.

LOADING A PROGRAM

When you first turn on your 2112, it boots up in Program Mode and the display looks something like:



To select a Program, do the following:

- Make sure Program mode is selected (the <Program> will be brightly lit). If the <Program> button is dim, press it once to return to Program mode.
- Use the <Program> button to select the Program bank (Factory or User). Each successive press of the <Program> button toggles between the Factory and User bank of Programs.
- Using the <Program/Effect> wheel, scroll to the Program you want to hear.

GETTING SOUNDS

It never fails, there always seems to be a sound man at the back of the room, or an engineer in the control room that wants “more of this, or less of that” (bottom line: your ear is king). But, to accommodate these situations, you may need to make some minor adjusting here and there along the way. So here are some helpful guidelines for getting great sounds, while keeping everyone happy.

INPUT AND OUTPUT ADJUSTMENTS

For all you Nigel Tuffnells out there, the 2112 really can go to 100, if that is the sound you require. But we at Digitech suggest that you keep it a little lower than that (we would prefer that you purchase our products instead of hearing aids). The best setting for the input control is to use the <Input> knob so you have strong signal coming into the 2112 occasionally lighting the clip LED. As far as setting the Output level, let your ears be the judge. But, if you can’t hear the rest of the band, chances are that you need to back off on the Output level of the 2112 or the input of your amplifier(s).

GAIN ADJUSTMENTS

To adjust the gain in the Tube or Distortion section, either turn the <Gain> knob on the front panel or press the <Edit> button to put you in Edit mode. Now use the <Program/Effect> wheel to scroll to the Tube or Distortion module. From this point, turn the <Page> knob to move to Page 2 of 2 of the Tube or Distortion module. The number of different preamp tones are almost unlimited when making gain adjustments. Your gain settings range from 0 to 100, so this gives you plenty of room for great tones in between.

EQ AND MIX ADJUSTMENTS

Adjusting the global EQ is as easy as grabbing the knob and turning. Knob <1> controls the level of the bass frequencies, knob <2> controls the level of the mids, and knob <3> controls the highs. In Program mode the level of each frequency band is displayed on the screen. Global EQ settings range from -12 to 12. For more information on the Global/Local EQ and Mix, see page 29.

WET/DRY MIX ADJUSTMENTS

To change the mix of dry and wet signal use knob <4>. Mix settings range from 0 (all dry) to 100% (all wet). The Mix knob really comes in handy when playing live because the acoustics of any room will change throughout a gig due to changes in crowd size, humidity, temperature, the dreaded gig gremlins, or whatever. As the room acoustics change, you can easily adjust the level of your effects accordingly with the turn of a knob. The Master Mix of each program can be modified in the Master Mix menu while in edit mode by either pressing the <Edit> button then scrolling through the program pages. Or, simply press the <Other> button until this menu is reached.

PROGRAM LEVELS

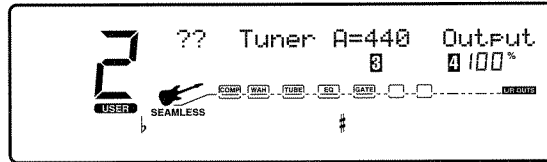
To adjust the overall level of a program push the <LEVELS> button. Then use the <1> Knob to either bypass or activate the Tube or Solid State levels. At this point, you now want to use the <2> knob to adjust the level of the selected distortion. From here, you will now want to use the <3> knob to set the DSP level. Last but not least, knob <4>. This controls the Master output. All of these levels range from 0 (off) to 100%.

USING THE TUNER

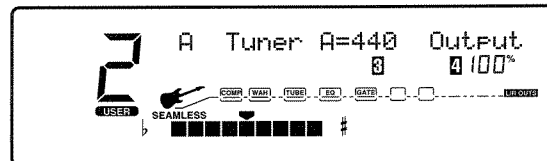
When using the Tuner of the 2112, it can be accessed one of two ways. Either by pressing the <Tuner> button on the front panel or using the optional Control One foot controller. The following, explains both modes of operation.

Front Panel

- Press the <Tuner> button. The display reads:



- As you play a note on the guitar, the top line will tell you which note you are playing, while the meter will show you if you are flat or sharp. If the meter is moving right, the note you are playing is sharp. If the meter moves left, you are flat. The goal is to tune your guitar so that the meter stops moving, and the display will lock-in, indicating that you are in tune. Once you start playing the selected note, the display will read as follows:



- Press the <Tuner> button to exit the Tuner mode.

Reference and Output

The 2112 gives you the option of changing the Tuning reference from F# to 453, by simply turning the <3> knob while the 2112 is in Tuner mode. Another feature available in the 2112 Tuner mode, is the ability to set the amount of signal that is passed to the output while tuning. This has a range from 0 (mute) to 100%. The output can be changed by turning the <4> to the desired level while the 2112 is in Tuner mode.

Control One Tuner Mode

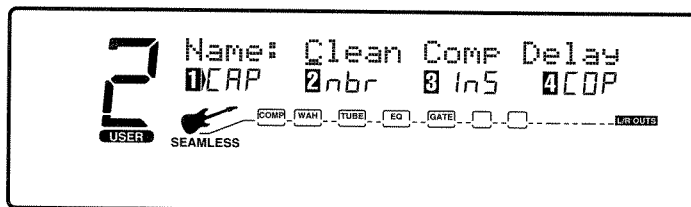
To access the Tuner mode using the optional Control One foot controller, press and hold the Bank Up/Tuner footswitch to engage tuner mode on the Control One.

- As you play a note on the guitar, the indicator in the display of the Control One will move either to the right, or the left. If the indicator is moving right, the note you are playing is sharp. If the indicator moves left, you are flat. The goal is to tune your guitar so that the indicator stops in the middle and the display locks-in, indicating you are in tune.
- In both methods of tuning, the tuner is referenced to A=440Hz. If you prefer tuning sharp or flat according to the A reference, use the <3> knob to select a new reference. This can be set as high as A=453Hz or as low as A=427Hz. The tuner can also be used for alternate tuning references where A=Ab (meaning you play an A note, but you hear an Ab note). It is possible to tune as low as A=Gb.
- At this point, press any footswitch on the Control One to exit the Tuner mode.

STORING/NAMING PROGRAMS

Before we get into editing programs and creating your own, let's learn how to store changes so you won't lose any modifications you'll want to keep. The Store procedure allows you to rename, relocate and save any modifications you have made to Programs so that they can be accessed easily later.

- Press the <Store> button once. The display shows the current Program name (which may look something like this):



A cursor appears under the first character of the Program name

NAMING THE PROGRAM

- Using the <Program/Effect> wheel, change the character to the one you want in the selected position.
- When the correct character is displayed in that position, use the <Page> knob to scroll the cursor to the next character you want to change.
- Use <I> knob to change the letter's case. The <2> knob is used to select numbers, The <3> knob is used to insert spaces. The <4> knob is used to copy and paste characters.
- To copy a character, position the cursor under the character you want to copy (using the <Page> knob), then turn the <4> knob clockwise. To paste the copied character, position the cursor where you want to paste the character, then turn the <4> knob counter-clockwise.
- To abort the procedure, push either the <Program> button to take you to Program Mode, the <Edit> button to take you to FX Edit Mode, or the <Utilities> button to take you to Utility Mode, depending upon which mode you want to enter.

STORING THE PROGRAM

- When you have the name how you want it, press the <Store> button again. The top line of the display reads:

Store To: [Program Name]

This screen allows you to select the location of the new Program. **Note** that when the Program is stored, it is stored in the User bank of Programs because Factory Programs cannot be overwritten.

- Use the <2> knob or the Program/Effect wheel to select the Program number where you want to store the new Program.
- Press <Store> again. The top line of the display briefly reads:
STORING PROGRAM TO ##
after which you are taken to the Program you just stored.

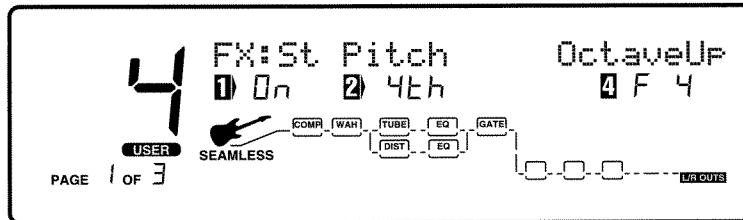
The newly created Program is now loaded, and can now be recalled at any time.

- To abort the procedure, push either the <Program> button to take you to Program Mode, the <Edit> button to take you to FX Edit Mode, or the <Utilities> button to take you to Utility Mode, depending upon which mode you want to enter.

EDITING A PROGRAM

It is extremely easy to create custom Effect Programs because your 2112 gives you access to a complete library of professionally developed default effects ("Defaults").

- From Program mode, press the <Pitch> button. The display looks something like this:



When you enter FX Edit mode, the first page of every FX Module allows you to:

- 1) Bypass that effect module (by turning it on or off) using the <1> knob.
- 2) Select an Effect Module (**Only in the Digital Effect section**), using the <2> knob.
- 3) Store the Default using the <3> knob (for more info on storing Defaults, see pg. 21)
- 4) Select a Default for the selected Effect Module using the <4> knob.

CHANGING EFFECT MODULES

Each program can be comprised of up to eight digital effects (in addition to the Preamp section). You can scroll through the modules in each program two different ways:

1. By pressing the <Edit> button to enter FX Edit mode and using the <Program/Effect> wheel to scroll through the different modules, or
2. By using the FX Library buttons. Pressing the <Preamp> button takes you directly to the first module in the preamp section. Subsequent pushes will scroll you through the successive modules in the preamp section. Likewise, pushing the <Dly/Rvb> button takes you directly to the first module in the Digital FX section which has a delay or reverb loaded in it. Subsequent pushes of the button scrolls you through subsequent modules that are loaded with a delay or reverb (assuming there are more delays or reverbs loaded in the program of course.)

Once you reach a module you want to change (ie: you want to swap a delay for a reverb), use the <2> knob to select a new effect.

SELECTING A DEFAULT

Once you have selected the effect you want in the program (ie: StDual Reverb), you can quickly scroll through several different StDual Reverb defaults stored in your 2112's library.

EXAMPLE:

There are 7 Stereo Pitch Shifter defaults to choose from. Some Factory Programs use these Default settings. So, if you like the Pitch shifter that is being used in Factory Program #4, and would like to use it in Program #98, simply scroll to the Stereo Pitch Shifter module, then use the <4> knob to recall the default (which happens to be F4-Octave Up) in Program #4. This eliminates the need to copy all those parameters from one location to the other.

For a list of all the FX Modules and their Defaults, see page 23-27.

ADJUSTING THE MODULE'S LEVEL

Once in Edit Mode, the parameters of every default module can be accessed through a series of pages. You adjust the level of a particular module from Edit page 2. If you're not already in Edit Mode, press the <Edit> button. You can then use the <Program/Effect> wheel to scroll to the module you want to change (ie: St Pitch). Using the <Page> knob, scroll to page 2. You can now change the individual module's level using the <1> knob. Settings range from 0 (off) to 100%.

CUSTOM DEFAULTS

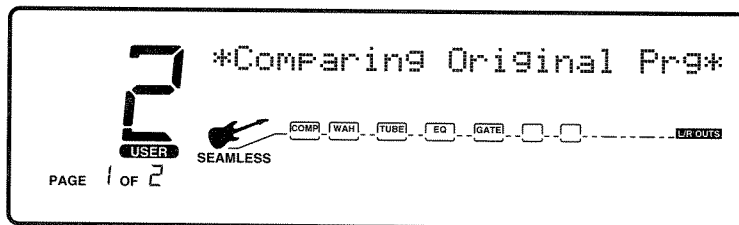
Once you have tweaked the parameters of an effect Module, you can store it off as part of the program. Once it is stored off, it becomes a custom default for that program, but is not added to the User default library. To save the settings as User Defaults, please see pg. 21

COMPARING CHANGES

During the course of editing Programs, you may find that you want to compare the edited version of the Program to the original, stored version. Fortunately, your 2112 provides you with this valuable A/B feature in the Compare function.

To compare an edited Program with the original Stored version, do the following:

- While in FX Edit Mode, press the <Edit> button once. The top line of the display reads:



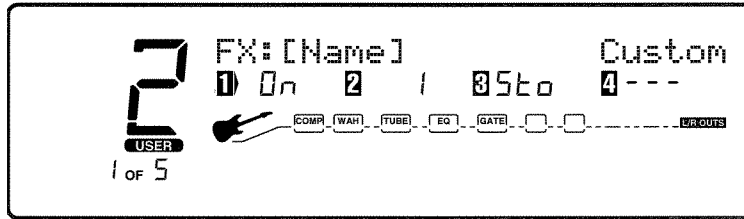
When this message is displayed, the stored Program is temporarily loaded and active.

- To return to the edited version, press the <Program> to get to Program Mode or the <Edit> button to get back to FX Edit Mode.

STORING/NAMING DEFAULTS

Before we get into editing Modules and creating your Defaults, let's learn how to store changes so you won't lose any modifications you'll want to keep. The Store procedure allows you to rename, relocate and save any modifications you have made to Defaults so that they can be accessed easily later.

- When you have satisfactorily altered an Effect Default (or created a new one), scroll back to Page 1 of the effect Module you are editing (if you're not already there). The display looks something like this:



- From Page 1 of the FX Edit Menu, turn the <3> Knob clockwise. You will then be able to name your new default.

NAMING THE DEFAULT

- Using the <Program/Effect> wheel, change the character to the one you want in the selected position.
- When the correct character is displayed in that position, use the <Page> knob to scroll the cursor to the next character you want to change.
- Use the <1> to change the letter's case. Use the <2> knob to select numbers. The <3> knob is used to insert spaces. The <4> knob is used to copy and paste characters.
- To copy a character, position the cursor under the character you want to copy (using the <Page> knob), then turn the <4> knob clockwise. To paste the copied character, position the cursor where you want to paste the character, then turn the <4> Knob counter-clockwise.
- To abort the procedure, push either the <Program> button to take you to Program Mode, the <Edit> button to take you to FX Edit Mode, or the <Utilities> button to take you to Utility Mode, depending upon which mode you want to enter.

STORING THE DEFAULT

- When you have the name as you want it to read, press <Store>. The top line of the display reads:

Store To: [Name]

This screen allows you to select the location of the new Default. Note that when the Default is stored, it is stored in the User bank of Defaults because Factory Defaults cannot be overwritten.

- Use the <2> knob to select the Default number where you want to store the new Default.
- Press <Store> again. The Default is saved off and you are taken to page 1 of the FX Edit menu.

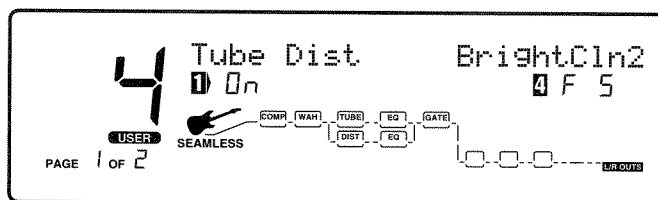
The newly created Default is now loaded, and can now be recalled at any time.

- To abort the procedure, push either the <Program> button to take you to Program Mode, the <Edit> button to take you to FX Edit Mode, or the <Utilities> button to take you to Utility Mode, depending upon which mode you want to enter.

EDITING A MODULE

Your 2112 comes loaded with pretty much all of the Factory Effect Defaults you'll need right at your finger tips. In any given situation, however, you may want to tweak a module just a tad (or more than a tad). The parameters of each Effect Module are reached through a series of pages.

- Press the <Edit> button. The display looks something like this:



When you first enter FX Edit mode (by pressing the <Edit> button), you are taken to the Tube distortion module in the Preamp section. Turn the <Program/Effect> wheel to scroll through the modules until you reach a digital Effect module. **Notice** that as you scroll through the different modules, the currently selected module will flash in the Effect Routing Matrix. Once you have reached a module in the Digital Effects section that you want to edit, use the <Page> knob to scroll to the particular parameters.

Notice: Anytime a change is made to either an Effect Module or Default, the **Changed** icon will appear directly below the effected parameter within the module or default.

SCROLLING THROUGH A MODULE'S PAGES

Notice in the bottom left corner of the display (just under the Program Number) the display indicates which page you are on and the total number of pages within the module. Each page allows you to access up to four parameters using the <1> - <4> knobs.

EXAMPLE:

To scroll through the parameter pages of the Quad Chorus module, from the Program mode either press the <Mod> button on the front panel until the Quad Chorus module comes up in the display, or, press the <Edit> button and once this button is lit, use the Program/Effect wheel to scroll to the Quad Chorus module. At this point use the <Page> button to scroll through the parameters of the Quad Chorus module.

For a description of all the FX Modules and their parameters, see pages 23-27.

DIGITAL EFFECT MODULE SIZE AND TYPE

With all of the work that these digital effect modules do for your sound, they have a tendency to work up an appetite. So, they consume their food from the FX pies chart referred to on page 4.

Since some of these effect modules have a larger appetite than the others, they require more pie. To help divide up the pie, we have provided you with a chart below that tells you what size of effect block that each will fit in. This helpful chart will also let you know if the selected module is either a: Mono, Stereo, or Dual output configuration.

Note: The Effect Module size will always be displayed in Page 1 of the selected effect module next to the number 2 icon located in the display.

Effect Name	Module Type - 4th	Module Type - HLF	Module Type - 3/4	Module Type - FULL	Effect Type
Dual Cho	✓	✓	✓	✓	Dual
Quad Cho		✓	✓	✓	Dual
Octal Cho			✓	✓	Dual
StDual Cho		✓	✓	✓	Stereo
Dual Fla	✓	✓	✓	✓	Dual
Stereo Fla		✓	✓	✓	Stereo
Dual Pha	✓	✓	✓	✓	Dual
Stereo Pha		✓	✓	✓	Stereo
RotarySpkr		✓	✓	✓	Stereo
St Tremolo	✓	✓	✓	✓	Stereo
Auto Pan	✓	✓	✓	✓	Stereo
Dual Dtn	✓	✓	✓	✓	Dual
Quad Dtn		✓	✓	✓	Dual
Octal Dtn			✓	✓	Dual
StDual Dtn		✓	✓	✓	Stereo
Smooth Pch			✓	✓	Stereo
Dual Pitch	✓	✓	✓	✓	Dual
Quad Pitch		✓	✓	✓	Dual
Octal Pch			✓	✓	Dual
St Pitch	✓	✓	✓	✓	Stereo
StDual Pch		✓	✓	✓	Stereo
Harmony			✓	✓	Stereo
Delay	✓	✓	✓	✓	Dual
Dual Delay	✓	✓	✓	✓	Dual
Quad Delay		✓	✓	✓	Dual
Stereo Delay		✓	✓	✓	Stereo
StDual Dly		✓	✓	✓	Stereo
StQuad Dly		✓	✓	✓	Stereo
Long Dly	✓	✓	✓	✓	Dual
Analog Dly	✓	✓	✓	✓	Stereo
StAlog Dly		✓	✓	✓	Stereo

Effect Name	Module Type - 4th	Module Type - HLF	Module Type - 3/4	Module Type - FULL	Effect Type
Chorus/Dly	✓	✓	✓	✓	Dual
Flange/Dly	✓	✓	✓	✓	Dual
Pre Delay	✓	✓	✓	✓	Dual
Reverb	✓	✓	✓	✓	Dual
DualReverb		✓	✓	✓	Dual
St Reverb			✓	✓	Stereo
StDual Rvb				✓	Dual
Gated Rvrb	✓	✓	✓	✓	Dual
St GatRvrb				✓	Stereo
Room Echo				✓	Stereo
Noise Gate	✓	✓	✓	✓	Stereo
Auto Wah	✓	✓	✓	✓	Stereo
GEQ8	✓	✓	✓	✓	Mono
GEQ15		✓	✓	✓	Mono
GEQ31				✓	Mono
St GEQ8		✓	✓	✓	Stereo
St GEQ15				✓	Stereo
St PEQ3	✓	✓	✓	✓	Stereo
PEQ6	✓	✓	✓	✓	Mono
St PEQ6		✓	✓	✓	Stereo

EFFECT MODULES AND DEFAULTS

The following is a list of all the Effect Modules, and their respective Factory Defaults.

PREAMP MODULES

Preamp

- Bluesy Rhythm
- Blues Lead
- Rock Man
- Twin Combo
- 1X12 Combo
- Country 1
- Country 2
- British Stack
- American Stack
- Dirty 1X12
- Fusion Lead
- Violin Lead
- Fuzzy Face
- Daddy's Tone
- Double Overdrive
- High Gain Solo
- Sweet Clean Tube
- Big Honk
- Power 1
- Power 2
- Blues Drive
- Power Clean
- Thick Blue
- Solo 1
- Solo 2
- Bright Comp Tube
- Klean Krunch
- T:Dirty-D:Clean
- T:Clean-D:Dirty
- Tube-DistHybrid

Compressor

- Light 1
- Light 2
- Medium 1
- Medium 2
- Heavy
- MaxSus

Tube Distortion

- WarmClean1
- WarmClean2
- WarmClean3
- BrightCln1
- BrightCln2
- BrightCln3
- Dirty1
- Dirty2
- Dirty3

- SatTube1
- SatTube2
- SatTube3

Tube and Solid State 10-Band EQ

- LoBoost1
- LoBoost2
- Mid Cut1
- Mid Cut2
- MidScoop1
- MidScoop2
- MidBoost1
- MidBoost2
- HiLo Boost
- HiBoost 1
- HiBoost 2
- HiBoost 3
- Warm
- Dark
- Honky
- Quack
- Smiley
- Notchy
- FullBody
- Nosey
- Punch
- 4X12 Cab

Solid State Distortion

- Punchy
- MaxCrnch
- Hi Gain
- Low Fuzz
- Med Fuzz
- "The" Fuzz
- OvDrive1
- OvDrive2
- Chunk 1
- Chunk 2
- WarmSus1
- WarmSus2
- WarmSus3

Noise Reduction

- S1 Pre Gate
- S2 Post NR
- S2 Post Tub

- S2PostDst
- Fast Swell
- Slow Swell

CHORUSES

Dual Chorus

- Medium
- Shallow
- MildNWide
- MediumWell
- DeepDepth
- Deep
- MaxDepth
- Shimmery
- SloVibrato
- FstVibrato

Quad Chorus

- Medium
- MildNWide
- MediumWell
- Thick
- DeepDepth
- Deep
- MaxDepth
- Shimmery
- SloVibrato
- FstVibrato
- ChorusLeft

Octal Chorus

- Medium
- Shallow
- DeepDepth
- MaxDepth
- Deep
- Shimmery
- SpcScrmblr

Stereo Dual Chorus

- Medium
- Shallow
- MediumWell
- DeepDepth
- Deep
- MaxDepth
- Shimmery

- SloVibrato

FLANGERS

Dual Flange

- HiSweep30%
- HiSweep70%
- LoSweep30%
- LoSweep70%
- Throaty
- Nasally
- Gonzo
- IntenseL
- IntenseR
- FlaChorus1
- FlaChorus2

Stereo Flange

- HiSweep30%
- HiSweep70%
- LoSweep30%
- LoSweep70%
- Throaty
- Nasally
- Gonzo
- FlaChorus1
- FlaChorus2

PHASERS

Dual Phaser

- ShallowSlo
- ShallowFst
- Mild Slow
- Mild Fast
- Medium
- Deep
- Shimmery
- PhaChorus1
- PhaChorus2
- Psychedelc

Stereo Phaser

- ShallowSlo
- ShallowFst
- Mild Slow
- Mild Fast
- Medium
- Deep
- Shimmery
- PhaChorus1
- PhaChorus2
- Psychedelc

DETUNERS

Dual Detuner

- -5Cents
- -12Cents
- +/-5Cents
- +/-10Cents
- Single Vox

Quad Detuner

- Shallow
- Medium
- Wide
- Deep

Octal Detuner

- Shallow
- Medium
- Wide
- Deep

Stereo Dual Detuner

- Medium
- Deep
- -5Cents
- -12 Cents
- Dtn Doubler

PITCH SHIFTERS

Whammy

- Octave Up
- Octave Dn
- 2ndMin3rd
- 2ndMaj3rd

Smooth Pitch

- ShftDn-12
- ShftDn-5
- ShftDn-24
- ShftUp+5
- ShftUp+7
- ShftUp+12

Dual Pitch

- 5th/OctUp
- 5thUpOctDn
- 3rd/5thUp
- Min3/5thUp
- 4th/OctDn
- OctUp/Down
- OctDownDtn

- 5ths Down
- 1&2OctsUp

Quad Pitch

- MajChord
- MinChord
- Oct/Dtn
- 5th/OctDtn
- 5Octaves

Octal Pitch

- Chord/Det1
- Chord/Det2
- MinChrdDtn
- 5thsOcts

Stereo Pitch

- 5th Up
- Min3rdUp
- Maj3rdUp
- OctaveUp
- 4thDown
- OctaveDown
- 2 OctsDown

Stereo Dual Pitch

- 5th/OctUp
- 5thUpOctDn
- 3rd/5thUp
- Min3/5thUp
- 4th/OctDn
- OctUp/Down,
- OctDownDtn
- 1&2OctsUp

Harmony

- Cmaj3rdUp
- Cmaj6thUp
- Emin3rdUp
- Cmaj6thDn
- Cmaj3rdDn
- Emix3rdUp
- Cmaj5thUp

DELAYS

Delay

- 1400ms/15%
- CombFilter
- Doubling
- Slapback
- 300msEcho
- 400ms/30%

- 500ms/25%
- 800ms/20%
- 1SecEcho
- MaxRepeats
- 1400ms/0%

Dual Delay

- PingPong
- 1SecTicToc
- Doubling
- Slapback
- DoubleSlap
- RoundNRnd
- Hard2Tap
- ThickTaps

Quad Delay

- RoundNRnd
- SynchroTap
- RtoLPanTap
- TripleSlow
- PingPong
- 400msThick
- OnTheRise
- Shav&Hrcut
- HorseTrot

Stereo Delay

- 700ms/20%
- CombFilter
- Doubling
- SlapRight
- 400ms/50%,
- 500ms/30%
- 600ms/15%
- MaxRepeats
- 350ms/0%
- 700ms/0%

Stereo Dual Delay

- Skip
- SwingPong
- PingPong1
- PingPong2
- DoubleSlap
- RoundNRnd
- Hard2Tap
- ThickEcho

Stereo Quad Delay

- RoundNRnd
- SynchroTap
- PingPong
- 400msThick
- HorseTrot
- Shav&Hrcut

- Ratatat
- Random

Long Delay

- 2.8sec/15%
- CombFilter
- Slapback
- 300msEcho
- 400ms/30%
- 500ms/25%
- 800ms/20%
- 1SecEcho
- MaxRepeats
- 2.8sec/0%

Analog Delay

- 1400ms/25%
- SoftEcho
- Eternity

Stereo Analog Delay

- 700ms/25%
- SoftEcho
- Eternity

MULTI-FX MODULES

Chorus/Delay

- MedChoEcho
- LitChoEcho
- MedChoSlap
- DeepChoDly
- ShimryEcho
- ModDly300m
- DeepModDly
- DlyCho300m

Flange/Delay

- FlaLitD300
- FlaMedD300
- HeavyFIDly
- LoSweepDly
- ThroatyDly
- DoublGonzo
- FlangJelly

REVERBS

Reverb

- SmoothHall
- Bar'nGrill
- OakFloorRm
- VocalReverb
- FoilPlate
- GoldPlate

- SmphnyHall
- RichChmbr
- Sanctuary
- SaltPalace
- CmmtGarage
- PlutoVerb

Dual Reverb

- BrightHall
- LngDrkHall
- Concrthall
- MiniHall
- FlatChambr
- WarmChambr
- BigCathedrl
- SmlCathedrl
- GoldPlate
- ThinPlate
- VocalPlate
- PercPlate
- StudioAmb
- StudioRoom
- WoodRoom
- FlutterRvb
- VeryThin
- CementRoom
- HugeArena

Stereo Reverb

- SmoothHall
- Bar'nGrill
- OakFloorRm
- VocalReverb
- FoilPlate
- GoldPlate
- SmphnyHall
- RichChmbr
- Sanctuary
- SaltPalace
- CmmtGarage
- PlutoVerb
- VocalAir

Stereo Dual Reverb

- BrightHall
- LngDrkHall
- Concrthall
- MiniHall
- FlatChambr
- WarmChambr,
- BigCathedrl
- SmlCathedrl
- GoldPlate
- ThinPlate
- VocalPlate

- PercPlate,
- StudioAmb
- StudioRoom
- WoodRoom
- FlutterRvb
- Very Thin
- CementRoom
- HugeArena

Gated Reverb

- 100msGated
- 200msDcyEx
- 200msDecay
- 200msGated
- 300msDcyEx
- 300msDecay
- 300msGated
- Reverse150
- Reverse300
- 300msPeak

Stereo Gated Reverb

- 200msDecay
- 200msGated
- 400msDcyEx
- 300msDecay
- 300msShelf
- DrkGate400
- 500msDecay
- 500msGated
- Reverse300
- Reverse500
- Peaking500

Room Echo

- WideSlap
- LiveSlap
- Springy
- Stage
- Voxy
- Drum1
- Drum2

OTHER MODULES**Pre Delay**

- 0ms
- 30ms
- 60ms
- 90ms
- 120ms
- Warm0ms
- Warm60ms

- Warm120ms
- 0msHPass1
- 0msHPass2
- 0msHPass3
- 0msHPass4
- 0msLPass1
- 0msLPass2
- 0msLPass3
- 0msLPass4

Rotary Speaker Simulator

- SloLeslie
- MedLeslie
- FastLeslie

Stereo Tremolo

- DeepSlow
- DeepMedium
- Deep Fast
- Mild Slow
- MildMedium
- Mild Fast

Auto Pan

- Wide Slow
- WideMedium
- Wide Fast
- NarrowSlow
- NarrowMed
- NarrowFast

Auto Wah

- Low Sens
- High Sens

Noise Gate

- LoThrsh
- MedThrsh
- HiThrsh
- FastSwell
- VolumSwell

EQUALIZERS**8-Band Mono Graphic EQ**

- Flat
- Low Pump
- Sizzle
- Smiley
- InvertPhase

15-Band Mono Graphic EQ

- Flat
- Low Pump

- Sizzle
- Smiley
- InvertPhase

31-Band Mono Graphic EQ

- Flat
- Low Pump
- Sizzle
- Smiley
- InvertPhase

8-Band Stereo Graphic EQ

- Flat
- Low Pump
- Sizzle
- Smiley
- PhasInvertL

15-Band Stereo Graphic EQ

- Flat
- Low Pump
- Sizzle
- Smiley
- PhasInvertL

3-Band Stereo Parametric EQ

- Flat
- Low Boost
- Smiley
- PhasInvertL
- PhasInvertR
- SmlBoost
- LowNudge
- 60HzNotch

6-Band Mono Parametric EQ

- Flat
- Low Boost
- Smiley
- 60HzNotch
- InvertPhase

6-Band Stereo Parametric EQ

- Flat
- Low Boost
- Smiley
- 60HzNotch
- PhasInvertL

EFFECTS LIBRARY

The following pages offer the complete low-down on all of the effects offered in the 2112.

PRE AMP EFFECTS

COMPRESSION

Compression is an invaluable tool in the effect world. It can make or break any recording session or live performance. Compression can take an incredible solo that just seems to be lacking somehow in a recording and bring so much life to it, that it almost jumps off the tape. The way the compressor does this is by turning the signals down as they become louder. After it makes the adjustment to the level, it boosts the overall signal back up. This effect can be used to increase sustain and tighten up guitar signal.

COMPRESSION PARAMETERS

Comp On/Bypass	Turns the Compression module On or bypasses the module.
Threshold	Sets the minimum input level at which the compressor will engage. As THRESHOLD is lowered, the compressor engages at lower levels, causing the apparent output level to decrease. Ranges in 1dB steps from -35dB to -5 dB.
Compression Ratio	Controls the amount of gain reduction for a given input signal level. This means that if RATIO is set 2:1, every 2dB increase in input level results in a 1dB increase in compressor output. Likewise, if RATIO is set to 5:1, every 5 dB increase in input level result in a 1 dB output level increase. The higher the RATIO setting, the more compressed the output signal becomes. Ranges from: 1.5:1 to infinity:1.
Attack	This parameter selects the attack time of the compressor. The attack times range are: slow, Medium, Fast, and Very Fast
Output Level	This parameter adjusts the overall output level of the compressor. Ranges in .5 dB increments. Range is from OFF to 20.0 dB.

ANALOG WAH

With the Analog Wah, you get the best of both worlds. This Analog Wah is digitally controlled. What exactly does that mean? This means that you get an dead-on accurate Wah emulation (you may have heard a certain Left-handed guitarist at Woodstock with this same tone), which is controlled via the 2112's powerful processing. And the best thing is, you no longer have to change batteries every 3 to 4 hours.

ANALOG WAH PARAMETERS

ON/Bypass	This parameter turns the Analog Wah On or Bypasses the effect module.
Wah Position	Controls the pedal position of the Analog Wah effect module. Ranges from 1 to 128. *An expression pedal must be assigned to this parameter in order for module to operate.
Wah Type	Selects which Wah type is to be used. Selections are: Toe heavy, Linear, and Heel Heavy.

TUBE DISTORTIONS

The days of having to sacrifice reliability for the great tonal characteristics of an old British or American tweed pre-amps are now just a thing of the past with the tube preamp distortion section of the 2112. The great thing about the 2112 is, you are not limited to just one preamp sound setting. You can have anything from Vintage Tweed to a British half, to a rectified full-on stack

TUBE DISTORTION PARAMETERS

Dist On/Off/Bypass	Turns the Tube Distortion module either On/Off or Bypasses the Module.
Distortion Type	Selects the the type of distortion that is being used in the program. The Tube Distortion types include: Warm Clean - Ideal for clean tone, Bright Clean - Great for mellow blues, Dirty Tube - Overdriven blues solos or dirty Rhythm tones, Saturated Tube - Heavily saturated tube amplifier voicing
Distortion Gain	Controls the amount of gain being used in the selected distortion type. This parameter value ranges from 0 to 100.

SOLID STATE DISTORTIONS

It seems that in this day and age, the great controversy is no longer Roe vs. Wade, it seems to be more of Tube vs. Solid State distortions. The 2112 believes that these two effects can live together in harmony under the same chassis lid. The Solid State distortions available in the 2112 offer variety and yet still compliment the Tube distortions.

SOLID STATE DISTORTION PARAMETERS

On/Off/Bypass	This parameter turns the Solid State distortion On/Off or Bypasses the effect module.
Distortion Type	This parameter allows you to select which Solid State Distortion type is being used. The Solid State Distortion Types are: Grunge - Industrial music industry standard, Fuzz - Fuzz-face type emulation, Overdrive - Classic distortion screamer, and Heavy Sustain - Heavily saturated soloing tones.
Distortion Gain	Controls the amount gain being used in the in the selected distortion type. This value ranges from 0 to 100

TUBE AND SOLID STATE DISTORTION PATH ANALOG 10-BAND GEQs

Included in every program of the 2112 Tube and Solid State distortion paths, is a 10-band graphic EQ with 12 dB boost or cut in 1 dB increments. **Note:** This EQ is separate from the Global/Local EQ and EQ effect modules used in Program mode.

NOISE REDUCTION

The Silencer II noise reduction system is definitely going to become your best friend in any recording session or live performance for keeping signals quiet. Along with being quiet, the Noise reduction can be placed in several different spots within the signal path of the 2112. This feature is great to use when extra noise reduction is needed in different areas.

NOISE REDUCTION PARAMETERS

Type	Selects the type and placement of the noise reduction to be used. Types include: 1. Silencer I pre T&D, 2. Silencer II post T&D, 3. Silencer II post Tube, 4. Silencer II post Solid State distortion.
Threshold	Set the minimum input level at which the compressor will engage. Ranges from -90 to 0.
Attenuation	Adjusts how far the signal is lowered when the gate is closed. Ranges from 1 to 5.
Attack	Controls how quickly the gate opens after the signal level reaches Thresh. Range: 1 to 10.
Release	Determines how quickly the the gate closes after the signal falls below the Threshold. Ranges from: 1 to 10.

GLOBAL/LOCAL EQ AND MIX

Whether you are playing in over 250 different clubs that have different characteristics and nuances, or recording in five different studios in as many days, the Global/Local EQ and Mix function of the 2112 is a great asset to your programming needs. The sound of each room or studio can vary so much, and change so quickly, in these situations your going to have to be making EQ and Mix changes on the fly. The Global/Local EQ and Mix selection section of the 2112 is located on the front panel of the 2112. The Global EQ can also be set to Local mode to control only the selected program. The Global/Local EQ and Mix selection is located in the 1st page of the utility section.

GLOBAL/LOCAL EQ AND MIX PARAMETERS

Gain	Controls the Gain either globally or locally in the 2112. Ranges from: 0 to 100.
Bass	Controls the Mid EQ frequencies either globally or locally in the 2112 and can be changed in 1 dB increments. Ranges from: -12 to 12dB.
Mid	Controls the Mid EQ frequencies either globally or locally in the 2112 and can be changed in 1 dB increments. Ranges from: -12 to 12dB.
Treble	Controls the Treble EQ frequencies either globally or locally in the 2112 and can be changed in 1 dB increments. Ranges from: -12 to 12dB.
Mix	Controls the overall Digital effect mix of the programs in the 2112. Ranges from 0% to 100%. When Mix is set to Global mode, the <Mix> knob adjusts percentages of the stored mix of the programs.

DIGITAL EFFECTS

REVERBS

Reverberation is probably the most widely used effect because it allows you to simulate the sound reflection characteristics of almost any kind of room. In a real room, reverb is a result of sound reflecting off room surfaces such as the walls, floor, ceiling, and objects in the room. The materials, size, and shape of the room determine how long these reflections echo and decay before dying out completely. These factors also help determine the audio characteristics of the room, such as how long the high-frequency reverberations ring when compared to the low frequencies, or how much initial "slapback" the room wall produces when a sound hits.

Today's technology allows the 2112 to offer a complete palette of flexible, easy to use reverbs. There are five basic reverbs to choose from:

- 1) **Reverb** - Simple, straight ahead reverb with only the most basic parameters.
- 2) **Dual Reverb** - Multi-dimensional reverb with flexible frequency band-splitting capabilities. The reverb can be divided into primary and secondary stages using selectable High or Low Pass cross-overs.
- 3) **Stereo Reverb** - A true stereo version of the Reverb Module.
- 4) **Stereo Dual Reverb** - A true stereo version of the Dual Reverb
- 5) **Gated Reverbs** - A very linear, high energy reverb that can be set to decay, stay flat, or ramp up the reverb decay, creating many unique ambient effects.
- 6) **Room Echo** - A true stereo, multi-tap delay for creating small ambient spaces. The delays are divided into four sections of early reflections. These reflections can be placed anywhere in the stereo field and can be as dense or sparse as necessary. The Room Delay also includes a feedback loop for delay regeneration.

REVERB

Real life reverberation is the result of sound reflecting off surfaces in a room or hall. It can best be described as millions of small echoes that decay over a period of time. The size of the room, the surface type of the walls, or the carpet on the floor all contribute to the way real reverberation behaves and sounds.

WHEN DO I USE REVERB? When recording in the studio, nearly always. Many guitar tracks, for example, are recorded in a very sterile environment (i.e. very dry), but adding reverb can add lush depth to any guitar track.

WHY SHOULD I USE STEREO REVERB? It is all about sounding natural. Since more and more parts of music are recorded in stereo, it sounds best to help them maintain their original images. Stereo reverb helps maintain that original stereo image. But don't forget that millions of hit recordings were made using mono input reverbs that created a stereo output image. The theory is that sound generally originates from one point in a room, so mono often works just fine. The rule? Don't get caught using too much reverb on your guitar in live situations. Even if the room is small, it still produces some reverb. Too much makes the guitar go away. Let it complement the room.

GATED REVERB

Gated reverb doesn't behave as naturally as the standard varieties of reverb. Originally, it was created by taking a long, dense reverb and chopping it short with a noise gate. This made for a burst of reverberation energy that could help thicken up a variety of sounds.

Digital signal processing techniques improved and soon allowed ways to create similar gated reverb sounds that were far more usable and flexible. Today's gated reverb doesn't get gated at all, it just sounds like it does. It is actually a large burst of delay taps that create the gated reverb sound. This allows you to choose the length of the effect along with different slope shapes.

WHEN DO I USE GATED REVERB? Using a gated reverb in a multi effect guitar application is ideal for producing unusual special effects. Using the Gated reverb can give any guitar the "Swell" sounds. This type of reverb is also ideal for producing an effect that is similar to backward masking.

REVERB PARAMETERS:

FX: Lvl	Controls the signal input level fed to the Module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the left/right positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right).
Type	Selects the reverb type. Each room type has a different decay range (just as real rooms do), so changing TYPE also changes the decay time of the room. Types are: Studio Room, Wood Room, Vocal Plate, Concert Hall, Plate Reverb, Chamber, Cathedral, Arena, Cement Shelter, and Infinite Spring (for Reverbs), and: Flat, Shelf, Decaying Linear, Decaying Logarithmic, Decaying Exponential, Decaying Sine, Reverse Linear, Reverse Logarithmic, Reverse Exponential, Reverse Sine, Peaking Linear, and Peaking Exponential (for Gated Reverbs).
Density	Controls the number of discrete room wall reflections during the early portions of DECAY. Higher settings produce more reflections while low settings yield fewer initial wall echoes. Use this control in conjunction with DISPERSION to build or reduce the thickness of early reflection clusters heard near the beginning of the reverberation. Ranges from 0% to 99%.
Dispersion	Controls the distance (time) between the echoes set by DENSITY. If DENSITY is set low and DISPERSION is set high, the initial room echoes. Dispersion can be heard as discrete echoes followed by smoother room reverberations. Set DISPERSION low for a dense cluster of reflections during the early portions of DECAY. Ranges from 1 to 5.
Diffusion	Simulates the presence of different room materials by controlling the smoothness of reverberations through the course of DECAY. Low DIFFUSION settings are great for simulating

	hard, flat surfaces while higher DIFFUSION settings can be used to simulate the presence of irregular surfaces in the room such as natural rock masonry or man-made diffusers. Unlike flat surfaces, these materials reflect (diffuse) the sound in many directions because of the irregularity of the surfaces themselves. This builds smoothness over the reverb progression. Ranges from 0% to 99%.
X-Over Type	Selects which crossover type will be used for the Primary Secondary reverb stages. The two crossover types are High Pass (HP) and Low Pass (LP).
X-Over Freq.	Selects the Frequency where the crossover begins to function. Ranges from 25Hz to 20kHz.
Prim & Secd X-Over	These two Parameters allow the crossover to be turned On or Off for each reverb stage. When Off, that particular stage will be full bandwidth, otherwise its frequency response is limited by the X-Over Type and Frequency Parameters.
Prim & Secd Damp	Adjusts how quickly the room absorbs the high-frequency reverberations. In a real room, absorptive materials can be used to dampen the natural high-frequency reverberations of the room. High settings of DAMP cause the reverberations to darken tonally and become less defined over the course of DECAY. Low settings cause less dramatic room effects on the tone of the reverberations. Ranges from 1 to 7.
Low Pass	Selects the frequency above which all frequencies are rolled off. This control can be used to darken the response of bright-sounding gated reverbs. Ranges from 100 Hz to 8 kHz in the Gated Reverb and from 100 Hz to 20 kHz in the Stereo Gated Reverb.
Time	Controls the length of the gated reverb in milliseconds (much like the DECAY control of a normal reverb). Ranges from 25 milliseconds to 300 milliseconds in the Gated Reverb and from 500 milliseconds in the Stereo Gated Reverb.
Blend	Cross-mixes reverberations from the left side into the right side and vice-versa. This can be used to increase the realism of the simulated room by adding reverberations from different parts of the room to each channel. Ranges from 0% to 99%.
Prim & Secd Blend	Adjusts the amount of BLEND for the Primary and Secondary reverb stages. See BLEND above for a complete parameter description.
Decay	Controls the length (RT60) of the room reverberations. This one control could have been divided among Size and Reflection controls but has been simplified here for easier use. To simulate a large room, use longer DECAY settings. For small rooms, use shorter DECAY settings. For more natural sounding reverbs, you may also want to decrease the DENSITY setting as DECAY is shortened. Ranges from .5 to 23 seconds depending on the Reverb Type currently selected.
Prim & Secd Decay	Controls the length (RT60) for the Primary and Secondary reverberation stages. This Parameter interacts with the SIZE and REFLCT Parameters. Larger SIZE and REFLCT settings will allow longer reverb decay times while smaller settings reduce the length of the reverb decays but produce better small environment emulations. Ranges from .26 to 11 seconds.
Prim & Secd Size	Changes the relative room size of the Primary and Secondary reverb stages. Ranges from 1 to 5.
Prim & Secd Reflect	Controls the simulation of energy loss of sound each time it is reflected. Hard, smooth materials like glass and wood have more reflectivity than softer, more porous materials. This control can be thought of as determining the "liveness" of the room. Ranges from 1 to 10.
Delay A	Sets the length of time before hearing Delay Group A. Ranges from 0 to 120 milliseconds.
Delay B	Sets the length of time before hearing Delay Group A and Delay Group B. Ranges from 0 to 120 milliseconds.
Delay C	Sets the length of time before hearing Delay Group B and Delay Group C. Ranges from 0 to 120 milliseconds.

Delay D	Sets the length of time before hearing Delay Group C and Delay Group D. Ranges from 0 to 120 milliseconds.
Out A - D	Controls the output level of the Delay Groups. Ranges from Off to 100%.
Bal A - D	Controls the left/right balance of the Delay Groups. Ranges from -99 to 99.
Shape	Selects the shape of the output levels for the delay group taps. Shape selections are: Flat, Peak, Decreasing, Increasing, Shelf, and Reverse Shelf.
Spread	Controls the width of the effect's stereo imaging. Ranges from 1 to 10.
FB: Dly	Sets the amount of time before the delay is feedback in. Ranges from 0 to 170 ms.
Amount	Sets how much delay is feedback into the signal. Ranges from Off to 50%.
Out L - R	Adjusts the overall level of the left/right side of the reverb. Ranges from Off to 100%.
Prim Out L	Adjusts the overall level of the left side of the Primary reverb. Ranges from Off to 100%.
Prim Out R	Adjusts the overall level of the right side of the Primary reverb. Ranges from Off to 100%.
Secd Out L	Adjusts the overall level of left side of the Secondary reverb. Ranges from Off to 100%.
Secd Out R	Adjusts the overall level of the right side of the Secondary reverb. Ranges from Off to 100%.

CHORUSES AND FLANGERS

Both choruses and flangers use a Low Frequency Oscillator (LFO) to produce their rich, swirling effects. When you change the speed and depth Parameters of modulation effects, you're actually controlling the frequency and amplitude of the LFO. These settings determine the rate and intensity of the modulation effect.

In general, here's how choruses and flangers work: after entering the Module, the source signal is split into two paths. One is allowed to pass through the Module unaltered, while the other is delayed and pitch modulated. The modified sound is then sent to the output, along with the original. In Fig. 4-1 below, a sine wave is used to modulate the pitch of the split sound source.

The Dual Chorus creates two different pitch "voices", while the Octal Chorus creates eight voices for extremely full, rich sounds.

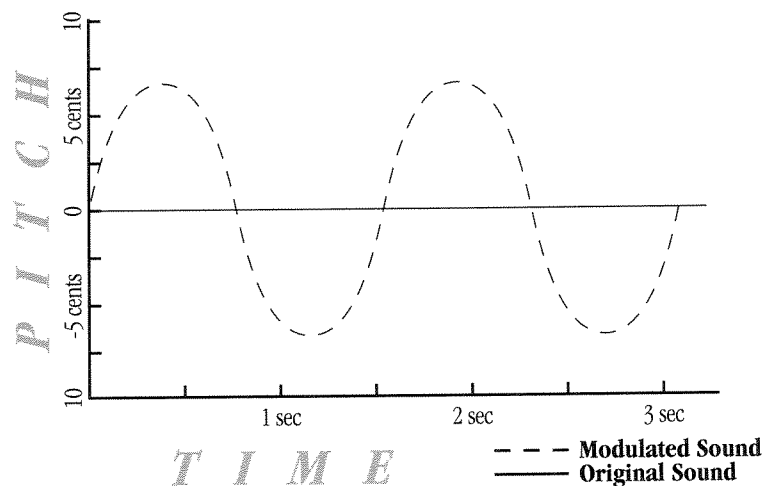


Figure 4-1 Modulation Example

The only difference between choruses and flangers is that flangers use less delay and have a feedback Parameter that sends a portion of the effected signal back to the input of the Module. When the effected signal reaches the input, it is sent through the Module again, building thickness and depth. If you increase the feedback enough, the source begins to lose its own original pitch to the dramatic pitch modulation of the feedback loop.

LFO Waveforms: There are four LFO waveforms available for Choruses, Flangers, Phasers, Tremolos, Auto Panners, and five for Modifier LFOs. They include SINE, TRIangle, SPecial-1, SPecial-2, and SPecial-3. See figure 4-2 for examples of what these waveforms look like.

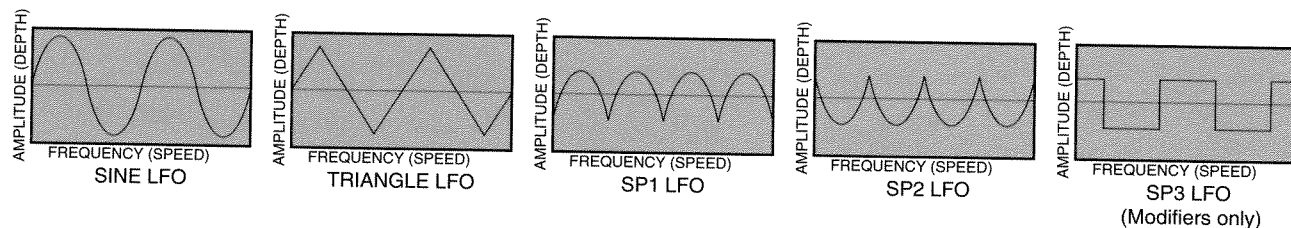


Figure 4-2 LFO Types

CHORUS

Chorus is probably the most basic modulation effect. It is really just a very small delay whose time is always changing. As the time is varied, the delayed signal's pitch changes (just like a tape recording's pitch raises when you play it faster). By moving the time back and forth, you hear a sound that goes in and out of tune. When combined with the original sound, it almost sounds like more than one instrument is playing. The 2112 uses several choruses at once to make huge rich sounds. For example, the octal chorus uses eight chorus voices at once to create an incredible ensemble of sound. Aside from the more obvious speed and depth parameters (which adjust respectively how fast and far the sound goes out of tune), the 2112 allows you to use different waveforms. The waveform defines how it will move in and out of tune. The triangle waveform is very popular for slow, shallow chorus settings, while the sine waveform works nicely for faster, deeper settings.

WHEN DO I USE CHORUS? The Chorus effect is so vast in applications, an easier question would probably be "When can't I use a Chorus. When playing the Blues, turn the Speed and Depth parameters up to produce an almost Lezlie-Type effect. When trying to obtain "Big" rock guitar tone, use the Chorus to thicken-up and add depth to your sound. And, any time your using a clean tone program, guitar always sounds so lush when chorus is added.

CHORUS PARAMETERS:

FX: Lvl	Controls the signal input level fed to the Module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the left/right positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right).
Speed	Controls the Low Frequency Oscillator (LFO) speed of the chorus. Ranges from 0.06 to 16.0 Hz.
Depth	Adjusts the intensity of the chorus effect. High settings produce dramatic modulation, while lower settings can be used to produce a more subtle, ambient swirling. Ranges from 0 to 30 milliseconds.
Depth 1 - 2	DEPTH1 adjusts the intensity of chorus voices 1-4. DEPTH2 adjusts the intensity of chorus voices 5-8. Ranges from 0 to 30 milliseconds.
Wander Speed	Controls the secondary LFO speed of chorus voices 5-8. This is a secondary oscillator for voices 5-8 that causes deviations from the oscillation path set by DEPTH2. This control can

	produce radical new textures when used creatively. Try setting it slightly faster or slower than SPEED. Ranges from 0.06 to 2.0 Hz.
Wander Depth	Adjusts the intensity of the oscillation deviations produced by WANDER SPEED. WANDER DEPTH produces dramatic psycho-acoustic swirling effects when set higher than DEPTH2. Ranges from 0 to 10 milliseconds.
WvFrm	Selects which waveform the LFO follows. Options are: sine, triangle, SPI (special 1), and SP2 (special 2). See figure 3-4
Dly A - B	Controls the delay time of chorus voices A and B. Higher delay time settings produce a more dramatic sweeping sound. Ranges from 0 to 60 milliseconds.
Dly C - D	Controls the delay time of chorus voices C and D. Higher delay time settings produce a more dramatic sweeping sound. Ranges from 0 to 60 milliseconds
Dly E - H	Controls the delay time of chorus voices E through H. Higher delay time settings produce a more dramatic sweeping sound. Ranges from 0 to 60 milliseconds
Out A - B	Adjusts the overall level of chorus voice A or B. Ranges from Off to 100%.
Pan A - B	Controls the placement of chorus voice A or B. Ranges from -99 to 99.
Out C - D	Adjusts the overall level of chorus voice C or D. Ranges from Off to 100%.
Pan C - D	Controls the placement of chorus voice C or D in the stereo image. Ranges from -99 to 99.
Out LA - LB	Adjusts the left-side level of chorus voice A or B. Ranges from Off to 100%.
Out RA - RB	Adjusts the right-side level of chorus voice A or B. Ranges from Off to 100%.
Spread	Controls the width of the effect's stereo imaging. The higher the setting, the wider the image. The lower the setting, the more monophonic the effect becomes. Ranges from 1 to 10.

FLANGER

A flanger is just a chorus that loops back into itself, causing what can be described as a tubular sound (since it sounds much like the reflections heard inside a large cement or metal pipe). It is still a modulating effect, so you hear a lot of sweeping movement. This makes the flanger a very colorful effect that can be easily overused if you're not careful. The more you feed the flanger back to itself, the more intense the sound becomes.

WHEN DO I USE FLANGE? An electric guitar is the first sound that begs for the flanger effect. It works very well with both clean and distorted guitar sounds. By setting the Speed and Depth parameters to higher settings, this will add more depth and body to the overall guitar signal.

FLANGER PARAMETERS

FX: Lvl	Controls the signal input level fed to the Module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right).
Speed	Controls the Low Frequency Oscillator (LFO) speed of the flanger. Ranges from 0.06 to 16.0 Hz.
Depth	Controls the intensity of the flange effect. High settings of DEPTH combined with high settings of FDBCK produce dramatic, synth-like textures. Ranges from 0 to 30 milliseconds.
FdBck	Controls how much of the flanged signal is fed back to the input of the Module. The

WvFrm

FDBACK Parameter is what gives flangers their distinctive voice. Flangers are capable of both positive and negative feedback loops, so experiment to find the sound you like best. Ranges from -99% to 99%.

Selects which waveform the LFO follows. Options for this control include sine, triangle, SP1 (Special 1), and SP2 (Special 2). The sine wave setting is probably the most easily recognized, but the smooth response of the triangle wave or the intensity of SP1 or SP2 typically produce better results. See figure 4-2.

Dly A - B

Controls the delay time of flange voice A or B. Shorter delay times produce a more dramatic, deeper sweeping sound. Ranges from 0 to 60 milliseconds.

Out A - B

Adjusts the overall level of flange voice A or B. Ranges from Off to 100%.

Pan A - B

Controls the stereo soundfield placement of flange voice A or B. Ranges from -99 to 99.

Out L - R

Controls the output level of the left or right side of the flanger. Ranges from Off to 100%.

PHASERS

The phaser or "phase shifter" as it is sometimes called, is a classic effect from the 70's that uses phase cancellation to create a warm sweeping effect. The effect is created by making a copy of a signal and moving it in and out of phase while mixing it with the original signal. As it moves, different frequencies are cancelled out creating a smooth curling sound. There is also a feedback control that sends the shifting signal back into the phaser's input. This intensifies the sound even more.

WHEN DO I USE A PHASER? This classic phaser effect is typically used with Guitars. A great example of this can be heard most when you listen to music of the 70's. Guitarist of the day loved their phasers. A phaser is a great effect to use when playing clean and funky rhythms.

PHASER PARAMETERS:

Dry: Lvl

Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.

Balance

Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right).

Speed

Controls the Low Frequency Oscillator (LFO) speed of the phaser. Ranges from 0.06 to 16.0 Hz.

Depth

Controls the intensity of the phaser effect. High settings of DEPTH combined with high settings of FDBCK produce dramatic, synth-like textures. Ranges from 0 to 30 milliseconds.

FdBck

Controls how much of the flanged signal is fed back to the input of the Module. The FDBACK Parameter is what gives phasers their distinctive resonating sound. Ranges from -99% to 99%.

WvFrm

Selects which waveform the LFO follows. Options for this control include sine, triangle, SP1 (Special 1), and SP2 (Special 2). The sine wave setting is probably the most easily recognized, but the smooth response of the triangle wave or the intensity of SP1 or SP2 typically produce better results. See figure 4-2.

Out A - B

Adjusts the overall level of phaser voice A or B. Ranges from Off to 100%.

Pan A - B

Controls the stereo soundfield placement of phaser voice A or B. Ranges from -99 to 99.

Out L - R

Controls the output level of the left or right side of the flanger. Ranges from Off to 100%.

ROTARY SPEAKER SIMULATOR

The Rotary Speaker Simulator allows you to emulate the classic rotating speaker sound, without the chiropractic problems that come with moving bulky speaker cabinets. The Rotary speaker is directly responsible for some of the most unique sounds in music. The applications for this effect are so diverse, it can be used to achieve sounds ranging from the Allman Brothers Band to the legendary Stevie Ray Vaughan.

ROTARY SPEAKER SIMULATOR PARAMETER:

FX: Lvl	Controls the signal input level fed to the Module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right)
Mode	Selects which speed mode the Rotor and Horn are in. Settings are fast or slow.
Spread	Sets the horn stereo microphone spread. Ranges from 0 to 100%.
H - R: Level	Sets the overall level of the Rotor or Horn. Ranges from Off to 100%.
Slo - Fast Hrn Speed	Controls the Low Frequency Oscillator (LFO) speed of the Horn. Ranges from 0.06 to 16.0 Hz.
Slo - Fast Hrn Depth	Controls the intensity of the rotating effect. Ranges from 0 to 30 milliseconds.
Slo - Fast Hrn Doppler	Sets the amount of shifted pitch heard in the Horn. Ranges from 0 to 50 milliseconds.
Slo - Fast Rtr Speed	Controls the Low Frequency Oscillator (LFO) speed of the Rotor. Ranges from 0.06 to 16.0 Hz.
Slo - Fast Rtr Depth	Controls the intensity of the rotating effect. Ranges from 0 to 30 milliseconds.
X-Over	Selects the frequency where the signal is split between the Horn and Rotor. Ranges from 25Hz to 20kHz.
Acceleration: H - R	Sets the amount of time that the Rotor and Horn take to come up to their full rotating speed. Ranges from 0 to 10 seconds.

TREMOLO AND AUTO-PANNER

Look out, because the popular Tremolo and Auto panner effects of the 50's and 60's are back with a vengeance. These effects that revolutionized "Surf-Style" music can be heard all over the air waves in the 90's. Tremolos and auto panners are similar to one another in that they both use an LFO to modulate input levels to produce vibrato effects.

TREMOLO

The word tremolo actually has several definitions in the music world. It basically means that a sound is being modulated in amplitude (the volume is beating or pulsing). It could be emulated by turning a volume knob up and down. But you probably have better things to do than turn a volume control up and down throughout a whole song, so let the 2112 do it for you.

Aside from speed and depth parameters, the tremolo also has an LFO waveform that determines the way a signal's volume is increased and decreased. While the Sine wave is probably the most common to the ear, the Triangle and Special 2 waveforms are progressively more intense.

WHEN DO I USE TREMOLO? Tremolo is truly a vintage sound for the guitar, electric piano and organ. Most pronounced on the guitar, you can hear it used on everything from sweet ballads to blues rock 'n roll.

AUTO PANNER

The auto panner is really just a dual version of a tremolo. It changes the amplitude of the left signal just as a tremolo does, but the amplitude of the right signal is inverse to that of the left signal. This gives the illusion that the signal is moving back and forth between the left and right speakers.

The Auto Panner's Speed typically doesn't get set as fast as the Tremolo since you usually want a sound to move smoothly back and forth in the stereo image. The 2112 auto panner is especially flexible since it can be used for either mono or stereo input sources. When used with a mono source, the signal pans back and forth as described earlier. When a stereo sound source is used, the original stereo image is maintained by moving the volume of the left signal exactly opposite of the right signal. The stereo image fades back and forth between the stereo extremes.

WHEN DO I USE AN AUTO PANNER? The auto panner can be a very creative tool. When running your guitar rig in a stereo set-up with the right amount of cabinet separation, the Auto-Panner creates a stereo panning effect that is right out of this world.

Auto panners can also add life to delays or choruses by moving them around instead of just sitting in one place in the mix. Simply place an auto panner module after a delay or chorus module. You don't need to set the auto panner's depth parameter too deep since you just want some gentle movement.

TREMOLO & AUTO PANNER PARAMETERS:

FX: Lvl	Controls the signal input level fed to the Module. Ranges from Off to 100%.
Speed	Controls the Low Frequency Oscillator (LFO) speed of the effect. Ranges from 0.06 to 16.0 Hz.
Depth	Controls the intensity of the effect. As DEPTH increases, volume changes become more dramatic. Ranges from 0 to 30 milliseconds.
WvFrm	Selects which waveform the LFO follows. Options for this control include sine, triangle, SP1 (Special 1), and SP2 (Special 2). The sine wave setting is probably the most easily recognized, but the smooth response of the triangle wave or the intensity of SP1 or SP2 typically produce better results. See figure 4-2.

PITCH SHIFTERS

The pitch shifter allows you to move sound from one pitch to another. It accomplishes this by recording a small part of the original sound and then playing it back either faster (to raise the pitch) or slower (to lower the pitch). It does this over and over again to create a new pitch.

WHEN DO I USE PITCH SHIFTING? Guitarists are probably the most well known users of pitch shifters. They commonly pitch shift their sound down by an octave to get a deep rumble out of their distortion, or shift it an octave up to emulate a 12 string guitar.

Both guitar and synth players have created some amazing textures by pitch shifting their sound up a fifth (7 semitones). This creates more complex chords out of simple ones (e.g. a basic Cmaj chord sounds like a Cmaj9 chord, or Cmin7 becomes a Cmin11 chord).

PITCH SHIFTERS PARAMETERS

FX: Lvl	Controls the signal input level fed to the Module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right)
Shft A - B	SHFTA and SHFTB control the pitch intervals between the original note and voices A and B of the pitch shifter. Pitch shifters can be used for a wide variety of effects, including dou-

bling, octave division, and chromatic harmonies. Each Pitch Shifter has a 4-octave range, stepped in semitones from -24 to +24.

Dtn A - B	Controls the detuning amount for pitch-shifted voices A and B. As DTN moves away from zero, dissonance becomes more pronounced. Low DTN settings can be useful for thickening or enhancing the imaging of the source material. Ranges from -50% to 50%.
Shft C - D	See Shift A - B.
Dtn C - D	See Dtn A - B.
Shft E - H	See Shift A - B.
Dtn E - H	See Dtn A - B.
Key	Sets the diatonic key for the harmonies. If the song you are playing is in the key of G Major, you would select G for the scale.
Scale	Sets the scale type for the Harmony you want to hear. Scale types include: Major, Minor, Harmonic Minor, Melodic Minor, Dorian, Mixolydian, Lydian, Lydian Augmented, Major Pentatonic, Minor Pentatonic, Blues, Whole Tone, Half-Whole, and Whole-Half.
Interval	Sets the basic interval of the Harmony. You can choose from one of several Harmony intervals. See the Harmony Interval Charts for reference.
Out A - B	Adjusts the overall level of pitch-shifted voice A or B. Ranges from Off to 100%.
Pan A - B	Controls the placement of pitch-shifted voice A or B in the stereo image. Ranges from -99 (all left) to 99 (all right).
Out C - D	Adjusts the overall level of pitch-shifted voice C or D. Ranges from Off to 100%.
Pan C - D	Controls the placement of pitch-shifted voice C or D in the stereo image. Ranges from -99 (all left) to 99 (all right).
Out E - H	Adjusts the overall level of pitch-shifted voice E through H. Ranges from Off to 100%.
Pan E - H	Controls the placement of pitch-shifted voice E through H in the stereo image. Ranges from -99 (all left) to 99 (all right).
Out L - R	Adjusts the left or right output level of the pitch-shifted voice. Ranges from Off to 100%.
Out LA - LA	Adjusts the left-side level of pitch-shifted voice A or B. Ranges from Off to 100%.
Out RA - RB	Adjusts the right-side level of pitch-shifted voice A or B. Ranges from Off to 100%.
Spread	Controls the width of the effect's stereo imaging. The higher the setting, the wider the image. The lower the setting, the more monophonic the effect becomes. Ranges from 1 to 10.

DETUNERS

The detuner effect does exactly what its name implies; it detunes a sound (moves it out of tune) and allows you to add it to the original sound. The result can be almost chorus-like, but it doesn't move like the chorus effect does. This actually makes the detuner more transparent and not quite as thick as the chorus effect, which in many applications is a good thing (since effects can quickly pile up and clog up great sounding audio).

WHEN DO I USE A DETUNER? The detuner falls into the same guidelines as the chorus effect. It works with just about everything; It is ideal for thickening up a rhythm guitar track.

Remember to experiment with the delay parameters if you are looking for a wider detuning sound. Adding 30-60

ms of delay to the detuner's voices that are panned hard to one side (while not delaying the other side) will change the detuner's stereo imaging greatly.

DETUNER PARAMETERS

FX: Lvl	Controls the signal input level fed to the Module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right).
Dtn A - B	Controls the detuning amount for detuner voices A and B. Higher detune settings produce a more dissonant sound. Ranges from -50% to 50%.
Dtn C - D	Controls the detuning amount for detuner voices C and D. Ranges from -50% to 50%.
Dtn E - H	Controls the detuning amount for detuner voices E through H. Ranges from -50% to 50%.
Dly A - B	Controls the amount of time before detuner voices A and B are heard. Higher delay time settings produce a short slapback delay effect. Ranges from 0 to 60 milliseconds.
Dly C - D	Controls the amount of time before detuner voices C and D are heard. Ranges from 0 to 60 milliseconds.
Dly E - H	Controls the amount of time before detuner voices E through H are heard. Ranges from 0 to 60 milliseconds.
Out A - B	Adjusts the overall level of detuner voice A or B. Ranges from Off to 100%.
Pan A - B	Controls the stereo soundfield placement of detuner voice A or B. Ranges from -99 (all left) to 99 (all right).
Out C - D	Adjusts the overall level of detuner voice C or D. Ranges from Off to 100%.
Pan C - D	Controls the stereo soundfield placement of detuner voice C or D. Ranges from -99 (all left) to 99 (all right).
Out LA - LB	Adjusts the left side level of detuner voice A or B. Ranges from Off to 100%.
Out RA - RB	Adjusts the right side level of detuner voice A or B. Ranges from Off to 100%.
Spread	Controls the width of the effect's stereo imaging. The higher the setting, the wider the image. The lower the setting, the more monophonic the effect becomes. Ranges from 1 to 10.

DELAYS

A delay produces discrete, repeating echoes of the source material at a specified interval. In digital delays, the input signal is "sampled" or recorded into memory, where it is held for the amount of time you specify with the delay time setting, after which the sample is replayed at the output. The 2112 delays have a feedback meter that is used to send a portion of the delayed signal back to the input to be re-recorded along with new source material. The feedback setting determines how long the delay repeats take to decay to inaudibility.

WHEN DO I USE DELAY? When you're the Lone Guitarist in a band, the Delay can be your best friend. The Delay repeats can create the illusion that there is more than one guitar being played. One trick to using delays effectively is setting the delays to fall in time with the music. This used to mean grabbing a calculator, dividing 60 by the tempo (beats per minute), then dividing that answer by the desired sub-beats ... Sound like a hassle? Yeah, we thought so too. So the 2112 takes care of all the calculations for you!

Suppose you want the delay to decay as triplets in your music. Simply go to any program and select the delay module using the <Edit> button. Turn the <Page> button (you should now see the delay time parameter displayed on

the screen). Now turn the <4> "TapIt" parameter knob to activate. Now press the <TapIT> on the downbeat of each triplet. You can "TapIt" as often as you like to make sure you really nail that downbeat.

The delay time will be automatically measured and since the Delay is set up so that DlyA=33%, DlyB=67% and DlyC=100% (DlyD is not used in this program), you'll hear a triplet delay that matches the beat of your music. If you feel like your delays are just a little off, simply use the <Program/Effect> wheel to tweak the delay time parameter into perfect synchronization. Remember that only one parameter needs to be adjusted. Delays A, B, C, and D will be automatically scaled to the new delay time!

Another common use for delay is for stereo imaging. Very small amounts of delay (10-25ms) can be used to make a signal sound like it is panned to one side. This trick works because of the way the brain interprets sounds. When your left ear hears something before the right ear, it thinks that the source of that sound is found somewhere to your left. You can also use delays set at 30-60ms, which spreads a sound to the extremes of the stereo image. Be careful with this technique if your mix has a chance of being listened to in mono.

DELAY PARAMETERS

FX: Lvl	Controls the signal input level fed to the Module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left) to 99 (all right).
Dly Time	Sets the maximum delay time available to each delay voice. For example, if DELAYTIME is set to 1000 ms, each delay voice can be set from 0 to 100% of that delay time. Ranges from 0 to 1.4 seconds (Maximum delay times differ between 4th, 3/4, HLF, and FUL module Types.) Half bandwidth delay times automatically double the set delay time used.
FdBck	Controls the fade time of the delay repeats. Higher settings take longer to fade out, while a setting of zero could be used to limit the delay to one repeat per voice. The delay provide both positive and negative feedback settings. Ranges from -99% to +99%.
TapIt	Allows you to change DELAYTIME in real-time, by tapping the TAPIT button at the tempo you want. Delay voice percentages do not change when using this control.
Smear	Sets the spread of Diffusion of the Delay Repeats. Ranges from 0 to 100%.
LPF	Selects where the Low Pass Filter is positioned within the Delay Module. Positions are: Pre Delay or Post Delay.
Frequency	Selects the Frequency band that appears in the LPF. Ranges from 25 Hz to 20 kHz.
Gain	Controls the output gain of the LPF. Ranges from -12 to 12.
Dly A - B	Controls the percentage of DELAYTIME allocated to delay voices A and B. For example, if DELAYTIME (above) is set to 1000 ms and DLYA is set to 75%, the voice A delay time is 750 ms. Remember, each voice in the Module can have any delay time up to 100% of DELAYTIME. Ranges from 0% to 100%.
Dly C - D	See Dly A - B.
Out	Adjusts the overall level of the Delay. Ranges from Off to 100%.
Pan right).	Controls the stereo soundfield placement of the delay. Ranges from -99 (all left) to 99 (all right).
Out L - R	Adjusts the left or right output level of the Delay. Ranges from Off to 100%.
Out A - B	Adjusts the output level of delay voice A or B. Ranges from Off to 100%.

Pan A - B	Controls the stereo soundfield placement of delay voice A or B. Ranges from -99 (all left) to 99 (all right).
Out C - D	Adjusts the output level of delay voice C or D. Ranges from Off to 100%.
Pan C - D	Controls the stereo soundfield placement of delay voice C or D. Ranges from -99 (all left) to 99 (all right).
Out LA - LB	Adjusts the left-side output level of delay voice A or B. Ranges from Off to 100%.
Out RA - RB	Adjusts the right-side output level of delay voice A or B. Ranges from Off to 100%.
Out LC - LD	Adjusts the left-side output level of delay voice C or D. Ranges from Off to 100%.
Out RC - RD	Adjusts the right-side output level of delay voice C or D. Ranges from Off to 100%.

EQUALIZERS

The 2112 has a broad selection of equalizer Modules to cover virtually any need. If you need bigger Guitar tone, the EQs will give it to you. Both mono and stereo modules are available. Remember that mono equalizers connected to stereo sources will always sum the stereo signal together for equalization (thus eliminating the stereo image). If you need to maintain the stereo image, use a stereo equalizer module.

The Parametrics allow you to cover very specific regions of the sound spectrum with extreme precision and control. Up to 6 bands of either stereo, or mono parametric equalization are available.

The Graphic equalizers use 1/3, 2/3, or 1 2/3 octave ISO-standard frequency centers. Equalization or EQ is probably one of the most valuable tools the 2112 offers. EQ allows you to change the level of certain frequencies of a sound, and it comes in two different basic flavors: graphic and parametric. Graphic is the most common and easiest to use, but the parametric offers much more flexibility and power.

WHEN DO I USE EQ? This may seem overly simplistic, but you should use EQ whenever your ears tell you to use it! However, you need to remember that EQ can do more harm than good when not used carefully. The EQ can take that thin and “Clangy” sounding Guitar and add all of the low end in the world that your heart may desire. This can also be used on the other side. If you have a song that needs tight and bright rhythm guitar, you can use the EQ modules to take out the Lows and build up your mids

HERE ARE A FEW SIMPLE EXAMPLES:

If you want to hear more of a bass guitar part, don't pump up the bottom end! Push up the mids and mid/highs a little. Adding more bottom end will just make things more muddy.

If you feel your Guitar tone is just a little dull, try adding some high frequency boost to just a few instruments in the mix don't just push up all the Guitar's' high frequencies, because it will quickly be too bright.

If you are having a hard time being heard in the mix, don't make it louder. Listen carefully and see if there is another instrument that is conflicting with your Guitar. Adding a little EQ in the right spot of the less dominant guitar will allow it to speak a little easier through the rest of the music.

GRAPHIC EQUALIZERS

Graphic EQs give you control of the levels for fixed or pre-selected frequencies (bands) that are evenly spaced. The 2112 offers 8 and 15 band stereo and mono GEQs and a 31 band mono GEQ. They all cover the complete range of frequencies, but the spacing between the 31 bands is much closer than the 8 bands, therefore offering more exact control of the sound.

GRAPHIC EQUALIZER PARAMETERS

Level	Controls the signal input level fed to the Module. Ranges from Off to 100%.
Phase	Inverts the phase of the source signal. Can be set either IN or OUT of phase.
Phase L - R	Inverts the phase of the left or right side of the stereo source signal. Can be set either IN or OUT of phase.
Freq	Controls the amount of boost / cut applied to the selected frequency. The GEQ 8 uses 1-1/3 octave ISO standard frequency centers, (Hz) while the GEQ15 and GEQ31 use 2/3 octave and 1/3 octave frequencies. Boost/cut range for each band is from -12 to 12.

PARAMETRIC EQUALIZERS

Parametric EQs offer the added flexibility of letting you define the center frequency you want to adjust, and how many frequencies around that center frequency you want to affect. Some of the PEQ modules in the 2112 also include high shelf and low shelf EQ bands. A high shelf allows you select a frequency, and the boost/cut parameter changes the level of all the frequencies above that selected frequency. The low shelf works the same way but works on frequencies below the selected frequency.

PARAMETRIC EQUALIZER PARAMETERS

Level	Controls the signal input level fed to the Module. Ranges from Off to 100%.
Phase	Inverts the phase of the source signal. Can be set either IN or OUT of phase.
Phase L - R	Inverts the phase of the left or right side of the stereo source signal. Can be set either IN or OUT of phase.
LoShlv Freq	Selects the center frequency of the low-frequency shelving EQ band. Ranges from 25Hz to 20kHz.
LoShlv Level	Adjusts the amount of boost or cut applied to the center frequency of the low-frequency shelving EQ band (selected by LOSHLV FREQ). Ranges from -12 to 12.
Band # Freq	Sets the center frequency of the selected band. 6-band PEQs have four true parametric bands of EQ plus shelving high- and low-frequency controls with variable frequency. Bands 1 and 2 range from 25 Hz to 20 kHz. Bands 3 and 4 range from 1 kHz to 20 kHz.
Band # Width	Controls the bandwidth of the selected frequency. The higher the setting of WIDTH, the more frequency-selective the boost/cut becomes. In other words, with low (narrow) WIDTH settings, frequencies around the selected center frequency are not affected by the LEVEL setting. As WIDTH increases, frequencies around the center frequency become affected by the setting of LEVEL.
Band # Level	Adjusts the amount of boost or cut applied to the selected frequency. Varies from -12 to 12.
HiShlv Freq	Selects the center frequency of the high-frequency shelving EQ band. Ranges from 1kHz to 20kHz.
HiShlv Level	Adjusts the amount of boost or cut applied to the center frequency of the high-frequency shelving EQ band (selected by HISHLV FREQ). Ranges from -12 to 12.

EDITING MODULES

NOISE GATE

Noise gates can do much more than the name implies. While it works nicely for getting rid of unwanted noise, the 2112 noise gates also create swelling effects.

The 2112 expands the threshold parameter into two separate parameters: Open Threshold and Close Threshold. By setting the close threshold to a lower level than the open threshold, signals can take longer to decay before the Gate begins to close. This makes the 2112 noise gate much more musical and natural in its behavior.

WHEN DO I USE A NOISE GATE? The most obvious application is getting rid of noise. As long as a signal is louder than the noise, the noise isn't usually heard. But the moment the signal gets softer or stops completely, room noise, amplifier noise, air conditioner noise, etc. suddenly become very audible. The Noise Gate can get rid of this problem so that when there's no signal, the noise is also eliminated.

By selecting a slower attack time and higher threshold levels, the noise gate causes signals to swell into audibility. When using a guitar for example, it creates the swelling sound usually associated with volume pedal or a pinky finger on the guitar's volume knob. The 2112 can take care of this for you so that your hands (or feet) are free to do more important things.

NOISE GATE PARAMETERS

Level	Controls the signal input level fed to the Module. Ranges from Off to 100%.
ThshO	Sets the level at which the gate begins to open at the rate set by ATTACK. Both THSHO and THSHC are independent controls. This gives you the option to do nifty stuff like setting THSHO higher than THSHC, which could be used to let guitar notes sustain longer while still retaining the noise-gating characteristics of the gate when closed.
ThshC	Sets the level at which the gate begins to close at the rate set by RELEASE. Both THSHO and THSHC are independent controls. THSHC cannot be set higher than THSHO.
Attn	Adjusts how far the signal level is attenuated when the gate is closed. The higher you set ATTN, the lower the noise floor of the source when the gate is closed. Ranges from 0 to 100%.
Delay	Sets the amount of delay before the Gate engages. Ranges from 0.1 to 10.0 milliseconds.
Attack	Controls how quickly the gate or compressor opens after the signal level reaches THSH. Ranges from 0 to 2 second.
Hold	Determines how long the gate remains open after the signal level falls below THSHC. Long HOLD settings can be used to prevent the gate from "stuttering", or opening and closing rapidly, during soft passages when average signal levels are just above or below the THSHC setting. Ranges from 0 to 500 milliseconds.
Release	Determines how quickly the gate closes after the signal level falls below THSHC. When used in conjunction with long HOLD settings, this control can be used to further prevent stuttering, or to make the closing of the gate less obtrusive. Ranges from 0 to 2 seconds.

MULTI EFFECTS MODULES

The 2112, Multi Effect Modules allow the User to combine either Delay and Chorus or Delay and Flange within one Effect module block. This is ideal for situations where the User needs to add another effect to the Effect Configuration, but is running low on signal processing resources. Within the module, there is a unique parameter that allows you route the signal several different ways between the two effects.

MULTI-EFFECT MODULE PARAMETERS

FX: Lvl	Controls the signal input level fed to the Module. Ranges from Off to 100%.
Dry: Lvl	Controls the level of the dry (unaffected) signal. Ranges from Off to 100%.
Balance	Controls the positioning of the dry signal in the stereo soundfield. Ranges from -99 (all left)

	to 99 (all right).
Route	Selects the route signal path within the Chorus/Delay, and Flange/Delay Multi effects modules. The 3 settings are: 1) Chorus/Flange into Delay with feedback into the Delay 2) Chorus/Flange into Delay with feedback into Chorus/Flange 3) Delay into Chorus/Flange with feedback thru the Chorus/Flange.
Speed	Controls the Low Frequency Oscillator (LFO) Speed of the Chorus or Flanger. Ranges from 0.06 to 16.0 Hz.
Depth	Adjusts the intensity of the Chorus or Flanger effect. Ranges from 0 to 30 milliseconds.
Feedback (Flanger)	Controls how much of the flanged signal is fed back to the input of the Module. The FDBACK Parameter is what gives flangers their distinctive voice. Flangers are capable of both positive and negative feedback loops, so experiment to find the sound you like best. Ranges from -99% to 99%.
WvFrm	Selects which waveform the LFO follow. Options for this control include: Sine, Triangle, SPI (Special 1), and SP2 (Special 2).
C/F: Delay	Controls the delay time of the Chorus or Flanger voice. Ranges from 0 to 40 milliseconds.
Delay Time	Sets the delay time for the delay tap. Ranges from 0 to 300 milliseconds.
Feedback	Controls the fade time of the delay repeats. Higher settings take longer to fade out, while a setting of zero will limit the delay to one repeat. Ranges from 0 to 99%.
TapIt	Allows you to change the Delay time in real-time by tapping the TAPIT button at the tempo you want. Delay voice percentages do not change when using this control.
Level: C/F/D	Controls the overall output level of each effect block. Ranges from Off to 100%.
Pan: C/F/D	Controls the stereo soundfield placement of each effect block. Ranges from -99 (all left) to 99 (all right).

WHAMMY EFFECTS

In today's music industry, it seems that every album on the charts, whether it be Country, Rock, Industrial, or Alternative, are using the DigiTech Whammy technology in some shape or form. Whether it be a subtle chorus Detune, or an all out 2 octave Whammy Dive, this thing is a definite attention getter, and first-call studio effect. At this rate, the Whammy effect could possibly log-in as much studio time as Chet Atkins.

WHAMMY EFFECT PARAMETERS

Whammy On/Off	Turns the Whammy module on or off. When the module is turned off, the signal will only continue to pass through the module if the dry level is turned up.
FX Level	This parameter lets you select the overall FX level mix of the Whammy Effect module. Ranges from: Off to 100%.
Dry Level	This parameter lets you select the amount of Dry signal that is included in the Whammy effect. Ranges from: Off to 100%.
Balance	This parameter allows you to pan the Dry signal either to the Right or the Left in the stereo soundfield. Ranges from Left 99 to Right 99.
Min Shift	This parameter sets the minimum pedal shift level of the Whammy effect. Ranges from: -72 (6 octaves down), to 24 (2 octaves up).
Max Shift	This parameter set the maximum pedal shift level of the Whammy effect. Ranges from: -72

EDITING MODULES

(6 octaves down), to 24 (2 octaves up).

Min Detune

This parameter sets the minimum pedal level of detune effect. Ranges from: -50% (down 50 cents), to 50% (up 50 cents).

Max Detune

This parameter sets the maximum pedal level of detune effect. Ranges from: -50% (down 50 cents), to 50% (up 50 cents).

Pedal

This parameter is used for the assignment of an expression pedal. This parameter also shows the pedal travel range. Ranges from: 0 to 100

Out

This parameter is used to set the overall output level of the Whammy module. Ranges from: 0 to 100%

Pan

This parameter is used for the position of the Whammy effect in the Stereo soundfield. Ranges from: Left 99 to Right 99.

AUTO WAH

Break out the Bell-bottom jeans and the Disco mirror balls, because the Auto-Wah is here to play. The Auto Wah is a great effect use when you want nasally wah-type effect but you don't want to do the leg work. The Auto Wah utilizes a sensitivity detector that reads the input signal, then simulates the action of a wah pedal. This is great for producing New Bohemian type sounds.

AUTO WAH EFFECT PARAMETERS

Auto Wah On/Off

Turns the Auto Wah module on or off. When the module is turned off, the signal will continue to pass through the module.

FX Level

This parameter lets you select the overall FX level mix of the Auto Wah Effect module. Ranges from: Off to 100%.

Sensitivity

This parameter adjusts the sensitivity of the detection of the automatic wah. The higher the sensitivity is set, the wider the Wah range is. Ranges from: Off to 100%.

ASSIGNING MODIFIERS

Modifiers are unique tools that can be used to dramatically alter your sound based on information from signal amplitude, the settings of a Low Frequency Oscillator (LFO) or MIDI Continuous Controller and external footswitch and pedal information.

Every Program in your 2112 has a set of Modifiers. Up to 16 Modifier links can be assigned to control any parameter. There are five types of Modifiers that can be linked to a parameter:

- MIDI CCs
- LFOs
- Dynamic (signal level dependent).
- External expression pedal
- The foot pedals and switches on the DigiTech Control One foot controller.

MIDI CCs

When you use MIDI CCs, the 2112 responds to CC numbers 0-127 and CHP (channel pressure or after-touch). This means that you could assign an Expression pedal, a keyboard's modulation or pitch bend wheel, or any other MIDI CC device to control effect Parameters.

LFOs

When you use LFOs, Parameter values can be controlled automatically between a defined minimum and maximum setting at a rate set by the user. The 2112 has 2 user definable LFOs in each program that can be assigned to any Parameter.

For example, you can create an auto panner without using an auto panner module. Simply link an effect's output pan parameter to the LFO modifier and the LFO will move that parameter back and forth. This modifier can be a very useful weapon in the ongoing battle of new sound creation. There are two LFOs available in each program that can use unique speeds and waveforms.

DYNAMIC MODIFIERS

When you use Dynamic Modifiers, the Parameter values are controlled in relation to the dynamics of the input signal. The possibilities are nearly endless, and they cannot be duplicated using any other method.

For example, you could link the Dynamic Modifier of a Program to control a chorus level. It doesn't sound like much on paper, but imagine the expressiveness of this type of effect on the guitar part. As the dynamics of the music increase, the chorus becomes less apparent. Ease up on the string attack a little and the chorus increases. ALL IN REAL TIME!

NOTE: Linking a Modifier to a Parameter causes the Parameter to change as if you were changing it using the Data Wheel. The only difference is that the <Store> button and CHANGED icon do not light. Therefore, the Default name may display 'Custom' if a Parameter is consistently being changed by a Modifier. Storing the

Program will store these new Parameter values.

EXTERNAL EXPRESSION PEDALS

In addition to the Expression pedal on the Control One, up to 2 external expression pedals can be incorporated into the mainframe operating system of the 2112 by connection (via the rear panel of the 2112, or the external expression pedal jack on the Control One) to an expression pedal.

Once the External Expression pedal is connected, the assignment procedure to be followed is listed below.

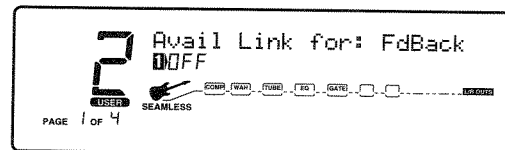
CONTROL ONE

For information on using the Control One, turn to the "Using the Control One" section starting on page 52.

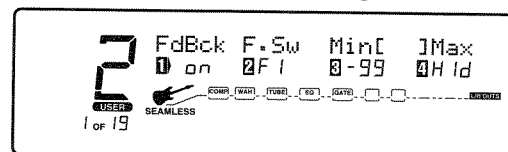
LINKING A PARAMETER TO A MODIFIER

To link a Parameter to a Modifier, please do the following:

- Scroll to the parameter you would like to link to a modifier (ie: Delay feedback). See page 19 if your not sure how to scroll through a module's parameters.
- Press <Assign>, the display looks something like:



- Turn the <I> knob to turn the link for that parameter on. The display will look something like this:



- Use the <2> knob to scroll through the different modifiers that can be linked to the Parameter you want assigned. The possibilities are:
MIDI CC's (CC): 0-127 & ChP (aftertouch)
Real Time modifiers (RT): LF 1, LF 2, dY 1, & dY 2
External Pedal (Ext): Pd 1 [Pd3] when the Control One is connected.
Control One (FPd1 & FSw): Pd 1-2 & F 1-10

NOTE: The MUTE and THRU effect types do not have any Parameters to connect to, so they will not appear in the parameter list.

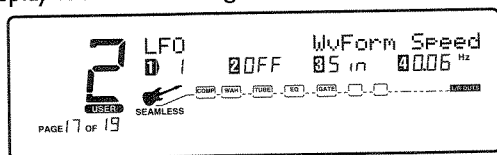
- Use the <3> knob to select the minimum Parameter value you want when the controller is in the maximum position.
- Use the <4> knob to select the maximum Parameter value you want when the controller is in the maximum position.

NOTE: Make sure you store any changes you want to save before moving on.

SETTING UP AN LFO

To set up an LFO that is linked to an effect parameter, the procedure is as follows:

- Enter Assign Mode by pressing the <Assign> button.
- Use the <Page> knob to scroll to the LFO page. The display looks something like:

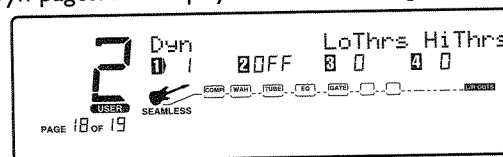


- You can use the <1> knob to select which of the two LFOs you want to adjust.
- Use the <2> knob to turn the LFO on or off.
- Use the <3> knob to change the selected LFO's waveform. You can select Sine, Triangle, Special 1, Special 2.
- Use the <4> knob to adjust the speed of the LFO cycle.

Any Parameters assigned to the LFOs will now follow the modulating waveform of the LFO you selected.

SETTING UP A DYNAMIC MODIFIER

- Enter Assign Mode by pressing the <Assign> button.
- Use the <Page> knob to scroll to the first of two Dyn pages. The display looks something like:



- You can use the <1> knob to select which of the two Dyns you want to adjust.
- Use the <2> knob to turn the Dyn on or off.
- Use the <3> knob to set the threshold above which dynamic modification of the Parameter begins.
- Use the <4> knob to set the point at which maximum Parameter modification occurs.
- Use the <Page> knob to scroll to the next Dyn page.
- Use the <1> knob to select which of the two Dyns you want to adjust.
- Use the <2> knob to adjust the attack time of the Dyn.
- Use the <3> knob to adjust the hold time of the Dyn.
- Use the <4> knob to adjust the release time of the Dyn.

MIDI FUNCTIONS

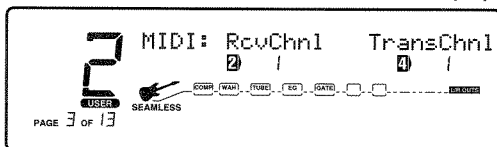
In this day and age where the role of the Guitarist has taken on so many new responsibilities, his or her equipment has to be fast, and has to be able to communicate with other devices at the drop of a hat. So, we at Digitech have given the 2112 all of the MIDI goodies that your heart may desire.

SETTING THE MIDI CHANNEL

This option sets the MIDI Channel that the 2112 will respond to MIDI program changes and CC messages. MIDI Channel settings include: Off, 1, 2,...15, 16, and All.

To change the MIDI channel assignment, do the following:

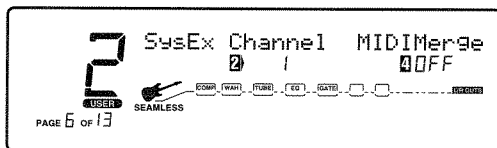
- Go to Page 3 of the Utilities menu. The display reads:



- Use the <2> knob to select the MIDI channel number you want your 2112 to receive on.
- Use the <4> knob to select the MIDI channel number you want your 2112 to transmit on.

MIDI MERGING

MIDI merging allows incoming MIDI data to be merged with any MIDI data generated by your 2112 before being sent to the MIDI Out/Thru port. Selecting the MIDI Merge option can be accessed in Page 6 of the Utilities menu. Once there, the display will look like this:



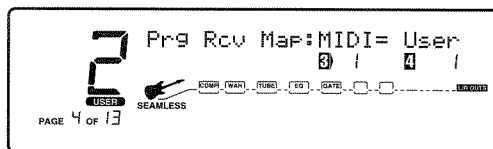
PROGRAM RECEIVE MAP

The Program Mapping features of the 2112 allow you to access any of your 2112's 224 Programs using the standard 128 Program Change commands through MIDI. From the Factory, the 2112 is set to access User Programs 1 through 100 using MIDI Program change numbers 1 through 100. MIDI Program change numbers 1 through 28 access the Factory Program bank.

To gain MIDI access to other programs not mentioned and Bypass you must use the program mapping feature.

To remap a Program number to a MIDI Program change number, do the following:

- Press <Utilities> ,and Scroll to Page 4 of the Utility Menu using the <Page> knob. The display reads:



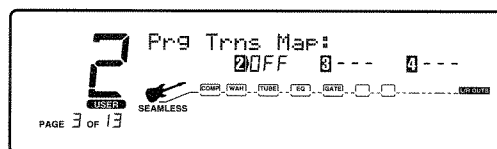
- Use the <3> knob to select the MIDI Program change number you want mapped. Note that the number under 2112 USER changes along with the MIDI number.
- Use the <4> knob to select the 2112 Program you want the selected MIDI Program change number to recall. As this number increases above Program 100, note that 2112 USER changes to 2112 FACT, indicating that the mapped number will recall the indicated Program number in the Factory bank..

PROGRAM TRANSMIT MAP

With the Program Transmit Map function, you can use your 2112 to control patch changes of your other effects devices. So if you are using the FX loop of the 2112 to create your sound, when you call up a program in your 2112, the appropriate programs in your other FX unit's will also be recalled.

To remap a MIDI Program change number to a Program number, do the following:

- Press <Utilities> ,and scroll to Page 3 of the Utility Menu using the <Page> knob. The display reads:



- Use the <2> knob to turn the Prg Transmit Map function on or off.
- Use the <3> knob to select the 2112 Program number you want mapped. Note that the number under MIDI changes along with the program number.
- Use the <4> knob to select the MIDI Program change number to be sent out the MIDI Out port when the corresponding program number is recalled.

SYSEX DEVICE CHANNEL

An easy way to think of the System Exclusive Device Channel option is to separate System Exclusive data from normal MIDI data. Each type of data has its own group of 16 channels upon which data can be transmitted.

Normal MIDI data, like Program Changes, MIDI Volume,

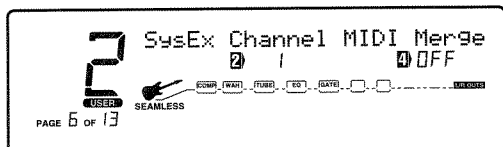
ADVANCED TOPICS

Modulation, etc. is transmitted and received on the MIDI channel designated by the setting of MIDI CHANNEL (pg. 68). SysEx data, on the other hand, is transmitted and received on the SysEx channel designated by the setting of SYSEX DEVICE CHANNEL.

This setup frees up your regular MIDI channels for other control options, and gives you the flexibility to request SysEx data from only the devices you want in your setup, whether they share the same MIDI channel or not.

To change the SysEx Device Channel number do the following:

- Press <Utilities>, and scroll to Page 6 of the Utility Menu using the <Page> knob. The display reads:



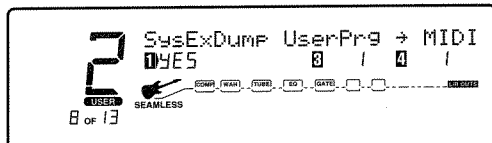
- Use the function <2> knob to select the desired SysEx channel (1, 2,...15, 16).

SYSEX DUMPS

PROGRAM DUMP: Allows you to dump individual 2112 Programs to another 2112 or external MIDI devices like patch librarians, computers, or sequencers for backup, storage, or organization. This option allows you to select the Program to be dumped, and, when dumping to another 2112, the Program location where you want the Program dumped.

To initiate an individual patch dump from the 2112, do the following:

- Press <Utilities> and scroll to Page 8 of the Utility Menu using the <Page> knob. The display reads:



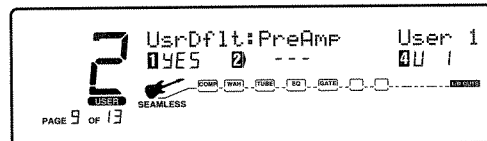
- Using the function <3> knob, select the Program number you want to dump. Note that the MIDI number changes as you scroll.
- Use the function <4> knob to select the Program location where you want the Program dumped.
- To initiate the dump, turn the function <1> knob. The Information line briefly reads **SENDING PROGRAM DUMP...** after which it returns to the Program dump screen.

DEFAULT DUMP: Allows you to dump individual 2112 User Defaults to another 2112 or external MIDI devices

like patch librarians, computers, or sequencers for backup, storage, or organization. This option allows you to select the Default to be dumped.

To initiate an individual Default dump from the 2112, do the following:

- Press <Utilities> and scroll to Page 9 of the Utility Menu using the <Page> knob. The display reads:



- Using the function <2> knob, select the Effect Module whose Default you want to dump.
- Use the function <4> knob to select the User Default you want to dump.
- To initiate the dump, turn the function <1> knob. The Information line briefly reads:

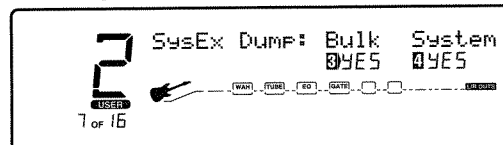
SENDING DEFAULT DUMP...

after which it returns to the User default screen.

BULK DUMP: This option allows you to dump all resident Programs in memory to an external recording device, like a patch librarian, computer, or sequencer for backup, storage, or organization. This option dumps all Programs simultaneously. It does not send any 2112 system information, such as SysEx Device channel or Program maps.

To perform a SysEx Bulk Dump of all 2112 Programs, do the following:

- Press <Utilities> and scroll to Page 7 of the Utility menu using the <Page> knob. The display reads:



- To initiate a bulk dump, turn the <2> knob. The Information line of the display reads

SENDING BULK DUMP...

after which the display returns to the Dump screen.

Bulk Dumps are very large and may take several minutes to complete.

SYSTEM DUMP: This is the option to use for dumping system data to an external MIDI or SysEx recording device. All the item settings in the Utility menu are sent using this option. Programs are not included in this dump. The System Dump procedure is the same as the Bulk Dump procedure (see above), except that to initiate a System Dump, turn the <4> knob.

CC CONTROLLED PROGRAM CHANGES

CC CONTROLLED PROGRAM CHANGES: This option allows you to send CC program changes from an external device. Not only can you send CC program changes, but you can also assign the MIDI map to select Banks. This means that you can select either Factory or User programs to be changed.

On power up, this map will default to the normal MIDI map. This simply means that the 2112 will respond to the MIDI receive map within the Utilities menu.

Send CC information on CC 31.

Value 0-9 = Normal MIDI map

Value 10-19 = No MIDI map (Program 1 = User 1)

Value 20-29 = No MIDI map (Program 1 = Factory 1)

ADVANCED TOPICS

OTHER UTILITY FUNCTIONS

These are the extra Utility functions included in the 2112 that make your programming life a little easier.

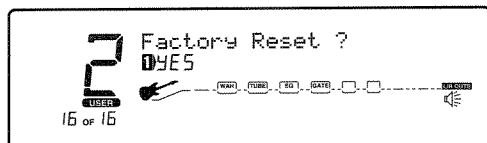
FACTORY RESET

Allows you to erase all User Program, Default and Utility settings at once and restore the 2112 memory to its factory condition.

WARNING! This procedure will destroy and reset ALL User Programs in the 2112 memory. Be sure you want to erase the memory, and start fresh before continuing with this procedure.

To perform a factory reset, do the following:

- Press <Utilities> and scroll to page 13 of the Utility Menu using the <Page> knob. The display reads:



- To initiate the reset, turn the function <1> knob.
- This is your last chance to change your mind. If you are sure, turn the <3> knob. If not, you can abort the procedure by turning the <4> knob. If you turn the <3> knob, the Information line of the display briefly reads: FACTORY RESETTING... after which the unit resets, and returns to Program 1.

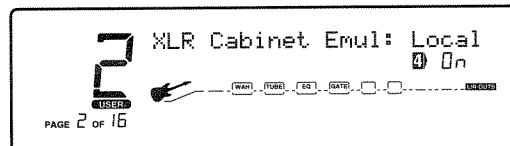
In extreme situations, the 2112 can be reset using a special power-up procedure. This will also completely reset the 2112, eliminating any custom settings created by the user. The procedure is as follows:

- Press and hold the <Preamp> button while powering up your 2112.
- Release the <Preamp> parameter button after an asterisk appears in the information line on the screen.
- Press the <Mod> button and the 2112 will re-initialize itself.

GLOBAL VS. LOCAL CABINET EMULATION

The thing to factor in when using the Cabinet emulator in either global or local mode is whether or not you want all of your sounds affected by this change. A good time to use Global mode is when your frequently playing in different venues (because each room always sounds different).

- Press <Utilities> and scroll to page 2 of the Utility page using the <Page> knob. The display reads:

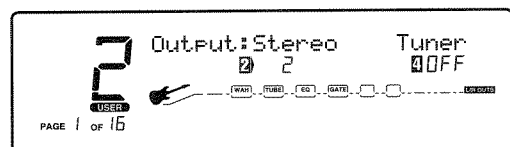


- Using the <4> knob, you can turn the Cabinet Emulator to either Local On or Global On mode, or Global Off.

GLOBAL VS. LOCAL EQ & WET/DRY MIXER

The thing to factor in when using the Global EQ and Wet/Dry Mixer in either global or local mode is whether or not you want all of your sounds affected by this change. A good time to use Global mode is when your frequently playing in different rooms (because each room always sounds different).

- Press <Utilities> and scroll to page 1 of the Utility page using the <Page> knob. The display reads:

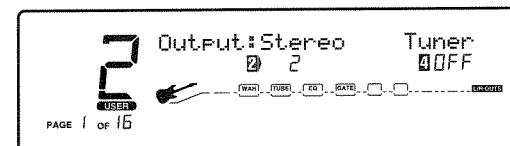


- Using the <4> knob, you can turn the Global EQ and Wet/Dry Mixer to either Local or Global mode.

OUTPUT MODE

You can output the signal of your 2112 as either a stereo or mono signal.

- Press <Utilities> and scroll to page 1 of the Utility page using the <Page> knob. The display reads:



- Using the <2> knob, you can turn set your 2112 to output either a stereo or mono signal.

CONFIGURING THE PEDALBOARD

The optional Control One foot controller can help you get the most out of your 2112. Since the Control One talks to the 2112 using a proprietary communication protocol, it offers better response time and capabilities not available with convention MIDI pedalboard controllers.

The Control One includes 12 footswitches for program and parameter control. It also features a built-in Expression Pedal. An external expression pedal jack allows you to add a second passive volume pedal for even more real-time control of your sound. The large 20 character display constantly feeds you important information like Program names or Tuner indicators.

CONNECTING THE CONTROL ONE

The Control One uses a standard 5-pin DIN cable (like those used for MIDI) to communicate with the 2112. Simply connect the Control One output jack to the 2112 Input jack (when the unit is powered down) and you're ready to roll!

NOTE: Never plug anything other than a Control One into the 2112's Foot Controller input jack. (Voltage is present at this jack).

If you choose to use a second expression pedal with the Control One foot controller, simply plug a cable from the pedal's output to the Control One's Ext pedal input. Voltage Control pedals (such as the DOD FX-17) can also be used with the Control One. You will need to connect the Control One to the CV Out of the expression pedal instead of the audio output.

EXPRESSION PEDAL NAMES

With the 2112 being able to accommodate up to 3 Expression pedals, the pedal names change if the Control One is used. The Names are as follows:

Exp1 = Expression pedal input on the rear of 2112.
When the Control One is not connected

Exp1 = Internal Expression on Control One (When the Control One is connected)

Exp2 = External Expression pedal insert on Control One
(When the Control One is connected)

Exp3 = Expression pedal insert on the rear of the 2112
(When the Control One is Connected).

ASSIGNING FUNCTIONS

The Control One helps you organize your sounds into 19 groups called Banks. Each of these Banks utilize the 10 footswitches patches, which are user programmable to do one of several functions. These functions include:

- Selecting any 2112 Program
- Modifying or turning On/Off any Parameter in real-time
- Sending MIDI CC information out of the MIDI out port (Toggle CC# for values 0 or 127)
- Assign a MIDI CC# for the Expression pedal to send out the MIDI port
- Selecting the next or previous Bank (Bank Up/Down)

To change Banks, Press either the Bank Up or Bank Down footswitches on the Control One to take you up or down one bank at a time.

The Foot Controller setup menu contains all the setup options necessary to use the 2112 with the optional DigiTech Control One foot controller. The submenus included under the Foot Controller setup are located on pages 10 and 11 of the utilities menu and they include:

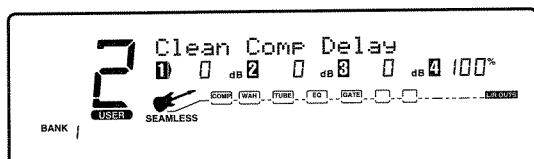
- Patch Assignment
- Continuous Control

The 2112 includes several shortcuts for programming your Control One:

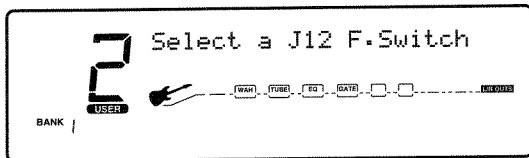
ASSIGNING PROGRAMS TO FOOTSWITCHES

To assign any currently selected Program to a Patch footswitch in the currently selected bank, do the following:

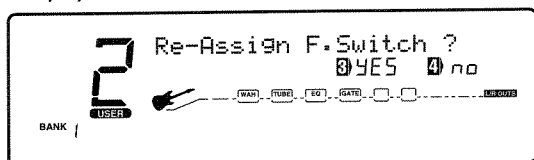
- Be sure that that the Program's Title screen is displayed as shown below:



- Press the <Assign> button once. The display reads:



- Press one of the ten footswitches to Link that Program to that switch. If you choose a footswitch that is already assigned to do something else besides select a Program, the display reads:



- Turning the <3> function button re-assigns the function

of the footswitch while turning <4> will leave everything as it was, aborting the procedure.

Once you link a Program to a Patch in a Bank, the LED lights above the footswitch that you selected indicating the Link was successful.

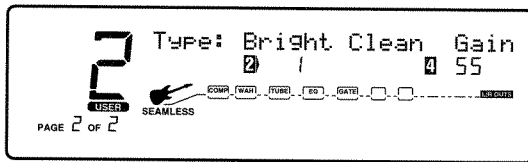
- Press the <Program> button to exit.

ASSIGNING PARAMETERS TO FOOTSWITCHES/EXPRESSION PEDALS

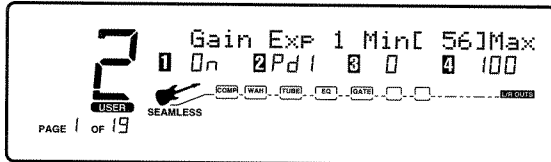
The 2112 allows you to control up to 16 Parameters per Program. Each time you link a parameter to a Footswitch or expression pedal, it is added to any assignments already made to that controller. This is where the 2112 becomes the dedicated work horse that it is, by doing all of the organizing for you so all you have to do is select which parameter is being controlled, then tell the 2112 to "Make it so"

To assign any currently selected Parameter to a footswitch or Expression pedal in the currently selected bank, do the following:

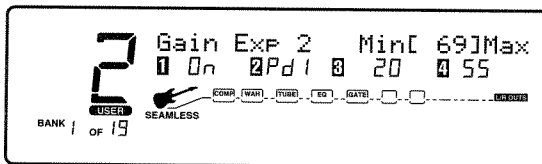
- Be sure that the Parameter you want to link is displayed and selected (below is an example the gain setting of the Tube Distortion module.). The display should appear something like this:



- Turn the <4> knob to select the gain parameter, then Press the <Assign> button once. The display reads:



- Select the footswitch or move the expression pedal to be used. An example would be to use Exp 1. From there, use knobs <3> and <4> to set the minimum and maximum ranges of the gain. Once this is done, the display will appear something like this:



- To exit the parameter assignment mode press the <Program> button to return to Program mode. The <Store> button will stay bright until these changes are stored, or the program is changed.

USING THE CONTROL ONE

OTHER FOOTSWITCH FUNCTIONS

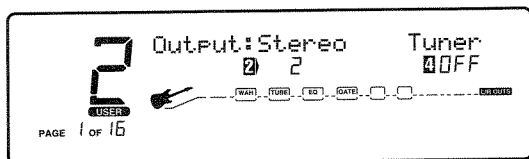
The footswitches on the Control One can be assigned to do several functions. This is done through the Foot Controller menus in the Utilities section of the 2112. These functions include:

Toggle MIDI CC: This function allows you to send MIDI Continuous Controller (CC) information out the MIDI port while the footswitch still maintains its ability to control a Parameter directly. When assigned to a footswitch, CC values 0 or 127 are sent. CC numbers 0 through 127 are available.

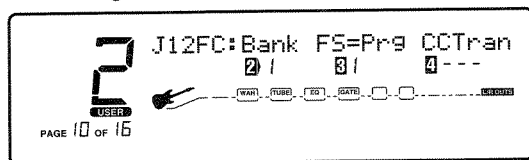
Int. Exp pedal CC: The Expression pedal of the Control One can also send MIDI CC data to other MIDI devices.

The procedure for setting up a MIDI CC toggle footswitch function is as follows:

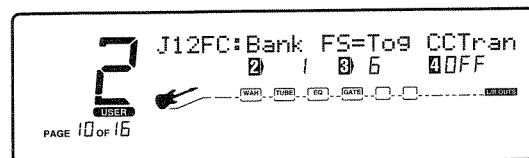
- Press the <Utilities> button once. The display reads:



- Turn the <Page> knob until the display reads:

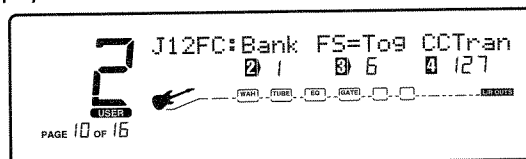


- Turn the <2> knob to select the bank in which the CC toggle is to be used. Once the bank is selected, use the <3> knob to select the footswitch to be used. The display reads:



- The display now shows that footswitch 6 in bank 1 is set to toggle CCs. Take notice that (from the factory) when footswitches 6-0 are selected, you can assign that footswitch a CC number from 0-127 by turning the <4> knob.

- Now to assign the CC number, just turn the function knob <4> until you have reached the desired CC. The display will now read something like this:



- Press <Utilities> to exit the Foot Controller setup menu.

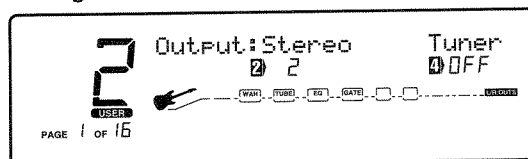
ASSIGNING MIDI CONTROL TO THE EXPRESSION PEDALS

This series of menus and submenus allows MIDI setup of the Expression pedal(s) of the Control One. There are two procedures you must do in order for the Expression pedals to work properly with MIDI:

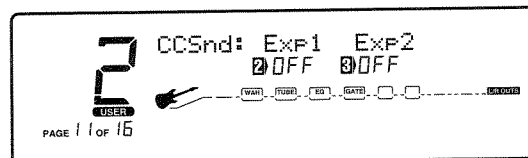
1. Assign CC Number
2. CC Transmit Channel

Assign CC Number to Expression Pedals - This option allows you to choose the MIDI CC numbers you want to use for sending continuous control messages using any one of the three Expression pedals options. From the factory, the Expression pedal(s) are not pre-assigned to any MIDI CC number. To assign which CC number is sent from the Expression pedal(s), do the following.

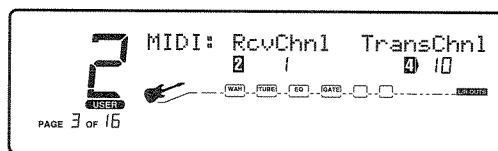
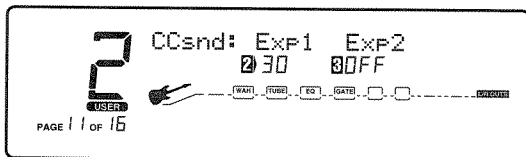
- Press the <Utilities> button once. The display reads something like this:



- Turn the <Page> knob until the display reads:



- Turn either function keys <2, 3 or 4> to assign a CC number to the selected Expression pedal. The display will appear like this if, for example Exp 1 is selected. (Exp1=Internal Expression pedal on 2112 w/o Control One. Or, Internal Expression on the Control One when connected. The display now reads:



- To exit the Transmit channel assignment, press the <Program> button.

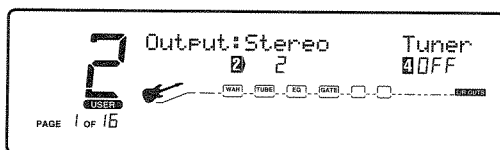
- Press the <Utilities> button to exit.
- For a complete explanation of Expression Pedal names, please refer to page 52.

CC Transmit Channel - This option allows you to set the MIDI channel on which CCs will be sent out the 2112 MIDI Out port to other MIDI devices. If you are using the Control One for the 2112 only, you don't need to worry about setting up this option.

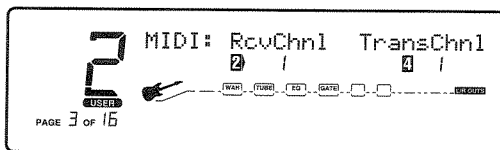
However, if you plan to use the Control One for continuous control over other MIDI devices (either in conjunction with the 2112 or by themselves), you need to assign a MIDI transmit channel for each of the CC numbers you'll be using for continuous control of the other devices.

To change the MIDI channels on which the selected CCs will transmit to other MIDI devices, do the following:

- Press the <Utilities> key once. The display reads:



- Turn <Page> knob until the display reads:



- Turn function knob <4> to select the MIDI CC transmit channel. For example, use select channel 10 and the display will now appear like this:

USING THE CONTROL ONE

OTHER PEDALBOARD TIDBITS

Here are a few other features that you will want to learn about to get the most out of your Control One foot controller:

BANK UP/TUNER AND BANK DOWN / BYPASS FOOTSWITCHES

These two footswitches are located at the far right side of the Control One next to the Expression pedal. The Bank Up/Tuner footswitch, as you may have guessed, will move to the next Bank Up in the 2112, as well as access the Tune Mode by simply pressing and holding the footswitch until the Tuner appears in the display.

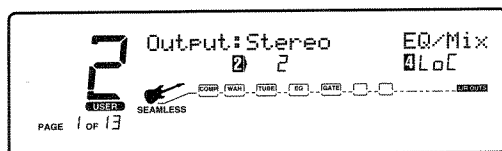
To access the next bank down press the footswitch once. To bypass the 2112, press and hold the footswitch until the LEDs indicate that the unit is now in bypass mode.

NOTE: The tuner information found on the front of the 2112 is also sent to the Control One foot controller for convenient tuning in live situations.

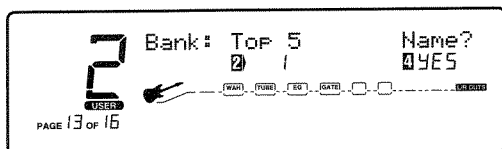
NAMING BANKS

Straight out of the box, the 2112 has 19 user Banks to choose from when used with the Control One foot controller. Each of the Banks have been given a specific named to give indication to what type of programs exist with the Bank. In your constant editing mode to make the box custom to your needs, we have given you the ability to rename the Banks. The procedure is as follows (and please don't worry, we won't be hurt):

- From Program Mode press the <Utilities> button and the display will appear something like this:

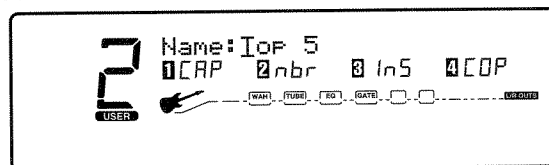


- Turn <Page> knob until the display reads:



- At this point, use the <2> knob to select the Bank to

be named. Once the Bank has been selected, turn the <4> knob to rename the Bank. The display now appears like this:



- To exit the Transmit channel assignment, press the <Utilities> button.
- Using the <I> knob, change the character to the one you want in the selected position.
- When the correct character is displayed in that position, use the <Page> knob to scroll the cursor to the next character you want to change.
- Use the <2> knob to select numbers, the <3> knob to insert spaces and the <4> knob to copy and paste characters.
- To copy a character, position the cursor under the character you want to copy (using the <Page> knob), then turn the <4> knob clockwise. To paste the copied character, position the cursor where you want to paste the character, then turn the <4> knob counter-clockwise.
- To abort the procedure, push either the <Program> button to take you to Program Mode, the <Edit> button to take you to FX Edit Mode, or the <Utilities> button to take you to Utility Mode, depending upon which mode you want to enter.

2112 FACTORY PROGRAM LIST

BANK 1 TOP 5

- 1- Go For It!Cfg-1
- 2- Clean Comp DelayCfg-5
- 3- Two Tone MayhemCfg-8
- 4- Electric 12 StringCfg-4
- 5- Star WahsCfg-4

BANK 2 SIGNATURE 1

- 6- EVH '78Cfg-2
- 7- Strange MicroBrewCfg-9
- 8- Down By the SeasideCfg-2
- 9- Whammy Against da MachineCfg-17
- 10- Jazz Down PatCfg-9

BANK 3 SIGNATURE 2

- 11- We're Not HoldsworthyCfg-2
- 12- It May be QueenCfg-17
- 13- SRV Lives OnCfg-5
- 14- Wind Cries JimiCfg-1
- 15- I'm from BostonCfg-5

BANK 4 MORPHING

- 16- Country >> Rock MorphCfg-7
- 17- Meta MorphCfg-15
- 18- Hot Stack >> Greasy FuzzCfg-4
- 19- SuperweetClean >> ThrashCfg-1
- 20- Auto MorphCfg-10

BANK 5 DUAL TONES

- 21- Hybrid Stereo SweepCfg-5
- 22- Dirty/Clean SqueezeCfg-1
- 23- StereoverdriveCfg-7
- 24- Pannable Sweet SoloCfg-7
- 25- My Tone's BiggerCfg-2

BANK 6 PREAMP ONLY 1

- 26- RockMangCfg-19
- 27- Jazz/Fusion SoloCfg-19
- 28- Tube DirtCfg-2
- 29- Big Power ChordCfg-21
- 30- Singing LeadCfg-20

BANK 7 PREAMP ONLY 2

- 31- Blues RhythmCfg-1
- 32- 70s' British StackCfg-1
- 33- Twin ComboCfg-1
- 34- Fuzz Me TenderCfg-1
- 35- Good Ol' Clean/CrunchCfg-1

BANK 8 BLUES TONES

- 36- Late Night BluesCfg-5
- 37- Exp Pedal SlideCfg-17
- 38- Squeezy Clean DelayCfg-5
- 39- Big Blues SoloCfg-4
- 40- Sweet & Blue SoloCfg-20

BANK 9 COUNTRY TONES

- 41- Country PickenCfg-7
- 42- Gonna Be a ShowdownCfg-3
- 43- Trem O' LuckCfg-3
- 44- Country Rockin STERCfg-7
- 45- Stereo CountryCfg-11

BANK 10 METAL TONES

- 46- Rhythm KingCfg-9
- 47- OctavianCfg-9
- 48- Stereo RazorCfg-4
- 49- Bad AttitudeCfg-8
- 50- Death ScoopCfg-9

BANK 11 ALTERNATIVE PROGRAMS

- 51- ThickererCfg-8
- 52- Real Auto WahCfg-9
- 53- Hip NotizeCfg-5
- 54- Happenin' RhythmCfg-1
- 55- Flower PhaseCfg-5

BANK 12 STUDIO APPLICATION PROGRAMS

- 56- LA ChorusCfg-11
- 57- Tru Stereo +Pan DlyCfg-7
- 58- Stereo Power ChordCfg-8
- 59- West Coast SoloCfg-8
- 60- Greasy SoloCfg-5

BANK 13 VINTAGE TONES

- 61- Surfin the 90s'Cfg-5
- 62- PhuzadelicCfg-11
- 63- Tape DelayCfg-11
- 64- Her Name was LezlieCfg-11
- 65- True Analog DelayCfg-11

BANK 14 CLEAN TONES

- 66- Clean Quad Detune/DelayCfg-5
- 67- Panning Clean Warm TubeCfg-4
- 68- Crisp CleanCfg-9
- 69- Clean w/Mod DelayCfg-4
- 70- Phase w/Panning DelayCfg-2

BANK 15 JAZZ/FUSION TONES

- 71- Texas Fusion SoloCfg-20
- 72- Jazz FX/Neck PickupCfg-20
- 73- Jazz Concert HallCfg-9
- 74- Pop Jazz CompCfg-12
- 75- Synth Vol Pedal PadCfg-12

BANK 16 ACOUSTIC GUITAR PROGRAMS

- 76- Electro Acoustic Det/RevCfg-5
- 77- PEQ Chorus/DelayCfg-5
- 78- 12 StringCfg-17
- 79- Just a PhaseCfg-2
- 80- Moving Detune/ReverbCfg-2

APPENDIX

BANK 17 DYNAMICS EFFECTED PROGRAMS

81-	Hit-Me-Hard Phase	Cfg-2
82-	Ducked Delay	Cfg-4
83-	Soft: Reverb Hard: Chorus	Cfg-8
84-	Envelope Attack	Cfg-4
85-	Panning DynoWah	Cfg-9

BANK 18 JAM-ALONG

86-	Sound+Sound Jam	Cfg-23
87-	Sound+Sound 1>4>5	Cfg-23
88-	DelayShifter	Cfg-10
89-	Mega Chord	Cfg-15
90-	Space Beat	Cfg-5

BANK 19 BASS GUITAR PROGRAMS

91-	Big Fat Bass Room	Cfg-4
92-	High Freq Chorus	Cfg-7
93-	Bowed Church Bass	Cfg-7
94-	Slappy Psycho Bass	Cfg-2
95-	Grungified Bass	Cfg-7
96-	Slight of Hand	Cfg-11
97-	Worth Waiting For	Cfg-4
98-	Peaceful Place	Cfg-5
99	Guitar Synth Pad	Cfg-12
100-	You Take the High tap	Cfg-13

DIGITAL EFFECT BLOCK CONFIGURATIONS (FACTORY BANK)

101)	Cfg. 1 (4, 4, 4, 4)
102)	Cfg. 2 (4, 4, H)
103)	Cfg. 3 (H, 4, 4)
104)	Cfg. 4 (4, H, 4)
105)	Cfg. 5 (H, H)
106)	Cfg. 6 (4, 4, 2)
107)	Cfg. 7 (4, 4, 4, 4)
108)	Cfg. 8 (H, H)
109)	Cfg. 9 (F)
110)	Cfg. 10 (H, H, H, H) Dual S-DISC II
111)	Cfg. 11 (F, F) Dual S-DISC II
112)	Cfg. 12 (4, 4, 4, 4, F) Dual S-DISC II
113)	Cfg. 13 (F, F) Dual S-DISC II
114)	Cfg. 14 (All 4ths) Dual S-DISC II
115)	Cfg. 15 (4,4,2,4,4,2)
116)	Cfg. 16 (All 4ths)
117)	Cfg. 17 (3,4)
118)	Cfg. 18 (4,3)
119)	Cfg. 19 (2,4,4,)
120)	Cfg. 20 (4,4,2,)
121)	Cfg. 21 (4,4,4,4)
122)	Cfg. 22 (H, H, F,)
123)	Cfg. 23 (F, H, 4,4)
124)	Cfg. 24 (4, 4, 4,4,F)

2112 PROGRAM DESCRIPTIONS

To help all of you Tone and Effect connoisseurs along the way, this list gives you a brief description all 100 Factory Programs of the 2112.

BANK 1 TOP 5

- 1- **Go For It!** - Pure and rich unaffected Tube Preamp tones right out of the box.
- 2- **Clean Comp Delay** - An automatic analog Wah that pans right and left.
- 3- **Two Tone Mayhem** - A program that utilizes both distortion paths. Tube distortion on the left side with delay. The right side uses Fuzz distortion with a detuner.
- 4- **Electric 12-String** - 12-String pitch shifter emulation with chorus and reverb effect modules.
- 5- **Star Wahs** - The Darth Vader of preamp and effect tones that also uses an Analog Wah module.

BANK 2 SIGNATURE 1

- 6- **EVH '78** - Tone of the Great Ones' early years, all with phaser and flanger if your an Atomic Punk player.
- 7- **Strange MicroBrew** - This one is a must for "Creamy" tone that utilizes Fuzz distortion and Reverb..
- 8- **Down By the Seaside** - Straight EQ'd clean tone with St. Tremolo to take you back a few years.
- 9- **Whammy Against da Machine** - Industrial Music at your feet. Tube distortion with an Octave-Up Whammy pitch shifter module that can be used with an Expression Pedal.
- 10- **Jazz Down Pat** - The true definition of Jazz/Fusion, with Tube distortion and Dual Reverb to bring it to life.

BANK 3 ARTIST SIGNATURE 2

- 11- **We're Not HoldsWorthy** - Tube distortion Dual Detuning and Delay to satisfy all of your technical prowess needs.
- 12- **It May be Queen** - This is the Killer. The classic Tube distortion and Harmony will put you in a real rhapsody.
- 13- **SRV Lives On** - You can almost taste the Tube distortion and Reverb here. And if that weren't enough, you can also use the Rotary Speaker simulator if your in a rude mood.
- 14- **Wind Cries Jimi** - Woodstock comes alive again with in your Fuzz face-type distortion.
- 15- **I'm from Boston** - Once you use this program, you won't look back. This Rockman-type tone with Tube distortion, Dual chorus and Delay is great to use with an old Gold Top on the big solos.

BANK 4 MORPHING PROGRAMS

- 16- **Country Rock > Rock Morph** - Clean tone with slapback delay, that modulates into Distorted with Cho/Dly.
- 17- **Meta Morph** - Two clean tones that morph between Flanger, Tremolo and Delay tone to Dual Pitch sifter, Dual detune, Reverb all before your very eyes and ears.
- 18- **Hot Stack >Greasy Fuzz** - Fuzz distortion with Chorus-Delay that morphs to plaxi-type tone with reverb.
- 19- **Superwet Clean > Thrash** - Clean and wet that morphs to full-on punk tone.
- 20- **Auto Morph** - Clean tone with chorus and a 5th up Pitch Shifter that transforms into distortion with reverb.

BANK 5 DUAL TONES

- 21- **Hybrid Stereo Sweep** - Clean tone with slapback delay, that modulates into Distorted with Cho/Dly.
- 22- **Dirty/Clean Squeeze** - A clean tone with full detune that modulates to distorted with 4-tap delay.
- 23- **Stereodrive** - Double your tone pleasure, with Solid State Overdrive and Dirty Tube distortions with Delay and Chorus modules.

APPENDIX

24- **Pannable Sweet Solo** - A Solo Must. Two unique tones panning back and forth with two delays and the big Solo button kicked to bring your sound over the top.

25- **My Tone's Bigger** - Tube Distortion and Fuzz distortion come together to produce a wall of sound.

BANK 6 PREAMP ONLY 1

26- **RockMang** - A Saturated Tube distortion with no effects. Just raw valve tone.

27- **Jazz/Fusion Solo** - When the Band leader gives you the nod, this is your chance to shine with Heavy Sustain solid state distortion that lets your notes sing.

28- **Tube Dirt** - A slight distorted Tube distorted that goes hand-in-hand with a Les Paul.

29- **Big Power Chord** - Classic Tube distortion that is perfect for chunkin' out the A-chords.

30- **Singing Lead** - Violin notes will sing through with this heavily saturated Heavy sustain solid state distortion that runs in stereo.

BANK 7 PREAMP ONLY 2

31- **Blues Rhythm** - Blues Tone straight out of Austin, Texas. Ideal to be used with Strats.

32- **70's British Stack** - A 1959-type tone when used with two 4X12 speaker cabinets.

33- **Twin Combo** - The only closer emulation of a Twin would require that the 2112 have a tweed front panel.

34- **Fuzz Me Tender** - A heavy 60's Fuzz face emulation that Jimi himself would be proud to use.

35- **Good Ol' Clean/Crunch** - Clean and Crunchy tones that are blended together for good measure.

BANK 8 BLUES TONES

36- **Late Night Blues** - A punchy Tube distortion with a Speaker simulator and Reverb module that will compliment any Strat, any time, day or night.

37- **Exp Pedal Slide** - Great Blues tone on Ry. Tube distortion that uses Pitch shifting to produce pedal steel-type effects when used with an Expression pedal.

38- **Squeezy Clean Delay** - Bright and Clean tube preamp, with Quad chorus and Delay effect modules.

39- **Big Blues Solo** - Use this program when you want to share your blues with the world. Tube distortion and Dual delay and chorus get pushed over the top with the Solo button engaged.

40- **Sweet and Blue Solo** - A nice Tube distortion that gets panned right and left Reverb and Delay modules with the Solo Button turned on drive the tone loud.

BANK 9 COUNTRY TONES

41- **Country Picken** - This tones a Grinin' Tele sounding program with a small amount of delay and reverb for depth.

42- **Gonna be a Showdown** - Pitch-Shifted Baritone-type guitar with wet Tremolo effect module.

43- **Trem O' Luck** - Big and rich Tremolo with Chorus and just the right amount of delay.

44- **Country Rockin STER** - Country Rock tone with stereo imaging that goes hand in hand with an old Tele.

45- **Stereo Country** - Clean Country tone which runs in stereo and uses a Dual Reverb module.

BANK 10 METAL TONES

46- **Rhythm King** - Heavy Tube distortion that uses just a touch of reverb

47- **Octavian** - A grindstone Solid State distortion with an Octave down pitch shifter.

48- **Stereo Razor** - Stereophonic Buzz saw 80's metal sound.

49- **Bad Attitude** - In your face medium gain sound.

50- **Death Scoop** - The quintessential metal sound with a huge mid EQ scoop.

BANK 11 ALTERNATIVE TONES

- 51- **Thickerer** - This program utilizes 2 distortions that can be panned right and left to produce mammoth tones.
- 52- **Real AutoWah**- When you want the Wah but you don't want to do the leg-work, this program is for you.
- 53- **Hip Notize** - Mellow Tremolo and Chorus effects can be heard on this one.
- 54- **Guitar Synth Pad** - Pitch Shifter, 2-Chorus modules, Dual detune, and Quad Delay are used to produce Synth-like sounds.
- 55- **Flower Phase** - The days of Haight-Ashbury are back with this phaser-effected program.

BANK 12 STUDIO APPLICATION PROGRAMS

- 56- **LA Chorus** - A pristine studio clean chorus tone with delay.
- 57- **Tru stereo + Pan Dly** - Lush, rich clean tone, with a panning delay.
- 58- **Stereo Power Chord** - Big, Stereo distortion program with 700ms of delay.
- 59- **West Coast Solo** - The tone of Session Guitarist throughout the land for soloing with multi-tap delays and the Solo Button engaged.
- 60- **Greasy Solo** - 80's pop solo tone that is rich with Quad Chorus and Dual Delay.

BANK 13 VINTAGE TONES

- 61 **Surfin' in the 90's** - Crystal clean spring Reverb combo amp tone with digital delay.
- 62- **Phuzadelic** - Solid State Fuzz Face-type distortion with an exaggerated phaser.
- 63- **Tape Delay** - Tube distortion with an analog tape-type delay that could put a smile on Mr. Johnson's face.
- 64- **Her Name was Leslie** - Clean tone with a Rotary Speaker simulator that doesn't weigh 200 pounds.
- 65- **True Analog Delay** - 350 ms of Analog Delay tone with regeneration control.

BANK 14 CLEAN TONES

- 66- **Clean Quad/Det** - A clean tone program that uses Quad Detune and Quad Delay effect modules.
- 67- **Panning Clean Warm Tube** - Smooth Tube distortion, that pans right and left with a Dual Delay module.
- 68- **Crisp Clean** - Just good old fashioned clean tone that is best at playin' rhythm guitar.
- 69- **Clean w/Mod Delay** - Clean EQ tone that uses a Multi-effect Chorus and Delay module for texture.
- 70- **Phase w/Panning Delay** - Classic clean tone, with Dual Phaser, Delay and Reverb effect modules.

BANK 15 JAZZ/FUSION TONES

- 71- **Texas Fusion Solo** - Ah Via Toneicom for Texas-sized solos that uses Dual Chorus Dual Delay and Reverb.
- 72- **Jazz FX/Neck Pickup** - A program that is lush with tone and digital effects.
- 73- **Jazz Concert Hall** - Distorted Fusion tone with monumental reverb that any 335 would love to play with.
- 74- **Pop Jazz Comp** - A standard of great jazz/fusion tones with a vast array of digital effects.
- 75- **Synth Vol Pedal Pad** - An accurate re-creation of a Synth volume pedal pad.

BANK 16 ACOUSTIC GUITAR APPLICATIONS

- 76- **Electro Acoustic Det/Rev** - Ideal for an Electric-Acoustic Guitar with Dual Detune and Dual Reverb effects.
- 77- **PEQ Chorus/Delay** - When PEQ boost is needed, this is the one that also has Chorus and Delay modules.
- 78- **12-String** - When you don't have the budget for a 12-String, let the 2112's 12-String emulator lend a hand.

79- **Just a Phase** - A heavily effected Phaser with Auto panner and Dual Delay modules for acoustic guitar.

80- **Moving Detune/Reverb** - Plenty of Detune and Reverb to thicken up acoustic guitar tracks.

BANK 17 DYNAMICS EFFECTED PROGRAMS

81- **Hit-Me-Hard-Phase** - A Clean tone with a Dynamic modifier linked to the phaser speed. So, the harder you pick, the faster the phaser speed.

82- **Ducked Delay** - A clean tone program where the Delay is heard when playing stops.

83- **Soft: Reverb Hard: Chorus** - When the attack is soft, reverb is present. When attack is harder big chorus is produced.

84- **Envelope Attack** - An Auto Wah program with the sensitivity set high for Wah-type effects.

85- **Panning DynoWah** - Slightly distorted, with an attack sensitive dynamic panning Wah effect.

BANK 18 JAM-ALONG BANK

86- **Sound + Sound Jam** - 2-second delay jam loop that can be used as a great sampler.

87- **Sound+Sound 1>4>5** - A 2-second delay jam loop with a Pitch Shifter module that can be used to modulate the jam loop up a 4th and 5th, so your Jam-Along can go through 3 chord changes.

88- **Delay Shifter** - Tube distortion Preamp tone with Delay and Pitch shifting modules.

89- **Mega Chord** - Big Tube distortion tone that runs Dual detune, Stereo Pitch shifter and Quad Detune modules to the left output. Then the Dual Pitch, Dual Phaser and Quad Delay modules run to the right.

90- **Space Beat** - Slightly distorted Dirty Tube distortion with Dual flanger and Quad Delay effect modules.

BANK 19 BASS GUITAR PROGRAMS

91- **Big Fat Bass Room** - Bass program with Dual Chorus and Dual Reverb effect modules for thick tone

92- **High Freq Chorus** - With the high frequencies boosted, this program is ideal for a Bass solo.

93- **Bowed Church Bass** - No frets required for this Upright Bass emulator program.

94- **Slappy Psycho Bass** - EQ Bass frequencies with a Dual Phaser and just a touch of Reverb for great slap bass.

95- **Grungified Bass** - A Motorhead must. A Bass program with a slight Tube distortion to drive over the edge.

96- **Slight of Hand** - A slight Tube distortion with the 10-band EQ dialed-in for 4X12 sounds with Detune and Phaser effect modules.

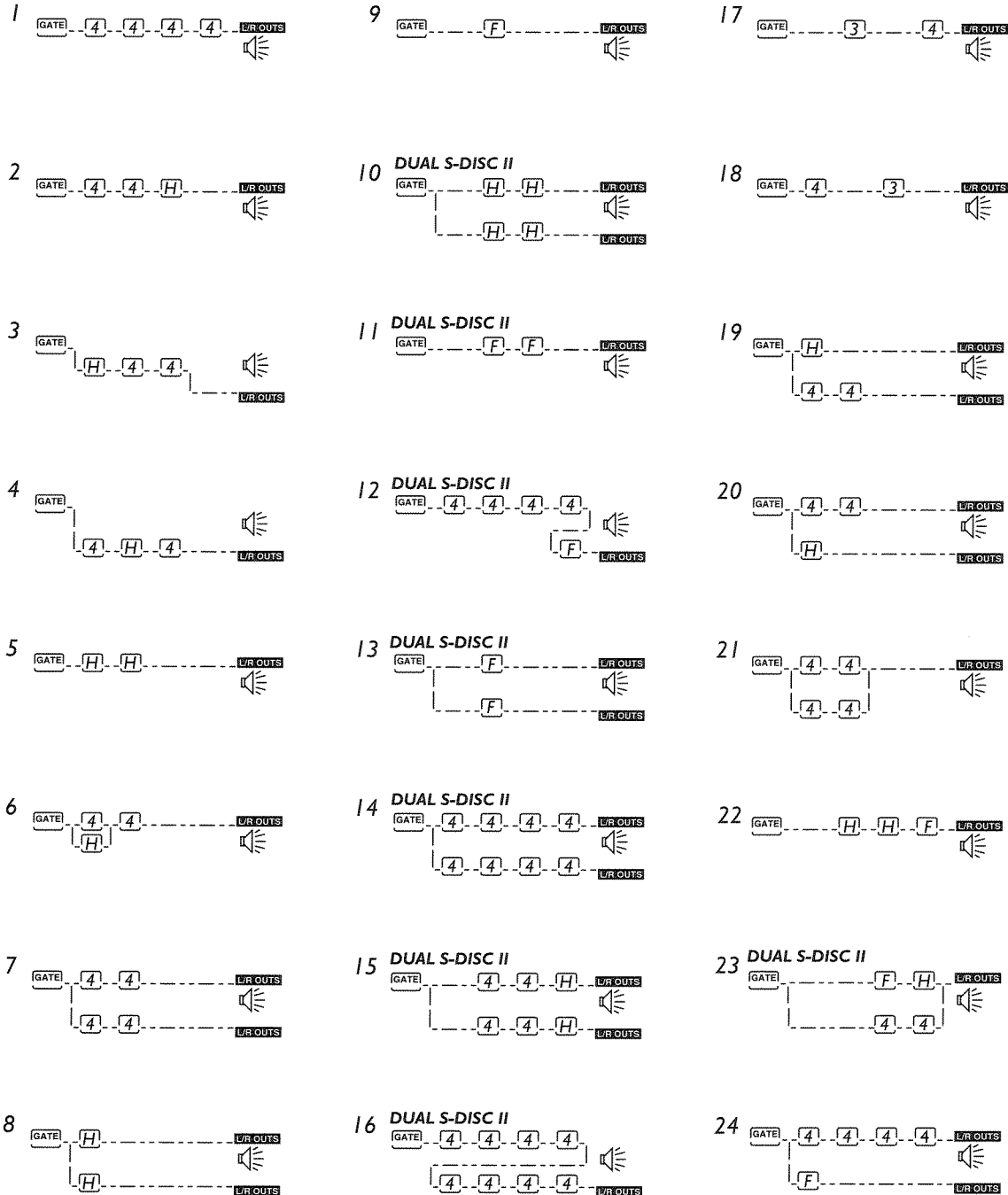
97- **Worth Waiting For** - A Clean tone program that utilizes 2 Dual Chorus and a Quad Delay effect Module.

98- **Peaceful Place** - A basic clean tone program with a small amount of Tube distortion that also uses 600ms of Delay and Dual detune modules.

99- **Guitar Synth Pad**- Pitch Shifter, 2-Chorus modules, Dual detune, and Quad Delay are used for synth-like sounds.

100- **You Take the High Tap** - Delay for days with 2 Quad Delay modules with up to 1.4 seconds of delay time.

EFFECT CONFIGURATION CHART



Dual Output Configurations -Take notice that several effect configurations (ie: 7 and 8) use dual outputs. This indicates that Dual distortion paths can be run to both the right and the left outputs. This will be dictated by panning either distortions to the right or the left.

Key: 4= 1/4 size module
 3= 3/4 size module
 H= 1/2 size module
 F= Whole size module

APPENDIX

HARMONY INTERVAL CHARTS

Interval	Major	Minor	Harm.Minor	Mel.Minor	Dorian	Mixolydian	Lydian
↑0ct	C	C	C	C	C	C	C
↑7th	B	B _♭	B	B	B _♭	B _♭	B
↑6th	A	A _♭	A _♭	A	A	A	A
↑5th	G	G	G	G	G	G	G
↑4th	F	F	F	F	F	F	F#
↑3rd	E	E _♭	E _♭	E _♭	E _♭	E	E
↑2nd	D	D	D	D	D	D	D
Ref	C	C	C	C	C	C	C
↓2nd	B	B _♭	B	B	B _♭	B _♭	B
↓3rd	A	A _♭	A _♭	A	A	A	A
↓4th	G	G	G	G	G	G	G
↓5th	F	F	F	F	F	F	F#
↓6th	E	E _♭	E _♭	E _♭	E _♭	E	E
↓7th	D	D	D	D	D	D	D
↓0ct	C	C	C	C	C	C	C

Int.	Lydian Aug.	Int.	Major Pent.	Int.	Minor Pent.	Int.	Blues	Int.	Whole Tone	Int.	Hlf-Whl Dim.	Int.	Whl-Hlf Dim.
										↑0ct	C	↑0ct	C
↑0ct	C									↑♭7th	B _♭	↑6th	B
↑7th	B					↑0ct	C	↑0ct	C	↑6th	A	↑5th	A
↑6th	A	↑0ct	C	↑0ct	C	↑♭7th	B _♭	↑♭7th	A#	↑5th	G	↑♭6th	G#
↑#5th	G#	↑6th	A	↑♭7th	B _♭	↑5th	G	↑#5th	G#	↑#4th	F#	↑♭5th	F#
↑#4th	F#	↑5th	G	↑5th	G	↑♭5th	F#	↑#4th	F#	↑3rd	E	↑4th	F
↑3rd	E	↑3rd	E	↑4th	F	↑4th	F	↑3rd	E	↑#2nd	E _♭	↑♭3rd	E _♭
↑2nd	D	↑2nd	D	↑♭3rd	E _♭	↑♭3rd	E _♭	↑2nd	D	↑2nd	D _♭	↑2nd	D
Ref	C	Ref	C	Ref	C	Ref	C	Ref	C	Ref	C	Ref	C
↓♭2nd	B	↓♭3rd	A	↓2nd	B _♭	↓2nd	B	↓2nd	A#	↓2nd	B _♭	↓♭2nd	B
↓♭3rd	A	↓4th	G	↓4th	G	↓4th	G	↓3rd	G#	↓♭3rd	A	↓♭3rd	A
↓3rd	G#	↓♭6th	E	↓5th	F	↓♭5th	F#	↓♭5th	F#	↓4th	G	↓3rd	G#
↓♭5th	F#	↓♭7th	D	↓6th	E _♭	↓5th	F	↓♭6th	E	↓♭5th	F#	↓♭5th	F#
↓♭6th	E	↓0ct	C	↓0ct	C	↓6th	E _♭	↓♭7th	D	↓♭6th	E _♭	↓5th	F
↓♭7th	D					↓0ct	C	↓0ct	C	↓6th	E	↓6th	E _♭
↓0ct	C									↓7th	D _♭	↓♭7th	D
										↓0ct	C	↓0ct	C

2112 SPECIFICATIONS

A/D Converter: 20 bit, 64 x oversampled delta-sigma stereo

D/A Converter: 20 bit 64 x oversampled

Sampling Frequency: 44.1 kHz

Frequency Response 20~20kHz +/- 0.5 dB

DSP SECTION:

Static-Dynamic Instruction Set computer 2 (S-DISC II®)

Digital Signal Path Width: 24 bits (144.5 dB)

Internal Data Path Width: 48 bits (289 dB)

Dynamic Delay Memory: 64k x 24 bits (1.4 seconds)

Static Delay Memory: 256 24-bit registers (5.8 milliseconds)

Data ALU Processing: 45.1 MIPS

Address ALU Processing: 33.8 MIPS

Multiplier Size: 24 bits x 24 bits

THD Less than 0.03 (kHz)

INPUT SECTION:

Connectors: 1- 1/4" TRS Plug balanced

Nominal Level: -10 dBV, +4 dBu, software variable

Maximum Level: +18 dBu

Impedance: 10 kΩ

OUTPUT SECTION:

Connectors: 2- 1/4" TRS Plug balanced,

Nominal Level: -10dBV, +4 dBu switchable

Maximum Level: +18 dBu

Impedance: 470 Ω

Recommended Output Load: 20K Ω

GENERAL:

Frequency Response: 20 Hz. - 20kHz. ±3 dB

S/N ratio: Greater than 91 dB; ref =max signal, 22 kHz measurement bandwidth, unweighted

96dB Max signal "A" Unweighted

Total Harmonic Distortion Less than 0.03% (1 kHz)

Midi In, Out/Thru

MEMORY CAPACITY:

Factory: 124 Programs

User: 100 Programs

POWER REQUIREMENTS:

US and Canada: 120 VAC, 60 Hz

Japan: 100 VAC, 50/60 Hz

Europe: 230 VAC, 50 Hz

UK: 240 VAC, 50 Hz

Power Consumption: 28 watts

Dimensions: 19" (482 mm) W x 3.50" (88 mm) H x 9.25" (234 mm) D

Net Weight: 10.60 lbs (4.80 kg.)

Shipping Weight: 13.35 lbs. (6.05 kg.)

MIDI IMPLEMENTATION CHART

Function...		Transmitted		Recognized		Remarks
Basic Channel	Default Channel	X	X	1-16	1-16	Memorized
Mode	Default Messages Altered		X X N/A	Mode 2, Mode 4 Mode2, Mode 4 X		Memorized
Note Number	True Voice	X	N/A	X	X	
Velocity	Note ON	X	X	X	X	
	Note OFF		X		X	
After Touch	Key's Ch's	X	X X	0	X X	
Pitch Bender			X		X	
Control Change			X		0	1*
Prog Change	True #	X	N/A	0	0-127	2*
System Exclusive			0		0	See SysEx (see appendix)
System Common	:Song Pos :Song Sel :Tune		X X		X X X	
System Real Time	:Clock :Commands		X X		X X	
Aux Mes-sages	:Local ON/OFF :All Notes Off :Active Sense :Reset		X X X X		X X X X	
Notes 1* Each Parameter can be linked to any control change. These assignment tables are stored in memory. 2* For Program map 1-128 (Program Change can be mapped to Factory Programs, User Programs, or Bypass function).						

Mode 1 : OMNI ON, POLY
Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON, MONO
Mode 4 : OMNI OFF, MONO

0 : Yes
X : No

SYSTEM EXCLUSIVE IMPLEMENTATION

MIDI System Exclusive communication allows a user to control a device directly through MIDI in a very powerful and flexible manner. Much care has gone into creating and testing this documentation but DigiTech can not guarantee 100% accuracy, nor can DigiTech be held responsible for presets and data lost in a product from System Exclusive Information use.

A working knowledge of the MIDI Version 1.0 Detailed Specification can be useful while implementing any manufacturer's SysEx commands. For a copy of the MIDI spec contact:

MIDI Manufacturers Association
5316 West 57th Street
Los Angeles, California 90056 USA
(213) 649-6434

It is a good practice to back up any user programs and/or user algorithms in the device before you begin to work with SysEx commands due to the fact that incorrect commands can produce unexpected results. Should you encounter any discrepancies between this documentation, and a DigiTech S-DISC II™ MIDI, product please feel free to contact us at:

Digitech Electronics
Attn: Product Management Dept.
8760 South Sandy Parkway
Sandy, Utah 84070 USA
(801) 566-8800
<http://www.digitech.com>

MIDI BASICS

MIDI CHANNELS: The 2112 can be set so that they communicate on 1 of 16 discrete MIDI channels. Some devices may also be set up to transmit or receive information on all channels in an Omni mode or to none of the channels in a Disabled mode.

PROGRAM CHANGES: When the 2112 is set to communicate on one or all of the MIDI channels, it will recognize a Program Change command. If the number is legal (e.g. within the device's range of selectable programs) the DigiTech device will respond by changing to the new program. MIDI sends Program Changes 0 through 127. DigiTech devices begin their program numbering with 1, thus Program Change 0 will select program 1. The 2112 also allows the user to 're-map' the Program Change commands so that Program Change 0 could call program 135, if so desired.

CONTINUOUS CONTROLLERS: A MIDI Continuous Controller may be 'Linked' to nearly any available parameter in the 2112. CC links (Modifiers) and their ranges are treated uniquely in each program with the assignments being saved only if they are stored as part of the program.

CHANNEL PRESSURE: DigiTech products treat Channel Pressure as simply another type of Continuous Controller which can be linked to parameters for control.

PITCH BEND: Pitch Bend information is a higher resolution controller that is not supported in DigiTech products, due to the density of the information and the resources needed to process it properly. Many MIDI control products offer the ability to map Pitch Bend to normal Continuous Controllers if a user wanted to control a parameter with a device such as a Pitch Bend Wheel.

APPENDIX

GENERAL FORMAT

The general format for the System Exclusive information is as follows (note: all SysEx values are displayed in Hexadecimal format, along with this symbol (h) for clarification):

<u>Hex Value</u>	<u>Definition</u>
F0(h)	System Exclusive 'Begin Message' byte
00(h) 00(h) 10(h)	Manufacturer's ID Number (DOD/DigiTech)
0n(h)	n = Unit's Device or SysEx Channel number (minus one) e.g. 00(h) is device or SysEx Ch 1 01(h) is device or SysEx Ch 2 etc... 0F(h) is device or SysEx Ch 16
dd	dd = device ID number 49(h) identifies the 2112
pp	pp = Procedure number. The different procedure's names and general formats are described in the Procedures Section.

dd(1)1, dd(1)2.....dd(n)1, dd(n)2

dd = Data as needed by procedures. Since the standard MMA MIDI Specification reserves 80(h) through FF(h) (decimal numbers 128 through 255) for specific commands, a split byte format is adopted for all data communication in this SysEx implementation. dd(n)2 denotes the 1st through 7th bits of the nth byte and dd(n)1 denotes the 8th bit of the nth byte. Note: All data that is requested or received, is in split byte format unless noted otherwise.

F7(h) System Exclusive 'End Message' byte

PROCEDURES

In the following section, SYS_HEAD refers to a valid System Exclusive header. The System Exclusive header starts with the System Exclusive status byte, and includes all bytes through the DigiTech device type. F7(h) is the System Exclusive 'Message End' byte. All SysEx numbers in the format definition of each procedure are given as hexadecimal values, along with this symbol (h) for clarification. Binary numbers are identified with this symbol (b).

REQUEST ONE PROGRAM (01h)

SYS_HEAD, 01(h), yy1, yy2, zz1, zz2 F7(h)

When yy = 00(h) User bank is selected

When yy = 01(h) Factory bank is selected

zz The Program number, 1-100 User (00-63(h)) or 1-124 Factory (00-BE(h))

When a Request One Program procedure is received, the 2112 will respond with a Receive One Program procedure.

RECEIVE ONE PROGRAM (42h)

SYS_HEAD 42(h), vv(1)1, vv(1)2, vv(2)1, vv(2)2, yy1, yy2, zz1, zz2, dd(1st)1, dd(1st)2, ... dd(nth)1, dd(nth)2, F7(h)

vv software version number
 When yy = 00(h) User bank is selected
 When yy = 01(h) Factory bank is selected
 zz The Program number, 1-100 (00-63h)
 dd(n) Program data

The Receive One Program procedure is used to load a program into the 2112. The number of program bytes to be received (n) is different for each program. If the 2112 is sent a Receive One Program procedure where the program number is not a valid RAM destination, it will be ignored.

REQUEST BULK DUMP (49h)

SYS_HEAD, 49(h), F7(h)

When a Request Bulk Dump procedure is received, the 2112 will respond with a Receive Bulk Dump procedure.

RECEIVE BULK DUMP (48h)

SYS_HEAD 48(h), dd(1st)1, dd(1st)2, ... dd(nth)1, dd(nth)2, F7(h)

dd(n) Bulk Dump Data

The Receive Bulk Dump procedure is used to load all User Programs into the 2112. A software version number is imbedded in the data.

REQUEST UTILITIES SETTINGS (11h)

SYS_HEAD, 11(h), F7(h)

When a Request Utilities Settings procedure is received, the 2112 will respond with a Receive Utilities Settings procedure.

RECEIVE UTILITIES SETTINGS (12h)

SYS_HEAD 12(h), vv(1)1, vv(1)2, vv(2)1, vv(2)2, rr1, rr2, tt1, tt2, ee1, ee2, ff1, ff2, ss1, ss2, nn1, nn2, mm1, mm2, qq1, qq2, yy(1st)1, yy(1st)2, zz(1st)1, zz(1st)2 ... yy(128th)1, yy(128th)2, zz(128th)1, zz(128th)2, F7(h)

vv software version number
 rr MIDI Receive Channel (range = 00(h) ~ 07(h))
 tt MIDI Transmit Channel (range = 00(h) ~ 07(h))
 ee Cabinet Emulator (range = 00(h) ~ 07(h))
 ff Foot Controller (range = 00(h) ~ 07(h))
 ss SysEx Channel (Studio 2112 only)
 nn MIDI Merge On/Off (Studio 2112 only)
 mm Mono-Stereo (range = 00(h) ~ 01(h))
 qq EQ mode (range = 00(h) ~ 07(h))
 yy, zz Program Map Settings (MIDI Program changes 1 ~ 128 = map)
 When yy = 00(h) User Bank is selected
 When yy = 01(h) Factory Bank is selected
 When yy = 02(h) and zz = 00(h), Bypass toggle is selected
 zz Program Number.

REQUEST PARAMETER VALUE (17h)

SYS_HEAD 17(h), aa1, aa2, bb1, bb2, F7(h)

aa Effect Module's Position
bb Effect Parameter's Position

When a Request Parameter Value procedure is received, the 2112 will respond with a Receive Parameter Value procedure.

RECEIVE PARAMETER VALUE (18h)

SYS_HEAD 18(h), aa1, aa2, bb1, bb2, cc1, cc2, F7(h)

aa Effect Module's Position
bb Effect Parameter's Position
cc Parameter Value

The Receive Parameter Value procedure is used to load Parameter Values into the 2112. Please refer to the Parameter Charts for more information.

REQUEST ALL CURRENT PARAMETER VALUES (23h)

SYS_HEAD, 23(h), ww1, ww2, F7(h)

When ww= 7F(h) All module's parameters will be requested.
When ww= 68(h) (position of the module minus 1), only that module's parameters will be requested.
ww Requested Module's parameter Values

When a Request All Current Parameter Values procedure is received, the 2112 will respond with a Respond All Current Parameter Values procedure.

RECEIVE ALL CURRENT PARAMETER VALUES FOR CURRENT PROGRAM (24h)

SYS_HEAD, 24(h), nn1, nn2, ww1, ww2, mm1(1st), mm2(1st), aa1(1st), aa2(1st), dd1(1st)(1st), dd2(1st)1st, ...
dd1(1st)(wth), dd2(1st)(wth), ... mm1(xth), ... mm2(xth), aa1(xth), aa2(xth), dd1(xth)(1st), dd2(xth)(1st), ...
dd1(xth)(wth), dd2(xth)(wth), F7(h)

When ww= 7F(h) All module's parameters will be received.
When ww= 68(h) (position of the modules minus 1), only that module's parameters will be received.

nn Number of Modules.
ww Modules User requested.
mm Indicates the beginning of the xth Module.
aa Number of available parameters in the FX Module.
dd Current value for the wth parameter.

The Receive All Current Parameter Values procedure is used to receive Parameter Values from the 2112 for the currently selected program.

Warning: Sending data that was retrieved from a different program will delete the memory. Be sure to only send data that was received from the same program.

REQUEST MODULE CONFIGURATION (25h)

SYS HEAD , 25 (h) , F7 (h)

When a Request Module Configuration procedure received, the 2112 will respond with a Respond Module Configuration procedure.

RESPOND MODULE CONFIGURATION (26h)

SYS HEAD , 26(h) , nn1, nn2, cc(1st)1, cc(1st)2, ee(1st)1, ee(1st)2, ... cc(nth)1, cc(nth)2 , ee(nth)1, ee(nth)2, F7(h)
 nn Number modules present in the algorithm
 cc Class I.D. of the nth module in the algorithm
 ee I.D. number of the effect currently loaded in the nth module (see pg. 12 for ID numbers)

Class I.D. Numbers for 2112

00(h) Preamp
 01(h) 1/4 Effect Module
 02(h) 1/2 Effect Module
 03(h) 3/4 Effect Module
 04(h) Whole Effect Module

RECEIVE KEY SCAN CODE (54h)

SYS_HEAD, 54(h), cc, F7(h)

cc Code for the Key Scan (note: there is only one byte, not two)

The Receive Key Scan Code procedure is used to emulate a button press on the front panel of the . See the Key Scan Code Maps (page 11) for a list of Key Scan codes.

RECEIVE HOLD KEY SCAN CODE (55h)

SYS_HEAD, 55(h), cc, 68, F7(h)

cc Code for the Key Scan (note: there is only one byte, not two)

68 Time key is pressed expressed in 0.1 seconds increments (note: there is only one byte, not two)

The Receive Hold Key Scan Code procedure is used to emulate a button press and hold on the front panel of the 2112. The device will respond with a Receive Key Accepted procedure.

RECEIVE KEY ACCEPTED (56h)

SYS_HEAD, 56(h), cc1, cc2, F7(h)

cc Code echoed for the Key Scan received. (00(h) if key is invalid)

The Receive Key Accepted procedure is sent from the 2112 in response and acceptance of a Receive Scan Code Key or Receive Hold Scan Code Key procedure but is ignored if received by the 2112.

SELECT ONE PROGRAM (1Fh)

SYS_HEAD, 1F(h), yy1, yy2, zz1, zz2 F7(h)

When yy = 00(h) User bank is selected

When yy = 01(h) Factory bank is selected.

zz The Program number, 1-100 User (00-63(h)) or 1-191 Factory (00-BE(h))

This command behaves like a standard MIDI Program Change command, except that it allows the selection of any Program in the 2112 without the use of mapping.

RESET PROGRAM (20h)

SYS_HEAD, 20(h), F7(h)

The Reset Program procedure causes the 2112 to reload the current saved program.

APPENDIX

RESET DEVICE (21h)

SYS_HEAD, 21(h), F7(h)

The Reset Device procedure causes the 2112 to re-boot the software as if the power had been turned off, and then back on. If edits have been made to the current program without saving, they will be lost.

RESET FACTORY SETTINGS (22h)

SYS_HEAD, 22(h), F7(h)

The Reset Factory Settings procedure causes the 2112 to reload a sections of the EPROM factory defaults and perform a hard reset.

REQUEST USER DEFAULTS (13h)

SYS_HEAD, 13(h), yy1, yy2, zz1, zz2 F7(h)

When a Request User Default procedure is received, the 2112 will respond with a Receive User Defaults procedure.

yy= effect ID #

zz= index map max = 5

FX ID # = 255

RECEIVE USER DEFAULTS (14h)

SYS_HEAD, 14(h), yy1, yy2, zz1, zz2 F7(h)

The Receive User Defaults procedure is used to receive User Defaults.

yy= effect ID #

zz= index map max = 5

FX ID # = 255

The following are codes for each of the buttons or keys on the 2112. Numbers are given as hexadecimal values.

<u>Key Label</u>	<u>Hex equivalent</u>	<u>Key Label</u>	<u>Hex equivalent</u>
Input Knob	54(h)	Wheel Up clockwise	0E(h)
Page/Gain knob	56(h)	Wheel Down (counter clockwise)	0F(h)
Knob 1	57(h)	Program button	01(h)
Knob 2	58(h)	Solo button	09(h)
Knob 3	59(h)	Levels button	02(h)
Knob 4	55(h)	Assign button	10(h)
FC pad 1	33(h)	Edit button	03(h)
FC pad 2	34(h)	Store button	11(h)
FC pad 3	35(h)	Utilities buttons	04(h)
FC pad 4	36(h)	Bypass button	12(h)
FC pad 5	37(h)	Preamp button	17(h)
FC pad 6	38(h)	Mod button	18(h)
FC pad 7	39(h)	Pitch button	27(h)
FC pad 8	40(h)	Dly/Rvb button	20(h)
FC pad 9	41(h)	Other button	25(h)
FC pad 10	42(h)	TapIt button	26(h)
FC bank Up	43(h)	Tuner button	27(h)
FC bank Down	44(h)		

FX MODULES AND PARAMETER CODES

The Following chart shows all effect modules and their respective parameters with SysEx Effect I.D. numbers attached.

FX #	FX Name	EditPage	P#	Parameter Name	FX #	FX Name	EditPage	P#	Parameter Name				
128(h)	Compressor	Page 1	00(h)	On/Off	3F(h)	GEQ 8	Page 1	00(h)	On/Off				
			01(h)	Default type				01(h)	FX Type				
		Page 2	02(h)	Threshold			02(h)	Default Type					
			03(h)	Ratio			Page 2	03(h)	Level				
		Page 3	04(h)	Attack				04(h)	Phase				
05(h)	Level		Page 3	05(h)			80Hz						
131(h)	Tube Dist.	Page 1		00(h)			On/Off	40(h)	GEQ 15	Page 3	06(h)	160Hz	
			01(h)	Default type			07(h)				315Hz		
		Page 2	02(h)	Distortion Type			Page 4			08(h)	630Hz		
			03(h)	Gain level						09(h)	1.25kHz		
						0A(h)	2.5kHz						
132(h)	Tube EQ	Page 1	00(h)	On/Off	43(h)	GEQ 31	Page 5			0B(h)	5.0kHz		
			01(h)	Default type						0C(h)	10.0kHz		
		Page 2	02(h)	Level			Page 1			00(h)	On/Off		
			03(h)	Phase						01(h)	FX Type		
		Page 3	04(h)	80Hz			Page 2			02(h)	Default Type		
			05(h)	140Hz				03(h)	Level				
		Page 4	06(h)	250Hz			Page 3	04(h)	Phase				
			07(h)	450Hz				05(h)	25Hz				
		Page 5	08(h)	800Hz			Page 4	06(h)	40Hz				
			09(h)	1.5kHz				07(h)	63Hz				
		Page 6	10(h)	2.5kHz			Page 5	08(h)	100Hz				
			11(h)	4.5kHz				09(h)	160Hz				
		Page 7	12(h)	8kHz			Page 6	0A(h)	250Hz				
			08(h)	15kHz				0B(h)	400Hz				
		Page 8	09(h)	160Hz			Page 7	0C(h)	630Hz				
			0A(h)	250Hz				0D(h)	1kHz				
		Page 9	0B(h)	400Hz			Page 8	0E(h)	1.6kHz				
			0C(h)	630Hz				0F(h)	2.5kHz				
		Page 10	0D(h)	1kHz			Page 9	10(h)	4.0kHz				
			0E(h)	1.6kHz				11(h)	6.3kHz				
		Page 11	0F(h)	2.5kHz			Page 10	12(h)	10.0kHz				
			10(h)	4.0kHz				13(h)	16.0kHz				
		133(h)	S. State Dist.	Page 1			00(h)	On/Off	44(h)	GEQ 32	Page 1	00(h)	On/Off
							01(h)	Default type				01(h)	FX Type
				Page 2			02(h)	Distortion Type			Page 2	02(h)	Default Type
							03(h)	Distortion Gain				03(h)	Level
Page 3					Page 3	04(h)	Phase						
						05(h)	20Hz						
134(h)	S. State EQ			Page 1	00(h)	On/Off	45(h)	GEQ 33			Page 4	06(h)	25Hz
					01(h)	Default type						07(h)	31.5Hz
				Page 2	02(h)	Level					Page 5	08(h)	40Hz
					03(h)	Phase						09(h)	50Hz
				Page 3	04(h)	80Hz					Page 6	0A(h)	63Hz
					05(h)	140Hz						0B(h)	80Hz
				Page 4	06(h)	250Hz					Page 7	0C(h)	100Hz
		07(h)	450Hz		0D(h)	125Hz							
		Page 5	08(h)	800Hz	Page 8	0E(h)			160Hz				
			09(h)	1.5kHz		0F(h)			200Hz				
		Page 6	10(h)	2.5kHz	Page 9	10(h)			250Hz				
11(h)	4.5kHz		11(h)	315Hz									
135(h)	Noise Gate	Page 1	00(h)	On/Off	46(h)	GEQ 34	Page 1	12(h)	400Hz				
			01(h)	Default type				13(h)	500Hz				
		Page 2	02(h)	Noise gate Type			Page 2	14(h)	630Hz				
			03(h)	Threshold				15(h)	800Hz				
		Page 3	04(h)	Attenuation			Page 3	16(h)	1.0kHz				
			05(h)	Attack				17(h)	1.25kHz				
		Page 4	06(h)	Release			Page 4	18(h)	1.6kHz				
								19(h)	2.0kHz				
		Page 5					Page 5	1A(h)	2.5kHz				
								1B(h)	3.15kHz				
		Page 6					Page 6	1C(h)	4.0kHz				
								1D(h)	5.0kHz				
		Page 7					Page 7	1E(h)	6.3kHz				
			1F(h)	8.0kHz									
Page 8			Page 8	20(h)	10.0kHz								
				21(h)	12.5kHz								

41(h) St GEQ 8	Page 1	22(h)	16.0kHz	1F(h) Dual Cho	Page 2	03(h)	Level		
		23(h)	18.0kHz		04(h)	Phase L			
		00(h)	On/Off		05(h)	Phase R			
		01(h)	FX Type		06(h)	Loshlv Freq			
	Page 2	02(h)	Default		07(h)	Level			
		03(h)	Level		08(h)	Band1 Freq			
		04(h)	Phase L		09(h)	Width			
		05(h)	Phase R		0A(h)	Level			
	Page 3	06(h)	80Hz		0B(h)	Band 2 Freq			
		07(h)	160Hz		0C(h)	Width			
		08(h)	315Hz		0D(h)	Level			
		09(h)	630Hz		0E(h)	Band3 Freq			
	Page 4	0A(h)	1.25kHz		0F(h)	Width			
		0B(h)	2.5kHz		10(h)	Level			
0C(h)		5.0kHz	11(h)	Band4 Freq					
0D(h)		10.0kHz	12(h)	Width					
42(h) St GEQ 15	Page 1	00(h)	On/Off	20(h) Quad Cho	Page 8	13(h)	Level		
		01(h)	FX Type			14(h)	HiShlv Freq		
		02(h)	Default Type			15(h)	Level		
		03(h)	Level						
	Page 2	04(h)	PhaseL		Page 1	00(h)	On/Off		
		05(h)	PhaseR		01(h)	FX Type			
		06(h)	25Hz		02(h)	Default			
		07(h)	40Hz		03(h)	FX Level			
	Page 3	08(h)	63Hz		04(h)	Dry Level			
		09(h)	100Hz		05(h)	Balance			
		0A(h)	160Hz		06(h)	Speed			
		0B(h)	250Hz		07(h)	Depth			
	Page 4	0C(h)	400Hz		08(h)	Waveform			
		0D(h)	630Hz		09(h)	DlyA			
0E(h)		1kHz	0A(h)	DlyB					
0F(h)		1.6kHz	0B(h)	OutA					
Page 5	10(h)	2.5kHz	0C(h)	PanA					
	11(h)	4.0kHz	0D(h)	OutB					
	12(h)	6.3kHz	0E(h)	PanB					
	13(h)	10.0kHz							
44(h) St PEQ 3	Page 1	00(h)	On/Off	22(h) Octal Cho	Page 1	00(h)	On/Off		
		01(h)	FX Type			01(h)	FX Type		
		02(h)	Default			02(h)	Default		
		03(h)	Level			03(h)	FX Level		
	Page 2	04(h)	PhaseL		04(h)	Dry Level			
		05(h)	PhaseR		05(h)	Balance			
		06(h)	Band1 Freq		06(h)	Speed			
		07(h)	Width Level		07(h)	Depth			
	Page 3	08(h)	Band2 Level		08(h)	Waveform			
		09(h)	Width Level		09(h)	DlyA			
		0A(h)	Band3 Freq		0A(h)	DlyB			
		0B(h)	Width Level		0B(h)	DlyC			
	45(h) PEQ 6	Page 4	0C(h)		DlyD	22(h) Octal Cho	Page 2	0C(h)	DlyD
			0D(h)		OutA			0D(h)	OutA
0E(h)			PanA	0E(h)	PanA				
0F(h)			OutB	0F(h)	OutB				
Page 5		10(h)	PanB	10(h)	PanB				
		11(h)	OutC	11(h)	OutC				
		12(h)	PanC	12(h)	PanC				
		13(h)	OutD	13(h)	OutD				
Page 6		14(h)	PanD	14(h)	PanD				
		00(h)	On/Off	00(h)	On/Off				
		01(h)	FX Type	01(h)	FX Type				
		02(h)	Default	02(h)	Default				
Page 7		03(h)	FX Level	03(h)	FX Level				
		04(h)	Dry Level	04(h)	Dry Level				
	05(h)	Balance	05(h)	Balance					
	06(h)	Speed	06(h)	Speed					
Page 8	07(h)	Depth1	07(h)	Depth1					
	08(h)	Depth2	08(h)	Depth2					
	09(h)	Speed	09(h)	Speed					
	0A(h)	Depth	0A(h)	Depth					
46(h) St PEQ 6	Page 1	0B(h)	DlyA	22(h) Octal Cho	Page 3	0B(h)	DlyA		
		0C(h)	DlyB			0C(h)	DlyB		
		0D(h)	DlyC			0D(h)	DlyC		
		0E(h)	DlyD			0E(h)	DlyD		

21(h) StDual Cho	Page 6	0D(h)	DlyC	30(h) Rotary Speaker	Page 2	03(h)	FX Level			
		0E(h)	DlyD		04(h)	Dry Level				
		0F(h)	DlyE		05(h)	Balance				
		10(h)	DlyF		Page 3	06(h)	Speed			
		11(h)	DlyG		07(h)	Depth				
	Page 7	12(h)	DlyH		08(h)	Feedback				
		13(h)	Spread		09(h)	Waveform				
		Page 4	0A(h)		OutL					
	Page 1	00(h)	On/Off		0B(h)	OutR				
		01(h)	FX Type		Page 1	00(h)	On/Off			
	Page 2	02(h)	Default			01(h)	FX Type			
		03(h)	FX Level			02(h)	Default			
		04(h)	Dry Level			Page 2	03(h)	FX Level		
	Page 3	05(h)	Balance			04(h)	Dry Level			
		06(h)	Speed			05(h)	Balance			
		07(h)	Depth			Page 3	06(h)	Mode		
Page 4	08(h)	Waveform	07(h)	Spread						
	09(h)	DlyA	08(h)	Horn Lvl						
Page 5	0A(h)	DlyB	09(h)	Rotor Lvl						
	0B(h)	OutL	Page 4	0A(h)		Dummy (ignore)				
	0C(h)	OutR	0B(h)	Horn Slow Speed						
47(h) Dual Flange	Page 1	00(h)	On/Off	0C(h)		Horn Slow Depth				
		01(h)	FX Type	0D(h)		Horn Slow Doppler				
		02(h)	Default	Page 5		0E(h)	Dummy (ignore)			
	Page 2	03(h)	FX level	0F(h)		Horn Fast Speed				
		04(h)	Dry Level	10(h)	Horn Fast Depth					
		05(h)	Balance	11(h)	Horn Fast Doppler					
	Page 3	06(h)	Speed	Page 6	12(h)	Dummy (ignore)				
		07(h)	Depth	13(h)	Rotor Slow Speed					
		08(h)	Feedback	14(h)	Roto Slow Depth					
	Page 4	09(h)	Waveform	Page 7	15(h)	Dummy (ignore)				
		0A(h)	DlyA	16(h)	Rotor Fast Speed					
		0B(h)	DlyB	17(h)	Roto Fast Depth					
	Page 5	0C(h)	OutA	Page 8	18(h)	X-Over				
		0D(h)	PanA	19(h)	Horn Acceleration					
		0E(h)	OutB	1A(h)	Rotor Acceleration					
	0F(h)	PanB								
48(h) Stereo Flange	Page 1	00(h)	On/Off	50(h) St. Tremolo	Page 1	00(h)	On/Off			
		01(h)	FX Type		01(h)	FX Type				
		02(h)	Default		Page 2	02(h)	Default			
	Page 2	03(h)	FX Level		03(h)	Level				
		04(h)	Dry Level		04(h)	Speed				
		05(h)	Balance		05(h)	Depth				
	Page 3	06(h)	Speed		06(h)	Waveform				
		07(h)	Depth		51(h) AutoPanner	Page 1	00(h)	On/Off		
		08(h)	Feedback			01(h)	FX Type			
	09(h)	Waveform	02(h)			Default				
	Page 5	0B(h)	OutL			Page 2	03(h)	Level		
		0C(h)	OutR			04(h)	Speed			
						05(h)	Depth			
	4B(h) Dual Phaser	Page 1	00(h)			On/Off	06(h)	Waveform		
			01(h)			FX Type	2C(h) Dual Detune	Page 1	00(h)	On/Off
			02(h)			Default		01(h)	FX Type	
Page 2		03(h)	FX Level	02(h)		Default				
		04(h)	Dry Level	Page 2		03(h)		FX Level		
		05(h)	Balance	04(h)		Dry Level				
Page 3		06(h)	Speed	05(h)		Balance				
		07(h)	Depth	Page 3		06(h)		DtnA		
		08(h)	Feedback	07(h)		DtnB				
Page 4		09(h)	Waveform	08(h)		DlyA				
		0A(h)	OutA	09(h)	DlyB					
		0B(h)	PanA	Page 4	0A(h)	OutA				
		0C(h)	OutB	0B(h)	PanA					
		0D(h)	PanB	0C(h)	OutB					
				0D(h)	PanB					
4C(h) Stereo Phaser		Page 1	00(h)	On/Off	2E(h) Quad Detune	Page 1		00(h)	On/Off	
	01(h)		FX Type	01(h)		FX Type				
	02(h)		Default							

		02(h)	Default			01(h)	FX Type
	Page 2	03(h)	FX Level			02(h)	Default
		04(h)	Dry Level		Page 2	03(h)	FX Level
		05(h)	Balance			04(h)	Dry Level
	Page 3	06(h)	DetnA			05(h)	Balance
		07(h)	DetnB		Page 3	06(h)	ShftA
		08(h)	DetnC			07(h)	DtnA
		09(h)	DetnD			08(h)	ShftB
	Page 4	0A(h)	DlyA			09(h)	DtnB
		0B(h)	DlyB		Page 4	0A(h)	OutA
		0C(h)	DlyC			0B(h)	PanA
		0D(h)	DlyD			0C(h)	OutB
	Page 5	0E(h)	OutA			0D(h)	PanB
		0F(h)	PanA				
		10(h)	OutB	2A(h) Quad Pitch	Page 1	00(h)	On/Off
		11(h)	PanB			01(h)	FX Type
	Page 6	12(h)	OutC		Page 2	02(h)	Default
		13(h)	PanC			03(h)	FX Level
		14(h)	OutD			04(h)	Dry Level
		15(h)	PanD			05(h)	Balance
					Page 3	06(h)	ShftA
2F(h) Octal Detune	Page 1	00(h)	On/Off			07(h)	DtnA
		01(h)	FX Type			08(h)	ShftB
		02(h)	Default			09(h)	DtnB
	Page 2	03(h)	FX Level		Page 4	0A(h)	ShftC
		04(h)	Dry Level			0B(h)	DtnC
		05(h)	Balance			0C(h)	ShftD
	Page 3	06(h)	DetnA			0D(h)	DtnD
		07(h)	DetnB		Page 5	0E(h)	Out A
		08(h)	DetnC			0F(h)	PanA
		09(h)	DetnD			10(h)	OutB
	Page 4	0A(h)	DetnE			11(h)	PanB
		0B(h)	DetnF		Page 6	12(h)	OutC
		0C(h)	DetnG			13(h)	PanC
		0D(h)	DetnH			14(h)	OutD
	Page 5	0E(h)	DlyA			15(h)	PanD
		0F(h)	DlyB				
		10(h)	DlyC	2B(h) Octal Pitch	Page 1	00(h)	On/Off
		11(h)	DlyD			01(h)	FX Type
	Page 6	12(h)	DlyE			02(h)	Default
		13(h)	DlyF		Page 2	03(h)	FX Level
		14(h)	DlyG			04(h)	Dry Level
		15(h)	DlyH			05(h)	Balance
	Page 7	16(h)	Spread		Page 3	06(h)	ShftA
						07(h)	DetnA
2D(h) StDual Dtn	Page 1	00(h)	On/Off			08(h)	ShftB
		01(h)	FX type			09(h)	DtnB
		02(h)	Default		Page 4	0A(h)	ShftC
	Page 3	03(h)	FX Level			0B(h)	DetnC
		04(h)	Dry Level			0C(h)	ShftD
		05(h)	Balance			0D(h)	DetnD
	Page 4	06(h)	DetnA		Page 5	0E(h)	ShftE
		07(h)	DetnB			0F(h)	DetnE
		08(h)	DlyA			10(h)	ShftF
		09(h)	DlyB			11(h)	DetnF
	Page 5	0A(h)	OutLA		Page 6	12(h)	ShftG
		0B(h)	OutLB			13(h)	DetnG
		0C(h)	OutRA			14(h)	ShftH
		0D(h)	OutRB			15(h)	DetnH
					Page 7	16(h)	OutA
						17(h)	OutB
26(h) Smooth Pitch	Page 1	00(h)	On/Off			18(h)	OutC
		01(h)	FX Type			19(h)	OutD
		02(h)	Default			1A(h)	OutE
	Page 2	03(h)	FX Level		Page 8	1B(h)	OutF
		04(h)	Dry Level			1C(h)	OutG
		05(h)	Balance			1D(h)	OutH
	Page 3	06(h)	Shft		Page 9	1E(h)	Spread
		07(h)	Dtn				
		08(h)	OutB				
		09(h)	PanB				
28(h) Dual Pitch	Page 1	00(h)	On/Off	27(h) Stereo Pitch	Page 1	00(h)	On/Off
						01(h)	FX Type

	Page 2	02(h)	Default	
		03(h)	FX Level	
		04(h)	Dry Level	
	Page 3	05(h)	Balance	
		06(h)	Shft	
		07(h)	Dtn	
		08(h)	OutL	
		09(h)	OutR	
29(h) St Dual Pitch	Page 1	00(h)	On/Off	
		01(h)	FX Type	
		02(h)	Default	
	Page 2	03(h)	FX Level	
		04(h)	Dry Level	
		05(h)	Balance	
	Page 3	06(h)	ShftA	
		07(h)	DtnA	
		08(h)	ShftB	
		09(h)	DtnB	
	Page 4	0A(h)	OutLA	
		0B(h)	OutLB	
		0C(h)	OutRA	
		0D(h)	OutRB	
25(h) Harmony	Page 1	00(h)	On/Off	
		01(h)	FX Type	
		02(h)	Default	
	Page 2	03(h)	FX Level	
		04(h)	Dry Level	
		05(h)	Balance	
	Page 3	06(h)	Key	
		07(h)	Scale	
	Page 4	08(h)	Interval	
	Page 5	09(h)	Level	
		0A(h)	Pan	
12(h) Delay(370ms)				
14(h) Delay(700ms)				
19(h) Delay(1400ms)	Page 1	00(h)	On/Off	
		01(h)	FX Type	
		02(h)	Default	
	Page 2	03(h)	FX Level	
		04(h)	Dry Level	
		05(h)	Balance	
	Page 3	06(h)	Delay Time	
		07(h)	FeedBack	
		08(h)	Tapit (ignore)	
	Page 4	09(h)	Out	
		0A(h)	Pan	
Dual Dly(370ms)				
15(h) Dual Dly(700ms)				
1A(h) Dual Dly(1400ms)	Page 1	00(h)	On/Off	
		01(h)	FX Type	
		02(h)	Default	
	Page 2	03(h)	FX Level	
		04(h)	Dry Level	
		05(h)	Balance	
	Page 3	06(h)	Delay Time	
		07(h)	FeedBack	
		08(h)	Tapit (ignore)	
	Page 4	09(h)	DlyA	
		0A(h)	DlyB	
	Page 5	0B(h)	OutA	
		0C(h)	PanA	
		0D(h)	OutB	
		0E(h)	PanB	
16(h) Quad Dly(700ms)				

1B(h) Quad Dly(1400ms)	Page 1	00(h)	On/Off	
		01(h)	FX Type	
		02(h)	Default	
	Page 2	03(h)	FX Level	
		04(h)	Dry Level	
		05(h)	Balance	
	Page 3	06(h)	Delay Time	
		07(h)	FeedBack	
		08(h)	Tapit (ignore)	
	Page 4	09(h)	DlyA	
		0A(h)	DlyB	
		0B(h)	DlyC	
		0C(h)	DlyD	
	Page 5	0D(h)	OutA	
		0E(h)	PanA	
		0F(h)	OutB	
		10(h)	PanB	
	Page 6	11(h)	OutC	
		12(h)	PanC	
		13(h)	OutD	
		14(h)	PanD	
17(h) S Delay(370ms)				
1C(h) S Delay(700ms)	Page 1	00(h)	On/Off	
		01(h)	FX Type	
		02(h)	Default	
	Page 2	03(h)	FX Level	
		04(h)	Dry Level	
		05(h)	Balance	
	Page 3	06(h)	Delay Time	
		07(h)	FeedBack	
		08(h)	Tapit (ignore)	
	Page 4	09(h)	OutL	
		0A(h)	OutR	
18(h) St. DI Dly(370ms)				
1D(h) St. DI Dly(700ms)	Page 1	00(h)	On/Off	
		01(h)	FX Type	
		02(h)	Default	
	Page 2	03(h)	FX Level	
		04(h)	Dry Level	
		05(h)	Balance	
	Page 3	06(h)	Delay Time	
		07(h)	FeedBack	
		08(h)	Tapit (ignore)	
	Page 4	09(h)	DlyA	
		0A(h)	DlyB	
	Page 5	0B(h)	OutLA	
		0C(h)	OutLB	
		0D(h)	OutRA	
		0E(h)	OutRB	
1E(h) St. Quad Delay	Page 1	00(h)	On/Off	
		01(h)	FX Type	
		02(h)	Default	
	Page 2	03(h)	FX Level	
		04(h)	Dry Level	
		05(h)	Balance	
	Page 3	06(h)	Delay Time	
		07(h)	FeedBack	
		08(h)	Tapit (ignore)	
	Page 4	09(h)	DlyA	
		0A(h)	DlyB	
		0B(h)	DlyC	
		0C(h)	DlyD	
	Page 5	0D(h)	OutLA	
		0E(h)	OutLB	
		0F(h)	OutLC	
		10(h)	OutLD	

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		05(h)	Balance			Page 3	06(h)	Delay A
	Page 3	06(h)	Reverb Type				07(h)	Delay B
		07(h)	Decay				08(h)	Delay C
	Page 4	08(h)	Density				09(h)	Delay D
		09(h)	Diffusion			Page 4	0A(h)	Out A
	Page 5	0A(h)	Blend				0B(h)	Bal A
		0B(h)	OutL				0C(h)	Out B
		0C(h)	OutR				0D(h)	Bal B
0B(h)StDual Reverb	Page 1	00(h)	On/Off			Page 5	0E(h)	Out C
		01(h)	FX Type				0F(h)	Bal C
		02(h)	Default				10(h)	Out D
	Page 2	03(h)	FX Level				11(h)	Bal D
		04(h)	Dry Level			Page 6	12(h)	Shape Type
		05(h)	Balance				13(h)	Spread
	Page 3	06(h)	Density			Page 7	14(h)	Diffusion
		07(h)	Diffusion				15(h)	Feedback Delay
		08(h)	Dispersion				16(h)	Feedback Amount
	Page 4	09(h)	X-Over Type			Page 8	17(h)	OutL
		0A(h)	Frequency				18(h)	OutR
	Page 5	0B(h)	Primary X-Over					
		0C(h)	Secondary X-Over	52(h) Noise Gate		Page 1	00(h)	On/Off
	Page 6	0D(h)	Primary Damp				01(h)	FX Type
		0E(h)	Secondary Damp			Page 2	02(h)	Default
	Page 7	0F(h)	Primary Decay				04(h)	Level
		10(h)	Primary Size				05(h)	Thrsh Open
		11(h)	Primary Reflection				06(h)	Thrsh Closed
	Page 8	12(h)	Secondary Decay			Page 3	07(h)	Attn
		13(h)	Secondary Size				08(h)	Delay
		14(h)	Secondary Reflection				09(h)	Attack
	Page 9	15(h)	Primary Blend				0A(h)	Hold
		16(h)	Primary OutL				0B(h)	Release
		17(h)	Primary OutR					
	Page 10	18(h)	Secondary Blend	7D(h) Thru		Page 1	00(h)	FX Type
		19(h)	Secondary OutL	7E(h) Mute	Page 1		00(h)	FX Type
		1A(h)	Secondary OutR					
10(h) Gated Reverb	Page 1	00(h)	On/Off	35(h) Whammy		Page 1	00(h)	On/Off
		01(h)	FX Type				01(h)	FX Type
		02(h)	Default				02(h)	Default
	Page 2	03(h)	FX Level			Page 2	04(h)	FX Level
		04(h)	Dry Level				05(h)	Dry level
		05(h)	Balance				06(h)	Balance
	Page 3	06(h)	Type			Page 3	07(h)	Min. Shift
		07(h)	Time				08(h)	Max. Shift
	Page 4	08(h)	Density			Page 4	09(h)	Min. Detune
		09(h)	LowPass				0A(h)	Max. Detune
	Page 5	0A(h)	OutL			Page 5	0B(h)	Pedal
		0B(h)	OutR				0C(h)	Out
							0D(h)	Pan
11(h) St Gated Reverb	Page 1	00(h)	On/Off	129(h) Wah		Page 1	00(h)	On/Bypass
		01(h)	FX Type				01(h)	Pedal
		02(h)	Default				02(h)	Wah Type
	Page 2	03(h)	FX Level					
		04(h)	Dry Level					
		05(h)	Balance					
	Page 3	06(h)	Type					
		07(h)	Time					
	Page 4	08(h)	Density					
		09(h)	Dispersion					
		0A(h)	Low Pass					
	Page 5	0B(h)	Blend					
		0C(h)	OutL					
		0D(h)	OutR					
0F(h) Room Echo	Page 1	00(h)	On/Off					
		01(h)	FX Type					
		02(h)	Default					
	Page 2	03(h)	FX Level					
		04(h)	Dry Level					
		05(h)	Balance					

SysEx PROGRAM DUMP EXAMPLE

For those of you that are reluctant to stick your feet in the SysEx water, we have included a simple example of a SysEx Program jump. It takes you set by step through all of the operation commands of a typical SysEx procedure.

<<SysEx Header>>

F0 00 00 10 47

<<Procedure>>

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<<Program Dump Version>>

00 01 00 01

<<Bank and Program for User Program 1>>

00 00 00 00

<<Program's Transmit Count...Lo Bytes, Hi Bytes>>

00 0A 00 06

<<FX Module Count for Module IDs>>

00 07

<<Module ID Numbers>>

00 0C 00 10 00 15 00 20 00 01 00 5A 00 77

<<Algorithm Number>>

00 00

<<FX Module Count for Module Types>>

00 07

<<FX Module Class Type

00 22 00 24 00 18 00 07 00 00 00 06 00 03

<<20 Character Program Name...dynamic>>

00 31 00 3A 00 52 00 76 00 62 00 20 00 32 00 3A 00 47 00 74 00 52 00 76
00 20 00 33 00 3A 00 44 00 6C 00 79 00 20 00 34 00 3A 00 43 00 68 00 6F

<<Null to indicate end of Character String>>

00 00

<<Misc Program Data...too dynamic to document>>

00 07 00 00 00 06 00 00 00 03 00 06 00 03 00 32 00 08 00 03 00 00 00 00 00 02 00 04 00 00 00 00 00 02 00 08
00 00 00 00.....

..... 01 7E 00 00 00 00 00 20 01 7F 00 00 00 00 00 20 00 00 00 00 00 00 20 00 01 00 00 00
00 00 20 00 02 00 00 00 00 00 20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

<<SysEx End>>

F7

NOTE: When the length of the program name is modified, the Program's Transmit Count must also be modified accordingly.



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