ENSONIQ

MR RACK

64 Voice Expandable Synth

Musician's Manual

Version 1.50

# MR-Rack Musician's Manual:

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Please record the following information:

Your Authorized ENSONIQ Dealer:__________________________ Phone:______________

Your Dealer Sales Representative:_______________________________________________

Serial Number of Unit:__________________________ Date of Purchase:________________

Your Authorized ENSONIQ Dealer is your primary source for service and support. The above information will be helpful in communicating with your Authorized ENSONIQ Dealer, and provide necessary information should you need to contact ENSONIQ Customer Service. If you have any questions concerning the use of this unit, please contact your Authorized ENSONIQ Dealer first. For additional technical support, or to find the name of the nearest Authorized ENSONIQ Repair Station, call ENSONIQ Customer Service at (610) 647-3930 Monday through Friday 9:30 AM to 12:15 PM and 1:15 PM to 6:30 PM Eastern Time. Between 1:15 PM and 5:00 PM we experience our heaviest call load. During these times, there may be delays in answering your call.

You can utilize ENSONIQ's Automatic Fax Retrieval System to obtain further information about your MR-Rack and other ENSONIQ products. The Fax Retrieval System is available 24 hours a day at (800) 257-1439. If you're connected to the Internet, visit ENSONIQ's World Wide Web site at ***www.ensoniq.com*** for more information on the MR-Rack and other ENSONIQ products. CompuServe subscribers can also find ENSONIQ at GO ENSONIQ.



**IMPORTANT:**
Note: This equipment has been designed and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
* Reorient or relocate the receiving antenna.
* Increase the separation between the equipment and receiver.
* Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
* Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications to the product not expressly approved by ENSONIQ could void the user's FCC authority to operate the equipment.

**CAUTION! Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to manufacturer's instructions.**

In order to fulfill warranty requirements, the MR-Rack should be serviced only by an Authorized ENSONIQ Repair Station. The ENSONIQ serial number label must appear on the outside of the unit, or the ENSONIQ warranty is void.

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**Part # 9310 0191 01 - E** **Model # MM-130**

# Instant MR-Rack!

The following is not a description of the ***only*** way to use the MR-Rack—it simply gets you down to the business of making music immediately. It doesn't explain any of the whys and wherefores or discuss the many creative possibilities of the MR-Rack. The rest of this manual, however, does.

## To Get Started

1. Turn the MR-Rack's front-panel Volume knob down all the way.
2. Connect the MR-Rack's Main Outs (the two jacks on the right when viewing the MR-Rack from the rear) to a mixer or stereo keyboard amplifier set to conservative levels, or connect a pair of stereo headphones to the MR-Rack's front-panel Phones jack.
3. Connect the MIDI Out of your sequencer/interface/controller, etc. to the MR-Rack's MIDI In.
4. Power up your sequencer/interface/controller, etc.
5. Connect the MR-Rack to a grounded AC outlet, using its supplied AC cord.
6. Power up the MR-Rack.
7. Bring up the MR-Rack's Volume knob about halfway—you can adjust it later, after you start playing some music. Your display looks something like this:

```
pt01:§01 ROM:004:030
DEMO-SND: Dense Mist
```

You're seeing the Sound selected for Part 01. The MR-Rack contains 16 Parts, which are currently set to MIDI channels 1-16. Try the Sound out, if you like, by setting your MIDI controller to transmit on MIDI channel 1.

## To Change the Sound on This Part

1. Turn the Sound Type knob clockwise or counter-clockwise to select the type of Sound you want.
2. Turn the Sound Name knob in either direction to choose a particular Sound.

## To Get to the Other 15 Parts (MIDI Channels 2-16)

- Press one of the Select Parts buttons to select another Part.

  The number of the Part you're working on will be shown in the upper left-hand part of the display.

## To Mute a Part

- Select the Part you want to silence and press the Mute button.

  The button's red LED will light, and the word "mute" will be displayed.

## Temperature Guidelines

The MR-Rack contains a substantial amount of computerized and electronic circuitry that can be susceptible to damage when exposed to extreme temperature changes. When the MR-Rack is brought inside after sitting in a cold climate (i.e., the back seat of your car), condensation builds up on the internal circuitry in much the same way a pair of glasses fogs up when you come inside on a cold day. If the unit is powered up as this condensation occurs, components can short out or be damaged. Excessively high temperatures also pose a threat to the unit, stressing both the internal circuits as well as the case. With this in mind, it is highly advisable to follow these precautions when storing, mounting and setting up your MR-Rack:

- Avoid leaving the MR-Rack in temperatures of less than 50 degrees Fahrenheit or more than 100 degrees Fahrenheit.
- When bringing the MR-Rack indoors after travel, allow the unit at least 20 minutes to reach room temperature before powering up. In the case of excessive outdoor temperatures (below 50 degrees Fahrenheit or above 100 degrees Fahrenheit), allow an hour or more before power up.
- Avoid leaving the MR-Rack inside a vehicle exposed to direct sunlight.

## Clean Up and Maintenance

Clean the exterior of your MR-Rack with a soft, lint-free, dry (or slightly damp) cloth. You can use a slightly dampened cloth (with a mild neutral detergent) to remove stubborn dirt, but make sure that the MR-Rack is thoroughly dry before turning on the power. Never use alcohol, benzene, volatile cleaners, solvents, abrasives, polish or rubbing compounds.

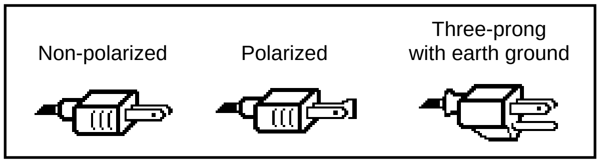
## Rack Mount Instructions

The MR-Rack can be rack mounted in a standard 19” audio rack:

- The MR-Rack occupies one standard rack space (1 3/4”). We recommend the use of nylon washers when rack mounting any unit. This will protect the faceplate from any damage.
- If you’re using only two screws to mount your unit into a rack space (we don’t recommend this), we suggest that you support the bottom of the unit.
- You may want to install the MR-Rack into a rack using quick-release screws. Quick release screws don’t require a screwdriver, so it’s easy to move things in and out of a rack. Four posts are screwed into the rack holes, the unit goes over the posts, and then knurled nuts are screwed on by hand.

## Polarization and Grounding

Like many modern electrical devices, your ENSONIQ product has a three-prong power cord with earth ground to ensure safe operation. Some products have power cords with only two prongs and no earth ground. To ensure safe operation, modern products with two-prong power cords have polarized plugs which can only be inserted into an outlet the proper way.




Some products, such as older guitar amplifiers, do not have polarized plugs and can be connected to an outlet incorrectly. This may result in dangerous high voltages on the audio connections, which could cause you physical harm or damage any properly grounded equipment to which they are connected, such as your ENSONIQ product.

To avoid shock hazards or equipment damage, we recommend the following precautions:

- If you own equipment with two-pronged power cords, check to see if they are polarized or non-polarized. You might consider having an authorized repair station change any non-polarized plugs on your equipment to polarized plugs to avoid future problems.
- Exercise caution when using extension cords or plug adapters. Proper polarization should always be maintained from the outlet to the plug. The use of polarized extension cords and adapters is the easiest way to maintain proper polarity.
- Whenever possible, connect all products with grounded power cords to the same outlet ground. This will ensure a common ground level to prevent equipment damage and minimize hum in the audio output.

AC outlet testers are available from many electronic supply and hardware stores. These can be used to check for proper polarity of outlets and cords.

## AC Line Conditioning

As with any computer device, the MR-Rack is sensitive to sharp peaks and drops in the AC line voltage. Lightning strikes, power drops, or sudden and erratic surges in the AC line voltage can scramble the internal memory, and in some cases, damage the unit’s hardware. Here are a few suggestions to help guard against such occurrences:

- A Surge/Spike Suppressor. The cheaper of the options, a surge/spike suppressor absorbs surges and protects your gear from all but the most severe over-voltage conditions. You can get multi-outlet power strips with built-in surge/spike suppressors for little more than the cost of unprotected power strips, so using one is a good investment for all your electronic equipment.
- A Line Conditioner. This is the best, but by far the more expensive way to protect your gear. In addition to protecting against surges and spikes, a line conditioner guards the equipment against excessively high or low line voltages. If you use the MR-Rack in lots of different locations with varying or unknown AC line conditions, you might consider investing in a line conditioner.

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# Chapter 1
# Welcome

## Welcome!

Congratulations on your purchase of the MR-Rack, and thank you for choosing ENSONIQ. We designed the MR-Rack with a single goal in mind: to create an easy-to-use box packed with great sounds. With ENSONIQ's exclusive SoundFinder™, picking Sounds couldn't be easier.

This chapter will show you how to find Sounds in the MR-Rack. It will also provide an easy-to-understand conceptual overview of the MR-Rack, show you how to play the built-in demonstration songs, offer a few technical notes and provide you with some additional reading resources to help deepen your understanding of sound and MIDI.

## Getting Ready to Listen

The simplest way to listen to the MR-Rack is by using stereo headphones. Turn the front-panel Volume knob all the way down and plug your headphones into the Phones jack. Turn the Volume knob up to a comfortable listening level once the MR-Rack starts making sound. The Phones jack output is designed to work with both low- and high-impedance headphones. Make sure you set the Volume knob carefully—high output volume levels could damage your hearing.

You may also use MR-Rack's rear-panel Main Outs. If you're connecting the MR-Rack to a mixer, turn the MR-Rack's Volume knob all the way up for the best possible sound. Adjust the input trims on your mixer to set the MR-Rack to an appropriate level.

If you'd like to run the MR-Rack's Main Outs through your home stereo, bear in mind that the MR-Rack is capable of producing a far greater dynamic range than what your system may be used to, and so, a little care is required. Turn the MR-Rack's Volume knob to about 12 o'clock, and operate your stereo at conservative levels to be on the safe side.

There's a more detailed description of how to connect the MR-Rack and set appropriate volume levels in "Setting Volume Levels" in ***Chapter 2*** of the MR-Rack Musician's Manual.

## Powering Up

Once you've got a listening method established, you can power up the MR-Rack.

1. Plug the MR-Rack's line cord into the line receptacle on its rear panel.
2. Connect the other end of the cable to a grounded AC outlet.
3. Press the Power button on the MR-Rack's front panel.

Once the MR-Rack completes its power-up sequence, the display will look something like this:

```
pt01:§01 ROM:004:030
DEMO-SND: Dense Mist
```

You're ready to start exploring the MR-Rack Sounds.

---

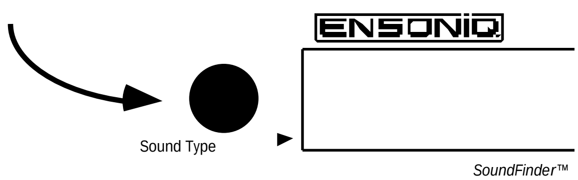
**Note:** If you've already customized the MR-Rack's wake-up mode—as described in ***Chapter 3***—press the Performance and Sound buttons simultaneously.

---

# Choosing Sounds

The MR-Rack's SoundFinder™ makes choosing Sounds a snap!

1. Press the Sound button—its LED lights up.
2. Turn the left-hand Sound Type knob on the MR-Rack's front panel clockwise or counter-clockwise.



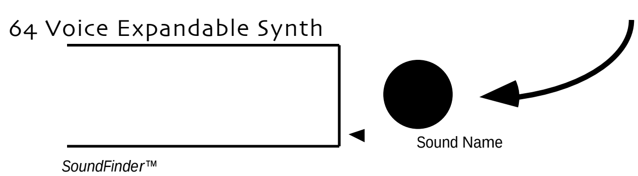

As you turn the Sound Type knob, you'll see different Sound categories appear in the lower left part of the MR-Rack's display.

```
pt01:§01 RAM:005:021
VOCALS  :   Aaaahhhs
```

i

Sound Type

3. Find a Sound Type category that interests you.
4. Turn the Sound Name knob clockwise or counter-clockwise to choose a Sound of the selected type.



Sound names appear on the lower right-hand portion of the display.

```
pt01:§01 RAM:001:015
VOCALS  :Airy Voices
```

i

Sound Name

5. To hear what a Sound sounds like, press the Audition button. A brief demo of the Sound will play. (You can change what plays when you press the Audition button—see “Auditioning Sounds on the MR-Rack” in ***Chapter 3***.)

   If you’ve already connected your MR-Rack to your MIDI set-up, you can set your controller to MIDI channel 1 and use it to play the Sound. You can also use MIDI program changes to select other Sounds. ***Chapter 2*** shows how the MR-Rack can be wired into your rig.

# Understanding the MR-Rack

The MR-Rack is easy to use, once you understand its simple internal structure. Here’s how it works.

## Sounds

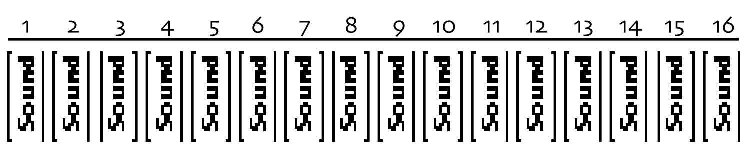
Sounds are the basic building blocks of the MR-Rack. They’re constructed from digital sound waves resident in the MR-Rack’s permanent memory.

If you’ve got a Macintosh or IBM-compatible computer, you can also create your own Sounds using the Unisyn editor ENSONIQ will supply to you when you send in your completed MR-Rack warranty card.

You can add additional Sounds by purchasing MRC Series Sound Cards and ENSONIQ EXP Series Wave Expansion Boards, which will be explained later in this chapter.

## Parts

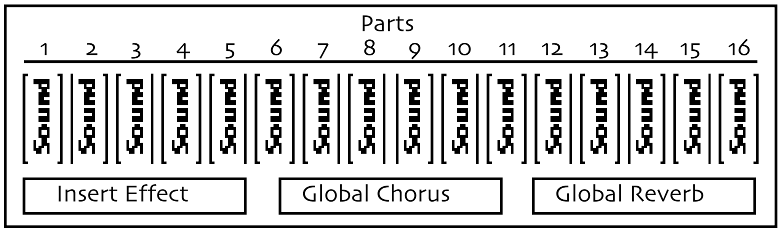
The MR-Rack can play 16 individual Sounds at once. Each Sound fits into one of 16 slots, called ***Parts***. You can select any MR-Rack Sound for use by any Part.




Each Part can have its own MIDI channel, and provides options—called ***Part parameters***—for controlling the behavior of the Part. Part parameters also offer tools that allow each Part to shape the Sound it uses. See ***Chapter 4*** for details.

# Performances

A collection of up to 16 Parts—including all the Sounds they contain and any of the alterations you've made to them, as well as a complete Effects setup—is called a ***Performance***.




You can save Performances to the MR-Rack's internal memory. This is useful for keeping track of the Sounds and settings for a particular song, project or live performance.

## Choosing Performances on the MR-Rack

You can select the Performances in the MR-Rack in a manner very similar to the manner in which Sounds are selected.

1. Press the Performance button so that its amber LED lights.
2. Turn the Sound Type knob clockwise or counter-clockwise to choose the type of Performance you'd like.
3. Turn the Sound Name knob clockwise or counter-clockwise to pick an individual Performance.

Performances can also be selected via MIDI. See "Using MIDI Program Changes" in ***Chapter 3*** for details.

# Effects

The MR-Rack contains a powerful 24-bit effect processor that provides a wide range of Effects that can be applied to any Sound. Each Performance contains three types of Effects:

- an Effect that can be borrowed from one of the Sounds in the Performance, known as the ***Insert*** Effect.
- a Global Chorus
- a Global Reverb

To provide maximum flexibility, the MR-Rack offers six busses to these Effects:

- the Insert FX Bus
- the Chorus FX Bus
- the LightReverb FX Bus
- the MediumReverb FX Bus
- the WetReverb FX Bus
- the Dry FX Bus

Each bus has its own settings that determine how it will use the Effect—or Effects—it can access, as well as which rear-panel outputs it will ultimately utilize. Parts may be assigned to any one of the six busses. The bus settings and the Part assignments are saved with each Performance. For more information on Effects, see ***Chapter 5***.

## Drum Kits

The MR-Rack contains a special category of Sounds called ***Drum Kit Sounds***. Drum Kit Sounds allow you to have up to 64 non-Drum Kit Sounds assigned to individual keys. Though these are most commonly drum and percussion Sounds, you can use any kind of Sound you'd like in a Drum Kit. Each Drum Kit key has its own Volume, Pan, Tuning and Effect settings. You can use as many Drum Kits in a Performance as there are Parts. In addition, every Performance offers an editable Drum Kit, called the ***PerfEditKit***, which you can customize and save as a Drum Kit Sound that you can use again. Drum Kits are described fully in "Editing Drum Kits" ***Chapter 4***.

## Staks

The MR-Rack features an innovative device called a ***Stak***, which is used for grouping Sounds together on a single MIDI channel. Staks make it easy to create layered Sounds and keyboard splits. Every Performance provides one Stak, which is created by assigning Parts to the designated Stak MIDI channel.

Staks provide a number of improvements over the traditional method of stacking or splitting Sounds assigned to a common MIDI channel. In conventional layers and splits, a program change sent over the common MIDI channel would set all of the layered or split Sounds to the same program number, ruining your carefully chosen sound selection—Staks, on the other hand, are program-change proof. The Stak MIDI channel can also be changed with a single adjustment, sparing you the work of reassigning every layered or split component individually, should you need to change the channel you want to use. And since the Stak MIDI channel is a global setting, you can easily access Staks in ROM Performances without having to copy the Performance into RAM.

For more information on Staks, see "Using Staks" in ***Chapter 4***.

## SoundFinder™

SoundFinder™ is an exclusive ENSONIQ feature that makes it simple to find the Sounds and Performances you want. Computer users may be familiar with databases, which allow you to view information in a manner of your choosing. SoundFinder™ operates in much the same way. The MR-Rack keeps a list of all the Sounds and Performances available to it at any given time, and shows them to you in logical, musically convenient categories called ***Sound Types*** and ***Performance Types***.

Sound Types let you view Sounds by instrument family—Vocals or Bells, for example—or by a number of other useful criteria, including the location in the MR-Rack's memory where they reside. The ALL-SND category is especially useful, since it shows all of the MR-Rack's Sounds arranged in alphabetical order. If you program your own sounds, you can store them in the USER-SND or *CUSTOM SoundFinder categories.

Performance Types allow you to view Performances according to where in the MR-Rack they reside.

## How the MR-Rack's Memory Works

Sounds and Performances are stored in memory locations called ***banks***. Each bank may store up to 128 Sounds—depending on how much memory each Sound requires—and 32 Performances. The MR-Rack is designed to access up to 128 banks. Banks may reside in the MR-Rack's internal memory or on PCMCIA data cards and ENSONIQ EXP Series Wave Expansion Boards you can purchase separately.

Banks become most important when using MIDI Program Changes to select Sounds and Performance. Each Sound or Performance is invoked with a Bank Select message—which tells the MR-Rack where the Sound or Performance resides—and a Program Change message, which pinpoints the Sound or Performance itself.

---

**Tip:** When you'd like to know the necessary Bank Select and Program Change for a Sound you've currently got selected, press the Sounds button and consult the upper right-hand corner of the MR-Rack's display: the pair of three-digit numbers tell you, first, the Bank Select and, second, the Program Change required for that Sound. To learn a Performance's Bank Select and Program Change, press the Performance button—the Performance display shows Bank Select and Program Change information in the same manner as the Sound display.

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## ROM and RAM

ROM ("Read Only Memory"') and RAM ("Random Access Memory") are the two areas within the MR-Rack's internal memory where Performances and Sounds are stored in banks.

Performances and Sounds saved into ROM memory are permanent and unalterable—these Performances and Sounds are always available. (You can edit them using the MR-Rack's Part parameters, and then save the edited versions to non-ROM memory locations.)

Performances and Sounds you edit or create are saved into the MR-Rack's RAM memory bank. RAM can be used over and over again, and, therefore, Performances and Sounds stored in RAM can be edited, re-saved or erased, as you wish.

## ROM Cards

The Data Card slot on the MR-Rack's front panel allows you to add new Sounds and Performances to the MR-Rack through the purchase of ENSONIQ's MRC Series Sound Cards. These PCMCIA ROM cards are inserted into the Data Card slot on the MR-Rack's front panel. The Sounds and Performances on these cards are permanent. (You can use the various Part parameters to customize them, and then save the edited versions to the MR-Rack's RAM memory.)

## SRAM Cards

The Data Card slot on the MR-Rack's front panel also allows you to add additional RAM memory banks through the purchase of SRAM PCMCIA cards, such as ENSONIQ's MC-512 card. These cards are great for storing your own MR-Rack Sounds and Performances.

## EXP Series Wave Expansion Boards

The MR-Rack can be upgraded to hold more digital sound waves and more Sound and Performance banks with the installation of ENSONIQ EXP Series Wave Expansion Boards. EXP Boards are mounted inside the MR-Rack's case—you can easily install them yourself!

For more details, see "Using ENSONIQ EXP Series Wave Expansion Boards" in ***Chapter 7***.

## The MR-Rack Display

The MR-Rack's display has been designed to provide you with all the information you'll need as you use the MR-Rack. The display will change as you perform different tasks, since what you'll need to know at any given time will vary depending on what you're doing. Each chapter in the MR-Rack Musician's Manual contains an introductory section describing how the display will function in that chapter's context.

# Playing the MR-Rack Demo

The MR-Rack can play special demonstration songs to give you an idea of how terrific it sounds.

### To Play the MR-Rack Main Demo

1. Press the Audition button, and hold it down.
2. While still holding Audition, press the Save button.
3. Let go of both buttons.
   In an unexpanded MR-Rack, the display shows:

```
Hit ENTER to Play:
MAINDEMO:MR Internal
```

If you've installed any Expansion boards or a ROM card containing MAINDEMO-type demonstration songs, your display will differ. Turn the Value knob counter-clockwise until the display looks as it does above.

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**Note:** When MR-Rack demos are being viewed or playing, MIDI In is disabled.

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4. Press Enter to play the demo.
5. Press Enter again to stop the demo.
6. When you're done listening to the demo song, press Exit to return to normal MR-Rack operation.

---

**Note:** When you press Exit after selecting and/or listening to the MR-Rack's demos, three System parameters are reset if the MR-Rack's WakeUpMode System parameter is set to Demo: the AutoSelect FXBus and Part Param Reset parameters are set to On, and the Perf ProgChgRecv parameter is set to Off (see ***Chapter 3*** if you'd like more information on these System parameters).

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## Playing Other Demos

ROM data cards, wave expansion boards and future operating systems can provide additional demos for your MR-Rack.

### To Play Other MR-Rack Demos

1. Press the Audition button, and hold it down.
2. While still holding Audition, press the Save button.
3. Let go of both buttons.
4. Turn the left-hand Sound Type knob to select a demo type.

```
Hit ENTER to Play:
WORLD   : Paddy&Pals
```

i
Demo Type

The demos you see may differ from the demos shown here.

---

**Note:** When MR-Rack demos are being viewed or playing, MIDI In is disabled.

---

5. Turn the right-hand Sound Name knob to choose a demo.

```
Hit ENTER to Play:
AMBIENT :  MR Trance
```

i

Demo Name

6. Press Enter to play the demo.
7. Press Enter again to stop the demo.
8. When you're done listening to the demo songs, press Exit to return to normal MR-Rack operation.

---

**Note:** When you press Exit after selecting and/or listening to the MR-Rack's demos, three System parameters are reset if the MR-Rack's WakeUpMode System parameter is set to Demo: the AutoSelect FXBus and Part Param Reset parameters are set to On, and the Perf ProgChgRecv parameter is set to Off (see ***Chapter 3*** if you'd like more information on these System parameters).

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# Other Points of Interest

## All Notes Off

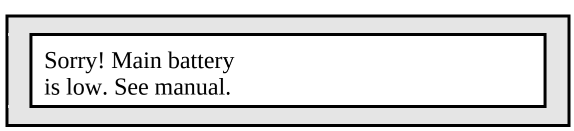
When using MIDI equipment, there are occasions when your system may get confused. This can cause a barrage of notes to sound which will continue until you do something to stop them. The MR-Rack provides an All Notes Off button, which you can double-click (press two times quickly) to silence these unwanted notes. You'll find it to the right of the MR-Rack's display. Think of the All Notes Off button as a "panic button."


## The MR-Rack's Battery

The MR-Rack "remembers" Sounds, Performances and its various settings even when its power is turned off, since it contains a battery which keeps its memory intact. All batteries eventually become discharged, and though your MR-Rack battery should last for years, you may eventually need to have it replaced by an Authorized ENSONIQ Repair Station.

### Battery Low Warning

The MR-Rack will tell you when its battery needs replacing. It will flash the following when you power up:



This display will appear only briefly, and then allow you to proceed normally. Make sure that everything in RAM that you'd like to keep—or any special System settings—has been safely stored on a Data Card or external MIDI storage device, and take the MR-Rack to an Authorized ENSONIQ Repair Station as soon as possible to have the battery replaced.

For more about saving MR-Rack data, see ***Chapter 6***.

## If You Experience Odd Behavior

If your MR-Rack is behaving peculiarly—for instance, the display is showing characters that shouldn't be there, or you're experiencing surprising Unexpected Event messages—a ***soft reset*** may cure the problem. There are three special procedures you can try:

- A soft reset is similar to turning the MR-Rack's power off and then on again. This procedure doesn't erase or adversely affect the contents of the MR-Rack's memory.
- A reinitialization procedure clears out the MR-Rack's internal memory, including any system data corruption. Reinitializing erases the contents of the MR-Rack's internal memory. This means that any Performances, Sounds, Effect set-ups or PerfEditKits stored in RAM will be lost. If you decide to reinitialize, try saving any items you want to preserve to a Data Card or via MIDI SysEx (see ***Chapter 6*** for details).
- A hard reinitialization procedure performs a very deep-level reinitialization of the MR-Rack. This means that any Performances, Sounds, Effect set-ups or PerfEditKits stored in RAM will be lost. If you decide to reinitialize, try saving any items you want to preserve to a Data Card or via MIDI SysEx (see ***Chapter 6*** for details). This procedure should be used in cases when the MR-Rack's front-panel buttons, for some reason, don't allow you to perform a standard reinitialization.

### To Perform A Soft Reset

1. Press and hold down the Save button.
2. While still holding Save, press the Exit button.

   If performing a soft reset doesn't end the strange occurrences, you may need to reinitialize the MR-Rack. Make sure that everything in RAM that you'd like to keep—or any special System settings—has been safely stored on a Data Card or external MIDI storage device before you reinitialize, since reinitialization will clear the MR-Rack's internal memory.

### To Perform a Standard Reinitialization

Make sure that everything in RAM that you'd like to keep—or any special System settings—has been safely stored on a Data Card or external MIDI storage device before you reinitialize, since reinitialization will clear the MR-Rack's internal memory.

1. Press and hold down the Save button.
2. While still holding Save, press the Enter button.
3. Let go of both buttons.
4. Press the Enter button again to perform the reinitialization

### To Perform a Hard Reinitialization

Make sure that everything in RAM that you'd like to keep—or any special System settings—has been safely stored on a Data Card or external MIDI storage device before you reinitialize, since reinitialization will clear the MR-Rack's internal memory.

1. Using its front-panel Power switch, turn the MR-Rack's power off.

   The hard reinitialization process is performed by switching the MR-Rack off and on eight times in rapid succession. Use the following technique:
2. Turn the MR-Rack's power back on just until the display flickers on, then shut if off again, then immediately back on—do this eight times.

   If reinitializing the MR-Rack fails to correct the problem, contact an Authorized ENSONIQ Repair Station.

# Available Options for Your MR-Rack

These optional accessories are available from your Authorized ENSONIQ Dealer:

- EXP Series Wave Expansion Boards — a user-installable board for Sound memory expansion. Each EXP Board contains 256 ROM Sounds, up to 24 MB of wave ROM, with Performances and demos. The MR-Rack can have up to three different EXP Wave Expansion Boards.
- ROM Card — a PCMCIA type ROM card containing 256 ROM Sounds, and 32 ROM Performances
- SRAM Card, including ENSONIQ's MC-512 Card — a PCMCIA type SRAM card containing a variable number of banks of Sounds and Performances. The number of banks on a card depends on the size of the card. Each bank is equal in size to the base unit RAM, and can hold the same number of Sounds (up to 128 RAM Sounds per bank) and Performances (128 RAM Performances per bank). The number of RAM Sounds depends on the number of layers in each Sound.

# Need More Help?

Whether you're an aspiring programmer looking for additional information about basic effect processing techniques and MIDI theory, or a professional sound engineer working with advanced applications, you may want more detailed information beyond the scope of this manual. The following books can help enhance your understanding of effect processing, MIDI, and related topics. These, in addition to the numerous monthly magazines, provide a wealth of information. While we don't endorse any one of these publications, we offer this partial list as a resource for you to draw on.

## The Mix Bookshelf

For prices and more information call: (800) 233-9604

### MIDI

***BECOMING A COMPUTER MUSICIAN***, Jeff Bowen
***MAKING MUSIC WITH YOUR COMPUTER***, David (Rudy) Trubitt, Ed.
***MIDI: A COMPREHENSIVE INTRODUCTION***, Joseph Rothstein
***MIDI XPLAINED***, Steinberg/Jones
***THE MIDI MANUAL***, David Huber
***UNDERSTANDING MIDI***, David Wills
***WHAT'S MIDI?***, Jon Eiche

### RECORDING

***IMPROVING YOUR SIGNAL PROCESSING SKILLS***, (cassette & manual) Bill Gibson
***MASTER HANDBOOK OF ACOUSTICS***, F. Alton Everest
***MODERN RECORDING TECHNIQUES,*** Huber & Runstein
***SOUND REINFORCEMENT HANDBOOK***, Davis & Jones

### SYNTHESIS

***FUNDAMENTAL TECHNOLOGIES OF THE SYNTHESIZER,*** Errol G. Specter
***SYNTHESIZER PERFORMANCE,*** Jeff Pressing
***WHAT'S A SYNTHESIZER?***, Jon Eiche

### VIDEOS

***SHAPING YOUR SOUND***, (video series) Tom Lubin

## Alfred Publishing Company

For prices and more information call (818) 891-5999

### MIDI

***ADVANCED MIDI APPLICATIONS***, GPI
***BASIC MIDI APPLICATIONS***, GPI
***WHAT IS MIDI?***, GPI

## Hal Leonard Publishing

For prices and more information call (414) 774-3630

***MIND OVER MIDI***, GPI
***TUNING IN: MICROTONALITY IN ELECTRONIC MUSIC***, Scott R. Wilkinson

## Monthly Magazines

The following magazines offer many specific articles and columns that can provide additional information.

### THE TRANSONIQ HACKER

For prices and more information about this independent news magazine for ENSONIQ Users, call (503) 227-6848

### KEYBOARD

For subscription rates and more information call (800) 289-9919

### ELECTRONIC MUSICIAN

For subscription rates and more information call (800) 888-5139

### HOME & STUDIO RECORDING

For subscription rates and more information call (818) 407-0744

### MIX

For subscription rates and more information call (800) 888-5139

### EQ

For subscription rates and more information call (212) 213-3444

# Chapter 2
# Connections

## Introduction

The MR-Rack is an outstanding addition to any MIDI set-up. This chapter describes how to connect the MR-Rack in some of the most popular MIDI environments.

The key to setting up any MIDI system is to approach the process in an orderly, methodical manner. As each cable or wire is added, the system grows in complexity. If you have a firm grasp of what's connected, and where, you'll find managing your rig to be much more pleasant. As you add more gear—or troubleshoot—the extra care you take now will pay off in the ease with which you'll be able to adapt your system to future needs.

### To Get Ready

It's always good policy to turn everything off—and all volume settings down—before you wire equipment together. This protects you and your gear from unwelcome surprises.

1. Turn the volume off for each piece of equipment you plan to include in your set-up.
2. Turn down any mixer faders or other volume controls for the sound system you're using.
3. Turn off the power for everything being included in your set-up.

### What Connections Need to be Made?

In any MIDI system, there are three types of connections to be made:

- MIDI connections
- Audio connections
- Power connections

## Making MIDI Connections

The MR-Rack will communicate with the rest of your equipment via MIDI. The nature of these connections and the number of MIDI cables you'll need varies, depending on your set-up. Each system has its own needs, which we'll explain in the individual set-ups in this chapter.

The MIDI set-ups described in "Making MIDI Connections" are:

- Using the MR-Rack with a controller
- Using the MR-Rack with a workstation
- Using the MR-Rack with a computer/stand-alone sequencer
- Editing Sounds with the MR-Rack and a computer
- Sequencing with the MR-Rack, a computer and a controller
- Using the MR-Rack with a computer, a controller and a merger
- Using the MR-Rack with a computer, a controller and a MIDI patchbay

If you've got questions about MIDI itself, or any of the terms above, consult the Glossary or "What Is MIDI?" sections of ***Chapter 9***.

Even if your plans for the MR-Rack differ from the scenarios described in this chapter, you're likely to find the set-ups you'll find here useful as starting points for your own system design.

## Using the MR-Rack with a Controller

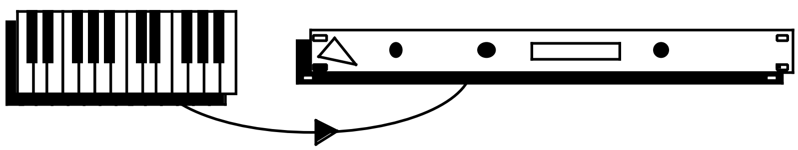
The MR-Rack can be used as a sound source with any type of MIDI controller. This includes MIDI keyboards, MIDI drum pads or triggers, MIDI guitars, or anything else a musician might play which sends out MIDI data.

### What You'll Need

- A single MIDI cable.
- Stereo headphones, for verifying your connections

### To Connect the MR-Rack

1. Connect one end of your MIDI cable to your controller's MIDI Out.
2. Connect the other end to the MR-Rack's MIDI In.



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**Note:** If your set-up utilizes a MIDI patcher, consult your patcher's documentation to learn how to set up the equivalent of this MIDI connection, or see "Using the MR-Rack With a Computer, Controller and MIDI Patchbay" later in this chapter.

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### Connecting the Rest of Your System

Now that you've made the MIDI connections between your controller and the MR-Rack, skip ahead to "Making Audio Connections" later in this chapter.

## Using the MR-Rack with a Workstation

A workstation is a MIDI instrument with a keyboard, a sequencer, built-in synthesizer or sampler, effects processor and disk drive or memory card. Adding an MR-Rack vastly expands the workstation's sonic palette and provides 64 voices of added polyphony. The MR-Rack can be played via MIDI from a workstation's keyboard, or addressed by its sequencer.

Often, a workstation's disk drive can be used to archive the memory contents of external devices—such as the MR-Rack—through the "dumping" of MIDI System Exclusive (SysEx) data. (If you'd like to know more about SysEx, see the Glossary and "What Is MIDI?" in ***Chapter 9***.) Consult your workstation's manual to see if yours can receive MIDI SysEx dumps—if not, you can simply skip the MIDI connection which would run from the MR-Rack back to your workstation. To learn how to perform a SysEx dump from the MR-Rack, see ***Chapter 6***.

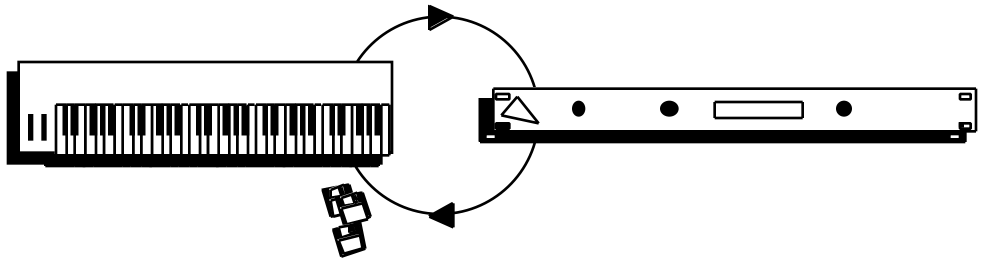
### What You'll Need

- Two MIDI cables
- Stereo headphones, for verifying your connections

### To Connect the MR-Rack

1. Connect one end of a MIDI cable to your workstation's MIDI Out.
2. Connect the cable's other end to the MR-Rack's MIDI In.
3. Connect one end of the other MIDI cable to the MR-Rack's MIDI Out.

4. Connect its other end to the workstation's MIDI In.



**Note:** If you use a MIDI patcher, consult your patcher's documentation to learn how to set up the equivalent of these MIDI connections, or see "Using the MR-Rack With a Computer, Controller and MIDI Patchbay" later in this chapter.

### Connecting the Rest of Your System

Now that you've made your MIDI connections between your workstation and the MR-Rack, skip ahead to "Making Audio Connections" later in this chapter.

## Using the MR-Rack with a Stand-Alone Sequencer

Sequencers provide a means of playing and/or recording MIDI music (including General MIDI music). There are essentially two physical types of sequencers. There are sequencer programs which run on a personal computer, and there are stand-alone boxes dedicated solely to the job of sequencing. This set-up describes how to use a stand-alone sequencer with the MR-Rack.

**Note:** If you've got a controller and a MIDI merger, you can follow the instructions in "Using the MR-Rack with a Computer, Controller and MIDI Merger" later in this chapter, by simply replacing any references to "computer" with "sequencer."

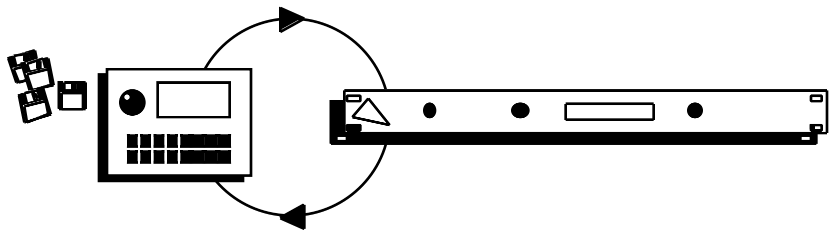
A sequencer is also likely to include a disk drive. Often, the drive can be used to archive the memory contents of external devices—such as the MR-Rack—through the "dumping" of MIDI System Exclusive (SysEx) data. (If you'd like to know more about SysEx, see the Glossary and "What Is MIDI?" in ***Chapter 9***.) Consult your sequencer's manual to see if yours can receive MIDI SysEx dumps—if not, you can simply skip the MIDI connection which would run from the MR-Rack back to your sequencer. ***Chapter 6*** describes how to perform a SysEx dump.

### What You'll Need

- Two MIDI cables
- Stereo headphones, for verifying your connections

### To Connect the MR-Rack

1. Connect one end of a MIDI cable to your sequencer's MIDI Out.
2. Connect the cable's other end to the MR-Rack's MIDI In.
3. Connect one end of the other MIDI cable to the MR-Rack's MIDI Out.
4. Connect its other end to the sequencer's MIDI In.



**Note:** If you use a MIDI patcher, consult your patcher's documentation to learn how to set up the equivalent of these MIDI connections, or see "Using the MR-Rack With a Computer, Controller and MIDI Patchbay" later in this chapter.

### Connecting the Rest of Your System

Now that you've made your MIDI connections between your sequencer and the MR-Rack, skip ahead to "Making Audio Connections" later in this chapter.

If you're using a General MIDI (GM) sequencer, you'll want to see "Using the MR-Rack for General MIDI Music" near the end of this chapter once you've finished setting up.

## Editing Sounds with the MR-Rack and a Computer

Computers are powerful musical tools when outfitted with the proper musical hardware and software. Some computers sport MIDI In/Out/Thru jacks. If yours doesn't, you'll need to purchase a MIDI interface for your computer.

ENSONIQ will provide you with Unisyn sound editing software for your computer when you fill out and mail in your completed warranty card. Once you've installed the Unisyn editor on your computer, you'll be able to create your own new Sounds for the MR-Rack (***Chapter 9*** provides information on using the Unisyn software).

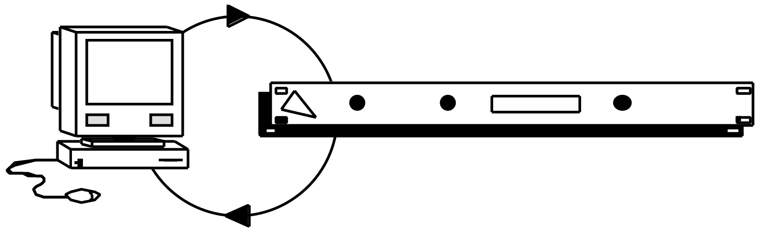
### What You'll Need

- Two MIDI cables
- Stereo headphones, for verifying your connections

### To Connect the MR-Rack

1. Connect one end of a MIDI cable to your computer's MIDI Out.
2. Connect the cable's other end to the MR-Rack's MIDI In.
3. Connect one end of the other MIDI cable to the MR-Rack's MIDI Out.

4. Connect its other end to the computer's MIDI In.



**Note:** This set-up is for MR-Rack users working with minimal MIDI hardware. If you own a MIDI merger or a MIDI patchbay, see "Using the MR-Rack with a Computer, Controller and MIDI Merger," or "Using the MR-Rack with a Computer, Controller and MIDI Patchbay" later in this chapter.

### Connecting the Rest of Your System

Now that you've made your MIDI connections between your computer and the MR-Rack, skip ahead to "Making Audio Connections" later in this chapter.

## Sequencing with the MR-Rack, a Computer and a Controller

Computers are powerful musical tools when outfitted with the proper musical hardware and software. Some computers sport MIDI In/Out/Thru jacks. If yours doesn't, you'll need to purchase a MIDI interface for your computer. There are many excellent MIDI sequencing programs on the market, including General MIDI sequencers. Once you've installed one on your computer, you'll be able to purchase and play pre-recorded sequences—or record your own music—using the Sounds onboard the MR-Rack.

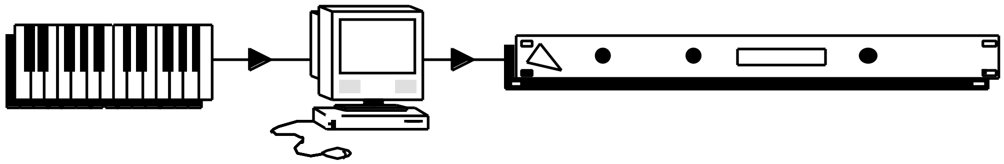
This set-up will allow you to play the MR-Rack's Sounds from your controller while recording into the computer sequencer. When the sequencer plays back the music, it will use the same MR-Rack Sounds. When using a computer sequencer, it's critical that your controller, sequencer, computer and—if you're using one—your MIDI interface be configured correctly. Consult their documentation to learn how to use them with a multi-timbral module such as the MR-Rack.

### What You'll Need

- Two MIDI cables
- Stereo headphones, for verifying your connections

### To Connect the MR-Rack

1. Connect one end of a MIDI cable to your controller's MIDI Out.
2. Connect the cable's other end to the computer's MIDI In.
3. Connect one end of the other MIDI cable to the computer's MIDI Out.
4. Connect its other end to the MR-Rack's MIDI In.



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**Note:** This set-up is for MR-Rack users working with minimal MIDI hardware. If you own a MIDI merger or a MIDI patchbay, see "Using the MR-Rack with a Computer, Controller and MIDI Merger," or "Using the MR-Rack with a Computer, Controller and MIDI Patchbay" later in this chapter.

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### Connecting the Rest of Your System

Now that you've made your MIDI connections between your computer, controller and the MR-Rack, skip ahead to "Making Audio Connections" later in this chapter.

If you're using a General MIDI (GM) sequencer, you'll want to see "Using the MR-Rack for General MIDI Music" near the end of this chapter once you've finished setting up.

## Using the MR-Rack with a Computer, Controller and MIDI Merger

Computers are powerful musical tools when outfitted with the proper musical hardware and software. Some computers provide MIDI In/Out/Thru jacks. If yours doesn't, you'll need to purchase a MIDI interface for your computer. There are many excellent MIDI sequencing programs on the market, including General MIDI sequencers. Once you've installed one on your computer, you'll be able to purchase and play pre-recorded sequences—or record your own music—using the Sounds onboard the MR-Rack. ENSONIQ will provide you with Unisyn sound editing software for your computer when you fill out and mail in your completed warranty card. Once you've installed the Unisyn editor on your computer, you'll be able to create your own new Sounds for the MR-Rack (***Chapter 9*** explains how to use the Unisyn software). You can also use the computer's storage devices to archive the contents of the MR-Rack's internal memory, via SysEx dumps. (If you're unfamiliar with SysEx, see the Glossary and "What Is MIDI?" in ***Chapter 9.***) ***Chapter 6*** describes how to perform a SysEx dump.

When using a computer, it's critical that your controller, all of your computer's software and—if you're using one—your MIDI interface be configured correctly. Consult their documentation to learn how to use them with a multi-timbral module such as the MR-Rack.

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**Note:** The following set-up will also work for MR-Rack users with a stand-alone sequencer, a controller and a MIDI merger. Follow the instructions below, and simply replace any references to "computer" with "sequencer."

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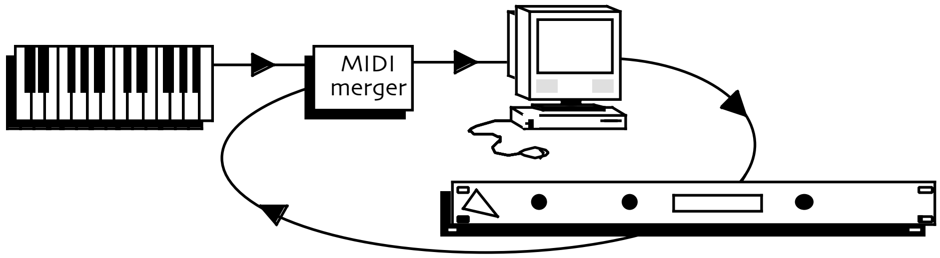
### What You'll Need

- Four MIDI cables
- Stereo headphones, for verifying your connections

### To Connect the MR-Rack

1. Connect one end of a MIDI cable to your controller's MIDI Out.
2. Connect the cable's other end to one of the merger's MIDI Ins.
3. Connect one end of a second MIDI cable to the merger's MIDI Out.
4. Connect its other end to the computer's MIDI In.
5. Connect a third cable from the computer's MIDI Out to the MR-Rack' s MIDI In.

6. Connect the fourth cable from the MR-Rack's MIDI Out to the merger's second MIDI In.




**Note:** This set-up is for MR-Rack users with a computer (or a stand-alone sequencer), a controller and a MIDI merger. If you don't own a MIDI merger, see "Editing Sounds with the MR-Rack and a Computer," Sequencing with the MR-Rack, a Computer and a Controller," or "Using the MR-Rack with a Stand-Alone Sequencer" earlier in this chapter. If you've got a MIDI patchbay, see "Using the MR-Rack with a Computer, a Controller and a MIDI Patchbay" below.

### Connecting the Rest of Your System

Now that you've made your MIDI connections between your computer, controller and the MR-Rack, skip ahead to "Making Audio Connections" later in this chapter.

If you're using a General MIDI (GM) sequencer, you'll want to see "Using the MR-Rack for General MIDI Music" near the end of this chapter once you've finished setting up.

## Using the MR-Rack with a Computer, Controller and MIDI Patchbay

Today's personal computers can be musical powerhouses when outfitted with MIDI In and Out jacks and used in conjunction with a device like the MR-Rack. Some computers have MIDI In/Out/Thru jacks. If yours doesn't, you'll need to purchase a MIDI interface for your computer.

With a computer, you can create new Sounds for the MR-Rack by using the Unisyn editing software ENSONIQ will provide to you when you send in your completed warranty card (see ***Chapter 9*** to learn more about using the Unisyn software).

Some people use computer sequencers to play back General MIDI songs that they've purchased. If you're not sure exactly what General MIDI is, consult the Glossary or "What Is General MIDI?" in ***Chapter 9***. Other people use computers sequencers to create their own music. For these musicians, it's desirable to include a MIDI controller in their computer/MR-Rack system so they can perform their parts and record them into the sequencer.

Any storage device connected to the computer— a floppy drive or a hard disk, for example—can provide a place to store the contents of the MR-Rack's memory. You can also use the computer's storage devices to archive the contents of the MR-Rack's internal memory, via SysEx dumps.(If you're unfamiliar with SysEx, see the Glossary and "What Is MIDI?" in ***Chapter 9***.) ***Chapter 6*** describes how to perform a SysEx dump.

A MIDI patchbay—especially one with merging capabilities—is the ideal way to connect your controller, computer, MR-Rack and any other MIDI device. Once everything is wired up to the patchbay, all inter-device connections are just a few mouse clicks, button presses or knob twists away.

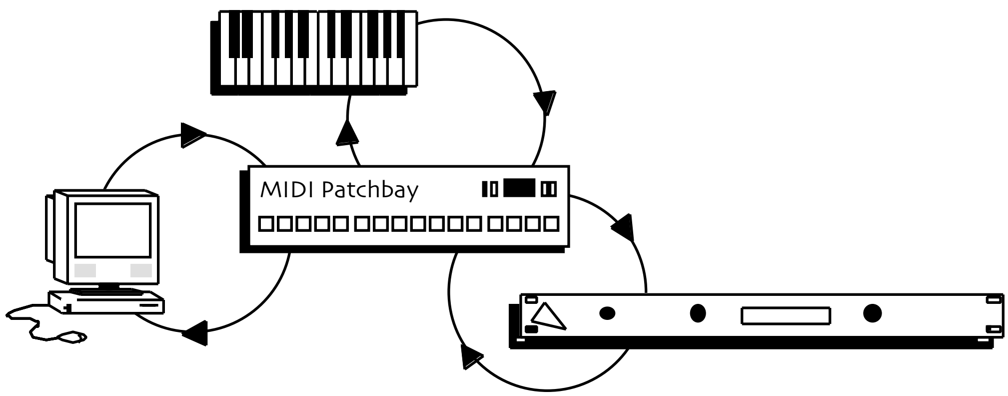
MIDI patchbays typically provide numbered pairs of MIDI In and Out jacks—each of these pairs is used by a single MIDI device. Consult your patchbay's documentation to see if the manufacturer has recommendations as to which location—that is, pair—should be used by your controller or computer. If not, you can connect any device to any location.

### What You'll Need

- Six MIDI cables
- Stereo headphones, for verifying your MR-Rack connections

### To Make Your MIDI Patchbay Connections

1. Select three patchbay locations: one for your computer, one for your controller and one for the MR-Rack.
2. Connect the computer's MIDI Out to the MIDI In of the patchbay location you've chosen for the computer.
3. Connect the same location's MIDI Out to the computer's MIDI In.
4. Connect the controller's MIDI Out to the MIDI In of the patchbay location you've chosen for the controller.
5. Connect the same location's MIDI Out to the controller's MIDI In.
6. Connect the MR-Rack's MIDI Out to the MIDI In of the patchbay location you've chosen for the MR-Rack.
7. Connect the same location's MIDI Out to the MR-Rack's MIDI In.




Consult your patchbay's documentation to learn how to route MIDI signals from one MIDI device to another (or others). The optimal routings will vary for the different software programs you'll be using—consult their manuals for details.

### Connecting the Rest of Your System

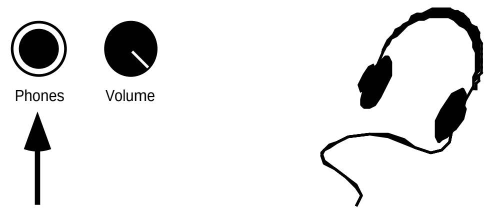
Once you've programmed your patchbay, skip ahead to "Making Audio Connections" below.

If you're using a General MIDI (GM) sequencer, you'll want to see "Using the MR-Rack for General MIDI Music" near the end of this chapter once you've finished setting up.

# Making Audio Connections

In any set-up, you'll need to determine what type of audio connection you'd prefer to establish between the MR-Rack and the rest of your system. There are a number of options.

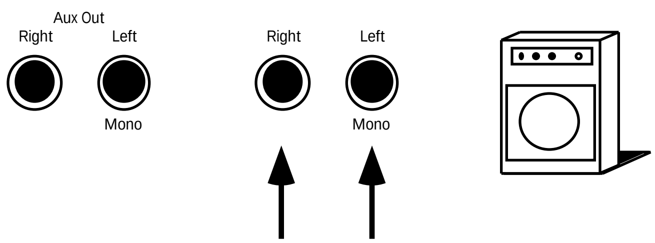
- You can listen to the MR-Rack with headphones plugged into the front-panel Phones jack. This is great for privacy—when you're practicing, no one else can hear what you're up to. It's also a convenient way to troubleshoot your system, and it's perfect for simply experiencing the MR-Rack's crystal-clear sound without added noise from other equipment in your rig. The MR-Rack's Volume knob controls your listening volume.



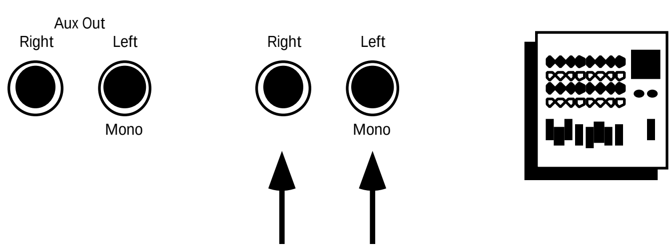

Using headphones is always available as an option, regardless of other audio connections you've made with the MR-Rack.

Plugging them in does not automatically mute the other audio outputs from the MR-Rack.

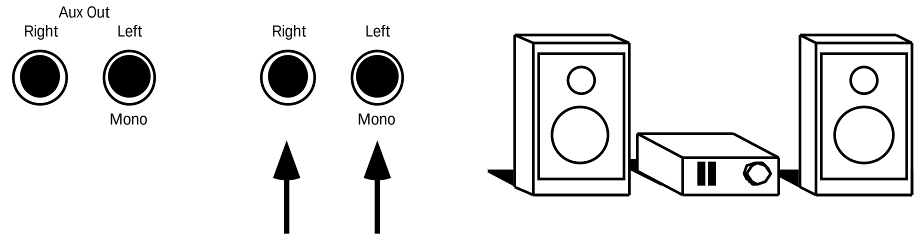
- If you'd prefer to use the MR-Rack in mono through a traditional keyboard or guitar amplifier, or through a single fader on a mixing console, connect one end of a 1/4" phone-type audio cable to the Main Out Left jack on the MR-Rack's back panel, and the other end to your amplifier or mixer. The "MR-Rack Output Jacks" section in ***Chapter 9*** contains technical information about the MR-Rack's output jacks.



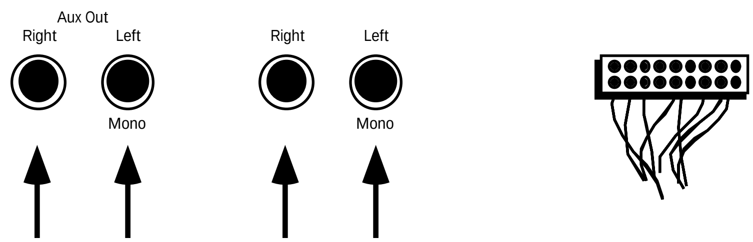

- If you'd like to operate your MR-Rack in stereo through a pair of faders on a mixing console, a stereo amplifier or two separate mono amps, you'll need two 1/4" phone-type cables. Connect one end of each cable to the MR-Rack's rear-panel Main Out Left and Right jacks and the other end to your desired destination. The "MR-Rack Output Jacks" section in ***Chapter 9*** contains technical information about the MR-Rack's output jacks.




- You can also connect the MR-Rack to your home stereo, though a bit of caution is required. The MR-Rack is capable of producing a far greater dynamic range than a home stereo typically encounters when playing compact discs, cassettes and LPs. See "Setting Volume Levels" later in this chapter to learn how to safely set the MR-Rack's Volume when using it with a home stereo. You'll need two 1/4"-phone-to-RCA-type cables, or you'll need to create some by attaching adapters to standard 1/4" phone or RCA cables. Connect the 1/4" phone plug end of each 1/4"-to-RCA cable to the MR-Rack's rear-panel Main Out Left and Right jacks and the RCA end to your stereo's auxiliary inputs. The "MR-Rack Output Jacks" section in ***Chapter 9*** contains technical information about the MR-Rack's output jacks.




- If you're connecting the MR-Rack to an audio patch bay, or if you've got four available inputs on your mixing console, you may elect to use all of the MR-Rack's Outs. The MR-Rack offers—in addition to its Main Outs—a pair of Aux Outs, useful for extracting Sounds or groups of Sounds from the MR-Rack's Main Outs mix. This allows you to treat the extracted material with its own outboard processing, or to control its volume more easily by assigning it its own faders on a mixer. To use all four Outs, you'll need four 1/4" phone-type cables. connect one end of each to the MR-Racks' rear-panel Main and Aux Outs Left and Right, and the other end to a patch bay position or mixer channel. The "MR-Rack Output Jacks" section in ***Chapter 9*** contains technical information about the MR-Rack's output jacks.




***Chapter 3*** of the MR-Rack Musician's Manual describes how to route specific Sounds to the Aux Outs. The MR-Rack also provides a simple switch for easily sending everything you may have routed to the Aux Outs back into the Main Outs mix. See "Using the MR-Rack's Four Outputs" in ***Chapter 3***.

# Making the Power Connection

The MR-Rack requires grounded AC power, supplied through the power cord that came with your MR-Rack. The MR-Rack power supply is intelligent and will adjust to your local voltage.

### To Connect the MR-Rack's AC Power

1. Connect one end of the MR-Rack's power cable to a grounded AC outlet.
2. Connect the other end of the MR-Rack's power cord to the jack labeled "Line" on the MR-Rack's rear panel.
3. Connect the other pieces of equipment in your system requiring AC power to AC outlets.

## Powering Up

You should always turn on the device which will be transmitting MIDI before you turn on the device which will be receiving it. If you have a series of MIDI devices, start with the first device in the chain, then power up the second, the third, and so on. This prevents unpleasant surprises which can result from unplanned MIDI information being “spit” out of transmitting devices as they power up. Such MIDI garbage could confuse a receiving device, and possibly disable it temporarily. If this should happen for some reason, turn the MR-Rack’s power off, and then back on.

# Confirming Your MIDI Connection

It’s important when setting up a MIDI system to verify your connections in an orderly manner, one step at a time. This is the best way to ascertain what’s working and what isn’t.

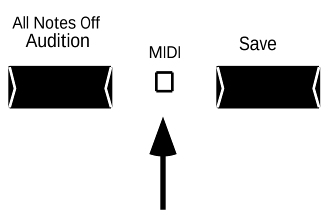
The following verification procedure details how to confirm that the MR-Rack is receiving MIDI properly. If your set-up requires communication in the opposite direction—from the MR-Rack back to another device—you’ll need to consult that device’s documentation to ascertain its method for verifying MIDI reception.

MIDI patchbay users should test their set-up with either the controller or the computer sending MIDI to the MR-Rack.

## To Verify that the MR-Rack is Receiving MIDI

- Play a few notes on your controller or play a sequence from your computer or stand-alone sequencer.
- If you’re using the “Editing Sounds with the MR-Rack and a Computer” set-up, and Unisyn editing software, open up a Sound-editing window and use the Screen Keys or Mouse Play feature to play a few notes. (Consult your Unisyn manual for information on configuration instructions and using these features.)

There’s a MIDI light on the MR-Rack’s front panel, located between the Audition and Save buttons.



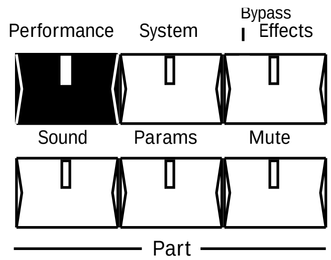

As you play, you should see it flicker. This tells you that your MIDI controller is properly connected to your MR-Rack.

If the MR-Rack’s MIDI light doesn’t flicker as you play your controller:

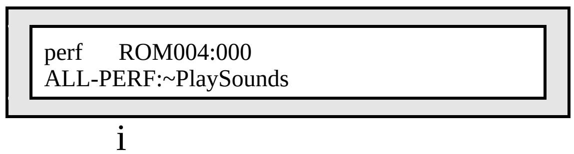
1. Check your controller’s MIDI transmission settings to make sure that it is set to transmit MIDI. Consult your controller’s manual if you’re not sure how to do this.
2. Double-check your MIDI cables. Is your controller’s MIDI Out connected to the MR-Rack’s MIDI In?

### To Confirm that the MR-Rack is Responding to MIDI

1. Press the Performance button on the MR-Rack’s front panel.

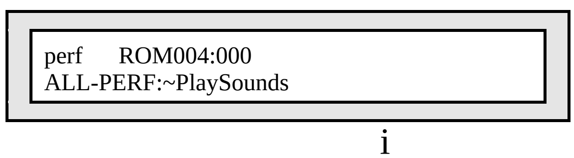



2. Turn the left-hand Sound Type knob so that the lower left-hand part of the display looks like this:




Performance Type

3. If "→PlaySounds" doesn't already appear in the lower right-hand corner of the display, turn the right-hand Sound Type knob until the display looks like this:




Performance Name

4. Plug a pair of stereo headphones into the MR-Rack’s front-panel Phones jack.
5. Bring up the MR-Rack’s Volume knob as you play your controller.

   You should be hearing notes as you play. If you’re not hearing anything, check your MIDI cabling, and make sure that your MIDI controller is set to transmit MIDI.

# Setting Volume Levels

The MR-Rack’s best sound is obtained when its Volume knob is turned all the way up—you should always set it as high as possible. How high you can go before audible distortion occurs will vary, depending on how you’re using the MR-Rack. Here are some tips:

- If you’re using the MR-Rack’s Phones jack, the Volume knob controls your listening level. Set it to a comfortable level.
- If you’re using the MR-Rack with a keyboard or guitar amplifier, start with your amp input at a low setting. Turn the MR-Rack’s Volume up as far as you can without experiencing distortion (unless that’s what you want). Then turn up your amp channel to a comfortable listening level.
- If you’re routing the MR-Rack directly to a mixing console, or indirectly through a patchbay, turn the MR-Rack’s Volume all the way up and make adjustments to the input gain of your mixer faders to ensure the sound doesn’t undesirably distort.
- If you’re listening to the MR-Rack through a home stereo, set your stereo’s volume to its normal level. With the MR-Rack’s Volume knob all the way down, play your controller with maximum force, or load up the loudest sequence you have and press Play. Slowly bring up the MR-Rack’s Volume knob as far as you can without hearing distortion. The

MR-Rack is capable of producing a far greater dynamic range than a home stereo typically encounters when playing compact discs, cassettes and LPs, and you'll have to make sure that loud notes from the MR-Rack will not damage your system.

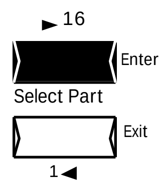
# Using the MR-Rack for General MIDI Music

Once you've made all of your connections, getting the MR-Rack ready for General MIDI is simple:

- Press the System button until the display shows:

System parameters:<br>Hit ENTER for GM!

- Press the Enter button.




The MR-Rack is now General-MIDI-ready. Start your General MIDI sequencer and the MR-Rack will do the rest.

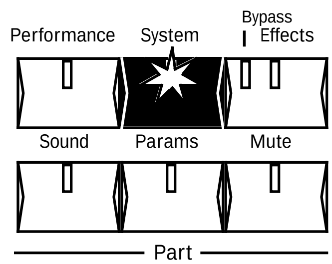
# Moving On

Since the MR-Rack is capable of playing 16 different Sounds at once—on 16 different MIDI channels—you'll want to get familiar with the way MIDI channels, Sounds and Parts work together. For a brief overview of the MR-Rack, see "Understanding the MR-Rack" in the first chapter of the MR-Rack Musician's Manual, ***Welcome***. For more detailed information on this subject, turn to ***Chapter 4.***

# Chapter 3
# Personalizing Your System

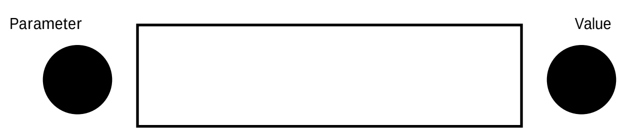
The MR-Rack offers a range of options that allow you tailor its behavior to suit your way of working. These global, system-wide settings operate in the background, letting you get on with the art of making music. They remain in effect at all times and are preserved when the MR-Rack's power is switched off.

To access these options, press the System button. When you press the System button, its yellow LED will light.




Each of the System options is called a ***parameter***. When you change the setting of a parameter, you are editing the parameter's ***value***.

To select System parameters, turn the Parameter knob. To edit a System parameter's value, turn the Value knob.

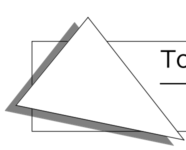



When selecting and editing System parameters, the MR-Rack always shows "System parameters:" on the top line of the display.

## Using the Global Pitch Bend Settings

A Pitch Bend Wheel is a spring-loaded wheel typically located to the far left of a MIDI keyboard. It's most commonly used to bend the pitch of notes up or down by pushing the wheel forward (up) or pulling it back (down). Some manufacturers employ a left/right scheme.

Most MR-Rack Sounds are programmed to respond to MIDI Pitch Bend messages in ways appropriate to the Sound. The MR-Rack also offers a global Pitch Bend set-up, which is always available. By setting the Part's Pitch Bend Up and Down Part parameters to "Sys,"



To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

you can instruct a Part—and its Sound—to use the global Pitch Bend settings instead of those originally programmed into the Sound. (See “Controlling a Part’s Pitch Bend Response” in ***Chapter 4*** for details.)

The MR-Rack offers three parameters for controlling the global Pitch Bend range:

- Pitch Bend Up
- Pitch Bend Down
- PitchBendMode

## Global Pitch Bend Up and Down

Both Pitch Bend Up and Pitch Bend Down have their own individual settings, and either can be set to raise or lower the pitch of any Part Sound whose Pitch Bend Up or Down Part parameter is set to “Sys.”

### To Determine the Global Pitch Bend Up Range

1. Press System.
2. Turn the Parameter knob until the display shows “Pitch Bend Up=.”

   The global Pitch Bend Up parameter can be set to:

   - 1-12dn or 1-12up—the pitch of Part Sounds whose Pitch Bend Up=Sys will be lowered or raised by the number of equal-temper semitones set here when a Pitch Bend Wheel is pushed all the way forward
   - Off—any Part Sounds whose Pitch Bend Up=Sys will ignore MIDI messages received from a Pitch Bend Wheel pushed forward
3. Use the Value knob to set the Pitch Bend Up value you desire.

### To Determine the Global Pitch Bend Down Range

1. Press System.
2. Turn the Parameter knob until the display shows “Pitch Bend Down=.”

   The global Pitch Bend Down parameter can be set to:

   - 1-12dn or 1-12up—the pitch of Part Sounds whose Pitch Bend Down=Sys will be lowered or raised by the number of equal-temper semitones set here when a Pitch Bend Wheel is pulled all the way back
   - Off—any Part Sounds whose Pitch Bend Up=Sys will ignore MIDI messages received from a Pitch Bend Wheel pulled back
3. Use the Value knob to set the Pitch Bend Down value you desire.

## Setting the Global Pitch Bend Mode

The PitchBendMode parameter unlocks a powerful feature that allows you to decide which notes will be affected by Pitch Bend messages when Part Sounds use the global Pitch Bend. (See “Controlling a Part’s Pitch Bend Response” in ***Chapter 4*** for details.) It can be set to one of three values:

- Normal—Pitch Bend messages will affect all notes currently sounding.
- Held—Pitch Bend messages will affect only those notes sounding from keys which are being physically held down.

  Notes held with the sustain pedal or in their release stage will remain at their original pitch. This feature can be used to create guitar-style pitch bends or to “paint” with pitch, leaving different notes sustaining at different pitches.
- Prog—the global Pitch Bend will not alter the Normal/Held settings programmed into

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter,
and then turn the Value knob to change the parameter's setting.

any Sounds using the global Pitch Bend set-up.

### To Determine the Global Pitch Bend's Behavior

1. Press System.
2. Turn the Parameter knob until the display shows "PitchBendMode=."
   The global PitchBend Mode parameter can be set to:
   - Normal—all notes of Part Sounds utilizing the global Pitch Bend will be affected when Pitch Bend messages are received
   - Held—only notes of Part Sounds utilizing the global Pitch Bend set-up which are being physically held down will be affected when Pitch Bend messages are received
   - Prog—notes set to bend according to the programming of Part Sounds utilizing the global Pitch Bend will be affected when Pitch Bend messages are received
3. Use the Value knob to set the PitchBend Mode to the desired value.

# Retuning the MR-Rack

## Fine Tuning the MR-Rack

There may be a time when you need to use the MR-Rack with an instrument that just can't be tuned, or if you have to deal with musicians who don't want to retune for one reason or another. The tuning parameter allows you to adjust the MR-Rack's tuning to match other instruments. The MR-Rack defaults to A=440, with an equi-tempered pitch table.

### To Fine Tune the MR-Rack

1. Press System.
2. Turn the Parameter knob until the display shows "Fine Tuning=."
3. Use the Value knob to set the amount that you want to raise or lower the pitch. The pitch can be lowered or raised from -50 to +49 cents.

**Note:** Setting the MR-Rack to 0 cents is equivalent to A=440. 100 cents is the equivalent of a semitone.

## Using Pitch Tables

The intervals (or relationships) between notes in a scale can be altered to create special pitch tables. The MR-Rack's pitch tables have a tuning resolution of 256 cents per semitone. The default pitch table is "EqualTemper," the western 12-tone equi-tempered pitch table. However, you can select from a large assortment of traditional, modern, ethnic, and exotic pitch tables in the MR-Rack. The MR-Rack also provides a RAM location for a custom pitch table, and supports the MIDI pitch table Bulk Tuning Dump and Single Note Tuning Change standards. If you've got the appropriate computer program, you can create your own pitch tables, and transmit them to the MR-Rack via SysEx (see "Pitch Tables and the MIDI Standard Tuning Format" in ***Chapter 9*** to learn more).

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

### To Assign a Global Pitch Table

1. Press System.
2. Turn the Parameter knob until the display shows “PitchTbl=.”
3. Use the Value knob to select the pitch table that you want to use. This selects the system pitch table, and will affect all Parts that have their PitchTbl Part parameter set to PitchTbl=Sys. (See ***Chapter 4*** for details.)

### To Assign a Part to a Special Pitch Table

1. Use the Select Part Buttons to choose the Part whose pitch table you’d like to set.
2. Press the Params button.
3. Turn the Parameter knob until the display shows “PitchTbl=.”
   PitchTbl can be set to:
   - Prog—to use the PitchTbl value programmed into the Sound.
   - Sys—to use the global System PitchTbl.
   - use one of the special pitch tables built in to the MR-Rack’s memory.
4. Turn the Value knob to set PitchTbl to Sys.

---

**Note:** When you select a new Sound for the Part, PitchTbl will be reset to Prog if the System Part Param Reset parameter is set to On. The Part Param Reset parameter is described later in this chapter in “Protecting Part Settings.”

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This parameter also responds to an NRPN LSB value of 021. See “Using RPNs and NRPNs to Edit Part Parameters” at the end of ***Chapter 4***.

For a complete list of pitch tables and their descriptions, see ***Chapter 9***.

# Synchronizing the MR-Rack to MIDI

MR-Rack Sounds and Insert Effect LFOs and DDLs use Low Frequency Oscillators (LFOs) as a means of creating vibrato and other rhythmic sonic changes. LFOs can be synchronized to a reference tempo. The MR-Rack contains an internal clock to provide such a reference. The clock can also be synchronized to MIDI clocks received from an external source—this is useful if you want to use another device (such as a computer sequencer or drum machine) as the master clock source, and want to synchronize the MR-Rack’s LFOs to it.

### To Set the Global Tempo Clock as the Timing Reference

1. Press System.
2. Turn the Parameter knob until the display shows “Tempo Clock Src=.”
   The Tempo Clock Src parameter can be set to:
   - Int—to use the MR-Rack’s own internal clock as the timing source.
   - MIDI—to use external MIDI clocks as the timing source.
3. Turn the Value knob to set Tempo Clock Src to Int.

### To Sync the MR-Rack’s Clock to an External MIDI Device

1. Press System.
2. Turn the Parameter knob until the display shows “Tempo Clock Src=.”
   The Tempo Clock Src parameter can be set to:
   - Int—to use the MR-Rack's own internal clock as the timing source.

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

- MIDI—to use external MIDI clocks as the timing source.

3. Turn the Value knob to set Tempo Clock Src to MIDI.

### To Set the Global Clock Tempo

If the Global Tempo Clock Source parameter is set to Int, this parameter sets the tempo of the MR-Rack's internal clock.

1. Press System.
2. Turn the Parameter knob until the display shows "System Tempo=."
3. The System Tempo parameter can be set to any tempo from 25 bpm (beats per minute) to 250 bpm.
4. Turn the Value knob to set System Tempo to the tempo that you want to use.

**Note:** If the Global Tempo Clock Source is set to MIDI, this display will show "MIDIbpm" as its value, and cannot be changed.

## Protecting Part Settings

Sounds are programmed with their own optimal Part settings built-in, and when you choose a Sound, those settings are applied to the currently selected Part. The following Part parameters may be reset when you select a new Sound on a Part: FX Bus (see ***Chapter 5*** for details), Pitch Bend Up, Pitch Bend Down, Octave Tuning, Coarse Tuning, Fine Tuning, PtchTbl, Glide Mode, Glide Time, Delay Time, SyncLFO&Noise, Normal LFO Rates, LFO Depth, LFO Delay Time, Amp Env Attack, Amp Env Decay, Amp Env Release, Filter Cutoff, Filt Env Attack, Filt Env Decay, Filt Env Release and Amp&FiltEnv Vel.

You might prefer to choose new Sounds without losing your current Part settings. You can use the Part Param Reset System parameter to determine whether or not these Part parameter settings will be retained when you select a new Sound. This parameter affects Sound selection from the MR-Rack's front panel, as well as Sound selection through the reception of MIDI Program Changes.

The Part Param Reset System parameter also affects the response of Parts to a Reset All Controllers MIDI message. When the ResetControlRecv System parameter—described later in this chapter—is set to On, a number of Part parameters are reset to default values when the MR-Rack receives a Reset All Controllers message. (See "Receiving Reset All Controllers MIDI Messages" later in this chapter.) Setting the Part Param Reset to Off will protect the settings of the Part parameters listed above from Reset All Controllers MIDI messages.

### To Protect Part Parameter Settings When New Sounds are Selected

1. Press System.
2. Turn the Parameter knob until the display shows "Part Param Reset=."

   The Part Param Reset parameter may be set to:

   - On—Part parameters will be reset when new Sounds are selected for a Part or Reset All Controllers MIDI messages are received
   - Off—Part parameters will not be reset when new Sounds are selected for a Part, or when Reset All Controllers MIDI messages are received

3. Use the Value knob to set Part Param Reset to Off.

### To Protect Part Parameters from Reset All Controllers MIDI Messages

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

1. Press System.
2. Turn the Parameter knob until the display shows “Part Param Reset=.”

   The Part Param Reset parameter may be set to:

   - On—Part parameters will be reset when new Sounds are selected for a Part or Reset All Controllers MIDI messages are received
   - Off—Part parameters will not be reset when new Sounds are selected for a Part, or when Reset All Controllers MIDI messages are received
3. Use the Value knob to set Part Param Reset to Off.

### To Allow the Selection of New Sounds to Reset Part Parameter Settings

1. Press System.
2. Turn the Parameter knob until the display shows “Part Param Reset=.”

   The Part Param Reset parameter may be set to:

   - On—Part parameters will be reset when new Sounds are selected for a Part or Reset All Controllers MIDI messages are received
   - Off—Part parameters will not be reset when new Sounds are selected for a Part, or when Reset All Controllers MIDI messages are received
3. Use the Value knob to set Part Param Reset to On.

### To Allow Reset All Controllers Messages to Reset Part Parameter Settings

1. Press System.
2. Turn the Parameter knob until the display shows “Part Param Reset=.”

   The Part Param Reset parameter may be set to:

   - On—Part parameters will be reset when new Sounds are selected for a Part or Reset All Controllers MIDI messages are received
   - Off—Part parameters will not be reset when new Sounds are selected for a Part, or when Reset All Controllers MIDI messages are received
3. Use the Value knob to set Part Param Reset to On.

## Letting the MR-Rack Pick Your Chorus or Reverb

Each Sound in the MR-Rack has a special Effect bus parameter called the ***Alt. FX Bus***. When a sound uses an Insert Effect, its Alt. FX Bus setting designates a second-choice Effect for situations in which the Insert Effect is already in use (in Sounds that use an Insert Effect, the Alt. FX Bus parameter can be edited using the Unisyn editing software). The Alt. FX Bus is also used for routing non-Insert Effect Sounds to the Global Chorus or Global Reverb—when you set a Part’s FX Bus parameter to Chorus or one of the Reverbs, you’re editing the Alt. FX Bus parameter as well.

The MR-Rack can use the Alt. FX Bus to automatically choose an appropriate Chorus or Reverb for Sounds that are meant to use an Insert Effect but are not assigned to the Insert Control Part in a Performance. The Sound’s Part will be assigned to the FX Bus designated by its Alt. FX Bus setting. The AutoSelect FXBus parameter enables this process. For more on how the MR-Rack ’s Effects work, see ***Chapter 5***.

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter,
and then turn the Value knob to change the parameter's setting.

### To Let the MR-Rack Automatically Pick a Sound's Chorus or Reverb

1. Press System.
2. Turn the Parameter knob until the display shows "AutoSelect FXBus=."

   The AutoSelect FXBus parameter can be set to:

   - On—to let the MR-Rack pick the Chorus or Reverb for newly-selected Sounds on Parts not designated as the Insert Control Part.
   - Off—to leave the Part's FX Bus assignment unchanged when a new Sound is selected.
3. Use the Value knob to set AutoSelect FXBus to On.

### To Protect Part Effect Bus Settings When a New Sound is Selected

1. Press System.
2. Turn the Parameter knob until the display shows "AutoSelect FXBus=."

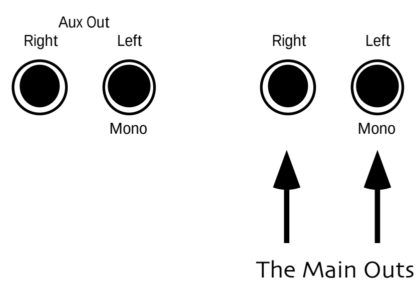
   The AutoSelect FXBus parameter can be set to:

   - On—to let the MR-Rack pick the Chorus or Reverb for newly-selected Sounds on Parts not designated as the Insert Control Part
   - Off—to leave the Part's FX Bus assignment unchanged when a new Sound is selected
3. Use the Value knob to set AutoSelect FXBus to Off.

# Using the MR-Rack's Four Outputs

The MR-Rack rear panel offers four audio outputs. There are two stereo pairs: the Main Outs and the Aux Outs. The Main Outs are used as the primary feed from the MR-Rack. The Aux Outs are useful for extracting Sounds or groups of Sounds from the MR-Rack's Main Out mix. By routing a Sound to the Aux Outs, you can treat it to its own outboard processing, or control its volume individually by assigning it to its own fader on a mixer.

Use standard balanced (TRS stereo cables) or unbalanced (TS mono cables) for the Main and Aux Outs.




As the labels below the Aux Out jacks and Main Out jacks indicate, the MR-Rack employs automatic switching on each pair of outputs:

- Main Outputs Left and Right are normally stereo outputs. However, if nothing is plugged into the Right Output, the stereo signal will be summed to mono and sent to the Left Main Output.
- Similarly, the Aux Outputs Left and Right are normally stereo outputs. However, if nothing is plugged into the Right Aux Output, the stereo signal will be summed to mono and sent to the Left Aux Output.

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

# Routing Sounds to Specific Outputs

All Parts—and the Sounds they use—are routed to an FX (Effect) bus. Each bus goes to an Effect, which is then assigned to either the Main Outs or the Aux Outs. The Dry bus is a special case in that it's assigned to the Main or Aux Out without going through an Effect. These assignments are part of the current Performance and may be saved with the Performance; the FX Bus parameter setting can also be saved into a Part's Sound. (See ***Chapter 6*** for details on saving Performances and Sounds.)

In routing a Sound to a particular pair of Outs, here's what happens:

- The Sound is assigned to a Part
- The Part is assigned to an FX bus
- The bus goes to an Effect (except the Dry bus, which goes directly to the Outs you choose)
- The Effect is assigned to either the Main Outs or the Aux Outs

## To Send a Part, Its Sound and Effect to the Desired Outputs

1. Use the Select Part Buttons to make sure the Part you want to assign to the Main Outs is selected.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "FX Bus=."
4. Using the Value knob, select an Effect bus to route the Part's Sound through the Effect you desire.
5. Press the Effect button.
6. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Output Assigns
```

7. Press Enter.
8. Turn the Parameter knob until the display shows the Output Assign parameter for the FX bus you've chosen.

---

**Note:** The LightReverb, Medium Reverb and WetReverb busses all use the Global Reverb Output Assign.

---

9. Use the Value knob to select either the Main or Aux Outs.

## To Send a Part and Its Dry Sound to the Desired Outputs

1. Use the Select Part buttons to make sure the Part you want to assign to the Main Outs is selected.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "FX Bus=."
4. Using the Value knob, select Dry.
5. Press the Effect button.

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

6. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Output Assigns
```

7. Press Enter.
8. Turn the Parameter knob until the display shows the Output Assign parameter for the Dry bus.

---

**Note:** The LightReverb, MediumReverb and WetReverb busses all use the Global Reverb Output Assign.

---

9. Use the Value knob to select either the Main or Aux Outs.

## Determining the Behavior of the Aux Outs

The Aux Outs are used for the extraction of Sounds from the Main Outs mix. The MR-Rack is designed to provide the maximum flexibility when using the Aux Outs in your rig. The AuxToMainOuts System parameter offers three different ways to employ the Aux Outs. You can choose which one will work best for you.

When AuxToMainOuts is set to Auto, the MR-Rack employs intelligent jack switching, which allows it to sense whether or not you've got a cable plugged into the Left Aux Out jack. If you do, the Main and Aux Outs function as totally discrete stereo feeds. If there's nothing connected to the jack, any signal sent to the Aux Outputs will be summed into the Main Outputs. This is convenient for musicians whose limited instrument inputs necessitate an economical, flexible use of cables, or who anticipate using the Aux Outs only rarely.

Musicians who would prefer to permanently connect all four MR-Rack Outs will find the remaining two AuxToMainOuts values useful. When the parameter is set to Never, the Aux and Main Outs are kept discrete. When it's set to Always, the Aux Outs are summed into the Main Outs. This allows musicians to leave all four MR-Rack output cables connected. When the Aux Outs are needed as a separate stereo feed, the AuxToMainOuts parameter can be set to Never. When only the Main Outs are required, it can be set to Always.

### To Enable Automatic Aux Out Routing Based on Cabling

1. Press System.
2. Turn the Parameter knob until the display shows "AuxToMainOuts=."

   The AuxToMainOuts parameter can be set to:

   - Never—the Aux and Main Outs will be discrete, even if the Left Aux Out is not connected
   - Always—the Aux signal will be summed into the Main outputs, even if the Left Aux Out is connected
   - Auto—the MR-Rack will sum any Sounds sent to the Aux Outs into the Main Outs if there's no cable plugged into the Left Aux Out jack
3. Use the Value knob to set AuxToMainOuts to Auto.

### To Use the Aux Outs with Permanently Connected Outputs

1. Press System.
2. Turn the Parameter knob until the display shows "AuxToMainOuts=."

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter,
and then turn the Value knob to change the parameter's setting.

The AuxToMainOuts parameter can be set to:

- Never—the Aux and Main Outs will be kept as discrete stereo feeds
- Always—the Aux signal will be summed into the Main Out stereo feed
- Auto—the MR-Rack will sum any Sounds sent to the Aux Outs into the Main Outs if there's no cable plugged into the Left Aux Out jack

3. Use the Value knob to set AuxToMainOuts=Never when you need to use the Aux Outs as a discrete stereo feed, or to Always when using the Main Outs only.

# Auditioning Sounds on the MR-Rack

Pressing the Audition button on the front panel will play a brief Sound audition demo for the Sound on the currently selected part. The nature of the audition material is determined with the setting of the Audition System parameter. When the Audition button is pressed, the MR-Rack can play octaves in any key, a major chord in any key, or a brief piece of music that's appropriate to the currently selected Sound Type.

### To Set What's Heard When the Audition Button is Pressed

1. Press System.
2. Turn the Parameter knob until the display shows "Audition=."
3. The Audition parameter can be set to:
   - Sound Type—a short composition appropriate to the currently selected Sound Type will play when the Audition button is pressed
   - A Octaves to G# Octaves—arpeggiated octaves up the keyboard will play when the Audition button is pressed
   - A maj Chord to G# maj Chord—a major chord in a central pitch range will play when the Audition button is pressed
   - A maj Arpeg to G# maj Arpeg—an arpeggiated major chord will play when the Audition button is pressed
4. Turn the Value knob to set the Audition type that you prefer.

# Waking up

You can determine how the MR-Rack will "wake up" when you turn its power on. It can power up a number of different ways, depending on the setting of the WakeUpMode parameter. The MR-Rack can turn on showing the last display—or "page"—you viewed when you turned the MR-Rack off. It can display the last Sound you selected. It can power up ready for General MIDI. Or it can wake up with the →PlaySounds Performance and Part 1 selected.

---

**Note:** The MR-Rack powers on with the Sounds LED lit, except when WakeUpMode is set to Last Page—in that case, the LED that was lit when the power was turned off will be lit when the MR-Rack is turned back on.

---

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

### To Set How the MR-Rack Will Wake Up

1. Press System.
2. Turn the Parameter knob until the display shows “WakeUpMode=.”

   The WakeUpMode parameter can be set to:

   - Last Page—the last page displayed when the MR-Rack was turned off will be restored when it’s turned on
   - Last Sound—the last Sound selected when the MR-Rack was turned off will be displayed when it’s turned on
   - GM—when the MR-Rack is turned on, it will be ready to operate with a General MIDI sequencer. See "Using the MR-Rack to Play General MIDI Music" later in this chapter for further details on how the MR-Rack works with General MIDI
   - Demo—when the MR-Rack is turned on, the Demo Performance and Part 1 will be selected, the AutoSelect FX Bus and PartParamReset parameters will be turned on and the Perf ProgChg parameter will be switched off (these parameters are described elsewhere in this chapter)
3. Use the Value knob to set Wake Up Mode to the desired value.

## Protecting the MR-Rack’s Memory

When operating in the heat of creativity, it’s all too easy to inadvertently erase things you’d rather preserve. The MR-Rack offers a special display prompt as a reality check during activities that could result in the loss of Sounds or Performances you don’t really want to lose. When saving, copying or initializing Sounds and Performances—or when initializing data cards—the MR-Rack can be set to display:

System Write Protect
On! ENTER overrides.

When you encounter this message, you can press Enter to continue what you were doing, or press Exit to abort the procedure. The Write Protect System parameter allows you to enable this feature if you feel you’d benefit from this double-check, or to disable it if you’d find the prompt unnecessary.

### To Enable the Write Protect Prompt

1. Press the System button.
2. Use the Parameter knob to scroll until the display shows “Write Protect.”
   - Off—the MR-Rack will execute the Save, Copy or Initialize procedure without displaying the Write Protect prompt
   - Prompt—the MR-Rack will display the Write Protect prompt before it executes Save, Copy or Initialize procedures
3. Use the Value knob to set Write protect to Prompt.

### To Disable the Write Protect Prompt

1. Press the System button.
2. Use the Parameter knob to scroll until the display shows “Write Protect.”
   - Off—the MR-Rack will execute the Save, Copy or Initialize procedure without displaying the Write Protect prompt

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

- Prompt—the MR-Rack will display the Write Protect prompt before it executes Save, Copy or Initialize procedures

3. Use the Value knob to set Write protect to Off.

# Setting the Stak MIDI Channel

The MR-Rack introduces ***Staks***, a convenient new way to create layers and keyboard splits. Staks are created by assigning two or more MR-Rack Parts—and the Sounds they use—to the Stak MIDI channel. (See “Using Staks” in ***Chapter 4*** for a fuller explanation of Staks.)

The Stak MIDI channel plays another important role in the operation of the MR-Rack. It can be used to receive MIDI Program Changes that will select new Performances. This will occur when the Perf ProgChgRecv System parameter is enabled (see “Changing Performances Via MIDI” below).

### To Set the Stak MIDI Channel

1. Press System.
2. Turn the Parameter knob until the display shows “Stak MIDI Channel=.”
   The Stak MIDI channel parameter may be set to any MIDI channel.
3. Use the Value knob to select the Stak MIDI Channel you prefer.

---

**Note:** When this parameter is edited, all currently sounding voices on all Parts will be muted.

---

# Adjusting Stak Coherence

Since Staks contain multiple Parts, it may appear at times that they respond in a loosely synchronized manner. This can be a desirable effect, as it makes a Stak sound bigger. In other situations, it’s not as musically appropriate. The Stak Coherence parameter allows you to instruct the MR-Rack to fire off all of the Staks voices precisely at once, for a tighter sound. The Stak Coherence parameter can be used to tighten up any Parts that share MIDI channels, even when they aren't assigned to the Stak MIDI channel.

---

**Tip:** When Stak Coherence=On, the overall timing of Parts that share MIDI channels may appear a bit sluggish as the MR-Rack perfectly lines up all of the notes before sounding any of them. If you're sequencing, you can compensate for this slower, more synchronized response by shifting tracks slightly ahead of the beat.

---

### To Perfectly Synchronize the Start of All Notes in a Stak

1. Press System.
2. Turn the Parameter knob until the display shows “Stak Coherence=.”
   The Stak Coherence parameter may be set to:
   - Off—the Stak’s notes will sound normally
   - On—all notes in a Stak will sound at exactly the same time
3. Use the Value knob to set Stak Coherence to On.

---

**Note:** When this parameter is edited, all currently sounding voices on all Parts will be muted.

---

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

### To Allow All Notes in a Stak to Start Normally

1. Press System.
2. Turn the Parameter knob until the display shows “Stak Coherence=.”
   The Stak Coherence parameter may be set to:
   - Off—the Stak’s notes will sound normally
   - On—all notes in a Stak will sound at exactly the same time
3. Use the Value knob to set Stak Coherence to Off.

**Note:** When this parameter is edited, all currently sounding voices on all Parts will be muted.

# Using MIDI Program Changes

## Changing Performances Via MIDI

The MR-Rack allows you to send MIDI Program Changes on the Stak MIDI channel as a means of selecting Performances. See “Setting the Stak MIDI Channel” above to learn how to set the Stak MIDI channel.

When the Perf ProgChgRecv System parameter is set to On, Program Changes received on the Stak MIDI channel will select new Performances. Any Part whose MIDI channel is set to Stak or to the same channel as the Stak MIDI channel will ignore Program Changes.

When ProgChgRecv is set to Off, Program Changes received on the Stak MIDI channel won’t select Performances. They’ll also be ignored by any Parts whose MIDI channel is set to Stak. Parts which use the same channel as the Stak MIDI channel, however, will respond to Program Changes received on this channel normally.

**Note:** The Perf ProgChgRecv parameter only affects Parts whose MIDI channels are set to Stak, or to the same channel as the Stak MIDI channel. Whether the Perf ProgChgRecv parameter is set to On or Off, all other Parts receive MIDI Program Changes according to the settings of their ProgramChngeRecv and Bank Select Recv Part parameters (see ***Chapter 4*** for details), and the setting of the Global Bank&ProgChgRecv System parameter described below.

### To Select New Performances With MIDI Program Changes

1. Press System.
2. Turn the Parameter knob until the display shows “Stak MIDI Channel=.”
3. Use the Value knob to select the Stak MIDI Channel you prefer.
4. Turn the Parameter knob until the display shows “Perf ProgChgRecv=.”
   The Perf ProgChgRecv parameter can be set to:
   - On—Program Changes received on the Stak MIDI channel will select new Performances
   - Off—Program Changes received on the Stak MIDI channel won’t select new Performances.
5. Turn the Value knob to set Perf ProgChgRecv to On
6. Send Program Changes on the Stak MIDI channel to select Performances.

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter,
and then turn the Value knob to change the parameter's setting.

**Note:** This parameter is overridden if Bank&ProgChgRecv (described below) is set to Off.

### To Disable the Selection of Performances By Program Changes

1. Press System.
2. Turn the Parameter knob until the display shows “Perf ProgChgRecv=.”

   The Perf ProgChgRecv parameter can be set to:

   - On—Program Changes received on the Stak MIDI channel will select new Performances
   - Off—Program Changes received on the Stak MIDI channel won’t select new Performances
3. Turn the Value knob to set Perf ProgChgRecv to Off.

   Any Parts set to the same channel as the Stak MIDI channel will respond to Program Changes received on the channel.

**Note:** This parameter is overridden if Bank&ProgChgRecv (described below) is set to Off.

## Setting the Global Reception of MIDI Bank Selects and Program Changes

The MR-Rack allows you to enable or disable its response to MIDI Bank Selects and Program Changes on a system-wide basis. The global Bank&ProgChgRecv System parameter functions as a master switch that can turn off the MR-Rack’s reception of Bank Selects and Program Changes regardless of the ProgramChngeRecv and Bank Select Recv Part parameter settings, or the setting of the Perf ProgChgRecv System parameter described earlier in this chapter. When Bank&ProgChgRecv=On, the above parameters control how each Part responds to or ignores Bank Select and Program Change messages, and whether or not Program changes received on the Stak MIDI channel will select new Performances. When Bank&ProgChgRecv is set to Off, the MR-Rack will ignore MIDI Bank Select and Program Changes completely.

### To Enable Reception of Bank Selects and Program Changes

1. Press System.
2. Turn the Parameter knob until the display shows “Bank&ProgChgRecv=.”

   The Bank&ProgChgRecv parameter can be set to:

   - On—MIDI Bank Selects and Program Changes will be responded to according to the settings of the ProgramChngeRecv and Bank Select Recv Part parameter and the Perf ProgChgRecv System parameter
   - Off—the MR-Rack will ignore MIDI Bank Selects and Program Changes
3. Turn the Value knob to set Bank&ProgChgRecv to On.

### To Disable Reception of Bank Selects and Program Changes

1. Press System.
2. Turn the Parameter knob until the display shows “Bank&ProgChgRecv=.”

   The Bank&ProgChgRecv parameter can be set to:

   - On—MIDI Bank Selects and Program Changes will be responded to according to the settings of the ProgramChngeRecv and Bank Select Recv Part parameter and the Perf ProgChgRecv System parameter

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

- Off—the MR-Rack will ignore MIDI Bank Selects and Program Changes

3. Turn the Value knob to set Bank&ProgChgRecv to Off.

# Responding to MIDI “Panic” Messages

Occasionally MIDI devices get confused. As a result, some MIDI products are able to send out “panic” messages to quickly bring MIDI chaos under control. The MR-Rack responds to the following panic messages:

- Reset All Controllers (MIDI controller #121)
- All Notes Off (MIDI controller #123)
- All Sounds Off (MIDI controller #120)

## Setting the MR-Rack’s Response to Reset All Controllers MIDI Messages

The ResetControlRecv System parameter allows you to determine how the MR-Rack will respond to Reset All Controllers MIDI messages. When it’s set to On, and a Part receives a Reset All Controllers message on its MIDI channel, it will return all of its real-time controllers and any parameters that respond to MIDI controllers to their default values, clearing up any hung values or unexpected settings. When ResetControlRecv is set to Off, no MR-Rack Parts will respond to Reset All Controllers messages. For more information on the MR-Rack's response to Reset All Controllers messages, see "Reset All Controllers (MIDI controller 121) Reception Behavior" in ***Chapter 9***.

### To Set the Response to Reset All Controllers Messages

1. Press System.
2. Turn the Parameter knob until the display shows “ResetControlRecv=.”

   The ResetControlRecv parameter can be set to:

   - Off—the MR-Rack will ignore Reset All Controllers MIDI messages
   - On—any Part receiving a Reset All Controllers message on its MIDI channel will reset its real-time controllers and any parameters that respond to MIDI controllers to default values
3. Turn the Value knob to set ResetControlRecv to the desired value.

## Setting the MR-Rack’s Response to All Notes Off MIDI Messages

The MR-Rack can respond to All Notes Off and All Sounds Off MIDI control messages. When a Part receives either of these on its MIDI channel, it silences any of its notes that are currently sounding. The AllNotesOff Recv System parameter is a combined filter for both of these messages. When it’s set to On, the MR-Rack will respond to them—when it’s set to Off, it will ignore them.

### To Set the MR-Rack’s Response to All Notes Off Messages

1. Press System.
2. Turn the Parameter knob until the display shows “AllNotesOff Recv=.”

   This AllNotesOff Recv parameter is a combined All Notes Off (MIDI control #123) and All Sounds Off (MIDI control #120) reception filter. It can be set to:

   - Off—the MR-Rack will ignore the All Notes Off and All Sounds Off MIDI messages
   - On—any Part receiving an All Notes Off and/or All Sounds Off MIDI message on its MIDI channel will silence all of its currently-sounding notes
3. Turn the Value knob to set AllNotesOff Recv to the desired value.

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter,
and then turn the Value knob to change the parameter's setting.

# Using MIDI SysEx

## Enabling and Disabling System Exclusive Communication

The MR-Rack can use MIDI System Exclusive (or "SysEx") messages to communicate with computer programs—such as the Unisyn sound editor ENSONIQ will provide you with when you send in your completed warranty card—and as a means of archiving the contents of its memory to an external storage device such as a floppy disk drive or a computer's hard drive. SysEx data is a special kind of MIDI data which doesn't require a specific MIDI channel. The SysEx Recv System parameter globally enables or disables the MR-Rack's MIDI SysEx communication capabilities, with exception of SysEx data dumps, described in ***Chapter 6***, which can always be performed. (If you'd like to learn more about MIDI SysEx, see "What Is MIDI" in ***Chapter 9***.)

### To Enable or Disable SysEx Communication

1. Press System.
2. Turn the Parameter knob until the display shows "SysEx Recv=."

   The SysEx Recv parameter can be set to:

   - Off—the MR-Rack will not receive or transmit MIDI SysEx data, except for the always-enabled SysEx data dumps described in ***Chapter 6***
   - On—the MR-Rack will receive and transmit MIDI SysEx data
3. Use the Value knob to set SysEx Recv to the desired value.

## Using SysEx Device IDs

Every MIDI product has its own SysEx identity—but what if you've got several MR-Racks connected at the same time? Each one of them can be assigned its own SysEx Device ID number, from 000 to 127. In this way, each MR-Rack can identify the MIDI SysEx data that it's meant to receive. Of course, it's vital that no two MR-Racks share the same SysEx Device ID number.

**Note:** The SysEx ID number is not a MIDI channel—SysEx data doesn't require one.

### To Set the MR-Rack's SysEx Device ID Number

1. Press System.
2. Turn the Parameter knob clockwise to "SysEx Device ID=."

   The SysEx Device ID parameter can be set to any number from 000 to 127.
3. Use the Value knob to select the System Exclusive Device ID number you want to use for this MR-Rack.

**Note:** When performing SysEx dumps from the MR-Rack using the Dump commands described in ***Chapter 6***, make note of your MR-Rack's current SysEx Device ID number. This number is embedded in the dumped data. Your MR-Rack will need to be set to this ID number when you want to re-transmit the data back into the MR-Rack.

# Setting Up New Real-Time Controllers

To access the Parameters described on this page (unless otherwise noted):

Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

Each Part in the MR-Rack can respond to the following real-time MIDI controllers and messages:

- Data Entry Slider
- Pitch Bend Wheel
- Mod Wheel
- Foot Pedal
- Sustain/Sostenuto pedals
- MIDI Volume messages
- MIDI Pan messages
- MIDI Expression messages

In addition, the MR-Rack allows you to define four additional real-time MIDI controllers: System Controller 1, System Controller 2, System Controller 3 and System Controller 4. These can be assigned to respond to any legitimate MIDI controller. Any one of the four can be used to modulate the MR-Rack's Sounds or Effects. See ***Chapter 5*** to learn how to use one of these System Controllers as an Effect modulator. See ***Chapter 9*** to learn about using the System Controllers to modulate elements within MR-Rack sounds.

---

**Note:** Each Part has four parameters which determine whether or not its Sound or—when the Part is designated as the Insert Control Part—its Insert Effect will respond to each of the four controllers. See "Working With System MIDI Controllers" in ***Chapter 4*** for details.

---

### To Set Up the Four System Controllers

1. Press System.
2. Turn the Parameter knob until the display shows the name of the System Controller you'd like to use:
   - CTRL1—System Controller 1
   - CTRL2—System Controller 2
   - CTRL3—System Controller 3
   - CTRL4—System Controller 4
3. After selecting one of the four System Controllers, use the Value knob to locate the MIDI controller number you'd like to assign to the System Controller you've selected.

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

**Note:** If more than one System Controller is assigned to the same MIDI controller number, only the lower-numbered System Controller will respond to the MIDI controller.

When the MR-Rack is shipped from the factory:

- CTRL1 is assigned to Breath Controller (MIDI controller #002).
- CTRL2 is assigned to FXControl1 (MIDI controller #012).
- CTRL3 is assigned to PatchSelct (MIDI controller #070).
- CTRL4 is assigned to Timbre (MIDI controller #071).

# Learning How Much RAM is Available for New Sounds

Unisyn, a computer-based, external sound editing program, can be used to create and edit your own Sounds. ENSONIQ will provide you a copy of the Unisyn MR-Rack Editor when you send in your completed MR-Rack warranty card. See the Unisyn documentation to learn how to install it on your computer. ***Chapter 9*** describes using the Unisyn editor to create and edit MR-Rack Sounds.

When you create a new Sound, you'll need to know if there's enough memory available in the MR-Rack to accommodate it. Each MR-Rack Sound can contain up to 16 layers. Each bank can contain up to 361 layers. The amount of free internal memory (RAM) in the MR-Rack is expressed as the number of layers still available in its RAM Sound bank.

### To Find Out How Much Free Memory (RAM) is Available in the MR-Rack

To get an idea of how much RAM memory is available for creating your sounds, the MR-Rack displays the amount of free Sound layers.

1. Press System.
2. Turn the Parameter knob until the display shows "Free RAM:."
   This read-only display shows the number of free Sound layers still available in RAM.

# Learning the Number of Banks on a Data Card

Data cards—or PCMCIA cards, as they're known throughout the computer and musical instrument industries—are credit-card-sized memory cards. A PCMCIA card is an easy way to instantly access new MR-Rack Sounds, Performances, and demos. MR-Rack-formatted cards may be inserted into the Data Card slot on the MR-Rack 's front panel. There are two types of PCMCIA cards that can be used with the MR-Rack.

ROM cards provide new Sounds, Performances and demos in a read-only format that can't be erased. Each ENSONIQ MRC Series ROM Sound card offers two Banks of new Sounds, Performances and demos.

SRAM cards—for saving your own Sounds and Performances. These cards vary in size, from 512k up to 2 MB. The number of banks on a card depends on the card's size:

- 512k cards can hold 4 Banks of Sounds and Performances
- 1 MB cards can hold 9 Banks of Sounds and Performances
- 2 MB cards can hold 18 Banks of Sounds and Performances
  Each card bank is equal in size to the MR-Rack's RAM memory—with a maximum

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

capacity of 361 Sound layers—and can hold the same number of Sounds (up to 128) and Performances (32).

SRAM Cards can be purchased inexpensively from computer supply stores or from ENSONIQ, whose MC-512 SRAM Card offers 4 Sound/Performance banks.

For more information, see “Using PCMCIA Data Cards” in ***Chapter 7***.

**Note:** The MR-Rack will not accept Flash PCMCIA cards, or any special-function PCMCIA cards, such as modem cards for portable computers, etc.

### To Learn How Many Banks are on the Currently Installed Card

1. Insert an MR-Rack formatted PCMCIA data card into the Data Card slot with its label side up and its connection edge toward the MR-Rack.

   To learn how to format a PCMCIA SRAM card, see ***Chapter 7.***

   The display will momentarily show:

```
PCMCIA Card Inserted
Registering...
```

2. Press System.
3. Turn the Parameter knob until the display shows “CRD Size:”

   This read-only display shows the number of banks on the installed card. If no card is installed, the display will show “ No card!” in place of the bank number.

# Identifying Installed Wave Expansion Boards

The MR-Rack can accommodate up to three ENSONIQ EXP Series Wave Expansion Boards. Wave Expansion Boards provide new wave data for the MR-Rack, as well as new Sounds, Performances and demos. For a full description of how to install and use ENSONIQ EXP Series Wave Expansion Boards, see “Using ENSONIQ EXP Wave Expansion Boards” in ***Chapter 7***.

The MR-Rack provides three displays which can identify any EXP Wave Expansion boards you have installed.

### To Identify an Installed Expansion Board

1. Press the System button.
2. Turn the Parameter knob until the display shows:

```
System parameters:
WaveEXP1:xxxxxxxxxxx
```

i

Expansion Board name

   When an Expansion Board is installed, this read-only display will show the name of the Expansion Board located in the first slot.

To access the Parameters described on this page (unless otherwise noted):

Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

3. Turning the Parameter knob two more times will reveal two more displays which show the names of the Expansion Boards in Wave EXP Slots 2 and 3 (if they're installed).

If there are no Expansion Boards installed, the display will show "WaveEXP1= **EMPTY**."

---

**Note:** If you've installed Expansion Boards and the MR-Rack appears not to be recognizing them, carefully repeat the instructions in "How To Install an Expansion Board" from ***Chapter 7***. If the MR-Rack still doesn't recognize the Expansion Board, call ENSONIQ Customer Service at 610-647-3930.

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# Using the MR-Rack to Play General MIDI Music

General MIDI is an agreed-upon set of sounds and protocols which aims to ensure that, no matter what brand or model General MIDI instrument you use in conjunction with your personal computer to play back a General MIDI recording, the music is guaranteed to sound good. For a more detailed description of General MIDI, see "What Is General MIDI?" found in ***Chapter 9***.

## To Use the MR-Rack as a General MIDI Sound Module

1. Press System.
2. Press System again. The display shows:

```
System parameters:
Hit ENTER for GM!
```

3. If you'd like to continue, press Enter. If not, press Exit.
   Pressing Enter selects the ROM GM performance, selects Part 1, and sets Perf ProgChgRecv=Off.

The MR-Rack is now prepared to operate in conjunction with General MIDI. If your GM sequencer's MIDI Out is connected to the MR-Rack's MIDI In, you're ready to start the music!

## To Set the MR-Rack to Power Up Ready for General MIDI Music

1. Press System.
2. Turn the Parameter knob until the display shows "WakeUpMode=."
   The WakeUpMode parameter can be set to:
   - Last Page—the last page displayed when the MR-Rack was turned off will be restored when it's turned on
   - Last Sound—the last Sound selected when the MR-Rack was turned off will be displayed when it's turned on
   - GM—when the MR-Rack is turned on, it will be ready to operate with a General MIDI sequencer
   - Demo— when the MR-Rack is turned on, the Demo Performance and Part 1 will be selected, and Program Changes received on the Stak MIDI channel will choose new Performances
3. Use the Value knob to set WakeUpMode to GM.

## To Reset the MR-Rack for Use with Non-General MIDI Music

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

1. Press the Performance button.
2. Use the Sound Type and Sound Name knobs to select a new Performance.

   When the MR-Rack prepares itself for General MIDI music, it alters the settings of a number of System parameters.
3. Check the settings of the Part Param Reset, PitchBendMode, AutoSelect FXBus, Perf ProgChgRecv, Bank&ProgChgRecv, ResetControlRecv, AllNotesOff Recv and SysEx System parameters to see if you'd like to reset them.

## MR-Rack General MIDI Details for the Curious

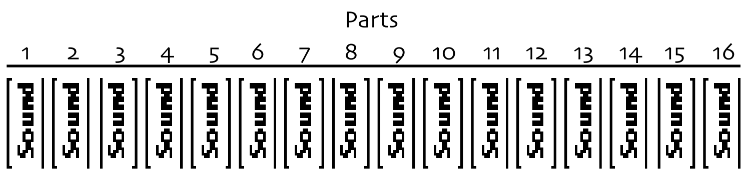
General MIDI is designed to be extremely easy to use, and requires no background knowledge of its workings. However, for MR-Rack users who are interested, here's what happens when you "Hit ENTER for GM!"

- The MR-Rack selects a General MIDI Performance whose Parts 1-16 are set to MIDI channels 1-16, respectively. These Parts are pointed towards the MR-Rack's banks of General MIDI Sounds, and their Bank Select reception has been disabled so that they'll only be able to select Sounds from these banks when they receive Program Changes. The GM Standard drum kit is assigned to Part 10.
- The System Perf ProgChgRecv parameter is set to Off to ensure that Program Changes don't unintentionally select a new, non-GM Performance.
- The System AutoSelect FX Bus parameter is set to Off to allow General MIDI Effect change messages to control the MR-Rack's chorus and reverb.
- The Part Param Reset parameter is set to Off to protect various Part parameters that are preset for General MIDI.
- PitchBendMode is set to Prog so that the GM Sounds are allowed to interpret Pitch Bend messages as they're programmed to, in accordance with General MIDI.
- Bank&ProgChgRecv is set to On so that the MR-Rack can respond to General MIDI Program Changes.
- ResetControlRecv and AllNotesOff Recv are set to On so that the MR-Rack can respond to MIDI panic messages.
- SysEx Recv is set to On so that you can return the MR-Rack to its original General MIDI settings any time you like, via a General MIDI On SysEx message.

To access the Parameters described on this page (unless otherwise noted):
Press the System button, turn the Parameter knob to locate the parameter, and then turn the Value knob to change the parameter's setting.

# Chapter 4
# Parts

The MR-Rack can play 16 individual Sounds at once. Each Sound fits into one of 16 slots, called ***Parts***. You can assign any MR-Rack Sound to any Part.



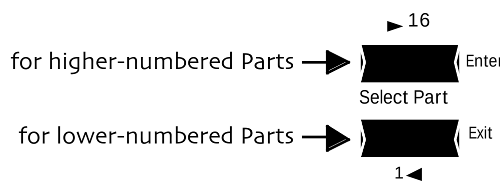

All 16 Parts, their settings and the current Effects set-up are components of a ***Performance***. For a conceptual overview of the MR-Rack, see "Understanding the MR-Rack" in ***Chapter 1***.

## To Select a Performance

1. Press the Performance button so that its LED lights up. If it's flashing, press it again.
2. Use the knob to the left of the MR-Rack's display to select an area of the MR-Rack's memory you'd like to select a Performance from.
3. Use the knob on the right side of the display to select a Performance.

## To Select a Part

To select a Part, press one of the Select Part buttons, which are located just to the left of the Parameter knob.




The upper button moves upward through the Parts, and the lower one downward. The Part Number field on the display will change to reflect your Part selection.

---

**Tip:** To move more quickly through the Parts, hold down either Select Part button when the Sound or Params LED is lit—the MR-Rack will scroll through the Parts for you. You can also hold a Select Part button down and use the Parameter knob to dial in the desired Part.

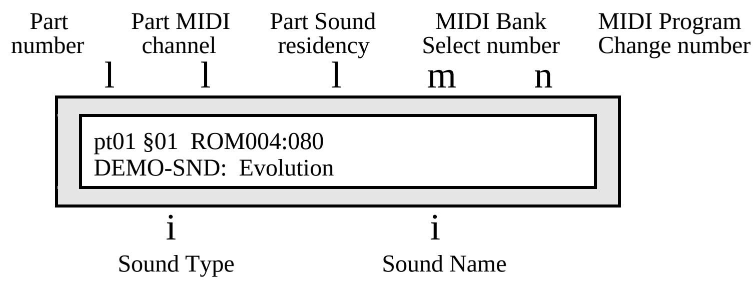
---

## Choosing a Sound for a Part

Each of the 16 Parts in every Performance can have its own Sound. The MR-Rack's SoundFinder makes choosing Sounds easy.

### To Change Sounds on a Part

1. Using the Select Part buttons, choose a Part.
2. Press the Sound button. The display will look something like this:




The MR-Rack display provides helpful information when selecting Sounds. The top line tells you where you are, starting with the Part Number field, which shows you which of the 16 Parts you're editing, and the Part MIDI Channel, which shows you which channel the Part will respond to.

---

**Note:** To hear Sounds as you select them, you'll need to make sure that your MIDI controller is transmitting on the MIDI channel that the currently selected Part uses. Any Part can be set to any MIDI channel or the special Stak channel. See "Setting a Part's MIDI Channel" later in this chapter to learn how to assign a Part to a MIDI channel. "Using Staks" describes Staks and how to use them.

---

The Part Sound Residency is a three-letter abbreviation to tell you where in the MR-Rack's memory the current Sound resides. The next two fields provide the current Sound's MIDI address: its MIDI Bank location and its Program number.

---

**Tip:** When you've selected a Sound that you'd like to invoke with MIDI program changes, the upper right-hand corner of the Sounds display gives you the Bank Select LSB and Program Change values required to call up the Sound. If you'd like, you can select Sounds in the MR-Rack with Program Changes that are unaccompanied by Bank Select messages—they'll simply choose Sounds from the currently selected bank. Unaccompanied Bank Select messages can be sent to the MR-Rack to "arm" a Part for a bank change that will occur when the next unaccompanied Program Change is received.

---

3. Turn the Sound Type knob. As you turn it, you'll see different Sound categories appear in the lower left part of the MR-Rack's display.

---

**Tip:** You can press the Sound button to toggle the Sound Type display field between the selected Sound's musical instrument category and its location within the MR-Rack's memory.

---

4. Locate a SoundFinder Sound Type category that interests you.

   (You can find a list of the SoundFinder Sound Types in ***Chapter 9***.)

   When you select new Sounds from the MR-Rack's front panel, each SoundFinder category remembers which of its Sounds you selected last, and goes immediately to that Sound when you pick the category again. This makes it easy to get back to your favorite Sounds.

5. Turn the Sound Name knob to choose a Sound of the selected type.

   Sound names appear on the lower right-hand portion of the display. When you select a new Sound, any notes currently playing on the selected Part will be silenced.
6. To listen to the Sound you've selected, send MIDI data to the MR-Rack on the MIDI channel to which the Part is assigned, as shown in the display above. Any Part can be edited to use any MIDI channel.

---

**Note:** If you hear more than one Sound playing as you listen to Sounds, it may be that another Part is set to the same MIDI channel you're using for the currently selected Part. Press the Select Part buttons to go through the other Parts and see if there's a conflict. If necessary, change the other Parts to a MIDI channel you're not using, or mute the unwanted Part. (See "Setting a Part's MIDI Channel" or "Muting and Soloing Parts" later in this chapter).

---

## A Note About Sounds and Effects

Most MR-Rack Sound are programmed with an Effect. Each Performance offers three types of Effects—an Insert Effect, Global Chorus and Global Reverb—and Parts may be routed to any of the three, or left dry. Sounds often sound best when they're on a Part that's been designated as the current Performance's Insert Control Part. ***Chapter 5*** provides a full explanation of the MR-Rack Effects.

### To Designate a Part as the Insert Control Part

1. Press the Effects button.
2. Turn the Parameter knob until the bottom line of the display shows the InsertContrlPart parameter.
3. Turn the Value knob to select the number of the Part you'd like to use as the current Performance's Insert Control Part.

## Auditioning Sounds

The MR-Rack offers several convenient ways to audition Sounds. You can hear a brief demonstration of the Sound playing a piece of music appropriate to its SoundFinder Sound Type category, playing octaves in any key, or playing a major chord, also in any key. As shipped from the factory, the MR-Rack will play a piece of music appropriate to the currently selected Sound Type. To learn how to change what you'll hear when you audition a Sound, see the Audition parameter in ***Chapter 3*** .

---

**Note:** Pressing the Audition button will have no effect when the Sound is being used on a Part that's muted.

---

### To Audition a Sound

- Press the Audition button.

### To Stop the Auditioning of a Sound

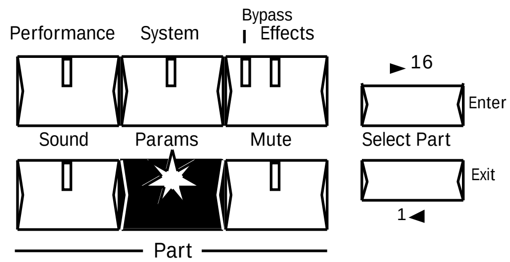
- Press the Audition button again.

  You can also turn the Sound Type knob or press any of the MR-Rack's buttons to stop auditioning.

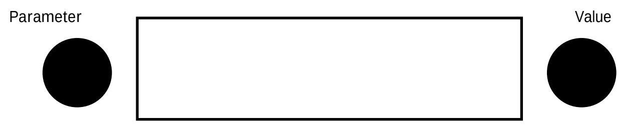
## Editing Parts

Each Part offers a number of options for determining how it—and any Sound the Part uses—will behave. These options are called Part ***parameters***. When you edit a Part parameter's setting, you are editing its ***value***.

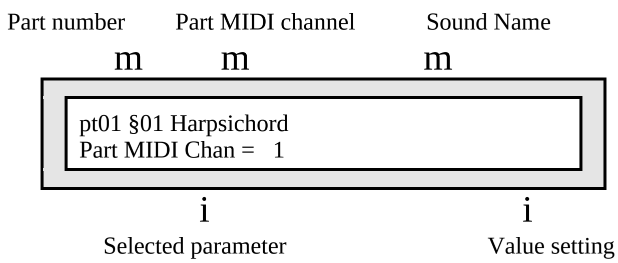
To access Part parameters, press the Params button. When you press the Params button, its green LED will light.



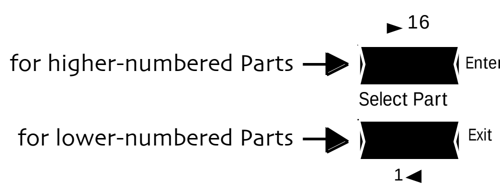

Once you've pressed the Params button, turn the Parameter knob to select the desired parameter. To edit a parameter's value, turn the Value knob.




The MR-Rack display provides helpful information when working with parameters.




The top line tells you where you are, starting with the Part Number field, which shows you which of the 16 Parts you're editing. To select another Part, press one of the Select Part buttons, which are located just to the left of the Parameter knob.




The upper button moves upward through the Parts, and the lower one downward. The Part Number field on the display will change to reflect your Part selection.

---

**Tip:** To move more quickly through the Parts, hold down either Select Part button when the Sound or Params LED is lit—the MR-Rack will scroll through the Parts for you. You can also hold a Select Part button down and use the Parameter knob to dial in the desired Part.

---

The Part MIDI Channel field shows which MIDI channel the Part will be responding to, or if the Part is set to the Stak MIDI channel, which is described later in this chapter. Whenever you're selecting Sounds or editing Parts, you can always look to this spot on the display to quickly learn a Part's MIDI channel, or if it belongs to a Stak. The Sound Name field tells you which Sound is assigned to the Part. The bottom line of the display shows the currently selected parameter on the left, and its current value on the right.

# Understanding Part Parameters

## The Two Kinds of Part Parameters

Each Part contains a broad selection of settings called ***Part parameters***. These parameters fall into two general types of settings:

- Some Part parameters control the behavior of the Part, for example, the MIDI channel on which the selected Part will receive MIDI data, and whether or not the Part will respond to MIDI Bank Select and Program Change messages and various other MIDI controllers
- Some Part parameters determine the behavior of the Part's Sound while it's being used by the Part—a broad collection of Sound-modifying tools lets each Part use its Sound in a manner of your choosing.

### Parts Parameters and Sounds

It's important, when editing Part parameters, to understand the relationship between Parts and the Sounds they use. You can think of a Part as a bin—or a slot, as mentioned above—that contains a Sound. When you adjust Part parameters to change the way a Sound is heard, the Sound is altered only for as long as it's being used by the Part you're editing. You're not permanently altering the Sound itself—you're merely changing the way the Part uses the Sound.

## When a Part Has Been Edited

Since the MR-Rack's 16 Parts collectively comprise a Performance, whenever you edit a Part's parameters, you're altering the currently selected Performance. Changes you make to any of the 16 Parts are temporary until you save this edited Performance to the MR-Rack's memory or a PCMCIA card. This is accomplished through the use of the Save: ThisPerformance command, described below in "Saving a Performance."

If you've used a Part's parameters to alter the nature of a Sound it's using, and would like to save those changes into the Sound itself, the MR-Rack allows you to do so by using the Save: ThisPart'sSound command, described below in "Saving a Part's Sound." By saving a Part's Sound, the changes you've made to the Sound will be heard whenever the Sound is selected for use by any Part.

## Working With an Edited Performance That Hasn't Yet Been Saved

When the Performance button is pressed after a Part parameter has been changed—or when a parameter setting is changed via MIDI while the Performance is being displayed—the word "EDITED" appears on the display to signify that the Performance has been altered. ("EDITED" also appears in the Performance display when an Effect has been edited; see ***Chapter 5***.)

m

```
perf      **EDITED**
ROM-PERF:~PlaySounds
```

Before you save a Performance, the MR-Rack temporarily stores your changes in an edit buffer. You can listen to other Performances without losing these edits, as long as you don't

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

do any further editing. Once you make any further changes, those edits will be placed in the buffer, wiping out your earlier work. To truly protect your edits, you'll need to save your Performance, or the Sound—or Sounds—you've been working with.

---

**Warning:** If a single Performance is transmitted to the MR-Rack via SysEx, it will be placed in the Performance edit buffer, replacing any edited Performance you have there. (See ***Chapter 6*** for more information on MIDI SysEx transmission and reception.)

---

### To Recall an Edited Performance

- Press the Performance button twice if it's not already lit, or once if it is.

  The Performance button's LED will begin blinking on and off and the display will flash "**EDITED**." You can now hear your edited Performance.

## Saving a Performance

When you save a Performance, you save the current Part parameter settings for all 16 Parts—including which Sounds they use—and the current Effects setup (***Chapter 5*** describes the MR-Rack's Effects).

### To Save a Performance

1. Press the Performance button and select the Performance that you want to save.
2. Press the Save button.
3. Turn the Parameter knob all the way counter clockwise.
4. Turn the Value knob all the way counterclockwise. The display shows:

```
Hit ENTER to:
Save:ThisPerformance
```

5. Press the Enter button.

   If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

   This display is offered as a double-check for you to make sure you really want to save this Performance. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press the Enter button. The display now allows you to name your Performance:

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

Left knob function Right knob function

```
LEFT:pos  RIGHT:char
New Name=FinePerform
```

New Performance Name

The Parameter knob (left) is used to select the character position within the name. You will know which character is selected because the position in the display will be underlined. Turning the knob clockwise moves the location to the right, and counterclockwise moves it to the left. The Value knob (right) is used to select the alpha-numeric character for that location.

7. Use the Parameter and Value knobs to select a name for your Performance.
8. When you've named your Performance, press the Enter button.
9. Use the Parameter knob to select either:
   - RAM—to save the Performance to the MR-Rack's internal RAM memory.
   - CRD—to save the Performance to an installed data card (see "Formatting a PCMCIA Card" below for instructions on how to prepare a data card for storage).
10. Use the Value knob to select a specific location for your Performance.
11. When you've selected a location for your Performance, press the Enter button. The MR-Rack will provide confirmation of your Save operation's success, and then display the newly-saved Performance.

---

**Warning:** When saving a Performance to a data card, avoid removing the card from its slot until the saving procedure is complete—doing so may result in corrupted data on the card and/or in the MR-Rack's internal memory.

---

## Saving a Part's Sound

When you save a Part's Sound, all of the selected Part's parameter settings affecting the way its Sound is heard become permanent attributes of the Sound.

### To Save a Part's Sound

1. Press the Sound button, and use the Select Part buttons to find the Sound that you want to save.
2. Press the Save button.
3. Turn the Parameter knob all the way counterclockwise.
4. Turn the Value knob until the display shows:

```
Hit ENTER to:
Save:ThisPart' sSound
```

5. Press the Enter button.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

If the System Write Protect parameter is set to Prompt, the display will show:

System Write Protect
On! ENTER Overrides.

This display is offered as a double-check for you to make sure you really want to save this Sound. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press the Enter button. The display now allows you to name your Sound:

Left knob function    Right knob function
m    m

LEFT:pos RIGHT:char
New Name=MySoundName

i
New Sound Name

The Parameter knob (left) is used to select the character position within the name. You will know which character is selected because the position in the display will be underlined. Turning the knob clockwise moves the location to the right, and counterclockwise moves it to the left. The Value knob (right) is used to select the alpha-numeric character for that location.

7. Use the Parameter and Value knobs to select a name for your Sound.
8. When you've named your Sound, press the Enter button.
9. Use the Value knob to select a SoundFinder type for your Sound. This feature allows you to easily locate similar Sounds. For more information about using SoundFinder, see ***Chapter 1***. For a complete list of SoundFinder types, see ***Chapter 9***.
10. When you've defined a SoundFinder type, press the Enter button.
11. Use the Parameter knob to select either:
    - RAM—to save the Sound to the MR-Rack's internal RAM memory.
    - CRD—to save the Sound to an installed data card (see "Formatting a PCMCIA Card" below for instructions on how to prepare a data card for storage).
12. Use the Value knob to select a specific location for your Sound.
13. When you've selected a location for your Sound, press the Enter button. The display momentarily confirms the successful completion of your command, and selects the newly-saved Sound. All of the Part's Sound-related parameters are reset to their nominal values.

---

**Warning:** When saving a Sound to a data card, avoid removing the card from its slot until the saving procedure is complete—doing so may result in corrupted data on the card and/or in the MR-Rack's internal memory.

---

If you'd like to install the newly-saved Sound as a SoundFinder category's favorite, turn the Value knob one tick clockwise or counter-clockwise and back to register the new Sound as the current category's favorite.

## The Structure of MR-Rack Sounds

To access the Parameters described on this page (unless otherwise n
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

The MR-Rack contains two types of Sounds: standard Sounds and Drum Kit Sounds.

Standard MR-Rack Sounds—constructed from high-quality digital sound waves resident in the MR-Rack's permanent memory or on wave expansion boards—can employ up to 16 layers, any number of which may be heard simultaneously, or switched on and off by modulators such as velocity.

Drum Kits allow you to have up to 64 different standard Sounds assigned to individual keys from the B two octaves below Middle C (B1) to the D three octaves above (D7). Though these are most commonly drum and percussion Sounds, you can use any kind of Sound you'd like in a Drum Kit. Each Drum Kit key, or ***DrumKey***, has its own Volume, Pan, Effect and Tuning settings.

---

**Note:** When you assign a Sound to a DrumKey, the DrumKey makes note of the location of the Sound in the MR-Rack's memory. When you play the DrumKey, it looks to that location and uses the Sound it finds there. If you edit the Sound or replace it, the DrumKey will play the edited version or the Sound you've replaced it with. If you've assigned a memory card or Expansion board Sound to the DrumKey, and removed the card or board, the DrumKey will be unable to locate its Sound and will produce silence when played.

---

You can use as many Drum Kit Sounds in a Performance as there are Parts. In addition, every Performance offers an editable Drum Kit, called the ***PerfEditKit***, which you can customize and save with the Performance or as a new Drum Kit Sound that can be used again. Drum Kits have a number of special parameters of their own, which are described "Using Drum Kits" later in this chapter.

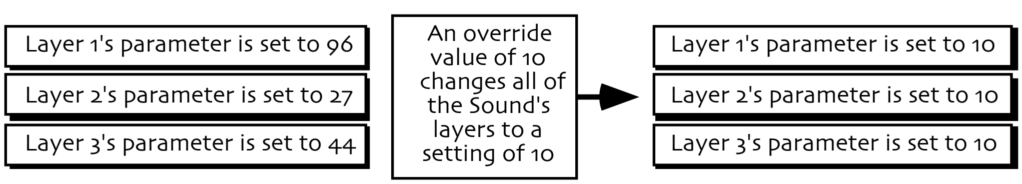
The parameters and procedures described in this chapter apply to both types of Sounds, except as noted.

## How Sound-Related Part Parameters Work

Each MR-Rack Sound is programmed on a computer using Unisyn editing software. (ENSONIQ will provide you with Unisyn software when you send in your warranty card). This software allows the programming of the individual layers within each Sound (see ***Chapter 9*** for details). The Part parameters let you quickly alter this programming in two ways. The parameters offer:

- overrides, which set all of the layers in the currently selected Sound to the absolute value you set
- offsets, which raise or lower the programmed values by the amount you set

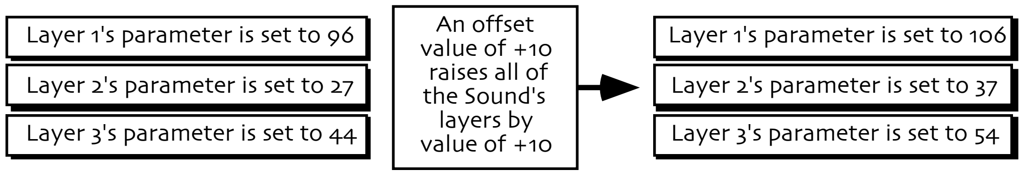
A Part parameter is an override when its typical use would be to set all of a Sound's layers to the same absolute value.




When an override parameter is set to "Prog," the originally programmed setting for each layer is retained.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

A Part parameter is an offset when it would typically be used to affect all of a Sound's layers at once while retaining their different settings in relation to one other. Offset parameters offer values that have positive/negative aspects (denoted with a "+" or "-"). When an offset is set to "0," the originally programmed value for each layer is in effect.




**Note:** Part offsets adjust layer parameters only within the parameters' legitimate ranges—offsets will not force them beyond those limits. If a Part offset parameter appears to be having no effect, it's likely that the layer parameter has already reached its maximum or minimum setting.

# Getting Back to Square One In a Flash

There may be times when you'd like to abandon your Part editing or Sound selections and quickly return the MR-Rack to the state it was in when you first powered it up.

The MR-Rack contains a special Performance called "→PlaySounds," which is selected when you turn the MR-Rack on (unless you've changed the MR's wake-up settings—see ***Chapter 3***).

In the →PlaySounds Performance:

- Parts 1 through 16 are set to MIDI channels 1 through 16.
- a Sound from the DEMO-SND SoundFinder category is selected for each Part.
- all of the Part parameters are reset to their default settings.
- Part 1 is designated as the Insert Control Part (***Chapter 5*** contains a description of the Insert Control Part).
- the Sound LED lights.
- Part 1 is selected.

You can instantly reset the MR-Rack to the →PlaySounds Performance, and these settings.

## To Instantly Reset the MR-Rack's Parts, Sounds, and Effects

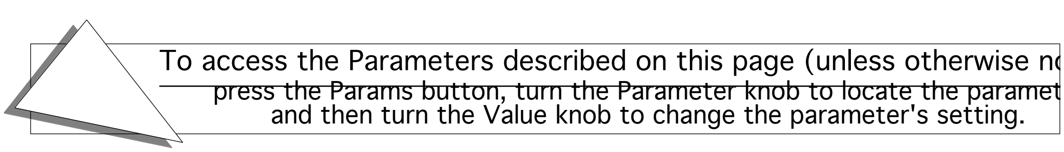
- Press the Performance and Sound buttons simultaneously.

## Protecting Your Part Edits

When you've made changes to a Part's parameters, those changes are temporary until you save the current Performance or the Part's Sound. The MR-Rack lets you choose whether your edits will be retained when new Sounds are selected for Parts, and when the MR-Rack receives Reset All Controllers MIDI messages.

### To Set What Happens to Edits When New Sounds Are Selected

1. Press the System button.
2. Turn the Parameters knob until the display shows:



```
System parameters:
Part Param Reset= On
```

This may say "Off"

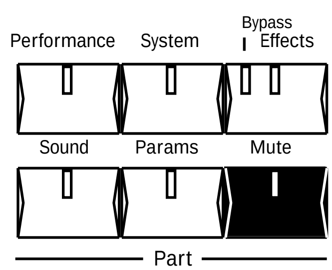
3. Set the Part Param Reset parameter's value to suit your needs:
   - If you'd prefer Part parameters to be reset for each new Sound selected for a Part, set Part Param Reset to On.
   - If you'd prefer for the current Part parameter settings to remain intact when a new Sound is selected for that Part, set to Part Param Reset to Off.

### To Set the MR's Response to Reset All Controllers Messages

1. Press System.
2. Turn the Parameter knob until the display shows "ResetControlRecv=."

   The ResetControlRecv parameter can be set to:
   - Off—the MR-Rack will ignore Reset All Controllers MIDI messages
   - On—any Part receiving a Reset All Controllers message on its MIDI channel will reset its real-time controllers and any parameters that respond to MIDI controllers to default values
3. Turn the Value knob to set ResetControlRecv to Off if you want to protect changes you've made to Part parameters, or to On if you prefer Reset All Controllers messages to reset the Part parameters described above.

# Muting and Soloing Parts




The Mute button serves three functions:

- It can ***mute*** a Part.
- It can ***solo*** a single Part.
- It can ***group solo*** multiple Parts.

### About the Mute LED

The Mute LED informs you of the mute/solo status of any Part you select:

- The Mute LED turns off if the selected Part is not muted.
- The Mute LED lights solidly if the selected Part is muted.
- The Mute LED flashes if the selected Part is soloed (single or group solo).

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

# Mute

The mute function can be used to silence individual Parts. This can be handy as a temporary measure when you're refining your set-up. In addition, Performances remember which Parts are muted—when you save a Performance, the mute status of each Part is saved as well—so you can also make your mutes a permanent feature of any given Performance.

It's worth noting that, even though muting turns off a Part's Sound, MIDI controllers are still received by the Part. This allows the silenced Part to continue to control the Insert Effect if it's designated as a Performance's Insert Control Part (see ***Chapter 5*** for more information on Insert Effects).

The setting of the Part Param Reset System parameter (see "Protecting Your Part Edits" above) will determine whether or not the Part will automatically un-mute when you select a new Sound for it. If Part Param Reset=On, the Part will be un-muted when you pick a new Sound; if it's set to Off, the Part will remain muted until you un-mute it with the Mute button.

### To Mute a Part

1. Make sure the Part you want to mute is selected. If it's not, use the Select Part buttons to select it.
2. Press the Mute button once—its LED will light.

This parameter also responds to an NRPN LSB value of 36. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

### To Un-Mute a Part

1. Make sure the Part you want to un-mute is selected. If it's not, use the Select Part buttons to select it.
2. Press the Mute button once—its LED will turn off.

This parameter also responds to an NRPN LSB value of 36. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

# Solo

The Mute button can also be used for soloing Parts. When a Part is soloed, all the other Parts in a Performance are silenced. Soloing allows you to isolate an individual Part when a number of them are currently responding to incoming MIDI. If more than one Part is responding to the same MIDI channel—as when you're using a Stak—soloing lets you listen to a single Part all by itself. If you're using a sequencer, soloing provides a way to quickly turn off all of the Parts so that you can listen to one Part alone.

The MR-Rack's solo feature is exceptionally smart—when you solo a Part, the MR-Rack remembers the mute/solo status of all the other Parts in the Performance. When you un-solo the soloed Part, all the other Parts will be conveniently returned to their prior state.

Parts can be soloed temporarily as you refine your set-up. In addition, Performances remember which Parts are soloed—when you save a Performance, the solo status of each Part is saved as well—so you can also make a soloed Part a permanent feature of any given Performance.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

### To Solo a Part

1. Make sure the Part you want to solo is selected. If it’s not, use the Select Part buttons to select it.
2. Double-click the Mute button—its LED will start to blink on and off.

This parameter also responds to an NRPN LSB value of 36. See “Using RPNs and NRPNs to Edit Part Parameters” at the end of this chapter.

### To Un-Solo a Part

1. Make sure the Part you want to un-solo is selected. If it’s not, use the Select Part buttons to select it.
2. Press the Mute button once—its LED will turn off.

This parameter also responds to an NRPN LSB value of 36. See “Using RPNs and NRPNs to Edit Part Parameters” at the end of this chapter.

### To Learn Whether Other Parts Were Already Muted

While you’ve got a Part soloed, you can tell whether or not the currently muted Parts had already been muted.

1. Select the Part whose prior status interests you, using the Select Part buttons.

   On the top line of the display, next to the number of the Part you selected, the word “mute” will appear.

m

pt02mute ROM004:000
AC-PIANO: Piano

   (The rest of the display will vary depending on what you were doing before you soloed your Part.)

   - If the “mute” is solidly lit, this Part was not muted before you soloed your Part.
   - If “mute” is flashing, this Part was muted before you soloed your other Part.

## Group Solo

The Mute button can be used to solo multiple Parts, which is referred to as a ***group solo***. When the group of Parts is soloed, all the other Parts in a Performance are silenced. Soloing groups of Parts allows you to isolate them when other Parts responding to MIDI are making them hard to hear. Group soloing would allow you to listen only to particular components in a Stak, or selected elements of a Performance when using an external sequencer.

The MR-Rack’s solo feature is exceptionally smart—when you solo Parts, the MR-Rack remembers the mute/solo status of all the other Parts in the Performance. When you un-solo the soloed Parts, all the other Parts will be conveniently returned to their prior state.

Parts can be group soloed temporarily as you refine your set-up. In addition, Performances remember which Parts are soloed—when you save a Performance, the solo status of each Part is saved as well—so you can also make a group of soloed Parts a permanent feature of any given Performance.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

### To Group-Solo Parts

1. Make sure the first Part you want to solo is selected. If it's not, use the Select Part buttons to select it.
2. Double-click the Mute button—its LED will start to blink on and off.
3. Repeat these two steps for all of the Parts you want to solo.

This parameter also responds to an NRPN LSB value of 36. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

### To Un-Solo a Part from a Group Solo

1. Make sure the Part you want to un-solo is selected. If it's not, use the Select Part buttons to select it.
2. Quickly double-click the Mute button—the Part's LED stops blinking, indicating that the Part is now muted along with the other un-soloed Parts.

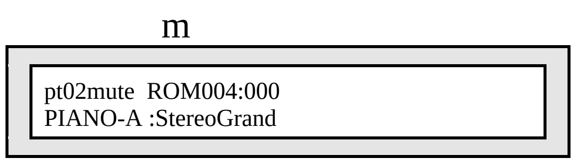
This parameter also responds to an NRPN LSB value of 36. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

### To Learn Whether Other Parts Were Already Muted

While you've got multiple Parts soloed, you can tell whether or not the currently muted Parts had already been muted.

1. Select the Part whose prior status interests you, using the Select Part buttons.

   On the top line of the display, next to the number of the Part you selected, the word "mute" will appear.




(The rest of the display will vary depending on what you were doing before you soloed any Parts.)

- If the "mute" is solidly lit, this Part was not muted before you soloed any Parts.
- If "mute" is flashing, this Part was muted before you soloed any Parts.

## Setting a Part's MIDI Channel

Each Part can be set to any of the standard 16 MIDI channels, or to a special channel called the ***Stak channel***.

### To Set a Part's MIDI Channel

1. Use the Select Part buttons to select the Part whose MIDI channel you'd like to set.
2. Press the Params button.
3. Move the Parameter knob all the way counterclockwise. The display will show "Part MIDI Chan=."

   You can set any Part to any of the 16 MIDI channels, or to Stak.
4. Use the Value knob to select the Part MIDI Channel.

   When edited, all currently sounding voices on the selected Part will be muted.

The display will reflect the changes you make.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

The current Part’s MIDI channel

```
Pt01§01 Harpsichord
Part MIDI Chan=   01
```

**Tip:** When a standard Sound (not a Drum Kit) is assigned to a Part, repeatedly pressing the Params button will toggle between this parameter and the FX Bus parameter. If the Part uses a Drum Kit, pressing the Params button will toggle between the Part MIDI Channel parameter and the DrumKey FX Bus parameter.

# Using Staks

The MR-Rack offers a powerful new device for layering Sounds or creating splits—it’s called a ***Stak***—and there’s one available in each Performance.

Multi-timbral MIDI modules have traditionally offered the possibility of creating layers and splits by assigning multiple Sounds to the same MIDI channel. (In the case of splits, the Sounds are mapped to respond to different pitch ranges.) Creating layers and splits in this manner can be awkward, however, since any program changes on the common MIDI channel will undo your carefully-designed Sound combinations, forcing all of the Sounds to the same program. In addition, if you decide to change the MIDI channel you want to use for the layer or split, you have to individually reset the MIDI channel of each Sound involved. While you’re free to use the traditional method with the MR-Rack, Staks offer a more elegant approach.

In the MR-Rack, you can create layers and splits by assigning Parts—and their Sounds—to the Stak MIDI channel. This accomplishes four things:

- All of the Parts—and their Sounds—will respond to the same MIDI channel.
- By changing a single System parameter you can set the entire group of Parts to respond to the MIDI channel of your choice.
- You can protect your Sound combinations from unintentional alteration.
- You can still customize each Part independently without affecting the other Parts in the Stak.

## To Create a Stak

1. Press the System button and turn the Parameter knob until the following display appears:

```
System parameters:
Stak MIDI Channel=01
```

This number may be different on your display

2. Turn the Value knob to select the MIDI channel you want to use to control the Stak.
3. Press the Params button.
4. Press the up or down Select Part buttons until the number of the first Part you want to

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

use in your Stak is displayed in the upper-left-hand corner of the display.

5. Turn the Parameters knob until the bottom line of the display shows “Part MIDI Channel.”

Your top line may look a bit different

```
pt01 §01 Harpsichord
Part MIDI Chan=   01
```

This number may be different on your display

6. Turn the Value knob until Part MIDI Channel=Stak.

   Note that the Part’s MIDI channel on the top line of the display has changed to “stak.” When you’re selecting Sounds for a Part, or editing Part parameters, you can look to this area to quickly ascertain if the selected Part is assigned to a Stak.

```
pt01stak Harpsichord
Part MIDI Chan= Stak
```

   The Part you’re working with will now respond to MIDI on the Stak MIDI channel you chose in Step 2.

7. Press the Sounds button.
8. Use the Sound Type knob and the Sound Name knob to select a Sound for the first Part in your Stak.
9. Repeat Steps 3 through 8 to add other Parts—and Sounds—to the Stak.

Each Part in the Stak can be edited, using the Part parameters described in this chapter, without affecting the other Parts in the Stak. You create splits by setting Parts in a Stak to different key ranges with the Key Range Lo and Hi parameters, described later in this chapter.

The System parameter Stak Coherence allows you to perfectly synchronize the beginning of any notes played in a Stak. Details on this parameter can be found in ***Chapter 3*** .

---

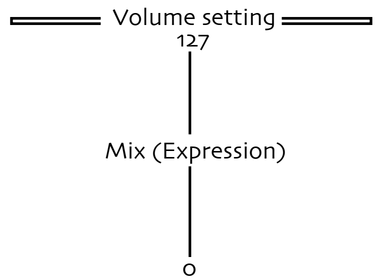
**Tip:** If you’d like to enjoy the layers or splits in any of the MR-Rack’s ROM Performances, Steps 1 and 2 above will allow you to access them on any MIDI channel that’s convenient for you.

---

To access the Parameters described on this page (unless otherwise n
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

# Controlling a Part's Loudness

The loudness for each Part can be set manually from the MR-Rack's front panel or via MIDI Volume or Expression control messages. The Volume amount determines the maximum loudness of a Part's Sound. Expression can raise or lower the Part's level, but only up to the maximum set by Volume.




This allows you to set an acceptable loudness ceiling for a Part, and to adjust its level without worrying that it will ever become too loud. It's also possible to invert the Part's response to Volume and Expression messages, so that greater values lower the Part's volume, and vice versa. This can be useful, for instance, when you'd like a Part to fade in as a result of MIDI Volume or Expression messages, while another Part fades out from the very same messages.

### To Set a Part's Maximum Volume

The Part Volume parameter allows you to override the loudness level programmed into the Sound currently installed on the Part you're editing. A Volume setting of 100 will leave the Sound's level set as programmed. Lower values will reduce the Sound's loudness—down by 96dB at a value of 0—and values above 100 will make it louder than programmed.

1. Use the Select Part buttons to choose the Part whose volume ceiling you'd like to set.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Part Volume=."
4. Turn the Value knob from 0 to 127 to adjust the part's Volume, or transmit MIDI Controller #7 values to the MR-Rack. See "To Enable or Disable a Part's Reception of Pitch Bend Messages" later in this chapter.

   The MR-Rack's display will reflect Volume changes made via MIDI just as if you'd made them from the front panel.

> When this parameter is edited on a Part that uses a Drum Kit, all of the Sounds in the Drum Kit are affected simultaneously by the changes you make.

### To Adjust the Relative Loudness of a Part

1. Use the Select Part buttons to choose the Part whose relative loudness you'd like to adjust.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Expression (Mix)=."

   The Part Expression parameter allows you to mix the level of the Sound currently installed on the Part you're editing, up to the maximum set by the Part Volume parameter above. A setting of 000 will reduce the Part's loudness -96dB below the level set with the Part Volume parameter.

> To access the Parameters described on this page (unless otherwise no
> press the Params button, turn the Parameter knob to locate the paramet
> and then turn the Value knob to change the parameter's setting.

4. Turn the Value knob from 000 to 127 to adjust the part's Expression, or transmit MIDI Controller #11 values to the MR-Rack. See "To Enable or Disable a Part's Reception of Pitch Bend Messages" later in this chapter.

   This parameter also responds to an NRPN LSB value of 034. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

   The MR-Rack's display will reflect Expression changes made via MIDI just as if you'd made them from the front panel.

> When this parameter is edited on a Part that uses a Drum Kit, all of the Sounds in the Drum Kit are affected simultaneously by the changes you make.

### To Invert a Part's Response to Volume and Expression Values

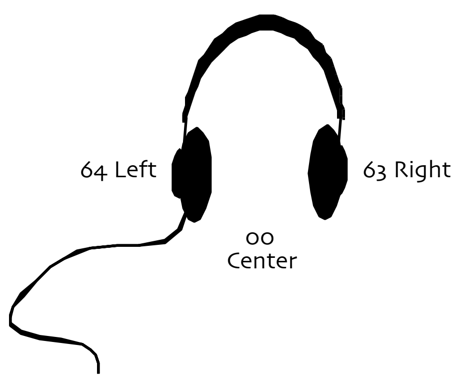
The Vol/MixPolarity parameter reverses the manner in which a Part will respond to Volume and Expression settings. When set to +Pos, the Part will respond normally: higher Volume and Expression values will result in greater loudness. When it's set to -Neg, higher Volume and Expression values will lower the level of the Part's Sound.

1. Use the Select Part buttons to choose the Part whose relative loudness you'd like to adjust.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Vol/MixPolarity=."
4. Turn the Value knob to set the Part's Volume/Mix polarity as you prefer.

> When this parameter is edited on a Part that uses a Drum Kit, all of the Sounds in the Drum Kit are affected simultaneously by the changes you make.

## Adjusting a Part's Stereo Positioning

MR-Rack Sounds are programmed to appear in specific places in the left/right stereo field. By adjusting a Part's pan setting, you can offset the stereo placement of any Sound it uses. A value of Center 00 will leave the Sound panned as it was programmed. Lower values will shift it to the left, and higher values will move it to the right. A Part Pan value of Left -64 shifts a Sound hard left, while +63 shifts it hard right.




If components within the Sound are panned differently, their relative positions will be maintained as the Part Pan value shifts the Sound in either direction.

### To Set a Part's Panning

1. Use the Select Part buttons to choose the Part whose stereo panning you'd like to adjust.

> To access the Parameters described on this page (unless otherwise n
> press the Params button, turn the Parameter knob to locate the paramet
> and then turn the Value knob to change the parameter's setting.

2. Press the Params button.
3. Turn the Parameter knob until the display shows “Pan=.”

   The Pan Part parameter can be set from -64 (hard left) to +63 (hard right).
4. Turn the Value knob to select a location within the stereo field for the part, or transmit MIDI Controller #10 values to the MR-Rack.

   The MR-Rack’s display will reflect Part Pan changes made via MIDI just as if you’d made them from the front panel.

> When this parameter is edited on a Part that uses a Drum Kit, all of the Sounds in the Drum Kit are affected simultaneously by the changes you make.

# Adding Effects to Part Sounds

Every MR-Rack Performance contains three Effects:

- a stereo Insert Effect
- a stereo Global Chorus
- a stereo Global Reverb

You’ll find a detailed description of the MR-Rack Effects in ***Chapter 5***.

Parts may be routed to any of these Effects, or left dry. To send a Part’s Sound to an Effect, the Part must be assigned to an Effect bus. There are six possible busses, named for the Effect they access. You can select:

- Insert—to send a Part to the Performance’s Insert Effect.
- Chorus—to send a Part through the Global Chorus.
- LightReverb—to add a minimal amount of Global Reverb to a Part’s Sound.
- MediumReverb—to add a greater amount of Global Reverb to a Part’s Sound.
- WetReverb—to add a large amount of Global Reverb to a Part’s Sound.
- Dry—for Parts that you don’t want to send through any of the Effects.

---

**Tip:** When a standard Sound (not a Drum Kit) is assigned to a Part, repeatedly pressing the Params button will toggle between this parameter and the Part MIDI Channel parameter.

---

> The following parameter is not present when the Part being edited uses a Drum Kit.

### To Route a Part to an Effect

1. Use the Select Part buttons to choose the Part you’d like to route to an Effect.
2. Press the Params button.
3. Turn the Parameter knob until the display shows “FX Bus=.”
4. Use the Value knob to select Insert, Chorus, LightReverb, MediumReverb, WetReverb, or Dry.

## Routing a Non-Insert Control Part to an FX Bus via MIDI

Part that are not designated as the Insert Control Part can be assigned to the Chorus bus, one of the Reverb busses or the Dry bus via MIDI. If such a Part receives MIDI controller 93 with a value of 1 or higher, it will be assigned to the Chorus FX bus. If the Part receives MIDI controller 93 with a zero value, it will be assigned to one of the Reverb busses or the Dry bus, according to the following scheme:

- If the Part receives a Controller 91 value of 0, it will be assigned to the Dry bus.

> To access the Parameters described on this page (unless otherwise nc
> press the Params button, turn the Parameter knob to locate the paramet
> and then turn the Value knob to change the parameter's setting.

- If the Part receives a Controller 91 value of 1-40, it will be assigned to the LightReverb bus.
- If the Part receives a Controller 91 value of 41-80, it will be assigned to the MediumReverb bus.
- If the Part receives a Controller 91 value of 81-127, it will be assigned to the WetReverb bus.

**Tip:** See "Using the Insert Control Part to Pick Insert Effects Via MIDI" in Chapter 5 to learn how to select Insert Effects via MIDI.

# Controlling a Part's Pitch Bend Response

A Pitch-Bend Wheel is a spring-loaded wheel typically located to the far left of a MIDI keyboard. It's most commonly used to bend the pitch of notes up or down by pushing the wheel forward (up) or pulling it back (down). Some manufacturers employ a left/right scheme.

The MR-Rack offers two parameters—Pitch Bend Up and Pitch Bend Down—that allow you to separately set how you want each Part to respond to MIDI Pitch Bend messages received from a Pitch Bend Wheel pushed in either direction.

These parameters will have no effect if the Pitch Bend Recv parameter is set to Off. See "To Enable or Disable a Part's Reception of Pitch Bend Messages" later in this chapter.

The following parameter is not present when the Part being edited uses a Drum Kit.

## To Set the Part's Response To a Pitch Bend Wheel Pushed Forward

1. Use the Select Part buttons to choose the Part whose Pitch Bend you'd like to customize.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Pitch Bend Up=."

   Pitch Bend Up can be set to:
   - 1-12dn or 1-12up—to lower or raise the pitch of the Part's Sound by 1 to 12 equal-temper semitones when a Pitch Bend Wheel is pushed all the way forward
   - Prog—to respond to upward Pitch Bend movements according to the value programmed into the Sound
   - Sys—to use the global System Pitch Bend Up value (see ***Chapter 3*** for details)
   - Off—to ignore MIDI messages received from a Pitch Bend Wheel pushed forward
4. Turn the Value knob to select the Pitch Bend Up value you prefer.

This parameter also responds to an RPN LSB value of 000 and an NRPN LSB value of 022. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

The following parameter is not present when the Part being edited uses a Drum Kit.

## To Set the Part's Response To a Pitch Bend Wheel Pulled Back

1. Use the Select Part buttons to choose the Part whose Pitch Bend you'd like to customize.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Pitch Bend Down=."

   Pitch Bend Down can be set to:

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

- 1-12dn or 1-12up—to lower or raise the pitch of the Part's Sound by 1 to 12 equal-temper semitones when a Pitch Bend Wheel is pulled all the way back
- Prog—to respond to downward Pitch Bend movements according to the value programmed into the Sound
- Sys—to use the global System Pitch Bend Down value (see ***Chapter 3*** for details)
- Off—to ignore MIDI messages received from a Pitch Bend Wheel pulled back

4. Turn the Value knob to select the Pitch Bend Down value you prefer.

This parameter also responds to an RPN LSB value of 000 and an NRPN LSB value of 023. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

**Note:** When you select a new Sound for the Part, Pitch Bend Up and Pitch Bend Down will be reset to Prog if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

# Retuning a Part

On a global level, the MR-Rack's overall tuning can be adjusted with the System Fine Tuning parameter (see ***Chapter 3*** for details). This parameter retunes all the Parts in the MR-Rack simultaneously. You can also re-tune individual Parts with the Part Octave Shift, Semitone Shift and Fine Tuning parameters.

The following parameter is not present when the Part being edited uses a Drum Kit.

## To Re-Tune a Part by Octaves

1. Use the Select Part buttons to choose the Part whose octave tuning you'd like to alter.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Octave Shift=."
4. Use the Value knob to retune the Part's Sound in octave steps, if desired.

   A setting of 0oct will result in the Part using the octave tuning value programmed into any Sound it uses. You can shift the Part up or down by a maximum of four equal-temper octaves.

This parameter also responds to an NRPN LSB value of 011. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

The following parameter is not present when the Part being edited uses a Drum Kit.

## To Re-Tune a Part by Semitones

1. Use the Select Part buttons to choose the Part whose coarse—or semitone—tuning you'd like to alter.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Semitone Shift=."
4. Use the Value knob to set the semitone tuning for the part.

   A setting of 0st will result in the Part using the semitone tuning value programmed into any Sound it uses. You can shift the Part upward by a maximum of 63 keyboard equal-temper semitones or downward by a maximum of 64.

This parameter also responds to an RPN LSB value of 002. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

To access the Parameters described on this page (unless otherwise n
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

The following parameter is not present when the Part being edited uses a Drum Kit.

### To Fine-Tune a Part

1. Use the Select Part buttons to choose the Part whose fine-tuning you'd like to alter.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Fine Tuning=."
4. Use the Value knob to adjust the fine tuning for the Part.
   A setting of 0cents will result in the Part using the fine-tuning value programmed into any Sound it uses. You can lower or raise the Part's fine tuning by -50 to +49 cents. 100 cents equals one semitone.

This parameter also responds to an RPN LSB value of 001. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

---

**Note:** When you select a new Sound for the Part, all of the Part tuning values will be reset to obey the tuning values programmed into the new Sound if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

---

# Using Special Pitch Tables

The MR-Rack provides a number of special pitch tables, as well as a custom pitch table which you can design on your computer with the proper software and transmit via MIDI over to the MR-Rack. "About RAM Pitch Tables" in ***Chapter 9*** provides detailed information on creating your own pitch tables, and ***Chapter 3*** contains more information on setting the MR-Rack's system, or global, pitch table. Any Part can be assigned to use one of these special tuning tables.

The following parameter is not present when the Part being edited uses a Drum Kit.

### To Assign a Part to a Special Pitch Table

1. Use the Select Part buttons to choose the Part whose pitch table you'd like to set.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "PitchTbl=."
   PitchTbl can be set to:
   - Prog—to use the PitchTbl value programmed into the Sound
   - Sys—to use the global System PitchTbl (see ***Chapter 3*** for details)
   - One of the special pitch tables built in to the MR-Rack's memory

   ***Chapter 9*** provides a list of the MR-Rack pitch tables.
4. Turn the Value knob to select the PitchTbl value you prefer.

---

**Note:** When you select a new Sound for the Part, PitchTbl will be reset to Prog if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

---

This parameter also responds to an NRPN LSB value of 021. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

# Determining Whether a Part's Sound Will Glide

It can be desirable for the notes in a Sound to glide from one to the next as you play them.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

By setting the Part Glide Mode parameter to On, the Sound the Part is using will be endowed with this gliding capability. Some of the MR-Rack's Sounds are already programmed with components that glide between notes—if you'd like, you can disable the glide built into such a Sound by setting its Part's Glide Mode parameter to Off. If you'd like the Sound to operate as programmed, you can choose the Prog value for the parameter.

The following parameter is not present when the Part being edited uses a Drum Kit.

### To Enable a Part's Glide Mode From the MR-Rack's Front Panel

1. Use the Select Part buttons to choose the Part whose glide mode you'd like to enable.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Glide Mode=."
   You can set the Part Glide Mode to:
   - Prog—to use the glide characteristics of the Sound used by the Part
   - Off—to disable the glide characteristics of the Sound used by the Part
   - On—to enable the Part's Sound to glide from note to note
4. Turn the Value knob to set the parameter to On.

**Note:** When you select a new Sound for the Part, Glide Mode will be reset to Prog if you've changed it by using the MR-Rack's front-panel controls, and if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

The following parameter is not present when the Part being edited uses a Drum Kit.

### To Disable a Part's Glide Mode  From the MR-Rack's Front Panel

1. Use the Select Part buttons to choose the Part whose Glide mode you'd like to disable.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Glide Mode=."
   You can set the Part Glide Mode to:
   - Prog—to use the glide characteristics of the Sound used by the Part
   - Off—to disable the glide characteristics of the Sound used by the Part
   - On—to enable the Part's Sound to glide from note to note
4. Turn the Value knob to set the parameter to Off.

**Note:** When you select a new Sound for the Part, Glide Mode will be reset to Prog if you've changed it by using the MR-Rack's front-panel controls, and if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

The MR-Rack also supports the use of MIDI controller 65 as a switch for turning a Part's glide—or ***portamento***—on and off (with no Prog option). Some MIDI control devices allow you to accomplish this with a foot switch. Since the MR-Rack's Glide Mode parameter has three options—Prog, On and Off—and MIDI controller 65 supports only two settings (a simple On and Off switch), Glide Mode in the MR-Rack is a bit more complex than other Part parameters. The two-way MIDI controller 65 is supported behind the scenes, while the three-way MR-Rack control is accessible through the Glide Mode parameter and display. The two methods for turning Glide Mode on and off overlap in function, and therefore, a particular methodology is required when using controller 65 to switch glide on and off.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

The following parameter is not present when the Part being edited uses a Drum Kit.

### To Enable or Disable a Part's Glide Mode via MIDI

1. Use the Select Part buttons to choose the Part whose Glide mode you'd like to enable or disable.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Glide Mode=."
4. Using the Value knob, set Glide Mode to Off.

   If either the hidden two-way controller 65 switch or the visible three-way parameter are set to On, Glide Mode will remain On. By setting the visible three-way parameter to Off, you allow the Part to respond to MIDI controller 65 without any unintended interference from the visible parameter.
5. Send a MIDI controller 65 value of 64 or higher to turn Glide Mode on.

   At this point, Glide Mode will be enabled, even though the display remains unchanged (it still shows "Off").
6. To turn Glide Mode off, send a MIDI controller 65 value of 63 or lower.

   If you've enabled glide via MIDI, the MR-Rack's Value knob will have no effect on the Glide Mode setting until the two-way controller 65 switch has been set to Off via MIDI, following the same logic discussed above in Step 4—neither switch can be on if you'd like to turn Glide Mode off, or to Prog.

   This parameter also responds to an NRPN LSB value of 031. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

**Note:** When you select a new Sound for the Part, Glide Mode will be reset to Prog if neither the visible three-way parameter or hidden two-way switch are set to On, and if the System Part Param Reset parameter is also set to On (see ***Chapter 3*** for details).

## Setting a Part's Glide Time

When a Sound in the MR-Rack is set to glide—as a result of its original programming or the Part Glide Mode parameter—you can adjust the speed at which its notes will glide from one to the next. This is accomplished by adjusting the Glide Time of the Part that uses the Sound. A Glide Time of 0 means that the Sound will glide at its programmed speed. If the Sound is gliding only as a result of the Part Glide Mode parameter, it probably has no glide time programmed into it at all, and therefore won't glide with a Glide Time setting of 0. Higher Glide Time values speed up the Sound's glide; lower values slow it down. The maximum Glide Time setting is +63, the minimum is -64.

To access the Parameters described on this page (unless otherwise n
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

The following parameter is not present when the Part being edited uses a Drum Kit.

### To Set a Part’s Glide Time

1. Use the Select Part buttons to choose the Part whose Glide Time you’d like to adjust.
2. Press the Params button.
3. Turn the Parameter knob until the display shows “Glide Time=.”
4. Turn the Value knob to adjust the Part’s Glide Time.

This parameter also responds to MIDI controller 5 or an NRPN LSB value of 032. See “Using RPNs and NRPNs to Edit Part Parameters” at the end of this chapter.

**Note:** When you select a new Sound for the Part, Glide Time will be reset to 0 if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

# Delaying Part Sounds

You can use the Part Delay Offset parameter to increase the amount of time it will take for a Part’s Sound to be heard after it receives a MIDI Note On message. If a Sound has a delay time already programmed into it, the Part Delay Offset can be used to lengthen that delay by up to 2500 milliseconds (ms). If a Sound has no programmed delay time, the Delay Offset parameter can delay it up to 2500ms. If the Part Delay Offset is set to 0ms, no delay time will be added to the Sound the Part uses.

The following parameter is not present when the Part being edited uses a Drum Kit.

### To Set a Part’s Delay Time

1. Use the Select Part buttons to choose the Part whose Sound you’d like to delay.
2. Press the Params button.
3. Turn the Parameter knob until the display shows “Delay Offset=.”
4. Turn the Value knob to select the Delay Offset value you prefer.

This parameter also responds to an NRPN LSB value of 024. See “Using RPNs and NRPNs to Edit Part Parameters” at the end of this chapter.

**Note:** When you select a new Sound for the Part, the Delay Offset will be reset to 0ms if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

# Customizing Part LFOs

LFOs—Low Frequency Oscillators—and noise generators are two important programming devices used in the creation of MR-Rack Sounds. They’re both rhythm-oriented sound modulators. Some of the LFOs and noise generators in MR-Rack Sounds are programmed to be synchronized (or “sync’d”) to the MR-Rack’s internal clock (see ***Chapter 3*** for more information on using the system clock). By setting the SyncLFO&Noise Part parameter to Normal, you can convert a Sound’s sync’d LFOs and Noise to the normal, unsynchronized variety. You can also use this parameter to alter the relationship of a Sound’s sync’d LFOs and Noise to the system clock by setting them to a division of the tempo produced by the system clock, from 1/1 to 1/32, including triplets.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

You can adjust a Part Sound's normal LFO rates with the Normal LFO Rate parameter, and the depth and delay time for all of its LFOs with the LFO Depth and LFO Delay Time Part parameters.

The following parameter is not present when the Part being edited uses a Drum Kit.

### To Convert Sync'd LFOs and Noise to Normal LFOs and Noise

1. Use the Select Part buttons to choose the Part whose System-sync'd LFOs and Noise you'd like to convert.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "SyncLFO&Noise=."

   The SyncLFO&Noise parameter can be set to:
   - Prog—to leave the sync'd LFOs and Noise as they're programmed into the Part's Sound.
   - Normal—to convert the sync'd LFOs and Noise to unsync'd LFOs and Noise.
   - 1/1 to 1/32T—to set the rhythmic relationship of the sync'd LFOs and Noise to the system clock's tempo—a "T" following a number signifies a triplet value.
4. Turn the Value knob to set the SyncLFO&Noise parameter to Normal.

This parameter also responds to an NRPN LSB value of 25. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

---

**Note:** When you select a new Sound for the Part, SyncLFO&Noise will be reset to Prog if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

---

The following parameter is not present when the Part being edited uses a Drum Kit.

### To Set the Relationship of Sync'd LFOs and Noise to the System Clock

1. Use the Select Part buttons to choose the Part whose Sound contains the System-sync'd LFOs and Noise you'd like to re-time.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "SyncLFO&Noise=."

   The SyncLFO&Noise parameter can be set to:
   - Prog—to leave the sync'd LFOs and Noise as they're programmed into the Part's Sound.
   - Normal—to convert the sync'd LFOs and Noise to unsync'd LFOs and Noise.
   - 1/1 to 1/32T—to set the rhythmic relationship of the sync'd LFOs and Noise to the system clock's tempo—a "T" following a number signifies a triplet value.
4. Turn the Value knob to set the SyncLFO&Noise parameter to the desired fractional value to the system clock.

This parameter also responds to an NRPN LSB value of 25. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

---

**Note:** When you select a new Sound for the Part, SyncLFO&Noise will be reset to Prog if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

---

The following parameter is not present when the Part being edited uses a Drum Kit.

### To Change a Part Sound's Normal (Unsynchronized) LFO Rates

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

1. Use the Select Part buttons to choose the Part whose Sound contains the Normal LFOs you'd like to re-time.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Normal LFO Rates=."

   The Normal LFO Rates parameter can be set anywhere from -64 to +63 to subtract from or add to the Part Sound's programmed LFO rates. A value of 0 will leave the Part Sound's normal LFOs at their programmed rate.
4. Turn the Value knob to set the Normal LFO Rates parameter to the desired rate offset.

This parameter also responds to MIDI controller 75 or an NRPN LSB value of 008. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

> The following parameter is not present when the Part being edited uses a Drum Kit.

### To Set a Part Sound's LFO Depth

1. Use the Select Part buttons to choose the Part containing the LFOs whose depth you'd like to adjust.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "LFO Depth=."

   The LFO Depth parameter can be set to -64 to +63 to subtract from or add to the Part Sound's programmed LFO depth. A value of 0 will leave the Part Sound's LFOs at their programmed depth.
4. Turn the Value knob to set the LFO Depth parameter to the desired depth offset.

This parameter also responds to an NRPN LSB value of 009. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

**Note:** When you select a new Sound for the Part, LFO Depth will be reset to 0 if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

> The following parameter is not present when the Part being edited uses a Drum Kit.

### To Set a Part's LFO Delay

1. Use the Select Part buttons to choose the Part containing the LFOs whose delay time you'd like to adjust.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "LFO Delay Time=."
4. Turn the Value knob to set the Delay Time offset to the desired amount.

   The LFO Delay parameter can be set to -64 to +63 to subtract from or add to the Part Sound's programmed LFO delay time. A value of 0 will leave the Part Sound's LFOs at their programmed delay setting.

This parameter also responds to an NRPN LSB value of 010. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

**Note:** When you select a new Sound for the Part, LFO Delay will be reset to 0 if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

## Controlling the Shape of Part Sounds

Most of the Sounds in the MR-Rack use envelopes to shape the volume and frequency

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

content of their components. The MR-Rack provides a number of Part parameters that allow you to adjust these envelopes to suit your needs. These parameters subtract from or add to the programmed values of the envelopes programmed into a Part's Sound. This preserves the relationship between all the various envelopes that may exist in a Sound while still giving you a great degree of control over the Sound's volume and timbral contours. The Part parameters which refer to volume, or amplitude, shaping are Amp Env Attack, Amp Env Decay, and Amp Env Release. The parameters which affect the filtering of the Sound's frequency content are Filter Cutoff—which allows you to adjust its filter cutoff settings—Filt Env Attack, Filt Env Decay, and Filt Env Release. Many envelopes in the MR-Rack's Sounds respond to MIDI Velocity. The Amp&Filt Env Vel Part parameter allows you to subtract from or add to the velocity sensitivity programmed into the amplitude and filter envelopes of a Part's Sound.

| The following parameter is not present when the Part being edited uses a Drum Kit. |
|---|

### To Adjust the Attack Time of Notes in a Part

1. Use the Select Part buttons to choose the Part containing the Sound whose amplitude attack time you'd like to adjust.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Amp Env Attack=."

   The Amp Env Attack parameter can be set anywhere from -64 to +63 to subtract from or add to the Part Sound's programmed attack times. A value of 0 will leave the Part Sound's various attack times at their programmed settings.
4. Turn the Value knob to set the Amp Env Attack offset to the desired amount.

This parameter also responds to MIDI controller 73 or an NRPN LSB value of 014. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

---

**Note:** When you select a new Sound for the Part, Amp Env Attack will be reset to 0 if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

---

| The following parameter is not present when the Part being edited uses a Drum Kit. |
|---|

### To Adjust the Decay of Notes in a Part

1. Use the Select Part buttons to choose the Part containing the Sound whose amplitude decay time you'd like to adjust.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Amp Env Decay=."

   The Amp Env Decay parameter can be set anywhere from -64 to +63 to subtract from or add to the Part Sound's programmed decay times. A value of 0 will leave the Part Sound's various decay times at their programmed settings.
4. Turn the Value knob to set the Amp Env Decay offset to the desired amount.

This parameter also responds to MIDI controller 76 or an NRPN LSB value of 015. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

To access the Parameters described on this page (unless otherwise n
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

**Note:** When you select a new Sound for the Part, Amp Env Decay will be reset to 0 if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

The following parameter is not present when the Part being edited uses a Drum Kit.

## To Adjust the Release of Notes in a Part

1. Use the Select Part buttons to choose the Part containing the Sound whose amplitude release time you'd like to adjust.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Amp Env Release=."

   The Amp Env Release parameter can be set anywhere from -64 to +63 to subtract from or add to the Part Sound's programmed release times. A value of 0 will leave the Part Sound's various release times at their programmed settings.
4. Turn the Value knob to set the Amp Env Release offset to the desired amount.

This parameter also responds to MIDI controller 72 or an NRPN LSB value of 016. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

**Note:** When you select a new Sound for the Part, Amp Env Release will be reset to 0 if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

The following parameter is not present when the Part being edited uses a Drum Kit.

## To Adjust the Filter Cutoff of a Part

1. Use the Select Part buttons to choose the Part containing the Sound whose filter cutoff you'd like to adjust.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Filter Cutoff=."

   The Filter Cutoff parameter can be set anywhere from -64 to +63 to subtract from or add to the Part Sound's programmed filter cutoff settings. A value of 0 will leave the Part Sound's various filter cutoffs at their programmed settings.
4. Turn the Value knob to set the Filter Cutoff offset to the desired amount.

This parameter also responds to MIDI controller 74 or an NRPN LSB value of 012. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

**Note:** When you select a new Sound for the Part, Filter Cutoff will be reset to 0 if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

The following parameter is not present when the Part being edited uses a Drum Kit.

## To Adjust the Filter Attack of a Part

1. Use the Select Part buttons to choose the Part containing the Sound whose filter attack time you'd like to adjust.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Filt Env Attack=."

   The Filt Env Attack parameter can be set anywhere from -64 to +63 to subtract from or add to the Part Sound's programmed filter attack times. A value of 0 will leave the Part Sound's various filter attack times at their programmed settings.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

4. Turn the Value knob to set the Filt Env Attack offset to the desired amount.

This parameter also responds to an NRPN LSB value of 017. See “Using RPNs and NRPNs to Edit Part Parameters” at the end of this chapter.

---

**Note:** When you select a new Sound for the Part, Filt Env Attack will be reset to 0 if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

---

The following parameter is not present when the Part being edited uses a Drum Kit.

## To Adjust the Filter Decay of a Part

1. Use the Select Part buttons to choose the Part containing the Sound whose filter decay time you’d like to adjust.
2. Press the Params button.
3. Turn the Parameter knob until the display shows “Filt Env Decay=.”

   The Filt Env Decay parameter can be set anywhere from -64 to +63 to subtract from or add to the Part Sound’s programmed filter decay times. A value of 0 will leave the Part Sound’s various filter decay times at their programmed settings.
4. Turn the Value knob to set the Filt Env Decay offset to the desired amount.

This parameter also responds to an NRPN LSB value of 018. See “Using RPNs and NRPNs to Edit Part Parameters” at the end of this chapter.

---

**Note:** When you select a new Sound for the Part, Filt Env Decay will be reset to 0 if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

---

The following parameter is not present when the Part being edited uses a Drum Kit.

## To Adjust the Filter Release of a Part

1. Use the Select Part buttons to choose the Part containing the Sound whose filter release time you’d like to adjust.
2. Press the Params button.
3. Turn the Parameter knob until the display shows “Filt Env Release=.”

   The Filt Env Release parameter can be set anywhere from -64 to +63 to subtract from or add to the Part Sound’s programmed filter release times. A value of 0 will leave the Part Sound’s various filter release times at their programmed settings.
4. Turn the Value knob to set the Filt Env Release offset to the desired amount.

This parameter also responds to an NRPN LSB value of 019. See “Using RPNs and NRPNs to Edit Part Parameters” at the end of this chapter.

---

**Note:** When you select a new Sound for the Part, Filt Env Release will be reset to 0 if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

---

To access the Parameters described on this page (unless otherwise n
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

The following parameter is not present when the Part being edited uses a Drum Kit.

### To Adjust Amp and Filter Envelopes' Velocity Sensitivity

1. Use the Select Part buttons to choose the Part containing the amplitude and filter envelopes whose velocity sensitivity you'd like to adjust.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Amp&Filt Env Vel=."

   The Amp&Filt Env Vel parameter can be set anywhere from -64 to +63 to subtract from or add to the Part Sound's amplitude and filter envelopes' velocity sensitivity. A value of 0 will leave the envelopes' sensitivity to MIDI velocity at their programmed settings.
4. Turn the Value knob to set the Amp&Filt Env Vel offset to the desired amount.

This parameter also responds to an NRPN LSB value of 020. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

---

**Note:** When you select a new Sound for the Part, Amp&Filt Env Vel will be reset to 0 if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

---

# Changing a Part's Key Range

Each Part in the MR-Rack can be set to respond to MIDI Note-Ons received from within a specified region of a MIDI keyboard controller. This allows the creation of splits and layers. You can split the entire 88-note keyboard range into as many as 16 different key zones by assigning up to 16 Parts to separate keyboard ranges (some MIDI keyboards have only 76 or 61 keys). In addition, you can set a Part's key range to overlap another's, producing "layered" ranges in which you would hear Sounds from more than one Part. A Part's key range is defined by setting its lowest note with the Key Range Lo Part parameter, and its highest with the Key Range Hi Part parameter.

---

**Note:** A Part's Key Range Lo value should not be set above its Key Range Hi setting, nor should its Key Range Hi value be set below its Key Range Lo setting.

---

### To Set a Part's Keyboard Range

1. Use the Select Part buttons to choose the Part whose keyboard range you'd like to set.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Key Range Lo=."

   The low end of a Part's key range can be any note you desire, from A0 to C8
4. Turn the Value knob to set the Key Range Lo to the desired note.

   Middle C is C4 (some MIDI controller manufacturers refer to Middle C as C3 check your controller's or sequencer's manual to see if that's the case).

   This parameter also responds to an NRPN LSB value of 026. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.
5. Turn the Parameter knob until the display shows "Key Range Hi=."

   The high end of a Part's key range can be any note you desire, from A0 to C8.
6. Turn the Value knob to set the Key Range Hi to the desired note.

   This parameter also responds to an NRPN LSB value of 027. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

   If you want to reset the range, simply reselect these parameters and repeat the process.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

When this parameter is edited on a Part that uses a Drum Kit, all of the Sounds in the Drum Kit are affected simultaneously by the changes you make.

## To Create a Keyboard Split

1. Press the System button.
2. Turn the Parameter knob until the display shows “Stak MIDI Channel.”
3. Set the Stak MIDI channel to the channel you’d like to use for your split.
4. Press the Sound button.
5. Use the Select Part buttons to choose the first Part you’d like to use in your split.
6. Using the Sound Type knob and the Sound Name knob, locate a Sound you’d like to use for your first split Part.
7. Press the Params button.
8. Turn the Parameter knob until the display shows “Part MIDI Chan.”
9. Set Part MIDI Chan to Stak.
10. Turn the Parameter knob until the display shows “Key Range Lo=.”

    The low end of a Part’s key range can be any note you desire, from A0 to C8.

    Middle C is C4 (some MIDI manufacturers refer to Middle C as C3 check your controller’s or sequencer’s manual to see if that’s the case).
11. Turn the Value knob to set the Key Range Lo to the desired note.

    This parameter also responds to an NRPN LSB value of 026. See “Using RPNs and NRPNs to Edit Part Parameters” at the end of this chapter.
12. Turn the Parameter knob until the display shows “Key Range Hi=.”

    The high end of a Part’s key range can be any note you desire, from A0 to C8.

**Note:** A Part’s Key Range Lo value cannot be set above its Key Range Hi setting, nor can its Key Range Hi value cannot be set below its Key Range Lo setting.

13. Turn the Value knob to set the Key Range Hi to the desired note.

    This parameter also responds to an NRPN LSB value of 027. See “Using RPNs and NRPNs to Edit Part Parameters” at the end of this chapter.

    If you want to reset the range, simply reselect these parameters and repeat the process.
14. Repeat steps 4-14 for each Part you’d like to use in your split, setting each Part to a unique keyboard range.

    Once you’ve set up your split, you’ll probably want to set up the Effects and Effect routing for your Parts. See ***Chapter 5*** to learn more about Effects.

## To Create a Split with Layered Regions

1. Press the System button.
2. Turn the Parameter knob until the display shows “Stak MIDI Channel.”
3. Set the Stak MIDI channel to the channel you’d like to use for your split.
4. Press the Sound button.
5. Use the Select Part buttons to choose the first Part you’d like to use in your split.
6. Using the Sound Type knob and the Sound Name knob, locate a Sound you’d like to use for your first split Part.
7. Press the Params button.
8. Turn the Parameter knob until the display shows “Part MIDI Chan.”
9. Set Part MIDI Chan to Stak.
10. Turn the Parameter knob until the display shows “Key Range Lo=.”

    The low end of a Part’s key range can be any note you desire, from A0 to C8.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

Middle C is C4 (some MIDI controller manufacturers refer to Middle C as C3 check your controller's or sequencer's manual to see if that's the case).

11. Turn the Value knob to set the Key range Lo to the desired note.

    This parameter also responds to an NRPN LSB value of 026. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

12. Turn the Parameter knob until the display shows "Key Range Hi=."

    The high end of a Part's key range can be any note you desire, from A0 to C8.

**Note:** A Part's Key Range Lo value cannot be set above its Key Range Hi setting, nor can its Key Range Hi value cannot be set below its Key Range Lo setting.

13. Turn the Value knob to set the Key Range Hi to the desired note.

    This parameter also responds to an NRPN LSB value of 027. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

    If you want to reset the range, simply reselect these parameters and repeat the process.

14. Repeat steps 4-14 for each Part you'd like to use in your split. Parts that you'd like to layer over each other should share portions, or all, of their keyboard ranges. Parts that are meant to be unlayered should be set to key ranges that are unused by any other Part.

    Once you've set up your split, you'll probably want to set up the Effects and Effect routing for your Parts. See ***Chapter 5*** to learn more about Effects.

# Setting Part Velocity Ranges

Parts can be programmed so that the Sounds they use are only heard when the Part receives MIDI Velocity messages within a specified range.

### To Set a Part's Velocity Window

1. Use the Select Part buttons to choose the Part whose velocity window you'd like to set.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "VelocityRange Lo=."

   The low boundary of a Part's velocity window can range from 0 to 127.

4. Turn the Value knob to set the VelocityRange Lo parameter to the desired value.

   This parameter also responds to an NRPN LSB value of 028. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

5. Turn the Parameter knob until the display shows "VelocityRange Hi=."

   The high boundary of a Part's velocity window can range from 0 to 127.

6. Turn the Value knob to set the VelocityRange Hi parameter to the desired value.

   VelocityRangeLo and Hi also respond to an NRPN LSB value of 029. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

When this parameter is edited on a Part that uses a Drum Kit, all of the Sounds in the Drum Kit are affected simultaneously bythe changes you make.

# Isolating Velocity-Dependent Components of Sounds

Many of the Sounds in the MR-Rack are designed to respond to MIDI Velocity messages. It's not uncommon for different components of Sounds to be revealed only when the Part receives specific MIDI Velocity values. The MR-Rack provides a way to set Parts so you can reliably produce these values and therefore, the Sound components they produce. This lets you easily extract favorite aspects MR-Rack Sounds that are only heard at specific velocities.

To access the Parameters described on this page (unless otherwise n
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

When the Velocity Mode Part parameter is set to any value other than Normal, Velocity messages that fall within the Part's velocity window (see "Setting Part Velocity Ranges" above) are automatically converted to the velocity set with the Velocity Mode parameter.

### To Extract Favorite Velocity-Dependent Components of Sounds

1. Use the Select Part buttons to choose the Part whose Sound contains component you'd like to isolate.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Velocity Mode=."

   The Velocity Mode parameter can be set to:

- Normal—to allow the Part Sound's velocity response to function normally.
- 0 to 127—to convert any Velocity messages received within the Part's velocity window to the value selected.

4. Turn the Value knob to set the Velocity Mode parameter to the desired velocity value.

This parameter also responds to an NRPN LSB value of 035. See "Using RPNs and NRPNs to Edit Part Parameters" at the end of this chapter.

> When this parameter is edited on a Part that uses a Drum Kit, all of the Sounds in the Drum Kit are affected simultaneously bythe changes you make.

# Setting a Part's Response To MIDI Pressure Messages

The MR-Rack supports Key Pressure as a modulator of its Sounds and Effects. A MIDI keyboard controller produces Key Pressure when a key is physically pressed down after it has traveled through its normal range of motion. There are two types of Key Pressure: Channel Pressure and Key Pressure (also referred to as PolyKey or Polyphonic Pressure). Channel Pressure simultaneously affects all currently-sounding notes as if they were a single entity. Key Pressure allows you to affect each note individually by applying pressure to its counterpart key on your keyboard controller.

MR-Rack Parts can be set to respond to both types of Pressure. Set the PressureMode Part parameter to Channel if you'd like the Part's Sound to respond only to Channel Pressure, or set it to Key if you'd like it to respond only to Key Pressure. If you're not sure which type of Pressure you'd like to use, you can set the parameter to Auto—the Part will sense which type of Pressure is required, based on what kind of MIDI Pressure data it receives.

### To Set a Part's Pressure Response

1. Use the Select Part buttons to choose the Part whose Pressure response you'd like to set.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Pressure Mode=."

   The Pressure Mode parameter can be set to:

   - Off—so that the Part will not respond to Pressure. If Pressure is assigned as an FX Mod Source, effects modulation is disabled.
   - Auto—so that the Part senses the appropriate type of Pressure required based on the incoming MIDI Pressure data.
   - Channel—so that the Part will only respond to Channel Pressure.
   - Key—so that the Part will only respond to Key Pressure.

4. Turn the Value knob to set the Pressure Mode parameter to the desired value.

This parameter also responds to an NRPN LSB value of 030. See "Using RPNs and NRPNs to

> To access the Parameters described on this page (unless otherwise no
> press the Params button, turn the Parameter knob to locate the paramet
> and then turn the Value knob to change the parameter's setting.

Edit Part Parameters" at the end of this chapter.

---

**Note:** When you select a new Sound for the Part, Pressure Mode will be reset to Auto if the System Part Param Reset parameter is set to On (see ***Chapter 3*** for details).

---

When this parameter is edited on a Part that uses a Drum Kit, all of the Sounds in the Drum Kit are affected simultaneously bythe changes you make.

# Working with Program Changes and Bank Selects

MIDI allows you to select MR-Rack Sounds remotely from your MIDI controller through the transmission of Bank Select and Program Change messages. A Bank Select message will specify the area in the MR-Rack's memory where a particular Sound resides, and a Program Change message will select the Sound itself. Each Part can receive Bank Select and Program Change messages on its MIDI channel, or it can be set to ignore either type of message.

When using Program Changes, you can guarantee that the Sound will be selected from the intended bank by sending the appropriate Bank Select message along with, and just prior to, the Program Change. If you'd like, you can select Sounds in the MR-Rack with Program Changes that are unaccompanied by Bank Select messages—they'll simply choose Sounds from the currently selected bank. Unaccompanied Bank Select messages may be sent to the MR-Rack to "arm" a Part for a bank change that will occur when the next unaccompanied Program Change is received.

### To Enable or Disable a Part's Reception of Program Change Messages

1. Use the Select Part buttons to choose the Part whose reception of MIDI Program Changes you'd like to enable or disable.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "ProgramChngRecv=."

   The ProgramChngRecv parameter may be set to:
   - On—to instruct the Part to respond to MIDI Program Change messages
   - Off—to instruct the Part to ignore MIDI Program Change messages
4. Turn the Value knob to set the ProgramChngRecv parameter value.

---

**Note:** BankSelect Recv will have no effect if the global Bank&ProgChgRecv is set to Off. See ***Chapter 3*** for details.

---

### To Enable or Disable a Part's Reception of Bank Select Messages

1. Use the Select Part buttons to choose the Part whose reception of MIDI Bank Selects you'd like to enable or disable.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Bank Select Recv=."

   The Bank Select Recv parameter functions as a combined filter for Bank Select MSB and LSB values. It may be set to:
   - On—to instruct the Part to respond to MIDI Bank Select messages
   - Off—to instruct the Part to ignore MIDI Bank Select messages
4. Turn the Value knob to set the Bank Select Recv parameter to the desired value.

---

**Note:** This parameter will have no effect if the global Bank&ProgChgRecv is set to Off.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

See ***Chapter 3*** for details.

## Finding Out What Bank Select and Program Change Values to Send

The MR-Rack's display makes it easy to find out which Bank Select and Program Change values you'll need to select the current Sound via MIDI.

### How to Select the Current Sound Via MIDI

1. Press the Sound button.
2. Using the Sound Type and Sound Name knobs, select a Sound.

   The display will tell you which Bank Select and Program Change values you'll need to send the MR-Rack to select the current Sound from your controller:

The Bank Select value for this Sound        The Program Change value for this Sound

l        n

```
pt01 §01  RAM001:033
ALL-SND   Your Sound
```

3. Instruct your controller to send the MR-Rack the displayed Bank Select and Program Change values.

# Enabling and Disabling Part Response to MIDI Controllers

The MR-Rack recognizes all of the major MIDI controllers. You can set individual Parts to respond to a each of these controllers, or to ignore it.

### To Enable or Disable a Part's Reception of Data Entry Messages

1. Use the Select Part buttons to choose the Part whose reception of MIDI Data Entry messages you'd like to enable or disable.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Data Entry Recv=."

   The Data Entry Recv parameter functions as a combined filter for Data Entry, Data Increment and Decrement, NRPN MSB 099 and LSB 098, and RPN MSB 101 and LSB 100 messages. It may be set to:

   - On—to instruct the Part to respond the above messages
   - Off—to instruct the Part to ignore the above messages
4. Turn the Value knob to set the Data Entry Recv parameter to the desired value.

**Note:** When the Data Entry Recv parameter is edited, Data Entry settings for the currently selected Part will be reset to 000 in order to prevent hung Data Entry values.

### To Enable or Disable a Part's Reception of Pitch Bend Messages

1. Use the Select Part buttons to choose the Part whose reception of MIDI Pitch Bend messages you'd like to enable or disable.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Pitch Bend Recv=."

   The Pitch Bend Recv parameter may be set to:

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

- On—to instruct the Part to respond to Pitch Bend messages
- Off—to instruct the Part to ignore Pitch Bend messages

4. Turn the Value knob to set the Pitch Bend parameter to the desired value.

---

**Note:** When the Pitch Bend parameter is edited, Pitch Bend settings for the currently selected Part will be reset to 064 in order to prevent hung Pitch Bend values.

---

### To Enable or Disable a Part's Reception of Mod Wheel Messages

1. Use the Select Part buttons to choose the Part whose reception of MIDI Mod Wheel (MIDI Controller #1) messages you'd like to enable or disable.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Mod Wheel (1) Recv=."
   The Mod Wheel (1) Recv parameter may be set to:
   - On—to instruct the Part to respond to Mod Wheel messages
   - Off—to instruct the Part to ignore Mod Wheel messages
4. Turn the Value knob to set the Mod Wheel (1) Recv parameter to the desired value.

---

**Note:** When the Mod Wheel (1) Recv parameter is edited, Mod Wheel settings for the currently selected Part will be reset to 000 in order to prevent hung Mod Wheel values.

---

### To Enable or Disable a Part's Reception of Foot Pedal Messages

1. Use the Select Part buttons to choose the Part whose reception of MIDI Foot Pedal (MIDI Controller #4) messages you'd like to enable or disable.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "FootPedal (4) Recv=."
   The FootPedal (4) Recv parameter may be set to:
   - On—to instruct the Part to respond to Foot Pedal messages
   - Off—to instruct the Part to ignore Foot Pedal messages
4. Turn the Value knob to set the FootPedal (4) Recv parameter to the desired value.

---

**Note:** When the FootPedal (4) Recv parameter is edited, Foot Pedal settings for the currently selected Part will be reset 000 in order to prevent hung Foot Pedal values.

---

### To Enable or Disable a Part's Reception of Volume Messages

1. Use the Select Part buttons to choose the Part whose reception of MIDI Volume (MIDI Controller #7) messages you'd like to enable or disable.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Volume(7)Recv=."
   The Volume(7)Recv parameter may be set to:
   - On—to instruct the Part to respond to Volume messages
   - Off—to instruct the Part to ignore Volume messages
4. Turn the Value knob to set the Volume(7)Recv parameter to the desired value.

### To Enable or Disable a Part's Reception of Pan Messages

1. Use the Select Part buttons to choose the Part whose reception of MIDI Pan (MIDI Controller #10) messages you'd like to enable or disable.
2. Press the Params button.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

3. Turn the Parameter knob until the display shows "Pan(10)Recv=."
   The Pan(10)Recv parameter may be set to:
   - On—to instruct the Part to respond to Pan messages
   - Off—to instruct the Part to ignore Pan messages
4. Turn the Value knob to set the Pan(10)Recv parameter to the desired value.

### To Enable or Disable a Part's Reception of Expression Messages

1. Use the Select Part buttons to choose the Part whose reception of MIDI Expression (MIDI Controller #11) messages you'd like to enable or disable.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Expressn(11)Recv=."
   The Expressn(11)Recv parameter may be set to:
   - On—to instruct the Part to respond to Expression messages
   - Off—to instruct the Part to ignore Expression messages
4. Turn the Value knob to set the Expressn(11)Recv parameter to the desired value.

### To Enable or Disable a Part's Reception of Sustain/Sostenuto Messages

1. Use the Select Part buttons to choose the Part whose reception of MIDI Sustain and Sostenuto messages you'd like to enable or disable.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "Sustain/SostRecv=."
   The Sustain/SostRecv parameter may be set to:
   - On—to instruct the Part to respond to Sustain and Sostenuto messages
   - Off—to instruct the Part to ignore Sustain and Sostenuto messages
4. Turn the Value knob to set the Sustain/SostRecv parameter to the desired value.

**Note:** When the Sustain/SostRecv parameter is edited, Sustain and Sostenuto settings for the currently selected Part will be reset to 000 in order to prevent hung Sustain and Sostenuto values.

# Working With System MIDI Controllers

The MR-Rack allows you to add four new MIDI controllers in addition to those the MR-Rack is already designed to receive. This is accomplished by designating your new MIDI controller as System Controller 1, System Controller 2, System Controller 3 or System Controller 4, via the System parameters CTRL1, CTRL2, CTRL3 and CTRL4. (See "Setting Up New Real-Time Controllers" in ***Chapter 3*** for more information.) Once you've assigned your new controller one of these identities, you can enable or disable each Part's response to each controller.

### To Enable or Disable a Part's Reception of Assigned System Controllers

1. Use the Select Part buttons to choose the Part whose reception of Controller 1, Controller 2, Controller 3 or Controller 4 you'd like to enable or disable.
2. Press the Params button.
3. Turn the Parameter knob until the display shows "SysCTRL1 Recv=."
4. Use the Value knob to turn SysCTRL1 Recv On or Off.
5. Turn the Parameter knob until the display shows "SysCTRL2 Recv=."
6. Use the Value knob to turn SysCTRL2 Recv On or Off.
7. Turn the Parameter knob until the display shows "SysCTRL3 Recv=."
8. Use the Value knob to turn SysCTRL3 Recv On or Off.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

9. Turn the Parameter knob until the display shows “SysCTRL4 Recv=.”
10. Use the Value knob to turn SysCTRL4 Recv On or Off.

**Note:** If a System Controller is assigned to the same controller number as one of the MR-Rack’s regular controllers, filtering out the regular controller will not affect reception of the System Controller. Likewise, filtering out the System Controller will not affect reception of the regular controller.

# Editing Drum Kits

**Note:** Drum Kit Sounds are described in “The Structure of MR-Rack Sounds” earlier in this chapter.

Each Performance can use as many Drum Kit Sounds as there are Parts. Each Performance also contains a single special editable Drum Kit called the ***PerfEditKit***. When you begin to edit a Drum Kit Sound you’ve selected for a Part, the MR-Rack will offer to make that Drum Kit the current Performance’s PerfEditKit. Once you’ve finished, you can save the PerfEditKit as a Sound that you can use again. If you’d like, you can then select other Drum Kit sounds in the Performance and modify them, designating each as the Performance’s PerfEditKit while you’re working on it, and saving it as a new Drum Kit Sound when you’re done.

There are two ways, therefore, to edit an MR-Rack Drum Kit:

- Select a Drum Kit as the Sound used by a Part and edit its Part parameters
- Select the current Performance’s PerfEditKit Sound directly and edit its Part parameters.

### To Edit a Drum Kit You’ve Chosen for a Part

1. Use the Select Part buttons to choose a Part.
2. Press the Sound button.
3. Use the Sound Type knob to select one of the SoundFinder Drum Kit categories:
   - DRUM-KIT—Drum Kits that use the ENSONIQ drum map keyboard layout
   - DRMKITGM—Drum Kits that use the General MIDI drum map keyboard layout
   - PERC-KIT—Percussion Drum Kits that use the ENSONIQ and the General MIDI drum map keyboard layouts
4. Turn the Sound Name knob to choose a Drum Kit you’d like to edit.
5. Press the Params button.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

6. Turn the Parameter knob until the display shows:

What you see here may be different

```
pt01 §01 Std.Kit  GM
DrumKey=         C4
```

What you see here may be different

7. Play a key on your MIDI keyboard (or other controller) to select the key you'd like to edit.
8. Turn the Parameter knob until the display shows:

What you see here may be different

```
pt01 §01 DrumKey= C4
Sound=        Bongo
```

What you see here may be different

**Note:** If a memory card or Expansion board Sound has been assigned to a DrumKey and the card or board has been removed, the Sound displayed here will be **EMPTY**.

9. Turn the Value knob to select a new Sound for this key.
   The display changes to:

```
Read-only! Hit ENTER
to make PerfEditKit.
```

   The MR-Rack is offering to make the Drum Kit you've selected the PerfEditKit for the current Performance.
10. If you'd like to continue editing this Drum Kit—and make it the current Performance's PerfEditKit—press Enter. If you'd rather not continue, press Exit.
11. If you've pressed Enter, you can now edit the Drum Kit you've selected.

## To Edit the Current Performance's PerfEditKit

1. Use the Select Part buttons to choose a Part.
2. Press the Sound button.
3. Turn the Sound Type knob all the way clockwise to select the CUSTOM SoundFinder category.

**Tip:** You can also select the PerfEditKit via MIDI by sending a Bank Select LSB 010 and a Program Change 000 message.

4. Turn the Sound Name knob to choose the PerfEditKit if it's not already displayed.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

5. Press the Params button.
6. Turn the Parameter knob to find the Drum Kit parameter you want to change and start editing.

## Selecting a DrumKey for Editing

MR-Rack Drum Kits are edited one key at a time. The first thing you need to do to edit a Kit is to select the key—called a ***DrumKey***—you want to start with.

The following parameter is only present when the Part being edited uses a Drum Kit.

### To Select a DrumKey for Editing

1. Use the method described in “To Edit a Drum Kit You’ve Chosen for a Part” or “To Edit the Current Performance’s PerfEditKit” above to prepare to edit a Drum Kit.
2. Turn the Parameter knob until the display shows:

What you see here may be different

m m m

pt01 §01 GM Std. Kit
DrumKey= C4

i

What you see here may be different

3. Press a key on your MIDI keyboard or controller to select a DrumKey to edit, or dial in the desired key with the Value knob (Middle C is C4). Drum Kits can go from the B two octaves below Middle C (B1) to the D three octaves above it (D7).

## Changing the Source of a DrumKey’s Sound

Each key in a Drum Kit can use a Sound from any of these Sound Type categories:

- CRD—Sounds from a data card if there’s one installed
- EXP—Sounds from expansion boards if there are any installed
- DRM—Drum Sounds in the MR-Rack’s ROM and RAM memory banks
- GM—General MIDI Sounds
- ROM—all the Sounds in the MR-Rack’s ROM memory
- RAM—all the Sounds in the MR-Rack’s RAM memory
- ALL—this category includes all of the above. The ALL Sound Type can be especially handy, since it lists Sounds alphabetically

**Note:** When you assign a Sound to a DrumKey, the Key makes note of the location of the Sound in the MR-Rack’s memory. When you play the DrumKey, it looks to that location and uses the Sound it finds there. If you edit the Sound or replace it, the DrumKey will play the edited version or the Sound you’ve replaced it with. If you’ve assigned a memory card or expansion board Sound to the DrumKey, and removed the card or board, the DrumKey will be unable to locate its Sound and will produce silence when played.

The following parameter is only present when the Part being edited uses a Drum Kit.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

### To Change the Sound Type Used by the Selected DrumKey

1. Use the method described in "To Edit a Drum Kit You've Chosen for a Part" or "To Edit the Current Performance's PerfEditKit" above to prepare to edit a Drum Kit.
2. Select a DrumKey to edit (see "Selecting a DrumKey for Editing" above).
3. Turn the Parameter knob until the display shows:

What you see here may be different

m m m

```
pt01 §01 DrumKey= C4
Sound Type=  DRM-SND
```

i

What you see here may be different

Each DrumKey can be set to use a Sound from any of the categories described above.

4. Turn the Value knob to select a new Sound category from which you can select a new Sound for the currently selected DrumKey.

**Tip:** If you'd like to work on another DrumKey, select it on your MIDI keyboard or other controller—the upper right-hand corner of the MR-Rack's display will show the new DrumKey you've selected.

## Changing a DrumKey's Sound by its Sound Name

You can select a new Sound for a DrumKey from the SoundFinder category chosen with the Sound Type parameter, described earlier.

The following parameter is only present when the Part being edited uses a Drum Kit.

### To Change a DrumKey's Sound By its Name

1. Use the method described in "To Edit a Drum Kit You've Chosen for a Part" or "To Edit the Current Performance's PerfEditKit" above to prepare to edit a Drum Kit.
2. Select a DrumKey to edit (see "Selecting a DrumKey for Editing" above).
3. Turn the Parameter knob until the display shows:

What you see here may be different

m m m

```
pt01 §01 DrumKey= C4
Sound=        Bongo
```

i

What you see here may be different

To access the Parameters described on this page (unless otherwise n
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

**Note:** If a memory card or Expansion board Sound has been assigned to a DrumKey and the card or board has been removed, the Sound displayed here will be Silence.

Each DrumKey can use any Sound from its currently selected SoundFinder category, except for another Drum Kit Sound (the MR-Rack hides other Drum Kits when you're selecting Kit Sounds so that you won't inadvertently choose one). To change the SoundFinder category, see "Changing the Source of a DrumKey's Sound" above.

4. Turn the Value knob to select a new Sound for the currently selected DrumKey.

**Tip:** If you'd like to work on another DrumKey, select it on your MIDI keyboard or other controller—the upper right-hand corner of the MR-Rack's display will show the new DrumKey you've selected.

## Changing a DrumKey's Sound by its Program Change Number

You can select a new Sound for a DrumKey from the SoundFinder category chosen with the Sound Type parameter, described above.

The following parameter is only present when the Part being edited uses a Drum Kit.

### To Change a DrumKey's Sound By Program Change Number

1. Use the method described in "To Edit a Drum Kit You've Chosen for a Part" or "To Edit the Current Performance's PerfEditKit" above to prepare to edit a Drum Kit.
2. Select a DrumKey to edit (see "Selecting a DrumKey for Editing" above).
3. Turn the Parameter knob until the display shows:

What you see here may be different

m m m

pt01 §01 DrumKey= C4
Location= DRM015:031

i

What you see here may be different

Each DrumKey can use any Sound from its currently selected SoundFinder category, except for another Drum Kit Sound (the MR-Rack hides other Drum Kits when you're selecting Kit Sounds so that you won't inadvertently choose one). To change the SoundFinder category, see "Changing the Source of a DrumKey's Sound" above.

4. Turn the Value knob to select a new Sound for the currently selected DrumKey.

**Tip:** If you'd like to work on another DrumKey, select it on your MIDI keyboard or other controller—the upper right-hand corner of the MR-Rack's display will show the new DrumKey you've selected.

## Changing a DrumKey's Volume

You can adjust the Volume of each DrumKey in a Drum Kit, measured in decibel increments added to or subtracted from its Sound's programmed value.

To access the Parameters described on this page (unless otherwise nc
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

> The following parameter is only present when the Part being edited uses a Drum Kit.

### To Change a DrumKey's Volume

1. Use the method described in "To Edit a Drum Kit You've Chosen for a Part" or "To Edit the Current Performance's PerfEditKit" above to prepare to edit a Drum Kit.
2. Select a DrumKey to edit (see "Selecting a DrumKey for Editing" above).
3. Turn the Parameter knob until the display shows:

What you see here may be different

m m m

```
pt01 §01 DrumKey= C4
Key Volume=     -1dB
```

i

What you see here may be different

Each DrumKey's Volume may be set anywhere from -50 to +14 dB (deciBels).

4. Turn the Value knob to adjust the Volume of the currently selected DrumKey to the desired level.

---

**Tip:** If you'd like to work on another DrumKey, select it on your MIDI keyboard or other controller—the upper right-hand corner of the MR-Rack's display will show the new DrumKey you've selected.

---

## Changing a DrumKey's Panning

You can shift the stereo panning of each DrumKey in a Drum Kit, from Left -64 to Right +63. If the DrumKey is using a stereo Sound, both sides of the Sound will shift proportionally, retaining their stereo separation.

> The following parameter is only present when the Part being edited uses a Drum Kit.

### To Change a DrumKey's Panning

1. Use the method described in "To Edit a Drum Kit You've Chosen for a Part" or "To Edit the Current Performance's PerfEditKit" above to prepare to edit a Drum Kit.
2. Select a DrumKey to edit (see "Selecting a DrumKey for Editing" above).
3. Turn the Parameter knob until the display shows:

What you see here may be different

m m m

```
pt01 §01 DrumKey= C4
Key Pan=   Right +40
```

i

What you see here may be different

Each DrumKey's stereo position may be set anywhere from Left -64 to Right +63.

4. Turn the Value knob to shift the panning of the currently selected DrumKey to the desired position in the stereo field.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

---

**Tip:** If you'd like to work on another DrumKey, select it on your MIDI keyboard or other controller—the upper right-hand corner of the MR-Rack's display will show the new DrumKey you've selected.

---

## Changing a DrumKey's Effect

Each DrumKey in a Drum Kit has its own Effect bus assignment so that it can be sent to any of the standard MR-Rack stereo Effect busses:

- Insert
- Chorus
- LightReverb
- MediumReverb
- WetReverb
- Dry

For a complete explanation of the MR-Rack's Effects, see ***Chapter 5.***

---

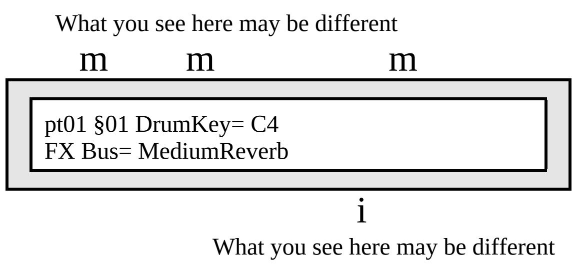
**Tip:** When a Drum Kit is assigned to a Part, repeatedly pressing the Params button will toggle between this parameter and the Part MIDI Channel parameter.

---

The following parameter is only present when the Part being edited uses a Drum Kit.

### To Change a DrumKey's Effect

1. Use the method described in "To Edit a Drum Kit You've Chosen for a Part" or "To Edit the Current Performance's PerfEditKit" above to prepare to edit a Drum Kit.
2. Select a DrumKey to edit (see "Selecting a DrumKey for Editing" above).
3. Turn the Parameter knob until the display shows:




Each DrumKey can be sent to any of the MR-Rack's Effects busses: Insert, Chorus, LightReverb, MediumReverb, WetReverb or Dry.

4. Turn the Value knob to select the appropriate Effect bus for the currently selected DrumKey.

---

**Tip:** If you'd like to work on another DrumKey, select it on your MIDI keyboard or other controller—the upper right-hand corner of the MR-Rack's display will show the new DrumKey you've selected.

---

To access the Parameters described on this page (unless otherwise n
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

## Changing a DrumKey’s Tuning

The pitch of each DrumKey’s Sound can be adjusted through the use of the Tuning Shift parameter. The parameter is set to shift a DrumKey sound’s pitch up and down by a semitone’s distance on a MIDI keyboard. The amount of re-tuning you’ll be able to do depends on the tuning scheme programmed into each Sound the Drum Kit uses. For example, many DRUM-category Sounds change by tiny amounts as you move up and down the keyboard, in order to best simulate the tuning range of the real-world percussion instruments they represent. Since you can use any MR-Rack Sound in a Drum Kit, there will be a wide variety in how individual Sounds respond to Tuning Shift adjustments.

| The following parameter is only present when the Part being edited uses a Drum Kit. |
|---|

### To Change a DrumKey’s Tuning

1. Use the method described in “To Edit a Drum Kit You’ve Chosen for a Part” or “To Edit the Current Performance’s PerfEditKit” above to prepare to edit a Drum Kit.
2. Select a DrumKey to edit (see “Selecting a DrumKey for Editing” above).
3. Turn the Parameter knob until the display shows:

What you see here may be different

m m m

```
pt01 §01 DrumKey= C4
Tuning Shift=    0st
```

i

What you see here may be different

Each DrumKey Sound’s pitch can be shifted by as many as 64 semitone steps on a keyboard downward (-64st) and 63 steps upward (+63st).

4. Turn the Value knob to select the desired amount of Tuning Shift for the currently selected DrumKey.

---

If you’d like to work on another DrumKey, select it on your MIDI keyboard or other controller—the upper right-hand corner of the MR-Rack’s display will show the new DrumKey you’ve selected.

---

## Saving Your Edited Drum Kit Sound

The Drum Kit you’ve just edited—the current Performance’s PerfEditKit— can be saved as a component of the current Performance (see “The Safe-Keeping of Part Edits” near the beginning of this chapter) or as a new Drum Kit Sound you can use again.

### To Save Your Drum Kit as a New Sound

1. Press the Save button.
2. Turn the Parameter knob all the way counter clockwise.

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

3. Turn the Value knob until the display shows:

```
Hit ENTER to:
Save:ThisPart'sSound
```

4. Press the Enter button.
   If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

   This display is offered as a double-check for you, to make sure you really want to save your Drum Kit. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3*** .
5. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press the Enter button. The display now allows you to name your Drum Kit:

Left knob function          Right knob function
m          m

```
Left:pos  Right:char
New Name=PerfEditKit
```

i
Note this underline

   The Parameter knob (left) is used to select the character position within the name. You will know which character is selected because the position in the display will be underlined. Turning the knob clockwise moves the location to the right, and counterclockwise moves it to the left. The Value knob (right) is used to select the alpha-numeric character for that location.
6. Use the Parameter and Value knobs to select a name for your Drum Kit.
7. When you've named your Drum Kit, press the Enter button.
8. Use the Value knob to select a SoundFinder type for your Drum Kit. Choose a category that will make it easy for you to locate your Drum Kit later on. For a complete list of SoundFinder types, see ***Chapter 9*** .
9. When you've defined a SoundFinder type, press the Enter button.
10. Use the Parameter knob to select either:
    - RAM—to save the Drum Kit to the MR-Rack's internal RAM memory
    - CRD—to save the Drum Kit to an installed data card (see "Formatting a PCMCIA Card" in ***Chapter 6*** for instructions on how to prepare a data card for storage)
11. Use the Value knob to select a specific location for your Drum Kit.
12. When you've selected a location for your Drum Kit, press the Enter button. The display momentarily confirms the successful completion of your command, and then selects the newly-saved Sound.

# Using RPNs and NRPNs to Edit Part Parameters

MIDI allows for a special category of controllers called RPNs (for "Registered Parameter

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

Numbers") and NRPNs (for "Non-Registered Parameter Numbers"). Many of the Part parameters can be edited via RPNs and NRPNs. If this is the case, the parameter's description found in this chapter will list the appropriate RPN or NRPN.

RPN MIDI messages must adhere to a specific structure in order to be properly understood by receiving devices such as the MR-Rack. They must include the following components:

- A continuous controller status byte for the Part's MIDI channel
- MIDI controller 101—the RPN MSB—with a value of 000
- MIDI controller 100—the RPN LSB—with the RPN value listed in the description of the relevant Part parameter
- MIDI controller 006—Data Entry—with the value to which you'd like to set the parameter. The values displayed for each parameter correspond to one of 128 possible MIDI values (which run from 000 up to 127). You can count the parameter values displayed on the MR-Rack, beginning from 000, to locate the corresponding Data Entry value you'll want to send to the MR.

NRPN MIDI messages must also adhere to a specific structure in order to be properly understood by receiving devices such as the MR-Rack. They must include the following components:

- A continuous controller status byte for the Part's MIDI channel
- MIDI controller 099—the NRPN MSB—with a value of 000
- MIDI Controller 098—the NRPN LSB—with the NRPN value listed in the description of the relevant Part parameter
- MIDI controller 006—Data Entry—with the value to which you'd like to set the parameter. The values displayed for each parameter correspond to one of 128 possible MIDI values (which run from 000 up to 127). You can count the parameter values displayed on the MR-Rack, beginning from 000, to locate the corresponding Data Entry value you'll want to send to the MR.

---

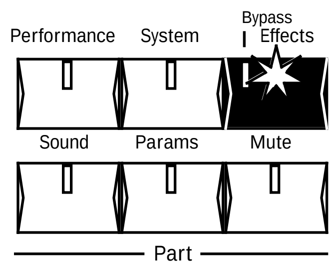
**Tip:** For a complete listing of the RPNs and NRPNs to which the MR-Rack responds, see "Registered and Non-Registered Parameters (RPN/NRPN)" in ***Chapter 9***.

---

To access the Parameters described on this page (unless otherwise no
press the Params button, turn the Parameter knob to locate the paramet
and then turn the Value knob to change the parameter's setting.

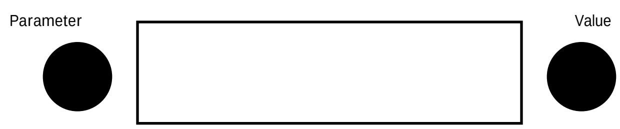
# Chapter 5
# Effects

This chapter explains the MR-Rack Effects. To access the functions you'll find in this chapter, press the Effects button, except where noted. When you press the Effects button, its yellow LED will light.




The MR-Rack provides many options for routing, assigning and editing Effects. Each of these options is called a ***parameter***. When you change the setting of a parameter, you are editing the parameter's ***value***.

To select Effect parameters, turn the Parameters knob. To edit an Effect parameter's value, turn the Value knob.




## Understanding the MR-Rack Effects

The MR-Rack Effects are designed to provide excellent sound quality and considerable flexibility. Take a few moments to familiarize yourself with the way they work so that you can fully take advantage of all they have to offer.

Every Performance contains an Effect setup comprised of several components. To start with, each Performance offers four stereo Effect options:

- an Insert Effect
- a Global Chorus
- a Global Reverb
- Dry (or no Effect)

## Insert Effects

Many MR-Rack Sounds are programmed with their own Insert Effects. Insert Effects are powerful, fully editable Effect programs that cover a broad range of applications. For a detailed list of the Insert Effects and their parameters, see ***Chapter 8***.

In each Performance, one Part can be designated as the Insert Control Part. When a Sound with an Insert Effect is selected for the Insert Control Part, the sound's Insert Effect becomes the current Performance's Insert Effect. A Performance's Insert Control Part is designated by setting the InsertContrlPart parameter, which is discussed later in this chapter. A Performance's Insert Effect can also be chosen manually, as described in "Working with the Insert Effect," later in this chapter.

---

**Note:** To ensure that you're hearing a Sound's intended Effect, the Sound must be assigned to the Performance's Insert Control Part. Sounds assigned to other Parts will not necessarily be heard through their original Effect.

---

Any of the Performance's other Parts may also use the Insert Effect. See ***Understanding Effect Busses*** later in this chapter for more details.

The Insert Effect is completely editable. Its output can be routed to the Global Chorus, the Global Reverb, or both, before traveling finally to either the MR-Rack's Main or Aux Outs. See "Determining Which MR-Rack Outputs the Insert Effect Will Use" later in this chapter for details.

## Global Chorus

Each Performance contains a high-quality Global Chorus Effect, which can be edited to suit your needs. The MR-Rack offers the following Chorus presets as starting points:

- MR Chorus
- MR Classic
- Fast & Wide
- Halleluiah
- Padmaker
- Slow & Deep
- Super Slow
- Thick
- Vintage
- Wide
- Slow Rotary
- Fast Rotary

The Global Chorus Preset parameter, described later in this chapter, is used to select the variation of chorus used in a Performance. Any Part in a Performance may utilize the Global Chorus. See ***Understanding Effect Busses*** later in this chapter for more details. The Global Chorus can be routed to either the MR-Rack's Main or Aux Outs, as determined by the setting of the Output Assign for Global Chorus parameter, described in "Determining Which MR-Rack Outputs the Global Chorus Will Use," later in this chapter.

## Global Reverb

Each Performance contains a high-quality Global Reverb Effect, which you can edit to suit your needs.

The MR-Rack offers the following Reverb presets as starting points:

- Smooth Plate
- Large Hall
- Small Hall
- Big Room
- Small Room
- Reflections
- Bright
- Huge Place

The Global Reverb Preset parameter, described later in this chapter, is used to select the variation of reverb used in a Performance. Any Part in a Performance may utilize the Global Reverb. See ***Understanding Effect Busses*** below for more details. The Global Reverb can be

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

routed to either the MR-Rack's Main or Aux Outs, as determined by the setting of the Output Assign for Global Reverb parameter, described in "Determining Which MR-Rack Outputs the Global Reverb Will Use," later in this chapter.

### Dry

Part Sounds don't have to go through any of the Effects above—they can remain dry by selecting the Dry Effect option. Dry Sounds can be routed to either the MR-Rack's Main or Aux Outs, as determined by the setting of the Output Assign for Dry FX Bus parameter, described "To Select the Dry Bus's Output Routing," later in this chapter.

## Understanding Effect Busses

In order to provide maximum flexibility, the MR-Rack offers six stereo pathways, or ***busses***, to the Effects:

- the Insert FX Bus
- the Chorus FX Bus
- the LightReverb FX Bus
- the MediumReverb FX Bus
- the WetReverb FX Bus
- the Dry FX Bus

Parts are routed to an Effect bus with the setting of the FX Bus Part Parameter. See "Adding Effects to Part Sounds" in ***Chapter 4*** for a more detailed description of this parameter.

### The Insert Bus

When a Part is assigned to the Insert bus, its Sound is routed to a wet/dry control. The wet/dry control determines the relative balance between the Sound as it is before going through the Insert Effect (dry), and as it is after going through the Insert Effect (wet).

The Insert Effect mix may then be sent into the Global Reverb. It can also be routed to the Global Chorus, where it encounters a second wet/dry control. In this case, the "dry" component is the Insert Effect mix, and the "wet" is the Insert Effect mix after it's been through the Chorus.

Any Part Sounds assigned to the Insert bus will use the MR-Rack outputs chosen by the Output Assign for Insert Effect parameter, described later in this chapter.

### The Chorus Bus

The Chorus bus can access both a Performance's Chorus and Reverb. When a Part is assigned to the Chorus bus, its Sound is routed to a wet/dry control. The wet/dry control determines the relative balance between the Sound as it is before going through the Global Chorus (dry), and as it is after the going through the Chorus (wet). This Chorus mix may then be sent to the Global Reverb.

Any Part Sounds assigned to the Chorus bus will use the MR-Rack outputs chosen by the Output Assign for Global Chorus parameter, described later in this chapter.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

# The Three Reverb Busses

## The LightReverb Bus

## The MediumReverb Bus

## The WetReverb Bus

For reverb, arguably the most important Effect of all, the MR-Rack provides three separate busses for routing Parts—and their Sounds—to a Performance's Reverb. It's not uncommon to want some Sounds to have a little reverb; others may require a bit more, and perhaps other Sounds need a lot of reverb.

The MR-Rack provides a solution to these several needs by offering a LightReverb bus for Part Sounds requiring just a touch of reverb, a MediumReverb bus for those wanting a bit more, and a WetReverb bus for Sounds that need an even greater amount of reverb. You can also determine how much reverb will be used by each of the buses, since each has its own send amount into the Reverb Effect. (See "Setting the Reverb Amounts for the LightReverb, MediumReverb and WetReverb Effect Busses" later in this chapter.) Once you've set the busses to their desired send amounts, you can assign Parts to the appropriate bus.

Any Part Sounds assigned to either of the three Reverb busses will use the MR-Rack outputs chosen by the Output Assign for Global Reverb parameter, described later in this chapter.

# The Dry Bus

Sounds assigned to the Dry bus will not be processed by the Insert Effect, the Global Chorus or the Global Reverb—they'll go directly to the MR-Rack outputs chosen by the Output Assign for Dry FX Bus parameter, described later in this chapter.

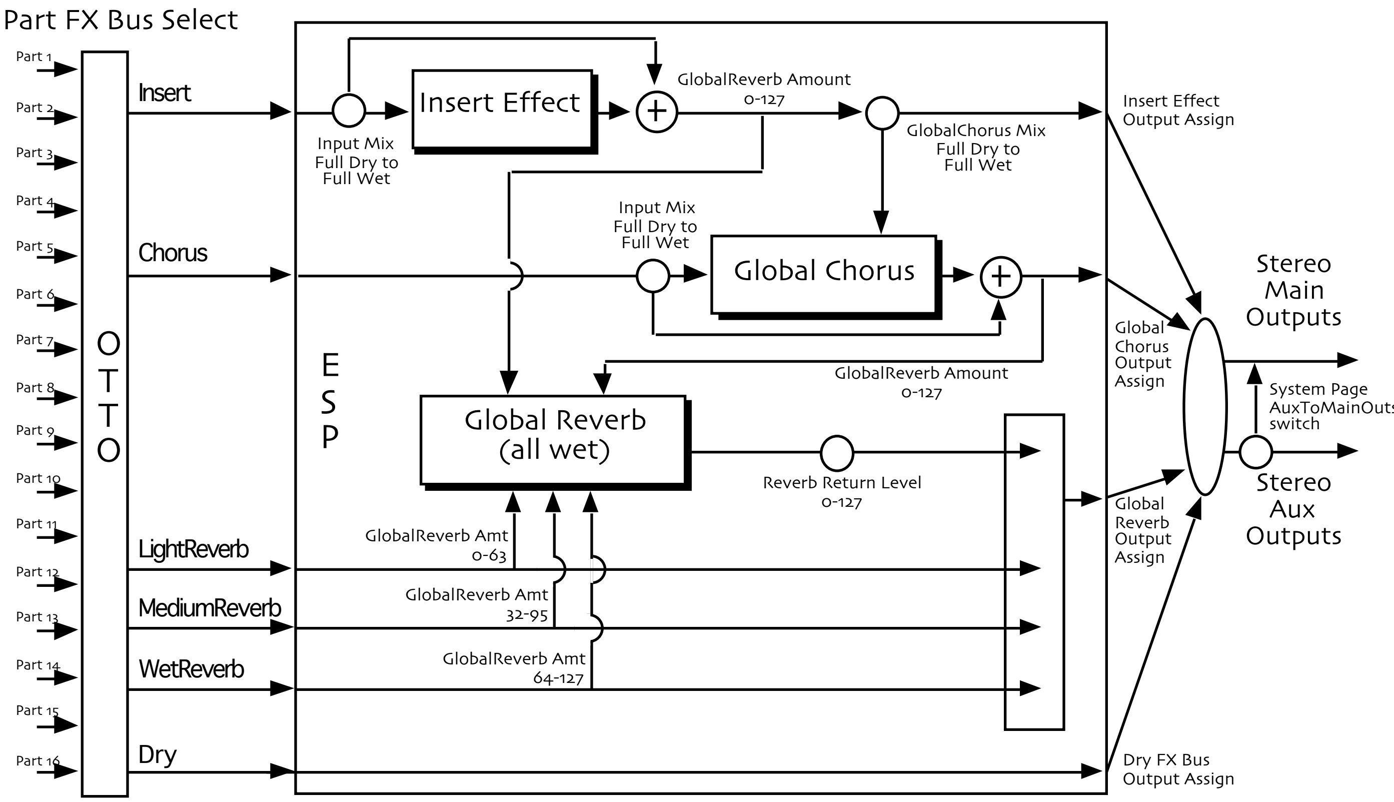
# Understanding the Special Alt. FX Bus

There's one more special Effect bus setting used by MR-Rack sounds, called the ***Alt. FX Bus***. If a Sound which uses an Insert Effect is chosen for a Part that's not the Insert Control Part, the Alt. FX Bus setting can provide a "second-best" Effect choice. It will perform this function if the System AutoSelect FXBus parameter is switched on (see ***Chapter 3***). The Alt. FX Bus is a parameter within the MR's Sounds that can be edited directly using the Unisyn Sound editor. In addition, when you set a Part's FX Bus parameter to Chorus, LightReverb, MediumReverb, WetReverb or Dry, and save the Part's Sound, the Alt. FX Bus parameter within the Sound is set to the same value.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

# A Diagram of the MR-Rack Effects




**Note:** In the above diagram, all arrows represent stereo signal paths. Hollow circles represent parameters that can be edited. The circle with a “+” means the signals are summed together. Arrows with a “bump” in them are not connected to the line that they cross. OTTO is the voice chip—actually, the MR-Rack contains two OTTOs—and ESP is the effects chip in the MR-Rack.

# Working with the Insert Effect

The Insert Effect can be directly selected in two ways:

- The Insert Effect can be installed by selecting a new Sound for the current Performance’s designated Insert Control Part. If the Sound is programmed with an Insert Effect, the Effect becomes the Performance’s Insert Effect. This method is described in “Using the Insert Control Part to Determine the Insert Effect,” later in this chapter.
- The Insert Effect can be selected manually by editing the Insert Effect. This method is described in “Manually Selecting an Insert Effect,” later in this chapter.

**Note:** When a new Insert Effect is selected using either method, all real-time control parameters (described later in this chapter) are reset to their default settings.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

# Using the Insert Control Part

Many MR-Rack Sounds are programmed with their own Insert Effects. In each Performance, one Part can be designated as the Insert Control Part, and the Sound it uses contributes its Effect to the Performance.

---

**Note:** The Insert Control Part is also used for real-time control of the Insert Effect. MIDI messages received on the Insert Control Part's MIDI channel can be used to modulate the Insert Effect.

---

## To Designate a Performance's Insert Control Part

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Effects:
InsertContrlPart= 01
```

What you see here may be different

The Insert Control Part parameter can be set to:

- Off—selecting Sounds on any Parts will not change the Insert Effect
- 01-16—any new Sound selected on the Part chosen here will have its programmed Insert Effect installed as the Performance's Insert Effect

3. Use the Value knob to set the displayed parameter to the desired value.

---

**Note:** If a Sound with no Insert Effect is selected for the Insert Control Part, the current Insert Effect will remain unchanged.

---

## Using the Insert Control Part to Determine the Insert Effect

If a Sound is programmed with an Insert Effect, selecting it for use by the Insert Control Part will cause the Sound's Insert Effect to be installed as the current Performance's Insert Effect. Once installed, the new Insert Effect can be customized using the editing procedures described in this chapter.

---

**Note:** If a Sound chosen for the Insert Control Part has no Insert Effect, the MR-Rack will automatically change the Insert Control Part's routing to the Alt. FX Bus programmed into the Sound. This occurs regardless of the setting of the AutoSelect FXBus System parameter.

---

## Using the Insert Control Part to Pick Insert Effects Via MIDI

You can select Insert Effects for a Performance via MIDI using the Insert Control Part. Select a Sound that uses the Insert Effect you want, or assign the desired Insert Effect to the Sound called "Silence" from the *UTILITY SoundFinder category (Silence is a good choice because it doesn't use up any Sound layers). Save the new Sound using a name that reflects its Insert Effect. By sending the Sound's MIDI Bank Select and Program Change to the Insert Control Part, your Insert Effect-only "Sound" will contribute its Insert Effect to the Performance. You can set up Insert Effect-only "Sounds" for all your favorite Insert Effects.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

# Editing the Insert Effect

The MR-Rack Insert Effects are highly editable. Some Insert Effect parameters are available no matter which Insert Effect you're using. These are described later in this chapter. Other Insert Effect parameters—and there are a lot of them—are unique to each Effect. There are so many of them that they've been allotted their own chapter in the MR-Rack Musician's Manual: ***Chapter 8***. Insert Effect parameter values are saved with each Performance.

## To Edit the Insert Effect

1. Press the Effects button if its yellow LED is not already lit.

---

**Note:** If the Effect button's red LED is lit or flashing, you may not be able to hear the Insert Effect. See "Bypassing Effects" later in this chapter to learn about bypassing and un-bypassing Effects.

---

2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Insert Effect
```

3. Press the Enter button.
4. Use the Parameter knob to select the Insert Effect parameter you want to modify.
5. Use the Value knob to set the displayed parameter to the desired value.

## To Manually Select an Insert Effect

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Insert Effect
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

```
Insert Effect=
   06 Small Plate
```

i

What you see here will be different

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

You can now select any of the Insert Effects:

| | | |
|---|---|---|
| 01 Parametric EQ | 15 Chorus→Rev | 29 ResVCF→DDL |
| 02 Hall Reverb | 16 Flanger→Rev | 30 Dist→VCF→DDL |
| 03 Large Room | 17 Phaser→Rev | 31 Pitch Detuner |
| 04 Small Room | 18 EQ → Reverb | 32 Chatter Box |
| 05 Large Plate | 19 Spinner→Rev | 33 Formant Morph |
| 06 Small Plate | 20 DDL→Chorus | 34 RotarySpeaker |
| 07 NonLinReverb1 | 21 DDL→Flanger | 35 Tunable Spkr |
| 08 NonLinReverb2 | 22 DDL→Phaser | 36 Guitar Amp |
| 09 Gated Reverb | 23 DDL→EQ | 37 Dist→DDL→Trem |
| 10 Stereo Chorus | 24 Multi-Tap DDL | 38 Comp→Dist→DDL |
| 11 8-VoiceChorus | 25 Dist→Chorus | 39 EQ→Comp→Gate |
| 12 Rev→Chorus | 26 Dist→Flanger | 40 EQ→Chorus→DDL |
| 13 Rev→Flanger | 27 Dist→Phaser | |
| 14 Rev→Phaser | 28 Dist→Auto Wah | |

5. Use the Value knob to select the Insert Effect you'd like to use.

Allow a moment for the MR-Rack to download the new Insert Effect you've chosen.

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

## Selecting an Insert Effect Preset

Each Insert Effect contains a number of presets. The Insert Effects are fully editable—these presets can serve as helpful starting points. When you manually select a new Insert Effect, the Effect's first preset is installed. The presets can also be manually chosen with the Insert Preset parameter.

### To Select an Insert Effect Preset

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

Hit ENTER to edit:
Insert Effect

3. Press the Enter button.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

4. Turn the Parameter knob until the display shows:

The name of the current Insert Effect

```
Insert:  Small Plate
Preset=  User Preset
```

Each Insert Effect has a number of presets that you can use or employ as starting points for your own Insert Effect editing.

When you first dial to the Insert Effect Preset display, the User Preset is selected—it contains the Insert Effect parameter settings that were in place when the current Performance was last saved. If you've been editing the current Performance and think you may want to use or tweak the User Preset—but you would like to listen to the other presets anyway, to see what they're like—save the Performance before selecting other Insert Effect presets. When you select a new preset, the User Preset is discarded, and can only be retrieved by reselecting the Performance.

5. Use the Value knob to select an Insert Effect Preset you'd like to use.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Using the Insert FX Bus Input Mix

When a Part is assigned to the Insert FX Bus, its Sound is routed to a wet/dry mix control. The wet/dry control determines the relative balance between the Sound as it is before going through the Insert Effect (dry), and as it is after the going through the Insert Effect (wet). The Insert FX Bus Input Mix parameter provides the wet/dry balance control.

### To Set the Insert FX Bus Wet/Dry Input Mix

1. Press the Effects button if its yellow LED is not already lit.

   If the Effect button's red LED is lit or flashing, you may not be able to hear the Insert Effect. See "Bypassing Effects" later in this chapter to learn about bypassing and un-bypassing Effects.

2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Insert Effect
```

3. Press the Enter button.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

4. Turn the Parameter knob until the display shows:

```
Insert FX Bus:
Input Mix=  29.2 Wet
```

i
What you see here may be different

You can set the Insert Bus wet/dry mix anywhere from Full Dry (no Insert Effect) to Full Wet (all Insert Effect).

5. Use the Value knob to set the Insert FX Bus Input Mix as you prefer.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Adding Global Reverb to the Insert Effect

It's often desirable to add some Reverb to Insert Effect Sounds. The MR-Rack allows you to do this by sending some or all of the Insert wet/dry input mix (described above) to the Global Reverb. This amount is determined by the Insert FX Bus Global Reverb Amount parameter.

### To Add Global Reverb to the Insert Effect

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Insert Effect
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

```
Insert FX Bus:
GlobalReverb Amt=  0
```

i
The number you see here may be different

You can send any amount of the Insert Bus wet/dry mix to the Global Reverb, from 0 to 127.

5. Use the Value knob to set the Insert FX Bus Global Reverb Amount send as you prefer.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

## Adding Global Chorus to the Insert Effect

After Sounds have been processed by the Insert Effect, they can be sent into the Global Chorus, via a wet/dry mix control. The wet/dry control determines the relative balance between the Sound as it is after going through the Insert Effect—referred to, in the context of this mix, as "dry"—and as it is after it's gone through the Global Chorus (wet). The Insert FX to Global Chorus Mix parameter provides the wet/dry balance control.

### To Add Global Chorus to the Insert Effect

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Insert Effect
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

```
Insert FX to Global
Chorus Mix=66.8% Wet
```

What you see here may be different

You can select the Insert FX to Global Chorus Mix parameter anywhere from Full Dry (the Insert Effect with no Chorus) to Full Wet (the Insert Effect completely Chorused).

5. Use the Value knob to set the Insert FX to Global Chorus Mix as you prefer.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Modulating the Insert Effect in Real Time

All of the MR-Rack Insert Effects allow real-time control of their parameters through the use of MIDI control messages received on the Insert Control Part. To set up real-time control of an Insert Effect, six things must be determined:

- Mod Src—for "Modulation Source," this parameter allows you to select what you'd like to use to change an Insert Effect's parameter in real time
- Mod Src Min—for "Modulation Source Minimum," this parameter sets a threshold below which MIDI values received from the Mod Src are ignored
- Mod Src Max—for "Modulation Source Maximum," this parameter sets a threshold above which MIDI values received from the Mod Src are ignored
- Dest—for "Modulation Destination," this parameter chooses the Insert Effect parameter you'd like to control in real time
- Dest Min—for "Modulation Destination Minimum," this parameter sets the lowest value the destination parameter can be set to by the real-time modulator
- Dest Max—for "Modulation Destination Maximum," this parameter sets the highest value the destination parameter can be set to by the real-time modulator

To access the Parameters described on this page (unless otherwise noted):
Press the Effects button, and follow the instructions above.

## Choosing a Real-Time Insert Effect Modulator

The MR-Rack allows you to use a number of real-time Effect modulators:

- Off—no Effect modulation
- FullModAmt—to set the Mod Dest to its maximum amount
- Velocity—the Mod Dest responds to the quickness, or hardness, of MIDI keystrikes
- Vel+Pressure—the Mod Dest responds to the quickness, or hardness, of MIDI keystrikes combined with the force by which keys, once struck, are pressed down into the keyboard
- +PosMIDIkey#—the Mod Dest uses the most recent MIDI Key note number as its value setting, from 0 for the lowest note of the MIDI pitch range to 127 for the highest note.
- -NegMIDIkey#—the Mod Dest uses the most recent MIDI Key note number as its value setting, from 127 for the lowest note of the MIDI pitch range to 0 for the highest note.
- Pressure—the Mod Dest responds to the force by which keys, once struck, are pressed down into the keyboard
- PitchWheel—the Mod Dest responds to the position of a Pitch Bend wheel, with a median modulation value produced by the wheel at rest in the middle, and with the wheel all the way forward producing the greatest modulation
- ModWheel—the Mod Dest responds to the up/down position of a Modulation wheel, with the wheel all the way forward producing the greatest modulation
- Wheel+Press—the Mod Dest responds to the up/down position of a Modulation wheel, combined with the force by which keys, once struck, are pressed down into the keyboard
- FootPedal—MIDI foot pedal messages, with the greatest modulation being produced by the pedal pushed all the way forward
- Sustain—a sustain pedal, most useful as an Effects modulator when it's used for a parameter that can be toggled on and off
- Sostenuto—a sostenuto pedal, most useful as an Effects modulator when it's used for a parameter that can be toggled on and off
- SysCTRL1—System Controller 1, a special real-time modulator that you can add to the MR-Rack's designated real-time modulators (see "Setting Up New Real-Time Controllers" in ***Chapter 3*** for further information)
- SysCTRL2—System Controller 2, a special real-time modulator that you can add to the MR-Rack's designated real-time modulators.(see "Setting Up New Real-Time Controllers" in ***Chapter 3*** for further information)
- SysCTRL3—System Controller 3, a special real-time modulator that you can add to the MR-Rack's designated real-time modulators (see "Setting Up New Real-Time Controllers" in ***Chapter 3*** for further information)
- SysCTRL4—System Controller 4, a special real-time modulator that you can add to the MR-Rack's designated real-time modulators (see "Setting Up New Real-Time Controllers" in ***Chapter 3*** for further information)

**Tip:** The MR-Rack provides Part parameters that allow you to disable or limit the Insert Control Part's reception of many of these modulation sources. See ***Chapter 4*** for details.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

### To Assign a Real-Time Insert Effect Modulator

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Insert Effect
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Insert Effect

m

```
Insert: MR Insert FX
Mod Src=a Mod Source
```

i

What you see here will be different

The Mod Src parameter can be set to any of the modulation sources listed above this "How-To."

5. Use the Value knob to select a Mod Src you'd like to use.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Verifying That Your Real-Time Controller Is Enabled

When using a controller to modulate Effects, it's a good idea to make sure that the Insert Control Part's reception of the controller is enabled. If you haven't already designated an Insert Control Part, see "Using the Insert Control Part" above.

### To Confirm That Real-Time Controller Reception Is Enabled

1. Press the Params button.
2. Use the up and down Select Part buttons to select the Part you've designated as the Insert Control Part.
3. Turn the Parameter knob until the display shows the Recv parameter for the controller you want to use (see ***Chapter 4*** for details).
4. Set the parameter to On.

## Setting the Real-Time Insert Effect Modulation Reception Window

The Insert Effect can be set to ignore real-time modulation values that don't fall within a pre-determined range. The Mod Src Min and Max parameters allow you to set the low and high limits of that window. If the MR-Rack receives a modulation value higher than the Mod Src Max, it will respond if it had received the highest value within the determined range.

### To Set the Insert Effect's Modulation Reception Window

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Insert Effect
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Insert Effect

m

```
Insert: MR Insert FX
Mod Src Min=      33
```

i

What you see here may be different

The Mod Src Min parameter determines the modulation value below which the Insert Effect will ignore the modulation source. It can be set anywhere below the Mod Src Max, from 0 to 127.

5. Turn the Parameter knob until the display shows:

The name of the current Insert Effect

m

```
Insert: MR Insert FX
Mod Src Max=     108
```

i

What you see here may be different

The Mod Src Max parameter determines the modulation value above which the Insert Effect will ignore the modulation source. It can be set anywhere above the Mod Src Min, from 0 to 127.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Setting the Insert Effect Parameter to be Modulated in Real-Time

The MR-Rack allows you to modulate any of the current Insert Effect's parameters, with the exception of either the LFO Rate and DDL Time parameters when they're set to a division of the System clock tempo.

### To Select an Insert Effect Parameter for Real-Time Modulation

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

```
Hit ENTER to edit:
Insert Effect
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Insert Effect

m

```
Insert: MR Insert FX
Dest=    a parameter
```

i

What you see here will be different

Each Insert Effect has its own unique parameters, any of which can be selected for real-time modulation with the Dest parameter.

5. Turn the Value knob to select the Insert Effect parameter you want to modulate in real time.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Setting the Allowable Amount of Real-Time Insert Effect Modulation

It's useful to be able to limit the amount of change a real-time modulator can impose on a parameter. You can use the Dest Min and Dest Max parameters to pre-determine the low and high limits to which the Dest parameter can be set by the Mod Src. The minimum modulation amount received from the Mod Src will never set the Dest parameter lower than the value set with the Dest Min parameter, nor will the maximum modulation received ever set it higher than the value established by Dest Max.

Real-time modulation can only set the LFO Rate and DDL Time parameters to their unsynchronized range of values.

---

**Note:** If the Dest Min is set above the Dest Max, the modulation will be inverted, with higher modulation amounts lowering the parameter's values, and vice versa.

---

### To Set the Insert Effect Modulation Amount

1. Press the Effects button if its yellow LED is not already lit.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Insert Effect
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Insert Effect

m

```
Insert: MR Insert FX
Dest Min=     33
```

i

What you see here may be different

The Dest Min parameter determines the lowest value to which the Dest parameter can be set by the modulation source. It can be set anywhere from 0 to 127.

5. Turn the Parameter knob until the display shows:

The name of the current Insert Effect

m

```
Insert: MR Insert FX
Dest Max=     108
```

i

What you see here may be different

The Dest Max parameter determines the highest value to which the Dest parameter can be set by the modulation source. It can be set anywhere from 0 to 127.

If the Min is set above the Max, the modulation will be inverted, with higher modulation amounts lowering the parameter's values, and vice versa.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Determining Which MR-Rack Outputs the Insert Effect Will Use

You can route the Insert Effect to the MR-Rack's rear-panel Main or Aux output jacks. This can be convenient for isolating Insert Effect Sounds to their own outputs.

### To Set the Insert Effect's Output Routing

1. Press Enter.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Output Assigns
```

3. Press Enter.
4. Turn the Parameter knob until the display shows:

```
Output Assign for
Insert Effect=  Main
```

   The output of the Insert Effect can be routed to:
   - Main—the output of the Insert Effect will be routed to the MR-Rack's Main Outs
   - Aux—the output of the Insert Effect will be routed to the MR-Rack's Aux Outs
5. Use the value knob to route the Insert Effect's output to the MR-Rack's rear-panel Main Outs or the Aux Outs.

# Working with the Global Chorus

The MR-Rack Global Chorus offers a host of parameters that allow you to adjust it to your taste. Global Chorus parameter values are saved with each Performance.

### To Access the Global Chorus Parameters

1. Press the Effects button if its yellow LED is not already lit.

---

**Note:** If the Effect button's red LED is lit or flashing, you may not be able to hear the Global Chorus. See "Bypassing Effects" later in this chapter to learn about bypassing and un-bypassing Effects.

---

2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Chorus
```

3. Press the Enter button.
4. Use the Parameter knob to select the Global Chorus parameter you want to modify, and use the Value knob to set the displayed parameter to the desired value.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

## Selecting a Global Chorus Preset

The MR-Rack contains a number of Global Chorus presets. The Chorus is quite editable—these presets can serve as starting points. The presets are chosen with the Global Chorus Preset parameter.

### To Select a Global Chorus Preset

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Chorus
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

```
Global Chorus:
Preset=  User Preset
```

You can select any of the Global Chorus presets:

- MR Chorus
- MR Classic
- Fast & Wide
- Halleluiah
- Padmaker
- Slow & Deep
- Super Slow
- Thick
- Vintage
- Wide
- Slow Rotary
- Fast Rotary

When you first dial to the Global Chorus Preset display, the User Preset is selected—it contains the Global Chorus parameter settings that were in place when the current Performance was last saved. If you've been editing the current Performance and think you may want to use or tweak the User Preset—but you would like to listen to the other presets anyway, to see what they're like—save the Performance before selecting other Global Chorus presets. When you select a new preset, the User Preset is discarded, and can only be retrieved by reselecting the Performance.

5. Use the Value knob to select the Global Chorus Preset you'd like to use.

Allow a moment for the MR-Rack to download the new Global Chorus Preset you've chosen.

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

## Using the Chorus Bus Wet/Dry Mix

When a Part is assigned to the Chorus bus, its Sound is routed to a wet/dry mix control. The wet/dry control determines the relative balance between the Sound as it is before going through the Global Chorus (dry), and as it is after the going through the Chorus (wet). The Chorus FX Bus Input Mix parameter provides the wet/dry balance control.

### To Set the Chorus FX Bus Wet/Dry Input Mix

1. Press the Effects button if its yellow LED is not already lit.

To access the Parameters described on this page (unless otherwise noted):
Press the Effects button, and follow the instructions above.

2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Chorus
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

```
Chorus FX Bus:
Input Mix=  Full Wet
```

i

What you see here may be different

You can select the Chorus Bus wet/dry mix anywhere from Full Dry (no Chorus) to Full Wet (all Chorus):

5. Use the Value knob to set the Chorus FX Bus Input Mix as you prefer.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Adding Reverb to the Global Chorus

It's often desirable to add some Reverb to Chorused Sounds. The MR-Rack allows you to do this by sending some or all of the Chorus wet/dry mix (described above) to the Global Reverb. This amount is determined by the Chorus FX Bus Global Reverb Amount parameter.

### To Add Global Reverb to the Global Chorus

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Chorus
```

3. Press the Enter button.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

4. Turn the Parameter knob until the display shows:

```
Chorus FX Bus:
GlobalReverb Amt=  0
```

The number you see here may be different

You can send any amount of the Chorus Bus wet/dry mix to the Global Reverb, from 0 to 127.

5. Use the Value knob to set the Chorus FX Bus Global Reverb Amount send as you prefer.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Adjusting the Global Chorus LFO Rate

The Global Chorus creates two digital copies of sound coming into the Chorus and then plays back the copies in stereo, slightly delayed, over the original uneffected sound (the copies generally play back at slightly different times, for a "fattening" effect). When the amount of time by which the copies are delayed is changed, the characteristic sweep of a chorus is heard. The Chorus LFO Rate sets how long it will take for the delay time to change from its shortest value to its longest value.

### To Adjust the Global Chorus LFO Rate

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Chorus
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Global Chorus preset

```
Chorus:    MR Chorus
LFO Rate=      O.5Hz
```

What you see here may be different

The Chorus LFO Rate parameter can be set anywhere from 0.0Hz to 20.0Hz.

5. Use the Value knob to set the Chorus LFO Rate as you prefer.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

other Effects for editing. Pressing Enter a third time will bring you back to this display.

## Adjusting the Global Chorus Depth

The Global Chorus creates two digital copies of sound coming into the Chorus and then plays back the copies in stereo, slightly delayed, over the original uneffected sound (the copies generally play back at slightly different times, for a “fattening” effect). When the amount of time by which the copies are delayed is changed, the characteristic sweep of a chorus is heard. The Chorus Depth parameter determines how much the original delay time will be increased and decreased.

### To Adjust the Global Chorus Depth

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Chorus
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Global Chorus preset

m

```
Chorus:    MR Chorus
Chorus Depth=  O.5ms
```

i

What you see here may be different

The Chorus Depth parameter can be set anywhere from 0.0ms (milliseconds) to 25.0ms.

5. Use the Value knob to set the Chorus Depth as you prefer.

**Tip:** Press the Enter button once or twice if you’d like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

## Adjusting the Global Chorus Center

The Global Chorus creates two digital copies of sound coming into the Chorus and then plays back the copies in stereo, slightly delayed, over the original uneffected sound (the copies generally play back at slightly different times, for a “fattening” effect). When the amount of time by which the copies are delayed is changed, the characteristic sweep of a chorus is heard. The Chorus Center parameter sets the basic amount of delay time between the original uneffected sound and the copies.

### To Adjust the Global Chorus Center

1. Press the Effects button if its yellow LED is not already lit.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Chorus
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Global Chorus preset

m

```
Chorus:  User Preset
Chorus Center=1O.6ms
```

i

What you see here may be different

The Chorus Depth parameter can be set anywhere from 0.0ms (milliseconds) to 25.0ms.

5. Use the Value knob to set the Chorus Depth as you prefer.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Adjusting the Global Chorus Spread

The Global Chorus is a stereo chorus. The Chorus Spread parameter allows you to decide just how pronounced you'd like the stereo effect to be.

### To Adjust the Global Chorus Spread

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Chorus
```

3. Press the Enter button.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

4. Turn the Parameter knob until the display shows:

The name of the current Global Chorus preset

m

```
Chorus:    MR Chorus
Spread=  L----|----R
```

i

What you see here may be different

The Chorus Spread display depicts the Chorus's stereo image graphically.

5. Use the Value knob to set the Chorus Spread as you prefer.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Adjusting the Global Chorus Phase

The Global Chorus creates two digital copies of sound coming into the Chorus and then plays back the copies in stereo, slightly delayed, over the original uneffected sound (the copies generally play back at slightly different times, for a "fattening" effect). When the amount of time by which the copies are delayed is changed, the characteristic sweep of a chorus is heard. The Chorus Phase parameter determines to whether the two copies' delay times will change together, or 180 degrees out of sync with each other—as one copy's delay time lengthens, the other's will shorten, and vice-versa.

### To Adjust the Global Chorus Phase

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Chorus
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Global Chorus preset

m

```
Chorus:    MR Chorus
Chorus Phase=   0deg
```

i

What you see here may be different

The Chorus Phase parameter can be set to:

- 0deg—the delay times of the left and right copies of the original uneffected sound will change together

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

- -180deg—the delay times of the left and right copies of the original uneffected sound will change 180 degrees out of sync with each other

5. Use the Value knob to set the Chorus Phase as you prefer.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Determining Which MR-Rack Outputs the Global Chorus Will Use

You can route the Global Chorus to the MR-Rack's rear-panel Main or Aux output jacks. This can be convenient for isolating Chorused Sounds to their own outputs.

### To Set the Global Chorus's Output Routing

1. Press Enter.

   If the Effect button's red LED is lit or flashing, you may not be able to hear the Global Chorus. See "Bypassing Effects" later in this chapter to learn about bypassing and un-bypassing Effects.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Output Assigns
```

3. Press Enter.
4. Turn the Parameter knob until the display shows:

```
Output Assign for
Global Chorus=  Main
```

   The output of the Global Chorus can be routed to:
   - Main—the output of the Global Chorus will be routed to the MR-Rack's Main Outs
   - Aux—the output of the Global Chorus will be routed to the MR-Rack's Aux Outs
5. Use the value knob to route the Global Chorus's output to the MR-Rack's rear-panel Main Outs or the Aux Outs.

# Working with the Global Reverb

The MR-Rack Global Reverb features a number of parameters that allow you to customize it to your idea of perfection. You can also route the Global Reverb to either the MR-Rack's rear-panel Main or Aux Outs. Global Reverb parameter values are saved with each Performance.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

### To Access the Global Reverb Parameters

1. Press the Effects button if its yellow LED is not already lit.

**Note:** If the Effect button's red LED is lit or flashing, you may not be able to hear the Global Reverb. See "Bypassing Effects" later in this chapter to learn about bypassing and un-bypassing Effects.

2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Reverb
```

3. Press the Enter button.
4. Use the Parameter knob to select the Global Reverb parameter you want to modify and use the Value knob to set the displayed parameter to the desired value.

## Selecting a Global Reverb Preset

The MR-Rack contains a number of Global Reverb presets. The Reverb is completely customizable—the presets serve as starting points. Global Reverb presets are chosen with the Reverb Preset parameter.

### To Select a Global Reverb Preset

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Reverb
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

```
Global Reverb:
Preset=  User Preset
```

   You can select any of the Global Reverb presets:
   - Smooth Plate
   - Large Hall
   - Small Hall
   - Big Room
   - Small Room
   - Reflections
   - Bright
   - Huge Place

   When you first dial to the Global Reverb Preset display, the User Preset is selected—it contains the Global Reverb parameter settings that were in place when the current Performance was last saved. If you've been editing the current Performance and think you may want to use or tweak the User Preset—but you would like to listen to the other presets anyway, to see what they're like—save the Performance before selecting other Global Reverb presets. When you select a new preset, the User Preset is discarded, and can only be retrieved by reselecting the Performance.
5. Use the Value knob to select the Global Reverb Preset you'd like to use.

To access the Parameters described on this page (unless otherwise noted):
Press the Effects button, and follow the instructions above.

Allow a moment for the MR-Rack to download the new Global Reverb Preset you've chosen.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Setting Reverb Amounts for the Light, Medium and Wet Reverb Busses

There are three different amounts of Global Reverb available to the Parts—and their Sounds—in every Performance. While the overall volume of the Global Reverb Effect is determined by the setting of the Reverb Return Level parameter (described later in this chapter) the MR-Rack provides three separate and customizable busses for sending Parts—and their Sounds—into a Performance's Global Reverb Effect:

- the LightReverb FX Bus—for sending minimal amounts of dry sound into the Global Reverb
- the MediumReverb FX Bus—for sending average amounts of dry sound into the Global Reverb
- the WetReverb FX Bus—for sending larger amounts of dry sound into the Global Reverb

The LightReverb, MediumReverb and WetReverb busses can each be set anywhere within their general ranges—their settings are saved with the Performance. The FX Bus Part parameter assigns Parts and their Sounds to whichever of these busses provides the desired amount of Global Reverb (for details, see "Adding Effects to Part Sounds" in ***Chapter 4***).

### To Set the LightReverb Amount

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Reverb
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

```
LightReverb FX Bus:
GlobalReverb Amt= 43
```

The number you see here may be different

The LightReverb Global Reverb Amount can be set anywhere from 0 to 63.

5. Use the Value knob to set the LightReverb Global Reverb Amount to the desired value.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

### To Set the MediumReverb Amount

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Reverb
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

```
MediumReverb FX Bus:
GlobalReverb Amt= 64
```

i

The number you see here may be different

The MediumReverb Global Reverb Amount can be set anywhere from 32 to 95.

5. Use the Value knob to set the MediumReverb Global Reverb Amount to the desired value.

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

### To Set the WetReverb Amount

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Reverb
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

```
WetReverb FX Bus:
GlobalReverb Amt= 99
```

i

The number you see here may be different

The WetReverb Global Reverb Amount can be set anywhere from 64 to 127.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

5. Use the Value knob to set the Global Reverb Amount to the desired value.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Setting the Global Reverb's Volume

The MR-Rack offers three busses that allow Part Sounds to be treated with varying degrees of Reverb. (See "Setting the Reverb Amounts for the Light, Medium and Wet Reverb Busses" above for details.) The overall volume of the Global Reverb is determined by the setting of the Reverb Return Level parameter. Though the three different amounts of dry sound sent into the Global Reverb by the three busses don't change when this parameter is adjusted, the volume of the Global Reverb itself does. This has the effect of raising and lowering the amount of Reverb for all three busses at once.

### To Set the Global Reverb Overall Volume

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Reverb
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Global Reverb preset

m

```
Reverb:    MR Reverb
Return Level=    108
```

i

The number you see here may be different

You can set the Global Reverb Return Level to any amount from 0 to 127.

5. Use the Value knob to set the Global Reverb Return Level to the desired amount.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Setting the Global Reverb's Decay Time

Reverb has the effect of making the Sounds it processes seem to exist in a real (or sometimes, surreal) acoustic space. The size of that imaginary space is determined primarily by how long it takes for the Reverb to fade away, or ***decay***. The Reverb Decay parameter allows you to adjust the size of the imaginary space created by the Global Reverb by setting the Decay time by fractions of seconds.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

### To Set the Global Reverb's Decay Time

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Reverb
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Global Reverb preset

m

```
Reverb:    MR Reverb
Decay=        2.2sec
```

i

The number you see here may be different

You can set the Global Reverb Decay Time from 0.0 sec (seconds) to 10.0sec.

5. Use the Value knob to set the Global Reverb Decay time to the desired length.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Setting the Global Reverb's High-Frequency Damping

As the Global Reverb decays, HF (for "High Frequency") Damping progressively decreases the volume of frequencies that occur above the value set with the Reverb HF Damping parameter. By setting the damping to a higher frequency, the Global Reverb appears more expansive, since its high-frequency content doesn't drop off before the Reverb fades away. Lower values suggest a somehow more contained space as the decay becomes muffled as it rings off.

### To Set the Global Reverb's HF Damping

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Reverb
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Global Reverb preset

m

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

Reverb:  MR Reverb
HF Damping=  10.2kHz

i

The number you see here may be different

You can set the Global Reverb High-Frequency Damping from 100 Hz to 21.2kHz.

5. Use the Value knob to set the Global Reverb HF Damping to the desired frequency.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Setting the Global Reverb's Brightness

The Global Reverb's HF (for "High Frequency") Bandwidth parameter filters out frequencies that occur above the HF Bandwidth parameter's value. Set the HF Bandwidth to a higher frequency to suggest hard reflective surfaces and lower values to imply softer surfaces .

### To Set the Global Reverb's HF Bandwidth

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

Hit ENTER to edit:
Global Reverb

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Global Reverb preset

m

Reverb:  MR Reverb
HF Bandwidth=14.2kHz

i

The number you see here may be different

You can set the Global Reverb High-Frequency Bandwidth from 100 Hz to 21.2kHz.

5. Use the Value knob to set the Global Reverb HF Bandwidth to the desired frequency.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Setting the Global Reverb's Diffusion

Quick, unusually loud bursts of sound—transients—may need some help to blend in pleasingly with the rest of the Global Reverb. The Reverb Diffusion 1 and 2 parameters offer

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

a way to blur—or “smear”—these bursts when you don’t want them to be perceived as such discrete events within the overall Reverb. Reverb Diffusion 1 works on the higher-frequency components of such transients, while Reverb Diffusion 2 affects their lower-frequencies. Higher values for both of these parameters increase the smearing. Lower values leave the transients as more discernible individual reflections within the Global Reverb.

### To Set the Global Reverb’s High-Frequency Diffusion

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Reverb
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Global Reverb preset

```
Reverb:    MR Reverb
Diffusion 1=     50
```

The number you see here may be different

You can set the Global Reverb’s high-frequency Diffusion from 0 to 100.

5. Use the Value knob to set the Global Reverb Diffusion 1 to the desired amount.

---

**Tip:** Press the Enter button once or twice if you’d like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

### To Set the Global Reverb’s Low-Frequency Diffusion

1. Press the Effects button if its yellow LED is not already lit.

To access the Parameters described on this page (unless otherwise noted):
Press the Effects button, and follow the instructions above.

2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Reverb
```

3. Press the Enter button.
4. Turn the Parameter knob until the display shows:

The name of the current Global Reverb preset

m

```
Reverb:    MR Reverb
Diffusion 2=      50
```

i

The number you see here may be different

You can set the Global Reverb's low-frequency Diffusion from 0 to 100.

5. Use the Value knob to set the Global Reverb Diffusion 2 to the desired amount.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Setting the Global Reverb's Definition

Reverb is achieved by creating many copies of an uneffected signal and playing back those copies one after the other, too close together in time to be perceived as separate copies, and decreasing in volume until silence is reached. As the copies fade away, they may occur closer together in time, acquiring a greater density. The Reverb Definition parameter allows you to adjust how quickly this density will increase as the Global Reverb decays. Higher values cause the Global Reverb to "thicken" as it trails off. Lower values leave it with a more consistent sound as it fades away.

### To Set the Global Reverb's Definition

1. Press the Effects button if its yellow LED is not already lit.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Global Reverb
```

3. Press the Enter button.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

4. Turn the Parameter knob until the display shows:

The name of the current Global Reverb preset

m

Reverb: MR Reverb
Definition= 50

i

The number you see here may be different

You can set the Global Reverb's Definition from 0 to 100.

5. Use the Value knob to set the Global Reverb Definition to the desired amount.

---

**Tip:** Press the Enter button once or twice if you'd like to quickly get to either of the other Effects for editing. Pressing Enter a third time will bring you back to this display.

---

## Determining Which MR-Rack Outputs the Global Reverb Will Use

You can route the Global Reverb to the MR-Rack's rear-panel Main or Aux output jacks. This can be convenient for isolating Reverbed Sounds to their own outputs.

### To Set the Global Reverb's Output Routing

1. Press Enter.
2. Turn the Parameter knob until the display shows:

Hit ENTER to edit:
Output Assigns

3. Press Enter.
4. Turn the Parameter knob until the display shows:

Output Assign for
Global Reverb= Main

The output of the Global Reverb can be routed to:

- Main—the output of the Global Reverb will be routed to the MR-Rack's Main Outs
- Aux—the output of the Global Reverb will be routed to the MR-Rack's Aux Outs

5. Use the value knob to route the Global Reverb's output to the MR-Rack's rear-panel Main Outs or the Aux Outs.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

# Working with Dry Sounds

MR-Rack Parts and their Sounds don't have to use the MR-Rack Effects—they can be assigned to the Dry bus (see "Understanding Effects Busses" above). The Dry bus can be routed to either the MR-Rack's Main or Aux Outs.

### To Set the Dry Bus's Output Routing

1. Press Enter.
2. Turn the Parameter knob until the display shows:

```
Hit ENTER to edit:
Output Assigns
```

3. Press Enter.
4. Turn the Parameter knob until the display shows:

```
Output Assign for
Dry FX Bus=     Main
```

   The output of the Dry Effect bus can be routed to:
   - Main—the output of the Dry Effect bus will be routed to the MR-Rack's Main Outs
   - Aux—the output of the Dry Effect bus will be routed to the MR-Rack's Aux Outs
5. Use the value knob to route the Dry Effect bus's output to the MR-Rack's rear-panel Main Outs or the Aux Outs.

# Bypassing Effects

There may be times when you'd like to temporarily turn an Effect—or all of the Effects—off in order to hear the Sounds you're using them on in their uneffected, "dry," state. This is accomplished by ***bypassing*** the Effects. You can bypass an individual Effect, pairs of them or all of them at once. The MR-Rack provides a number of ways to bypass Effects, so that it's easy to do no matter what you're currently doing with the MR-Rack. Some bypass methods use the Effects button, some use the Effects Bypass parameter, and one uses both.

**Note:** When the Insert Effects is bypassed, it still responds to real-time modulation via MIDI. Any real-time changes made by that modulation while the Effect is bypassed will be heard when it's un-bypassed.

The Effect button's red LED tells you at a glance whether any or all of the Effects are bypassed:

- If the Effect button's red LED is not lit, none of the Effects are bypassed.
- If the Effect button's red LED is lit and not flashing, one or two of the Effects are bypassed and won't be heard. (See "Learning Which Effects Are Bypassed" below to learn how to tell which Effect or Effects are turned off.)
- If the Effect button's red LED is flashing, all of the Effects are bypassed and won't be heard.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

## Bypassing and Un-Bypassing With the Effects Button

You can use the Effects button as a convenient bypass/un-bypass toggle switch.

### To Bypass an Individual Effect Using the Effects Button

In order to bypass one of the Effects using the Effects button, the MR-Rack's display must show:

```
Hit ENTER to edit:
 an Effect
```

This should be the name of the Effect you want to bypass

You can get to this display easily, regardless of where in the MR-Rack you are when you decide to bypass an Effect. One of these scenarios should apply to you:

- If you're not currently working on the Effects, press the Effects button so that its yellow LED lights. Turn the Parameter knob to dial in the version of the display above that shows the Effect you want to bypass.
- If you've just begun to work on the Effects—and its yellow LED is lit—but haven't yet hit Enter to start editing the Insert Effect, Global Chorus or Global Reverb parameters, turn the Parameter knob to dial in the version of the display above that shows the Effect you want to bypass.
- If you're currently editing the Insert Control Part or Bypass parameter—and the Effect button's yellow LED is lit—turn the Parameter knob to dial in the version of the display above that shows the Effect you want to bypass.
- If you're currently editing the Insert Effect, Global Chorus or Global Reverb parameters, press the Effect button and then turn the Parameter knob to dial in the version of the display above that shows the Effect you want to bypass.

Once the "Hit ENTER to edit:" display appears, and the Effect you want to bypass is showing on its bottom line:

1. Press the Effects button.

   The Effects button's red LED will light and the display will show:

```
Hit ENTER to edit:
 an Effect   *BYPD*
```

*BYPD* tells you the Effect is bypassed

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

### To Un-Bypass an Individual Effect Using the Effects Button

Un-bypassing works in virtually the same manner as bypassing. In order to un-bypass an Effect using the Effects button, the MR-Rack's display must show:

```
Hit ENTER to edit:
 an Effect   *BYPD*
```

This should be the name of the Effect you want to un-bypass

There are a number of ways to get to this display, depending on what you're currently doing. One of these scenarios should describe your situation:

- If you're not currently working on the Effects, press the Effects button so that its yellow LED lights. Turn the Parameter knob to dial in the version of the display above that shows the Effect you want to un-bypass.
- If you've just begun to work on the Effects—and its yellow LED is lit—but haven't yet hit Enter to start editing the Insert Effect, Global Chorus or Global Reverb parameters, turn the Parameter knob to dial in the version of the display above that shows the Effect you want to un-bypass.
- If you're currently editing the Insert Control Part or Bypass parameter—and the Effect button's yellow LED is lit—turn the Parameter knob to dial in the version of the display above that shows the Effect you want to un-bypass.
- If you're currently editing the Insert Effect, Global Chorus or Global Reverb parameters, press the Effect button and then turn the Parameter knob to dial in the version of the display above that shows the Effect you want to un-bypass.

Once the "Hit ENTER to edit:" display appears, and the Effect you want to un-bypass is showing on its bottom line:

1. Press the Effects button.
   The Effects button's red LED will turn off and the display will show:

```
Hit ENTER to edit:
 an Effect
```

This will be the name of the Effect you've just un-bypassed

### To Use the Effects Button Alone to Bypass All Effects at Once

You can use this technique to quickly bypass all of the Effects.

1. Double-click the Effects button.
   The Effect button's red LED will flash, and all of the Effects will be bypassed.

### To Use the Effects Button to Un-Bypass All Effects at Once

If all of the Effect are bypassed, you can use this technique to quickly un-bypass them all.

1. Double-click the Effects button.
   The Effect button's red LED will go out all of the Effects will be un-bypassed.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

## Bypassing and Un-Bypassing with the Bypass Parameter

The Effects Bypass parameter provides a one-stop procedure that offers the most comprehensive set of options for bypassing and un-bypassing Effects.

### To Bypass and Un-Bypass Effects With the Bypass Parameter

The Effects Bypass parameter provides a simple way to bypass and un-bypass any or all of the Effects. Its display looks like this:

```
Effects:
Bypass=        None
```

i

The text here may vary

The Effects Bypass parameter can be reached in a few different ways, depending on what you're doing when you decide to access it:

- If you're not currently working on the Effects, press the Effects button so that its yellow LED lights and then turn the Parameter knob until the Bypass display appears.
- If you've just begun to work on the Effects—and the Effects button's yellow LED is lit—but haven't yet hit Enter to start editing the Insert Effect, Global Chorus or Global Reverb parameters, turn the Parameter knob until the above display appears.
- If you're currently editing the Insert Control Part—and the Effect button's yellow LED is lit—turn the Parameter knob until the above display appears.
- If you're currently editing the Insert Effect, Global Chorus or Global Reverb parameters, press the Effect button and then turn the Parameter knob until the above display appears.

Once the "Effects: Bypass" display is showing:

1. Turn the Value knob to select which Effect or Effects you'd like to bypass. The choices are:
   - None—none of the Effects will be bypassed
   - Chorus Only—only the Chorus will be bypassed
   - Reverb only—only the Reverb will be bypassed
   - Chorus&Reverb—the Global Chorus and Global Reverb will be bypassed
   - Insert Only—only the Insert Effect will be bypassed
   - Insert&Chorus—the Insert Effect and the Global Chorus will be bypassed
   - Insert&Reverb—the Insert Effect and the Global Reverb will be bypassed
   - All Effects—all of the Effects will be bypassed
2. Turn the Value knob to bypass or un-bypass any or all of the Effects as you desire.

To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

### Quick Bypass of All Effects with the Bypass Parameter

You can press the Effect button once to quickly bypass or un-bypass all of the Effects at once while you're viewing the Effects Bypass parameter display:

```
Effects:
Bypass=        None
```

The text here may vary

- If none of the Effects are currently bypassed as you view the Effects Bypass parameter display, press the Effects button once to bypass them all.
- If any of the Effects are currently bypassed as you view the Effects Bypass parameter display, press the Effects button once to un-bypass them all.

## Learning Which Effects are Bypassed When the Red Effects LED Is Lit

If the Effects button's red LED is lit—and not flashing—one or two Effects are bypassed. If it's flashing, all of the Effects are bypassed.

### To Easily Find Out Which Effects are Bypassed

The Effects Bypass parameter's display can quickly tell you which Effect or Effects are bypassed.

```
Effects:
Bypass=  Chorus Only
```

This area of the display shows which Effect or Effects are currently bypassed

The Effects Bypass parameter can be reached in a few different ways, depending on what you're doing when you decide to access it:

- If you're not currently working on the Effects, press the Effects button so that its yellow LED lights and then turn the Parameter knob until the Bypass display appears.
- If you've just begun to work on the Effects—and the Effects button's yellow LED is lit—but haven't yet hit Enter to start editing the Insert Effect, Global Chorus or Global Reverb parameters, turn the Parameter knob until the above display appears.
- If you're currently editing the Insert Control Part—and the Effect button's yellow LED is lit—turn the Parameter knob until the above display appears.
- If you're currently editing the Insert Effect, Global Chorus or Global Reverb parameters, press the Effect button and then turn the Parameter knob until the above display appears.

The Effects Bypass parameter can be adjusted, if you like, to change which Effect or Effects are bypassed.

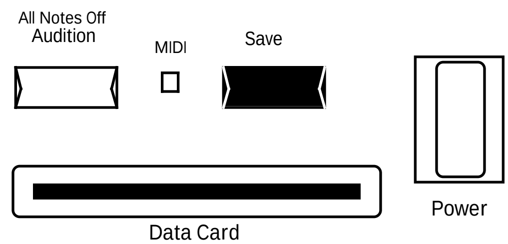
To access the Parameters described on this page (unless otherwise noted):

Press the Effects button, and follow the instructions above.

# Chapter 6
# Special Commands

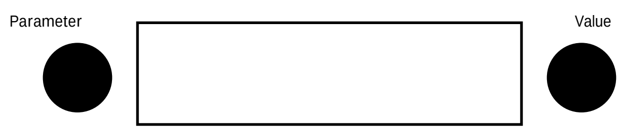
This chapter describes some of the special processes the MR-Rack can perform. Once you've started customizing the MR-Rack's Sounds and Performances, you'll probably want to save your work. This chapter will teach you how to save, copy, and store MR-Rack information to internal RAM memory, MIDI storage devices, and to PCMCIA SRAM memory cards, which you'll learn how to prepare for storage.

To access the functions in this chapter, press the Save button, except where noted.




Each of the functions described in this chapter are invoked with a ***command***.

To select a command, turn the Parameters knob. To select the object of the command, turn the Value knob.




## The Four Special Commands

Pressing the Save button displays and allows four commands:

- Save—to store a selected object in any writable, non-ROM, location
- Dump—transmits the selected object as MIDI SysEx data that can be stored in any external MIDI storage device capable of receiving SysEx dumps
- Copy—copies entire Sound and Performance banks between writable memory locations
- Init—clears sound and memory locations in preparation for new data

### To Abort a Command

The Exit button is used to abort the current command and displays the Sound page.

**Note:** Only RAM and non-write-protected card locations are visible as writable target destinations.

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

# Saving Commands

## Saving the Current Performance

This command is used to save the currently selected Performance to any writable Performance location.

### To Save the Current Performance

1. Press the Performance button and select the Performance that you want to save.
2. Press the Save button.
3. Turn the Parameter knob all the way counter clockwise.
4. Turn the Value knob all the way counterclockwise. The display shows:

```
Hit ENTER to:
Save:ThisPerformance
```

5. Press the Enter button.
   If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

   This display is offered as a double-check for you to make sure you really want to save this Performance. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.
6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press the Enter button. The display now allows you to name your Performance:

Left knob function    Right knob function

```
LEFT:pos  RIGHT:char
New Name=InitPerform
```

New Performance Name

   The Parameter knob (left) is used to select the character position within the name. You will know which character is selected because the position in the display will be underlined. Turning the knob clockwise moves the location to the right, and counterclockwise moves it to the left. The Value knob (right) is used to select the alpha-numeric character for that location.
7. Use the Parameter and Value knobs to select a name for your Performance.
8. When you've named your Performance, press the Enter button.
9. Use the Parameter knob to select either:
   - RAM—to save the Performance to the MR-Rack's internal RAM memory.
   - CRD—to save the Performance to an installed data card (see "Formatting a PCMCIA Card" below for instructions on how to prepare a data card for storage).

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

10. Use the Value knob to select a specific location for your Performance.
11. When you've selected a location for your Performance, press the Enter button. The MR-Rack will provide confirmation of your Save operation's success, and then display the newly-saved Performance.

**Warning:** When saving a Performance to a data card, avoid removing the card from its slot until the saving procedure is complete—doing so may result in corrupted data on the card and/or in the MR-Rack's internal memory.

## Saving the Current Effects Setup

This command is used to save the Effect setup in the currently selected Performance to any writable Performance location. You can use this command to copy an effect setup from one Performance to another. For more information about the MR-Rack Effects, see ***Chapter 5***.

### To Save the Current Effects Setup

1. Press the Performance button and select the Performance containing the Effect setup that you want to save.
2. Press the Save button.
3. Turn the Parameter knob all the way counterclockwise.
4. Turn the Value knob until the display shows:

```
Hit ENTER to:
Save:ThisEffectSetup
```

5. Press the Enter button.

   If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

   This display is offered as a double-check for you to make sure you really want to save this Effect setup. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.
6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter and use the Parameter knob to select either:
   - RAM—to save the Effect setup to a Performance in the MR-Rack's internal RAM memory.
   - CRD—to save the Effect setup to a Performance on an installed data card (see "Formatting a PCMCIA Card" below for instructions on how to prepare a data card for storage).
7. Use the Value knob to select a specific Performance for your Effect setup.
8. When you've selected a Performance in which to save your Effect setup, press the Enter button.

**Warning:** When saving an Effect setup to a Performance on a data card, avoid removing the card from its slot until the saving procedure is complete—doing so may result in corrupted data on the card and/or in the MR-Rack's internal memory.

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

## Saving the Current PerfEditKit

This command is used to save the PerfEditKit in the currently selected Performance to any writable Performance location. For more information about using, creating, and editing Drum Kit Sounds, see ***Chapter 4***.

### To Save the Current PerfEditKit

1. Press the Performance button and select the Performance that contains the PerfEditKit that you want to save.
2. Press the Save button.
3. Turn the Parameter knob all the way counter clockwise.
4. Turn the Value knob until the display shows:

```
Hit ENTER to:
Save:ThisPerfEditKit
```

5. Press the Enter button.

   If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

   This display is offered as a double-check for you to make sure you really want to save this PerfEditKit. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.
6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter and use the Parameter knob to select either:
   - RAM—to save the PerfEditKit to a Performance in the MR-Rack's internal RAM memory.
   - CRD—to save the PerfEditKit to a Performance on an installed data card (see "Formatting a PCMCIA Card" below for instructions on how to prepare a data card for storage).
7. Use the Value knob to select a specific Performance for your PerfEditKit.
8. When you've selected a Performance in which to save your PerfEditKit, press the Enter button.

---

**Warning:** When saving a PerfEditKit to a Performance on a data card, avoid removing the card from its slot until the saving procedure is complete—doing so may result in corrupted data on the card and/or in the MR-Rack's internal memory.

---

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

## Saving the Current Part's Sound

This command is used to save the Sound on the currently selected Part to any writable Sound location. If the PerfEditKit is on the currently selected Part, it will be copied out into a Sound location, with a type of CUSTOM, and can be renamed.

When a Part's Sound is saved, all of the current Sound-related Part settings are saved within the Sound:

- Part Volume
- Expression (Mix)
- Part Pan
- FX Bus
- Pitch Bend Up
- Pitch Bend Down
- Octave Shift
- Semitone Shift
- Fine Tuning
- PitchTbl
- Glide Mode
- Glide Time
- Delay Offset
- SyncLFO&Noise
- Normal LFO Rates
- LFO Depth
- LFO Delay Time
- Amp Env Attack
- Amp Env Decay
- Amp Env Release
- Filter Cutoff
- Filt Env Attack
- Filt Env Decay
- Filt Env Release
- Amp&Filt Env Vel
- Key Range Lo
- Key Range Hi
- VelocityRange Lo
- VelocityRange Hi
- VelocityMode
- PressureMode

(The Vol/MixPolarity parameter and the various MIDI reception filter parameters are not saved with the Part's Sound, since they affect the behavior of the Part itself, and have no impact on the Sound.)

**Note:** After a Part's Sound has been saved, the Parts parameters are reset to their nominal values—the Sound has internalized the previous Part settings.

When the Sound being saved is on the Insert Control Part and is assigned to the Insert FX Bus, the current Insert Effect will be saved in the Sound. If it's assigned to another FX Bus, only its routing will be saved with the Sound.

When the Part's Sound is a Drum Kit Sound, and any DrumKey is routed to the Insert FX Bus, the Insert Effect will be saved with the Sound. (There's an exception to this rule: when the only DrumKeys routed to the Insert FX Bus are using the Sound called "Silence," the Insert Effect won't be saved with the Sound.) The FX Bus routing of a Drum Kit's DrumKeys is always saved, regardless of whether or not any non-Silence DrumKeys are assigned to the Insert FX Bus.

### To Save the Current Part's Sound

1. Press the Sound button, and use the Select Part buttons to find the Sound that you want to save.
2. Press the Save button.
3. Turn the Parameter knob all the way counterclockwise.

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

4. Turn the Value knob until the display shows:

   Hit ENTER to:
   Save:ThisPart' sSound

5. Press the Enter button.

   If the System Write Protect parameter is set to Prompt, the display will show:

   System Write Protect
   On! ENTER Overrides.

   This display is offered as a double-check for you to make sure you really want to save this Sound. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press the Enter button. The display now allows you to name your Sound:

   Left knob function — Right knob function
   m — m

   LEFT:pos  RIGHT:char
   New Name=MySoundName

   i
   New Sound Name

   The Parameter knob (left) is used to select the character position within the name. You will know which character is selected because the position in the display will be underlined. Turning the knob clockwise moves the location to the right, and counterclockwise moves it to the left. The Value knob (right) is used to select the alpha-numeric character for that location.

7. Use the Parameter and Value knobs to select a name for your Sound.
8. When you've named your Sound, press the Enter button.
9. Use the Value knob to select a SoundFinder type for your Sound. This feature allows you to easily locate similar Sounds. For more information about using SoundFinder, see ***Chapter 1***. For a complete list of SoundFinder types, see ***Chapter 9***.
10. When you've defined a SoundFinder type, press the Enter button.
11. Use the Parameter knob to select either:
    - RAM—to save the Sound to the MR-Rack's internal RAM memory.
    - CRD—to save the Sound to an installed data card (see "Formatting a PCMCIA Card" below for instructions on how to prepare a data card for storage).
12. Use the Value knob to select a specific location for your Sound.
13. When you've selected a location for your Sound, press the Enter button. The display momentarily confirms the successful completion of your command, and selects the newly-saved Sound. All of the Part's Sound-related parameters are reset to their nominal values.

---

**Warning:** When saving a Sound to a data card, avoid removing the card from its slot until the saving procedure is complete—doing so may result in corrupted data on the

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

card and/or in the MR-Rack's internal memory.

If you'd like to install the newly-saved Sound as a SoundFinder category's favorite, turn the Value knob one tick clockwise or counter-clockwise and back to register the new Sound as the current category's favorite.

# Dump Functions

## Dumping the Current Performance

This command is used to transmit the currently selected Performance as MIDI SysEx data to any MIDI storage device capable of receiving a MIDI SysEx dump. Once safely stored, the SysEx data may be re-transmitted back to the MR-Rack's memory. If you're unclear what MIDI SysEx is all about, see "What Is MIDI?" in ***Chapter 9***.

### To Dump the Current Performance

1. Connect a MIDI cable from the MR-Rack MIDI Out to the MIDI In of the receiving unit (the one you will use to store SysEx information).
2. Set up the receiving unit to receive SysEx messages. Its manual should contain instructions on how to do this.
3. Press the MR-Rack's Performance button and select the Performance that you want to save via a SysEx dump.

**Important:** When performing SysEx dumps from the MR-Rack, make note of your MR-Rack's current SysEx Device ID number. This number is embedded in the dumped data. Your MR-Rack will need to be set to this ID number when you want to re-transmit the data back into the MR-Rack. See "Using SysEx Device IDs" in ***Chapter 3*** for details.

4. Press the Save button.
5. Turn the Parameter knob until "Dump:" appears in the bottom line of the display.
6. Turn the Value knob all the way counterclockwise. The display shows:

```
Hit ENTER to:
Dump:ThisPerformance
```

7. Press the Enter button. The display momentarily confirms your dump.
8. Save the SysEx information in your receiving device as explained in its manual.

## Dumping the Current PerfEditKit

This command is used to transmit the PerfEditKit in the currently selected Performance as a Drum Kit Sound via MIDI SysEx. For more information about using, creating, and editing Drum Kit Sounds, see ***Chapter 4***.

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

### To Dump the Current PerfEditKit

1. Connect a MIDI cable from the MR-Rack MIDI Out to the MIDI In of the receiving unit (the one you will use to store SysEx information).
2. Set up the receiving unit to receive SysEx messages. Its manual should contain instructions on how to do this.
3. Press the MR-Rack's Performance button and select the Performance that has the PerfEditKit that you want to save via a SysEx dump.

---

**Important:** When performing SysEx dumps from the MR-Rack, make note of your MR-Rack's current SysEx Device ID number. This number is embedded in the dumped data. Your MR-Rack will need to be set to this ID number when you want to re-transmit the data back into the MR-Rack. See "Using SysEx Device IDs" in ***Chapter 3*** for details.

---

4. Press the Save button.
5. Turn the Parameter knob until "Dump:" appears in the bottom line of the display.
6. Turn the Value knob until the display shows:

```
Hit ENTER to:
Dump:ThisPerfEditKit
```

7. Press the Enter button. The display momentarily confirms your dump.
8. Save the SysEx information in your receiving device as explained in its manual.

## Dumping the Current Part's Sound

This command is used to transmit the Sound on the currently selected Part as MIDI SysEx.

### To Dump the Current Part's Sound

1. Connect a MIDI cable from the MR-Rack MIDI Out to the MIDI In of the receiving unit (the one you will use to store SysEx information).
2. Set up the receiving unit to receive SysEx messages. Its manual should contain instructions on how to do this.
3. Use the MR-Rack's Select Part buttons to find the Sound that you want to save via a SysEx dump.

---

**Important:** When performing SysEx dumps from the MR-Rack, make note of your MR-Rack's current SysEx Device ID number. This number is embedded in the dumped data. Your MR-Rack will need to be set to this ID number when you want to re-transmit the data back into the MR-Rack. See "Using SysEx Device IDs" in ***Chapter 3*** for details.

---

4. Press the Save button.
5. Turn the Parameter knob until "Dump:" appears in the bottom line of the display.

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

6. Turn the Value knob until the display shows:

```
Hit ENTER to:
Dump:ThisPart' sSound
```

7. Press the Enter button. The display momentarily confirms your dump.
8. Save the SysEx information in your receiving device as explained in its manual.

## Dumping All RAM Performances

This command is used to transmit the entire contents of the RAM Performance bank as MIDI SysEx.

### To Dump All RAM Performances

1. Connect a MIDI Cable from the MR-Rack MIDI Out to the MIDI In of the receiving unit (the one you will use to store SysEx information).
2. Set up the receiving unit to receive SysEx messages. Its manual should contain instructions on how to do this.

---

**Important:** When performing SysEx dumps from the MR-Rack, make note of your MR-Rack's current SysEx Device ID number. This number is embedded in the dumped data. Your MR-Rack will need to be set to this ID number when you want to re-transmit the data back into the MR-Rack. See "Using SysEx Device IDs" in ***Chapter 3*** for details.

---

3. Press the MR-Rack's Save button.
4. Turn the Parameter knob until "Dump:" appears in the bottom line of the display.
5. Turn the Value knob until the display shows:

```
Hit ENTER to:
Dump:RAMPerformances
```

6. Press the Enter button. Because you are transmitting a large amount of information, this may take a moment.
7. Save the SysEx information in your receiving device as explained in its manual.

## Dumping All RAM Sounds

This command is used to transmit the entire contents of the RAM Sound bank as MIDI SysEx.

### To Dump All RAM Sounds

1. Connect a MIDI cable from the MR-Rack MIDI Out to the MIDI In of the receiving unit (the one you will use to store SysEx information).
2. Set up the receiving unit to receive SysEx messages. Its manual should contain instructions on how to do this.

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

**Important:** When performing SysEx dumps from the MR-Rack, make note of your MR-Rack's current SysEx Device ID number. This number is embedded in the dumped data. Your MR-Rack will need to be set to this ID number when you want to re-transmit the data back into the MR-Rack. See "Using SysEx Device IDs" in ***Chapter 3*** for details.

3. Press the MR-Rack's Save button.
4. Turn the Parameter knob until "Dump:" appears in the bottom line of the display.
5. Turn the Value knob until the display shows:

```
Hit ENTER to:
Dump:     RAM Sounds
```

6. Press the Enter button. Because you are transmitting a large amount of information, this may take a moment.
7. Save the SysEx information in your receiving device as explained in its manual.

## Performing a System Parameters Dump

This command is used to transmit all of the current System page parameter settings as MIDI SysEx.

### To Perform a System Parameters Dump

1. Connect a MIDI cable from the MR-Rack MIDI Out to the MIDI In of the receiving unit (the one you will use to store SysEx information).
2. Set up the receiving unit to receive SysEx messages. Its manual should contain instructions on how to do this.

**Important:** When performing SysEx dumps from the MR-Rack, make note of your MR-Rack's current SysEx Device ID number. This number is embedded in the dumped data. Your MR-Rack will need to be set to this ID number when you want to re-transmit the data back into the MR-Rack. See "Using SysEx Device IDs" in ***Chapter 3*** for details.

3. Press the MR-Rack's Save button.
4. Turn the Parameter knob until "Dump:" appears in the bottom line of the display.
5. Turn the Value knob until the display shows:

```
Hit ENTER to:
Dump:   System Setup
```

6. Press the Enter button. The display momentarily confirms your dump.
7. Save the SysEx information in your receiving device as explained in its manual.

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

### Sending SysEx Data Back to the MR-Rack

Once SysEx data has been stored to any external storage device, you can load it back into the MR-Rack whenever you want to.

#### To Receive a SysEx Dump

1. Set the MR-Rack's SysEx Recv System parameter to On, so that the MR-Rack's SysEx reception is enabled (see "Using MIDI SysEx" in ***Chapter 3*** for details)
2. Set the MR-Rack's SysEx Device ID System parameter to the same number it was set to when you performed the original SysEx dump (see "Using MIDI SysEx" in ***Chapter 3*** for details)
3. Initiate a SysEx dump from your storage device.

## Copy Functions

### Copying RAM Performances to a PCMCIA Card

This command copies the entire contents of the RAM Performance bank to any selected CRD Performance bank.

#### To Copy RAM Performances to a PCMCIA Card

1. Insert a MR-Rack-formatted RAM card into the card slot on the front panel of the MR-Rack.

   To learn how to format a PCMCIA SRAM card for use with the MR-Rack, see "To Initialize and Format a PCMCIA Card" below.

   The display will briefly show:

   PCMCIA Card inserted
   Registering...

2. Press the Save button.
3. Turn the Parameter knob until "Copy:" appears in the bottom line of the display.
4. Turn the Value knob counterclockwise until the display shows:

   Hit ENTER to:
   Copy:RAMPerformances

5. Press the Enter button.

   If the System Write Protect parameter is set to Prompt, the display will show:

   System Write Protect
   On! ENTER Overrides.

   This display is offered as a double-check for you to make sure you really want to copy the RAM Performances. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter.
7. Turn the Parameter knob to select the current location and intended destination of what you're copying:

```
Copy Performances
From RAM To CRD: 096
```

Performances will be copied from RAM to the card

8. Turn the value knob to select a specific card bank location to copy the RAM Performances into:

```
Copy Performances
From RAM To CRD: 096
```

Performances will be copied to this card bank

9. When you've selected a location for your Performances, press the Enter button. The MR-Rack will clear the destination memory locations and then perform the copy procedure.

---

**Warning:** When copying Performances to a data card, avoid removing the card from its slot until the copying procedure is complete—doing so may result in corrupted data on the card and/or in the MR-Rack's internal memory.

---

## Copying PCMCIA Card Performances to RAM

This command copies the entire contents of any selected card Performance bank to the RAM Performance bank.

### To Copy PCMCIA Card Performances to RAM

1. Insert a MR-Rack-formatted RAM card into the card slot on the front panel of the MR-Rack.

   To learn how to format a PCMCIA SRAM card for use with the MR-Rack, see "To Initialize and Format a PCMCIA Card" later in this chapter.

   The display will briefly show:

```
PCMCIA Card inserted
Registering...
```

2. Press the Save button.
3. Turn the Parameter knob until "Copy:" appears in the bottom line of the display.
4. Turn the Value knob counterclockwise until the display shows:

```
Hit ENTER to:
Copy:RAMPerformances
```

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

5. Press the Enter button.

   If the System Write Protect parameter is set to Prompt, the display will show:

   ```
   System Write Protect
   On! ENTER Overrides.
   ```

   This display is offered as a double-check for you to make sure you really want to copy the RAM Performances. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter.
7. Turn the Parameter knob to select the current location and intended destination of what you're copying:

   ```
   Copy Performances
   To RAM From CRD: 096
   ```

   Performances will be copied to RAM from the card

8. Turn the value knob to select the specific card Performance bank location you want to copy into RAM:

   ```
   Copy Performances
   To RAM From CRD: 096
   ```

   This Performance bank will be copied to RAM

9. Once you've selected the card Performance bank you want to copy into RAM, press the Enter button. The MR-Rack will clear the destination memory locations and then perform the copy procedure.

---

**Warning:** When copying Performances from a data card, avoid removing the card from its slot until the copy procedure is complete.

---

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

# Copying RAM Sounds to a PCMCIA Card

This command copies the entire contents of the RAM Sound bank to any selected CRD Sound bank.

## To Copy RAM Sounds to a PCMCIA Card

1. Insert a MR-Rack-formatted RAM card into the card slot on the front panel of the MR-Rack.

   To learn how to format a PCMCIA SRAM card for use with the MR-Rack, see "To Initialize and Format a PCMCIA Card" below.

   The display will briefly show:

```
PCMCIA Card inserted
Registering...
```

2. Press the Save button.
3. Turn the Parameter knob until "Copy:" appears in the bottom line of the display.
4. Turn the Value knob clockwise until the display shows:

```
Hit ENTER to:
Copy:     RAM Sounds
```

5. Press the Enter button.

   If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

   This display is offered as a double-check for you to make sure you really want to copy the RAM Sounds. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter.
7. Turn the Parameter knob to select the current location and intended destination of what you're copying:

```
Copy Sounds
From RAM To CRD: 096
```

Sounds will be copied from Ram to the card

8. Turn the value knob to select a specific card bank location to copy the RAM Sounds into:

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

Copy Sounds
From RAM To CRD: 096

i

Sounds will be copied to this card bank

9. When you've selected a card bank location for the RAM Sounds, press the Enter button. The MR-Rack will clear the destination memory locations and then perform the copy procedure.

**Warning:** When copying Sounds to a data card, avoid removing the card from its slot until the copying procedure is complete—doing so may result in corrupted data on the card and/or in the MR-Rack's internal memory.

## Copying PCMCIA Card Sounds to RAM

This command copies the entire contents of any selected CRD Sound bank to the RAM Sound bank. If a ROM card is installed, and the card Sound bank is larger than the RAM Sound bank, you will be prompted to perform a partial copy (see the list of storage and error messages in ***Chapter 9***).

### To Copy PCMCIA Card Sounds to RAM

1. Insert a MR-Rack-formatted RAM card into the card slot on the front panel of the MR-Rack.

   To learn how to format a PCMCIA SRAM card for use with the MR-Rack, see "To Initialize and Format a PCMCIA Card" later in this chapter.

   The display will briefly show:

PCMCIA Card inserted
Registering...

2. Press the Save button.
3. Turn the Parameter knob until "Copy:" appears in the bottom line of the display.
4. Turn the Value knob clockwise until the display shows:

Hit ENTER to:
Copy: RAM Sounds

5. Press the Enter button.

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

This display is offered as a double-check for you to make sure you really want to copy the RAM Sounds. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter.
7. Turn the Parameter knob to select the current location and intended destination of what you're copying:

```
Copy Sounds
To RAM From CRD: 096
```

i

Sounds will be copied to RAM from the card

8. Turn the value knob to select the specific card Sound bank you want to copy into RAM:

```
Copy Sounds
To RAM From CRD: 096
```

i

This Sound bank will be copied to RAM

9. Once you've selected the card Sound bank you want to copy into RAM, press the Enter button. The MR-Rack will clear the destination memory locations and then perform the copy procedure.

---

**Warning:** When copying Sounds from a data card, avoid removing the card from its slot until the copy procedure is complete.

---

# Initialize Functions

## Initializing a Performance

This command is used to set the Performance edit buffer to the same settings as the ROM →Play Sounds Performance. (The Performance edit buffer is described in ***Chapter 4.***)

### To Initialize a Performance

1. Press the Performance button and select the Performance that you want to initialize.
2. Press the Save button.
3. Turn the Parameter knob all the way clockwise.
4. Turn the Value knob all the way counterclockwise. The display shows:

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

Hit ENTER to:
Init:ThisPerformance

5. Press the Enter button.
   If the System Write Protect parameter is set to Prompt, the display will show:

System Write Protect
On! ENTER Overrides.

   This display is offered as a double-check for you to make sure you really want to erase the current Performance. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.
6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter. The display shows:

Sure? Hit ENTER to:
Init:ThisPerformance

7. The MR-Rack is offering you a second chance to cancel the initialization. If you'd like to cancel the operation, press the Exit button. If you're ready to initialize the current Performance, press the Enter button to execute the command.

## Initializing an Effects Setup

This command is used to set the Effect setup in the currently selected Performance to the settings in the ROM →PlaySounds Performance. For more information about the MR-Rack Effects, see ***Chapter 5***.

### To Initialize an Effects Setup

1. Press the Performance button and select the Performance that contains the Effects setup that you want to initialize.
2. Press the Save button.
3. Turn the Parameter knob all the way clockwise.
4. Turn the Value knob until the display shows:

Hit ENTER to:
Init:ThisEffectSetup

5. Press the Enter button.

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

This display is offered as a double-check for you to make sure you really want to erase the selected Effect setup. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter. The display shows:

```
Sure? Hit ENTER to:
Init:ThisEffectSetup
```

7. The MR-Rack is offering you a second chance to cancel the initialization. If you'd like to cancel the operation, press the Exit button. If you're ready to initialize the selected Effect setup, press the Enter button to execute the command.

## Initializing a PerfEditKit

This command is used to set the PerfEditKit in the currently selected Performance to the PerfEditKit settings in the ROM →PlaySounds. For more information about using, creating and editing Drum Kit Sounds, see ***Chapter 4***.

### To Initialize a PerfEditKit

1. Press the Performance button and select the Performance that contains the PerfEditKit that you want to initialize.
2. Press the Save button.
3. Turn the Parameter knob all the way clockwise.
4. Turn the Value knob until the display shows:

```
Hit ENTER to:
Init:ThisPerfEditKit
```

5. Press the Enter button.

If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

This display is offered as a double-check for you to make sure you really want to erase the selected PerfEditKit. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter. The display shows:

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

```
Sure? Hit ENTER to:
Init:ThisPerfEditKit
```

7. The MR-Rack is offering you a second chance to cancel the initialization. If you'd like to cancel the operation, press the Exit button. If you're ready to initialize the selected PerfEditKit, press the Enter button to execute the command.

## Initializing a Part's Sound

This command is used to erase, or nullify, the Sound on the currently selected part. A nullified Sound takes up no memory, and is no longer visible when you're selecting Sounds.

---

**Note:** This command is intended for Parts that are using Sounds other than the PerfEditKit. To initialize the PerfEditKit, see "Initializing a PerfEditKit" above.

---

### To Initialize a Part's Sound

1. Press the Sound button, and use the Select Part buttons to find the Sound that you want to initialize.
2. Press the Save button.
3. Turn the Parameter knob all the way clockwise.
4. Turn the Value knob until the display shows:

```
Hit ENTER to:
Init:ThisPart'sSound
```

5. Press the Enter button.

   If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

   This display is offered as a double-check for you to make sure you really want to erase the selected Sound. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter. The display shows:

```
Sure? Hit ENTER to:
Init:ThisPart'sSound
```

7. The MR-Rack is offering you a second chance to cancel the initialization. If you'd like to cancel the operation, press the Exit button. If you're ready to initialize the selected Sound, press the Enter button to execute the command.

## Initializing RAM Performances

This command is used to set the entire contents of the RAM Performance bank to the

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

settings in the ROM →PlaySounds Performance.

### To Initialize RAM Performances

1. Press the Save button.
2. Turn the Parameter knob all the way clockwise.
3. Turn the Value knob until the display shows:

```
Hit ENTER to:
Init:RAMPerformances
```

4. Press the Enter button.
   If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

   This display is offered as a double-check for you to make sure you really want to erase all of the RAM Performances. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.
5. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter. The display shows:

```
Sure? Hit ENTER to:
Init:RAMPerformances
```

6. The MR-Rack is offering you a second chance to cancel the initialization. If you'd like to cancel the operation, press the Exit button. If you're ready to initialize the RAM Performances, press the Enter button to execute the command.

## Initializing RAM Sounds

This command is used to erase the entire contents of the RAM Sound bank, so that all RAM Sound memory becomes available for re-use.

### To Initialize RAM Sounds

1. Press the Save button.
2. Turn the Parameter knob all the way clockwise.

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

3. Turn the Value knob until the display shows:

```
Hit ENTER to:
Init:     RAM Sounds
```

4. Press the Enter button.

   If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

   This display is offered as a double-check for you to make sure you really want to erase all of the RAM Sounds. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

5. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter. The display shows:

```
Sure? Hit ENTER to:
Init:     RAM Sounds
```

6. The MR-Rack is offering you a second chance to cancel the initialization. If you'd like to cancel the operation, press the Exit button. If you're ready to initialize the RAM Sounds, press the Enter button to execute the command.

## Initializing the System Setup

This command is used to reset all of the System page parameter settings to their original values. For more information about the System parameters, see ***Chapter 3***.

### To Initialize the System Setup

1. Press the Save button.
2. Turn the Parameter knob all the way clockwise.
3. Turn the Value knob until the display shows:

```
Hit ENTER to:
Init:   System Setup
```

4. Press the Enter button.

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

This display is offered as a double-check for you to make sure you really want to erase your System settings. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

5. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter. The display shows:

```
Sure? Hit ENTER to:
Init:   System Setup
```

6. The MR-Rack is offering you a second chance to cancel the initialization. If you'd like to cancel the operation, press the Exit button. If you're ready to initialize the System parameters, press the Enter button to execute the command.

## Formatting a PCMCIA Card

In order to save MR-Rack data on a PCMCIA SRAM data card, the card must be formatted for use with the MR-Rack. This is achieved through the process of reinitialization. Initializing a card erases all data currently stored on the card and prepares it to receive new data from the MR-Rack.

Only PCMCIA SRAM cards—such as ENSONIQ's MC-512—should be used for MR-Rack memory storage.

### To Initialize and Format a PCMCIA Card

1. Insert a PCMCIA RAM card into the Data Card slot on the front panel of the MR-Rack.
2. Press the Save button.
3. Turn the Parameter knob all the way clockwise.
4. Turn the Value knob until the display shows:

```
Hit ENTER to:
Init:    PCMCIA Card
```

5. Press the Enter button.

If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER Overrides.
```

This display is offered as a double-check for you to make sure you really want to erase PCMCIA card. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

6. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

Enter. The display shows:

```
Sure? Hit ENTER to:
Init:    PCMCIA Card
```

7. The MR-Rack is offering you a second chance to cancel the initialization. If you'd like to cancel the operation, press the Exit button. If you're ready to initialize your PCMCIA card, press the Enter button to execute the command.

To access the Parameters described on this page (unless otherwise noted):
Press the Save button, turn the Parameter knob to locate the action, and then turn the Value knob to select the object of the action.

# Chapter 7
# Expanding the MR-Rack

You can make your MR-Rack even more powerful by taking advantage of the expansion possibilities described in this chapter.

## Using PCMCIA Data Cards

PCMCIA data cards are credit-card-sized memory cards popular throughout the computer industry. The MR-Rack uses them for the storage of Sounds, Performances and demos. There are basically two kinds of PCMCIA cards that are appropriate for use with the MR-Rack:

- ROM (Read-Only Memory) PCMCIA data cards
- SRAM (Static RAM) PCMCIA data cards

---

**Important:** The MR-Rack will not accept Flash PCMCIA cards, nor should you insert any special-function PCMCIA cards, such as modem cards for portable computers, into the MR-Rack's Data Card slot.

---

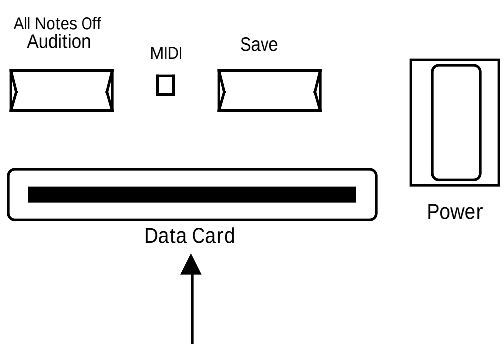
### Working With ROM PCMCIA Data Cards

ROM PCMCIA cards are read-only cards. The information they contain is permanent—you can't erase it. ROM PCMCIA cards make excellent storage devices for Sounds, Performances and demos you want to keep, such as those available on ENSONIQ's MRC Series ROM Sound Cards.

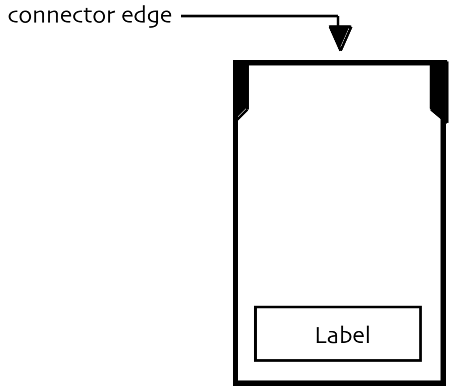
#### To Install a ROM Data Card

1. Locate the Data Card slot on the MR-Rack's front panel.

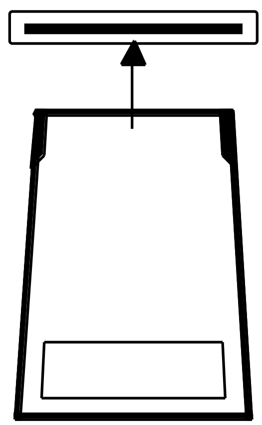
   PCMCIA cards may be installed in the MR-Rack with its power on or off. However, if the MR-Rack is on when you insert the card, its display will confirm the connection for you.



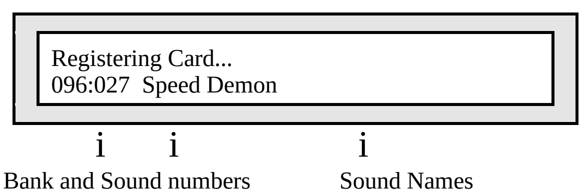
2. Turn your data card label-side-up, with its connector edge facing away from you.




3. Slide the card firmly into the MR-Rack’s Data Card slot until you hear it click as it makes contact with the MR-Rack’s internal card socket.



If the MR-Rack is powered up, SoundFinder will begin quickly cataloging the Sounds and Performances on the card. The display will reflect its progress:




When SoundFinder has finished cataloging the card’s Sounds and Performances, it will refind the last Sound selected for each Sound Type, and designate it as the category’s favorite, for your convenience.

If you insert a data card when the MR-Rack’s power is off, this process will occur during the power-up sequence.

Updating the SoundFinder database and re-establishing favorites takes a few moments. The length of this process is determined by the size of the card and the number of banks it contains.

**Warning:** Avoid removing the card from its slot while it's being registered—doing so may result in corrupted data on the card and/or in the MR-Rack's internal memory.

**Tip:** If the MR-Rack refuses to register the card, try inserting it again. If any other message is displayed, consult ***Chapter 9*** for an explanation of the error message you've encountered.

### To Remove a ROM Data Card

You can remove a data card from the MR-Rack with its power on or off.

1. Remove the data card from its slot by pulling it toward you.
   If the MR-Rack's power is on, its display will show:

```
PCMCIA Card Removed
Unregistering...
```

**Note:** Performances or Drum Kit Sounds that used Sounds from the data card you've just removed will display **EMPTY** in place of any no-longer available card Sounds.

### Accessing a ROM Card's Sounds, Performances and Demos

All of the Sounds, Performances and demos on your ROM card can be selected in exactly the same manner as your onboard Sounds, Performances and demos. You'll find a new SoundFinder category has appeared—CRD—containing your new materials.

## Working With SRAM PCMCIA Data Cards

SRAM PCMCIA data cards are intended as additional storage space for your MR-Rack Sounds and Performances. The MR-Rack can use SRAM cards of three different memory capacities:

- 512k cards—provide 4 additional Sound/Performance banks
- 1 megabyte cards—provide 9 additional Sound/Performance banks
- 2 megabyte cards—provide 18 additional Sound/Performance banks

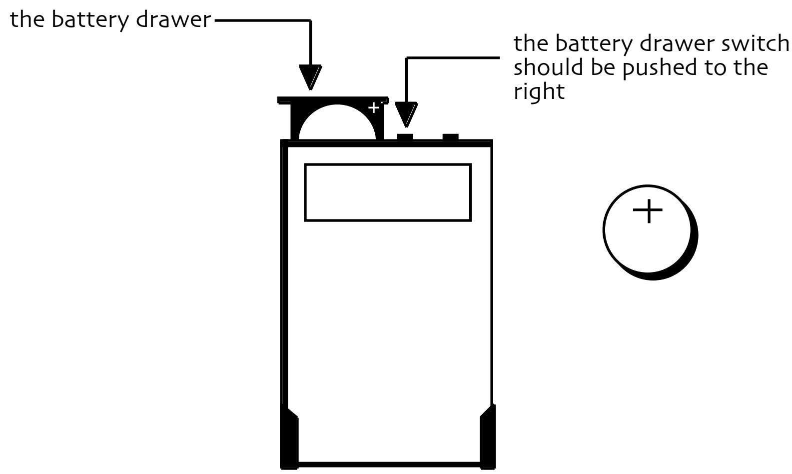
PCMCIA cards can be purchased inexpensively from vendors of computer equipment and from ENSONIQ, which offers the MC-512 PCMCIA SRAM card.

## SRAM PCMCIA Cards and Batteries

To maximize battery life, many SRAM PCMCIA cards are shipped without a battery. Before using these cards, you must first install the correct-size battery.

### To Install the Battery in an SRAM PCMCIA Card

1. Slide the switch away from the battery drawer to release the drawer.




Note that the second switch to the right in the illustration above is the write-protect switch, which is used to prevent accidental erasure of card files.

2. Pull gently on the plastic tab at the top of the battery drawer to open it.
3. Insert the battery in the battery drawer with the flat (+) side of the battery facing up.
4. Slide the battery drawer closed.
5. Slide the switch toward the battery drawer to lock the battery drawer closed.

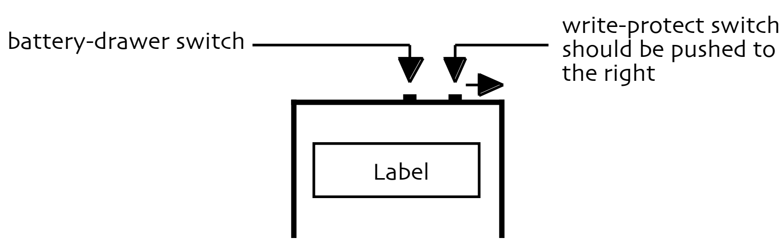
---

**Tip:** If you need to change your card's battery—but don't want to lose what you've got saved on the card—you can change the battery while the card is installed in the MR-Rack and the MR-Rack's power is on. Be careful not to turn the MR-Rack's power off or remove the card until its new battery has been installed.

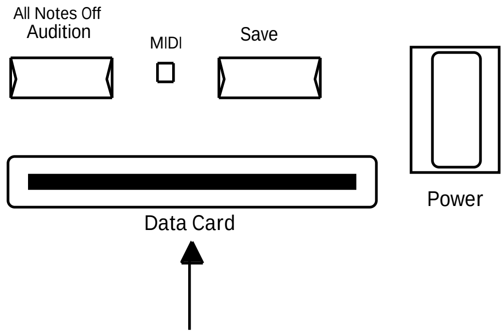
---

## To Install a New SRAM Data Card

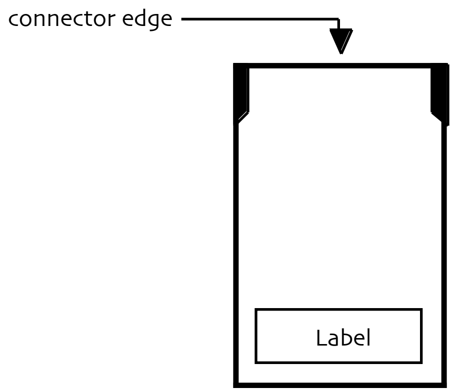
It's best to install an SRAM PCMCIA data card with the MR-Rack's power on and with the card's write-protect switch set to the "off" position.



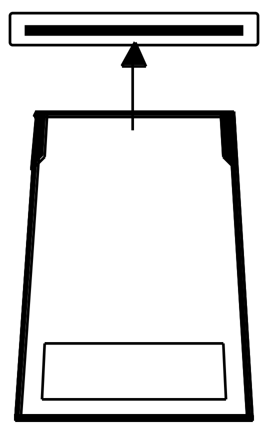

1. Locate the Data Card slot on the MR-Rack's front panel.




2. Turn your data card label-side-up, with its connector edge facing away from you.




3. Slide the card into the MR-Rack's Data Card slot until you feel it making contact with the MR-Rack's internal card socket.



4. The MR-Rack display will show:

```
PCMCIA Card Inserted
* Unformatted Card *
```

Before using an SRAM data card to store Sounds and Performances, the card must be formatted for the MR-Rack through the process of initialization. This takes only a few moments.

### To Initialize and Format a PCMCIA Card

1. Press the Save button.
2. Turn the Parameter knob all the way clockwise.
3. Turn the Value knob until the display shows:

```
Hit ENTER to:
Init:    PCMCIA Card
```

4. Press the Enter button.

   If the System Write Protect parameter is set to Prompt, the display will show:

```
System Write Protect
On! ENTER overrides.
```

   This display is offered as a double-check for you, to make sure you really want to erase PCMCIA card. If you'd like to avoid this prompt in the future, see "Protecting the MR-Rack's Memory" in ***Chapter 3***.

5. If you'd like to cancel the operation, press the Exit button. If you'd like to proceed, press Enter. The display shows:

```
Sure? Hit ENTER to:
Init:    PCMCIA Card
```

6. The MR-Rack is offering you a second chance to cancel the initialization. If you'd like to cancel the operation, press the Exit button. If you're ready to initialize your PCMCIA card, press the Enter button to execute the command.

   The display will confirm the initialization and registration of the card.

### To Install an Already-Formatted SRAM Data Card

1. Follow steps 1-3 of "To Install a New SRAM Data Card."

   If the MR-Rack is powered up, SoundFinder will begin quickly cataloging the Sounds and Performances on the card. The display will reflect its progress:

```
Registering Card...
096:027  Speed Demon
```

Bank and Sound numbers     Sound names

When SoundFinder has finished cataloging the card's Sounds and Performances, it will refind the last Sound selected for each Sound Type, and designate it as the category's favorite, for your convenience.

If you insert a data card when the MR-Rack's power is off, this process will occur during the power-up sequence.

Updating the SoundFinder database and re-establishing favorites takes a few moments. The length of this process is determined by the size of the card and the number of banks it contains.

**Warning:** Avoid removing the card from its slot while it's being registered—doing so may result in corrupted data on the card and/or in the MR-Rack's internal memory.

**Tip:** If the MR-Rack refuses to register the card, try inserting it again. If any other message is displayed, consult ***Chapter 9*** for an explanation of the error message you've encountered.

### To Remove an SRAM Data Card

You can remove a data card from the MR-Rack with its power on or off.

1. Remove the data card from its slot by pulling it toward you.

   If the MR-Rack's power is on, its display will show:

```
PCMCIA Card Removed
Unregistering...
```

### Accessing an SRAM Card's Sounds, Performances and Demos

All of the Sounds, Performances and demos on your SRAM card can be selected in exactly the same manner as your onboard Sounds, Performances and demos. You'll find a new SoundFinder category has appeared—CRD—containing your new materials.

**Note:** Saving and copying Performances, Sounds, Effect Set-Ups and PerfEditKits to and from data cards is discussed in ***Chapter 6***.

# Using ENSONIQ EXP Series Wave Expansion Boards

The MR-Rack is shipped from ENSONIQ's factory with a powerful 12 megabytes of 16-bit wave data, at a CD-quality sample playback rate of 44.1kHz. By installing ENSONIQ's EXP Series Wave Expansion Boards, you can bring the MR-Rack's wave data memory up to a gigantic 84 megabytes. The MR-Rack can accommodate three EXP Series Wave Expansion boards, which supply new Sounds, Performances and demos as well as up to 24 megabytes of new wave data on each board. You can easily install EXP Series Wave Expansion Boards yourself—this chapter describes how.

## An Important Note About Electro Static Discharge

Many of the internal components in the MR-Rack, as well as expansion boards, are susceptible to Electro Static Discharge (ESD), commonly known as "static." Electro static discharge can destroy or damage electronic devices. Here are some procedures you can follow when handling electronic devices in order to minimize the possibility of causing ESD damage:

1. Before opening your MR-Rack or handling the expansion boards, you should be

grounded—use a ground strap to discharge any static electric charge built up on your body. The ground strap attaches to your wrist and a ground source allowing your hands the freedom to work.

2. Avoid any unnecessary movement, such as scuffing your feet when handling electronic devices, since most movement can generate additional charges of static electricity.
3. Minimize the handling of the expansion boards. Keep them in their static-free packages until needed. Transport or store the expansion boards only in their protective packages.
4. When handling the expansion boards, avoid touching the connector pins. Try to handle the expansion boards by the edges only.

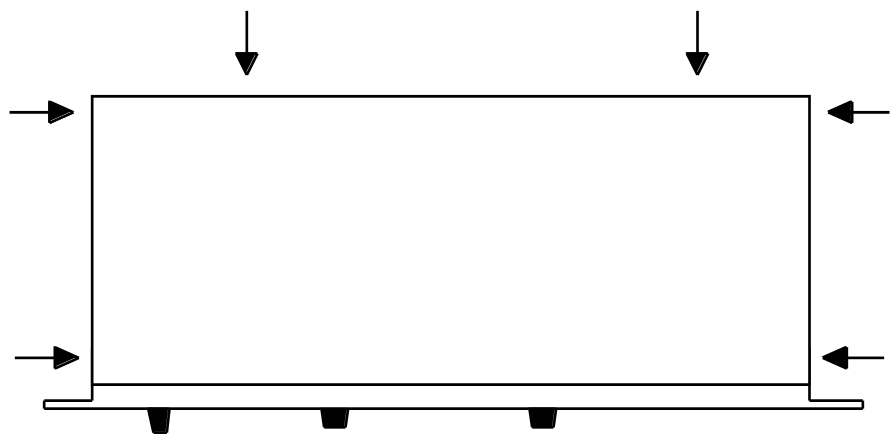
If you have any questions concerning the use of the MR-Rack or expansion boards, or for additional technical support, please contact ENSONIQ Customer Service at (610) 647-3930 Monday through Friday 9:30 a.m. to 12:15 p.m. and 1:15 p.m. to 6:30 p.m. Eastern Time.

# Installing and Removing Expansion Boards

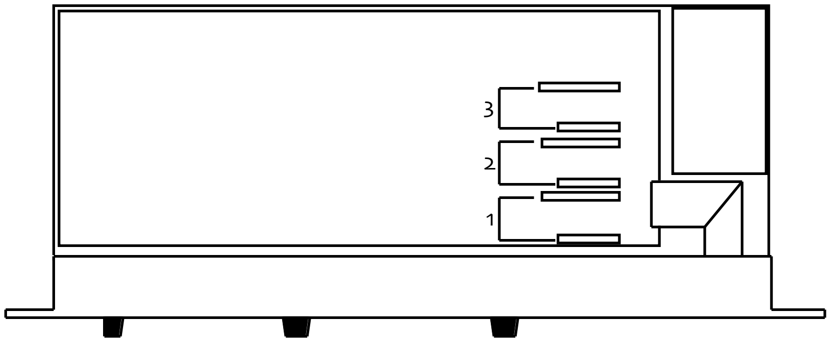
The MR-Rack can use up to three discrete expansion boards at any one time. Expansion boards are easily installed. Here's how:

### How To Install an Expansion Board

1. Turn the MR-Rack off, and unplug it from its AC outlet.
2. Remove the six Phillips-head screws from the MR-Rack lid. The screws are located at the arrows shown below:



3. Remove the lid from the MR-Rack by lifting the back of the lid slightly, and sliding it away from the unit.
4. Examine the inside of the MR-Rack, and locate the three expansion board slots. Notice that each slot has a 50-pin connector (toward the back of the unit) and a 40-pin connector (toward the front).




5. Examine your expansion board. Notice that it, too, has both a 50-pin and 40-pin connector.

6. Position your expansion board above the lowest numbered empty slot and align the connectors.

---

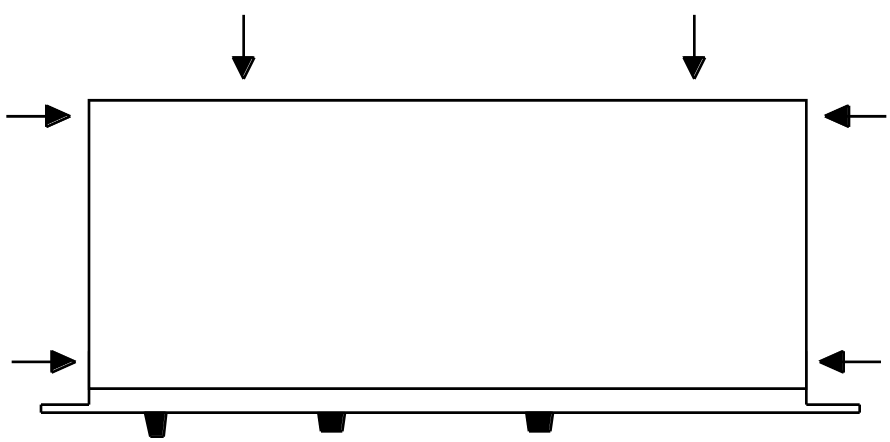
**Important:** Expansion boards must be installed in the lowest numbered available locations, or the MR-Rack may not recognize them.

---

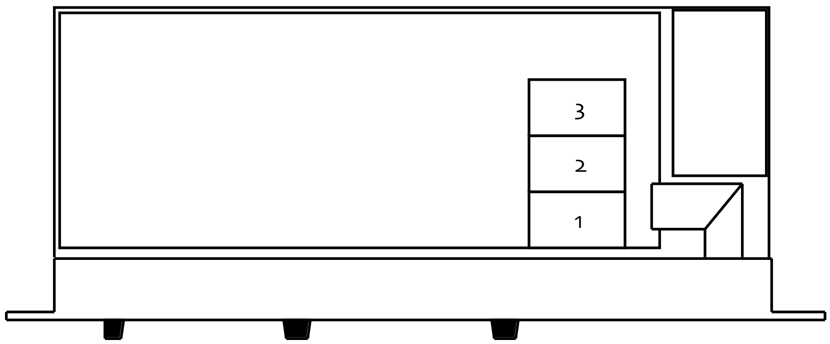
7. Press the expansion board down firmly into its location so that it makes a physical (and electrical) connection with your MR-Rack. The expansion board's connectors ***must*** be inserted into ***both*** of the chassis' connectors in order to work properly.
8. Slide the lid into the front panel extrusion, and lower it into place.
9. Reinstall the six screws that hold the lid down.
10. Plug the MR-Rack into an outlet, power it up, and follow the instructions in "To Identify an Installed Expansion Board," below to verify that the MR-Rack is properly recognizing the expansion board.

## How To Remove an Expansion Board

1. Turn the MR-Rack off, and unplug it from its AC outlet.
2. Remove the six Phillips-head screws from the MR-Rack lid. The screws are located at the arrows shown below:



3. Remove the lid from the MR-Rack by lifting the back of the lid slightly, and sliding it away from the unit.
4. Examine the inside of the MR-Rack, and locate the expansion board you'd like to remove, as shown in the following illustration.




5. Grab the expansion board you want to remove by its edges and gently lift it straight upwards out of its socket to remove it.

---

**Important:** Expansion boards must be installed in the lowest numbered available location. If you've removed the Number 1 or 2 expansion board, re-install the remaining boards in the lowest available slots.

---

7. Slide the lid into the front panel extrusion, and lower it into place.
8. Reinstall the six screws that hold the lid down.
9. Plug the MR-Rack into an outlet, power it up, and follow the instructions in "To Identify an Installed Expansion Board," below to verify that the MR-Rack is properly recognizing any remaining expansion boards.

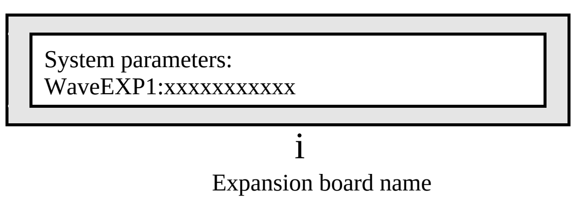
---

**Note:** Performances or Drum Kits that used Sounds from the expansion board you've just removed will display **EMPTY** in place of any no-longer available expansion board Sounds.

---

## To Identify an Installed Expansion Board

1. Press the System button.
2. Turn the Parameter knob until the display shows:




When an expansion board is installed, this read-only display will show the name of the expansion board located in the first slot.

3. Turning the Parameter knob two more times will show the names of the expansion boards in Wave EXP Slots 2 and 3 (if they're installed).

If there are no expansion boards installed, the display will show "WaveEXP1=  **EMPTY**."

**Note:** If you've installed expansion boards and the MR-Rack appears not to be recognizing them, carefully repeat the instructions in "How To Install an Expansion Board." If the MR-Rack still doesn't recognize the expansion board, call ENSONIQ Customer Service at 610-647-3930.

# Updating the MR-Rack Operating System

With most electronic devices, operating system upgrades have become common. For ENSONIQ products, an operating system upgrade provides system enhancements, and at times offers additional features.

You can find out what the current operating system is by calling ENSONIQ Customer Service at (610) 647-3930, or the the ENSONIQ Fax Retrieval System at (800) 257-1439. We suggest requesting the complete catalog of available documents. The Fax Retrieval System offers over 200 documents covering all of the ENSONIQ products, and a variety of related issues. Document 0010 is the current O.S. list. If you're online, you can visit the ENSONIQ locations on CompuServe (at "GO ENSONIQ") or on the World Wide Web at "www.ensoniq.com." An up-to-date O.S. list for all ENSONIQ products can also be found in the Transoniq Hacker, a third-party monthly publication (for more information on the Hacker, call 1-503-227-6848).

## Learning the Version Number of Your MR-Rack Operating System

You can easily find out what operating system (or "O.S.") your MR-Rack is currently using.

### To Find the Operating System

1. Press the Save button and hold it down.
2. While still holding the Save button, press the System button.
   The display briefly shows your current Operating System:

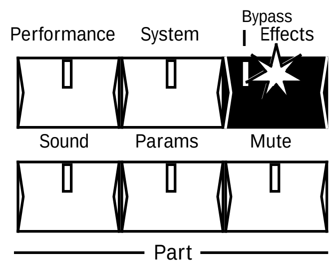
```
  ENSONIQ MR-RACK
O.S. Version:   #.##
```

# Chapter 8
# Insert Effect Parameters

This chapter offers detailed descriptions of the Insert Effects and their related parameters. For a basic overview of how the effects work in the MR-Rack, see ***Chapter 5 — Effects***.

To access the functions you'll find in this chapter, follow these steps:

1. Press the Effects button.
   When you first press the Effects button, its yellow LED will light.



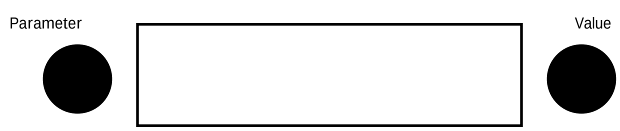

2. Turn the Parameter knob all the way counterclockwise. The display shows:

Hit ENTER to edit:
Insert Effect

3. Press the Enter button.

The MR-Rack provides many options for routing, assigning, and editing effects. Each of these options is called a ***parameter***. When you change the setting of a parameter, you are editing the parameter's ***value***.

To select Effect parameters, turn the ***Parameters knob***. To edit an Effect parameter's value, turn the ***Value knob***.



# List of MR-Rack Insert Effects

The following is a list of the Insert Effects in the order that they appear in the MR-Rack:

| | | |
|---|---|---|
| 01 Parametric EQ | 15 Chorus→Rev | 29 ResVCF→DDL |
| 02 Hall Reverb | 16 Flanger→Rev | 30 Dist→VCF→DDL |
| 03 Large Room | 17 Phaser→Rev | 31 Pitch Detuner |
| 04 Small Room | 18 EQ→Reverb | 32 Chatter Box |
| 05 Large Plate | 19 Spinner→Rev | 33 Formant Morph |
| 06 Small Plate | 20 DDL→Chorus | 34 RotarySpeaker |
| 07 NonLinReverb1 | 21 DDL→Flanger | 35 Tunable Spkr |
| 08 NonLinReverb2 | 22 DDL→Phaser | 36 Guitar Amp |
| 09 Gated Reverb | 23 DDL→EQ | 37 Dist→DDL→Trem |
| 10 Stereo Chorus | 24 Multi-Tap DDL | 38 Comp→Dist→DDL |
| 11 8-VoiceChorus | 25 Dist→Chorus | 39 EQ→Comp→Gate |
| 12 Rev→Chorus | 26 Dist→Flanger | 40 EQ→Chorus→DDL |
| 13 Rev→Flanger | 27 Dist→Phaser | |
| 14 Rev→Phaser | 28 Dist→AutoWah | |

# List of Effect Modulators

Here is a list of the effect modulators available within the MR-Rack:

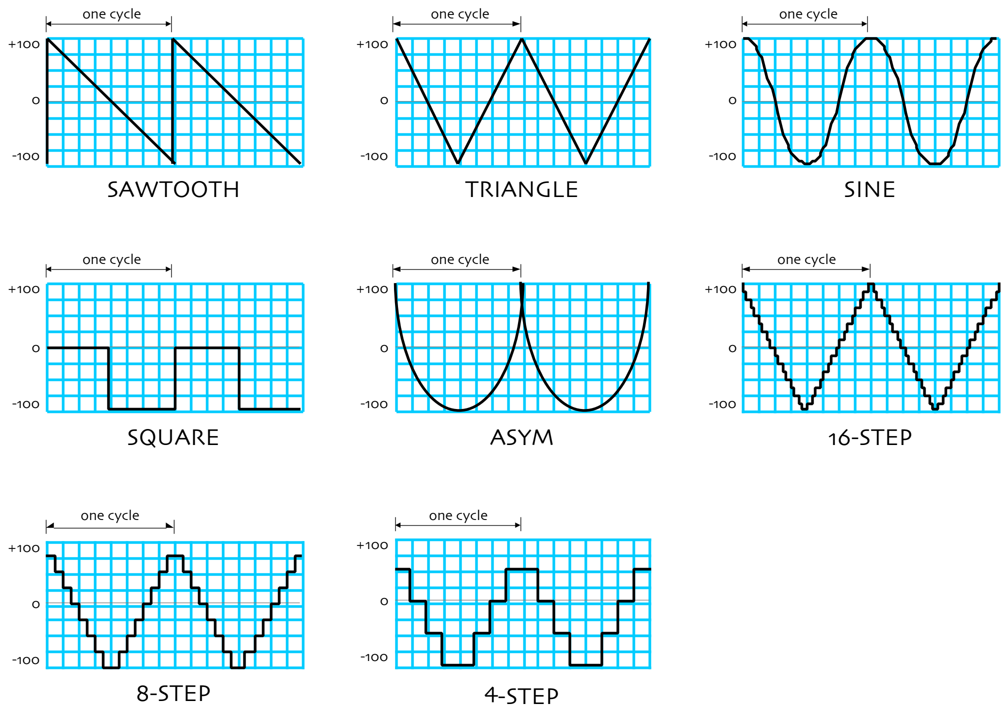
| | |
|---|---|
| Off | No effect modulation. |
| FullModAmt | Full on, all the time; destination always modulated to Mod Amt Max. |
| Velocity | Last velocity received; filtered by VelocityRange and VelocityMode. |
| Vel+Pressure | Addition of last velocity received & highest poly/channel pressure value; both filtered. |
| +PosMIDIkey# | Last MIDI key number received (0-127); filtered by Key Range. Centered on MIDI note 64. |
| -NegMIDIkey# | Inverted response of the absolute MIDI key number. Centered on MIDI note 64. |
| Pressure | Highest poly or channel value; filtered by Key Range & PressureMode; 0 when Off. |
| PitchWheel | Last pitch wheel value; filtered by Pitch Bend Recv. |
| ModWheel | Last mod wheel value; filtered by Mod Wheel(1)Recv. |
| Wheel+Press | Addition of last mod wheel value & highest poly or channel value; both filtered. |
| FootPedal | Last foot pedal value; filtered by FootPedal(4) Recv. |
| Sustain | Last sustain value; filtered by Sustain/SostRecv. |
| Sostenuto | Last sostenuto value; filtered by Sustain/SostRecv. |
| SysCTRL1 | Last assignable controller 1 value; filtered by CTRL1 Recv. |
| SysCTRL2 | Last assignable controller 2 value; filtered by CTRL2 Recv. |
| SysCTRL3 | Last assignable controller 3 value; filtered by CTRL3 Recv. |
| SysCTRL4 | Last assignable controller 4 value; filtered by CTRL4 Recv. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

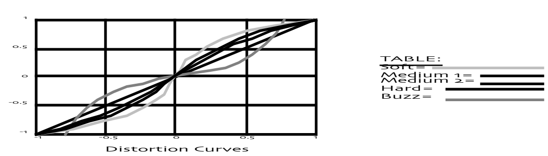
# LFO Wave Shapes

Many Insert Effects have an LFO Shape parameter that determines how the LFO signal will rise or fall. There are eight possible values:




# Distortion Curves

Many distortion-based Insert Effects have a “Dist Curve” parameter that determines the type of clipping produced by the distortion. There are five possible distortion curves:




To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

# Insert Effect Parameters

The following is a description of the Insert Effects and their related parameters. Parameters that are common to all Insert Effects, and the modulation parameters are defined in ***Chapter 5 — Effects***.

### Common Insert Effect Parameters

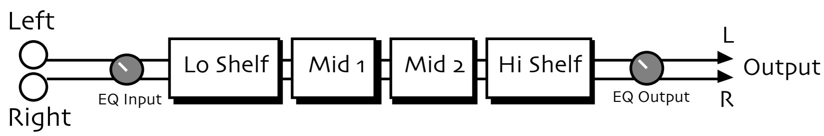
| | |
|---|---|
| Preset | GlobalReverb Amt |
| Input Mix | Insert FX to Global Chorus Mix |

### Common Modulation Parameters

| | | |
|---|---|---|
| Mod Src | Mod Src Max | Dest Min |
| Mod Src Min | Dest | Dest Max |

# Insert Effect Descriptions

## 01 Parametric EQ




This Insert Effect offers a minimum phase, four-band parametric EQ.

| Parameter | Range | Description |
|---|---|---|
| EQ Input | Off, -49.5dB to +24dB | Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals. |
| LoShelf Fc | 10Hz to 20.0kHz | Sets the center of the low frequency EQ. |
| LoShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this low frequency shelf. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |
| Mid 1 Q | 1.0 to 40.0 | Bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency parametric. |
| Mid 2 Fc | 10Hz to 20.0kHz | Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Q | 1.0 to 40.0 | Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Gain | Off, -49.5dB to +24dB | Identical to the Mid 1 Gain parameter, used to control different bandwidths within the mid range. |
| HiShelf Fc | 10Hz to 20.0kHz | Sets the center frequency of the high frequency shelf. |
| HiShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this high frequency shelf. |
| EQ Output | Off, -49.5dB to +24dB | Controls the gain coming out of the parametric EQ. |

## 02 Hall Reverb

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

## 03 Large Room

## 04 Small Room

Hall Reverb is a large acoustic space, and provides a high density reverb. Large Room reverb provides ambience, and Small Room reverb simulates the ambience of a small room.

| Parameter | Range | Description |
|---|---|---|
| Decay | 0sec to 12.7sec (Hall setting) 0sec to 10.0sec (Room settings) | Controls the amount of time it takes for the reverberation to decay to a very low level after the input signal stops. Higher values are recommended for the hall reverb. |
| LF Decay | -99% to +99% | Functions as a tone control and boosts (when set to a positive value) or cuts (when set to a negative value) the rate at which low frequencies will decay. |
| HF Damping | 100Hz to 21.2kHz | Controls the rate of attenuation of high frequencies in the decay of the reverberation. As natural reverb decays, some high frequencies tend to get absorbed by the environment. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy. |
| HF Bandwidth | 100Hz to 21.2kHz | The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass. |
| Primary Send | -99% to +99% | Controls the level of the diffused input signal into the reverb definition. |
| Diffusion 1 | 0 to 100 | Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters. |
| Diffusion 2 | 0 to 100 | This parameter, similar to and in series with Diffusion1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source. |
| Definition | 0 to 100 | Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate. A general rule of thumb is this: Definition should not exceed the LF Decay time added to the Decay time. |
| Detune Rate | 0.00Hz to 1.54Hz | Controls the LFO rate of detuning introduced into the reverberation decay. Detuning creates a slight oscillating pitch shift into the decay, giving it a more natural sound by breaking up resonant modes. |
| Detune Depth | 0% to 100% | Controls the depth of the detuning, that is, how much the pitch will change. Low values yield a metallic sound. Some sounds may require very low values, while others sound more natural with higher values. |
| PreDelay | 0 to 36ms | Controls the amount of time it takes for the original signal to be presented to the reverb. Higher values denote a longer delay. |
| ER 1 Time | 0 to 112ms | Controls the delay time for the first pre-echo. Pre-echoes are the first sounds reflected back from the walls or reflective "live" surfaces. Higher values delay the diffused signal more. |
| ER 1 Send | -99% to +99% | Controls the level of the first pre-echo, with the echo routed directly to the output. |
| ER 1 Level | -99% to +99% | Controls the level of the first pre-echo. This pre-level controls the echo send to the Definition. |
| ER 2 Time | 0 to 112ms | Controls the delay time for the second pre-echo. |
| ER 2 Send | -99% to +99% | Controls the level of the second pre-echo, with the echo routed directly to the output. |
| ER 2 Level | -99% to +99% | Controls the level of the second pre-echo. As a signal continues to bounce off the different reflective surfaces (walls), it decreases in volume. Set this parameter to a lower value than Ref 1 Level, in order to create a natural sounding echo. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| Position 1<br>Position 2<br>Position 3 | -99% to +99%<br>-99% to +99%<br>-99% to +99% | These parameters simulate the depth of the hall. Think of them as three different microphones placing at various distances within the hall (Position 1 is closest to the front, and Position 3 is farthest from the front). When the range (volume) is higher for Position 1, the sound appears closer to the front, whereas a higher setting for Position 3 appears farther from the front, suggesting a deeper (wetter) hall. |
| Output Bal | Full <L to Full >R | Controls the output of the hall reverb in the stereo field. |

## 05 Large Plate

## 06 Small Plate

A plate reverb takes the vibrations from a metal plate and uses them to create a metallic sounding reverb. Large plate reverbs are often used to enhance a vocalist's performance, and small plate reverbs are often used in the studio for drums and percussion.

| Parameter | Range | Description |
|---|---|---|
| Decay | 0sec to 10.0sec | Controls the amount of time it takes for the reverberation to decay away to a very low level after the input signal stops. High values of decay sound good on plate reverbs. |
| HF Damping | 100Hz to 21.2kHz | Increasing the value of this parameter will gradually filter out increasing amounts of high frequency energy. Higher values yield an abrupt decay. This parameter controls the cut off of a low pass filter in series with the decay within the definition. |
| HF Bandwidth | 100Hz to 21.2kHz | This parameter acts as a low pass filter on the output of the plate reverbs, controlling the amount of high frequencies present. The higher the setting, the more high frequencies are allowed to pass through, offering a brighter ringing sound. Some interesting effects can be created by using a mod controller over a large range. |
| Diffusion 1 | 0 to 100 | Smears the input signal to create a smoother sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear, making the echoes less apparent. |
| Diffusion 2 | 0 to 100 | This Diffuser, similar to and in series with the previous one, offers control over lower frequency ranges. Plate reverbs tend to sound metallic, and the diffusers help to smear the signal, eliminating the metallic sound. |
| Definition | 0 to 100 | Controls the rate at which echo density increases with time. Higher values can cause the echo density to build at a rate that exceeds the decay rate. For the best results, try to select the highest value that works with your sound source. |
| PreDelay | 0 to 36ms | Controls the amount of time it takes for the input signal to be presented to the plate reverb. A value of 0 would offer no delay. |
| ER 1 Level<br>ER 2 Level<br>ER 3 Level<br>ER 4 Level | -99% to +99%<br>-99% to +99%<br>-99% to +99%<br>-99% to +99% | Control four early reflection levels. Setting these levels to lower values will produce a wetter sound. These four reflection levels are close to the input of the Definition. |
| Output Bal | Full <L to Full >R | Controls the left/right stereo balance of the plate reverb signal. |

## 07 NonLinReverb1

## 08 NonLinReverb2

Non Linear reverbs can be used to obtain blooming reverb, gated reverb, reverse reverb and early reflections. In general, they do not produce an exponentially decaying reverb. Unlike the hall, room and plate reverbs, NonLinReverb1 and 2 pass the input signal through the reverb diffusers only once. For this reason the reverb diffusers are called ***Density***, to distinguish them from the other reverb diffusers (called Definition). Density controls the

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

***amount*** of echo density, as opposed to the rate of increase of echo density. The NonLin reverbs purposely impose a coloration on the resulting sound.

| Parameter | Range | Description |
|---|---|---|
| Env 1 Level | -99% to +99% | These parameters control the output tap levels sequenced in time across the density from input to output. Envelope Level 1 is tapped right after the diffusers and before the echoes. If this is undesirable, set Envelope Level 1 to -99%. Envelope Levels 8 and 9 are positioned at the very end of the Density; setting these too high can cause excessive ringing. Envelope Levels 8 and 9 are also very dry. Set all nine tap levels to find the envelope for your application. We recommend the average Envelope Level not to exceed a value of +45% to prevent overdriving these reverbs. |
| Env 2 Level | -99% to +99% | |
| Env 3 Level | -99% to +99% | |
| Env 4 Level | -99% to +99% | |
| Env 5 Level | -99% to +99% | |
| Env 6 Level | -99% to +99% | |
| Env 7 Level | -99% to +99% | |
| Env 8 Level | -99% to +99% | |
| Env 9 Level | -99% to +99% | |
| HF Damping | 100Hz to 21.2kHz | The HF Damping is located within the density. This parameter selects the amount of high frequency energy to be filtered out. |
| HF Bandwidth | 100Hz to 21.2kHz | The high frequency bandwidth parameter acts as a low pass filter on the output signal, controlling the amount of high frequencies that will be heard. The higher the setting, the more high frequencies are heard. |
| Primary Send | -99% to +99% | Controls the level of the diffused input signal which is nearly instantaneous with respect to the input. This signal is injected directly into the Density at the specified level. |
| Diffusion 1 | 0 to 100 | This parameter smears the input signal transients of higher frequency ranges. Higher values are recommended for smoother percussion. Very low values will give a highly repetitive echo-like sound. Diffusion1 and 2 exist within each diffuser block. |
| Diffusion 2 | 0 to 100 | Diffusion2 is similar to Diffusion1, but offers control of lower frequencies. In general a setting of 50 can be considered an equal mix of dry/diffused sound; this setting is a good starting point. |
| Density 1 | 0 to 100 | Density 1 controls the number of echoes. |
| Density 2 | 0 to 100 | Density 2 controls the number of echoes in a lower frequency range. In general, to get the smoothest sound, Density 2 is usually less than the value of Density 1. |
| ER 1 Time | 0 to 112ms | Controls the amount of time it takes for the first pre-echo to be injected into the Density. Pre-echoes are the sounds which have been reflected back from the walls or other reflective surfaces. |
| ER 1 Send | -99% to +99% | This parameter controls the level of the first pre-echo. |
| ER 2 Time | 0 to 112ms | This controls the amount of time it takes for the second pre-echo to be injected into the Density. |
| ER 2 Send | -99% to +99% | This parameter controls the level of the second pre-echo. Experiment with both positive and negative on all echoes to change the tonal character of the results. |
| Output Bal | Full <L to Full >R | Controls the left/right stereo balance of the reverb signal. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

## 09 Gated Reverb

When the output of a reverb is muted partway through its decay, it creates a gated sound. To achieve this gated effect, the Gated Reverb must gate a number of internal parameters, not just the output amplitude envelope. It is, however, the output amplitude over which you have control. The MR-Rack offers a highly controllable gated reverb, optimized for percussive instruments, but useful for any sound. The gate is first opened when the input signal passes the trigger threshold. This trigger threshold should be set as low as possible, so that none of the input signal is missed. The gated reverb triggers whenever the input signal exceeds a (user programmable) threshold. The gate will stay open as long as the input signal remains above the threshold, and all the input signals will be accumulated under this gate until the total input signal level falls below the hysteresis level. When this happens, the Hold Time will begin. The reason for hysteresis is to eliminate false retriggering and to ensure precise hold time durations. If you desire a separate gate on each and every note, use the Non Lin reverbs.

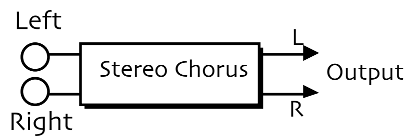
| **Parameter** | **Range** | **Description** |
|---|---|---|
| Gate Thresh | -96.0dB to 0.0dB | Sets the signal level that triggers the gated reverb. When the incoming signal reaches this value, it triggers (starts) the gated reverb. Higher values would require a stronger incoming signal. Set this parameter as low as possible to work with your particular source, but not so low as to cause false triggering. |
| Gate Hysteresis | 0dB to 48dB | Sets the lower threshold level relative to Gate Thresh below which the Gate Hold Time begins.<br>If the difference between Gate Thresh and Gate Hysteresis is lower than the level of the incoming signal, the gated reverb will continue to retrigger. With a high Decay rate, this adds a cavernous quality to percussion instruments. |
| Gate Attack | 50us to 10.0s | Sets the attack time of the gated reverb once the incoming signal has reached the trigger level. Generally the attack should be short and not set longer than the Gate Hold time. |
| Gate Release | 50us to 10.0s | Sets the amount of time after the Gate Hold time has elapsed for the gated reverb to shut down. Generally these times are very short. |
| Gate Hold | 50us to 10.0s | Sets the amount of time that the reverb will hold after the retrigger and before the release. The Gate Hold time will begin again if retriggered. |
| Decay | 0sec to 10.0sec | Sets the decay rate. In general, the decay rate is set very high. |
| HF Damping | 100Hz to 21.2kHz | Controls the rate of attenuation of high frequencies in the decay of the reverb. Increasing the value of this parameter will gradually filter out increasing amounts of high frequency energy. |
| Diffusion 1 | 0 to 100 | Smears the transients, so as to diffuse and smooth the sound. Lower values will cause impulsive sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding). Recommended setting is approximately 50. |
| Diffusion 2 | 0 to 100 | This parameter, similar to and in series with Diffusion 1, performs the same way but controls lower frequency ranges. Recommended setting is approximately 50. |
| Definition | 0 to 100 | Controls the rate of echo density build up in the reverb decay. If set too high, the echo density will build at a rate that exceeds the decay rate. A general rule of thumb: Definition should not exceed the Decay Rate. We recommend settings between 25 and 50. |
| Slap Time | 0ms to 108ms | Controls the delay time of an internal dry stereo signal to create a slapback. In general, the slapback is greater or equal to the Gate Hold time to achieve a reverse effect. |
| Slap Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the slapback (internal dry) signal. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| ER 1 Level<br>ER 2 Level<br>ER 3 Level<br>ER 4 Level | -99% to +99%<br>-99% to +99%<br>-99% to +99%<br>-99% to +99% | These parameters control four early reflection levels. Setting these levels to lower values will produce a wetter sound. |
| Output Bal | Full <L to Full >R | Controls the left/right stereo balance of the gated reverb signal. A setting of -99 would offer hard left, whereas a setting of +99 would offer hard right. A setting of +00 would place the reverb in the center of the stereo spectrum. |

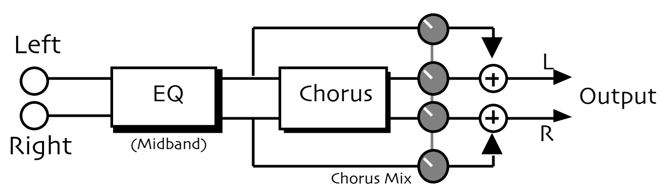
## 10 Stereo Chorus




This stereo chorus uses delays to produce pitch and amplitude modulation.

| Parameter | Range | Description |
|---|---|---|
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the rate of pitch modulation applied to the delays. |
| Chorus Depth | 0.0ms to 25.0ms | Controls the excursion of modulation. As this parameter increases, the amount of detuning also increases. |
| ChorusCenter | 0.0ms to 50.0ms | Controls the nominal delay time of the chorus about which the delay modulation occurs. Adjusting this parameter will change the tonal character of the chorus. |
| Spread | (wide stereo to mono) | This parameter offers control of the synthesized stereo field. The farthest counterclockwise setting of the Value knob offers true stereo, the middle setting forces the left and the right into the center (mono), and turning the Value knob fully clockwise inverts the left and right signal. |
| Chorus Phase | 0deg to -180deg | Controls the relative phase between left and right LFOs. |

## 11 8-VoiceChorus




8-Voice Chorus offers a symphonic chorused sound having eight different voices and using eight separately randomized LFOs. This effect is good for creating an ensemble of instruments from single sources (there is no internal filtering applied to any of the chorused voices).

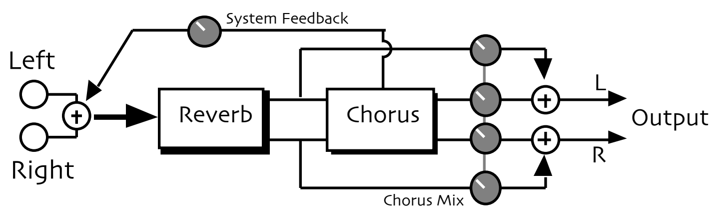
| Parameter | Range | Description |
|---|---|---|
| EQ Input | Off, -49.5dB to +24dB | Adjusts the input volume of the EQs to eliminate the possibility of clipping boosted signals. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency shelf. |
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency shelf. |
| EQ Output | Off, -49.5dB to +24dB | Controls the gain coming out of the parametric EQ. |
| Dry Blend | Full Dry to Full Wet | Controls the dry to wet mix of the chorus . |
| HPF Cutoff | 10Hz to 10.9kHz | Controls the cutoff frequency of the high pass filter frequency applied to the input signal. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 7.0Hz | Controls the rate of pitch modulation applied to the delays. |
| Chorus Depth | 0.0ms to 300ms | Controls the excursion of modulation. |
| ChorusCenter | 0.0ms to 300.0ms | Controls the nominal delay time of the chorus about which the delay modulation occurs. Adjusting this parameter will change the tonal character of the chorus. |
| Center Offset | 0% to 100% | Controls the relative spacing in nominal delay time among the eight voices. |
| Chorus Phase | -180deg to +180deg | Controls the relative phase between left and right LFOs. |
| Chorus Feedback | -99% to +99% | Controls the amount of feedback applied to the chorus. Positive settings are in-phase, negative values are out-of-phase, and impart a different tonality to the chorus. |

## 12 Rev→Chorus




Combines a plate reverb with a stereo chorus.

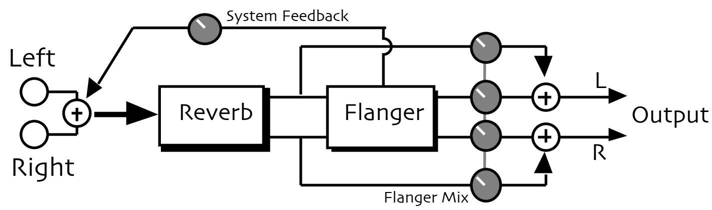
| Parameter | Range | Description |
|---|---|---|
| Decay | 0.0sec to 10.0sec | Controls the amount of time it takes for the reverberation to decay after the input signal stops. |
| HF Damping | 100Hz to 21.2kHz | Controls the rate of attenuation of high frequencies in the decay of the reverberation. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy. |
| HF Bandwidth | 100Hz to 21.2kHz | The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass. |
| Diffusion 1 | 0 to 100 | Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters. |
| Diffusion 2 | 0 to 100 | This parameter, similar to and in series with Diffusion1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source. |
| Definition | 0 to 100 | Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate. |
| Chorus Mix | Full Dry to Full Wet | Controls the Dry/Wet mix of the chorus. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the rate of pitch modulation to the chorus. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| LFO Phase | -180deg to +180deg | Controls the relative phase between left & right LFOs. |
| Chorus Depth | 0.0ms to 25.0ms | Controls the amount of modulation. |
| Chorus Center | 0.0ms to 50.0ms | Controls the delay times within the chorus. Adjusting this parameter will change the tonal character of the chorus. |
| System Feedback | -99% to +99% | Controls the amount of feedback applied from the output of the chorus to the input of the reverb. |

## 13 Rev→Flanger



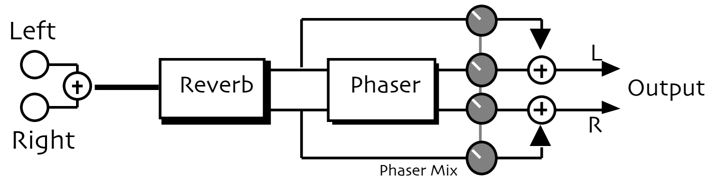

This Insert Effect features a plate reverb with a flanger effect.

| Parameter | Range | Description |
|---|---|---|
| Decay | 0.0sec to 10.0sec | Controls the amount of time it takes for the reverb to decay after the input signal stops. |
| HF Damping | 100Hz to 21.2kHz | Controls the rate of attenuation of high frequencies in the decay of the reverberation. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy. |
| HF Bandwidth | 100Hz to 21.2kHz | The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass. |
| Diffusion 1 | 0 to 100 | Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters. |
| Diffusion 2 | 0 to 100 | This parameter, similar to and in series with Diffusion1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source. |
| Definition | 0 to 100 | Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate. |
| FlangerMix | Full Dry to Full Wet | Controls the Dry/Wet mix of the flanger. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the rate of modulation applied to the flanger. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| LFO Phase | -180deg to +180deg | Controls the relative phase between left and right LFOs. |
| Flanger Depth | 0.0ms to 25.0ms | Controls the range of the high-to-low frequency sweep in the flanger effect. |
| FlangerCenter | 0.0ms to 50.0ms | Sets the sweep mid-point of the flanger effect. |
| Notch Depth | 0% to 100% | Controls the depth of the peaks and notches produced by the flanger. |
| Feedback | -99% to +99% | Controls the amount of feedback applied to the flanger. Positive or negative values will impart a different tonality to the flange effect, either accenting the peaks or the notches. |
| System Feedback | -99% to +99% | Controls the amount of feedback applied from the output of the flanger to the input of the reverb. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

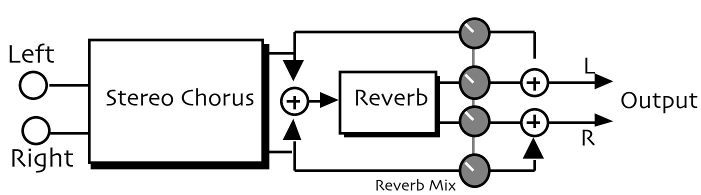
## 14 Rev→Phaser




Combines a plate reverb with a 12-pole phase shifter.

| Parameter | Range | Description |
|---|---|---|
| Decay | 0.0sec to 10.0sec | Controls the amount of time it takes for the reverberation to decay away to a very low level after the input signal stops. |
| HF Damping | 100Hz to 21.2kHz | Controls the rate of attenuation of high frequencies in the decay of the reverberation. As natural reverb decays, some high frequencies tend to get absorbed by the environment. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy. |
| HF Bandwidth | 100Hz to 21.2kHz | The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass. This functions like a tone control on a guitar. |
| Diffusion 1 | 0 to 100 | Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters. |
| Diffusion 2 | 0 to 100 | This parameter, similar to and in series with Diffusion1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source. |
| Definition | 0 to 100 | Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate. |
| Phaser Mix | Full Dry to Full Wet | Controls the Dry/Wet mix of the phaser. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the rate of the modulation applied to the phaser. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| Phaser Depth | 0 to 100 | Controls the amount of modulation applied to the phaser. |
| Phaser Center | 0 to 100 | This parameter controls the mid-point of the phaser. |
| Notch Depth | 0% to 100% | Controls the depth of the peaks and notches produced by the phaser. This parameter should normally be set to 100%. |
| Feedback | -99% to +99% | Controls the amount of feedback applied to the phaser. Positive or negative values will impart a different tonality to the phaser effect, either accenting the peaks or the notches. |

## 15 Chorus→Rev




Chorus→Rev combines a rich sounding chorus with the standard reverb.

To access the Parameters described on this page (unless otherwise noted):

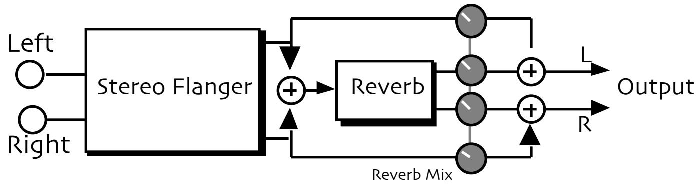
Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| Parameter | Range | Description |
|---|---|---|
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the rate of the modulation applied to the delay time of the chorus. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| LFO Phase | -180deg to +180deg | Controls the relative phase between left and right LFOs. |
| Chorus Depth | 0.0ms to 25.0ms | Controls the amount of modulation. |
| Chorus Center | 0.0ms to 50.0ms | Controls the four delay times within the chorus. Adjusting this parameter will change the tonal character of the chorus. |
| Rev Mix | Full Dry to Full Wet | Controls the Dry/Wet mix of the reverb. |
| Decay | 0.0sec to 10.0sec | Controls the amount of time it takes for the reverberation to decay away to a very low level after the input signal stops. |
| HF Damping | 100Hz to 21.2kHz | Controls the rate of attenuation of high frequencies in the decay of the reverberation. As natural reverb decays, some high frequencies tend to get absorbed by the environment. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy. |
| HF Bandwidth | 100Hz to 21.2kHz | The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass. |
| Diffusion 1 | 0 to 100 | Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters. |
| Diffusion 2 | 0 to 100 | This parameter, similar to and in series with Diffusion1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source. |
| Definition | 0 to 100 | Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate. |

To access the Parameters described on this page (unless otherwise noted):

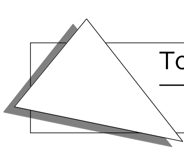
Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

# 16 Flanger→Rev




This Insert Effect features a flanger combined with a plate reverb.

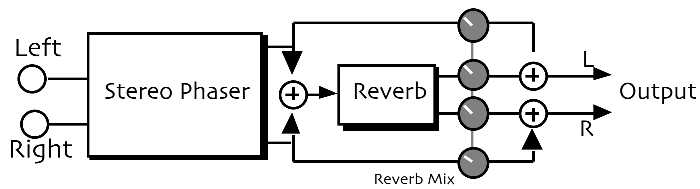
| Parameter | Range | Description |
|---|---|---|
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the rate of the modulation applied to the flange effect. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| LFO Phase | -180deg to +180deg | Controls the relative phase between left and right LFOs. |
| Flanger Depth | 0.0ms to 25.0ms | Controls the range of the high-to-low frequency sweep in the flanger effect. |
| FlangerCenter | 0.0ms to 50.0ms | Sets the sweep mid-point of the flanger effect. |
| Notch Depth | 0% to 100% | Controls the depth of the peaks and notches produced by the flanger. This parameter should be set to 100% for maximum effect. |
| Feedback | -99% to +99% | Controls the amount of feedback applied to the flanger. Positive or negative values will impart a different tonality to the flange effect, either accenting the peaks or the notches. |
| Rev Mix | Full Dry to Full Wet | Controls the Dry/Wet mix of the reverb. |
| Decay | 0.0sec to 10.0sec | Controls the amount of time it takes for the reverberation to decay away to a very low level after the input signal stops. |
| HF Damping | 100Hz to 21.2kHz | Controls the rate of attenuation of high frequencies in the decay of the reverberation. As natural reverb decays, some high frequencies tend to get absorbed by the environment. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy. |
| HF Bandwidth | 100Hz to 21.2kHz | The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass. |
| Diffusion 1 | 0 to 100 | Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters. |
| Diffusion 2 | 0 to 100 | This parameter, similar to and in series with Diffusion1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source. |
| Definition | 0 to 100 | Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate. |



To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

# 17 Phaser→Rev



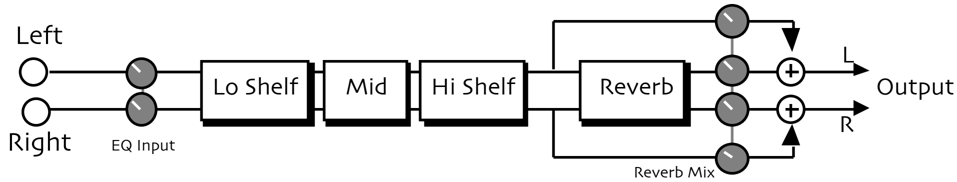

A 12-pole phase shifter with reverb.

| Parameter | Range | Description |
|---|---|---|
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the rate of the modulation applied to the phaser. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| Phaser Depth | 0 to 100 | Controls the amount of modulation applied to the phaser. |
| Phaser Center | 0 to 100 | This parameter controls the mid-point of the phaser. |
| Notch Depth | 0% to 100% | Controls the depth of the peaks and notches produced by the phaser. This parameter should normally be set to 99. |
| Feedback | -99% to +99% | Controls the amount of feedback applied to the phaser. Positive or negative values will impart a different tonality to the phaser effect, either accenting the peaks or the notches. |
| Rev Mix | Full Dry to Full Wet | Controls the Dry/Wet mix of the reverb. |
| Decay | 0.0sec to 10.0sec | Controls the amount of time it takes for the reverberation to decay away to a very low level after the input signal stops. |
| HF Damping | 100Hz to 21.2kHz | Controls the rate of attenuation of high frequencies in the decay of the reverberation. As natural reverb decays, some high frequencies tend to get absorbed by the environment. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy. |
| HF Bandwidth | 100Hz to 21.2kHz | The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass. This functions like a tone control on a guitar. |
| Diffusion 1 | 0 to 100 | Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters. |
| Diffusion 2 | 0 to 100 | This parameter, similar to and in series with Diffusion1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source. |
| Definition | 0 to 100 | Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

# 18 EQ→Reverb



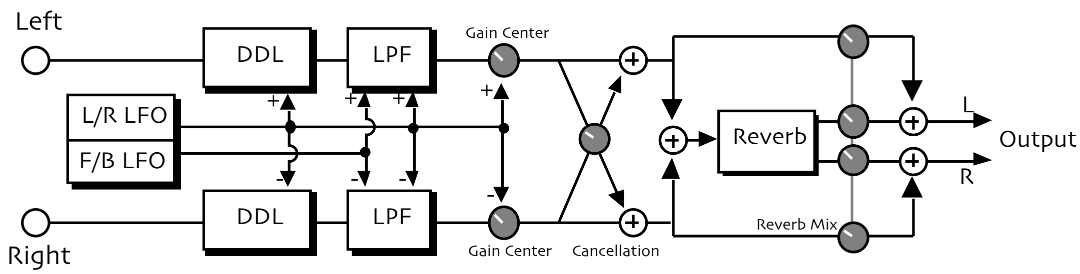

A parametric EQ with reverb.

| Parameter | Range | Description |
|---|---|---|
| EQ Input | Off, -49.5dB to +24dB | Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals. |
| LoShelf Fc | 10Hz to 20.0kHz | Sets the center of the low frequency EQ. |
| LoShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this low frequency shelf. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this high frequency shelf. |
| HiShelf Fc | 10Hz to 20.0kHz | Sets the center frequency of the high frequency shelf. |
| HiShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this shelf. |
| EQ Output | Off, -49.5dB to +24dB | Controls the gain coming out of the parametric EQ. |
| Rev Mix | Full Dry to Full Wet | Controls the reverb mix. |
| Decay | 0.0sec to 10.0sec | Controls the amount of time it takes for the reverb to decay after the input signal stops. |
| HF Damping | 100Hz to 21.2kHz | Controls the rate of attenuation of high frequencies in the decay of the reverb. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy. |
| HF Bandwidth | 100Hz to 21.2kHz | Acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass. The higher the setting, the more high frequencies are allowed to pass. |
| Diffusion 1 | 0 to 100 | Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters. |
| Diffusion 2 | 0 to 100 | This parameter, similar to and in series with Diffusion1, controls lower frequency ranges. |
| Definition | 0 to 100 | Controls the rate at which echo density is increased with time. Setting this too high can cause the echo density to build at a rate which exceeds the decay rate. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

## 19 Spinner→Rev



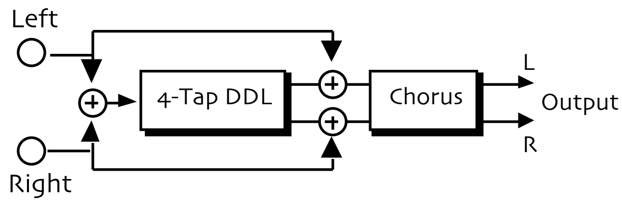

Combines a pseudo-three dimensional panner with the standard reverb.

| Parameter | Range | Description |
|---|---|---|
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the rate of modulation applied to the spinner. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for modulation. |
| LFO Phase | -180deg to +180deg | Controls the relative phase between the left and right and front and back LFOs. Set this to ±90 deg for circular motion. |
| DDL Mod Depth | 0.0ms to 10.0ms | Controls the left to right mod depth to delay time. Try setting this to 0.3 ms for average head size. |
| DDL ModCenter | 0.0ms to 50.0ms | Fixed delay time. |
| Level Mod | 0% to 100% | Left to right LFO mod depth to level. |
| L-to-R Mod | 0% to 100% | Left to right LFO mod depth to filter. |
| F-to-B Mod | 0% to 100% | Front to back LFO mod depth to filter. If the sum of the L-to-R Mod and F-to-B Mod is greater than 100%, the filter can “thump” as it closes down. |
| Cancellation | -99% to +99% | Sets the depth and phase of the opposite speaker cancellation signal. |
| Rev Mix | Full Dry to Full Wet | Controls the Dry/Wet mix of the reverb. |
| Decay | 0.0sec to 10.0sec | Controls the amount of time it takes for the reverb to decay after the input signal stops. |
| HF Damping | 100Hz to 21.2kHz | Controls the rate of attenuation of high frequencies in the decay of the reverberation. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy. |
| HF Bandwidth | 100Hz to 21.2kHz | Acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass. The higher the setting, the more high frequencies are allowed to pass. |
| Diffusion 1 | 0 to 100 | Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters. |
| Diffusion 2 | 0 to 100 | This parameter, similar to and in series with Diffusion1, controls lower frequency ranges. |
| Definition | 0 to 100 | Controls the rate at which echo density is increased with time. Setting this too high can cause the echo density to build at a rate which exceeds the decay rate. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

## 20 DDL→Chorus



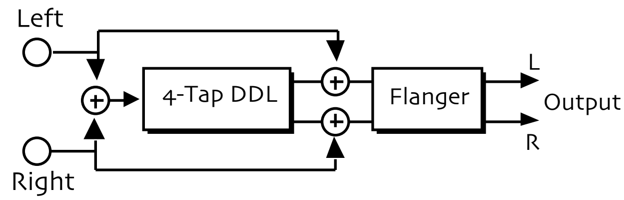

DDL→Chorus combines four independent controllable digital delays with a chorus.

| Parameter | Range | Description |
|---|---|---|
| Dly1 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the first independent delay. |
| Dly1 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly1 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly1 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly1 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly2 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the second independent delay. |
| Dly2 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly2 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly2 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly2 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly3 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the third independent delay. |
| Dly3 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly3 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly4 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the fourth independent delay. |
| Dly4 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly4 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the four rates of the modulation applied to the delay time of the chorus. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| LFO Phase | -180deg to +180deg | Controls the relative phase between left and right LFOs. |
| Chorus Depth | 0.0ms to 25.0ms | Controls the amount of modulation. |
| ChorusCenter | 0.0ms to 50.0ms | Controls the delay time within the chorus, and changes the tonal character. |
| Spread | (wide stereo to mono) | This parameter offers control of the synthesized stereo field. The farthest counterclockwise setting of the Value knob offers true stereo, the middle setting forces the left and the right into the center (mono), and turning the Value knob fully clockwise inverts the left and right signal. |

## 21 DDL→Flanger

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.



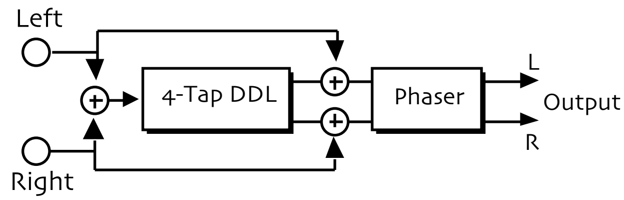

Combines four independent controllable digital delays with a flanger.

| Parameter | Range | Description |
|---|---|---|
| Dly1 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the first independent delay. |
| Dly1 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly1 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly1 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly1 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly2 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the second independent delay. |
| Dly2 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly2 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly2 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly2 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly3 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the third independent delay. |
| Dly3 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly3 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly4 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the fourth independent delay. |
| Dly4 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly4 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the rate of the modulation applied to the flange effect. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| LFO Phase | -180deg to +180deg | Controls the relative phase between left and right LFOs. |
| Flanger Depth | 0.0ms to 25.0ms | Controls the range of the high-to-low frequency sweep in the flanger effect. |
| FlangerCenter | 0.0ms to 50.0ms | Sets the sweep mid-point of the flanger effect. |
| Notch Depth | 0% to 100% | Controls the depth of the peaks and notches produced by the flanger. This parameter should be set to 100% for maximum effect. |
| Feedback | -99% to +99% | Controls the amount of feedback applied to the flanger. Positive or negative values will impart a different tonality to the flange effect, either accenting the peaks or the notches. |

## 22 DDL→Phaser

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.



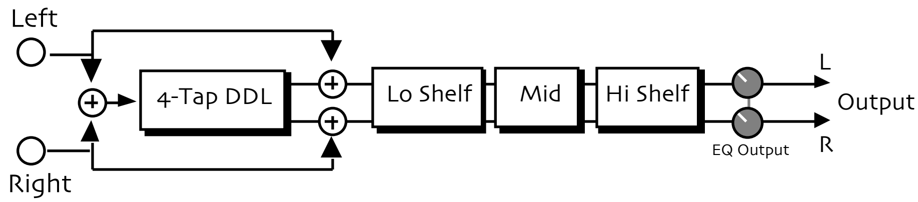

Combines a digital delay with a phase shifter.

| Parameter | Range | Description |
|---|---|---|
| Dly1 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the first independent delay. |
| Dly1 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly1 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly1 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly1 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly2 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the second independent delay. |
| Dly2 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly2 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly2 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly2 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly3 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the third independent delay. |
| Dly3 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly3 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly4 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the fourth independent delay. |
| Dly4 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly4 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the rate of the modulation applied to the phaser. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| Phaser Depth | 0 to 100 | Controls the amount of modulation applied to the phaser. |
| Phaser Center | 0 to 100 | This parameter controls the mid-point of the phaser. |
| Notch Depth | 0% to 100% | Controls the depth of the peaks and notches produced by the phaser. This parameter should normally be set to 99. |
| Feedback | -99% to +99% | Controls the amount of feedback applied to the phaser. Positive or negative values will impart a different tonality to the phaser effect, either accenting the peaks or the notches. |

## 23 DDL→EQ

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.



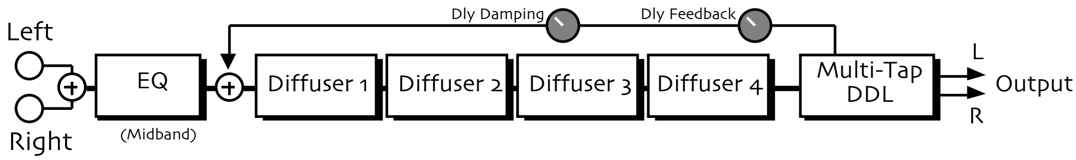

Combines a digital delay with a parametric EQ.

| Parameter | Range | Description |
|---|---|---|
| Dly1 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the first independent delay. |
| Dly1 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly1 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly1 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly1 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly2 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the second independent delay. |
| Dly2 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly2 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly2 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly2 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly3 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the third independent delay. |
| Dly3 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly3 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly4 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the fourth independent delay. |
| Dly4 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly4 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| EQ Input | Off, -49.5dB to +24dB | Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals. |
| LoShelf Fc | 10Hz to 20.0kHz | Sets the center of the low frequency EQ. |
| LoShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this low frequency shelf. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency shelf. |
| HiShelf Fc | 10Hz to 20.0kHz | Sets the center frequency of the high frequency shelf. |
| HiShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this high frequency shelf. |
| EQ Output | Off, -49.5dB to +24dB | Controls the gain coming out of the parametric EQ. |

# 24 Multi-Tap DDL

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.



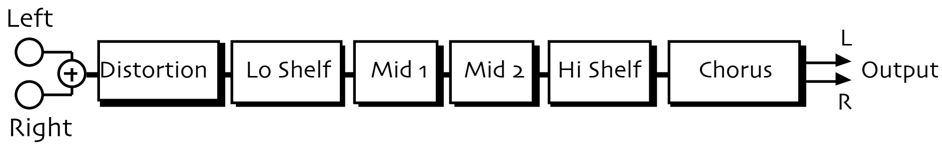

Multi-Tap DDL offers four diffusers in series feeding a nine-tap digital delay.

| Parameter | Range | Description |
|---|---|---|
| EQ Input | Off, -49.5dB to +24dB | Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals. |
| EQ Output | Off, -49.5dB to +24dB | Controls the gain coming out of the parametric EQ. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency shelf. |
| Diffusion 1 | -99% to +99% | Sets the diffusion amount of the first diffuser. |
| Diffus Time 1 | 0ms to 62ms | Sets the delay time of the first diffuser. |
| Diffusion 2 | -99% to +99% | Sets the diffusion amount of the second diffuser. |
| Diffus Time 2 | 0ms to 62ms | Sets the delay time of the second diffuser. |
| Diffusion 3 | -99% to +99% | Sets the diffusion amount of the third diffuser. |
| Diffus Time 3 | 0ms to 62ms | Sets the delay time of the third diffuser. |
| Diffusion 4 | -99% to +99% | Sets the diffusion amount of the fourth diffuser. |
| Diffus Time 4 | 0ms to 62ms | Sets the delay time of the fourth diffuser. |
| Dly Interval | Uniform, Linear+, Linear-, Expon.+, Expon.-, Random | Controls the space of the taps within the DDL. |
| MaxDlyTime | 1/1 Sys to 1/32 Sys, 0ms to 500ms | Controls the maximum delay time. |
| Dly Smoothing | 0ms to 500ms | Controls the amount of time it takes to change from one Dly Max Time setting to another. Low values result in more clicking but less detuning. High values result in less clicking but more detuning. |
| Feedback Tap | 1 to 9 | Selects one of the nine taps to be fed back into the input of the effect. |
| Dly Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly Damping | 10Hz to 20.0kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly Levels | Uniform, Linear+, Linear-, Expon.+, Expon.-, Random | Controls the relative levels of the taps. |
| Dly Max Level | 0 to 100 | Controls the maximum level that any one tap can attain. |
| Dly Pan | Centered, Alternating, L->R, R->L, Center->Out, Out->Center, Random | Controls the panning of the taps in the stereo field. |
| Dly Spread | 0 to 100 | Controls the width of the stereo field. A setting of 0 is the narrowest (mono)—a setting of 100 is the widest (full stereo). |

## 25 Dist→Chorus

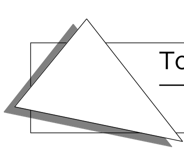
To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.




Dist→Chorus combines a distortion with a chorus.

| Parameter | Range | Description |
|---|---|---|
| Dist LPF Fc | 10Hz to 20.0kHz | Filters out high frequencies prior to the distortion. |
| Dist Offset | -99% to +99% | Adjusts the balance of even-to-odd-generated harmonics. |
| Dist Gain | Off, -49.5dB to +48dB | Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the Dist Volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume. |
| Dist Curve | Soft, Medium 1, Medium 2, Hard, Buzz | Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz). |
| Dist Volume | Off, -49.5dB to 0.0dB | Controls the volume of the distortion effect. Generally, if the Distortion Gain is set high, set this parameter lower. |
| Post VCF Fc | 10Hz to 7.10kHz | Determines the distortion filter cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal for a wah wah pedal effect. |
| Post VCF Q | 1.0 to 40.0 | Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the *presence* of the peak. This setting is important for the auto-wah effect. |
| Dist Dry Lev | Off, -49.5dB to 0.0dB | Controls the amount of dry signal to be mixed with the distorted signal. |
| EQ Input | Off, -49.5dB to +24dB | Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals. |
| LoShelf Fc | 10Hz to 20.0kHz | Sets the center of the low frequency EQ. |
| LoShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this low frequency shelf. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency shelf. |
| Mid 2 Fc | 10Hz to 20.0kHz | Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Q | 1.0 to 40.0 | Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Gain | Off, -49.5dB to +24dB | Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range. |
| HiShelf Fc | 10Hz to 20.0kHz | Sets the center frequency of the high frequency shelf. |
| HiShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this high frequency shelf. |
| EQ Output | Off, -49.5dB to +24dB | Controls the gain coming out of the parametric EQ. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the four rates of the modulation applied to the delay time of the chorus. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| LFO Phase | -180deg to +180deg | Controls the relative phase between left and right LFOs. |
| Chorus Depth | 0.0ms to 25.0ms | Controls the amount of modulation. |
| ChorusCenter | 0.0ms to 50.0ms | Controls the delay times within the chorus. Adjusting this parameter will change the tonal character of the chorus. |

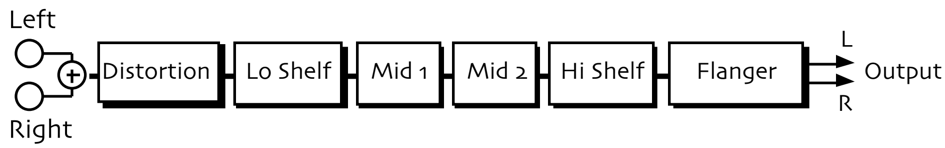


To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| Spread | (wide stereo to mono) | This parameter offers control of the synthesized stereo field. The farthest counterclockwise setting of the Value knob offers true stereo, the middle setting forces the left and the right into the center (mono), and turning the Value knob fully clockwise inverts the left and right signal. |

## 26 Dist→Flanger




Dist→Flanger combines a distortion with a flanger.

| Parameter | Range | Description |
|---|---|---|
| Dist LPF Fc | 10Hz to 20.0kHz | Filters out high frequencies prior to the distortion. |
| Dist Offset | -99% to +99% | Adjusts the balance of even-to-odd-generated harmonics. |
| Dist Gain | Off, -49.5dB to +48dB | Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the Distortion Volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume. |
| Dist Curve | Soft, Medium 1, Medium 2, Hard, Buzz | Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz). |
| Dist Volume | Off, -49.5dB to 0.0dB | Controls the volume of the distortion effect. Generally, if the Distortion Gain is set high, set this parameter lower. |
| Post VCF Fc | 10Hz to 7.10kHz | Determines the distortion filter cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal for a wah wah pedal effect. |
| Post VCF Q | 1.0 to 40.0 | Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the *presence* of the peak. This setting is important for the auto-wah effect. |
| Dist Dry Lev | Off, -49.5dB to 0.0dB | Controls the amount of dry signal to be mixed with the distorted signal. |
| EQ Input | Off, -49.5dB to +24dB | Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals. |
| LoShelf Fc | 10Hz to 20.0kHz | Sets the center of the low frequency EQ. |
| LoShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this low frequency shelf. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency shelf. |
| Mid 2 Fc | 10Hz to 20.0kHz | Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Q | 1.0 to 40.0 | Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Gain | Off, -49.5dB to +24dB | Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range. |
| HiShelf Fc | 10Hz to 20.0kHz | Sets the center frequency of the high frequency shelf. |
| HiShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this high frequency shelf. |
| EQ Output | Off, -49.5dB to +24dB | Controls the gain coming out of the parametric EQ. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the rate of the modulation applied to the flange effect. |

To access the Parameters described on this page (unless otherwise noted):

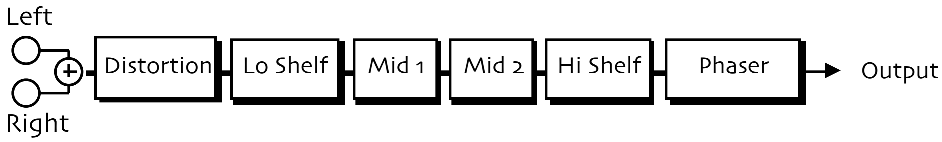
Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| LFO Phase | -180deg to +180deg | Controls the relative phase between left and right LFOs. |
| Flanger Depth | 0.0ms to 25.0ms | Controls the range of the high-to-low frequency sweep in the flanger effect. |
| FlangerCenter | 0.0ms to 50.0ms | Sets the sweep mid-point of the flanger effect. |
| Notch Depth | 0% to 100% | Controls the depth of the peaks and notches produced by the flanger. This parameter should be set to 100% for maximum effect. |
| Feedback | -99% to +99% | Controls the amount of feedback applied to the flanger. Positive or negative values will impart a different tonality to the flange effect, either accenting the peaks or the notches. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

## 27 Dist→Phaser




This Insert Effect combines a raspy distortion with a phase shifter.

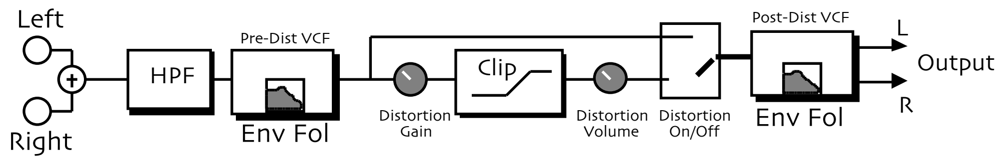
| **Parameter** | **Range** | **Description** |
|---|---|---|
| Dist LPF Fc | 10Hz to 20.0kHz | Filters out high frequencies prior to the distortion. |
| Dist Offset | -99% to +99% | Adjusts the balance of even-to-odd-generated harmonics. |
| Dist Gain | Off, -49.5dB to +48dB | Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the Distortion Volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume. |
| Dist Curve | Soft, Medium 1, Medium 2, Hard, Buzz | Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz). |
| Dist Volume | Off, -49.5dB to 0.0dB | Controls the volume of the distortion effect. Generally, if the Distortion Gain is set high, set this parameter lower. |
| Post VCF Fc | 10Hz to 7.10kHz | Determines the distortion filter cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal for a wah wah pedal effect. |
| Post VCF Q | 1.0 to 40.0 | Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the *presence* of the peak. This setting is important for the auto-wah effect. |
| Dist Dry Lev | Off, -49.5dB to 0.0dB | Controls the amount of dry signal to be mixed with the distorted signal. |
| EQ Input | Off, -49.5dB to +24dB | Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals. |
| LoShelf Fc | 10Hz to 20.0kHz | Sets the center of the low frequency EQ. |
| LoShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this low frequency shelf. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency shelf. |
| Mid 2 Fc | 10Hz to 20.0kHz | Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Q | 1.0 to 40.0 | Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Gain | Off, -49.5dB to +24dB | Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range. |
| HiShelf Fc | 10Hz to 20.0kHz | Sets the center frequency of the high frequency shelf. |
| HiShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this high frequency shelf. |
| EQ Output | Off, -49.5dB to +24dB | Controls the gain coming out of the parametric EQ. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the rate of the modulation applied to the phaser. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| Phaser Depth | 0 to 100 | Controls the amount of modulation applied to the phaser. |
| Phaser Center | 0 to 100 | This parameter controls the mid-point of the phaser. |
| Notch Depth | 0% to 100% | Controls the depth of the peaks and notches produced by the phaser. This parameter should normally be set to 99. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| Feedback | -99% to +99% | Controls the amount of feedback applied to the phaser. Positive or negative values will impart a different tonality to the phaser effect, either accenting the peaks or the notches. |

## 28 Dist→AutoWah




Dist→AutoWah combines a voltage control filter and a raspy distortion, and a second voltage control filter. Three effects can be obtained: Distortion, Wah-wah, and Auto-wah. The last two functions use the same VCF. These filters can be disabled or used as EQ if desired. There is a second VCF that exists after the distortion that can be set to act like a simple speaker simulator, or it can be modulated in parallel with the pre-distortion VCF.

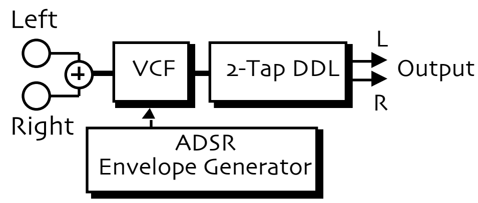
| Parameter | Range | Description |
|---|---|---|
| Pre HPF Fc | 10Hz to 1.50kHz | Filters out the low frequencies before the EQ. The higher the value, the less low frequencies will pass through. |
| Pre VCF Fc | 10Hz to 7.10kHz | Determines the distortion filter cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal for a wah wah pedal effect. |
| Pre VCF Q | 1.0 to 40.0 | Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the *height* of the peak. This setting is important for the auto-wah effect. |
| PreVCF EnvAmt | -99% to +99% | Determines how much the amplitude of the incoming signal will modify the distortion filter cutoff frequency. When set to 0, no modification will occur. When set to mid positive values, the Pre-VCF Fc will go high, but then come down to its nominal setting. When set to negative mid values, the Pre-VCF Fc will go low, and then go back up to its nominal setting. How quickly it does so is determined by the Attack and Release parameters. This sound is the auto-wah; positive values will boost the high frequencies, offering an “oww-oww” sound, and negative values will cut the high frequencies, producing a “dweep-dweep” sound. |
| Dist Gain | Off, -49.5dB to +48dB | Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the Distortion Volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume. |
| Dist Volume | Off, -49.5dB to 0.0dB | Controls the volume of the distortion effect. Generally, if the Distortion Gain is set high, set this parameter lower. |
| Distortion | Off, On | Chooses between distorted and clean signals. |
| Post VCF Fc | 10Hz to 7.10kHz | This parameter is used to control the second VCF that exists after the distortion. |
| Post VCF Q | 1.0 to 40.0 | This parameter is used to control the second VCF that exists after the distortion. |
| PostVCF EnvAmt | -99% to +99% | This parameter is used to control the second VCF that exists after the distortion. |
| VCF Attack | 50us to 100ms | Sets the attack of the envelope follower (i.e. determines how closely the attack is followed) once the incoming signal has been detected. Generally the attack should be short. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| VCF Release | 1ms to 10.0s | Sets the amount of time after the incoming signal has ceased for the envelope follower to shut down. Generally these times are longer than the attack times. |
| Post HPF Fc | 10Hz to 1.50kHz | Filters out the low frequencies after the distortion. |

## 29 ResVCF→DDL



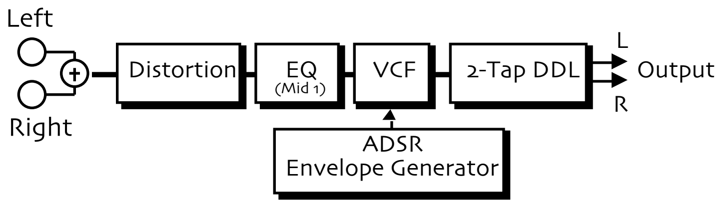

ResVCF→DDL combines a voltage control filter and a digital delay.

| Parameter | Range | Description |
|---|---|---|
| VCF Input | Off, -49.5dB to 0.0dB | Acts as a trim control at the input of the VCF. |
| VCF Fc | 10Hz to 7.10kHz | Determines the VCF cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal for a wah wah pedal effect. |
| VCF Q | 1.0 to 40.0 | Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the *presence* of the peak. This setting is important for the auto-wah effect. |
| ADSR Attack | 50us to 10.0s | Sets the attack time for the ADSR Envelope shape. |
| ADSR Decay | 50us to 10.0s | Sets the decay time for the ADSR Envelope shape. |
| ADSR Sustain | Off, -49.5dB to 0.0dB | Sets the sustain level for the ADSR Envelope shape. |
| ADSR Release | 50us to 10.0s | Sets the release time for the ADSR Envelope shape. |
| ADSR Env Amt | -99% to +99% | Determines the degree to which the envelope modifies the cutoff frequency of the VCF. |
| ADSR TrigMode | Single or Multi | Determines whether the envelope which controls the VCF will retrigger with each key-event (Multi) or not (Single). |
| Dly1 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the first independent delay. |
| Dly1 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly1 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly1 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly1 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly2 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the second independent delay. |
| Dly2 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly2 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly2 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly2 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |

## 30 Dist→VCF→DDL

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.




Dist→VCF→DDL combines a distortion, a voltage control filter and a digital delay.

| **Parameter** | **Range** | **Description** |
|---|---|---|
| Dist LPF Fc | 10Hz to 20.0kHz | Filters out high frequencies prior to the distortion. |
| Dist Offset | -99% to +99% | Adjusts the balance of even-to-odd-generated harmonics. |
| Dist Gain | Off, -49.5dB to +48dB | Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the Distortion Volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume. |
| Dist Curve | Soft, Medium 1, Medium 2, Hard, Buzz | Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz). |
| Dist Volume | Off, -49.5dB to 0.0dB | Controls the volume of the distortion effect. Generally, if the Distortion Gain is set high, set this parameter lower. |
| Post VCF Fc | 10Hz to 7.10kHz | Determines the distortion filter cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal for a wah wah pedal effect. |
| Post VCF Q | 1.0 to 40.0 | Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the *presence* of the peak. This setting is important for the auto-wah effect. |
| Dist Dry Lev | Off, -49.5dB to 0.0dB | Controls the amount of dry signal to be mixed with the distorted signal. |
| EQ Input | Off, -49.5dB to +24dB | Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency shelf. |
| VCF Input | Off, -49.5dB to 0.0dB | Acts as a trim control at the input of the VCF. |
| VCF Fc | 10Hz to 7.10kHz | Determines the VCF cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal for a wah wah pedal effect. |
| VCF Q | 1.0 to 40.0 | Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the *presence* of the peak. This setting is important for the auto-wah effect. |
| ADSR Attack | 50us to 10.0s | Sets the attack time for the ADSR Envelope shape. |
| ADSR Decay | 50us to 10.0s | Sets the decay time for the ADSR Envelope shape. |
| ADSR Sustain | Off, -49.5dB to 0.0dB | Sets the sustain level for the ADSR Envelope shape. |
| ADSR Release | 50us to 10.0s | Sets the release time for the ADSR Envelope shape. |
| ADSR Env Amt | -99% to +99% | Determines the degree to which the envelope modifies the cutoff frequency of the VCF. |
| ADSR TrigMode | Single or Multi | Determines whether the envelope which controls the VCF will retrigger with each key-event (Multi) or not (Single). |
| Dly1 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the first independent delay. |
| Dly1 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |

To access the Parameters described on this page (unless otherwise noted):

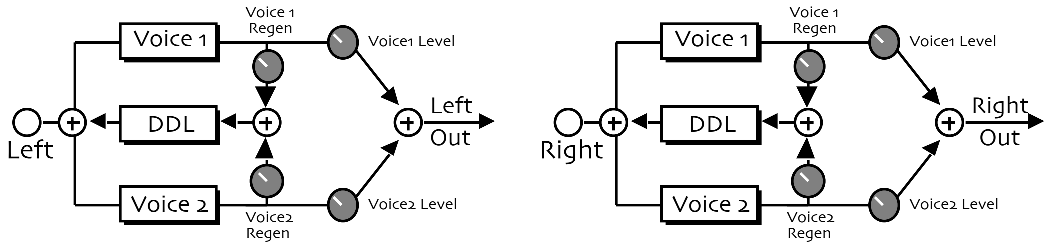
Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| Dly1 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly1 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly1 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly2 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the second independent delay. |
| Dly2 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly2 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly2 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly2 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

# 31 Pitch Detuner



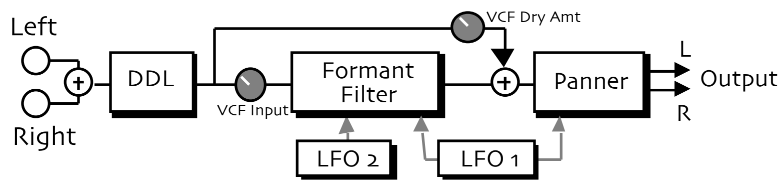

Pitch Detuner allows you to change the pitch of a sound to any pitch within a range of two octaves in either direction.

| Parameter | Range | Description |
|---|---|---|
| Voice1 Semi | -24 semi to +24 semi | Allows you to adjust the pitch of Voice 1 up to two octaves above or below the original pitch in semi-tones (half steps). |
| Voice1 Fine | -100cent to +100cent | This parameter allows you to fine tune the pitch of Voice 1. |
| Voice1 Level | Off, -49.5dB to 0.0dB | Adjusts the volume of Voice 1. |
| Voice1 Regen | -99% to +99% | Controls the amount of feedback from the output of the pitch detuner back into the input. This allows you to create special effects with ascending/descending delays. |
| Voice1 Width | 1ms to 185ms | Controls the splice width of voice 1. Select the width that sounds best to you. Shorter values result in a grainier sound, while longer values sound smoother. |
| Voice1 Mod | 0% to 100% | Controls the amount of modulation applied to Voice 1. |
| Voice2 Semi | -24 semi to +24 semi | Allows you to adjust the pitch of Voice 2 up to two octaves above or below the original pitch in semi-tones (half steps). |
| Voice2 Fine | -100cent to +100cent | This parameter allows you to fine tune the pitch of Voice 2. |
| Voice2 Level | Off, -49.5dB to 0.0dB | Adjusts the volume of Voice 2. |
| Voice2 Regen | -99% to +99% | Controls the amount of feedback from the output of the pitch detuner back into the input. This allows you to create special effects with ascending/descending delays. |
| Voice2 Width | 1ms to 185ms | Controls the splice width of voice 2. Select the width that sounds best to you. Shorter values result in a grainier sound, while longer values sound smoother. |
| Voice2 Mod | 0% to 100% | Controls the amount of modulation applied to Voice 2. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | This parameter controls the rate of pitch modulation which creates a chorusing effect. To achieve chorusing, this rate must be very low. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| LFO Phase | -180deg to +180deg | Controls the relative phase between left and right LFOs. |
| Regen Time | 1/1 Sys to 1/32 Sys, 0ms to 185ms | Controls the amount of delay in the feedback path. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

## 32 Chatter Box




This Insert Effect uses a formant filter with a time-varying spectrum to impart a dynamic vocal-like quality to almost any sound. Two LFOs are combined such that the filter morphs between four vowel shapes that you select. The first LFO is also tied to an auto-panner, which can bounce the vocalized signal through stereo space. Finally, a digital delay can be used to create highly unusual talking echo effects.

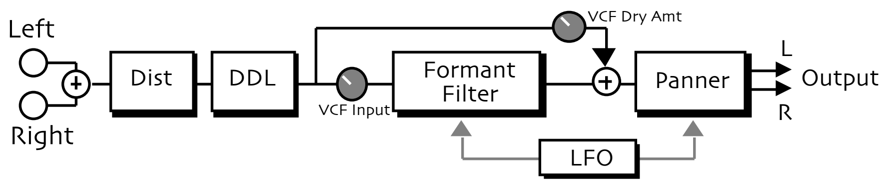
| Parameter | Range | Description |
|---|---|---|
| VCF Input | Off, -49.5dB to 0.0dB | Trims the input to the formant filter so that clipping does not occur. |
| VCF Dry Amt | Off, -49.5dB to 0.0dB | Controls the level of the DDL signal to be mixed with the output of the formant filter. |
| Shape 1 | A, E, I, O, U, AA, AE, AH, AO, EH, ER, IH, IY, UH, UW, B, D, F, G, J, K, L, M, N, P, R, S, T, V, Z | Select the first shape of the formant filter. |
| Shape 2 | A, E, I, O, U, AA, AE, AH, AO, EH, ER, IH, IY, UH, UW, B, D, F, G, J, K, L, M, N, P, R, S, T, V, Z | Select the second shape of the formant filter. |
| Shape 3 | A, E, I, O, U, AA, AE, AH, AO, EH, ER, IH, IY, UH, UW, B, D, F, G, J, K, L, M, N, P, R, S, T, V, Z | Select the third shape of the formant filter. |
| Shape 4 | A, E, I, O, U, AA, AE, AH, AO, EH, ER, IH, IY, UH, UW, B, D, F, G, J, K, L, M, N, P, R, S, T, V, Z | Select the fourth shape of the formant filter. |
| FormantWarp | -12 to +12 semi | Shifts all formant frequencies up or down, warping the “size” of the formant filter. |
| AutoPan Depth | 0% to 100% | Controls the depth of the auto-panning function after the formant filter. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | This parameter controls the rate of pitch modulation which creates a chorusing effect. To achieve chorusing, this rate must be very low. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| LFO 2 Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | This parameter controls the rate of the second LFO. |
| LFO 2 Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the second LFO will use for pitch modulation. |
| Dly1 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the first independent delay. |
| Dly1 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly1 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly1 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly2 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the second independent delay. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| Dly2 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly2 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly2 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |

# 33 Formant Morph




This effect is similar to the Chatter Box, except that it has a distorter for increased harmonic content, and it uses a single LFO to morph between two vowel shapes that you select.

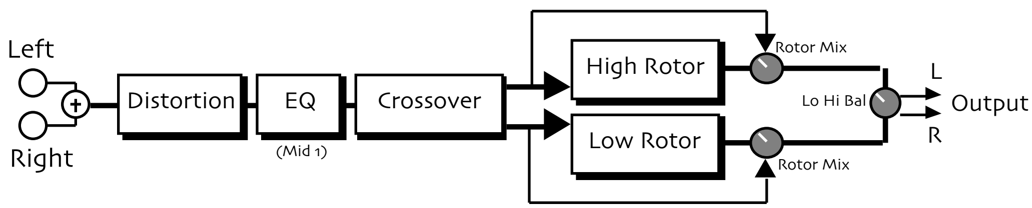
| Parameter | Range | Description |
|---|---|---|
| Dist Gain | Off, -49.5dB to +48dB | Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the Distortion Volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume. |
| Dist Volume | Off, -49.5dB to 0.0dB | Controls the volume of the distortion effect. Generally, if the Distortion Gain is set high, set this parameter lower. |
| Dist LPF Fc | 10Hz to 20.0kHz | Filters out high frequencies prior to the distortion. |
| Post VCF Fc | 10Hz to 7.10kHz | Determines the distortion filter cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal for a wah wah pedal effect. |
| Post VCF Q | 1.0 to 40.0 | Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the *presence* of the peak. This setting is important for the auto-wah effect. |
| Dist Offset | -99% to +99% | Adjusts the balance of even-to-odd-generated harmonics. |
| Dist Curve | Soft, Medium 1, Medium 2, Hard, Buzz | Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz). |
| Dist Dry Lev | Off, -49.5dB to 0.0dB | Controls the amount of dry signal to be mixed with the distorted signal. |
| VCF Input | Off, -49.5dB to 0.0dB | Trims the input to the formant filter so that clipping does not occur. |
| VCF Dry Amt | Off, -49.5dB to +24dB | Controls the level of the distortion/DDL signal to be mixed with the output of the formant filter. |
| Shape 1 | A, E, I, O, U, AA, AE, AH, AO, EH, ER, IH, IY, UH, UW, B, D, F, G, J, K, L, M, N, P, R, S, T, V, Z | Selects the first shape of the formant filter. |
| Shape 2 | A, E, I, O, U, AA, AE, AH, AO, EH, ER, IH, IY, UH, UW, B, D, F, G, J, K, L, M, N, P, R, S, T, V, Z | Selects the second shape of the formant filter. |
| FormantWarp | -12 to +12 semi | Shifts all formant frequencies up or down, warping the “size” of the formant filter. |
| AutoPan Depth | 0% to 100% | Controls the depth of the auto-panning function after the formant filter. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | This parameter controls the rate of pitch modulation which creates a chorusing effect. To achieve chorusing, this rate must be very low. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for pitch modulation. |
| LFO Phase | -180deg to +180deg | Controls the relative phase between left and right LFOs. |
| Dly1 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the first independent delay. |
| Dly1 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly1 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly1 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly2 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the second independent delay. |
| Dly2 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly2 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly2 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |

## 34 RotarySpeaker




This Insert Effect adds the famous classic rotating speaker effect to any sound. A tunable distortion is added to the input signal and is also passed through the rotors.

| **Parameter** | **Range** | **Description** |
|---|---|---|
| Dist LPF Fc | 10Hz to 20.0kHz | Filters out high frequencies prior to the distortion. |
| Dist Offset | -99% to +99% | Adjusts the balance of even-to-odd-generated harmonics. |
| Dist Gain | Off, -49.5dB to +48dB | Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the Distortion Volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume. |
| Dist Curve | Soft, Medium 1, Medium 2, Hard, Buzz | Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz). |
| Dist Volume | Off, -49.5dB to 0.0dB | Controls the volume of the distortion effect. Generally, if the Distortion Gain is set high, set this parameter lower. |
| Post VCF Fc | 10Hz to 7.10kHz | Determines the distortion filter cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal for a wah wah pedal effect. |
| Post VCF Q | 1.0 to 40.0 | Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the *presence* of the peak. This setting is important for the auto-wah effect. |
| Dist Dry Lev | Off, -49.5dB to 0.0dB | Controls the amount of dry signal to be mixed with the distorted signal. |
| EQ Input | Off, -49.5dB to +24dB | Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

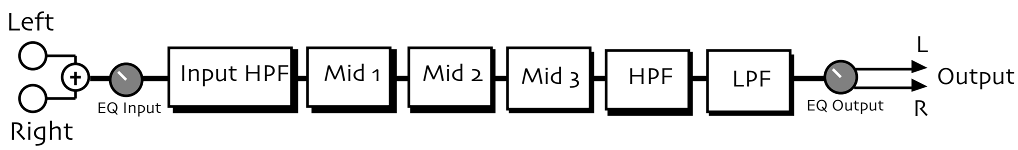
| | | |
|---|---|---|
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency parametric. |
| Speed | Slow or Fast | Determines how the rotating speaker will switch between slow and fast speeds. The behavior of this switch accurately reflects an actual rotary speaker, taking time to speed up or slow down, based on the values of the Inertia parameters. By assigning a modulation controller to this parameter, you can change between the slow and fast speeds in real time. |
| Spread | Stereo or Mono | Selects either a stereo or mono rotary speaker effect. |
| Crossover Fc | 10Hz to 20.0kHz | Sets the crossover frequency between the low and high rotors. |
| Lo Hi Bal | Full <Lo to Full >Hi | Controls the balance between the low and the high rotor. |
| Rotor Mix | Full Dry to Full Wet | Controls the balance between the leakage (dry) signal and the rotor (wet) signal. We recommend settings near 70.0% wet. |
| Hi Inertia | 100ms to 10.0s | Determines how long it will take for the rotor effect to speed up to the high setting after switching from slow. Adjust this parameter to simulate the effect of the rotary speaker gradually picking up speed. |
| Hi Slow | 0.0Hz to 10.0Hz | Sets the rotary speaker's "slow" rate when the Lo Hi Bal parameter is set to "Hi," or when the selected modulator is at zero output level. The higher the value, the faster the rate. |
| Hi Fast | 0.0Hz to 10.0Hz | Sets the rotary speaker's "fast" rate when the Lo Hi Bal parameter is set to "Hi," or when the selected modulator is at zero output level. The higher the value, the faster the rate. |
| Hi FM Min | 0 to 100 | Sets the minimum amount of detuning as the speaker rotates when the Lo Hi Bal parameter is set to "Hi." |
| Hi FM Max | 0 to 100 | Sets the maximum amount of detuning as the speaker rotates when the Lo Hi Bal parameter is set to "Hi." These two parameters create what is also known as the "Doppler" effect. |
| Hi AM Min | 0 to 100 | Sets the minimum amount that the volume will change as the speaker rotates when the Lo Hi Bal parameter is set to "Hi." |
| Hi AM Max | 0 to 100 | Sets the maximum amount that the volume will change as the speaker rotates when the Lo Hi Bal parameter is set to "Hi." Broader ranges between these two parameters will create a deeper rotating speaker effect. |
| Lo Inertia | 100ms to 10.0s | Determines how long it will take for the rotor effect to slow down to the low setting after switching from Fast. Adjust this parameter to simulate the effect of the rotary speaker gradually slowing down. |
| Lo Slow | 0.0Hz to 10.0Hz | Sets the rotary speaker's "slow" rate when the Lo Hi Bal parameter is set to "Lo," or when the selected modulator is at zero output level. The higher the value, the faster the rate. |
| Lo Fast | 0.0Hz to 10.0Hz | Sets the rotary speaker's "fast" rate when the Lo Hi Bal parameter is set to "Lo," or when the selected modulator is at zero output level. The higher the value, the faster the rate. |
| Lo FM Min | 0 to 100 | Sets the minimum amount of detuning as the speaker rotates when the Lo Hi Bal parameter is set to "Lo." |
| Lo FM Max | 0 to 100 | Sets the maximum amount of detuning as the speaker rotates when the Lo Hi Bal parameter is set to "Lo." These two parameters create what is also known as the "Doppler" effect. |
| Lo AM Min | 0 to 100 | Sets the minimum amount that the volume will change as the speaker rotates when the Lo Hi Bal parameter is set to "Lo." |
| Lo AM Max | 0 to 100 | Sets the maximum amount that the volume will change as the speaker rotates when the Lo Hi Bal parameter is set to "Lo." Broader ranges between these two parameters will create a deeper rotating speaker effect. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| Speed Control | Normal or Toggle | Allows you to select a modulator and define what *type* of modulation you want to use to affect the rotor speed. The two modulation modes are:<br>• Normal — The modulation source continuously switches between the Speed slow setting and fast setting, based on the mod source position and/or movement. Try this setting with a Mod Wheel — you'll hear the rotary speaker change speed based on the position of the wheel (and the speed settings).<br>• Toggle — The modulation source toggles the rotor speed between the Speed slow setting and fast setting. Every time the modulation source moves from zero in a positive direction, the rotating speaker effect changes speeds from slow to fast or fast to slow. Try this setting with a Sustain pedal.<br>With both types of modulation, the rotary speaker *always* takes the Inertia time to get to the Rotor Speed Slow and Fast settings. |

## 35 Tunable Spkr




This Insert Effect offers an EQ controllable speaker sound. By tuning three parametric filters, you can simulate many different speaker cabinet sounds that are used in all styles of music.

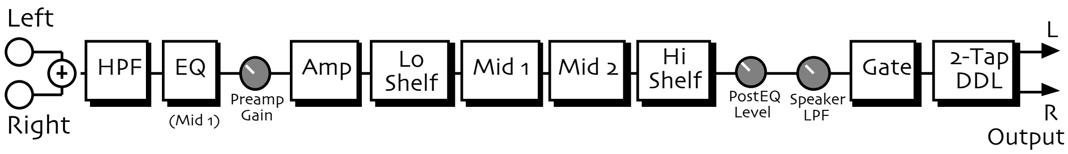
| Parameter | Range | Description |
|---|---|---|
| Pre HP Fc | 10Hz to 1.50kHz | Controls the boost or cut of the high pass filter frequency applied to the input signal. |
| EQ Input | Off, -49.5dB to +24dB | This parameter allows you to adjust the input level before the EQs to eliminate the possibility of clipping boosted signals. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid-frequency parametric. Higher values have a brighter sound. |
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency shelf. |
| Mid 2 Fc | 10Hz to 20.0kHz | Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Q | 1.0 to 40.0 | Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Gain | Off, -49.5dB to +24dB | Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range. |
| Mid 3 Fc | 10Hz to 20.0kHz | Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range. |
| Mid 3 Q | 1.0 to 40.0 | Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range. |
| Mid 3 Gain | Off, -49.5dB to +24dB | Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range. |
| EQ Output | Off, -49.5dB to +24dB | Since speaker cabinets are "lossy," output gain is required to compensate losses in perceived volume. Setting this gain too high will cause clipping of the output signal. |
| HPF Cutoff | 10Hz to 20.0kHz | Filters out the low frequencies. The higher the value, the less low frequencies pass through. This parameter is used to increase brightness. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| LPF Cutoff | 10Hz to 20.0kHz | Controls the boost or cut of the low pass filter frequency applied to the input signal. |

## 36 Guitar Amp




This Insert Effect recreates the warm sound of a tube guitar amplifier. It does this by emulating tube distortion characteristics. This effect is good for all stringed instruments. Guitar Amp is optimized for “bluesy” type sounds.

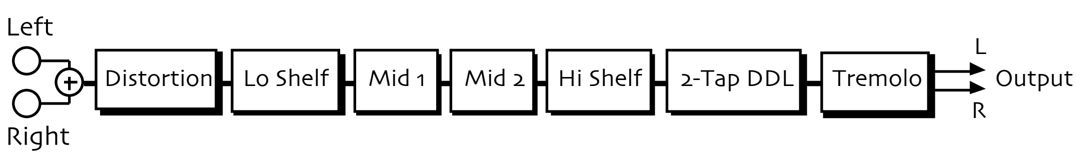
| **Parameter** | **Range** | **Description** |
|---|---|---|
| Pre HP Fc | 10Hz to 1.50kHz | Filters out the low frequencies before the preamp. The higher the value, the less low frequencies pass through. |
| Pre EQ Trim | Off, -49.5dB to +24dB | Controls the input level to the pre-amp EQ to eliminate the possibility of clipping boosted signals. |
| Pre EQ Fc | 10Hz to 20.0kHz | Determines the center frequency of the parametric filter before the preamp. Higher values have a brighter sound. |
| Pre EQ Q | 1.0 to 40.0 | Determines the width of the resonant peak at the parametric filter center frequency. While the Filter center parameter determines where (at what frequency) this peak will occur, the Q setting controls the presence of the peak. |
| Pre EQ Gain | Off, -49.5dB to +24dB | Adjusts the amount of boost or cut applied to the parametric filter in front of the preamp. |
| Preamp Gain | Off, -49.5dB to +24dB | Adjusts the amount of boost or cut applied to the incoming signal. This parameter can be thought of as the primary distortion stage (clipping). We recommend a setting of 0 dB, since these emulations were optimized for distortion there. Lower preamp gains will result in less distortion, while higher preamp gains will yield clipping distortion. For low preamp gain, it may be desirable to use low tube bias values. |
| Master Level | Off, -49.5dB to 0.0dB | This parameter controls the output level of the main amp. |
| Tube Bias | 0 to 100 | For preamp gains approximately 0 dB, this parameter controls the emphasis of even to odd harmonics which determines the tone of the amp; mid values emphasize even harmonics and offer a warmer (“glowing tube”) sound, while the highest values may sound like tubes going bad. Tube bias and preamp gain are independent parameters. For low preamp gain, it may be desirable to use low tube bias values, because this more closely imitates the operation of a real amplifier. |
| Bias Attack | 50us to 10.0s | Controls the time it takes for the incoming signal to get to the Amp Tube Bias. Generally the attack should be short. |
| Bias Release | 50us to 10.0s | Sets the amount of time after the incoming signal has ceased for the amp level to shut down. Generally these times are longer than the attack times. |
| Post HP Fc | 10Hz to 1.50kHz | This parameter filters out the low frequencies of the main amp prior to the speaker. The higher the value, the less low frequencies pass through. |
| Amp BassGain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to the low shelving filter. |
| Amp Mid1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |
| Amp Mid1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| Amp Mid1Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency parametric. |
| Amp Mid2 Fc | 10Hz to 20.0kHz | Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range. |
| Amp Mid2 Q | 1.0 to 40.0 | Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range. |
| Amp Mid2Gain | Off, -49.5dB to +24dB | Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range. |
| Amp TrebGain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to the high shelving filter. |
| PostEQ Level | Off, -49.5dB to +24dB | This parameter controls the output level of the main amp before the output EQ. |
| Speaker LPF | 10Hz to 20.0kHz | Attenuates the high frequency content of the signal driving the distortion at a rate of 6dB per octave starting at the corner frequency set by this parameter.<br>The high-frequency bandwidth acts as a low pass filter on the signal going into the distortion, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass. This functions like a tone control on a guitar. |
| Gate Thresh | -96.0dB to 0.0dB | Sets the upper threshold level at which the noise gate passes the audio. |
| Gate Hysteresis | 0dB to 48dB | Sets the lower threshold level relative to Gate Thresh, below which the noise gate shuts off the audio. |
| Dly1 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the first independent delay. |
| Dly1 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly1 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly1 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly1 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly2 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the second independent delay. |
| Dly2 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly2 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |

## 37 Dist→DDL→Trem




A guitar-effect chain that includes voltage-controlled distortion, parametric EQ, digital delay, and LFO modulation.

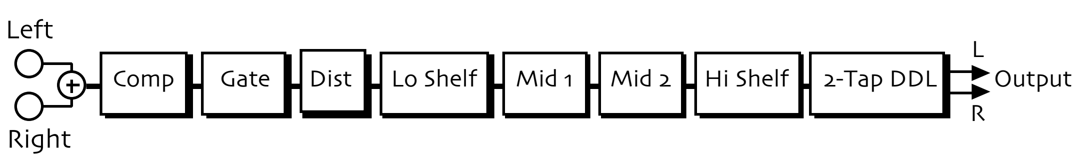
| Parameter | Range | Description |
|---|---|---|
| Dist LPF Fc | 10Hz to 20.0kHz | Filters out high frequencies prior to the distortion. |
| Dist Offset | -99% to +99% | Adjusts the balance of even-to-odd-generated harmonics. |
| Dist Gain | Off, -49.5dB to +48dB | Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the Distortion Volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume. |
| Dist Curve | Soft, Medium 1, Medium 2, Hard, Buzz | Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz). |
| Dist Volume | Off, -49.5dB to 0.0dB | Controls the volume of the distortion effect. Generally, if the Distortion Gain is set high, set this parameter lower. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| Post VCF Fc | 10Hz to 7.10kHz | Determines the filter cut off-frequency after the distortion. Higher values have a brighter sound. This parameter can be used to emulate a speaker cabinet. |
| Post VCF Q | 1.0 to 40.0 | Determines the level and width of the resonant peak at the filter cutoff point. While the Post VCF Fc parameter determines where (at what-frequency) this peak will occur, this parameter controls the *sharpness* of the peak. |
| Dist Dry Lev | Off, -49.5dB to 0.0dB | Controls the amount of dry signal to be mixed with the distorted signal. |
| LoShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to the low frequency shelf. |
| HiShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to the high frequency shelf. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency shelf. |
| Mid 2 Fc | 10Hz to 20.0kHz | Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Q | 1.0 to 40.0 | Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Gain | Off, -49.5dB to +24dB | Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range. |
| EQ Output | Off, -49.5dB to +24dB | Controls the gain coming out of the parametric EQ. |
| Dly1 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the first independent delay. |
| Dly1 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly1 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly1 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly1 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly2 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the second independent delay. |
| Dly2 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly2 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly2 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly2 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the rate of the modulation applied to the tremolo. |
| LFO Shape | Triangle, Sine, Sawtooth, Square, Asym, Step | Determines the shape that the LFO will use for amplitude modulation. |
| LFO Phase | -180deg to +180deg | Controls the relative phase between left and right LFOs. |
| LFO Depth | Full Dry to Full Wet | Controls the amount of tremolo. |

## 38 Comp→Dist→DDL




To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

A bright guitar-effects chain that features compression, voltage-controlled distortion, parametric EQ, and a digital delay.

| Parameter | Range | Description |
|---|---|---|
| Comp Ratio | 1.0:1 to INF:1 | Sets the amount of compression. The range is based on decibels (dB) above the threshold. If set to 4:1 for example, it will allow 1 dB increase in output level for every 4 dB increase in input level. When set to infinity, it acts as a limiter. |
| Comp Attack | 50us to 10.0s | Determines the attack rate after the initial signal has been detected and before the compression takes affect. |
| Comp Release | 50us to 10.0s | Determines how long it takes for the compression to be fully deactivated after the input signal drops below the threshold level. This is generally chosen longer than the attack time. |
| Comp Thresh | -96.0dB to 0.0dB | Sets the threshold level. Signals that exceed this level will be compressed, while signals that are below will be unaffected. To turn off the compressor, set the level to +00 dB. |
| Comp Output | Off, -49.5dB to +48dB | This parameter boosts or cuts the compressed signal level. |
| Gate Thresh | -96.0dB to 0.0dB | Sets the upper threshold level at which the noise gate passes the audio. |
| Gate Hysteresis | 0dB to 48dB | Sets the lower threshold level relative to Gate Thresh, below which the noise gate shuts off the audio. |
| Dist LPF Fc | 10Hz to 20.0kHz | Filters out high frequencies prior to the distortion. |
| Dist Offset | -99% to +99% | Adjusts the balance of even-to-odd-generated harmonics. |
| Dist Gain | Off, -49.5dB to +48dB | Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the Distortion Gain Out down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume. |
| Dist Curve | Soft, Medium 1, Medium 2, Hard, Buzz | Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz). |
| Dist Volume | Off, -49.5dB to 0.0dB | Controls the volume of the distortion effect. Generally, if the Distortion Gain In is set high, set this parameter lower. |
| Post VCF Fc | 10Hz to 7.10kHz | Determines the filter cut off-frequency after the distortion. Higher values have a brighter sound. This parameter can be used to emulate a speaker cabinet. |
| Post VCF Q | 1.0 to 40.0 | Determines the level and width of the resonant peak at the filter cutoff point. While the Post VCF Fc parameter determines where (at what-frequency) this peak will occur, this parameter controls the *sharpness* of the peak. |
| Dist Dry Lev | Off, -49.5dB to 0.0dB | Controls the amount of dry signal to be mixed with the distorted signal. |
| LoShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to the low frequency shelf. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency shelf. |
| Mid 2 Fc | 10Hz to 20.0kHz | Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Q | 1.0 to 40.0 | Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Gain | Off, -49.5dB to +24dB | Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range. |
| HiShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to the high frequency shelf. |
| EQ Output | Off, -49.5dB to +24dB | Controls the gain coming out of the parametric EQ. |
| Dly1 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the first independent delay. |
| Dly1 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly1 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |

To access the Parameters described on this page (unless otherwise noted):

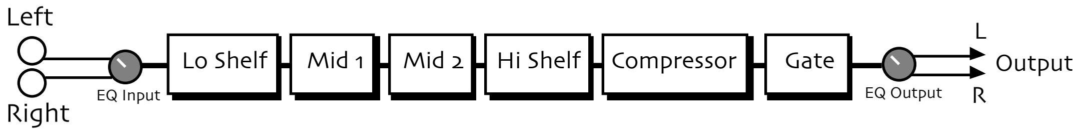
Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| Dly1 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly1 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly2 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the second independent delay. |
| Dly2 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly2 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

## 39 EQ→Comp→Gate



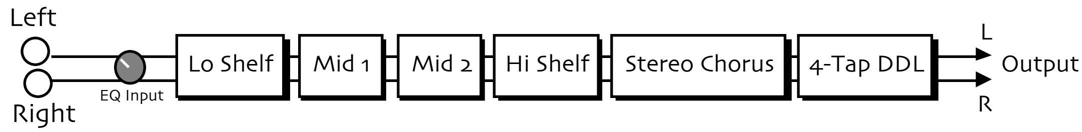

EQ→Comp→Gate combines an EQ with a full feature stereo compressor. For high compressor ratios, this Insert Effect functions as a limiter. This effect operates by compressing (attenuating) signals above the threshold and passing the signals below the threshold. For higher ratios and lower thresholds, this effect can be used to create sustain.

| Parameter | Range | Description |
|---|---|---|
| EQ Input | Off, -49.5dB to +24dB | Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals. |
| Lo Shelf Fc | 10Hz to 20.0kHz | Sets the center of the low frequency EQ. |
| LoShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this low frequency shelf. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency shelf. |
| Mid 2 Fc | 10Hz to 20.0kHz | Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Q | 1.0 to 40.0 | Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Gain | Off, -49.5dB to +24dB | Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range. |
| HiShelf Fc | 10Hz to 20.0kHz | Sets the center frequency of the high frequency shelf. |
| HiShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this high frequency shelf. |
| EQ Output | Off, -49.5dB to +24dB | Controls the gain coming out of the parametric EQ. |
| Comp PreDelay | 0ms to 100ms | Determines how long it takes before the compressor is activated. |
| Comp Ratio | 1.0:1 to INF:1 | Sets the amount of compression. The range is based on decibels (dB) above the threshold. If set to 4:1 for example, it will allow 1 dB increase in output level for every 4 dB increase in input level. When set to infinity, it acts as a limiter. |
| Comp Attack | 50us to 10.0s | Determines the attack rate after the initial signal has been detected and before the compression takes affect. |
| Comp Release | 50us to 10.0s | Determines how long it takes for the compression to be fully deactivated after the input signal drops below the threshold level. This is generally chosen longer than the attack time. |
| Comp Thresh | -96.0dB to 0.0dB | Sets the threshold level. Signals that exceed this level will be compressed, while signals that are below will be unaffected. To turn off the compressor, set the level to +00 dB. |
| Comp Output | Off, -49.5dB to +48dB | This parameter boosts or cuts the compressed signal level. |
| Gate Thresh | -96.0dB to 0.0dB | Sets the upper threshold level at which the noise gate passes the audio. |
| Gate Hysteresis | 0dB to 48dB | Sets the lower threshold level relative to Gate Thresh, below which the noise gate shuts off the audio. |
| Gate Attack | 50us to 10.0s | Determines the time after the initial signal has been detected for the gate to occur. |
| Gate Release | 50us to 10.0s | This parameter sets the amount of time after the signal has elapsed for the noise gate to shut down. For a longer sustain, set this parameter higher. |
| Gate Hold | 50us to 10.0s | This is the detection sustain time in the ADSR which constitutes attack, sustain, and release. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

# 40 EQ→Chorus→DDL




A guitar-based effect chain that features a four-band parametric EQ, chorus, and four discrete delays.

| Parameter | Range | Description |
|---|---|---|
| EQ Input | Off, -49.5dB to +24dB | Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals. |
| LoShelf Fc | 10Hz to 20.0kHz | Sets the center of the low frequency EQ. |
| LoShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this low frequency shelf. |
| Mid 1 Fc | 10Hz to 20.0kHz | Sets the center of the mid frequency parametric. |
| Mid 1 Q | 1.0 to 40.0 | This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth. |
| Mid 1 Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this mid frequency shelf. |
| Mid 2 Fc | 10Hz to 20.0kHz | Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Q | 1.0 to 40.0 | Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range. |
| Mid 2 Gain | Off, -49.5dB to +24dB | Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range. |
| HiShelf Fc | 10Hz to 20.0kHz | Sets the center frequency of the high frequency shelf. |
| HiShelf Gain | Off, -49.5dB to +24dB | Sets the amount of boost or cut applied to this high frequency shelf. |
| EQ Output | Off, -49.5dB to +24dB | Controls the gain coming out of the parametric EQ. |
| Dry Blend | Full Dry to Full Wet | Controls the amount of the dry signal. |
| LFO Rate | 1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz | Controls the four rates of the modulation applied to the delay time of the chorus. |
| Chorus Depth | 0.0ms to 25.0ms | Controls the amount of modulation. |
| Chorus Center | 0.0ms to 50.0ms | Controls the four delay times within the chorus. Adjusting this parameter will change the tonal character of the chorus. |
| Dly1 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the first independent delay. |
| Dly1 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly1 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly1 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly1 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly2 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the second independent delay. |
| Dly2 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly2 Feedback | -99% to +99% | Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay. |
| Dly2 Damping | 100Hz to 21.2kHz | Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The higher the number, the more the signals are damped. |
| Dly2 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly3 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the third independent delay. |
| Dly3 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

| | | |
|---|---|---|
| Dly3 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |
| Dly4 Time | 1/1 Sys to 1/32 Sys, 0ms to 630ms | Sets the amount of delay time for the fourth independent delay. |
| Dly4 Level | Off, -49.5dB to +12.0dB | Adjusts the volume of the delayed signal against the original dry signal. |
| Dly4 Pan | Full <L to Full >R | Determines the location of the delay in the stereo spectrum. |

To access the Parameters described on this page (unless otherwise noted):

Press Effects, turn the Parameter knob to select Insert Effect, and press Enter. Turn the Parameter knob to select the parameter, and use the Value knob to change the parameter's Setting.

# Glossary

| | |
|---|---|
| **Alt. FX Bus** | The "second-choice" Effect Bus routing for Sounds routed to the Insert Effect bus. Also an alternate term for the FX Bus parameter of any Sound not routed to the Insert Effect bus. In the MR Unisyn editor, the Alt. FX Bus is the means by which a Sound's Effect routing is programmed when it's not being routed to the Insert or Dry Effect busses. |
| **Ambience** | The sound of the physical space—real or simulated—in which a sound occurs. |
| **Amplify** | To increase the level, or loudness, of a signal. |
| **Amplitude** | The level, or loudness, of a signal. |
| **AO-C8** | The MIDI pitch range of an 88-note keyboard. The lowest note is an A, designated as "A0," and the highest note, a C, is referred to as "C8." The numbers increment at each C—A0 is followed by A#0, B0 and C1, for example. Middle C is "C4." Most MIDI manufacturers use this scheme; however, a few manufacturers refer to Middle C as "C3." |
| **Attenuate** | To decrease the level, or loudness, of a signal. |
| **Balanced-Line Input** | Three-conductor balanced lines are used to interconnect various pieces of equipment, and are often used in professional studios. These balanced-line inputs tend to reject hum and/or radio frequency interference. The MR-Rack has balanced-line outputs, for connecting with professional balanced-line input studio equipment. |
| **Bandwidth** | The overall frequency spectrum of a Sound or Effect, measured in Hertz (Hz) and kiloHertz (kHz). |
| **Bank** | A group of MR-Rack Sounds and Performances. There can be up to 127 Sounds in a bank, or up to 32 Performances. Banks can be selected via MIDI with a Bank Select MSB of 0 followed by a Bank Select LSB value specifying the number of the desired bank. MIDI Program Change messages can select individual Sounds or Performances from within the chosen bank. |
| **Bank Select** | A MIDI message pair which allows the remote selection of banks of MR-Rack Sounds and Performances. A Bank Select message pair is comprised of an MSB value of 0 followed by an LSB value specifying the desired bank. |
| **Buffer** | An area within the MR-Rack's memory which temporarily stores changes made to a Performance, including Part Sound selection, Part parameter edits, Effect routings, Effect edits and PerfEditKit edits. These changes become permanent only when they are written to the MR-Rack's memory using a Save command. |
| **C4** | The MIDI designation for Middle C on a MIDI keyboard or controller. Note: some MIDI manufacturers refer to Middle C as "C3." |
| **Chorusing** | An audio effect that results from the mixing together of a source signal with slightly delayed copies of itself where the delay time of the copies is fluctuating in a regular, rhythmic fashion. The timing variations create phasing anomalies that cause the source signal to swirl, and sound wider and/or bigger. |
| **Compression** | A sound-conditioning process that reduces a source signal's dynamic range. Loud signals get softer and softer signals get louder. |
| **Compression Ratio** | The amount by which a signal is compressed, expressed as a ratio. For example, a 4 to 1 compression ratio will result in an increase of 1dB in output level for every 4dB increase in input level. At high ratios (such as 20:1 and above), the compressor acts as a limiter. |
| **CTRL** | Synonym for "System Controller." |
| **Cutoff Frequency** | The filter setting that determines which frequencies a filter will leave un-attenuated. In a low-pass filter, the cutoff frequency setting determines the highest frequency that will be allowed to pass through the filter. In a high-pass filter, it determines the lowest frequency. |
| **Cycle** | A sound wave's single journey from exerting a greater amount of air pressure to a lesser one and back to its starting point. The number of cycles per second determines the pitch—or frequency—of the sound wave. The number of cycles per second is expressed in Hertz (Hz) and kiloHertz (kHz). |
| **Damping** | A reverb parameter that determines how quickly the high-frequency content of a reverb will be reduced as it decays to silence. |
| **DDL** | Abbreviation for "digital delay line," an Effect that creates a digital copy, or copies, of a source signal and plays it (or them) back later than the original signal. These delays can be used to create a myriad of audio effects. |

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| **Diffusion** | A reverb parameter used to smear a reverb's transients in order to smooth the reverb's sound. Low diffusion values will cause transients to appear as a series of discrete echoes, while higher values tend to increase the blurring effect for a smoother sound. |
| **Drum Kit Sound** | A special type of Sound in which each of the 64 keys from B1 to D4 points to and plays its own standard MR-Rack Sound. Each key in a Drum Kit Sound—called a "DrumKey"—has its own Part parameters. |
| **DrumKey** | Any of the keys from B1 to D4 when a Drum Kit Sound is selected. Each DrumKey plays a standard MR-Rack Sound and has its own Part parameters. |
| **Dry** | The Effect description for a Sound not routed to any of the MR's Effects. |
| **Early Reflections (ER)** | Early reflections are delayed signals that aurally suggest the size of ambient spaces. In the real world, sound bounces off surfaces it encounters—walls, ceiling and floor. Quick early reflections suggest small spaces, with these surfaces close by. Longer early reflections imply to the ear that the surfaces are farther away, and that the ambient space is therefore larger. |
| **Effect** | Signal processing typically applied to Sounds as a final touch. Many Effects simulate ambiences of a realistic or fantastic nature. Effects include reverbs, delays, choruses, flangers, phasers, distortion and so on. Every MR-Rack Performance offers an Effects set-up comprised of a Global Chorus, a Global Reverb and an Insert Effect of your choosing. |
| **Envelopes** | Devices which allow the shaping of Sounds and Effects. |
| **Equalization (EQ)** | The process of altering the frequency content of a sound. Everything we hear is comprised of a number of sound waves occurring at the same time, at different pitches, or "frequencies." Equalization allows you to change the volume balance of the frequencies within a sound. |
| **Feedback** | A signal routing in which the output of an Effect is mixed back into the input. Feedback of a delay line is also called regeneration. |
| **Filter** | A device that attenuates selected frequencies within a Sound or Effect. For example, a high-pass filter passes all signals higher than a selected frequency, attenuating all those frequencies below it. A low-pass filter passes all signals below a selected frequency, attenuating all those frequencies above it. |
| **Flanger** | A processor that simulates the effect of two synchronized tape machines playing back the same signal, with the speed of one machine being slowed slightly by the gentle pressing on the outer shell—or "flange"—of one of its tape reels. This small amount of delay causes a phasing cancellation that filters out elements of the Sound being processed. Changing the delay time causes the "flange" effect. In the MR-Rack, flanging is achieved using interpolated digital delay lines. |
| **Frequency** | The number of times per second that a sound wave repeats its excursion from maximum compression of air pressure to minimum compression and back to its starting point—each excursion is called a cycle. The number of cycles per second is expressed in Hertz (Hz) and kiloHertz (kHz). Lower frequencies produce lower pitches and higher frequencies produce higher pitches. Sounds are comprised of a number of sound waves of varying frequencies occurring at roughly the same time. "Frequency" may be used as shorthand for one of those sound waves, or "frequencies" for a group of them. |
| **Gate (Noise Gate)** | A device that attenuates a source signal falling below a pre-determined volume threshold. A useful tool in eliminating noise and controlling signals that use an effect. Ambiences such as reverb may be gated to produce an extreme and artificial-sounding decay. |
| **Global** | The MR-Rack uses this word in two senses: 1. System-wide settings which affect all Sounds, Parts, Performances and Effects in the MR-Rack. 2. the Chorus and Reverb Effects which are available in any Performance, referred to as "Global Chorus" and "Global Reverb." |
| **Hysteresis** | The property of a system whose behavior is determined by the level, direction, and history of a controlling signal. Used in the MR-Rack to provide greater control over gating, triggering, and compression. |
| **Layer** | The MR-Rack uses this word in two senses: 1. a set of digital sound recordings—or samples—that span the entire MIDI pitch range, and their associated parameters. Up to 16 of these can be combined to create an MR-Rack Sound. 2. to pile Sounds "on top of each other" by assigning multiple Parts to the same MIDI channel or the Stak channel, causing the Sounds to play simultaneously in response to the MIDI notes received on their common MIDI channel. |
| **LED** | LEDs (Light Emitting Diodes) are small solid-state lamps found embedded in a number of the MR-Rack's buttons. Under normal conditions, they have a virtually unlimited lifetime. |
| **LFO** | An oscillator which generates sound waves at a frequency below the audio spectrum. These low-frequency waves can modulate audible sound waves to produce vibrato, tremolo, and other effects. LFOs can also be employed to produce rhythmic changes in various Effects. |

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|---|---|
| **LFO Delay** | The amount of time it takes for an LFO to begin modulating a Sound or Effect. |
| **LFO Depth** | The amount of LFO modulation. |
| **LFO Rate** | The speed at which an LFO wave completes a single cycle. |
| **Limiter** | A device that will prevent a source signal from exceeding a pre-set amplitude threshold. A limiter can be thought of as a compressor with an infinite compression ratio. |
| **LSB** | Many MIDI controllers use a pair of MIDI messages. The first—the MSB—for "Most Significant Byte"—chooses among 128 sets of MIDI values, each of which contains 128 values of its own. The LSB—for "Least Significant Byte"—selects one of the 128 values contained in each MSB set. The MR-Rack MIDI Implementation chart in this chapter provides information on the proper use of MSB/LSB values with various MIDI controllers and the MR-Rack. |
| **MIDI** | Musical Instrument Digital Interface. A communication protocol for musical instruments. MIDI has expanded the ability of the electronic musician to interconnect products from different manufacturers through the use of this single communication protocol. See "What Is MIDI?" elsewhere in this chapter for more information. |
| **MIDI Controller** | The MR-Rack uses this word in two senses: 1. a MIDI-transmitting instrument—such as a MIDI keyboard, MIDI drum pads, or MIDI guitar, etc. 2. a type of MIDI message which allows the modification of sounds in real time via MIDI, generated by devices such as pitch bend wheels, data entry sliders, mod wheels or levers, sustain pedals, and so on. |
| **MIDI Controller Number** | Each MIDI message used to modify Sounds in real time—such as those transmitted by pitch bend wheels, data entry sliders, mod wheels or levers, sustain pedals, etc.—is assigned its own MIDI controller number. The MIDI controller numbers supported by the MR-Rack are listed in the MR-Rack MIDI Implementation chart in this chapter. |
| **MIDI Merger** | A device that allows a MIDI instrument to receive MIDI data from multiple transmitting instruments through a single MIDI In jack by combining all of the instruments' data into a single MIDI data stream. MIDI Mergers are available as self-contained devices; many MIDI patchbays also offer built-in MIDI merging. See "MIDI Patchbay." |
| **Modulation** | Any change made to a Sound, sound wave or an Effect, either through pre-programmed automatic devices or real-time manual manipulation. |
| **Modulator** | Any device, real or software-based, which can be used to change a Sound, sound wave or Effect. |
| **MSB** | Many MIDI controllers use a pair of MIDI messages. The first—the MSB—for "Most Significant Byte"—chooses among 128 sets of MIDI values, each of which contains 128 values of its own. The LSB—for "Least Significant Byte"—selects one of the 128 values contained in each MSB set. The MR-Rack MIDI Implementation chart in this chapter provides information on the proper use of MSB/LSB values with various MIDI controllers and the MR-Rack. |
| **Noise** | A software mechanism that produces a randomly fluctuating level, used to create random modulation in a Sound or Effect. |
| **Normal LFO** | An MR-Rack LFO whose rate is set to a fixed time value. |
| **Pan** | The apparent location of a Sound relative to the left and right speakers used in a stereophonic sound system. |
| **Parameter** | Any setting of the MR-Rack which can be changed or modified. |
| **Parametric EQ** | An equalizer for targeting specific frequency regions in a Sound with pinpoint accuracy. |
| **Patchbay** | A central junction box for audio or MIDI cables. A patchbay allows the interconnection of instruments, consoles, recorders and effect devices—and the changing of those connections—through electronic switching, eliminating the need for physically unplugging and re-plugging cables. |
| **Performance** | A collection of 16 Parts, their Sounds, settings, Effect routings, Effect settings and PerfEditKit. |
| **Phaser** | Originally conceived as an approximation of a flanging Effect. All-pass filters are used in place of the delay lines. All-pass filters introduce delay by modifying signal phase, hence the name. |
| **Pitch Table** | A set of tuning instructions which tell the MR-Rack what pitch to sound in response to the receipt of MIDI note-ons. |
| **Program Change** | A MIDI message which instructs the MR-Rack to select the Sound whose Program Change number corresponds to the Program Change's numerical value in the currently selected bank. |
| **Q** | A bandwidth control that determines the width of the resonant peak at the center of the frequency band. This is equal to the cutoff frequency divided by the bandwidth. By raising the Q value, a narrower bandwidth is selected. |

| | |
|---|---|
| **Regeneration** | A signal routing in which some of the output is mixed back into the input. The feedback of a delay line is also referred to as “regeneration.” |
| **Resonant Peak** | The frequency selected in an equalizer or filter. Also referred to as “Q.” It may be as narrow as a single frequency or broadened to include adjacent frequencies. |
| **Reverb** | Multiple echoes and reflections which combine to create an ambient effect that fades to silence in imitation of the manner in which sound naturally decays. Different devices have been used to simulate these ambiences: springs, plates, tubes, and chambers. The MR-Rack uses digital processing to create new environments and simulate these classic ambiences. |
| **RPN** | For “Registered Parameter,” a set of MIDI Controller values used for the adjustment of various pitch bend and tuning parameters. |
| **Sample** | A digital recording used as the basic building block of MR-Rack Sounds. |
| **Signal** | A general term for sound. |
| **Sound** | In the MR-Rack, “Sound”—with a capital “S”—is a collection of up to 16 layers of samples. |
| **Sound Wave** | A periodic disturbance in air pressure that causes the eardrum to vibrate in response. |
| **Split** | A grouping of Sounds wherein each Sound responds only to notes played within a specific keyboard range. |
| **Stak** | A group of Sounds whose Parts are assigned to the Stak MIDI channel. Sounds assigned to the Stak MIDI channel respond to MIDI data received on the Stak MIDI channel, allowing them to be layered with each other, split into separate keyboard regions, or a combination of both. |
| **Standard Sound** | A normal, non-Drum Kit MR-Rack Sound. Each standard Sound can have up to 16 sound layers. |
| **Sync LFO** | An MR-Rack LFO whose rate is synchronized to the MR-Rack’s system clock. |
| **SysCTRL** | Synonym for “System Controller.” |
| **System Clock** | A built-in reference pulse generated by the MR-Rack for the synchronizing of LFO and Noise modulators used in Sounds and Effects. The system clock can be set to a fixed value or synchronized to received MIDI clocks. |
| **System Controller** | Any of four special assignable MIDI controllers available in the MR-Rack, useful for enabling system-wide MR-Rack response to non-standard MIDI controllers. Each System Controller may be set to any MIDI controller number (000-127), and may be used in the modulation of Sounds and Effects. |
| **Transient** | A quick, momentary burst of high-amplitude sound. |
| **Value** | An MR-Rack parameter’s setting. |
| **Voltage-Controlled Filter** | A filter whose cutoff frequency is modulated by input voltage. Useful for creating distortion, wah wah, and envelope (auto-wah) Effects. |
| **XLR Connector** | A type of professional audio connector, with three pins: Pin 1 is the ground reference, Pin 2 carries the “hot” signal, and Pin 3 carries the anti-phase “cold” signal. Designed for use with balanced inputs and outputs. |

# Chapter 9
# Supplemental Information

This section contains additional information that you will find helpful in fully understanding the MR-Rack and its abilities.

## List of SoundFinder Types

### Performance Types

The following is a list of the MR-Rack Performance Types. If there are no Performances of a particular type, the type will not appear in the list. Performances will appear in numerical order within each type:

| | |
|---|---|
| CRD-PERF | Performances found on a PCMCIA card |
| EXP-PERF | Expansion board Performances |
| GM-PERF | General MIDI-based Performances |
| ROM-PERF | Performances stored in ROM memory. |
| RAM-PERF | Performances stored in RAM memory. |
| ALL-PERF | All Performances, in alphabetical order |

### Sound Types

Here is a list of the available SoundFinder Sound types. If there are no Sounds of a particular type, the type will not appear in the list of types:

| | |
|---|---|
| USER-SND | Sound Type for Sounds that you want quick access to. These Sounds also appear in their appropriate SoundFinder musical instrument type list. |
| DEMO-SND | Demo sounds are designed to demonstrate the scope of Sounds in the MR-Rack. Whenever this is selected, the first Sound in the type will be selected the MR-Rack will not reselect the last Sound selected in the Demo type. Demo Sounds also appear in their appropriate Sound Type list. |
| CRD-SND | PCMCIA card Sounds. |
| EXP-SND | Expansion board Sounds. |
| DRM-SND | ROM drum key Sounds. |
| GM-SND | Includes both ROM General MIDI Sounds, and GM/GS Drum Kit Sounds |
| ROM-SND | All Sounds in ROM. |
| RAM-SND | All RAM Sounds. |
| ALL-SND | All Sounds. The PerfEditKit appears in ALL-SND. |
| BASS | Acoustic and electric basses. |
| BASS-SYN | Synth basses, and processed electric basses with a “synthy” quality. |
| BELL | Acoustic and synth bell Sounds, both pitched (e.g., glockenspiel, celesta). and non-pitched (e.g., church bells). |
| BRASSECT | Trumpet, trombone, tuba, French horn, saxophone, and mixed brass sections (including sampled sections) and small ensembles (with more than one distinct pitch/“player” on a single key). |
| BRASSOLO | Solo brass (e.g., trumpet, trombone, tuba, French horns). |
| DRUM-KIT | Drum kits that use the ENSONIQ Drum Map. |
| DRMKITGM | Drum kits that use the General MIDI Drum Map. |
| GUITAR-A | Steel, nylon, and gut-stringed acoustic guitars. |
| GUITAR-E | Clean electric guitars and distortion guitars. |
| HITS | Orchestra hits. |
| KEYS | Other stringed keyboard Sounds (e.g., harpsichord and clavinet). |

| | |
|---|---|
| LAYERS | Unnatural layered combinations of acoustic elements (e.g., a bass harmonic layered with a string section), excluding pianos/electric-pianos/organs layered with other Sounds in which the piano/electric-piano/organ element is dominant. Also excludes multi-instrumental orchestral layers. |
| LOOPGRUV | Looped, repeating musical passages and drum rhythm loops (sampled or wave-sequenced) that play on one key. |
| MALLET | Tuned mallet-struck percussion instruments (e.g., marimba, xylophone, timpani, steel drum, log drum). |
| ORCHSTRA | Multi-instrumental orchestral Sounds (e.g., mixed strings/brass/ woodwinds/reeds/orchestral percussion) layered with one another. |
| ORGAN-A | Acoustic pipe and pump organs. |
| ORGAN-E | Electric and electronic organs. |
| ORGANLYR | Any organs layered with other Sounds in which the organ element is dominant. |
| PERC-KIT | Percussion kits that use either the ENSONIQ or General MIDI Percussion Maps. |
| PERCSOLO | Solo untuned percussion (e.g., taiko, synth-tom) includes most drum key Sounds. |
| PIANO-A | Acoustic pianos, honky-tonk, toy pianos, and piano forte. |
| PNOLYR-A | Acoustic pianos layered with other Sounds in which the acoustic piano element is dominant. |
| PIANO-E | Electric and electronic piano Sounds, and electric pianos layered with acoustic pianos. |
| PNOLYR-E | Electric pianos layered with other Sounds in which the electric piano element is dominant. |
| PLUCKED | Plucked strings (e.g., harps, banjo, dulcimer, sitar), pizzicato strings, and other plucked instruments (e.g., kalimba). |
| SAX-SOLO | Solo saxophones. |
| SOUND-FX | Realistic sound effects (e.g., broken glass, animal sounds, record scratches) and entirely non-pitched fantasy and chaos sound effects.(e.g., spacecraft, environments) |
| SPLITS | Combination keyboard splits of two or more different types of Sounds. Also includes splits of similar sounds that have discontiguous key ranges (e.g., a bassoon/oboe split that covers the natural ranges of both instruments). |
| STRGSECT | Bowed string sections (including sampled sections) and small string ensembles (with more than one distinct pitch/“player” on a single key). |
| STRGSOLO | Bowed solo strings (e.g., violin, viola, cello). |
| SYN-COMP | Non-vintage, sustaining and non-sustaining, polyphonic synth Sounds with a pitched or non-pitched, highly obtrusive attack component that lend themselves toward comping (i.e., you can always play successive 1/8 note chords with these funky sounds). |
| SYN-LEAD | Monophonic lead synth Sounds (excluding monophonic synth basses). |
| SYN-PAD | Non-vintage, sustaining, polyphonic synth Sounds with a pitched, less obtrusive attack component, and an appropriate release, that lend themselves toward pad playing. |
| SYN-VINT | Polyphonic, signature vintage “analog” synth Sounds (excluding monophonic vintage synth leads and synth basses). Normally these are named after the synth that they evoke. |
| SYNOTHER | Other types of pitched, polyphonic, hybrid synth Sounds with sustaining, disparate components (e.g., sample & hold sync Sounds). |
| VOCALS | Vocal Sounds (e.g., choirs, synth-vox). |
| WINDREED | Solo woodwinds/reeds (e.g., flute, oboe, bassoon, clarinet, recorder, English horn, ocarina, bandneon, shakuhachi, bagpipes, harmonica, accordion, melodica, didjeridoo). |
| *UTILITY | Utility resources (e.g., default template Sounds used for programming and other special non-musical purposes). |
| *CUSTOM | Use this type to define your own special purpose Sounds when created with external computer-based sound editing software. The PerfEditKit will always be assigned to CUSTOM. ENSONIQ sounds will never be released with a type of CUSTOM. |

# List of Wave Names and Classes

Here is a list of the waves found within the MR-Rack voice architecture:

**KEYBOARD**
GRAND PIANO
GRAND MED HI
GRAND MED LO
GRAND SOFT
PIANO THUD
PNO HAMMER UP
PNO HARP NOIS
TINE EPNO A
TINE EPNO B
TINE EPNO C
TINE EPNO D
TINE EPNO E
TINE EPNO F
DIGI PIANO
DIGI PNO SOFT
FM EPNO A
FM EPNO B
FM EPNO C
FM EPNO D
WURLIE HIVEL
WURLIE LOVEL
HARPSICHORD
CLAVINET
FM CLAV
CELESTE
ORG-775305004
ORG-845351402
ORG-875434578
ORG-875645332
ORG-888000000
ORG-888808008
ORG-888856444
ORG-888880880
ORGAN WAVE 1
ORGAN WAVE 2
PERC ORGAN 1
PERC ORGAN 2
ROTARY ORGAN
SYNKEY WAVE
CHURCH ORGAN
PIPE ORGAN
REED ORGAN
CLINK
ORG KEYCLICK
MOOG LEAD
PAD SYNTH

**STRING-SOUND**
NYLON GUITAR
NYLON GTR SOFT
STEEL GUITAR
STEEL GTR SOFT
FRET NOISE
EL GUITAR 1
EL GTR 1 SOFT
EL GUITAR 2
DIST GUITAR
DIST GTR LOOP
FEEDBACK HARM
GTR HARMONIC
JAZZ GUITAR
MUTE GUITAR
MUTE GTR SOFT
CELLO
VIOLIN
STRING SECTION
STRING SECT B
STRING SECT C
PIZZ STRINGS
BANJO
HARP
GOTO
SHAMISEN
SITAR

**BRASS+HORNS**
TRUMPET
MUTE TRUMPET
FLUGELHORN
SOLO FR HORN
TROMBONE
POP BRASS SEC
FR HORN SECT
SYNTH BRASS

**WIND+REEDS**
TENOR SAX
ALTO SAX
SOPRANO SAX
SAX AIR
CHIFF
CHIFFLUTE
FLUTE
OCARINA
PAN FLUTE
OBOE
ENGLISH HORN
BASSOON
CLARINET
ACCORDION 1
ACCORDION 2
HARMONICA
CONCH SHELL
RECORDER

**VOCAL-SOUND**
VOCAL AAHS
VOCAL OOHS
BREATHY OOH
SYNTH VOX AAH
VOCAL AIR
DOO ATTACK

**BASS-SOUND**
STANDUP BASS
STANDUP BS 2
STANDUP BS 3
FRETLESS BASS
FINGER BASS 1
FINGER BASS 2
FINGER BASS 3
PICK BASS 1
PICK BASS 2
MUTED BASS
SLAP BASS 1
SLAP BASS 2
BASS POP NOIS
BS HARMONICS
EL BASS TAP
ANALOG BS 1
ANALOG BS 2
ANALOG BS 3
FM BASS 1
FM BASS 2
GUITARRON
TUBE BASS

**DRUM-SOUND**
ACOUSTC KICK
BIG KICK
BOOM KICK
BRIGHT KICK
DANCE KICK
ELEC KICK
FAT KICK
GATED KICK
JAZZ KICK
LOOP KICK
MUFF KICK
PROCESSD KICK
PUNCHY KICK
RAP KICK
REAL KICK
RESO KICK
SYNTH KICK 1
SYNTH KICK 2
TIGHT KICK
COM/GATE SNR
CONCERT SNARE
CRACK SNARE
DANCE SNARE
ELEC SNARE
GATED POP SNR
GM SNARE 1
HIPHOP SNARE
POP SNARE
RAP SNARE
REAL SNARE
RIMSHOT
ROCK SNARE
SYNTH SNARE
SNARE ROLL
SIDESTICK 1
SIDESTICK 2
STICK CLICK
BRUSH HIT
BRUSH SLAP
BRUSH SWISH
BRUSH TAP
BRUSH TOM
DRY TOM
ROOM TOM
SYNTH DRUM
SYNTH RIM

**CYMBALS**
CLOSED HAT 1
CLOSED HAT 2
CLOSED HAT 3
SYN CLOSEHAT
RAP HAT 1
RAP HAT 2
OPEN HAT
SYN OPEN HAT
PEDAL HAT
CRASH CYMBAL
RIDE CYMBAL
RIDE BELL
CHINA CRASH

**PERCUSSION**
AGOGO
BONGO
CABASA
CASTANETS
CLAVE
CLICK
CONGA HIGH
CONGA LOW
CONGA MUTE
COWBELL
COWBELL STICK
CUICA
FINGER SNAPS
GUIRO
HANDCLAPS
JAWHARP
MARACAS
SHAKER
SLEIGHBELL
SPOONS
TAIKO
TAMBOURINE
TIMBALI
TRIANGLE
VIBRASLAP
WHISTLE
WOODBLOCK
SYN CLAPS
SYN COWBELL
SYN MARACAS
SYNTH CLAVE
SYNTH KISS
WIND CHIME
CACTUS LOOP
NUT RATTLE LP
RAINSTICK

**TUNED-PERC**
VIBRAPHONE
MARIMBA
XYLOPHONE
LOG DRUM
KALIMBA
STEEL DRUM
DOORBELL
GAMELAN BELL
GLOCKENSPIEL
HANDBELLS
SM TUNED GONG
TUBULAR
TYMPANI
DANCE HIT
ORCH HIT

**SOUND-EFFECT**
APPLAUSE
BIRD SONG
GUNSHOT
HELICOPTER
TELEPHONE
WIND CHIMES
SURFACE NOISE

**WAVEFORM**
SAWTOOTH
SINE WAVE
SQUARE WAVE
TRIANGLE WAVE
ANALOG WV 1
ANALOG WV 2
ANALOG WV 3
ANALOG WV 4
ANALOG WV 5
ANALOG WV 6
ANALOG WV 7
ANALOG WV 8
DIGITAL WV 1
DIGITAL WV 2
BELL WAVE 1
BELL WAVE 2
BELL WAVE 3
BELL WAVE 4
BELL WAVE 5
BELL WAVE 6
BELL WAVE 7
BIG BELL WF
SYNTH BELL
VOCAL WF 1
VOCAL WF 2
VOCAL WF 3
VOCAL WF 4
VOCAL WF 5
VOCAL WF 6
DOUBLE REED
REED WF
SINGLE REED
PIANO BS WF
PIANO WF
E-BASS WF 1
E-BASS WF 2

**INHARMONIC**
NOISE
SPECTRUM
AIR LOOP
BIG BELL
CRYSTAL
TEXTURE

**TRANSWAVE**
AAH OOH XW
ANA BS XWAVE
ANA VOX-X
ANALOG PAD X
BELL XWAVE 1
BELL XWAVE 2
BELL XWAVE 3
BELL XWAVE 4
DRAWBAR XW
MELLOW SWEEP
MULTI BELL
ORGAN XWAVE
OSC SYNC XW 1
OSC SYNC XW 2
PHASE SYNC
PULSE X
RAP BS XWAVE
RESONANCE
REZ BS XWAVE
REZ SWEEP
REZO-X 4
REZO-X 3
REZO-X 2
REZO-X 1
SCRATCH WAVE
SOFT ANALOG
TECHNO BASS
TINE XWAVE
TRANSWAVE AA
TRANSWAVE AH
TRANSWAVE EE
TRANSWAVE OO
TRANSWAVE Z
TRI SWEEP
WAKKA WAKKA

# What Is MIDI

Musical instrument and computer manufacturers have agreed upon a set of standards which allows their products to communicate with each other. It's called "MIDI." There are two basic aspects to the MIDI standards: what kind of wiring will be used to connect MIDI devices, and what kind of messages will be sent through those wires. The word "MIDI," by the way, is an acronym for "Musical Instrument Digital Interface."

### Life In The MIDI World

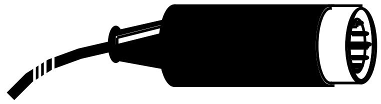
MIDI has opened up incredible possibilities for musicians and music lovers alike. Here are some of the things MIDI has made possible:

- Home enthusiasts can enjoy pre-recorded MIDI programs, performed by their personal computers in conjunction with tabletop boxes (such as the MR-Rack). In doing so, they can take advantage of General MIDI, a separate-but-related standard which we'll get into a bit later on.
- Keyboardists can connect their instruments to a myriad of boxes which produce sounds (such as the MR-Rack). MIDI allows a conventional-looking keyboard to control a number of such devices at the same time, providing for the creation of new, complex timbres. Keyboardists can also set up specific areas on their keyboards to control individual boxes. These same capabilities are available to computer users. Actually, pretty much any musical instrument can be outfitted to control MIDI devices.
- Musicians can record their performances into MIDI recorders—called ***sequencers***—which are found in keyboard workstations and computers. Once recorded, MIDI-recorded performances can be tweaked and nudged to perfection. Musical arrangements can be re-orchestrated even after they've been recorded. And musicians can fix mistakes they've made during their MIDI-recorded performances.
- Musicians can program their MIDI devices to suit their own needs right from their personal computers, taking advantage of computers' large graphic displays, familiar keyboards and comfortable mice.
- MIDI instruments can send what's stored in their internal memories out to external storage devices, such as hard disks and floppy drives.
- Recording engineers can control mixing consoles and effects devices with MIDI.
- Stage lights in concert halls can be automated to respond to musical cues.

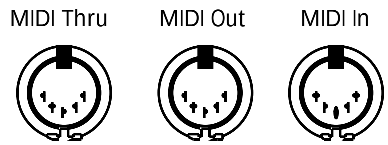
# Understanding MIDI

### MIDI Hardware

The architects of MIDI had to settle, first of all, on the MIDI hardware: the wires. All MIDI cables have the same kind of plug on either end:



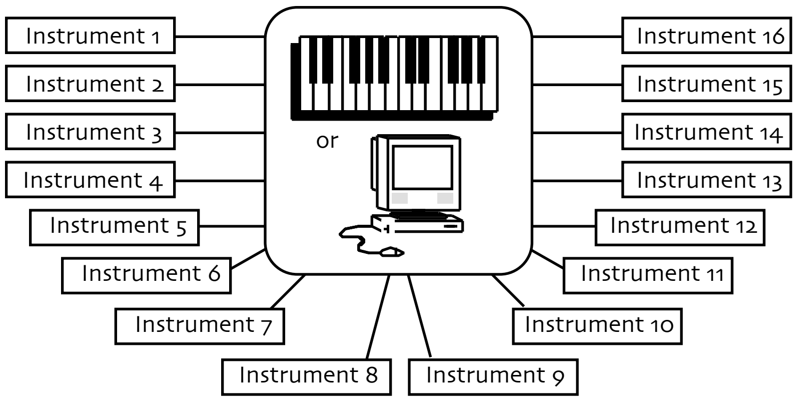
There are three MIDI sockets, or ***jacks***, on the back of most MIDI instruments. The ***MIDI In*** jack is for MIDI information coming into the instrument. The instrument sends out its own MIDI information through the ***MIDI Out*** jack. The ***MIDI Thru*** jack is for MIDI data that passes through the instrument unchanged, on its way to some other MIDI device.



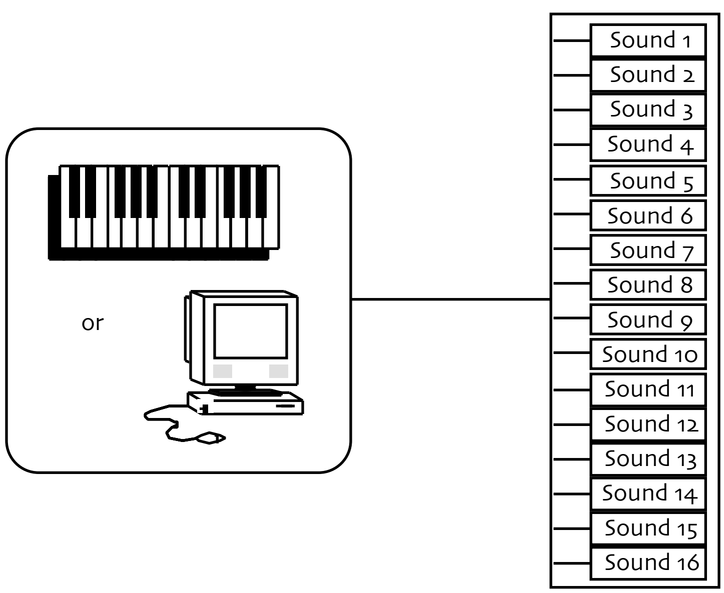

The MIDI cable itself can carry 16 independent channels of MIDI information which travel together through the wire. This means that you can have 16 separate MIDI conversations going on at once among instruments and/or computers connected together with MIDI cables.

## How MIDI Channels Work

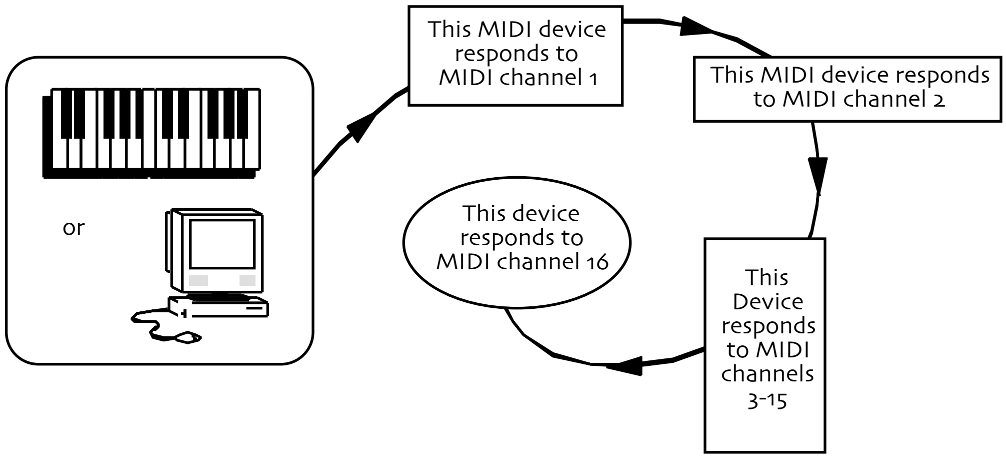
MIDI instruments can be set up to listen to specific channels and ignore everything else that's going on. This allows a central device to control each instrument individually.




Some devices—such as the MR-Rack—are capable of responding to as many as 16 channels at once. Such instruments are referred to as being ***multi-timbral***—it's as if there are up to 16 musical instruments in one box, and MIDI allows you to control each sound separately.




MIDI rigs can also combine both possibilities, with some instruments programmed to respond to one MIDI channel or another, and multi-timbral devices set up to receive up to 16 channels at once.




What travels up and down all these channels are MIDI messages, and these constitute the second major component of the MIDI Spec.

## How MIDI Messages Work

MIDI works in a manner reminiscent of the old player pianos, with their sheets of hole-punched paper telling the keyboard mechanism which keys to press down and when. It's not sound that's sent through MIDI cables it's just instructions from one MIDI device—called the "controller"—to another. Of course, MIDI generally doesn't cause any keys to physically move.

Suppose a keyboardist presses a note on a keyboard which is controlling some sound-producing MIDI box. The controller would send out a ***Key Down*** message for that note. The MIDI box receiving such a message would play the note. When the keyboardist lets go, the controller would send out a ***Key Up*** message, and the receiving device would stop sounding the note. At heart, it's as simple at that.

MIDI captures the expressive nuances in a performance by sending out other kinds of messages. Controllers can sense how hard a musician plays—referred to in the MIDI world as v***elocity***—and can instruct other devices to respond accordingly. Sustain and sostenuto foot pedals also send out MIDI messages. There are many tools for expression that can be transmitted and responded to via MIDI.

To tell a MIDI instrument which sound or effect program you want to hear, you would send a MIDI ***Program Change***.

MIDI can also send messages that have the same effect as pushing buttons and twirling knobs on a receiving device. To make sure that only the intended instrument listens to such instructions, MIDI sends it a special greeting in a language only it can understand. Every MIDI device has such a language, and these "hey there" messages are referred to as "System Exclusive headers." System Exclusive data is often referred to as ***SysEx*** data. SysEx is also used for the "dumping" of a MIDI instrument's memory to an external storage device, such as a hard disk or floppy drive it helps the data find its way back home when it's time to load it back into the instrument.

In MIDI recording, all of the messages that a controller produces are sent to a sequencer. Most sequencers have Record, Stop and Play buttons, since they're usually designed to resemble tape recorders. When the Record button is pressed, the sequencer captures incoming MIDI information. Pressing Stop tells the sequencer to store that information in its memory. When Play is pressed, it sends it back out.

### The Art of MIDI

The fact that MIDI is so simple to use is a testament to the cleverness of its designers. Its true magic, however, lies in MIDI's power as a tool in the creative process, and in the imaginations of those artists who wield it.

## What Is General MIDI

General MIDI is an agreed-upon set of sounds and protocols which aims to ensure that, no matter what brand or model General MIDI instrument you use in conjunction with your personal computer to play back a General MIDI recording, the music will sound essentially the same. General MIDI provides a tremendous convenience for listeners and multimedia fans who want to enjoy MIDI-based music without having to delve too deeply into its mechanics.

All General MIDI-supporting products sport the General MIDI logo:

General MIDI accomplishes its predictability by employing a very specific set of agreements on a number of MIDI issues.

### General MIDI Sounds

In the larger MIDI universe, any sound may reside anywhere in an instrument's memory, in the General MIDI world, the same sounds always reside in the same-numbered memory locations. This guarantees that if a programmer calls up a particular sound when he or she programs some General MIDI music, any time anyone anywhere plays that music back on a General MIDI instrument, that same sound will be invoked. See “List of General MIDI Sounds” in this chapter for a full list of the General MIDI sounds.

### General MIDI Drum Kits

Another important convention employed by General MIDI instruments are the General MIDI drum maps. The GM drum maps are available in several different styles, with a different drum or percussion sound on every key on the keyboard, running from the B two octaves below Middle C to the D# or E two octaves above. Some sounds in the GM drum maps are consistent from style to style—the low key on a 61-note keyboard will always be a bass drum of some kind and the note two semitones above it will always be a snare drum, for instance. Drum maps in General MIDI are always addressed via MIDI channel number 10. See “General MIDI Drum Maps” in this chapter for details of the various General MIDI drum map layouts.

### Earning the Logo

There are a number of other standards with which an instrument must comply in order to deserve its General MIDI logo. The advent of General MIDI has brought a tremendous amount of standardization to the wide-open MIDI universe, allowing the proliferation of multimedia and easy-to-use home entertainment products. You can be sure that, if the MIDI music you purchase for your computer displays the General MIDI logo, it will work perfectly with your MR-Rack.

# General MIDI Sound Map

The following map shows the General MIDI sound name and program change number of each Sound as they appear in the MR-Rack. This map also shows how General MIDI divides the instruments into 16 categories of similar Sounds:

| PROG # | INSTRUMENT | PROG # | INSTRUMENT | PROG # | INSTRUMENT | PROG # | INSTRUMENT |
|---|---|---|---|---|---|---|---|
| 0-7 | PIANO | 32-39 | BASS | 64-71 | REED | 96-103 | SYNTH EFFECTS |
| 0 | Piano 1 | 32 | Ac.Bass | 64 | Sop.Sax | 96 | Ice Rain |
| 1 | Piano 2 | 33 | FingBass | 65 | Alto Sax | 97 | Soundtrk |
| 2 | Piano 3 | 34 | PickBass | 66 | TenorSax | 98 | Crystal |
| 3 | HonkyTnk | 35 | FrtlsBas | 67 | Bari.Sax | 99 | Atmspher |
| 4 | E.Piano1 | 36 | SlapBs1 | 68 | Oboe | 100 | Britness |
| 5 | E.Piano2 | 37 | SlapBs2 | 69 | Eng.Horn | 101 | Goblin |
| 6 | Harpsi. | 38 | SynBass1 | 70 | Bassoon | 102 | EchoDrop |
| 7 | Clavinet | 39 | SynBass2 | 71 | Clarinet | 103 | StarThm. |
| 8-15 | CHROM PERCUSSION | 40-47 | STRINGS | 72-79 | PIPE | 104-111 | ETHNIC |
| 8 | Celesta | 40 | Violin | 72 | Piccolo | 104 | Sitar |
| 9 | Glockens | 41 | Viola | 73 | Flute | 105 | Banjo |
| 10 | Musicbox | 42 | Cello | 74 | Recorder | 106 | Shamisen |
| 11 | Vibes | 43 | CntrBass | 75 | PanFlute | 107 | Koto |
| 12 | Marimba | 44 | TremStrg | 76 | BotlBlow | 108 | Kalimba |
| 13 | Xylophon | 45 | PizzStrg | 77 | Shaku. | 109 | Bagpipe |
| 14 | Tubular | 46 | Harp | 78 | Whistle | 110 | Fiddle |
| 15 | Santur | 47 | Timpani | 79 | Ocarina | 111 | Shannai |
| 16-23 | ORGAN | 48-55 | ENSEMBLE | 80-87 | SYNTH LEAD | 112-119 | PERCUSSIVE |
| 16 | Organ 1 | 48 | Strings | 80 | SquareWv | 112 | TinklBell |
| 17 | Organ 2 | 49 | SlowStrg | 81 | Saw Wv | 113 | Agogo |
| 18 | Organ 3 | 50 | SynStrg1 | 82 | SynCalio | 114 | SteelDrm |
| 19 | Ch.Organ | 51 | SynStrg2 | 83 | Chiff.Ld | 115 | Woodblok |
| 20 | ReedOrgn | 52 | ChoirAah | 84 | Charang | 116 | Taiko |
| 21 | Accord. | 53 | Vox Oohs | 85 | Solo Vox | 117 | MeloTom1 |
| 22 | Harmnica | 54 | Syn.Vox | 86 | 5ths Wv | 118 | Syn.Drum |
| 23 | Bandneon | 55 | Orch.Hit | 87 | Bs.&Lead | 119 | Rev.Cym. |
| 24-31 | GUITAR | 56-63 | BRASS | 88-95 | SYNTH PAD | 120-127 | SOUND EFFECTS |
| 24 | NylonGtr | 56 | Trumpet | 88 | Fantasia | 120 | FretNois |
| 25 | SteelGtr | 57 | Trombone | 89 | Warm Pad | 121 | BrthNois |
| 26 | Jazz Gtr | 58 | Tuba | 90 | PolySyn. | 122 | Seashore |
| 27 | CleanGtr | 59 | MuteTrpt | 91 | SpaceVox | 123 | Birds |
| 28 | Mute Gtr | 60 | Fr.Horn | 92 | BowedGls | 124 | Telephon |
| 29 | OvDrvGtr | 61 | Brass 1 | 93 | MetalPad | 125 | Hlicoptr |
| 30 | Dist.Gtr | 62 | SynBrs.1 | 94 | Halo Pad | 126 | Applause |
| 31 | Gtr.Harm | 63 | SynBrs.2 | 95 | SweepPad | 127 | Gunshot |

The names listed above are as they appear in the MR-Rack, and not as they appear in the General MIDI Spec. The only differences are in spelling.

# GM and GS Percussion Key Maps (Channel 10)

| MIDI Note # | | 0 - Std.Kit-GM 32 - Jazz Kit-GM | 8 - RoomKit-GM | 16 - Pwr. Kit-GM | 24 - Elec Kit-GM | 25 - SynthKit-GM |
|---|---|---|---|---|---|---|
| 35 | B1 | AcoustcKick | AcoustcKick | AcoustcKick | AcoustcKick | AcoustcKick |
| 36 | C2 | Bright Kick | Bright Kick | Fat Kick1 | Elec Kick1 | Syn Kick-GM |
| 37 | C# 2 | SideStick 1 | SideStick 1 | SideStick 1 | SideStick 1 | SynRimshot |
| 38 | D2 | Snare-GM | Snare-GM | Snare-GM | Elec Sn-GM | Syn Snr-GM |
| 39 | D# 2 | HouseClap1 | HouseClap1 | HouseClap1 | HouseClap1 | HouseClap1 |
| 40 | E2 | Rock Snare | Rock Snare | Gated Sn-GM | Gated Sn-GM | Rock Snare |
| 41 | F2 | Dry Tom 1 | Room Tom 1 | Room Tom 1 | Elec Tom-GM | Syn Tom-GM |
| 42 | F# 2 | 4xCl Hat3 | 4xCl Hat3 | 4xCl Hat3 | 4xCl Hat3 | SynClHat-GM |
| 43 | G2 | Dry Tom 1 | Room Tom 1 | Room Tom 1 | Elec Tom-GM | Syn Tom-GM |
| 44 | G# 2 | Pedal Hat | Pedal Hat | Pedal Hat | Pedal Hat | SynClHat-GM |
| 45 | A2 | Dry Tom 1 | Room Tom 1 | Room Tom 1 | Elec Tom-GM | Syn Tom-GM |
| 46 | A# 2 | OpenHat-GM | OpenHat-GM | OpenHat-GM | OpenHat-GM | SynOpHat-GM |
| 47 | B2 | Dry Tom 1 | Room Tom 1 | Room Tom 1 | Elec Tom-GM | Syn Tom-GM |
| 48 | C3 | Dry Tom 1 | Room Tom 1 | Room Tom 1 | Elec Tom-GM | Syn Tom-GM |
| 49 | C# 3 | Crash 1-GM | Crash 1-GM | Crash 1-GM | Crash 1-GM | 808 Cymbal |
| 50 | D3 | Dry Tom 1 | Room Tom 1 | Room Tom 1 | Elec Tom-GM | Syn Tom-GM |
| 51 | D# 3 | Ride 1-GM | Ride 1-GM | Ride 1-GM | Ride 1-GM | Ride 1-GM |
| 52 | E3 | China 1-GM | China 1-GM | China 1-GM | R.Crash-GM | China 1-GM |
| 53 | F3 | RideBell-GM | RideBell-GM | RideBell-GM | RideBell-GM | RideBell-GM |
| 54 | F# 3 | Tambourine | Tambourine | Tambourine | Tambourine | Tambourine |
| 55 | G3 | Splash1-GM | Splash1-GM | Splash1-GM | Splash1-GM | Splash1-GM |
| 56 | G# 3 | Cowbell | Cowbell | Cowbell | Cowbell | Syn Cowbell |
| 57 | A3 | Crash 1-GM | Crash 1-GM | Crash 1-GM | Crash 1-GM | Crash 1-GM |
| 58 | A# 3 | Vibraslap | Vibraslap | Vibraslap | Vibraslap | Vibraslap |
| 59 | B3 | Ride 1-GM | Ride 1-GM | Ride 1-GM | Ride 1-GM | Ride 1-GM |
| 60 | C4 | Bongo | Bongo | Bongo | Bongo | Bongo |
| 61 | C# 4 | Bongo | Bongo | Bongo | Bongo | Bongo |
| 62 | D4 | Conga Mute | Conga Mute | Conga Mute | Conga Mute | SynHiCongGM |
| 63 | D# 4 | Conga High | Conga High | Conga High | Conga High | SynHiCongGM |
| 64 | E4 | Conga Low | Conga Low | Conga Low | Conga Low | SynLoCongGM |
| 65 | F4 | Timbali | Timbali | Timbali | Timbali | Timbali |
| 66 | F# 4 | Timbali | Timbali | Timbali | Timbali | Timbali |
| 67 | G4 | Agogo | Agogo | Agogo | Agogo | Agogo |
| 68 | G# 4 | Agogo | Agogo | Agogo | Agogo | Agogo |
| 69 | A4 | Cabasa | Cabasa | Cabasa | Cabasa | Cabasa |
| 70 | A# 4 | Maracas | Maracas | Maracas | Maracas | Syn Maracas |
| 71 | B4 | Whistle B | Whistle B | Whistle B | Whistle B | Whistle B |
| 72 | C5 | Whistle A | Whistle A | Whistle A | Whistle A | Whistle A |
| 73 | C# 5 | Guiro Short | Guiro Short | Guiro Short | Guiro Short | Guiro Short |
| 74 | D5 | Guiro Long | Guiro Long | Guiro Long | Guiro Long | Guiro Long |
| 75 | D# 5 | Clave | Clave | Clave | Clave | Synth Clave |

| | | | | | | |
|---|---|---|---|---|---|---|
| 76 | E5 | Woodblock 1 | Woodblock 1 | Woodblock 1 | Woodblock 1 | Woodblock 1 |
| 77 | F5 | Woodblock 1 | Woodblock 1 | Woodblock 1 | Woodblock 1 | Woodblock 1 |
| 78 | F#5 | Cuica 1 | Cuica 1 | Cuica 1 | Cuica 1 | Cuica 1 |
| 79 | G5 | Cuica 5 | Cuica 5 | Cuica 5 | Cuica 5 | Cuica 5 |
| 80 | G#5 | Tri Mute-GM | Tri Mute-GM | Tri Mute-GM | Tri Mute-GM | Tri Mute-GM |
| 81 | A5 | Tri Open-GM | Tri Open-GM | Tri Open-GM | Tri Open-GM | Tri Open-GM |
| 82 | A#5 | Shaker | Shaker | Shaker | Shaker | Shaker |
| 83 | B5 | Sleighbell | Sleighbell | Sleighbell | Sleighbell | Sleighbell |
| 84 | C6 | WindchimeGM | WindchimeGM | WindchimeGM | WindchimeGM | WindchimeGM |
| 85 | C#6 | Castanets 1 | Castanets 1 | Castanets 1 | Castanets 1 | Castanets 1 |
| 86 | D6 | Mt Surdo-GM | Mt Surdo-GM | Mt Surdo-GM | Mt Surdo-GM | Mt Surdo-GM |
| 87 | D#6 | Op Surdo-GM | Op Surdo-GM | Op Surdo-GM | Op Surdo-GM | Op Surdo-GM |
| 88 | E6 | Silence | Silence | Silence | Silence | Silence |

# GM and GS Percussion Key Maps (Channel 10)

| MIDI Note # | | 40 - Brsh Kit-GM | 48 - Orch Kit-GM | 64 - DanceKit-GM | 65 - TeknoKit-GM | 66 - FormtKit-GM |
|---|---|---|---|---|---|---|
| 35 | B1 | AcoustcKick | Big Kick1 | Boom Kik C | PtchDwnKik3 | HouseKick2 |
| 36 | C2 | Bright Kick | ConcrtBD-GM | PtchDwnKik3 | PtchDwnKik1 | HouseKick1 |
| 37 | C#2 | SideStick 1 | SideStick 1 | SideStick 1 | House Rim | House Rim |
| 38 | D2 | Brush Tap | ConcrtSnare | CrackSnare1 | House Snare1 | House Snare1 |
| 39 | D#2 | Brush Slap | Castanets 1 | HouseClap1 | Stereo Clap | HouseClap1 |
| 40 | E2 | Brush Swish | ConcrtSnare | HiPass Snr2 | HiPass Snr3 | HouseSnare4 |
| 41 | F2 | Dry Tom 1 | Tympani | HouseTom1 | HouseTom1 | HouseTom1 |
| 42 | F#2 | 4xCl Hat3 | Tympani | 4xCl Hat3 | HouseClHat2 | HouseClHat1 |
| 43 | G2 | Dry Tom 1 | Tympani | HouseTom1 | HouseTom1 | HouseTom2 |
| 44 | G#2 | Pedal Hat | Tympani | Pedal Hat | HouseClHat2 | Pedal Hat |
| 45 | A2 | Dry Tom 1 | Tympani | HouseTom1 | HouseTom1 | HouseTom1 |
| 46 | A#2 | OpenHat-GM | Tympani | ShrtOpHat 1 | HouseOpHat2 | HouseOpHat1 |
| 47 | B2 | Dry Tom 1 | Tympani | HouseTom1 | HouseTom1 | HouseTom2 |
| 48 | C3 | Dry Tom 1 | Tympani | HouseTom1 | HouseTom1 | HouseTom1 |
| 49 | C#3 | Crash 1-GM | Tympani | HouseCrash2 | HouseCrash2 | HouseCrash1 |
| 50 | D3 | Dry Tom 1 | Tympani | HouseTom1 | HouseTom1 | HouseTom2 |
| 51 | D#3 | Ride 1-GM | Tympani | Cool Ride 1 | Cool Ride 1 | HouseRide1 |
| 52 | E3 | China 1-GM | Tympani | Gong mf | Gong mf | China Crash |
| 53 | F3 | RideBell-GM | Tympani | HouseRide2 | HouseRide1 | Ride Bell |
| 54 | F#3 | Tambourine | Tambourine | Dyn.Tambo | Dyn.Tambo | Tambourine |
| 55 | G3 | Splash1-GM | Splash1-GM | ChokeSplash | ChokeSplash | SplashCym 1 |
| 56 | G#3 | Cowbell | Cowbell | Cowbell | Cowbell | Cowbell |
| 57 | A3 | Crash 1-GM | Crash 1-GM | 808 Cymbal | 808 Cymbal | Crash Cym 1 |
| 58 | A#3 | Vibraslap | Vibraslap | Vibraslap | Pole | Vibraslap |
| 59 | B3 | Ride 1-GM | Piatti-GM | SizlRideCym | SizlRideCym | Ride Cym 1 |
| 60 | C4 | Bongo | Bongo | Bongo | Synth Drip | Bongo |
| 61 | C#4 | Bongo | Bongo | Bongo | Synth Kiss | Bongo |
| 62 | D4 | Conga Mute | Conga Mute | CongaLO/whl | SynLoCongGM | Conga Mute |
| 63 | D#4 | Conga High | Conga High | CongaHi/whl | SynHiCongGM | Conga High |
| 64 | E4 | Conga Low | Conga Low | CongaMoose1 | SynLoCongGM | Conga Low |
| 65 | F4 | Timbali | Timbali | Timbali | Timbali | Tambourine |
| 66 | F#4 | Timbali | Timbali | Timbali | Timbali | Timbali |
| 67 | G4 | Agogo | Agogo | Agogo | Agogo | Agogo |
| 68 | G#4 | Agogo | Agogo | Agogo | Agogo | Agogo |
| 69 | A4 | Cabasa | Cabasa | Cactus Hit1 | Cactus Hit1 | Cabasa |
| 70 | A#4 | Maracas | Maracas | Egg Shaker | Egg Shaker | Maracas |
| 71 | B4 | Whistle B | Whistle B | Synth Hit 1 | Synth Hit 1 | Whistle A |
| 72 | C5 | Whistle A | Whistle A | Synth Hit 4 | Synth Hit 2 | Whistle A |

| | | | | | | |
|---|---|---|---|---|---|---|
| 73 | C#5 | Guiro Short | Guiro Short | Synth Hit 6 | Synth Hit 3 | HouseRide1 |
| 74 | D5 | Guiro Long | Guiro Long | Synth Hit 7 | Synth Hit 4 | Guiro Long |
| 75 | D#5 | Clave | Clave | Synth Hit12 | Synth Hit 5 | Clave |
| 76 | E5 | Woodblock 1 | Woodblock 1 | Synth Hit11 | Synth Hit 6 | Woodblock 1 |
| 77 | F5 | Woodblock 1 | Woodblock 1 | Wakka 1 | Synth Hit 7 | Woodblock 1 |
| 78 | F#5 | Cuica 1 | Cuica 1 | Wakka 3 | Synth Hit 8 | Cuica 1 |
| 79 | G5 | Cuica 5 | Cuica 5 | Wakka 5 | Synth Hit 9 | Cuica 1 |
| 80 | G#5 | Tri Mute-GM | Tri Mute-GM | Wakka 7 | Synth Hit 10 | Triangle Mt |
| 81 | A5 | Tri Open-GM | Tri Open-GM | Scratch 1 | Synth Hit 11 | Triangle Op |
| 82 | A#5 | Shaker | Shaker | Scratch 2 | Synth Hit 12 | Cym Swell2 |
| 83 | B5 | Sleighbell | Sleighbell | Scratch 3 | Synth Hit 10 | AltRevCrash |
| 84 | C6 | WindchimeGM | WindchimeGM | Scratch 4 | Synth Hit 10 | HiPass Kik1 |
| 85 | C#6 | Castanets 1 | Castanets 1 | Scratch 6 | Synth Hit 8 | Synth Hit 4 |
| 86 | D6 | Mt Surdo-GM | Mt Surdo-GM | Scratch 10 | Synth Hit 7 | HiPass Snr1 |
| 87 | D#6 | Op Surdo-GM | Op Surdo-GM | Scratch 11 | Synth Hit 5 | HouseClap2 |
| 88 | E6 | Silence | Applause-GM | Silence | Silence | HiPass Snr2 |

# MR-Rack MIDI Implementation

The MR-Rack features an extensive MIDI (Musical Instrument Digital Interface) implementation. For normal applications, you will find all the information you need regarding the MR-Rack's MIDI functions in this manual. You can also refer to the following MIDI Implementation Chart for a summary of the MR-Rack MIDI implementation.

If you are writing a computer program to communicate with the MR-Rack via MIDI, or otherwise require a copy of the full MR-Rack System Exclusive Specification, it is available free of charge by writing to:

ENSONIQ Corp.
MIDI Specification Desk
155 Great Valley Parkway
P.O. Box 3035
Malvern PA 19355-0735
USA

Include in your written request your name and address, and indicate that you would like a copy of the "MR-Rack System Exclusive Specification." Please allow 2 to 3 weeks for delivery.

**ENSONIQ [Synthesizer Module]** **Date: Sept. 18, 1996**

**Model: MR-Rack** **MIDI Implementation Chart** **Version: 1.50**

| Function... | | Transmitted | Recognized | Remarks |
|---|---|---|---|---|
| **Basic Channel** | Default<br>Changed | X<br>X | 1-16<br>1-16 | Each of MR-Rack's 16 Parts may be set to any MIDI channel |
| **Mode** | Default<br>Messages<br>Altered | X<br>X<br>************** | MULTI<br>X<br>X | |
| **Note Number** | True voice | ************** | 21-108 | Part note reception is filtered by Key Lo and Key High Part parameters |
| **Velocity** | Note On<br>Note Off | X<br>X | O<br>O | Part Note On velocity reception is filtered by VelocityRange Lo and VelocityRange Hi Part parameters<br>Part Note Off velocity is filtered by VelocityRange Lo and VelocityRange Hi Part parameters when modulating keyup layers |
| **After Touch** | Key's<br>Channel | X<br>X | O<br>O | Poly-Key™ pressure |
| **Pitch Bend** | | X | O | supports held mode |
| **Control Change** | | | 0-119 | see "MIDI Controllers Behavior" below |
| **Program Change** | <br>True# | X<br>************** | 0-119<br>0-119 | select Sounds from the currently selected bank<br>invalid Program Changes select silent Sound |
| **System Exclusive** | | O | O | see MR-Rack SysEx Specification<br>recognizes Universal Non-Real Time SysEx General MIDI On/Off messages<br>recognizes MIDI Tuning Dump Standard and Single-Note Tuning Change messages |
| **System Common** | Song Position<br>Song Select<br>Tune Request | X<br>X<br>X | X<br>X<br>X | |
| **System Real Time** | Clock<br>Commands | X<br>X | O<br>X | |
| **Aux Messages** | Local On/Off<br>All Notes Off<br>Active Sensing<br>System Reset | X<br>X<br>X<br>X | X<br>O<br>X<br>X | |
| **Notes** | Response to received Controllers varies depending on the nature of the MR-Rack parameter affected—see parameter descriptions for details<br>When MR-Rack is configured for General MIDI, Bank Select reception is disabled, and new Performances cannot be selected by Program Changes—see "Using the MR-Rack with General MIDI Standard MIDI Files", Chapter 3 | | | |

Mode 1: Omni On, Poly    Mode 2: Omni On, Mono    O: Yes
Mode 3: Omni Off, Poly    Mode 4: Omni Off, Mono    X: No

# MIDI Controllers Reception Behavior

| Control Change | Description | Remark |
|---|---|---|
| 0-119 | SysCTRL 1-4 | assignable controllers |
| 0 | Bank Select MSB | always 0 |
| 1 | Mod Wheel | |

| | | |
|---|---|---|
| 4 | Foot (Pedal) | |
| 5 | Portamento Time | |
| 6 | Data Entry MSB | for editing of Registered and Non-Registered Parameters only, after Registered or Non-Registered Parameter MSB and LSB are received |
| 7 | Volume | |
| 10 | Pan | |
| 11 | Expression Controller | |
| 32 | Bank Select LSB | |
| 64 | Sustain | |
| 65 | Portamento On/Off | |
| 66 | Sustenuto | |
| 72 | Release Time | Amp Env Release |
| 73 | Attack Time | Amp Env Attack |
| 74 | Brightness | Filter Cutoff |
| 75 | Sound Controller 6 | Normal LFO Rate |
| 76 | Sound Controller 7 | Amp Env Decay |
| 91 | Effects 1 Depth | GM Chorus Depth, described in “Adding Effects to Part Sounds,” *Chapter 4* |
| 93 | Effect 2 Depth | GM Reverb Depth, described in “Adding Effects to Part Sounds,” *Chapter 4* |
| 98 | Non-Reg. Param. Select LSB | Part parameter descriptions in *Chapter 4* list Part parameters’ Non-Registered parameter LSB values |
| 99 | Non-Reg. Param. Select MSB | always 0 |
| 100 | Reg. Param. Select LSB | always 0, 1 or 2 only |
| 101 | Reg. Param. Select MSB | always 0 |

## List of MIDI Controller Names

This list of MIDI Controller names (as found in the MR-Rack) represents the current state-of-the-art MIDI controller assignments as defined in the MIDI Detailed Specification, version 95.1:

| | | |
|---|---|---|
| Bank Select #000 - Bank Select | Expression#043 - Expression LSB | MIDIContrl#086 - UNDEFINED |
| Mod Wheel #001 - Mod Wheel or Lever | FXControl1#044 - Effect Control 1 LSB | MIDIContrl#087 - UNDEFINED |
| Breath #002 - Breath Controller | FXControl2#045 - Effect Control 2 LSB | MIDIContrl#088 - UNDEFINED |
| MIDIContrl#003 - UNDEFINED | MIDIContrl#046 - UNDEFINED | MIDIContrl#089 - UNDEFINED |
| FootContrl#004 - Foot Controller | MIDIContrl#047 - UNDEFINED | MIDIContrl#090 - UNDEFINED |
| Glide Time#005 - Portamento Time | GenPurpse1#048 - UNDEFINED | FX Depth 1#091 - Effects Depth 1 |
| Data Entry#006 - Data Entry MSB | GenPurpse2#049 - General Purpose 1 LSB | FX Depth 2#092 - Effects Depth 2 |
| Volume #007 - Volume | GenPurpse3#050 - General Purpose 2 LSB | FX Depth 3#093 - Effects Depth 3 |
| Balance #008 - Balance | GenPurpse4#051 - General Purpose 3 LSB | FX Depth 4#094 - Effects Depth 4 |
| MIDIContrl#009 - UNDEFINED | MIDIContrl#052 - General Purpose 4 LSB | FX Depth 5#095 - Effects Depth 5 |
| Pan #010 - Pan | MIDIContrl#053 - UNDEFINED | Data Inc #096 - Data Inc |
| Expression#011 - Expression | MIDIContrl#054 - UNDEFINED | Data Dec #097 - Data Dec |
| FX Control1#012 - Effect Control 1 | MIDIContrl#055 - UNDEFINED | NonRgPmLSB#098 - Non-Reg param Num LSB |
| FX Control2#013 - Effect Control 2 | MIDIContrl#056 - UNDEFINED | NonRgPmMSB#099 - Non-Reg param Num MSB |
| MIDIContrl#014 - UNDEFINED | MIDIContrl#057 - UNDEFINED | RgParamLSB#100 - Reg param Num LSB |
| MIDIContrl#015 - UNDEFINED | MIDIContrl#058 - UNDEFINED | RgParamMSB#101 - Reg param Num MSB |
| GenPurpse1#016 - General Purpose 1 | MIDIContrl#059 - UNDEFINED | MIDIContrl#102 - UNDEFINED |
| GenPurpse2#017 - General Purpose 2 | MIDIContrl#060 - UNDEFINED | MIDIContrl#103 - UNDEFINED |
| GenPurpse3#018 - General Purpose 3 | MIDIContrl#061 - UNDEFINED | MIDIContrl#104 - UNDEFINED |
| GenPurpse4#019 - General Purpose 4 | MIDIContrl#062 - UNDEFINED | MIDIContrl#105 - UNDEFINED |
| MIDIContrl#020 - UNDEFINED | MIDIContrl#063 - UNDEFINED | MIDIContrl#106 - UNDEFINED |
| MIDIContrl#021 - UNDEFINED | Sustain #064 - Sustain | MIDIContrl#107 - UNDEFINED |
| MIDIContrl#022 - UNDEFINED | PortOn/Off#065 - Portamento On/Off | MIDIContrl#108 - UNDEFINED |
| MIDIContrl#023 - UNDEFINED | Sostenuto #066 - Sostenuto | MIDIContrl#109 - UNDEFINED |
| MIDIContrl#024 - UNDEFINED | Soft Pedal#067 - Soft Pedal | MIDIContrl#110 - UNDEFINED |
| MIDIContrl#025 - UNDEFINED | LegatoFtsw#068 - Legato Ftsw | MIDIContrl#111 - UNDEFINED |
| MIDIContrl#026 - UNDEFINED | Hold 2 #069 - Hold 2 | MIDIContrl#112 - UNDEFINED |
| MIDIContrl#027 - UNDEFINED | PatchSelct#070 - Snd Variation (Patch Select) | MIDIContrl#113 - UNDEFINED |
| MIDIContrl#028 - UNDEFINED | Timbre #071 - Harmonic Content (Timbre) | MIDIContrl#114 - UNDEFINED |
| MIDIContrl#029 - UNDEFINED | Release #072 - Release | MIDIContrl#115 - UNDEFINED |
| MIDIContrl#030 - UNDEFINED | Attack #073 - Attack | MIDIContrl#116 - UNDEFINED |
| MIDIContrl#031 - UNDEFINED | Brightness#074 - Brightness | MIDIContrl#117 - UNDEFINED |
| BankSelect#032 - Bank Select LSB | SoundCntl6#075 - Sound Controller 6 | MIDIContrl#118 - UNDEFINED |
| Mod Wheel #033 - Mod Wheel LSB | SoundCntl7#076 - Sound Controller 7 | MIDIContrl#119 - UNDEFINED |
| Breath #034 - Breath Controller LSB | SoundCntl8#077 - Sound Controller 8 | |
| MIDIContrl#035 - UNDEFINED | SoundCntl9#078 - Sound Controller 9 | |
| FootContrl#036 - Foot Controller LSB | SoundCtl10#079 - Sound Controller 10 | |
| Glide Time#037 - Portamento Time LSB | GenPurpse5#080 - General Purpose 5 | |
| Data Entry#038 - Data Entry LSB | GenPurpse6#081 - General Purpose 6 | |
| Volume #039 - Volume LSB | GenPurpse7#082 - General Purpose 7 | |
| Balance #040 - Balance LSB | GenPurpse8#083 - General Purpose 8 | |
| MIDIContrl#041 - UNDEFINED | Portamento#084 - Portamento Control | |
| Pan #042 - Pan LSB | MIDIContrl#085 - UNDEFINED | |

**Note:** Controllers #000-031 are the MSBs and #032-063 are the LSBs for controllers with 14 bit resolution, and their names are displayed identically in the list of values.

# Reset All Controllers (MIDI controller 121) Reception Behavior

When the System page, ResetControlRecv=Off, the Reset All Controllers message will be ignored.

When System page, ResetControlRecv=On, the following MIDI messages and parameters on all parts assigned to the MIDI channel on which the message was received will be reset to the following values:

| | | |
|---|---|---|
| Assignable SysCtrl1-4=000 | Controller 008=064 | Controller 070 to 071=000 |
| Pitch Bend=center | Controller 009=000 | Controller 072 to 079=064 |
| Channel Pressure=000 | Controller 010=064 | Controllers 080 to 097=000 |
| Polyphonic Pressure=000 for all 88 keys | Controller 011=127 | Controller 098 to 101=cleared |
| Controllers 001 to 004=000 | Controllers 012 to 031=000 | Controllers 102 to 119=000 |
| Controller 005=064 | Controllers 033 to 064=000 | Controllers 120 to 127=left unchanged |
| Controller 006=000 | Controller 065=000 | |
| Controller 007=100 | Controllers 066 to 069=000 | |

### When System page, Part Param Reset=Off:

Controllers 005, and 070 to 079 will be left unchanged.

### When System page, Part Param Reset=On:

Controllers 005, and 070 to 079 will be reset to the values listed above.

Part MIDI reception filters do not affect reception of the Reset All Controllers message.

## Registered Parameters

Registered parameters 0, 1 and 2 are received multi-timbrally by the MR-Rack. When received on a Part's MIDI channel, RPN 0 affects the Part's Pitch Bend Up and Down simultaneously: Pitch Bend up is raised and Pitch Bend Down is lowered by the same RPN value. RPNs 1 and 2 edit Semitone Shift and Fine Tuning parameters, respectively, when received on the Part's MIDI channel.

Registered parameters must be transmitted to the MR-Rack as a Continuous Controller status byte followed by three consecutive Continuous Controller messages: The Registered parameter MSB and LSB values select the Part parameter that will be edited, and a Data Entry value invokes the Part parameter's desired setting.

**Controllers**

| **Number** | **Name** | **Value** |
|---|---|---|
| 101 | Registered Parameter Select MSB (Most Significant Byte) | always 0 |
| 100 | Registered Parameter Select LSB (Least Significant Byte) | 00, 01 or 02 (see below) |
| 6 | Data Entry MSB | 0-127, desired Part parameter setting |

**Registered Parameters**

| **Number** | **Name** | **MR-Rack Parameter Range** |
|---|---|---|
| 00 | Pitch Bend Range | 0-12 (displayed as Pitch Bend Up =0-12 up raises pitch Pitch Bend Down=0-12 down |
| 01 | Fine Tuning | 0-127 (displayed as -50 cents to +49 cents) |
| 02 | Coarse Tuning | 0-127 (displayed as -64st to +63st) |

## Non-Registered Parameters

Non-Registered parameters are received multi-timbrally by the MR-Rack, affecting Part parameters when received on the Part's MIDI channel.

Non-Registered parameters must be transmitted to the MR-Rack as a Continuous Controller status byte followed by three consecutive Continuous Controller messages. The Non-Registered parameter MSB and LSB select the Part parameter, and a Data Entry value invokes the Part parameter's desired setting.

| Controllers<br>Number | Name | Value |
|---|---|---|
| 99 | Non-Registered Parameter Select MSB (Most Significant Byte) | always 0 |
| 98 | Non-Registered Parameter Select LSB (Least Significant Byte) | see Part parameter descriptions in Chapter 4 for each parameter's Non-Registered parameter LSB value |
| 6 | Data Entry MSB | 0-127, desired Part parameter setting |

# Registered and Non-Registered Parameters (RPN/NRPN)

| | |
|---|---|
| Expression | Responds to MIDI controller 011 and NRPN LSB LSB 034. |
| FX Bus assignment (Insert, Chorus, LightReverb, MediumReverb, WetReverb, Dry) | Responds to MIDI NRPN LSB 033. |
| Pitch Bend Up | Responds to MIDI RPN LSB 000 and NRPN LSB 022. |
| Pitch Bend Down | Responds to MIDI RPN LSB 000 and NRPN LSB 023. |
| Octave Tuning (-4oct to +4oct) | Responds to MIDI NRPN LSB 011. |
| Semitone Coarse Tuning | Responds to MIDI RPN LSB 002. |
| Fine Tuning | Responds to MIDI RPN LSB 001. |
| Pitch Table | Responds to MIDI NRPN LSB 021. |
| Glide Mode | Responds to MIDI controller 065 (see below) and NRPN LSB 031. When a value of 64 or greater for MIDI controller 065 is received, glide will be enabled for the part; values below 64 will not disable glide. |
| Glide Time | Responds to MIDI controller 005 and NRPN LSB 032. |
| Delay Time positive-only | Responds to MIDI NRPN LSB 024. |
| tempo Sync'ed LFO and Noise system tempo time division | Responds to MIDI NRPN LSB 025. |
| Normal LFO Rate | Responds to MIDI controller 075 and NRPN LSB 008. |
| LFO Depth | Responds to MIDI NRPN LSB 009. |
| LFO Delay Time | Responds to MIDI NRPN LSB 010. |
| Amplitude Envelope Attack time | Responds to MIDI controller 073 and NRPN LSB 014. |
| Amplitude Envelope Decay time | Responds to MIDI controller 076 and NRPN LSB 015. |
| Amplitude Envelope Release time | Responds to MIDI controller 072 and NRPN LSB 016. |
| lo-pass & hi-pass Filter Cutoff | Responds to MIDI controller 074 and NRPN LSB 012. |
| Filter Envelope Attack time | Responds to MIDI NRPN LSB 017. |
| Filter Envelope Decay time | Responds to MIDI NRPN LSB 018. |
| Filter Envelope Release time | Responds to MIDI NRPN LSB 019. |
| Amp & Filter Envelope Velocity sensitivity | Responds to MIDI NRPN LSB 020. |
| Key Range Low limit | Responds to MIDI NRPN LSB 026. |
| Key Range High limit | Responds to MIDI NRPN LSB 027. |
| Velocity Range Low limit | Responds to MIDI NRPN LSB 028. |
| Velocity Range High limit | Responds to MIDI NRPN LSB 029. |
| Pressure Mode | Responds to MIDI NRPN LSB 030. |
| Velocity MIDI reception converter | Responds to MIDI NRPN LSB 035. |
| (Part) Mute button | Responds to MIDI NRPN LSB 036 (0=normal muted, 1=unmuted, 2=solo muted, 3=solo, 4-127=solo). |

For an explanation of how to use RPNs and NRPNs with the MR-Rack, see "Using RPNs and NRPNs to Edit Parameters" at the end of ***Chapter 4***.

## Universal Non-Real-Time SysEx General MIDI On/Off

The MR-Rack recognizes the Universal Non-Real-Time SysEx General MIDI On/Off messages.

When the MR-Rack receives a SysEx General MIDI On message, it responds as if the MR-Rack's own Hit ENTER for GM! command has been run: the General MIDI Performance is selected, and certain System parameters are reset (see "Using the MR-Rack with General MIDI Standard MIDI Files" in ***Chapter 3*** for details).

The Universal Non-Real-Time SysEx General MIDI On message is comprised of the Universal Non-Real-Time header, the current SysEx Device ID number of the MR-Rack, sub-ID #1and sub-ID #2 messages, and an End of SysEx message.

**Turning General MIDI On Via SysEx**

| Transmit | Description | Notes |
|---|---|---|
| F0, 7E | Universal Non-Real-Time SysEx header | |
| <Device ID> | SysEx Device ID | 0-127, determined by the setting of the SysEx Device ID System parameter (see Chapter 3) |
| 09 | sub-ID#1=General MIDI message | |
| 01 | sub-ID#2=General MIDI On | |
| F7 | End of SysEx | |

When the MR-Rack receives a Universal Non-Real-Time SysEx General MIDI Off message, it concludes General MIDI operation by selecting the →PlaySounds Performance and Part 1. System parameters altered at the start of General MIDI operation are not reset (for a list of these parameters, see "Using General MIDI," ***Chapter 3***).

The Universal Non-Real-Time SysEx General MIDI Off message is comprised of the Universal Non-Real-Time header, the SysEx Device ID number of the MR-Rack, sub-ID #1and sub-ID #2 messages, and an End of SysEx message.

**Turning General MIDI Off Via SysEx**

| Transmit | Description | Notes |
|---|---|---|
| F0, 7E | Universal Non-Real-Time SysEx header | |
| <Device ID> | SysEx Device ID | 0-127, determined by the setting of the SysEx Device ID System parameter (see Chapter 3) |
| 09 | sub-ID#1=General MIDI message | |
| 02 | sub-ID#2=General MIDI Off | |
| F7 | End of SysEx | |

## Pitch Tables and the MIDI Tuning Standard Format

Pitch tables created using an external computer can be downloaded into the MR-Rack's RAM pitch table using the MIDI Tuning Standard format. The MR-Rack can accommodate one user-defined RAM pitch table in addition to the many alternate pitch tables stored in ROM. The MR-Rack's pitch tables can be accessed by any of its 16 Parts through the setting of the Part's PitchTbl parameter, or via NRPN LSB 021 values sent on the Part's MIDI channel. You can also select a system-wide special pitch table by selecting the desired table with the PitchTbl System parameter.

The MIDI Tuning Standard is comprised of two kinds of messages: the MIDI Tuning Dump, a SysEx bulk dump which transmits tunings for all keys, and a Single-Note Tuning Change, which alters the tuning of a specific note. The SysEx bulk dump format is supported by several tuning editors for the Apple Macintosh and Microsoft Windows 95. It is anticipated that the Single-Note Tuning Change message will be employed by third-party tuning controllers to achieve Middle-Eastern music scales.

The MR-Rack's response to the Single-Note Tuning Change message has been extended to allow users to apply a single tuning change to the MR-Rack's entire pitch range. If a Single-Note Tuning Change message is sent to user-tuning number 7F (127), and if the note is between middle C and an octave above (note numbers 60 to 71 inclusive), the tuning change will be applied to all notes in the current RAM pitch table. In all other cases, the note-change message only changes the tuning for the note specified. If a Single-Note Tuning Change message is received during playback of a note (between the key-down and key-up messages), the tuning change takes effect on the next note.

It is suggested that third-party tuning controllers should send a zero-pitch-detune message for each of the twelve notes supported by the Single-Note Tuning Change message and also select the RAM tuning for the receiving channel. The zero-pitch messages need only be sent once before sending their note-change messages.

For more information on the MIDI Tuning Standard, contact:

MIDI Manufacturer's Association
c/o Tom White, President
P.O. Box 3173
La Habra, CA 90632-3173
Phone/FAX: (310) 947-4569
email: mma@earthlink.net

Just Intonation Network
535 Stevenson Street
San Francisco, CA 94103
Phone: (415) 824-5325
FAX: (415) 864-8726
WWW: http://www.dnai.com/~jinetwk

# List of ROM System Pitch Tables

The intervals (or relationships) between each note in a scale is called a pitch table. The default pitch table is the western 12-tone equal-tempered pitch table. The MR-Rack offers a large assortment of traditional, modern, ethnic, and exotic pitch tables for use as the System pitch table. These pitch tables are:

| Pitch Table | Description |
|---|---|
| EqualTemper | The Western 12-tone equal-temperament tuning is used for the default pitch table. |
| Pythagrn-C | Early tuning derived by calculating 12 perfect fifths and adjusting the octaves downward as necessary. Leaves all fifths except the one between G# and D# very pure. The entire mathematical anomaly encountered by tuning up 12 perfect fifths (called the Pythagorean comma) is accounted for in the interval between G# and D#. |
| Just Int-C | Designed so that the major intervals in any scale are very pure, especially the third and fifth. |
| Meantone-C | One of the earliest attempts to derive a tuning which would accommodate music played in a variety of keys. The major third interval is very pure. |
| Wrkmeistr-C | Derived by Andreas Werkmeister, a contemporary of Bach, this is a further attempt to create a temperament which would accommodate music played in any key. |
| Vallotti-C | A variation of Pythagorean tuning in which the first 6 fifths in the circle of fifths are flat by 1/6 of the Pythagorean Comma. This is probably close to the tuning used by Bach for his Well-Tempered Clavier. |
| Grk-Diatonc | The basic building block of ancient Greek music (in which most modern Western music has its roots) was the tetra chord - four notes and three intervals spanning a perfect fourth. The placement of the two inner notes of the tetra chord determined its genus — diatonic, chromatic or enharmonic. This pitch table is derived from two diatonic tetra chords, combined to form a seven-note scale similar to the modern diatonic scale. It is to be played only on the white keys. Tone center is E. |

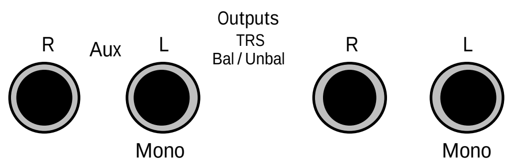
| | |
|---|---|
| Grk-Chromat | This pitch table is derived from two chromatic tetra chords (the intervals are, roughly, quarter-tone, half-step, major third), combined to form a seven-note scale. It is meant to be played on the white keys. Tone center is E. |
| Grk-Enharm | This pitch table is derived from two enharmonic tetra chords (the intervals are, more or less, two quarter-tones followed by a major third), combined to form a seven-note scale. It is meant to be played on the white keys. Tone center is E. |
| Turkish-A | This is a typical Turkish octave-based scale using only one quarter tone. The second note in the scale is tuned 40 cents flat from the equal-tempered equivalent. In this tuning B is 40 cents flatter from B natural. The scale rises from A. |
| Arabic-1 | The intervals in this table form the basis for much Middle Eastern music. Here the octave is divided into 17 intervals, corresponding to the fret intervals of some stringed instruments used in this area. The scale rises from the base pitch of C4 in a series of three repeating intervals (in cents) of 90, 90, 24 and so on. From C4 to F5 represents an octave. |
| Arabic-2 | Similar to Arabic 1, except that here the octave is divided into 24 intervals. This makes one pitch octave cover two keyboard octaves, meaning that the fingering will be the same in any octave. This scale rises from the base pitch of C4 in a series of four repeating intervals (in cents) of 24, 66, 24, 90 and so on. |
| Arabic-3 | This is a 12-tone scale using quarter tones (notes tuned sharp or flat by 50 cents from their equal-tempered equivalents) on the C#, E, G# and B keys. |
| Arabic-4 | Another octave-based scale with an Arabic flavor. In this case the “quarter tones” are not perfectly equal, imparting a distinctive character to the notes. |
| Java-Pelog1 | One of the two main scales of the gamelan orchestras of Java and Bali is the seven-tone scale called Pelog. The notes C, D, F , G, and A (which are reproduced on the black keys) are considered primary, with E and B used for grace notes. The octaves are stretched (tuned a little sharp) due to the harmonic content of the instruments in the gamelan. (Note that there are many subtle variations of these tunings, almost as many as there are gamelan ensembles. The tunings we have included here are to be considered typical, not definitive.) |
| Java-Pelog2 | Another version of the seven-tone Pelog scale used in gamelan music. The notes C, D, F , G, and A (which are reproduced on the black keys) are considered primary, with E and B used for grace notes. The octaves are stretched (tuned a little sharp) due to the harmonic content of the instruments in the gamelan. |
| Java-Pelog3 | A third version of the seven-tone Pelog scale used in gamelan music. The notes C, D, F , G, and A (which are reproduced on the black keys) are considered primary, with E and B used for grace notes. |
| Java-Slndro | A 15-tone equal tempered tuning from Java. Playing every third note (as in a diminished chord) yields a typical 5-tone scale of the gamelan. Other notes can be used as passing tones. |
| Java-Combi | This is actually two pitch tables in one. The white keys play the seven-tone Pelog scale, same as the table JAVA-PELOG1. The black keys play a five-tone scale called Slendro, which is close to a five-tone equi-tempered scale. Both tunings have their octaves stretched (tuned a little sharp) due to the harmonic content of the instruments in the gamelan. |
| Indian-Raga | Indian scale used to play ragas, based on 22 pure intervals called Srutis. This pitch table uses two keyboard octaves to play one octave in pitch. The 22 Srutis are mapped to keys in this two-octave range omitting the A#s, which play the same pitch as the adjacent A. |
| Tibetan | This tuning is based on a pentatonic scale from Tibet. Notice that playing the black keys yield a scale similar to the 5-tone Slendro tuning from Indonesia. |
| Chinese-1 | This is a seven-tone scale used widely in China. It is meant to be played on the white keys. |
| Chinese-2 | This is a seven-tone scale based on an ancient Chinese lute tuning. It is meant to be played on the white keys. |
| Thailand | This is a seven-tone equi-tempered scale from Thailand. It is meant to be played on the white keys. |
| 24-Tone-Equ | Centered on C4, this scale has an even quarter tone (50 cents) between each keyboard note, and each pitch octave covers 2 keyboard octaves. This tuning has been used by many contemporary composers and can be used in some Middle Eastern music. |
| 19-Tone-Equ | Centered on C4, this scale divides the octave into 19 equal steps. From C4 to G5 forms an octave. This scale yields very pure thirds and sixths, but not fifths. Like the 24-tone scale, this has been used by some modern composers. |
| 31-Tone-Equ | Centered on C4, this scale divides the octave into 31 equal steps. From C4 to G6 forms an octave. Similar to 19-tone in the purity of its intervals. |
| 53-Tone-Equ | This scale divides the octave into 53 equal steps. From C2 to F6 forms an octave. It yields very pure thirds, fourths and fifths. |
| Harmonic | This is a mathematically generated scale based on the relationships of the partials in the harmonics of the fifth octave of the linear harmonic spectrum. It is interesting mostly from a theoretical standpoint. |
| CarlosAlpha | The first of three scales derived mathematically by Wendy Carlos in the search for scales with the maximum purity of primary intervals, Alpha is based on the division of the octave into 15.385 equal steps (78 cents per key). One pitch “octave” covers 16 keys, though because the Carlos scales are asymmetric (not based on whole number divisions of the octave) they do not yield pure octaves. |
| Carlos-Beta | Wendy Carlos’ Beta scale is based on the division of the octave into 18.809 equal steps 63.8 cents per key. One pitch “octave” covers 19 keys though, being asymmetric, it yields no pure octaves. |
| CarlosGamma | Wendy Carlos’ Gamma scale is based on the division of the octave into 34.188 equal steps (35.1 cents per key). This scale has essentially perfect major thirds, fourths and fifths. One pitch “octave” covers 35 keys, though, again, being asymmetric it yields no pure octaves. |
| Partch-43 | Harry Partch was a pioneer of micro-tonality in the early 20th century. He developed this 43-tone-per-octave scale of pure intervals, and even designed an entire orchestra of instruments for music using this scale. The tonal center is found on key D2 (the low D on the 76-note keyboard). This pitch table has been transposed up an octave to bring the notes into a more usable range. |
| Reverse | This pitch table simply reverses the pitch-tracking of the keyboard, putting the highest notes at the bottom of the keyboard and the highest notes at the top. Lots of fun. |
| Bagpipe | This is the tuning of a traditional Scottish bagpipe. |
| ShonaMbira1 | This is one tuning of the African Mbira, similar to the Kalimba or thumb-piano. Each Mbira player uses his own “tuning” which is his signature. |
| ShonaMbira2 | Another Mbira tuning. |
| SuperJust | This is a Just Intonation scale created by Wendy Carlos. |
| 88CET | 88CET is a scale with a constant interval of 88 cents. It features three different thirds and close approximations to many just intervals. This keyboard mapping omits the G#/Ab key from the system. |
| Pierce-Bohl | This is an octave-repeating stretched scale invented by John Pierce which is derived from a pure twelfth divided into thirteen steps. |

| | |
|---|---|
| WS1 | The WS scales have been created for single samples which span the entire keyboard. WS1 maintains 12 tones per octave for two octaves centered on middle C, then continues to high and low ends of the keyboard with 1/4 of a semitone or 48 tones per octave. |
| WS2 | WS2 maintains 12 tones per octave for three octaves centered on middle C from G to G. |
| WS3 | WS2 maintains 12 tones per octave for four octaves centered on middle C. |
| Stretch | A stretch tuning, in which the middle C is at unity, C1 is detuned flat 40 cents and C8 is detuned sharp 40 cents. The stretch is a linear ramp between these two offsets. |
| RandomDetun | This is a tuning in which each note has been "tweaked" by ±10 cents, giving chords a chorused effect which is different for each note. |
| RAM | Selects pitch tables that can be downloaded via MIDI. See earlier in this chapter for more information about RAM pitch tables. |

# Using the MR-Rack Outputs

## A Note About the Main and Aux Output Jacks

Use standard balanced (TRS) stereo cables or unbalanced (TS) mono cables for these connections.




As the labels on the Aux Out jacks and Main Out jacks indicate, the MR-Rack employs automatic switching on each stereo pair of outputs. That is:

- Main Outputs Left and Right are normally stereo outputs. However, if nothing is plugged into the Right Output, the stereo signal will be summed to mono and sent to the Left Output.
- Similarly, the Aux Outputs Left and Right are normally stereo outputs. However, if nothing is plugged into the Right Aux Output, the stereo signal will be summed to mono and sent to the Left Aux Output.

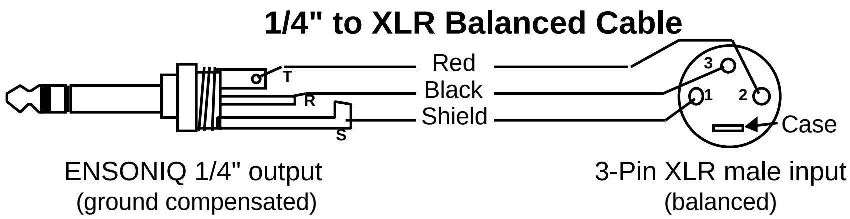
**Note:** If there is nothing connected to the Left Aux Out jack, any signal sent to the Aux Outputs will be summed into the Main Outputs.

## Ground Compensated Outputs

The MR-Rack has "ground compensated" outputs, which offer the advantages of balanced outputs (minimized hum and interference), plus the advantage of a transformer isolated output (eliminates ground loop problems). The output connector "grounds" are not hooked directly to the MR-Rack ground, thus eliminating the possibility of a ground loop. This ground compensating scheme works on both balanced and unbalanced equipment with standard cables.

## Using XLR Outs with the MR-Rack

The MR-Rack ground compensating outputs make things very easy. Use of a standard 1/4" to XLR cable will work fine with no ground loops.




## Using Headphones with the MR-Rack

Headphones can be used with the MR-Rack when connected to the front panel 1/4" stereo Phones jack to listen to the MR-Rack in stereo. The signals going to this jack are the same signals that appear at the Main output rear panel jacks, even if they are not connected. The Main rear outputs are mapped to the stereo headphone as follows: Main Out Left is mostly to the left Main Out Right is mostly to the right. The outputs are not routed hard left and right to the headphone jack, to provide a "mixed stereo" signal:


Headphone volume is controlled by the Volume knob. Plugging headphones into the Phones jack does not turn off the audio in the outputs.

---

**Warning:** The headphone output circuit is designed to minimize the volume differences between low and high impedance headphones. Because some headphones are more efficient than others, make sure you set the Volume knob accordingly — high output volume levels could damage your hearing.

---

## Sending the Aux Signals to the Headphones

Since the headphone jack always mirrors the Main Output rear panel jacks, the easiest way to send the Aux signals to the headphones is to route the Aux signals to the Main Outputs. Here's how:

### To Route the Aux Signals to the Main Outputs:

1. Press the System Button. Its LED should be lit.
2. Using the Parameter knob, locate the "AuxToMainOuts" parameter.
3. Turn the Value knob to select "AuxToMainOuts=Always."

Now whatever was routed to the Aux jacks is now being sent to the Main Outputs, and therefore, can be heard in the Headphones.

---

**Note:** Remember to reset the System "AuxToMainOuts" parameter if you do not want to send the Aux signals to the Main Outputs.

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# Troubleshooting the MR-Rack

The successful operation of a MIDI rig depends on proper settings for all of the gear involved. However, even when your other equipment is correctly configured, there may be times when things don't go quite as you planned.

## If the MR-Rack Doesn't Play

### Symptom:

You're playing your controller or running your sequencer, but the MR-Rack is silent.

### What's Going On:

There are a few possibilities. Follow the steps below until the problem is solved.

### Remedy:

1. Make sure that your controller's or sequencer's MIDI Out is connected to the MR-Rack's MIDI In. If you're using a MIDI patchbay or going through a computer, consult the documentation for those devices to make sure you connections are correctly made. (***Chapter 2—Connections*** describes how to use the MR-Rack in a number of common MIDI set-ups.)
2. Settlinger's Law (who was that guy, anyway?) demands that you confirm that all the devices involved are powered up.
3. Ascertain the MIDI channel or channels that your controller or sequencer is transmitting on.
4. Press the MR-Rack's Sound button and use the MR-Rack's up and down Select Part buttons to make sure that the Part or Parts you want to use are set to the MIDI channel(s) your controller or sequencer is set to.
5. If the Part MIDI channel(s) doesn't agree with your controller's or sequencer's, you'll have to change either the MR-Rack's or your controller's or sequencer's setting(s). To change the MR-Rack's, press the Params button once or twice to display each relevant Part's MIDI Chan parameter, and use the Value knob to reset the Part's channel.
6. If a Part is set to Stak, press the System button, and use the Parameter knob to locate the Stak MIDI Channel parameter and learn which MIDI channel Stak is set to. If it needs to be changed, use the Value knob to change it. (Staks are described fully in "Using Staks" in ***Chapter 4—Parts***)
7. If you're still having trouble, call ENSONIQ Customer Service at (610) 647-3930.

## If You're Hearing Sounds You Don't Expect to Hear

### Symptom:

You'd like to listen to individual Sounds, but when you select one, you seem to be hearing additional Sounds.

### What's Going On:

The MR-Rack's Parts can be set so that they share MIDI channels. You're in a Performance where this is the case.

### Remedy:

1. If you're simply auditioning the MR-Rack's Sounds and you have no preference for which Part you'd like to use, press the Sound and Performance buttons simultaneously. This returns you to the →PlaySounds Performance. In this Performance, each Part is set to its own MIDI channel—Parts 1-16 are set to channels 1-16. (You can use the Performance button as a toggle switch if you'd like to undo this.)
2. Set your controller to MIDI channel 1 and use the Sound Type and Sound Name knobs to select the Sound you'd like to hear.
3. If you'd like to use a Part other than Part 1, use the up and down Select Part buttons to select the Part you want, and set your controller to the same MIDI channel number as the Part. For auditioning the MR-Rack's Sounds, Part 1 is the best Part to use in the →PlaySounds Performance.
4. Set your controller to transmit on the MIDI channel that numerically corresponds to the Part you're using, i.e., use MIDI channel 1 to play Sounds on Part 1.
5. Press the Sound button and use the Sound Type and Sound Name knobs to select the Sound you'd like to hear.

## If You're Seeing One Sound on the Display but Hearing Another

### Symptom:

You've selected a Sound on the MR-Rack and you're playing your controller, but the Sound you hear doesn't seem to be the Sound you've selected.

### What's Going On:

The Part currently being displayed—and the one you chose a Sound for—is set to a different MIDI channel than your controller is. Some other Part is set to your controller's MIDI channel, and that's what you're hearing. You can remedy this by changing your controller's MIDI channel to the channel displayed on the top line of the MR-Rack's display, or you can adjust the MR-Rack's settings.

### Remedy:

1. Ascertain which MIDI channel your controller is transmitting on.
2. If you're simply auditioning the MR-Rack's Sounds, press the Sound and Performance buttons simultaneously, and set your controller to MIDI channel 1. Skip ahead to Step 6.
3. If you have no preference as to which Part you're using—for example, you haven't made any Part parameter edits you'd like to keep—and you'd like to continue using the MIDI channel your controller is currently set to, press the Sound button and use the up and down Select Part buttons to locate the Part that's set to the same MIDI channel as your controller. Skip ahead to Step 6.
4. If you'd like to continue using the Part you've got currently selected, press the Params button once or twice to locate the Part MIDI Chan parameter. You can set your controller to transmit on the Part's current channel, or you can use the Value knob to set the Part to the channel your controller's already using. Use the up and down Select Part buttons to make sure no other Part is set to the channel you're using—you can reset any such Parts to an unused MIDI channel. Skip ahead to Step 6.
5. If the Part is set to Stak, press the System button, and use the Parameter knob to locate the Stak MIDI Channel parameter and learn which MIDI channel Stak is set to. If it needs to be changed, use the Value knob to change it. (Staks are described fully in "Using Staks" in ***Chapter 4—Parts***)
6. Press the Sound button to return to where you started.

## If You're Selecting New Sounds But What You Hear Remains the Same

### Symptom:

You're picking new Sounds from the front panel, but the MR-Rack keeps playing the same one.

### What's Going On:

The Part currently being displayed—and the one you're choosing Sounds for—is set to a different MIDI channel than your controller is. Some other Part is set to your controller's MIDI channel, and that's what you're hearing. You can remedy this by changing your controller's MIDI channel to the channel displayed on the top line of the MR-Rack's display, or you can adjust the MR-Rack's settings.

### Remedy:

1. Ascertain which MIDI channel your controller is transmitting on.
2. If you're simply auditioning the MR-Rack's Sounds, press the Sound and Performance buttons simultaneously, and set your controller to MIDI channel 1. Skip ahead to Step 6.
3. If you have no preference as to which Part you're using—for example, you haven't made any Part parameter edits you'd like to keep—and you'd like to continue using the MIDI channel your controller is currently set to, press the Sound button and use the up and down Select Part buttons to locate the Part that's set to the same MIDI channel as your controller. Skip ahead to Step 6.
4. If you'd like to continue using the Part you've got currently selected, press the Params button once or twice to locate the Part MIDI Chan parameter. You can set your controller to transmit on the Part's current channel, or you can use the Value knob to set the Part to the channel your controller's already using. Use the up and down Select Part buttons to make sure no other Part is set to the channel you're using—you can reset any such Parts to an unused MIDI channel. Skip ahead to Step 6.
5. If the Part is set to Stak, press the System button, and use the Parameter knob to locate the Stak MIDI Channel parameter and learn which MIDI channel Stak is set to. If it needs to be changed, use the Value knob to change it. (Staks are described fully in "Using Staks" in ***Chapter 4—Parts***)
6. Press the Sound button to return to where you started.

## If Sounds Are Behaving Unexpectedly

### Symptom:

Any odd behavior could qualify: Sounds play only in certain key ranges, they respond oddly to controllers or not at all, they seem to be going through unexpected Effect. In general, if things are behaving strangely, this one's for you.

### What's Going On:

The MR-Rack is an extremely flexible device. Parts—and therefore their Sounds—and Effects can be set to do many interesting things. You're in a Performance where the Part or Effect settings are producing the unexpected behavior you're experiencing.

### Remedy:

1. If you're simply trying to audition the MR-Rack's Sounds or haven't made any edits you want to keep, press the Sound and Performance buttons simultaneously. (If you don't want to lose edits you've made, skip to Step 5.)

   This returns you to the →PlaySounds Performance. In this Performance, each Part is set to its own MIDI channel—Parts 1-16 are set to channels 1-16.

2. Press the Sound button.
3. Set your controller to transmit on MIDI channel 1 to play Sounds on Part 1.
4. Use the Sound Type and Sound Name knobs to select the Sound you'd like to hear.
5. If you've been creating a set-up you'd like to preserve, use the up and down Select Part buttons to select the Part (or Parts) behaving oddly.
6. Press the Params button and use the Parameter knob to view each of the Part parameters—be on the lookout for settings that could be causing your problem. Pay special attention to the Part FX Bus parameter if you suspect that Effects might somehow be involved in the problem.
7. Use the Value knob to change suspicious parameter settings. Try each change out to see if you've isolated the culprit.
8. If you're still experiencing odd behavior, press the Effects button.
9. If checking the Part parameters revealed that the problem Part(s) is routed to the Insert Effect, use the Parameter knob to select "Press ENTER to Edit Insert Effect." Press Enter.
10. Use the Parameter knob to view each of the Insert Effect parameters—watch out for settings that could be causing your problem (see ***Chapter 8*** for an explanation of the Insert Effect parameters). Use the Value knob to change suspicious settings. Try each change out.

## If the Sounds You're Hearing Sound Unexpectedly Strange

### Symptom:

You're listening to one of the MR-Rack's Sounds, and it doesn't Sound like its name, or sounds odd. When you choose new Sounds, they all sound similarly peculiar.

### What's Going On:

You're listening to the Sounds through an inappropriate Insert Effect.

### Remedy:

1. If all you want to do is audition the MR-Rack's Sounds, press the Sound and Performance buttons simultaneously. This sets you up to listen to Sounds on Part 1, which has been designated as the Insert Control Part—when you select a new Sound on an Insert Control Part, the MR-Rack installs the Sound's own Insert Effect, if it has one, or routes the Part to the Global Chorus or Global Reverb. Use the Sound Type and Sound Name knobs to select Sounds and play them via MIDI channel 1.
2. If you'd like to continue using the Part you're currently working with, you can designate it as the Insert Control Part—when you select new Sounds, the MR-Rack will install the proper Effect for the Sound. Press Effects, use the Parameter knob to locate the Insert Control Part parameter and use the Value knob to set the parameter to the Part you're using.
3. If you'd rather hear the Sounds you're selecting through the Global Chorus, Global Reverb or without Effects (Dry), press the Params button once or twice to locate the Part FX Bus parameter, and use the Value knob to send the Part, and its Sounds, where you'd like them to go.
4. If the Part you're using is the Insert Control Part, whenever you choose a new Sound, the MR-Rack will automatically set the Part to the routing programmed into the Sound. If this is occurs and is undesirable, press Effects, use the Parameter knob to locate the Insert Control Part parameter and use the Value knob to set the parameter to a Part you're not using, or to Off.

## If You're Hearing Music You Don't Expect to Hear

### Symptom:

The MR-Rack is playing melodies, chords or rhythms it's not supposed to be playing.

### What's Going On:

The MR-Rack, being a multi-timbral device, can receive on all 16 MIDI channels simultaneously, and its Parts can be set to any MIDI channel. It may be that one or more Parts are set to the same channel(s) you're using for other instruments in your MIDI set-up, and that the MR-Rack is therefore responding to MIDI information intended for those other instruments.

### Remedy:

1. Press the Sound button.
2. Use the up and down Select Part buttons to see what Sound is on each Part in order to decide which Part(s) you want to use. The top line of the display will also tell you the MIDI channel each Part is set to.
3. If a Part you want to use is set to the wrong MIDI channel, press the Params button once or twice to display the Part's MIDI Chan parameter, and use the Value knob to reset the Part's channel. Skip ahead to Step 5.
4. If the Part is set to Stak, press the System button, and use the Parameter knob to locate the Stak MIDI Channel parameter and learn which MIDI channel Stak is set to. If it needs to be changed, use the Value knob to change it.
5. Press Sound again.
6. Using the Select Part buttons, select a Part you ***don't*** intend to use.
7. If the word "mute" doesn't already appear in the display, press the Mute button once. "Mute" will appear and the Mute button's red LED will light.
8. Repeat Steps 6 and 7 for each Part that you won't be using. (To un-mute a Part, press Mute again.)
9. If you're using an Insert Effect, press the Effect button and turn the Parameter knob to locate the Insert Control Part parameter. Make sure that the Insert Control Part is an unmuted Part, or that it's set to Off (***Chapter 5*** explains the Insert Control Part).
10. Now that the MR-Rack is working as you want it to, it would be good idea to save this set-up as a new Performance. See "Saving the Current Performance" in ***Chapter 6*** for instructions.

## Sounds That You Expect to Hear Are Unexpectedly Silent

### Symptom:

You're playing your controller or sequencer and Parts (and their Sounds) which previously played are no longer there.

### What's Going On:

There are two main possibilities: either the missing Part(s) has been inadvertently set to an incorrect MIDI channel, or it's been muted.

### Remedy:

1. Press the Sound button.
2. Use the up and down Select Part buttons to examine each Part. Verify that each Part is set to the MIDI channel that you intended, and is not muted (as evidenced by the word "mute" in the display and the Mute button's red LED switching on when you select a Part).
3. If a Part is set to the wrong MIDI channel, press the Params button once or twice to locate the Part MIDI Chan parameter, and use the Value knob to set it correctly.
4. If a Part is improperly muted, press the Mute button to unmute it.
5. Once the MR-Rack is working as you want it to, it would be good idea to save this set-

up as a Performance. See “Saving the Current Performance” in ***Chapter 6*** for instructions.

## The MR-Rack is Not Responding to Program Changes or Bank Selects

### Symptom:

You’re sending MIDI program changes or Bank Select messages to the MR-Rack, but it’s not responding.

### What’s Going On:

There are two main possibilities: you’re in a Performance where Program Changes or Bank Selects have been disabled, or reception to these messages has been turned off on a system-wide level.

### Remedy:

1. If all you want to do is audition the MR-Rack’s Sounds, press the Sound and Performance buttons simultaneously. This places you in the →PlaySounds Performance, where Program Changes and Bank Select reception has been enabled for all Parts. If this doesn’t solve your problem, skip to Step 3.
2. If you’d like to continue using the Part you’re currently working with, press the Params button and use the Parameter knob to locate the ProgramChngeRecv and Bank Select Recv parameters. Set the relevant parameter to On.
3. Press the System button and use the Parameter knob to locate the Bank&ProgChgRecv parameter. This parameter must be set to On in order for the MR-Rack to respond to Program Change and Bank Select messages.

## You’re Trying to Modulate a Sound Via MIDI, But Nothing’s Happening

### Symptom:

You’re trying to modulate a Sound with a pitch bend wheel, mod wheel or other MIDI control, and the Sound isn’t responding.

### What’s Going On:

There are two possibilities: either the Part that the Sound is using is set to ignore the modulator, or the MR-Rack doesn’t respond to the modulator without being specifically instructed to do so. If you’re creating your own MR-Rack Sounds using a computer editor, you can program them to respond to any MIDI controls you’d like.

### Remedy:

1. The MR-Rack provides reception filters for MIDI Volume, Expression, Pan, Pitch Bend, Velocity, Channel Pressure, Key (Polyphonic) Pressure, Data Entry, Mod Wheel, Foot Pedal and Sustain/Sostenuto. If you’re using one of these modulators, press the Sound button, and use the up and down Select Part buttons to select the Part using the Sound that’s not responding as you’d like it to.
2. Press Params and use the Parameter knob to locate the reception filter for the modulator you’re using. Most of these parameters are displayed as: [Modulator name] Recv=. Use the Value knob to set the appropriate reception filter to On. Velocity is enabled or disabled for each Part with the VelocityRange Lo and Hi, and Velocity Mode parameters—try setting Lo to 0 and Hi to 127, and Velocity Mode to Normal. Use the PressureMode parameter to enable or disable Part response to Channel or Key Pressure response—if you’re not sure which kind of Pressure you’re using, set it to Auto.
3. If you’re using a modulator other than those listed above, press the System button and use the Parameter knob to locate the CTRL1, CTRL2, CTRL3 and CTRL4 parameters. If

one of these is not already set to the modulator you want to use, choose a CTRL and use the Value knob to dial in your modulator, either by name or MIDI control number. (If you're dialing in a modulator by name, you may find the name appearing twice in the list use its lowest numbered, MSB, version.)

4. Press the Sound button, and use the up and down Select Part buttons to select the Part using the non-responding Sound.
5. Press Params and use the Parameter knob to locate the reception filter for the CTRL you've chosen to use.
6. Use the Value knob to set the selected CTRL reception filter to On.

## You're Trying to Modulate an Effect Via MIDI, But Nothing's Happening

### Symptom:

You're trying to modulate an Effect with a pitch bend wheel, mod wheel or other MIDI control, and the Sound isn't responding.

### What's Going On:

There are four main possibilities. The Part that's receiving your real-time MIDI control isn't the Insert Control Part, and therefore has no control over the Insert Effect. The Insert Control Part may be set to ignore your modulator. The MR-Rack may need to be specifically instructed to respond to the your modulator. Or the current Insert Effect has not yet been programmed to respond to real-time control. Try the steps below until your problem is solved.

It may also be that after correctly setting up your real-time modulation parameters, you changed the Insert Effect itself—when you pick a new Insert Effect, these parameters revert to their default values, and must be reset.

### Remedy:

1. Press the Effects button and use the Parameter knob to locate the Insert Control Part parameter. Select the Part you want to use to control the Insert Effect. Press Params once or twice to locate the Part MIDI Chan parameter. Use the up and down Select Part buttons to locate the designated Insert Control Part. Reset your controller to send its real-time control messages on the MIDI channel displayed, or use the value knob to set the Insert Control Part to the MIDI channel your controller's set to.
2. The MR-Rack provides reception filters for MIDI Volume, Expression, Pan, Pitch Bend, Velocity, Channel Pressure, Key (Polyphonic) Pressure, Data Entry, Mod Wheel, Foot Pedal and Sustain/Sostenuto. If you're using one of these modulators, press the Sound button, and use the up and down Select Part buttons to select the Part designated as the Insert Control Part.
3. Press Params and use the Parameter knob to locate the reception filter for the modulator you're using. Most of these parameters are displayed as: [Modulator name] Recv=. Use the Value knob to set the appropriate reception filter to On. Velocity is enabled or disabled for each Part with the VelocityRange Lo and Hi, and Velocity Mode parameters—try setting Lo to 0 and Hi to 127, and Velocity Mode to Normal. Use the PressureMode parameter to enable or disable Part response to Channel or Key Pressure response—if you're not sure which kind of Pressure you're using, set it to Auto. Skip to Step 7.
4. If you're using a modulator other than those listed above, press the System button and use the Parameter knob to locate the CTRL1, CTRL2, CTRL3 and CTRL4 parameters. If one of these is not already set to the modulator you want to use, choose one of them and use the Value knob to dial in your modulator, either by name or MIDI control number. (If you're dialing in a modulator by name, you may find the name appearing twice in the list use its lowest numbered, MSB, version.) You won't want to set multiple CTRLs to the same controller if you do, the MR-Rack will only use the lowest-numbered CTRL set to the controller.

5. Press the Sound button, and use the up and down Select Part buttons to select the Part using the non-responding Sound.
6. Press Params and use the Parameter knob to locate the reception filter for the CTRL you've chosen to use (it will be displayed as a "SysCTRL"). Use the Value knob to set the selected CTRL reception filter to On.
7. Press the Effects button and use the Parameter knob to select "Press ENTER to Edit Insert Effect." Press Enter.
8. Use the Parameter knob to locate the Mod Src, Mod Src Min, Mod Src Max, Dest, Dest Min and Dest Max parameters and verify that the Effect is set up to be modulated via MIDI. If it's not, set these parameters as desired (see ***Chapter 5*** for a detailed description of these parameters).

# Error/Informational Messages

All error messages cause the MR-Rack to soft restart after displaying the message for about three seconds.

| | |
|---|---|
| Sorry! An Unexpected Event xxx occured. | Message to indicate that the MR-Rack has experienced a fatal error. The bottom line shows the event code number (000 to 256). |
| Init:ThisPart'sSound Can't initialize! | Appears when you try to use the Init:ThisPart'sSound command with the PerfEdit Kit. The Perf Edit Kit is not really a saved sound, it's a buffer. To init a Perf Edit Kit, use the Init:ThisPerfEditkit command. |

# Storage Prompts and Messages

RAM

| | |
|---|---|
| System Write Protect On! ENTER overrides. | Prompt to confirm overriding the system write protect. ee the description of the Write Protect parameter in Section 3 — Personalizing Your System for more information. |
| Read-only! Hit ENTER to make PerfEditKit. | Prompt to confirm copying the selected drum kit over the existing PerfEditKit for editing. See Chapter 4 — Parts for more information about the Performance Edit Kit and drum kit sound-specific parameters. |
| Can't write there! | The selected location can't be written to because it is not a registered writable location. |
| Sorry! There is no memory available. | Message stating that you out of memory in the target bank. |
| Sorry! Main battery<br>is low. See manual. | The MR-Rack's main battery has a low voltage. See Chapter 1 — Welcome for more information about the MR-Rack battery. |

| Card | |
|---|---|
| * Unformatted card * | The format of the card inserted was not recognized. |
| PCMCIA Card Inserted Registering... | This message appears while the MR-Rack adds the contents of a card to its directory index after a card is inserted. |
| PCMCIA Card Removed Unregistering... | This message appears while the MR-Rack removes the contents of a card from its directory index after a card is removed. |
| Card Write Protect! | This message is to remind you that you can’t write to ROM cards and write-protected cards. |
| No Card Inserted! | This message is to remind you that no card is present, and hence the copy function selected cannot be executed. |
| Sorry! Save to card failed. Check media | The attempted save to the card has failed  have the card inspected for electrical anomalies. |
| Sorry! Too big. Hit ENTER to copy ###%. | Message to inform you that the ROM card sound bank that you want to copy to RAM won’t all fit, and a prompt to perform a partial copy (a percent). |
| * Card battery low * | The MR-Rack’s card battery has a low voltage. |

| MIDI SysEx | |
|---|---|
| Dump:    <dump type> Sending... | Message to inform that the MR-Rack is transmitting MIDI SysEx. |
| RCV: <message type> Receiving <msg type> | Message to inform that the MR-Rack is receiving MIDI SysEx. |
| RCV: <message type> Successful! | Message to inform that MIDI SysEx reception is complete. |
| Bad location | This is displayed when trying to send a sound into a ROM location. |
| Wrong checksum | This appears if the checksum is incorrect. |
| Failed! May be hosed | Message to inform you that the Sound or Performance bank may be corrupted. |
| Sorry! No memory for sound sent from MIDI | Message to inform that the MR-Rack does not have sufficient memory to store the single sound SysEx message that was sent to it. |

# The Unisyn MR-Rack Software

The Unisyn MR-Rack software provides a way to create and edit MR-Rack Sounds and Performances with your computer. Before you begin, you must first connect your MR-Rack to a Macintosh or IBM-compatible computer. For more information about setting up the MR-Rack with a computer, see the MR-Rack Musician's Manual, ***Section 2—Connections,*** as well as Unisyn's own documentation. Consult your Unisyn documentation to familiarize yourself with the way that Unisyn operates.

The following sections provide information specific to using the three Unisyn editing modules for the MR-Rack: the Sound Editor, the DrumKit Editor and the Perform (Performance) Editor. It is assumed that you've already powered up the MR-Rack and your computer, and have successfully launched and configured the Unisyn software.

# Using the Unisyn Sound Editor

The Unisyn MR-Rack Sound Editor module allows you to program new MR-Rack Sounds, or to customize pre-existing Sounds. The Sound Editor works with standard—that is, non-Drum Kit—MR-Rack Sounds. (Read "Using the Unisyn DrumKit Editor" to learn how to create and edit Drum Kit Sounds with Unisyn). For a detailed description of standard Sounds, see "Sound Editor Overview," below.

There are three general areas of new knowledge required for using the Unisyn MR-Rack Sound Editor:

- the methods for moving standard Sounds back and forth between your computer and the MR-Rack
- how to move Sound elements within and between Sounds
- the Sound-creation and editing capabilities of the Sound Editor itself

## Getting Pre-Existing Standard Sounds From the MR-Rack Into Unisyn

When you'd like to use Unisyn to edit a pre-existing MR-Rack Sound, the first step is to move the Sound from the MR-Rack into Unisyn.

### To Move a Standard Sound From the MR-Rack Into Unisyn

1. Locate the Sound you want to edit on the MR-Rack and note its MIDI Bank Select and Program Change numbers.

MIDI Bank Select number ↘ MIDI Program Change number ↘

```
pt01 §01  ROM004:080
DEMO-SND:  Evolution
```

2. After launching Unisyn, double-click on the Sound Editor module in Unisyn's Modules window, or select Sound from the sub-menu in the Modules pull-down menu.

   This opens Unisyn's Sound Editor module—you'll probably want to expand it to its full view.
3. Set Unisyn's ***Use MIDI Chan*** parameter to the MIDI channel you'd like to use for sending program changes to the MR-Rack and for playing its Sounds from your computer.
4. Set Unisyn's ***Sound Bank #*** to the MR-Rack Sound's displayed MIDI Bank Select number.
5. Set Unisyn's ***Sound Patch #*** to the MR-Rack Sound's displayed MIDI Program Change number.

6. From Unisyn's MIDI pull-down menu, select Get Patch.

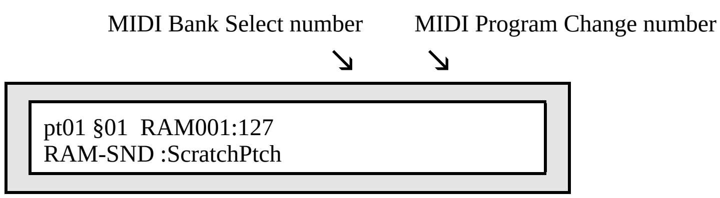
   In a moment, the selected Sound will be transferred into the Unisyn Sound Editor.
7. See "Creating Standard Sounds Or Editing Pre-Existing Sounds With Unisyn" below to prepare Unisyn and your MR-Rack for Sound editing.

## Creating New Standard Sounds or Editing Pre-Existing Sounds

When Unisyn creates or edits an MR-Rack Sound, it instantly sends the new data to the MR-Rack. Therefore, prior to editing, Unisyn must be directed to a target location in the MR-Rack's RAM memory or to a location on a non-write-protected memory card (see ***Chapter 7*** for more on memory cards). If Unisyn attempts to alter an uneditable ROM or GM Sound within the MR-Rack, an error message will be displayed.

### To Prepare Unisyn for Sound Editing

1. Locate an unused Sound location in the MR-Rack's RAM bank or on an un-write-protected memory card as a target for your Unisyn work, or find a Sound in one of those locations that you won't mind replacing.
2. Note the target location's MIDI Bank Select number and Program Change number.




3. After launching Unisyn, double-click on the Sound Editor module in Unisyn's Modules window, or select Sound from the sub-menu in the Modules pull-down menu.

   This opens Unisyn's Sound Editor module—you'll probably want to expand it to its full view.
4. Set Unisyn's ***Use MIDI Chan*** parameter to the MIDI channel you'd like to use for sending program changes to the MR-Rack and for playing its Sounds from your computer.
5. Set Unisyn's ***Sound Bank #*** to the target location's MIDI Bank Select number.
6. Set Unisyn's ***Sound Patch #*** to the target location's MIDI Program Change number.
7. Toggle the Unisyn ***Sound Patch #*** parameter's up and down arrows once, and check the MR-Rack's display to verify that Unisyn and the MR-Rack are both pointing to the same target location.
8. If you're creating a new Sound from scratch, you can now start editing Unisyn parameters.
9. If you're going to be editing a pre-existing MR-Rack Sound, select Send Patch from Unisyn's MIDI pull-down menu to transmit the original version of the Sound to the target memory location before you begin altering it.

## Copying Layer Parameters

Unisyn allows you to copy all of the parameters in any one of a Sound's layers into another layer in the same Sound. (For a more detailed description of layers, see "Sound Editor Overview," later in this chapter.) This can be useful when you'd like two layers to be similar, though not identical. You can also copy layers from one Sound to another: a handy way to make your own Sounds from favorite components of existing Sounds.

The following instructions assume that you've launched Unisyn and properly prepared it for editing.

### To Copy Layer Parameters Within the Same Standard Sound

1. In the Unisyn sound editor, select the Sound whose layer or layers you'd like to copy.
2. Select ***Copy*** from Unisyn's Edit menu.

3. Select ***Paste Sections...*** from Unisyn’s Edit menu.
4. Set ***From Section:*** to the layer whose parameters you’d like to copy.
5. Set ***To Section:*** to the layer you like to copy those parameters to.
6. Click OK.

---

**Tip:** You can copy settings between different layers by repeating steps 3 through 6.

---

Make sure that your Sound’s ***Layers in Sound*** parameter is set so that the destination layer will be usable, and make sure that the layer’s ***Enable*** parameter is set to On (see below for more information on this parameter).

### To Copy Layer Parameters Between Standard Sounds

1. Use the ***Get Patch*** command or open a disk file to bring into Unisyn the Sound you’ll be copying layers from.
2. Select ***Copy*** from Unisyn’s Edit pull-down menu.
4. Get the Sound you’d like to copy into, using the Get Patch command to retrieve it from the MR-Rack, or by opening a disk file.
5. Select a RAM target location according to the instructions in “To Prepare for Sound Editing,” above.
6. Select ***Paste Sections...*** from Unisyn’s Edit menu.
7. Set ***From Section:*** to the layer you want to copy.
8. Set ***To Section:*** to the layer you like to copy those parameters to.
9. Click OK.

---

**Tip:** You can paste as many layers from the copied Sound as you like by repeating steps 6 through 9.

---

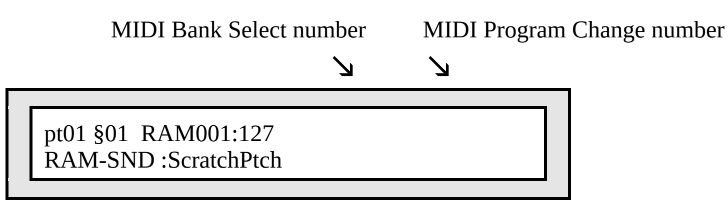
Make sure that the ***Layers in Sound*** parameter in the Sound you’ll be copying into is set so that the destination layer will be usable, and that the layer’s ***Enable*** parameter is set to On (see below for more information on this parameter).

## Sending Standard Sounds From Unisyn to the MR-Rack

MR-Rack Sounds that have been saved as disk files in your computer must be sent to the MR-Rack in order to be used. The following instructions assume that you’ve launched Unisyn.

### To Send Sounds From Unisyn to the MR-Rack

1. Locate an unused Sound location in the MR-Rack’s RAM bank or on an un-write-protected memory card as a target for your Unisyn Sound, or find a Sound in one of those locations that you won’t mind replacing.
2. Note the target location’s MIDI Bank Select number and Program Change number.




3. If the Sound you’d like to transmit to the MR-Rack is already displayed in Unisyn’s Sound Editor module, skip to Step 6.
4. If the Sound you’d like to transmit has been saved as a disk file, use the Open command in Unisyn’s File menu to open the file.
5. Select Sound from the sub-menu in the Modules pull-down menu.

This opens Unisyn's Sound Editor module—you'll probably want to expand it to its full view.

6. Set Unisyn's ***Use MIDI Chan*** parameter to the MIDI channel you'd like to use for sending program changes to the MR-Rack and for playing its Sounds from your computer.
7. Set the Unisyn's ***Sound Bank #*** to the target location's MIDI Bank Select number.
8. Set the Unisyn's ***Sound Patch #*** to the target location's MIDI Program Change number.
9. Toggle the Unisyn ***Sound Patch #*** parameter's up and down arrows once, and check the MR-Rack's display to verify that Unisyn and the MR-Rack are both pointing to the same target location.
10. Select Send Patch from Unisyn's MIDI pull-down menu to transmit the Sound to the MR-Rack.

## Sound Editor Overview

Standard Sounds in the MR-Rack are collections of audio samples whose sonic characteristics may be modified to suit your needs. Some of these samples encompass the full 88-key range with a single sample, while others are grouped together with related samples, carefully matched and mapped to cover the MIDI pitch range. In the Unisyn Sound Editor, single samples or groups of matched samples are referred to as ***waves***. Standard MR-Rack Sounds are constructed from up to 16 of these waves, placed on top of each other in ***layers*** (Drum Kits are a special case and have their own Unisyn editor; see below). Each layer in a standard Sound is adorned with a rich assortment of editable parameters, and is edited separately.

Various aspects of the layers in an MR-Rack Sound may be modulated in real time by the following modulators:

- Off—no modulation
- FullAmt—the maximum amount of modulation is applied to the modulation destination
- LFO—the selected layer's LFO
- Stepped—a significant amount of random noise modulation at a rate determined by the Noise Rate parameter (see below)
- Smooth—a subtle amount of random noise modulation at a rate determined by the Noise Rate parameter (see below)
- Env1—the selected layer's Envelope 1
- Env2—the selected layer's Envelope 2
- Env3—the selected layer's Envelope 3
- Velocity—MIDI Velocity: higher values cause greater modulation; lower values cause less modulation
- Vel+Pres—a combination modulator, with MIDI Velocity and Pressure messages together achieving maximum modulation amounts
- MIDIKey—MIDI note numbers set the modulation destination parameter to absolute corresponding values
- Keyboard—MIDI note numbers above C4 raise the modulation destination's value from its setting; lower note numbers reduce it
- Pressure—MIDI channel or polyphonic (ENSONIQ PolyKey™) Pressure; higher values cause greater modulation, lower values cause less modulation
- PitchWhl—MIDI Pitch Bend raises or lowers modulation destination value; a pitch bend wheel at rest transmits a central modulation value of 64
- ModWhl—MIDI Modulation Wheel (Controller #1); maximum values are attained when the mod wheel is pushed all the way forward
- Whl+Pres—a combination modulator, with MIDI Mod Wheel and Pressure messages together achieving maximum modulation amounts
- FtPedal—MIDI Foot Pedal (Controller #4); maximum values are attained when the foot pedal is pushed all the way forward
- Sustain—MIDI Sustain pedal (Controller #64) operating as a modulation switch: down produces maximum modulation; up produces no modulation

- Sostenuto—MIDI Sostenuto pedal (Controller #66) operating as a modulation switch: down produces maximum modulation; up produces no modulation
- SysCTRL1—the first of the MR-Rack's assignable MIDI controllers (see "Setting Up New Real-Time Controllers" in ***Chapter 3***)
- SysCTRL2—the second of the MR-Rack's assignable MIDI controllers (see "Setting Up New Real-Time Controllers" in ***Chapter 3***)
- SysCTRL3—the third of the MR-Rack's assignable MIDI controllers (see "Setting Up New Real-Time Controllers" in ***Chapter 3***)
- SysCTRL4—the fourth of the MR-Rack's assignable MIDI controllers (see "Setting Up New Real-Time Controllers" in ***Chapter 3***)

## Sound Settings

While most of the Sound Editor parameters refer to a single layers within a Sound, the following suite of parameters apply to the whole Sound.

### Layers in Sound

Determines the number of layers to be used in the Sound being edited or created. Each Sound can have up to 16 layers, depending on available memory in the MR-Rack.

**Range:** 1 to 16

### Bend Down

Determines the maximum number of semitone steps by which the pitch-bend enabled layers in the Sound will be lowered or raised when the MR-Rack receives Pitch Bend messages from a MIDI Pitch Bend wheel pulled all the way down (back).

**Range:** 12 down to 12 up, Off

### Bend Up

Determines the maximum number of steps by which the pitch-bend enabled layers in the Sound will be raised or lowered when the MR-Rack receives Pitch Bend messages from a MIDI Pitch Bend wheel pushed all the way up (forward).

**Range:** 12 down to 12 up, Off

### Restrike Limit

Determines the number of consecutive keystrikes of the same key in the same layer before voice-stealing occurs. Velocity-switched Sounds may result in keystrikes sounding from different layers, therefore allowing more keystrikes before note-stealing is activated. In a standard Sound, the Default value is equivalent to 2 voices/layers. If the Sound is used by a Drum Kit, the Default value changes to 6 voices/layers.

**Range:** 1 voice/layer to 16 voices/layer, Default

### GM Alias

***(parameter not applicable to the MR-Rack)***

**Range:** ***n/a***

### Pitch Table

Selects a pitch table which may be accessed by layers in the Sound (see "List of ROM System Pitch Tables" elsewhere in this chapter for a list of Pitch Tables). The MR-Rack supports the MIDI Tuning Change Standard—pitch tables may be transmitted via MIDI SysEx to the MR-Rack's RAM pitch table (see "MR-Rack MIDI Implementation" elsewhere in this chapter for more details).

**Range:** various, RAM

### Held PBend

Determines whether or not the Sound's pitch-bend enabled layers will operate normally or in Held mode. Normally, when MIDI Pitch Bend messages are received, all notes sounding are affected by the Pitch Bend messages. In Held mode, only notes physically being held down—notes which have not yet received a key-up message—are affected when Pitch Bend messages are received. The Held option is useful for a number of musical situations, including the simulation of pedal steel guitars or solo string lines played against a chordal background.

**Range:** Off, On

### Sound Category

Determines the Sound's SoundFinder Sound Type instrument category.

**Range:** various

### Demo Sound?

Enables/disables inclusion of the Sound in the DEMO-SND SoundFinder Sound Type category.

**Range:** Off, On

### User Sound?

Enables/disables inclusion of the Sound in the USER-SND SoundFinder Sound Type category. The USER-SND category provides easy access to Sounds you've created yourself.

**Range:** Off, On

### Sound Bank #

Selects the bank in the MR-Rack from which a Sound Patch # is chosen as a target for Sound edits or for Unisyn's Get Patch command (see Sound Patch # below).

**Range:** 0 to 127

### Sound Patch #

Selects a Sound location within the Sound Bank chosen above. Sounds may be retrieved from this location using Unisyn's Get Patch command, and Unisyn Sound edits are written to this location as they occur.

**Range:** 0 to 127

### Use MIDI Chan

Determines the MIDI channel used to send MIDI Bank Selects and Program Changes from Unisyn to the MR-Rack. It also selects the MIDI channel that can be used to play the MR-Rack's Sound from Unisyn.

**Range:** Channel 1-Channel 16

### Use Handshake?

Enables/disables the ability of Unisyn and the MR-Rack to confirm edits behind the scenes. When set to Off, Unisyn sends edits, but receives no confirmation back from the MR-Rack; when set to On, MR-Rack invisibly confirms receipt of edit data.

**Range:** No (off-line), Yes (Live)

## Edit Context Parameters

The Edit context parameters are available in the left-hand margin throughout the Sound Editor. This suite of parameters establishes the context in which all of your layer edits will occur:

- a layer is selected for editing
- the selected layer is turned on, off, is soloed or is muted
- the selected layer is instructed to use the parameter settings of another layer in the current Sound

### Edit Layer

Selects a layer for editing: the number of layers in each Sound is determined by the setting of the Layers parameter (see below).

**Range:** 1 to 16

### Enable

Determines the status of the currently displayed layer. Each layer may be activated (On), deactivated (Off), spotlighted through the silencing of all other layers (Solo), or silenced (Mute).

**Range:** Off, On, Solo, Mute

### Use Lyr

Instructs the currently displayed layer to use its own or another layer's parameter settings

**Range:** 1 to 16

## Select Parameters

The following basic parameters determine the behavior of the selected layer.

### Volume (dB)

Determines the volume of the current layer.

**Range:** -72 to 14

### Pan

Positions the current layer within the stereo field. A value of -64 pans the layer hard left, +00 pans the layer center, +63 pans the layer hard right.

**Range:** -64 to 63

### SemiTune

Lowers or raises the pitch of the current layer by semitones.

**Range:** -64 to 64

### Fine Tune

Fine tunes the pitch of the current layer by steps of one cent (1/100 of a semitone).

**Range:** -128 to 127

### Trigger On

Determines whether the selected layer will sound notes upon the receipt of note-ons or note-offs. When Trigger On=Key Down, the layer will sound on note-on. When Trigger On=Key Up, layer will trigger on note-off, and release velocity amounts will be used for all velocity-dependent envelope parameters.

**Range:** KeyUp, KeyDown

### Low Key

Determines the lowest MIDI note to which the current layer will respond.

**Range:** A0 to C8

### High Key

Determines the highest MIDI note to which the current layer will respond.

**Range:** A0 to C8

### Vel lo

Determines the lowest velocity amount the current layer will respond to when Trigger On=KeyDown, or the lowest release velocity the layer will respond to if Trigger On=KeyUp.

**Range:** 0 to 127

### Vel hi

Determines the highest velocity amount the current layer will respond to when Trigger On=KeyDown, or the highest release velocity the layer will respond to if Trigger On=KeyUp.

**Range:** 0 to 127

### Trigger Ctrl

This parameter designates a MIDI Controller as a filter for the current layer. When the layer has received a value for the controller that falls within the range determined by the (Trigger) Ctrl Low and Ctrl High parameters (see below), the layer will respond to MIDI note-ons and note-offs. If no such controller values have been received, the layer will not sound.

**Range:** Off (unused), all MIDI Controllers, SysCTRLs 1-4

### Ctrl Low

Determines the lowest recognized value for the MIDI controller specified with the Trigger Ctrl parameter (see above). Values for the selected Trigger Ctrl lower than this setting will cause the selected layer to ignore MIDI note-ons and note-offs.

**Range:** 0 to 127

### Ctrl High

Determines the highest recognized value for the MIDI controller specified with the Trigger Ctrl parameter (see above). Values for the selected Trigger Ctrl higher than this setting will cause the selected layer to ignore MIDI note-ons and -offs.

**Range:** 0 to 127

### Glide

Enables/disables glide (portamento) in the current layer. The exact nature of the layer's glide is determined by the Voice parameter (see below).

**Range:** Off, On

### Glide Time

Determines the amount of time it takes for the pitch to glide from one note to another when Glide is enabled in the current layer: 0 represents the shortest glide time, 127 the longest. When Voice=Mono (see below), glide in the MR-Rack is constant-time portamento: the time it takes to glide from note to note is the same regardless of how far way from each other the notes are.

**Range:** 0 to 127

### Voice

Determines whether the current layer will be polyphonic or monophonic. When Voice=Poly, notes glide from a random selection of pitches.

**Range:** Poly, Mono

### PBend

Enables/disables the current layer's response to MIDI Pitch Bend messages.

**Range:** Off, On

### Sustain

Enables/disables the current layer's response to MIDI Sustain messages.

**Range:** Off, On

### KeyGrp

Allows assignment of current layer to one of 16 monophonic key groups. Key groups are used when you'd like two or more waves to cut each other off, particularly helpful when emulating real-world situations where two waves would be mutually exclusive. For example, when designing hi-hat drum Sounds, you can assign the layers in your open hi-hat Sound and those in your closed hi-hat Sound to the same key group. When these two Sounds are accessed by a Drum Kit Sound, the last one played will silence the other, as it would in a real hi-hat.

**Range:** Off, 1 to 16

### Layer Delay

Determines amount of time the current layer will wait to sound a note after receiving a note-on or trigger. A delay of up to 9999 milliseconds is possible. If Envelope 3's Env Mode parameter (see below) is set to Finish, notes will sound even if their keys have been released before the Layer Delay time has passed.

**Range:** 0 to 9999

## Pitch Parameters

The following parameters determine the pitch behavior of the selected layer.

### KeyTrack

Determines the pitch response of the current layer to MIDI note numbers. The default is Western equal temperament; other options include ratio relationships to received note numbers, inverted equal temperament or assignment to the Sound's pitch table, determined by the Pitch Table parameter (see above).

**Range:** various

### Pitch Mod

Selects a pitch modulator for the current layer. See "Sound Editor Overview" above for a list of the available pitch modulators.

**Range:** various

### Mod Amt

Determines the amount and polarity of pitch modulation caused by the Pitch Mod within the overall limit designated by the Mod Range parameter (see below).

**Range:** -127 to 127

### Mod Range

Determines the maximum amount of pitch shifting the Pitch Mod may cause, in keyboard steps. The amount of pitch change invoked by each step is dependent on the layer's pitch table.

**Range:** 0 to 64

### Env1 Amt

Env 1 Amt is a special routing that endows Envelope 1 with unique capabilities in the modulation of the current layer's pitch. When applied to the current layer's pitch via the Env 1 Amt parameter, Envelope 1 automatically sustains at the pre-enveloping pitch, regardless of its Level 4 setting. Instead, its Level 4 setting serves to determine which Envelope 1 level values will cause the pitch to rise above the un-enveloped pitch and which level values will drive it below. Envelope 1 level values equal to the Level 4 value will cause the current layer to sound at the un-enveloped pitch. Higher level values will shift the pitch upward, and lower values will shift the pitch downward. This feature allows for the creation of bi-directional pitch envelope shapes, while conveniently ensuring that the current layer will always sustain at the un-enveloped pitch.

**Range:** -127 to 127

### LFO Amt

Determines the degree to which the LFO will affect the pitch of the current layer.

**Range:** 0 to 127

## Wave Parameters

### Wave Class

Determines the wave class from which the current layer's wave will be selected. See "List of Wave Names and Classes" elsewhere in this chapter for a complete a list of the Wave Classes resident in an unexpanded MR-Rack. ENSONIQ Wave Expansion boards provide additional sound waves for the MR-Rack. In the Unisyn Sound Editor, expansion waves are found in special Wave Class categories named after the expansion boards on which they reside. To access these waves, the appropriate expansion board must be installed in your MR-Rack.

**Range:** various

**Note:** If Unisyn retrieves a Sound from an MR-Rack containing expansion-board waves it doesn't recognize, it will assign any such waves to the "unknown!" Wave Class. If this occurs, visit ENSONIQ's World Wide Web site at www.ensoniq.com or call ENSONIQ Customer Service to obtain the most recent Unisyn profile for the MR-Rack.

### Wave Name

Determines the wave used by the current layer. Each wave may contain a single sound sample or a set of matched multisamples. See "List of Wave Names and Classes" elsewhere in this chapter for a complete a list of the Waves resident in an unexpanded MR-Rack. ENSONIQ Wave Expansion boards provide additional sound waves. In the Unisyn Sound Editor, these waves can be found in special Wave Classes named for the expansion boards on which they're located. To access these waves, the appropriate expansion board must be installed in your MR-Rack.

**Range:** various

### Direction

Determines the direction that the current layer's wave will play. When Direction=backward, looped waves will play from the end of the sample to the start point, and will not loop.

**Range:** Forward, Backward

### Start Index

Determines a location relative to the beginning of the selected wave. The wave will play from this location at note-on. A setting of 0 will cause the wave to play from its beginning; higher values move the playback start point further into the wave.

**Range:** 0 to 127

### Wave Mod

Selects a Start Index modulation source. See "Sound Editor Overview" above for a list of the available Start Index modulators.

**Range:** various

### Wave Mod Amt

Determines the degree to which the selected Wave Mod will move the Start Index, and in which direction it will move it. Negative modulation amounts will push the Start Index forward towards the beginning of the layer's wave; higher values will push it back toward its end. If the Direction parameter (see above) is set to Backward, the opposite is true.

**Range:** -127 to 127

### Shift Mode

Enables/disables the resetting of the key ranges for multisamples in the selected layer. If the layer's wave consists of a single sample, this parameter will have no effect.

**Range:**

- Off—uses standard sample mapping
- Shift All—moves the key ranges of all samples in the wave by the number of semitones designated by the Shift Amount parameter (see below)
- Stretch—stretches the sample designated by the Shift Amount parameter down to the bottom of the MIDI pitch range but preserves the original key ranges of all other samples above that key
- Pick One—stretches the sample designated by the Shift Amount parameter over the entire pitch range
- Shift Vel—selects the sample designated by the Shift Amount parameter as the sample heard at the lowest-velocity keystrikes. Greater velocities play samples mapped higher in the MIDI pitch range than the selected sample

### Shift Amount

This parameter is used in conjunction with the Shift Mode parameter (see above), and operates according to the selected Shift Mode value:

- When Shift Mode=Off, this parameter has no effect
- When Shift Mode=Shift All, this parameter selects the number of keyboard steps by which all of the layers' wavesample key ranges will be shifted
- When Shift Mode=Stretch, Pick One or Shift Vel, this parameter selects a location, in keyboard steps, above or below C4 (Middle C)

**Range:** -64 to 63

## Envelope 1 Parameters

The following parameters pertain to the first of the selected layer's three envelopes. Envelope 1 is typically applied to pitch, though it may be used as a modulator for any modulatable parameter. When Envelope 1 is applied to a layer's Pitch through the Env1 Amt pitch parameter (see "Pitch Parameters," above), it's endowed with some special attributes, also described above.

Envelope 1's diagram reflects its current Time and Level settings. You can alter these settings by entering values in their parameter boxes, or by dragging the blue dots in the diagram.

### Time 1

Determines the time it takes for the envelope's level to travel from zero (when a note-on is received) to Level 1, also referred to as the "attack time." The higher the value, the longer the time.

**Range:** 0 to 99

### Time 2

Determines the time it takes the envelope to go from Level 1 to Level 2.

**Range:** 0 to 99

### Time 3

Determines the time it takes the envelope to go from Level 2 to Level 3.

**Range:** 0 to 99

### Time 4

Determines the time it takes the envelope to go from Level 3 to the Level 4 stage. At the end of Time 4, the envelope will remain at Level 4 until the key is released.

**Range:** 0 to 99

### Time 5

Determines the time it takes the envelope to return to zero after the key has been released, also referred to as the "release time."

**Range:** 0 to 99

### Level 1

Determines the level the envelope will reach at the end of the time defined by Time 1.

**Range:** 0 to 127

### Level 2

Determines the level the envelope will reach at the end of Time 2.

**Range:** 0 to 127

### Level 3

Determines the level the envelope will reach at the end of Time 3.

**Range:** 0 to 127

### Level 4

Determines the level the envelope will reach at the end of Time 4 and that it will retain until a note-off or sustain-off message is received. When Envelope 1 is used to modulate the current layer's pitch through the Env 1 Amt parameter, this parameter functions differently—see "Env 1 Amt" above.

**Range:** 0 to 127

### Level Vel

Determines to what degree velocity will affect envelope levels. Level Vel values greater than 0 increase the amount of velocity required to reach the Envelope 1 values determined by the Level 1, Level 2, Level 3, and Level 4 settings. Vel Curv gives you further control over the velocity response of the envelope.

**Range:** 0 to 99

### Attack Vel

Determines the degree to which higher velocities will shorten Envelope 1's Time 1. This parameter will have no effect if Time 1=0.

**Range:** 0 to 99

### Key Scale

Makes the envelope times longer or shorter, depending on the key played. The scaling effect of this parameter is based on a center break point of F4+. Higher values will make all envelope 1 times (except Time 5) shorter for keys above F4+, and longer for keys below F4+. Envelope times for F4+ itself are not affected by this parameter.

**Range:** 0 to 99

### Release Mod Amt

Determines the degree to which higher release velocities will make the Envelope 1's Time 5 shorter or longer. When the value is positive, a higher release velocity value will result in a shorter Time 5. When the value is negative, a higher release velocity value will result in a longer Time 5. This parameter will have no effect if the Time 5=0. Note that release velocity values must fall within the range set with the Vel lo and hi parameters, in order to be recognized.

**Range:** -127 to 127

### Env Mode

Envelope 1 may function in one of three ways:

- Normal—Envelope 1 plays through normally. When the key is released, the envelope takes the Time 5 to go from the current level down to zero.
- Finish—Envelope 1 finishes playing through all its stages, ignoring the key-up event. The envelope spends no time at the Level 4 stage. When the Time 4 interval is finished, instead of stopping at the Level 4 stage, the envelope immediately goes into the Time 5 stage. This is good for percussive-type sounds where you want the envelope to be the same for every note, no matter how long the key is held down.
- Repeat—At the end of the Time 3 stage, instead of sustaining, Envelope 1 goes immediately back to the beginning and repeats, starting with the Time 1 stage. When the key is released, the envelope stops repeating and moves into the release stage, taking the Time 5 interval to go from the current level down to zero. This type of envelope can be used to create complex LFO-type effects.

**Range:** Normal, Finish, Repeat

### Vel Curve

Selects which of the velocity response curves the envelope will use if the velocity level control (Level Vel) is set to some value other than zero.

**Range:** Quikrise, Convex1, Convex2, Convex3, Linear, Concave1, Concave2, Concave3, Concave4, LateRise

## Filter Parameters

Each layer in an MR-Rack Sound has a pair of independently configurable multi-mode dynamic digital filters. The following parameters determine the behavior of the selected layer's filters.

### Mode

Determines the filter configuration for the current layer: LP=low-pass filter, which allows frequencies lower than the filter cutoff frequency (Fc) to be heard; HP=high-pass filter, which allows frequencies above the Fc to be heard. Each layer has two filters: the first is always LP, while the second may be LP or HP. The steepness of each filter is determined by its ***pole*** setting; the higher the pole value, the more extreme the filter's slope becomes. A 1-pole filter rolls off frequencies at a slope of 6 dB per octave, a 2-pole filter at 12 dB per octave, and a 3-pole at 18 dB per octave.

**Range:** 2LP/2HP, 3LP/1HP, 2LP/2LP, 3LP/1LP

### Flt 1+2 Link

When set to On, Filter 2 uses Filter 1's settings; when Off, Filter 2 uses its own settings.

**Range:** Off, On

## Filter 1 Parameters

### FC1 Mod

Selects a modulator for Filter 1's cutoff frequency. See "Sound Editor Overview" above for a list of the available FC1 modulators.

**Range:** various

### FC1 Mod Amt

Determines the amount by which the modulation source will lower or raise Filter 1's cutoff frequency.

**Range:** -127 to 127

### KeyTrack

Determines how Filter 1's cutoff frequency will change as various MIDI note numbers are received, expressed in ratios. Positive values raise the cutoff as higher note numbers are received.

**Range:** Off, various

### KeyT Breakpoint

Determines which MIDI note number will be treated as the nominal center of the Key Track range, and produce neither negative or positive cutoff modulation.

**Range:** C-1 to A9

### FC1

Determines Filter 1's cutoff frequency. Filter 1 is always a low-pass filter: frequencies within the selected wave that are lower than the FC1 setting will pass, or be heard. Frequencies above it will be filtered out. Lowering the FC1 value is similar to turning down the treble on a home stereo.

**Range:** 0 to 127

### Env2 Amt

Determines the degree to which Envelope 2 will affect Filter 1's cutoff frequency.

**Range:** 0 to 127

## Filter 2 Parameters

### FC2 Mod

Selects a modulator for Filter 2's cutoff frequency. See "Sound Editor Overview" above for a list of the available FC2 modulators.

**Range:** various

### FC2 Mod Amt

Determines the amount by which the modulation source will lower or raise Filter 2's cutoff frequency.

**Range:** -127 to 127

### KeyTrack

Determines how Filter 2's cutoff frequency will change as various MIDI note numbers are received, expressed in ratios. Positive values raise the cutoff as higher note numbers are received.

**Range:** Off, various

### KeyT Breakpoint

Determines which MIDI note number will be treated as the nominal center of the Key Track range, and will produce neither negative or positive cutoff modulation.

**Range:** C-1 to A9

### FC2

Determines Filter 2's cutoff frequency. Filter 2 can be either a low-pass or high-pass. When Filter 2 is a low-pass (LP) filter, frequencies within the selected wave that are lower than the FC1 setting will pass, or be heard. Frequencies above it will be filtered out. When Filter 2 is a high-pass (HP) filter, frequencies above FC2 will be heard, while those below it will be filtered out.

**Range:** 0 to 127

### Env2 Amt

Determines the degree to which Envelope 2 will affect Filter 2's cutoff frequency.

**Range:** 0 to 127

## Envelope 2 Parameters

The following parameter's pertain to the second of the selected layer's three envelopes. Envelope 2 is typically applied to Filters 1 and 2—there are built-in parameters specifically for this purpose—it may also be used as a modulator for any modulatable parameter. Envelope 2's diagram reflects its current Time and Level settings. You can alter these settings by entering values in their parameter boxes, or by dragging the blue dots in the diagram.

### Time 1

Determines the time it takes for the envelope's level to travel from zero (when a note-on is received) to Level 1, also referred to as the “attack time.” The higher the value, the longer the time.

**Range:** 0 to 99

### Time 2

Determines the time it takes the envelope to go from Level 1 to Level 2.

**Range:** 0 to 99

### Time 3

Determines the time it takes the envelope to go from Level 2 to Level 3.

**Range:** 0 to 99

### Time 4

Determines the time it takes the envelope to go from Level 3 to the Level 4 stage. At the end of Time 4, the envelope will remain at Level 4 until the key is released.

**Range:** 0 to 99

### Time 5

Determines the time it takes the envelope to return to zero after the key has been released, also referred to as the “release time.”

**Range:** 0 to 99

### Level 1

Determines the level the envelope will reach at the end of the time defined by Time 1.

**Range:** 0 to 127

### Level 2

Determines the level the envelope will reach at the end of Time 2.

**Range:** 0 to 127

### Level 3

Determines the level the envelope will reach at the end of Time 3.

**Range:** 0 to 127

### Level 4

Determines the level the envelope will reach at the end of Time 4 and that it will retain until a note-off or sustain-off message is received.

**Range:** 0 to 127

### Level Vel

Determines to what degree velocity will affect envelope levels. Level Vel values greater than 0 increase the amount of velocity required to reach the Envelope 2 values determined by the Level 1, Level 2, Level 3, and Level 4 settings. Vel Curv gives you further control over the velocity response of the envelope.

**Range:** 0 to 99

### Attack Vel

Determines the degree to which higher velocities will shorten Envelope 2’s Time 1. This parameter will have no effect if Time 1=0.

**Range:** 0 to 99

### Key Scale

Makes the envelope times longer or shorter, depending on the key played. The scaling effect of this parameter is based on a center break point of F4+. Higher values will make all envelope 1 times (except Time 5) shorter for keys above F4+, and longer for keys below F4+. Envelope times for F4+ itself are not affected by this parameter.

**Range:** 0 to 99

### Release Mod Amt

Determines the degree to which higher release velocities will make the Envelope 2's Time 5 shorter or longer. When the value is positive, a higher release velocity value will result in a shorter Time 5. When the value is negative, a higher release velocity value will result in a longer Time 5. This parameter will have no effect if the Time 5=0, and also that release velocity values must fall within the range set with the Vel lo and hi parameters, in order to be recognized.

**Range:** -127 to 127

### Env Mode

Envelope 2 may function in one of three ways:

- Normal—Envelope 2 plays through normally. When the key is released, the envelope takes the Time 5 to go from the current level down to zero.
- Finish—Envelope 2 finishes playing through all its stages, ignoring the key-up event. The envelope spends no time at the Level 4 stage. When the Time 4 interval is finished, instead of stopping at the Level 4 stage, the envelope immediately goes into the Time 5 stage. This is good for percussive-type sounds where you want the envelope to be the same for every note, no matter how long the key is held down.
- Repeat—At the end of the Time 3 stage, instead of sustaining, Envelope 2 goes immediately back to the beginning and repeats, starting with the Time 1 stage. When the key is released, the envelope stops repeating and moves into the release stage, taking the Time 5 interval to go from the current level down to zero. This type of envelope can be used to create complex LFO-type effects.

**Range:** Normal, Finish, Repeat

### Vel Curve

Selects which of the velocity response curves the envelope will use if the velocity level control (Level Vel) is set to some value other than zero.

**Range:** Quikrise, Convex1, Convex2, Convex3, Linear, Concave1, Concave2, Concave3, Concave4, LateRise

## Amp Parameters

The following parameters affect the selected layer's amplitude, or volume, characteristics.

### Amp Mod

Selects a modulator for the current layer's volume. See "Sound Editor Overview" above for a list of the available Amp Mod modulators you may use in addition to Envelope 3, which always affects layer volume.

**Range:** various

### Amp Mod Amt

Determines the degree to which the Amp Mod or will lower or raise the volume of the layer.

**Range:** -127 to 127

### Pan Mod

Selects a modulation source for the current layer's position in the stereo field. See "Sound Editor Overview" above for a list of the available Pan Mod modulators.

**Range:** various

### Pan Mod Amt

Determines the degree to which the modulator will move the current layer's stereo position to the left (negative values) or right (positive values).

**Range:** -127 to 127

### Rolloff Mode

Enables/disables a progressive volume reduction for the current layer, either above or below the rolloff Key (see Key below).

**Range:** Off, Below, Above

### Slope (dB/oct)

Determines the extremity of the rolloff when Rolloff Mode is engaged.

**Range:** 0 to 127

### Key

Determines the MIDI note number above or below which the rolloff occurs when Rolloff Mode is engaged.

**Range:** C-1 to A9

### Noise Rate

Determines the speed of the Stepped and Smooth modulators (see "Sound Editor Overview" above).

---

**Tip:** When this parameter is set to 0, the noise modulators will choose new random values only upon new note-ons, and will not further modulate already-sounding notes.

---

**Range:** 0 to 127

### Noise Sync

Enables/disables synchronization of the current layer's Stepped and Smooth noise modulators to the MR-Rack's System Tempo by providing rhythmic divisions of its pulse. The System Tempo may be synchronized to the MR-Rack's internal clock or to received MIDI clocks.

**Range:** Normal, various rhythmic divisions of System Tempo

## Envelope 3 Parameters

The following parameter's pertain to the third of the selected layer's three envelopes. Envelope 3 always controls its layer's volume, though it may be used as a modulator for any modulatable parameter. Envelope 3's diagram reflects its current Time and Level settings. You can alter these settings by entering values in their parameter boxes, or by dragging the blue dots in the diagram.

### Time 1

Determines the time it takes for the envelope's level to travel from zero (when a note-on is received) to Level 1, also referred to as the "attack time." The higher the value, the longer the time.

**Range:** 0 to 99

### Time 2

Determines the time it takes the envelope to go from Level 1 to Level 2.

**Range:** 0 to 99

## Time 3

Determines the time it takes the envelope to go from Level 2 to Level 3.

**Range:** 0 to 99

## Time 4

Determines the time it takes the envelope to go from Level 3 to the Level 4 stage. At the end of Time 4, the envelope will remain at Level 4 until the key is released.

**Range:** 0 to 99

## Time 5

Determines the time it takes the envelope to return to zero after the key has been released, also referred to as the “release time.”

**Range:** 0 to 99

## Level 1

Determines the level the envelope will reach at the end of the time defined by Time 1.

**Range:** 0 to 127

## Level 2

Determines the level the envelope will reach at the end of Time 2.

**Range:** 0 to 127

## Level 3

Determines the level the envelope will reach at the end of Time 3.

**Range:** 0 to 127

## Level 4

Determines the level the envelope will reach at the end of Time 4 and that it will retain until a note-off or sustain-off message is received.

**Range:** 0 to 127

## Level Vel

Determines to what degree velocity will affect envelope levels. Level Vel values greater than 0 increase the amount of velocity required to reach the Envelope 3 values determined by the Level 1, Level 2, Level 3, and Level 4 settings. Vel Curv gives you further control over the velocity response of the envelope.

**Range:** 0 to 99

## Attack Vel

Determines the degree to which higher velocities will shorten Envelope 3’s Time 1. If Envelope 3’s Time 1=0, Time 2 will be shortened.

**Range:** 0 to 99

### Key Scale

Makes the envelope times longer or shorter, depending on the key played. The scaling effect of this parameter is based on a center break point of F4+. Higher values will make all envelope 1 times (except Time 5) shorter for keys above F4+, and longer for keys below F4+. Envelope times for F4+ itself are not affected by this parameter.

**Range:** 0 to 99

### Release Mod Amt

Determines the degree to which higher release velocities will make the Envelope 3's Time 5 shorter or longer. When the value is positive, a higher release velocity value will result in a shorter Time 5. When the value is negative, a higher release velocity value will result in a longer Time 5. This parameter will have no effect if the Time 5=0, and also that release velocity values must fall within the range set with the Vel lo and hi parameters, in order to be recognized.

**Range:** -127 to 127

### Env Mode

Envelope 3 may function in one of three ways:

- Normal—Envelope 3 plays through normally. When the key is released, the envelope takes the Time 5 to go from the current level down to zero.
- Finish—Envelope 3 finishes playing through all its stages, ignoring the key-up event. The envelope spends no time at the Level 4 stage. When the Time 4 interval is finished, instead of stopping at the Level 4 stage, the envelope immediately goes into the Time 5 stage. This is good for percussive-type sounds where you want the envelope to be the same for every note, no matter how long the key is held down.
- Repeat—At the end of the Time 3 stage, instead of sustaining, Envelope 3 goes immediately back to the beginning and repeats, starting with the Time 1 stage. When Envelope 3 recycles from the beginning, it uses the same Wave Start Index setting (see above) it used on the original key-down. When the key is released, the envelope stops repeating and moves into the release stage, taking the Time 5 interval to go from the current level down to zero. This type of envelope can be used to create complex LFO-type effects.

**Range:** Normal, Finish, Repeat

### Vel Curve

Selects which of the velocity response curves the envelope will use if the velocity level control (Level Vel) is set to some value other than zero.

**Range:** Quikrise, Convex1, Convex2, Convex3, Linear, Concave1, Concave2, Concave3, Concave4, LateRise

## LFO Parameters

Each layer in an MR-Rack Sound has its own LFO (Low Frequency Oscillator). The following parameters determine the behavior of the selected layer's LFO.

### LFO Shape

Determines the wave shape of the selected layer's LFO:

**Range:**

Triangle—commonly used to modulate pitch to produce vibrato

Sine+Tri—mixture of a sine and triangle wave, a somewhat pointy sine wave

Sine—pure fundamental frequency, more rounded in its peaks and valleys than the triangle wave

Pos-Tri—a positive-only triangle wave useful for simulating vibrato on instruments like the guitar where a player can only bend notes up

Pos-Sine—positive-only sine wave useful for simulating vibrato on instruments like the guitar where a player can only bend notes up

Saw—sawtooth wave commonly used for special effects

Square—positive-only square wave useful for producing in-tune trill effects

### Retrigger

Determines whether the LFO will restart with each note-on. When set to “off,” the LFO will cycle continuously without resetting, whether a note is being played or not. When set to “ON,” the LFO waveform will always commence at its starting phase, as determined by the Phase parameter, when a note-on is received.

**Range:** Off, On

### Timebase

Enables/disables synchronization of the current layer’s LFO to the MR-Rack’s System Tempo, by providing rhythmic divisions of its pulse. The System Tempo may be synchronized to the MR-Rack‘s internal clock or to received MIDI clocks.

**Range:** Normal, various rhythmic divisions of System Tempo

### Rate

Determines the speed of the LFO.

---

**Tip:** When this parameter is set to 0, the LFO will produce modulation only upon new note-ons, and will not further modulate already-sounding notes.

---

**Range:** 0 to 99

### Depth

Determines the amplitude of the LFO.

**Range:** 0 to 127

### Delay

Determines the time it takes for the LFO to go from zero to the amount determined by the Depth parameter. Values above 0 will cause the LFO to take longer to achieve its full depth.

**Range:** 0 to 99

### Phase

Determines the starting phase of the LFO, when Retrigger=On. With a setting of 0, the LFO will always restart at the beginning of its cycle.

---

**Tip:** When Phase=0, this parameter determines what part of the LFO wave will be applied as a fixed modulator upon key-down.

---

**Range:** 0 to 127

### Depth Mod

Selects a modulator for the LFO depth. See “Sound Editor Overview” above for a list of the available LFO Depth Mod modulators.

**Range:** various

### Depth Mod Amt

Determines the degree to which the modulator will decrease or increase the LFO depth.

**Range:** -127 to 127

### Rate Mod

Selects a modulator for the LFO rate. See “Sound Editor Overview” above for a list of the available LFO Rate Mod modulators.

**Range:** various

### Rate Mod Amt

Determines the degree to which the modulator will slow down or speed up the LFO Rate.

**Range:** -127 to 127

## Effect Parameters

### Alt FX Bus

Determines the FX Bus routing of Sound that has an Insert Effect when it's assigned to a Part that's not the Insert Control Part.

**Range:** Default (MediumVerb), Chorus, LiteVerb, MediumVerb, WetVerb, Dry

### Send Insert FX?

Enables/disables sending of Sound's Insert Effect to the MR-Rack, if there's one present.

**Range:** Off, On

**Note:** Insert Effects can be assigned to a Sound only in the MR-Rack itself, when the Sound is assigned to a Part that's routed to the Insert FX Bus and has been designated as the Insert Control Part (Unisyn has no way of accomplishing this). Once the Sound has been assigned an Insert Effect, performing a Get Patch command in Unisyn will retrieve the Sound with its Insert Effect, which will be displayed in the read-only Insert FX Name field in the Unisyn Sound Editor.

### Input Mix

If the current Sound has an Insert Effect, this parameter determines the relative balance between the Sound as it is before going through the Insert Effect (dry), and as it is after the going through the Insert Effect (wet). A value of 0 is all dry, a value of 127 is all wet.

**Range:** 0 to 127

### Insert Cho Mix

If the current Sound has an Insert Effect, this parameter determines the relative balance between the Sound as it is after going through the Insert Effect, and as it is after it's gone through the Global Chorus. A value of 0 is all Insert Effect, a value of 127 is all Chorus.

**Range:** 0 to 127

### Insert Rvb Amount

Determines the amount of the Global Reverb added to the Insert Effect by adjusting the amount of the Insert Effect being sent into the Global Reverb.

**Range:** 0 to 127

### Insert FX Name

A read-only display listing any Insert Effect retrieved with the current Sound after a Unisyn Get Patch command is performed.

**Range:** read-only

# Using the Unisyn DrumKit Editor

There are two general areas of new knowledge required for using the Unisyn MR-Rack DrumKit Editor:

- the methods for moving Drum Kit Sounds back and forth between your computer and the MR-Rack

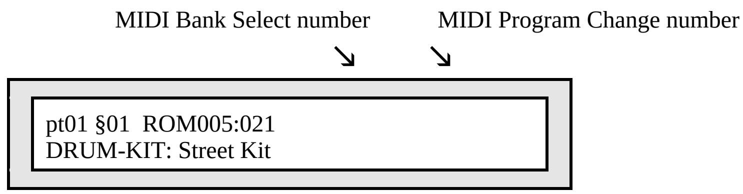
- the Drum Kit Sound-creation and editing capabilities of the DrumKit Editor itself

## Getting Pre-Existing Drum Kit Sounds From the MR-Rack Into Unisyn

When you'd like to use Unisyn to edit a pre-existing MR-Rack Drum Kit Sound, the first step is to move the Sound from the MR-Rack into Unisyn.

### To Move a Drum Kit Sound From the MR-Rack Into Unisyn

1. Locate the Drum Kit Sound you want to edit on the MR-Rack and note its MIDI Bank Select and Program Change numbers.




2. After launching Unisyn, double-click on the DrumKit Editor module in Unisyn's Modules window, or select Drumkit from the sub-menu in the Modules pull-down menu.

   This opens Unisyn's DrumKit Editor module.
3. Set the DrumKit Editor's ***Use MIDI Chan*** parameter to the MIDI channel you'd like to use for sending program changes to the MR-Rack and for playing its Drum Kit Sounds from your computer.
4. Set Unisyn's ***Drum Bank #*** to the MR-Rack Drum Kit Sound's displayed MIDI Bank Select number.
5. Set Unisyn's ***Drum Patch #*** to the MR-Rack Drum Kit Sound's displayed MIDI Program Change number.
6. From Unisyn's MIDI pull-down menu, select Get Patch.

   In a moment, the selected Drum Kit Sound will be transferred into the Unisyn Sound Editor.
7. See "Creating New Drum Kit Sounds, Editing Pre-Existing Sounds with Unisyn" below to learn how to prepare your MR-Rack for editing.

## Creating New Drum Kit Sounds, Editing Pre-Existing Sounds with Unisyn

When Unisyn creates or edits an MR-Rack Drum Kit Sound, it instantly sends the new data to the MR-Rack. Therefore, prior to editing, Unisyn must be directed to a target location in the MR-Rack's RAM memory or to a location on a non-write-protected memory card (see ***Chapter 7*** for more on memory cards). If Unisyn attempts to alter an uneditable ROM or GM Sound within the MR-Rack, an error message will be displayed.

---

**Note:** While the MR-Rack allows editing of a Drum Kit Sound only after it's been converted to the current PerfEditKit, Unisyn allows you to edit Drum Kit Sounds with any writable MR-Rack memory location.

---

### To Prepare Unisyn for Drum Kit Sound Editing

1. Locate an unused Sound location in the MR-Rack's RAM bank or on an un-write-protected memory card as a target for your Unisyn Drum Kit work, or find a Sound in one of those locations that you won't mind replacing.
2. Note the target location's MIDI Bank Select number and Program Change number.

MIDI Bank Select number ↘ MIDI Program Change number ↘

pt01 §01 RAM001:127
RAM-SND :ScratchPtch

3. After launching Unisyn, double-click on the DrumKit Editor module in Unisyn's Modules window, or select Drumkit from the sub-menu in the Modules pull-down menu.

   This opens Unisyn's DrumKit Editor module.
4. Set the DrumKit Editor's ***Use MIDI Chan*** parameter to the MIDI channel you'd like to use for sending program changes to the MR-Rack and for playing its Drum Kit Sounds from your computer.
5. Set Unisyn's ***Drum Bank #*** to the target location's MIDI Bank Select number.
6. Set Unisyn's ***Drum Patch #*** to the target location's MIDI Program Change number.
7. Toggle the Unisyn ***Drum Patch #*** parameter's up and down arrows once, and check the MR-Rack's display to verify that Unisyn and the MR-Rack are both pointing to the same location.
8. If you're creating a new Drum Kit Sound from scratch, you can now start editing Unisyn parameters.
9. If you're going to be editing a pre-existing MR-Rack Drum Kit Sound, select Send Patch from Unisyn's MIDI pull-down menu to transmit the original version of the Drum Kit Sound to the target location before you begin altering it.

## Sending Drum Kit Sounds From Unisyn to the MR-Rack

MR-Rack Drum Kit Sounds that have been saved as disk files in your computer must be sent to the MR-Rack in order to be used. The following instructions assume that you've launched Unisyn.

### To Send Drum Kit Sounds From Unisyn to the MR-Rack

1. Locate an unused Sound location in the MR-Rack's RAM bank or on an un-write-protected memory card as a target for your Unisyn Drum Kit Sound, or find a Sound in one of those locations that you won't mind replacing.
2. Note the target location's MIDI Bank Select number and Program Change number.

MIDI Bank Select number ↘ MIDI Program Change number ↘

pt01 §01 RAM001:127
RAM-SND :ScratchPtch

3. If the Drum Kit Sound you'd like to transmit to the MR-Rack is already displayed in Unisyn's DrumKit Editor module, skip to Step 6.
4. If the Drum Kit Sound you'd like to transmit has been saved as a disk file, use the Open command in Unisyn's File menu to open the file.
5. Select Drumkit from the sub-menu in the Modules pull-down menu.

   This opens Unisyn's DrumKit Editor module.

6. Set Unisyn’s Send ***Use MIDI Chan*** parameter to the MIDI channel you’d like to use for sending program changes to the MR-Rack and for playing its Drum Kit Sounds from your computer.
7. Set Unisyn’s ***Drum Bank #*** to the target location’s MIDI Bank Select number.
8. Set Unisyn’s ***Drum Patch #*** to the target location’s MIDI Program Change number.
9. Toggle the Unisyn ***Drum Patch #*** parameter’s up and down arrows once, and check the MR-Rack’s display to verify that Unisyn and the MR-Rack are both pointing to the same target location.
10. Select Send Patch from Unisyn’s MIDI pull-down menu to transmit the Drum Kit Sound to the MR-Rack.

## DrumKit Editor Overview

Drum Kit Sounds in the MR-Rack can access up to 64 standard Sounds at a single time, with each of those Sounds mapped to a single key, called a ***DrumKey*** (If you’d like, multiple DrumKeys can access the same Sound).

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**Note:** Drum Kits identify Sounds by their locations in the MR-Rack’s memory. If the Sounds are moved, or removed, the Drum Kit must be redirected to the Sound’s new location, or to another Sound.

---

Each DrumKey has a suite of parameters for tailoring the Sound it’s using to your needs. The Unisyn DrumKit Editor provides computer access to the same Drum Kit Sound Part parameters available from the MR-Rack’s front panel when a Drum Kit Sound is assigned to the selected Part.

## DrumKey Parameters

The following parameters affect individual DrumKeys.

### Edit DrumKey

Selects a DrumKey within the current PerfEditKit for editing.

**Range:** B1 to D7

### DrumKey Bank

Determines the MR-Rack bank in which the Sound assigned to the selected DrumKey resides.

**Range:** 0 to 127

### DrumKey Program

Determines the Sound that the selected DrumKey will use.

**Range:** 0 to 127

### FX Bus

Determines the FX Bus routing of the selected DrumKey.

**Range:** Insert, LiteVerb, MediumVerb, WetVerb, Dry

### Volume

Offsets the programmed volume of the Sound assigned to the selected DrumKey. Adjustments are measured in deciBels.

**Range:** -50 to 14

### Pan

Offsets the programmed stereo panning of the Sound assigned to the selected DrumKey. A 0 value uses the Sound’s programmed panning; negative values shift the Sound leftward; positive values shift it to the right.

**Range:** -64 to 63

### Tuning Shift

Retunes the Sound assigned to the selected DrumKey by keyboard steps. Amount of pitch change depends on the Key Track value programmed into the Sound.

**Range:** -64 to 63

## Drum Kit Parameters

The following parameters determine the characteristics of the entire Drum Kit Sound.

### Kit Category

Determines the Drum Kit's SoundFinder Sound Type instrument category.

**Range:** SoundFinder categories

### Demo Kit?

Enables/disables inclusion of the Drum Kit in the DEMO-SND SoundFinder Sound Type category.

**Range:** Off, On

### User Kit?

Enables/disables inclusion of the Drum Kit in the USER-SND SoundFinder Sound Type category. The USER-SND category provides easy access to Sounds you've created yourself.

**Range:** Off, On

### Drum Bank #

Selects the bank in the MR-Rack from which a Drum Kit Sound (Patch) # is chosen as a target for Drum Kit edits or for Unisyn's Get Patch command (see Drum Patch # below).

**Range:** 0 to 127

### Drum Patch #

Selects a Sound location within the Sound Bank chosen above. Drum Kit Sounds may be retrieved from this location using Unisyn's Get Patch command, and Unisyn Sound edits are written to this location as they occur.

**Range:** 0 to 127

### Use MIDI Chan

Determines the MIDI channel used to send MIDI Bank Selects and Program Changes from Unisyn to the MR-Rack. It also selects the MIDI channel that can be used to play the MR-Rack's Drum Kit Sound from Unisyn.

**Range:** Channel 1-Channel 16

### Use Handshake?

Enables/disables the ability of Unisyn and the MR-Rack to confirm edits behind the scenes . When set to Off, Unisyn sends edits, but receives no confirmation back from the MR-Rack; when set to On, MR-Rack invisibly confirms receipt of edit data.

**Range:** No (off-line), Yes (Live)

### Send Insert FX?

Enables/disables sending of Drum Kit Sound's Insert Effect to the MR-Rack, if there's one present.

**Range:** Off, On

---

**Note:** Insert Effects can be assigned to a Drum Kit Sound only in the MR-Rack itself, when the Sound is assigned to a Part that's routed to the Insert FX Bus and has been designated as the Insert Control Part (Unisyn has no way of accomplishing this). Once the Drum Kit Sound has been assigned an Insert Effect, performing a Get Patch command in Unisyn will retrieve the Drum Kit Sound with its Insert Effect, which will be displayed in the read-only Insert FX Name field in the Unisyn DrumKit Editor.

#### Input Mix

If the Drum Kit Sound has an Insert Effect, this parameter determines the relative balance between the Drum Kit as it is before going through the Insert Effect (dry), and as it is after the going through the Insert Effect (wet). A value of 0 is all dry, a value of 127 is all wet.

**Range:** 0 to 127

#### Insert Cho Mix

If the Drum Kit Sound has an Insert Effect, this parameter determines the relative balance between the Drum Kit as it is after going through the Insert Effect, and as it is after it's gone through the Global Chorus. A value of 0 is all Insert Effect, a value of 127 is all Chorus.

**Range:** 0 to 127

#### InsertRvb Amt

Determines the amount of the Global Reverb added to the Insert Effect by adjusting the amount of the Insert Effect being sent into the Global Reverb.

**Range:** 0 to 127

#### Insert FX Name

a read-only display listing the Insert Effect retrieved with the current Drum Kit after a Unisyn Get Patch command is performed.

**Range:** read-only

# Using the Unisyn Perform (Performance) Editor

There are two general areas of new knowledge required for using the Unisyn MR-Rack Performance Editor:

- the methods for moving Performances back and forth between your computer and the MR-Rack
- the capabilities of the Performance Editor itself

## Getting the Current Performance From the MR-Rack to Unisyn

The Unisyn Performance Editor always retrieves the MR-Rack's current Performance.

### To Move the Current MR-Rack Performance Into Unisyn

1. On the MR-Rack, select the Performance you'd like to retrieve into your computer, and into Unisyn.
2. After launching Unisyn, double-click on the Perform Editor module in Unisyn's Modules window, or select Perform from the sub-menu in the Modules pull-down menu.

   This opens Unisyn's Performance Editor module—you'll probably want to expand it to its full view.
3. Select Get Patch from Unisyn's MIDI menu.

   In a moment, the current MR-Rack Performance will be transferred into the Unisyn Perform Editor.

## Creating New Sounds and Editing Pre-Existing Performances with Unisyn

When Unisyn creates or edits an MR-Rack Performance, it instantly sends the new data to the MR-Rack's edit buffer (for details on the Performance edit buffer, see "The Safe-Keeping of Part Edits” in ***Chapter 4***). The edited Performance must the be saved using the Save: This Performance command in order to be made permanent (see “Saving the Current Performance” in ***Chapter 6***).

### To Prepare Unisyn for Sound Editing

1. After launching Unisyn, double-click on the Perform Editor module in Unisyn’s Modules window, or select Performance from the sub-menu in the Modules pull-down menu.

   This opens Unisyn’s Performance Editor module—you’ll probably want to expand it to its full view.
2. If you’re creating a new Performance from scratch, or if you’ve just retrieved the Performance to be edited from the MR-Rack, you can now start editing Unisyn parameters.
3. If you’re going to be editing a pre-existing MR-Rack Performance that you’ve loaded into Unisyn from a disk file, select Send Patch from Unisyn’s MIDI pull-down menu to transmit the Performance to the MR-Rack before you begin altering it.

**Note:** Remember to save the edited Performance to a location in the MR-Rack’s memory using the Save:ThisPerformance command (see “Saving the Current Performance” in ***Chapter 6***).

## Sending a Performance From Unisyn to the MR-Rack

MR-Rack Performances that have been saved as disk files in your computer must be sent to the MR-Rack in order to be used. The following instructions assume that you’ve launched Unisyn.

### To Send a Performance From Unisyn to the MR-Rack

1. If the Performance you’d like to transmit to the MR-Rack is already displayed in Unisyn’s Performance Editor module, skip to Step 6.
2. If the Performance you’d like to transmit has been saved as a disk file, use the Open command in Unisyn’s File menu to open the file.
3. Double-click on the Performance’s name in Unisyn’s Modules window, or select Perform from the sub-menu in the Modules pull-down menu.

   This opens Unisyn’s Performance Editor module—you’ll probably want to expand it to its full view.
4. Select Send Patch from Unisyn’s MIDI pull-down menu to transmit the Performance to the MR-Rack.

**Note:** Remember to save the edited Performance to a location in the MR-Rack’s memory using the Save:ThisPerformance command (see “Saving the Current Performance” in ***Chapter 6***).

## Perform (Performance) Editor Overview

A Performance is a collection of all of the settings of the MR-Rack’s 16 Parts, as well as the settings of the Insert Effect, Global Chorus and Global Reverb. Performances provide and easy way to store and access MR-Rack set-ups. The Unisyn Perform (Performance) Editor provides computer access to the same Performance parameters accessed by the MR-Rack’s front panel Sound, Params and Effects buttons.

## Part Assign Parameters

These parameters provide quick access to Mute/Solo status, MIDI channel, Bank and Sound assignment parameters for all 16 Parts.

### Part *(number)*

Determines the status of each Part in the current Performance.

**Range:** Off, On, Mute, Solo

### Channel

Determines the MIDI channel on which each Part receives MIDI messages.

**Range:** 1 to 16, Stak

### Bank

Determines the MR-Rack bank from which the Part's Sound will be selected.

**Range:** 0 to 127

### Prgm

Determines, by Program Change number, the Sound to be used by the Part.

**Range:** 0 to 127

## Part Pan Parameters

These parameters provide quick access to stereo panning parameters for all 16 Parts.

### Pan

Sets the stereo offset for each Part. A value of 0 leaves the panning of the Part's Sound as programmed. Values below 0 shift it to the left; higher values shift it to the right; 0 uses the programmed pan value.

**Range:** -64 to 63

## Part Volume Parameters

These parameters provide quick access to the volume settings for all 16 Parts.

### (Number) Vol

Determines the volume ceiling for each Part.

**Range:** 0 to 127

## Part Edit (1/3) Parameters

The following parameters apply to the single Part selected by the Edit Part parameter, below.

### Edit Part

Selects an individual Part for editing.

**Range:** 1 to 16

### Pitch Bend Up

Determines the selected Part's response to Pitch Bend Up messages received on its MIDI channel. Program leaves the Pitch Bend Up response as programmed; System causes the Part to use the System Pitch Bend Up setting; -12 to 12 set the Pitch Bend Up response to MIDI pitch steps down or up.

**Range:** Program, System, -12 to 12

### Pitch Bend Down

Determines the selected Part's response to Pitch Bend Down messages received on its MIDI channel. Program leaves the Pitch Bend Down response as programmed; System causes the Part to use the System Pitch Bend Down setting; -12 to 12 set the Pitch Bend Down response to MIDI pitch steps down or up.

**Range:** Program, System, -12 to 12

### Octave Shift

Retunes the selected Part's Sound downward or upward by two octaves.

**Range:** -2 to 2

### Semitone Shift

Retunes the Part's Sound downward or upward by keyboard steps. When the Part employs equal temperament tuning, each step equals a semitone.

**Range:** -64 to +64

### Fine Tuning

Retunes the Part's Sound downward or upward cents. Values run from -128 (-50cents) to 127 (+49cents).

**Range:** -128 to 127

### Normal LFO Rates

Offsets the programmed LFO speed for the unsynchronized LFOs within the selected Part's Sound. Values below 0 slow the programmed rate; values above increase it; 0 uses the programmed rate value.

**Range:** -64 to 63

### LFO Depth

Offsets the programmed volume, and therefore the depth of effect, of the LFOs within the selected Part's Sound. Values below 0 decrease the programmed depth; values above increase it; 0 uses the programmed depth value.

**Range:** -64 to 63

### LFO Delay Time

Offsets the programmed delay before the LFOs within the selected Part's Sound reach their maximum depth. Values below 0 decrease the programmed depth; values above increase it; 0 uses the programmed time value.

**Range:** -64 to 63

### Glide Mode

Determines the glide behavior of the selected Part's Sound. With a setting of Prog, the Sound will behave as programmed; Off disables glide regardless of the Sound's programmed settings; On enables glide regardless of the Sound's programmed settings.

**Range:** Prog, Off, On

### Glide Time

Offsets the programmed glide time for the layers in the selected Part’s Sound. Values below 64 decrease the programmed glide time; values above 64 increase it; 0 uses the programmed glide time.

**Range:** 0 to 127

### Delay Offset

Offsets the programmed delay time for the layers in the selected Part’s Sound. 0 causes the Sound to use the programmed delay times; times increase to 2500 milliseconds at a value of 127.

**Range:** 0 to 127

### SyncLFO&Noise

Allows the de-synchronization or retiming of synchronized noise modulators and LFOs in the Part’s Sound. By setting this parameter to to Normal, synchronized LFO and Noise modulators become no longer synchronized. This parameter can also be used to alter the rhythmic relationship of the synchronized LFOs and Noise to the System Tempo.

**Range:** Normal, various rhythmic divisions of System Tempo

### Pressure Mode

Determines pressure reception for the selected Part’s Sound. Off disables pressure response; Auto responds appropriately to the type of pressure received; Channel sets Part to respond only to channel pressure; Key sets Part to respond only to key, or polyphonic, pressure.

**Range:** Off, Auto, Channel, Key

### FX Bus

Determines the FX Bus routing for the selected Part.

**Range:** Insert, Chorus, LightVerb, MediumVerb, WetVerb, Dry

### Velocity Mode

Allows all notes whose velocities fall within the selected Part’s velocity window (Vel Low and High params) to be responded to as a fixed velocity value. normal disables feature; available fixed velocity values are 0 to 127.

**Range:** Normal, Fix 1 to 127

## Part Edit (2/3) Parameters

The following parameters apply to the single Part selected by the Edit Part parameter, above.

### Expression

Determines the selected Part’s volume up to the maximum set with the Volume parameter.

**Range:** 0 to 127

### Amp Env Attack

Offsets the Time 1 (Attack) settings for the amplitude/volume envelopes in the selected Part’s Sound. Values below 0 shorten the times; values above lengthen them; 0 uses the programmed time values.

**Range:** -64 to 63

### Amp Env Decay

Offsets the Time 2, 3 and 4 settings for the amplitude/volume envelopes in the selected Part's Sound. Values below 0 shorten the times; values above lengthen them; 0 uses the programmed time values.

**Range:** -64 to 63

### Amp Env Release

Offsets the Time 5 (Release) settings for the amplitude/volume envelopes in the selected Part's Sound. Values below 0 shorten the times; values above lengthen them; 0 uses the programmed time values.

**Range:** -64 to 63

### Filt Env Attack

Offsets the Time 1 (Attack) settings for the filter envelopes in the selected Part's Sound. Values below 0 shorten the times; values above lengthen them; 0 uses the programmed time values.

**Range:** -64 to 63

### Filt Env Decay

Offsets the Time 2, 3 and 4 settings for the filter envelopes in the selected Part's Sound. Values below 0 shorten the times; values above lengthen them; 0 uses the programmed time values.

**Range:** -64 to 63

### Filt Env Release

Offsets the Time 5 (Release) settings for the filter envelopes in the selected Part's Sound. Values below 0 shorten the times; values above lengthen them; 0 uses the programmed time values.

**Range:** -64 to 63

### Filter Cutoff

Offsets the filter cutoff frequencies for the filters in the selected Part's Sound. Values below 0 lower the cutoff settings; values above raise them; 0 uses the programmed cutoff values.

**Range:** -64 to 63

### Amp&Filt Vel

Offsets the velocity-sensitivity of the amplitude and filter envelopes in the selected Part's Sound. Values below 0 decrease their sensitivity; values above increase it; 0 uses the programmed velocity sensitivity.

**Range:** -64 to 63

### Vel Low

Determines the low boundary of the selected Part's velocity window. Received velocities below this value will be ignored by Part.

**Range:** 0 to 127

### Vel High

Determines the high boundary of the selected Part's velocity window. Received velocities will be ignored by Part.

**Range:** 0 to 127

### Key Low

Determines the low boundary of the selected Part’s pitch-reception window. Received MIDI notes lower than this value will be ignored by Part.

**Range:** A0 to C8

### Key High

Determines the high boundary of the selected Part’s pitch-reception window. Received MIDI notes higher than this value will be ignored by Part.

**Range:** A0 to C8

## Part Edit (3/3) Parameters

The following parameters apply to the single Part selected by the Edit Part parameter, above.

### Prog Change Recv

Enables/disables Part’s reception of MIDI Program Changes.

**Range:** On, Off

### Bank Change Recv

Enables/disables Part’s reception of MIDI Bank Selects.

**Range:** On, Off

### Data Entry Recv

Enables/disables Part’s reception of MIDI Data Entry messages.

**Range:** On, Off

### Pitch Bend Recv

Enables/disables Part’s reception of MIDI Pitch Bend messages.

**Range:** On, Off

### Mod Wheel Recv

Enables/disables Part’s reception of MIDI Mod Wheel messages.

**Range:** On, Off

### Foot Pedal Recv

Enables/disables Part’s reception of MIDI Foot Pedal messages.

**Range:** On, Off

### Volume Recv

Enables/disables Part’s reception of MIDI Volume messages.

**Range:** On, Off

### Pan Recv

Enables/disables Part’s reception of MIDI Pan messages.

**Range:** On, Off

### Sustain Recv

Enables/disables Part’s reception of MIDI Sustain messages.

**Range:** On, Off

### Volume Polarity

Determines Part's response to MIDI Volume messages. Positive causes Part to respond normally (lower values lower volume, higher values raise it); Negative inverts response (lower values raise volume; higher values lower it).

**Range:** Positive, Negative

### Pitch Table

Allows selected Part to use a special pitch table. Program chooses Sound's programmed pitch table assignment; System chooses the System pitch table; RAM chooses the RAM pitch table; pitch tables stored in ROM may also be selected.

**Range:** Program, System, various ROM Pitch Tables, RAM

### SysCTRL1 Recv

Enables/disables Part's reception of assignable controller SysCTRL 1's messages.

**Range:** On, Off

### SysCTRL2 Recv

Enables/disables Part's reception of assignable controller SysCTRL 2's messages.

**Range:** On, Off

### SysCTRL3 Recv

Enables/disables Part's reception of assignable controller SysCTRL 3's messages.

**Range:** On, Off

### SysCTRL4 Recv

Enables/disables Part's reception of assignable controller SysCTRL 4's messages.

**Range:** On, Off

## Reverb

The following parameters apply to the current Performance's Global Reverb.

## Reverb Routing

The following parameters determine the amounts of signal sent on the three Global Reverb FX busses and the overall Global Reverb level.

### LiteVerb Send

Determines the amount of dry signal sent to the Global Reverb via the LightReverb FX Bus.

**Range:** 0 to 63

### MediumVerb Send

Determines the amount of dry signal sent to the Global Reverb via the MediumReverb FX Bus.

**Range:** 32 to 95

### WetVerb Send

Determines the amount of dry signal sent to the Global Reverb via the WetReverb FX Bus.

**Range:** 64 to 127

### Return Level

Determines the overall output volume of the Global Reverb.

**Range:** 0 to 127

## Reverb Params

The following parameters determine the qualities of the Global Reverb.

### Decay

Determines the time it takes for the Global Reverb to fade to silence after being excited by an input signal.

**Range:** 0 to 100

### HF Damping

Determines the threshold frequency at which damping begins as Global Reverb decays . Values run from 0 (100 Hz) to 127 (21.2 kHz).

**Range:** 0 to 127

### HF Bandwidth

Determines the threshold frequency above which frequencies are attenuated in the Global Reverb. Values run from 0 (100 Hz) to 127 (21.2 kHz).

**Range:** 0 to 127

### Diffusion 1

Determines the amount of smearing of attack transients in the Global Reverb.

**Range:** 0 to 100

### Diffusion 2

Determines the amount of smearing of attack transients in the Global Reverb; optimized for low-frequency transients.

**Range:** 0 to 100

### Definition

Determines the density of reflections in the Global Reverb as it decays.

**Range:** 0 to 100

## Chorus

The following parameters apply to the current Performance's Global Chorus.

## Chorus Routing

The following parameters determine what happens to Sounds directed to the Chorus FX Bus.

### Input Mix

Sets the wet/dry balance between the dry signal routed to the Chorus FX Bus and the output of the Global Chorus.

**Range:** 0 to 127

### Reverb Amount

Determines the amount of Global Reverb added to the Global Chorus output.

**Range:** 0 to 127

### Chorus Params

The following parameters determine the qualities of the Global Chorus.

### LFO Rate

Determines the speed at which the Global Chorus's center delay time transforms from its shortest value to its longest. Values run from 0 (0.0 Hz) to 127 (20.0 Hz).

**Range:** 0 to 116

### Chorus Depth

Determines the amount by which the Global Chorus's center delay time shortens and lengthens. Values run from 0 (0.0 Hz) to 127 (25.0 Hz).

**Range:** 0 to 250

### Chorus Center

Determines the center delay time of the two delays within the Global Chorus. Values run from 0 (0.0 Hz) to 127 (25.0 Hz).

**Range:** 0 to 500

### Chorus Spread

Determines the amount of stereo imaging in the Global Chorus.

**Range:** 0 to 10

### Chorus Phase

Enables/disables the synchronization of the Global Chorus's pair of delays as they travel from their shortest length to longest. 0 causes the delays to change together; 1 causes one delay to shorten while the other lengthens, and vice versa.

**Range:** 0, 1

## Insert

The following parameters apply to the current Performance's Insert Effect.

## Insert Routing

The following parameters determine what happens to Sounds directed to the Insert FX Bus and designate an Insert Control Part.

### Input Mix

Sets the wet/dry balance between the dry signal routed to the Insert FX Bus and the output of the Insert Effect.

**Range:** 0 to 127

### Chorus Mix

Determines the amount of Global Chorus added to the Insert Effect by setting a wet/dry balance between the output of the Insert Effect being sent into the Global Chorus and the output of the Global Chorus.

**Range:** 0 to 127

### Reverb Amount

Determines the amount of the Global Reverb added to the Insert Effect by adjusting the amount of the Insert Effect being sent into the Global Reverb.

**Range:** 0 to 127

### Insert Type

a read-only display listing the Insert Effect retrieved with the current Performance after a Unisyn Get Patch command is performed.

**Range:** read-only

**Note:** Insert Effects can be assigned to a Performance only in the MR-Rack itself. Once the Performance has been assigned an Insert Effect, executing a Get Patch command in Unisyn will retrieve the Performance with its Insert Effect, which will be displayed in this read-only field in the Unisyn Perform Editor.

### Control Part

Determines which Part in the current Performance will contribute newly-selected Sounds' Insert Effect as the Performance Insert Effect. Also determines which Part will receive real-time controllers for modulation of the Insert Effect. May also be set to Off, for no Insert Control Part.

**Range:** Off, 1 to 16

## Output Assigns

The following parameters determine the rear-panel output jack routing of the current Performance's Effects and Dry FX Bus.

### Reverb Output

Determines to which rear-panel jacks the output of the Global Reverb will be routed.

**Range:** Main, Aux

### Chorus Output

Determines to which rear-panel jacks the output of the Global Chorus will be routed.

**Range:** Main, Aux

### Insert Output

Determines to which rear-panel jacks the output of the Insert Effect will be routed.

**Range:** Main, Aux

### Dry Bus Output

Determines to which rear-panel jacks Sounds sent to the Dry FX Bus will be routed.

**Range:** Main, Aux

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