

Reference Manual

ASRXP RO



LEADING THE WORLD IN SOUND INNOVATION

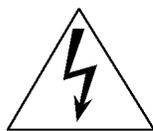
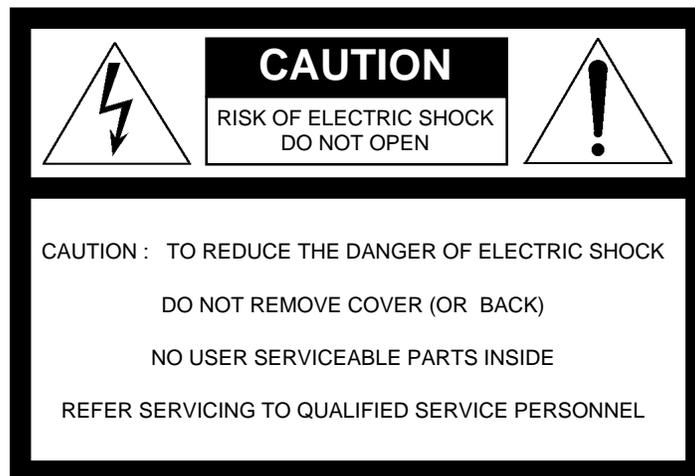
READ THIS FIRST!

WARNING!!

Grounding Instructions

This product must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER: Improper connection of the equipment-grounding conductor can result in the risk of electric shock. Check with a qualified electrician or service personnel if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with this product — if it will not fit the outlet, have a proper outlet installed by a qualified electrician.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electronic shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

SEE IMPORTANT SAFETY INSTRUCTIONS ON BACK COVER!

**"INSTRUCTIONS PERTAINING TO A RISK OF FIRE,
ELECTRIC SHOCK, OR INJURY TO PERSONS"**

IMPORTANT SAFETY INSTRUCTIONS

WARNING—When using electric products, basic precautions should always be followed, including the following:

1. Read all the instructions before using the product.
2. Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
3. This product should be used only with a cart or stand that is recommended by the manufacturer.
4. This product, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
5. The product should be located so that its location or position does not interfere with its proper ventilation.
6. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
7. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
8. This product may be equipped with a polarized line plug (one blade wider than the other). This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace your obsolete outlet. Do not defeat the safety purpose of the plug.
9. The power supply cord of the product should be unplugged from the outlet when left unused for a long period of time.
10. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
11. The product should be serviced by qualified service personnel when:
 - a. The power supply cord or the plug has been damaged; or
 - b. Objects have fallen, or liquid has been spilled into the product; or
 - c. The product has been exposed to rain; or
 - d. The product does not appear to operate normally or exhibits a marked change in performance;
or
 - e. The product has been dropped, or the enclosure damaged.
12. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

SAVE THESE INSTRUCTIONS



ASRXP RO

Reference Manual
Version 3.00

ASR-X Pro Reference Manual

Written, designed, and illustrated by:
Thanks to:

Robby Berman
Jim Bryan

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ENSONIQ® Corp
155 Great Valley Parkway
Box 3035
Malvern, PA 19355-0735
USA
World Wide Web—<http://www.ensoniq.com>
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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.

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Although every effort has been made to ensure the accuracy of the text and illustrations in this manual, no guarantee is made or implied in this regard.

IMPORTANT:

Note: This equipment has been tested 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.

In order to fulfill warranty requirements, your ASR-X Pro 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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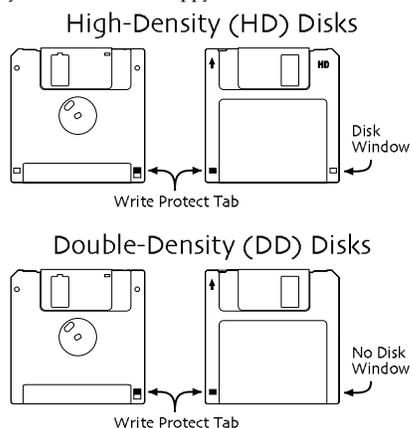
Temperature Guidelines

The ASR-X Pro contains a substantial amount of computerized and electronic circuitry that can be susceptible to damage when exposed to extreme temperature changes. When the ASR-X Pro 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 and setting up your ASR-X Pro:

- Avoid leaving the ASR-X Pro in temperatures of less than 50 degrees Fahrenheit or more than 100 degrees Fahrenheit.
- When bringing the ASR-X Pro 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 ASR-X Pro inside a vehicle exposed to direct sunlight.

Care and Feeding of the Disk Drive

The ASR-X Pro's disk drive is used to store sounds, rhythms, and sequencer data. This quad-density disk drive will store your data on a high-density (HD) 3.5" micro floppy disk. You can also store data on a DOS-formatted double-density (DD) 3.5" micro floppy disk.



Disks have a sliding write-protection tab so that you can protect your data against accidental erasure. When the write-protection tab covers the protect window, you can store information on the disk. Sliding the tab so that the window is open will protect the disk against being accidentally reformatted or having files deleted. High density disks can be easily identified because they have an additional disk window located on the lower right corner of the disk.

Floppy disks are a magnetic storage medium, and should be treated with the same care you'd give important audio tapes. Just as you would use high quality audio tapes for your important recording needs, we recommend using high quality floppy disks for your ASR-X Pro. Here are a few Do's and Don'ts concerning disks and the disk drive.

Do's:

- Use either high-density (HD) or double-density (DD) 3.5" disks. Both types are available from most computer stores.
- Keep your disks and the disk drive clean and free of dust, dirt, liquids, etc.
- Label your disks and keep a record of what is saved on each.

Don't's:

- Don't use single-sided (SD) disks. These disks have not passed testing on both sides. While a single-sided disk might work with the ASR-X Pro, it is possible that you will eventually lose important data to a disk error if you try using single-sided disks.
- Don't put anything other than a disk into the disk drive.
- Don't transport the unit with a disk in the drive.

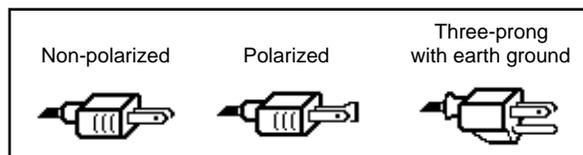
- Don't expose disks to temperature extremes. Temperatures below 50° F and above 140° F can damage the plastic outer shell.
- Don't expose your disks to moisture.
- Don't dry your disks in a microwave oven.
- Don't subject disks to strong magnetic fields. Exposure to magnetic energy can permanently damage the information on the disk. Keep disks away from speaker cabinets, tape decks, power cables, airline x-ray equipment, power amplifiers, TV sets, and any other sources of magnetic energy.
- Don't eject the disk while the drive is operating (i.e., when the disk drive light is on).

Clean Up and Maintenance

Clean the exterior of your ASR-X Pro 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 ASR-X Pro is thoroughly dry before turning on the power. Never use alcohol, benzene, volatile cleaners, solvents, abrasives, polish or rubbing compounds.

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 ASR-X Pro 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. 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 ASR-X Pro in lots of different locations with varying or unknown AC line conditions, you might consider investing in a line conditioner.

Table of Contents

1	Welcome	1
	The ASR-X Pro Experience Begins.....	1
	What Else is in the Box?.....	1
	Setting Up the ASR-X Pro.....	1
	Using the Audio Outputs.....	1
	Setting the Output Volume.....	2
	The Audio Inputs.....	2
	Making MIDI Connections.....	2
	Using a Foot Switch with the ASR-X Pro.....	2
	Powering the ASR-X Pro.....	2
	The ASR-X Pro Controls.....	3
	The ASR-X Pro Display.....	3
	The Knobs.....	3
	The Exit/No and Enter/Yes Buttons and Their LEDs.....	3
	Playing the Demo.....	4
	Important ASR-X Pro Concepts.....	4
	Architecture Overview.....	4
	You Are Here.....	5
	What's Where.....	5
	The All Notes Off Button.....	6
	About Note, Tips and Warnings in the ASR-X Pro Documentation.....	6
	Optional Accessories for the ASR-X Pro.....	6
2	Tracks	7
	Introduction to Tracks.....	7
	To Select One of the Tracks in the Currently Selected Sequence.....	7
	Selecting a Sound for a Track.....	7
	Banks and Sounds.....	8
	Selecting a Track's Sound Using the Sound Type and Sound Name Knobs.....	8
	SoundFinder.....	8
	Selecting a Track's Sound Using the Essentials Buttons.....	9
	Programming the Essentials Buttons.....	9
	Selecting and Playing a Track's Sound Via MIDI.....	10
	Selecting and Programming a MIDI-OUT Sound.....	10
	Quickly Erasing a Track Sound.....	11
	Editing Track Parameters.....	11
	Overrides and Offsets.....	11
	Editing Track Parameters Via MIDI.....	12
	What Each Track Parameter Does.....	12
	Muting and Soloing a Track.....	19
	Muting and Soloing from the Front Panel.....	19
	Muting Tracks via MIDI.....	19
3	Pads	21
	The Pads:Overview.....	21
	What are the Pads?.....	21
	What the Pads Play.....	22
	Standard Sounds.....	22
	Kit Sounds.....	22
	Octave Transpose Buttons.....	23
	The Kit Mapper.....	23
	Patch Select Buttons.....	23
	Patch Selects and MIDI.....	24

Programming the Pads.....	24
Overview.....	24
To Prepare the Selected Track's Sound for Pad Editing.....	24
Selecting a Pad for Editing.....	25
Choosing a Pad's Sound.....	25
Overview of the Pad Edit Parameters.....	25
Determining a Pad's Behavior.....	26
PAD Parameters.....	26
Editing a Pad's Sound.....	27
The ASR-X Pro Modulators.....	27
WAVE Parameters.....	29
PTCH Parameters.....	30
ENV1 Parameters.....	31
FLT Parameters.....	32
FLT1 and FLT2 Parameters.....	33
ENV2 Parameters.....	33
AMP Parameters.....	33
ENV3 Parameters.....	34
MOD Parameters.....	34
MISC Parameters.....	35
Processing a Sound's Wave.....	36
The Pad Process Display.....	36
The Pad Processes.....	36
Normalize gain?.....	36
Scale loudness?.....	36
Reduce sample bits?.....	37
Invert sample data?.....	37
Truncate length?.....	38
Copy sound?.....	38
Scale time?.....	38
Stompl.....	39
Sound Type.....	39
Oscillator #.....	39
Mode.....	39
Oscillator Mode Stomper Parameters.....	40
Filter Mode Stomper Parameters.....	40
4 Effects 41	
Overview of the ASR-X Pro Effects.....	41
Insert Effects.....	41
The Insert Control Track.....	41
Global Reverb.....	42
FX Busses: How Sounds are Sent to the Effects.....	42
Selecting and Editing a Sequence's Effects.....	43
To Select an Effect.....	43
To Edit an Effect.....	43
Insert Effect and Global Reverb Context Parameters.....	44
Insert Effect Real-Time Modulation Parameters.....	44
Setting a Sequence's Insert Control Track.....	46
Bypassing a Sequence's Effects.....	46
LFO Wave Shapes.....	47
Distortion Curves.....	47
5 Sampling/Resampling 49	
Overview.....	49
What is Sampling?.....	49
What is Resampling?.....	49
What Happens When You Create a Wave.....	49
What can be Sampled in the ASR-X Pro.....	49
Using the ASR-X Pro Audio Inputs.....	50

Resampling Setup	50
Source.....	50
In Bus.....	51
Recording Mode	51
Auto-Normalize.....	51
Record Time.....	51
Pre-Trigger Time.....	52
Trig Mode.....	52
Setting the Trigger Threshold.....	52
Sampling/Resampling a Wave.....	53
How to Start and Stop Sampling a Wave	53
Sending a Wave to Pads.....	53
What Happens When You Send a Wave to a Pad or Pads?.....	54
Automatically Spreading a Wave Across all of a Kit's Pads.....	55
6 Sequencing 57	
Overview.....	57
How the ASR-X Pro Sequencer Works	57
What is a Sequence?	57
Operating the Sequencer	58
The Sequence Select Button.....	59
Creating a New Sequence.....	60
Selecting Sequences	60
The Sequence Edit Button.....	60
Tempo.....	60
RecordMode.....	61
Step Recording.....	61
Recording Track Parameter Changes.....	63
Recording Sequence Volume and Tempo Changes	63
Loop Playback.....	64
Time Signature.....	64
Using Regions.....	64
RecordQuantize.....	65
Edit Click/Countoff?	65
The Sequence Process Button	67
Undo track ?.....	67
Quantize track?	67
Copy track?	72
Erase track?	74
Erase trk to end?	74
Rename sequence?.....	75
Append sequence?	75
Copy this sequence?	75
Erase this sequence?.....	76
Erase all sequences?	76
Enter pattern mode?.....	76
Create a new song?	77
Playing a Song.....	77
Exiting and Re-Entering Song Mode.....	77
Editing a Song.....	77
Adding a Step to the End of a Song	78
Inserting and Erasing Song Steps	78
The ASR-X Pro Sequencer and MIDI.....	79
7 Disk/Global 81	
The Disk/Global Controls.....	81
Storage Options.....	81
Introduction to Floppy Disk Storage	81
The Floppy Disk Drive	81
Introduction to SCSI Storage.....	82
What is SCSI?.....	82

About SCSI Device IDs.....	83
About Termination.....	84
Folders/Directories.....	85
Invisible Folders.....	85
Preparing for SCSI.....	85
Attaching SCSI Cables.....	85
Powering Up SCSI Devices.....	85
Troubleshooting Your SCSI System.....	86
SMDI Transfers.....	86
The Disk Buttons.....	86
SCSI Device Selection and Navigation.....	86
Select Device?.....	87
Scan SCSI Devices?.....	87
Folder Navigation.....	87
Creating a New Folder Using the ASR-X Pro.....	88
Creating a New Folder Using a Computer.....	88
The Save Button.....	88
File Types that can be Saved.....	89
Saving the Contents of the Scratch Pad to Disk.....	90
Naming Disk Files.....	90
The Load Button.....	90
File Types that can be Loaded.....	90
A Note About Imported ASR-10 and ASR-88 Sounds.....	91
Selecting an Individual File to be Loaded.....	92
Selecting a Location into which a Sound will be Loaded.....	92
The System/MIDI Button.....	92
Set system prefs?.....	93
Touch Curve.....	93
Patch Selects.....	93
FtSw L and FtSw R (.....	93
AutoSelect FXBus.....	94
Track ParamReset.....	95
Auto-Zero Cross.....	95
SCSI Device ID.....	95
SCSI Termination.....	95
Alter system pitch?.....	95
The System Pitch Bend Setup.....	95
Fine Tuning.....	96
PitchTbl.....	96
Edit MIDI settings?.....	96
Local-Off Operation of the ASR-X Pro.....	96
ClockSource.....	97
Xmit MIDI Clocks.....	97
Bank&ProgChgRecv.....	97
ResetControlRecv.....	97
AllNotesOff Recv.....	97
SysEx Device ID.....	97
CTRL1, CTRL2, CTRL3 and CTRL4.....	97
Access disks utils?.....	98
Format disk?.....	98
Copy [disk name] disk?.....	98
Optimize [disk name] disk?".....	99
A Note About the SCSI Copy and Optimize Utilities.....	99
Reset SCSI bus?.....	99
Write-Protect.....	100
Erase disk files?.....	100
Rename disk files?.....	100
Directory Sorted.....	101
Free.....	101

Enter MemoryManager?.....	101
Show free memory?.....	101
Erase memory banks?.....	101
Erase sound?.....	101
Rename sound?.....	101
Change sound type?.....	102
Exp Name.....	102
Save these settings?.....	102
8 Expanding the ASR-X Pro	103
Overview.....	103
An Important Note About Electro Static Discharge.....	103
Opening the ASR-X Pro.....	103
Installing Additional Sampling/Resampling Memory.....	104
Installing an ENSONIQ EXP-Series Wave Expansion Board.....	106
Updating the ASR-X Pro Operating System.....	108
9 Supplemental Information	111
List of ROM Waves.....	111
List of SoundFinder Categories.....	112
Drum and Percussion Maps.....	113
ENSONIQ Drum Map.....	113
ENSONIQ Percussion Map.....	113
GM Kit Map.....	114
List of Quantize Templates.....	115
What Is MIDI?.....	115
Life In The MIDI World.....	115
Understanding MIDI.....	116
MIDI Hardware.....	116
How MIDI Channels Work.....	116
How MIDI Messages Work.....	117
The Art of MIDI.....	117
List of MIDI Controller Names.....	118
ASR-X Pro MIDI Implementation.....	119
MIDI Implementation Chart.....	119
MIDI Controllers Reception Behavior.....	120
Reset All Controllers Reception Behavior.....	120
Track ParamReset Behavior.....	121
Using RPNs and NRPNs to Edit Parameters.....	122
Registered Parameters.....	122
Non-Registered Parameters.....	123
List of NRPNs.....	123
Pitch Tables and the MIDI Tuning Standard Format.....	124
List of ROM Pitch Tables.....	124
Index	127

1 Welcome

The ASR-X Pro Experience Begins

Congratulations on your purchase of the ENSONIQ ASR-X Pro Advanced Sampler/Resampler. This box is the ultimate groove machine—ideal for deejays and musicians who enjoy grabbing sounds out of the air and turning them into mind-boggling loops.

This book—the ASR-X Pro Reference Manual—contains detailed information on all of the ASR-X Pro’s many features. If you’d like to start getting to know your ASR-X Pro through a hands-on tour of its hot spots, take a look at the ASR-X Pro User’s Guide, which contains step-by-step quick-starts for the major features of the ASR-X Pro, a list of all of its built-in sounds and descriptions of its insert effect parameters.

For the latest information on the ASR-X Pro and other ENSONIQ products, visit ENSONIQ’s World Wide Web site at <http://www.ensoniq.com>.

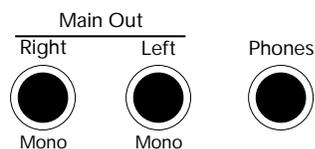
What Else is in the ASR-X Pro Box?

The following items are included with every ASR-X Pro shipped from the ENSONIQ factory:

- ENSONIQ X-Audio Sampling CD
- ENSONIQ ASR-X Pro User’s Guide
- Volume 1—Producers’ Mix
- ENSONIQ ASR-X Pro Reference Manual
- hex wrench
- AC power cable

Setting Up the ASR-X Pro

Using the Audio Outputs



As shipped from ENSONIQ, the ASR-X Pro provides two ways to listen to the sounds it makes:

- You can listen to the ASR-X Pro using headphones by plugging your headphones into the 1/4” Phones jack on the ASR-X Pro rear panel.
- Using 1/4” audio cables, you can connect the Left and Right Main Outs to a mixer or amplifier. The ASR-X Pro outputs produce a great-sounding stereo image. If you’d prefer to use the ASR-X Pro in mono, connect only the Left or Right Main Out jack to your mixer or amplifier, and make sure nothing is plugged into the other Main Out jack.

Warning: You can use 1/4” to RCA-type adapters to connect the ASR-X Pro outputs to a home stereo, but do so with care, since the dynamic range of the ASR-X Pro is much greater than that of a CD or record, and could damage your speakers. See “Setting the Output volume” below.

Aux Out 1, Aux Out 2, Aux Out 3, Aux Out 4

These four pairs of stereo outputs become available for use with the purchase and installation of an ENSONIQ X-8 output expander board. You can connect them to a mixer, amplifier or stereo system.

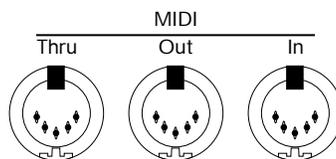
Setting the Output Volume

The ASR-X Pro, like all digital equipment, produces its best fidelity when its front panel Volume knob is turned all the way up—when using the ASR-X Pro with a mixer or amplifier, use the input level controls on the mixer or amplifier to find a usable volume setting for the ASR-X Pro. When the ASR-X Pro is connected to a home stereo, turn the ASR-X Pro Volume knob all the way down, power up (see below), and, while playing its pads with maximum force, slowly turn up the ASR-X Pro Volume knob to find a level that sounds good but doesn't cause the stereo's inputs to distort.

The Audio Inputs

The two Audio Input jacks on the rear panel of the ASR-X Pro allow you to sample audio from a microphone or line-level audio source—such as a CD player or phonograph—connected to your ASR-X Pro. The use of the Audio Inputs is described in Chapter 5.

Making MIDI Connections



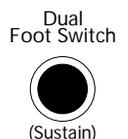
The ASR-X Pro has powerful MIDI capabilities. The rear panel MIDI jacks are:

- **MIDI Thru**—This jack is used when the ASR-X Pro is part of a MIDI daisy-chain, with multiple MIDI devices connected in a row. Any MIDI data that the ASR-X Pro receives will be passed along from this jack to the MIDI In of the next device in the series.
- **MIDI Out**—The ASR-X Pro sends MIDI data out of this jack. Since the ASR-X Pro can play external MIDI sounds from its pads or sequencer tracks, or provide a timing reference for an external sequencer, connect this jack to the MIDI In of a MIDI sound module, sequencer, or MIDI patchbay.
- **MIDI In**—The ASR-X Pro responds to MIDI data sent through a MIDI cable connecting this jack to the MIDI Out of an external MIDI controller, sequencer, storage device or MIDI patchbay. When the ASR-X Pro is receiving MIDI data, its front-panel MIDI LED flashes.



Using a Foot Switch with the ASR-X Pro

Connecting a foot switch to the ASR-X Pro's rear-panel Dual Foot Switch jack allows you to use a foot switch for conventional purposes—as a sustain pedal, for example—or for performing certain operations hands-free. Chapter 7 describes the many possible uses of a foot switch with the ASR-X Pro. The ASR-X Pro can accommodate a dual foot switch—such as ENSONIQ's SW-10—or a single foot switch, such as ENSONIQ's SW-2 or SW-6.



Connecting SCSI Devices

To learn how to connect SCSI devices to your ASR-X Pro, see Chapter 8.

Powering the ASR-X Pro

Connect one end of the supplied AC cable to the ASR-X Pro's line jack—located next to the On/Off switch on the rear panel—and the other end to a grounded AC outlet. The ASR-X Pro works with all standard voltages.

Turning On the ASR-X Pro

When powering up the ASR-X Pro, as with any audio gear, turn down your monitoring system to avoid any unwanted level spikes. To turn on the ASR-X Pro, press in the top of the rear-panel On switch.

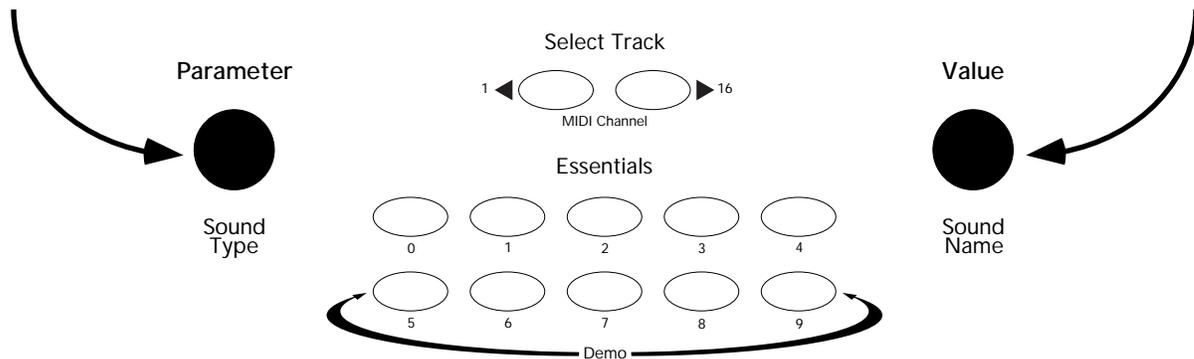
The ASR-X Pro Controls

Each section of the ASR-X Pro provides buttons for its related tasks. In addition, there are a set of common controls and indicators that you'll find yourself using again and again.

The ASR-X Pro Display

The display located in the center of the ASR-X Pro front panel is your doorway to all of the ASR-X Pro's workings. Information relating to everything you do is presented on this display. Each chapter in this manual describes what you'll see while using your ASR-X Pro—and what it all means.

The Knobs



In the center of the front panel, below the display, are two knobs central to most every ASR-X Pro activity. These knobs each have two names, since they operate in two wide-ranging contexts.

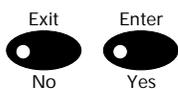
- When you're selecting sounds for tracks or for pads in the ASR-X Pro, the central knobs are referred to as the Sound Type and Sound Name knobs. These names are printed underneath the knobs, as shown above. The Sound Type and Sound Name knobs are the key to unlocking the power of the ASR-X Pro's SoundFinder feature. Each knob does just what its name suggests: the Sound Type knob selects a kind of sound, and the Sound Name selects an individual sound.

Tip: To learn more about selecting sounds and SoundFinder, see Chapter 2.

- Virtually every other ASR-X Pro activity also uses the two central knobs. In these contexts, they're referred to as the Parameter knob and the Value knob. These names are printed above the knobs, as shown in the above illustration.
 - A *parameter* is a characteristic of the ASR-X Pro software that can be changed.
 - A *value* is the setting of a parameter.

The Parameter knob is used for the selection of a parameter for editing, and the Value knob changes its value. There are times that the knobs are used for selecting procedures to be performed—in these cases as well, the knobs are referred to as the Parameter and Value knobs.

The Exit/No and Enter/Yes Buttons and Their LEDs



The two buttons marked "Exit/No" and "Enter/Yes" are central to the performance of many ASR-X Pro procedures, and are used for navigating the ASR-X Pro displays and parameters.

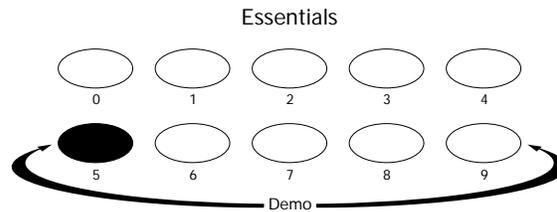
Most of the operations performed on the ASR-X Pro are posed as questions on its display—at such a time, think of these buttons as No and Yes buttons. When the ASR-X Pro asks you a question, the LEDs in the buttons flash as a reminder that the ASR-X Pro requires a response from you in order to proceed with the selected operation. To answer "No" or "Yes," press the appropriate button.

Some of the ASR-X Pro's features offer sets of parameters and procedures. In such cases, you'll begin by answering "Yes" to a top-level question, which will have the effect of beginning the procedure. From there you'll encounter parameters presented on sub-displays that relate to the top-level question. To exit back out to the top level of the ASR-X Pro, you can press the Exit/No button.

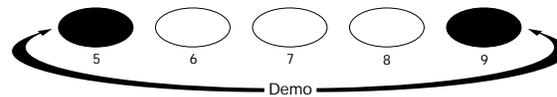
Playing the ASR-X Pro Demo

The ASR-X Pro contains some short demonstration pieces to give you an idea of the kind of music it can produce. These demos are based on the wave data built into the ASR-X Pro. To play the main demo:

1. Locate the Essentials buttons on the ASR-X Pro's front-panel.
2. Hold down the Essentials Button 5.



3. While still holding the Button 5 down, press Essentials Button 9.



4. Release both buttons.
The display will show...

```
Start demo playback?
MAINDEMO: Internal
```

5. Press the Enter/Yes button to hear the demo.
3. To stop the demo, press any button on the ASR-X Pro front panel.
4. To select the individual demos that make up the main demo, turn the Parameter knob to select other demo categories, and the Value knob to select individual demos in the selected category—then press Enter to hear the selected demo.

Important ASR-X Pro Concepts

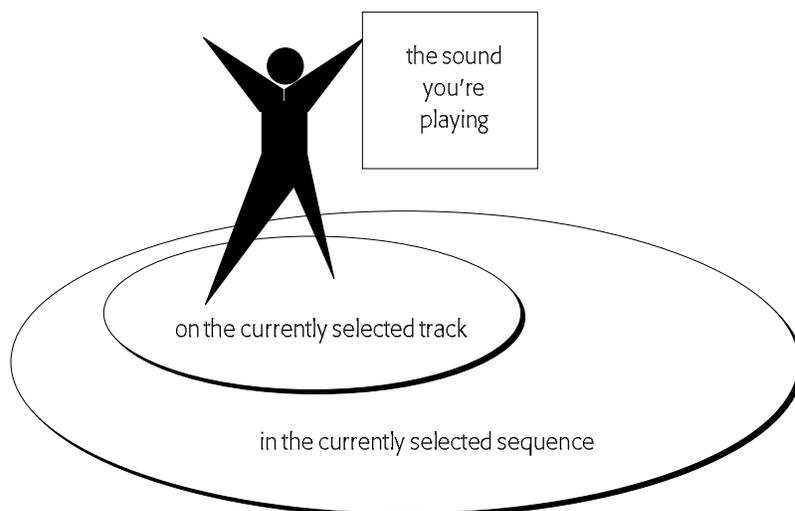
Architecture Overview

The ASR-X Pro is a groovestation containing a variety of elements, each represented by an area (or two, in the case of the pads) of the ASR-X Pro front panel:

- tracks
- pads (and pad editing)
- effects
- sampling/resampling
- sequencer
- disk functions and global settings

While each area has its own chapter in this manual describing it in detail, it's important that you always know where you are and what you're doing.

You Are Here



- In the ASR-X Pro, there is always a sequence selected, even if you haven't recorded anything.
- In the ASR-X Pro, there is always a track selected, even if you haven't recorded anything.

Therefore, the important thing to remember about the architecture of the ASR-X Pro is this simple rule:

You're always on the currently selected track in the currently selected sequence.

This means that:

- When you press the Track Sound button and pick a new sound, you're choosing a new sound for the currently selected track (described in Chapter 2).
- When you play the pads, you're playing the sound on the currently selected track (see Chapter 3).
- When you convert a standard sound into a RAM kit, the newly created RAM kit is assigned to the currently selected track (described in Chapter 3).
- When you select new sounds or otherwise edit or process what's on a pad, you're editing one of the pads in the RAM kit on the currently selected track (described in Chapter 3).
- When you sample or resample and send your wave(s) to one or more pads, you're sending them to a RAM kit on the currently selected track (described in Chapter 5).
- When you play the pads and record in the sequencer, you're recording on the currently selected track (described in Chapter 6).

What's Where

The ASR-X Pro contains essentially three types of memory:

1. ROM (for "Read-Only Memory")—This is a permanent and unchangeable area of memory that contains the wave data used by the sounds shipped with your ASR-X Pro; it also contains the sounds themselves.
2. RAM (for "Random Access Memory")—This area of memory holds:

• the contents of the Scratch Pad	• waves you've sampled and sent to pads
• the sounds that play your samples	• RAM kits you've created and edited
• sequences	• System/MIDI settings

Note: RAM memory is fast, efficient memory; it's also volatile, which means that everything you do will be stored in RAM only until you turn off the ASR-X Pro, at which time RAM is cleared. While this offers you a clean slate each time you turn on the ASR-X Pro, it also means that it's important to remember to save your work to disk before powering down.

- FLASH—FLASH memory is a writable form of permanent memory in which the ASR-X Pro stores its operating system—its contents are retained even when the ASR-X Pro is turned off. In addition, when the ASR-X Pro is shipped from the factory, FLASH holds the default system, click and resampling setup parameter values, as well as the default Essentials buttons sound assignments and USER quantization templates. You can write your own custom settings to FLASH; see Chapter 7. When you update your operating system version from floppy, the new version is written to FLASH.

The “Allocating memory” Message

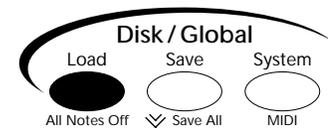
From time to time you may see “Allocating memory” briefly appear on the ASR-X Pro display. This is completely normal—it means that the ASR-X Pro is defragmenting its RAM memory to make most efficient use of available space. Defragmenting takes bits and pieces of free RAM joins them into uninterrupted, larger chunks of memory. This helps your data play back quickly and smoothly.

How Many Notes Can be Played at Once

The ASR-X Pro supports 32-voice polyphony, which means that 32 sound layers can be playing at any given moment. Different sounds use different numbers of layers—sounds based on the samples you create use one or two per note, while ROM sounds may use up to 16 per note—so the number of notes that can be played simultaneously depends very much on the sounds being used. To learn more about sound layers, see Chapter 3.

The All Notes Off Button

It’s not uncommon for MIDI devices to get momentarily confused, given the amount of MIDI data that moves through the cables in a MIDI studio, and the ASR-X Pro is no exception. The Disk/Global Load button doubles as a handy All Notes Off button. If notes in the ASR-X Pro continue playing when you feel they should stop, double-click this button to turn off all of the currently sounding notes.



About Note, Tips and Warnings in the ASR-X Pro Documentation

Throughout the ASR-X Pro Reference Manual and User’s Guide, you’ll encounter notes, tips and warnings, offset from the rest of the text by borders, and always beginning with the word “Note,” “Tip” or “Warning” in bold type. Each of these has its own meaning:

- **Note:** information regarding the topic being discussed that should not be overlooked.
- **Tip:** a way of using the feature being discussed that’s worth being aware of.
- **Warning:** information that’s vital in preventing damage to the ASR-X Pro, other equipment, or you.

Optional ENSONIQ Accessories for the ASR-X Pro

- X-8 output expander—The X-8 output expander provides additional outputs for your ASR-X Pro, usable as four pairs of stereo outputs, or as eight mono outputs.
- SW-10 foot switch—The SW-10 provides two foot pedals mounted on a single base that let you take full advantage of the ASR-X Pro many hands-free possibilities.
- SW-2 foot switch—The SW-2 synthesizer-style single foot switch can access the many possibilities available to a foot switch on the ASR-X Pro.
- SW-6 foot switch—The SW-2 piano-style single foot switch can access the many possibilities available to a foot switch on the ASR-X Pro.
- X-Audio audio CDs—Each X-Audio series CD contains a huge assortment of materials that can be sampled into the ASR-X Pro.
- EXP Series Wave Expansion Boards—These exciting boards from ENSONIQ provide the ASR-X Pro with new sounds and ROM wave data.

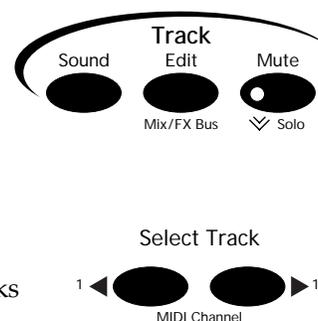
2 Tracks

Introduction to Tracks

Whatever you do in the ASR-X Pro—and whatever kind of sound you play from its pads or via MIDI—you're always on a track in a sequence, even when you haven't yet recorded any notes. When you choose and listen to the sounds built-in to your ASR-X Pro, or that you've sampled/resampled yourself, you're actually choosing sounds for the currently selected track. Tracks are absolutely central to life with an ASR-X Pro. The Track buttons allow you to control the properties of each track.

Each track has:

- a sound that can be played using the ASR-X Pro pads or from an external controller via MIDI, or a sound that can play an external MIDI device.
- an editable set of parameters that determine how the sound will behave while it's assigned to the track.
- a mute/solo capability that can silence the track or isolate by turning all other tracks off.
- its own MIDI channel for receiving and transmitting MIDI data. Each track's MIDI channel is the same as its track number—there are 16 tracks in each sequence.

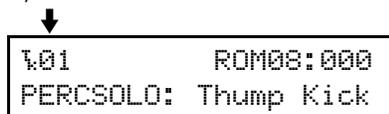


These topics are discussed in detail in this chapter.

To Select One of the Tracks in the Currently Selected Sequence

The track display tells you which track is currently selected. To view it, press the Track Sound button.

The currently selected track



To Select a Track

1. Press the Select Track right arrow button to select a higher-numbered track, or the left arrow button to select a lower-numbered track.

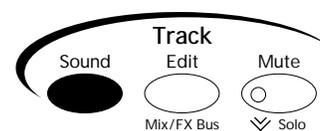


Tip: Hold down either button to scroll through the tracks.

Selecting a Sound for a Track

There are four ways to place a sound on the currently selected track, all of which begin with pressing the Track Sound button:

- You can select a track's sound using the front-panel Sound Type and Sound Name knobs, taking advantage of the ASR-X Pro powerful SoundFinder feature—see "Selecting a Track's Sound Using the Sound Type and Sound Name Knobs" below.
- You can select a track's sound by sending MIDI Bank Select and Program Change messages to the ASR-X Pro—see "Selecting a Track's Sound Via MIDI" later in this section.
- You can transform any ROM sound on the track into a new, editable RAM drum kit by sampling or resampling and sending your sample to a pad (see Chapter 5).



- You can transform any ROM sound on the track into a new, editable RAM drum kit by editing the sound using the Pad editing controls (see Chapter 3).

When a new sound is selected for a track, the ASR-X Pro will automatically reset certain track parameters if the System/MIDI Track ParamReset parameter is set to “On” (see Chapter 7). For a list of these parameters, see “Track ParamReset Behavior” in Chapter 9.

Banks and Sounds

Sounds are stored in the ASR-X Pro in groups called *banks*. A bank can contain up to 127 sounds. Each bank has a corresponding MIDI Bank Select number that allows it to be selected via MIDI, and within each bank, each sound has a program number corresponding to a MIDI Program Change value so that it, too, can be selected via MIDI (see “Selecting and Playing a Track’s Sound Via MIDI” later in this chapter).

Selecting a Track’s Sound Using the Sound Type and Sound Name Knobs

Sound selection using the ASR-X Pro front-panel knobs is simple. The ASR-X Pro utilizes ENSONIQ’s acclaimed SoundFinder™ technology to make the location and selection of sounds logical and easy.

SoundFinder

SoundFinder is a database of all the sounds in your ASR-X Pro. The power of a database lies in its ability to let you to view information in a manner of your choosing. SoundFinder keeps a list of all the sounds available in your ASR-X Pro, and shows them to you in convenient categories called *sound types*.

SoundFinder sound types show you sounds by instrument family—vocals or bells, for example—or by other useful criteria, including the location in the ASR-X Pro’s memory where they reside. The ALL-SND category is especially useful; it shows all of the ASR-X Pro sounds arranged in alphabetical order.

Tip: When you select a sound from a SoundFinder category, the ASR-X Pro remembers the sound you’ve selected, and offers it to you as a first choice when you return to the category.

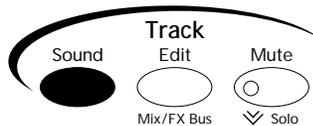
While most of SoundFinder’s categories describe types of musical instruments, there are three additional categories that allow you to select sounds based on the location in memory in which they reside:

- EXP-SND—This category contains sounds located on an EXP Series Wave Expansion Board.
- ROM-SND—This category contains sounds stored in permanent ROM.
- RAM-SND—This category contains sounds stored in temporary RAM. There are two banks’ worth of RAM sound memory (to learn about banks, see “Banks and Sounds” above).

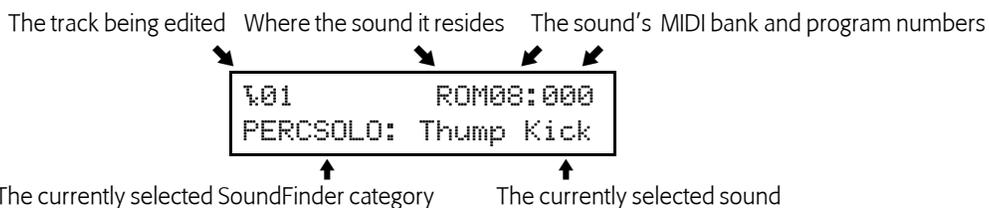
You can also set a track to transmit MIDI data—see “Selecting and Programming a MIDI-OUT Sound.”

To Select a Sound Using the Sound Type and Sound Name Knobs

- Press the Track Sound button.



The display shows you information that’s helpful when picking sounds:



- Turn the Sound Type knob to select a different SoundFinder category, if desired.

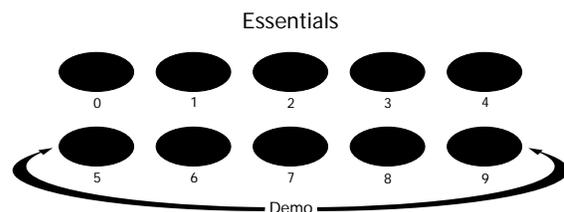
Tip: To quickly locate all RAM kits, turn the Sound Type knob all the way to the left (to the USER-SND category). To find the sounds that play your waves, turn it all the way right (*CUSTOM).

- Turn the Sound Name knob to select a new sound.

Selecting a Track's Sound Using the Essentials Buttons

The ten Essentials buttons provide instant access to 15 of your favorite sounds. To assign an Essential sound to the currently selected track:

- Press the Track Sound button.
- Press the desired Essentials button for Essential sounds 0-9, or hold down an upper Essentials button and press the button beneath it for Essential sounds 10-14.



Tip: You can also select Essentials using foot switches—see Chapter 7.

The single Essentials buttons are pre-programmed by ENSONIQ with the following sounds:

<i>Essentials button:</i>	<i>selects:</i>	<i>Essentials button:</i>	<i>selects:</i>
0	Gizmo Kit	5	Vintge Bs 1
1	Dance Kit	6	Sweep Bass
2	HeavyDrmKit	7	Snot-T-Bass
3	Ol'SkoolKit	8	Mono Boy
4	GM Kit	9	Tite'T'Bass

The upper and lower Essentials pairs are programmed to select these sounds:

<i>Essentials pair:</i>	<i>selects:</i>	<i>Essentials pair:</i>	<i>selects:</i>
0 and 5	R. Peggio	3 and 8	PaddedEPno
1 and 6	Classic Syn	4 and 9	Techno Sync
2 and 7	Squared Off		

Programming the Essentials Buttons

You can assign one any of your own favorite sounds to an Essentials button in any of the following ways:

- Select the desired sound using the Sound Type and Name knobs, hold down the Track Sound button and, while still hold it, press the Essentials button to which you want to assign the sound.
- Hold down the desired Essentials button and, while still holding it, select the desired sound using the Sound Type and Name knobs.
- After setting up a foot switch for the selection of Essentials (Chapter 7), select the desired sound using the Sound Type and Name buttons, hold down the Track Sound button and, while still holding it, select the intended Essentials button using your foot switch.

Tip: You can save your current Essentials sound assignments to disk—see Chapter 7.

Tip: To learn how to store Essentials assignments permanently into FLASH memory, see “Save these settings?” in Chapter 7.

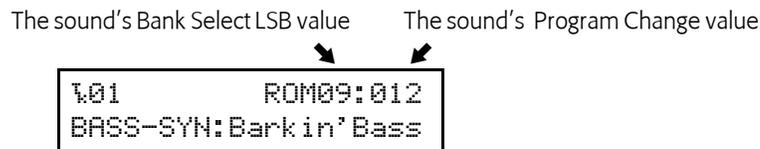
Selecting and Playing a Track's Sound Via MIDI

You can select sounds for tracks by sending the ASR-X Pro MIDI Bank Select LSB and Program Change values on each track's MIDI channel (the MIDI channel corresponding to its track number). Sounds can also be played from MIDI on each track's MIDI channel.

Note: Each track *always* receives and responds to MIDI data received on its MIDI channel, regardless of which track is currently selected.

Note: In order for the ASR-X Pro to respond to Bank Select and Program Change messages, its System/MIDI Bank&ProgChgRecv parameter must be set to "On" (see Chapter 7 for more information). In addition, the target track's ProgramChngeRecv and Bank Select Recv parameters must also be set to "On" (these two parameters are described later in this chapter).

The track sound selection display shows you the Bank Select LSB and Program Change values for the displayed sound. You can program these Bank Select and Program Change values into an external MIDI device in order to select the sounds via MIDI later on.



To Select and Play a Track's Sound Via MIDI

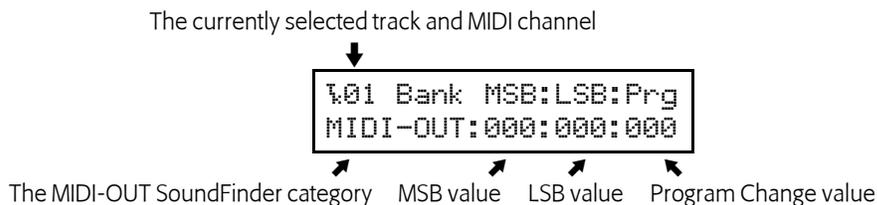
1. Set a MIDI device to transmit on the channel of the track whose sound you want to select or play.
2. Send the appropriate Bank Select and Program Change values to the ASR-X Pro.
3. Send note and controller data from your external device to play the track's sound.

Selecting and Programming a MIDI-OUT Sound

You can set up a track to transmit Bank Select, Program Change, note and controller data to an external MIDI device by assigning a MIDI-OUT sound to the track. When a track uses a MIDI-OUT sound, the track will produce no sound on the ASR-X Pro itself—instead, notes played on the pads, as well as data recorded on the track, will be transmitted from the ASR-X Pro on the track's MIDI channel.

To Select and Program a MIDI-OUT Sound

To assign a MIDI-OUT sound to a track, turn the Sound Type knob clockwise all the way to select the MIDI-OUT sound category. The MIDI-OUT category does not require you to select an individual sound as such—instead, its display allows you to set Bank Select MSB and LSB and Program Change values for transmission from the selected track in order to select the desired sound in the external MIDI device.



To set a Bank Select or Program Change value to be transmitted, select the desired field by turning the Value knob—the selected field will flash to show that it can be edited. Turn the Value knob to set the desired Bank Select MSB, LSB and/or Program Change value. The values are transmitted as they're set.

Note: Some MIDI devices select banks in response to received Bank Select MSB and/or LSB messages. Consult your external device's documentation to learn which values to use.

Tip: You can assign a MIDI-OUT sound to an Essentials button—when the Essentials button is pressed, the sound's Bank Select LSB and Program Change values will be transmitted.

Quickly Erasing a Track Sound

You can quickly erase a RAM sound from a track by holding down the Track Sound button and, while still holding it, pressing the No button. When the ASR-X Pro asks you if you're sure you want to delete the sound and any references to it, press the Yes button to erase the sound—it will be removed from RAM and replaced by the ROM sound Silence.

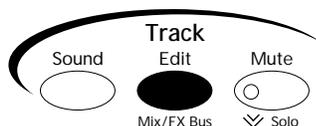
Note: Since this feature removes the selected sound and its copies, make sure not to inadvertently erase the original "SMPL X" version of the sound. If you erase this sound, the ASR-X Pro will also delete all copies of the sound, including the final version. Delete only the unwanted copies—if you haven't re-named your sounds using the Memory Manager, these will be the versions whose names end with an underscore and a number. Erase the original version of a sound only when you want to remove it and any sounds based upon it from memory.

Editing Track Parameters

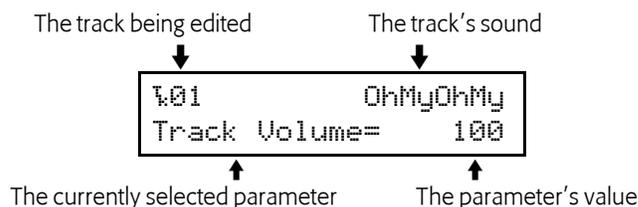
Editing a track's parameters—and therefore determining the behavior of its sound—involves the same technique regardless of the parameter being edited.

To Edit a Track Parameter

1. Press the Track Edit/Mix/FX Bus button in the Track section of the ASR-X Pro front panel.



2. Turn the Parameter knob to select the track parameter you'd like to edit. All of the track parameter displays show the track number and currently selected sound on the top line, and the selected parameter and its value on the bottom line:



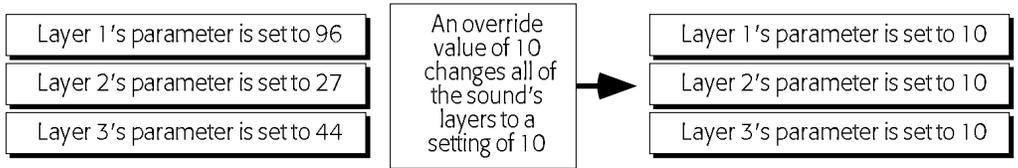
3. Turn the Value knob to change the setting of the selected parameter .

Overrides and Offsets

ASR-X Pro sounds are made up of layers of waves. Track parameters allow you to easily change the settings in all of a sound's layers at once by altering them in one of two ways. Each track parameter is either:

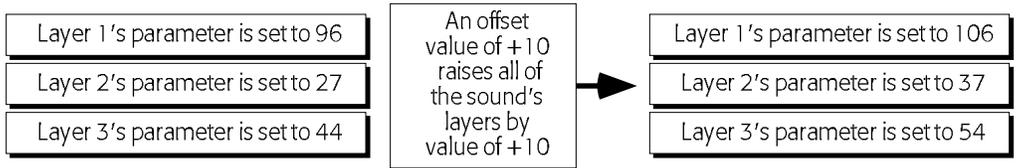
- an override, which sets all of the layers in the currently selected sound to the absolute value you set.
- an offset, which raises or lower the programmed values by the amount you set.

Overrides set all of a sound's layers to the same absolute value for the selected parameter.



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

Offsets are typically used to affect all of a sound’s layers at once, retaining their different settings for the selected parameter in relation to one other. Offset parameters offer values that have positive/negative aspects (shown with a “+” or “-”). When an offset is set to “0,” the originally programmed value for each layer is in effect.



Note: Offsets adjust layer parameters only within the parameters’ legitimate ranges—they can’t force them beyond those limits. If a track offset parameter appears to be having no effect, it’s likely that the setting for the parameter in the sound’s layers has already reached its maximum or minimum setting.

Editing Track Parameters Via MIDI

Track parameters can be edited via MIDI in two ways. Some of the parameters, such as Track Volume, Mix (Expression) and Pan correspond to standard MIDI sound controllers, and can be adjusted by sending the ASR-X Pro values for the relevant controllers. In addition, most of the track parameters can be edited using special registered and non-registered MIDI parameters (RPNs and NRPNs). To learn more about RPNs and NRPNs, see Chapter 9.

What Each Track Parameter Does

Track Volume

The Track Volume parameter allows you to override the loudness ceiling programmed into the selected track’s sound. A Volume setting of 127 will leave the sound’s level set as it was programmed. Lower values will reduce the sound’s loudness—down by 96dB at a value of 0.

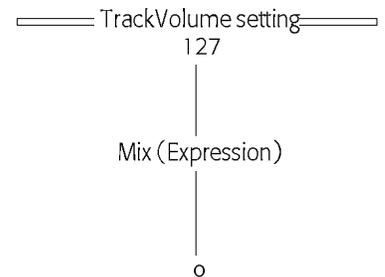
Track Volume can also be edited via MIDI with controller #7 (Volume) messages.

Mix (Expression)

The Mix (Expression) parameter can raise or lower the level of the sound on the selected track, but only as high as the maximum set by the Track Volume parameter.

You can set an acceptable loudness ceiling for a sound with the Track Volume parameter, and use the Mix (Expression) parameter to adjust its level without worrying that it will ever become too loud.

Mix (Expression) can also be edited via MIDI with controller #11 (Expression) messages.



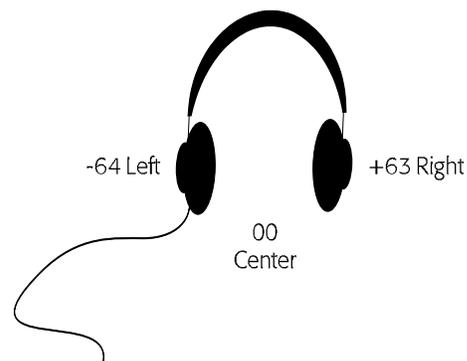
Vol/Mix Polarity

The Vol/MixPolarity parameter reverses the manner in which the selected track's sound will respond to Volume and Mix (Expression) messages received via MIDI. When set to +Pos, the sound will respond normally: higher Volume and Mix (Expression) values will result in greater loudness. When set to -Neg, higher Volume and Mix (Expression) values will lower the level of the sound.

Track Pan

ASR-X Pro sounds are programmed to be heard in specific places in the left/right stereo field. By adjusting the Track Pan setting, you can offset the stereo placement of the currently selected track's sound. 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. If components within the sound are panned differently, their relative positions will be maintained as the sound is shifted in either direction.

Track Pan can be edited via MIDI with controller #10 (Pan) messages.



FX Bus

The FX Bus parameter allows you to assign the selected track—and its sound—to the current sequence's insert or global reverb effects, or left un-effected, or "dry." This is accomplished by assigning the track to an FX (for "effect") bus. (Using the ASR-X Pro Effects is described in Chapter 4.) You can select:

- Prog—to have the sound of each pad use its own FX Bus setting in a kit sound, or to have a standard sound use its Alt Bus setting.
- Insert—to send the selected track's sound to the sequence's insert effect.
- LightReverb—to add a minimal amount of global reverb to the selected track's sound.
- MediumReverb—to add a greater amount of global reverb to the selected track's sound.
- WetReverb—to add the maximum amount of global reverb to the selected track's sound.
- Dry—to leave the selected track's sound un-effected, or "dry."

Note: When an X-8 output expansion board has been installed, an additional four busses become available. These stereo FX busses, AuxOut1, AuxOut2, AuxOut3 and AuxOut4 allow you to send a track's sound directly to the auxiliary outputs. To use the auxiliary busses as separate mono busses, pan the tracks routed to them hard left or hard right (see "Track Pan" above).

MIDI controller #91 can be used to select one of the reverb busses or the dry bus for any track other than the insert control track. This is accomplished by sending the ASR-X Pro a controller #91 value on the track's MIDI channel. When the track receives a controller #91 value of:

- 0, it will be assigned to the Dry FX bus.
- 1-40, it will be assigned to the LightReverb FX bus.
- 41-80, it will be assigned to the MediumReverb FX bus.
- 81-127, it will be assigned to the WetReverb FX bus.

TrackMIDIOut

When a track's TrackMIDIOut parameter is set to "Enable," the track can transmit MIDI data on its corresponding MIDI channel when it uses a MIDI-OUT sound." When the parameter is set to "Disable," no MIDI data for the track will be transmitted from the pads or sequencer.

Note: The ASR-X Pro intelligently transmits a track's Bank Selects and Program Changes only when they're different from the last ones transmitted from the track.

Pitch Bend Up and Pitch Bend Down

The Pitch Bend Up and Pitch Bend Down parameters allow you to separately set how you want the selected track's sound to respond to up and down Pitch Bend messages received via MIDI.

Pitch Bend Up and Pitch Bend Down can be set to:

- 1-12dn or 1-12up—to lower or raise the pitch of the selected track's sound by 1 to 12 equal-temper semitones when Pitch Bend up or down messages are received via MIDI.
- Prog—to respond to received up or down Pitch Bend messages according to the programming in the track's sound.
- Sys—to use the global system Pitch Bend Up or Down values (see Chapter 7 for details).
- Off—to ignore received up or down Pitch Bend messages.

Tip: Each track provides a filter—the Pitch Bend Recv parameter—that you can use to disable or enable its response to Pitch Bend messages received via MIDI. This parameter is described later in this chapter.

Octave Shift

The Octave Shift parameter allows you to shift, by octaves, the pitch at which the selected track will play its sound. A setting of 0oct means the sound will play at its programmed octave tuning value. You can tune the sound up or down by a maximum of four equal-temper octaves.

Semitone Shift

The Semitone Shift parameter allows you to shift, in semitone steps, the pitch at which the selected track will play its sound. A setting of 0st means the sound will play at its programmed semitone tuning value. You can shift the sound upward by as much as 63 equal-temper semitones or downward by 64 semitones.

Fine Tuning

The Fine Tuning parameter allows you to re-tune the sound on the selected track by cents. A setting of 0cents means the sound will use its programmed fine tuning value. You can lower or raise the sound's fine tuning by -50 to +49 cents. 100 cents equals one semitone.

PitchTbl

ASR-X Pro contains a variety of non-standard tunings, or pitch tables. The PitchTbl parameter allows the selected track's sound to use one of these special tunings.

Tip: Each track in the ASR-X Pro has its own PitchTbl parameter that determines the pitch table to be used by the sound on the track. By setting each track to a different pitch table, you can program the ASR-X Pro's tracks to produce 16 different tunings at once!

The PitchTbl parameter can be set to:

- Prog—to use the pitch table the sound was originally programmed to use.
- Sys—to use the global system pitch table. (See Chapter 7 to learn about designating a system-wide pitch table.)
- One of the pitch tables built into the ASR-X Pro.

Chapter 9 provides a list of the built-in ASR-X Pro pitch tables.

Tip: With the proper software, you can also design your own pitch table on a computer, and transmit it to the ASR-X Pro via MIDI. "About RAM Pitch Tables" in Chapter 9 provides detailed information on creating your own pitch tables.

Glide Mode

The Glide Mode parameter allows you to set the glide characteristics of the selected track's sound. The parameter can be set to:

- Prog—so that gliding from note to note will occur according to the sound's programming.
- Off—so that no gliding will occur.
- On—so that all of the layers in the sound will glide from note to note.

Note: When this parameter is set to "On"—enabling gliding in the selected track's sound—adjust the Glide Time parameter (described below) to set the speed at which the track's sound will glide from note to note.

If the Glide Mode parameter is set to "Prog" or "Off," the parameter can also be toggled on or off via MIDI by sending MIDI controller #65 (Portamento) values to the ASR-X Pro on the selected track's MIDI channel. Values of 64 or above will turn glide on; values of 63 or lower will turn it off (there is no way to select the Prog setting via MIDI). When controller #65 is used for this purpose, the ASR-X Pro display will not show that the parameter has been reset—it will simply happen. In order to return control of the Glide Mode parameter to the ASR-X Pro's front-panel, a controller #65 value of 63 or less must be sent to the ASR-X Pro on the selected track's MIDI channel.

Glide Time

When a track's sound is programmed to glide from note to note, the Glide Time parameter allows you to adjust the speed at which its notes will glide from one to the next. The parameter can be set anywhere from -64 to +63. A value of 0 means that the sound will glide at its programmed speed. Higher values will slow the sound's glide, and lower values will cause it to speed up.

Delay Offset

The Delay Offset parameter can be used to increase the amount of time it will take for a track's sound to be heard after it receives a key down message, either from a pad or via MIDI. If a sound has been programmed with a delay time, the delay offset will lengthen that delay time 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 parameter is set to 0ms, no delay time will be added to the sound.

SyncLFO&Noise

The SyncLFO&Noise parameter allows you to alter the behavior of any LFOs and noise generators in the selected track's sound that are programmed to be synchronized to the ASR-X Pro's sequencer or to incoming MIDI clocks. The parameter can be set to:

- Prog—to allow the synchronized LFOs and noise in the track's sound to behave as programmed.
- Normal—to de-synchronize any synchronized LFOs and noise in the track's sound.
- 1/1 to 1/32T—to set the rhythmic relationship of any synchronized LFOs and noise in the track's sound to the ASR-X Pro's system tempo, or to incoming MIDI clocks. A "T" following a number signifies a triplet value.

Tip: The System/MIDI ClockSource parameter determines whether the ASR-X Pro sequencer or MIDI clocks will control synchronized LFOs or noise. See Chapter 7.

Normal LFO Rates

The Normal LFO Rates parameter allows you to raise or lower the programmed speed of any unsynchronized LFO's in the selected track's sound. The parameter can be set from -64 to +63. A value of 0 means the track's sound will retain its programmed LFO rate. A value other than 0 will be added to or subtracted from the sound's originally programmed rate.

LFO Depth

The LFO Depth parameter allows you to increase or decrease the programmed depth of the LFO's in the selected track's sound. The parameter can be set from -64 to +63. A value of 0 means the track's sound will retain its programmed LFO depth. A value higher than 0 will increase the depth of the sound's LFOs, while values below zero will reduce it.

LFO Delay Time

The LFO Delay Time parameter allows you to lengthen or shorten the delay programmed for any of the LFOs in the selected track's sound. The parameter can be set from -64 to +63. A value of 0 means the track's sound will retain its programmed LFO delay setting. Any value above 0 will lengthen the sound's LFO delay times, while any values below 0 will shorten them.

Amp Env Attack

The Amp Env Attack parameter allows you to lengthen or shorten the attack times of amplitude envelopes within the selected track's sound. The parameter can be set anywhere from -64 to +63. A value of 0 will leave the attack times of amplitude envelopes within the track's sound behaving as programmed. Values above 0 will lengthen the attack times, while values below 0 will shorten them.

Amp Env Decay

The Amp Env Decay parameter allows you to lengthen or shorten the decay times of amplitude envelopes within the selected track's sound. The parameter can be set anywhere from -64 to +63. A value of 0 will leave the decay times of amplitude envelopes within the track's sound behaving as programmed. Values above 0 will lengthen the decay times, while values below 0 will shorten them.

Amp Env Release

The Amp Env Release parameter allows you to lengthen or shorten the release times of amplitude envelopes within the selected track's sound. The parameter can be set anywhere from -64 to +63. A value of 0 will leave the release times of amplitude envelopes within the track's sound behaving as programmed. Values above 0 will lengthen the release times, while values below 0 will shorten them.

Filter Cutoff

The Filter Cutoff parameter allows you to raise or lower the filter cutoff settings programmed into the selected track's sound. The parameter can be set anywhere from -64 to +63. A value of 0 will leave the cutoff settings in the track's sound unchanged. Values above 0 will raise the cutoff settings, while values below 0 will lower them.

Filter Resonance

The Filter Resonance parameter allows you to raise or lower the resonance settings programmed into the selected track's sound. The parameter can be set anywhere from -64 to +63. A value of 0 will leave the resonance settings in the track's sound unchanged. Values above 0 will increase the resonance settings, while values below 0 will lower them.

Filt Env Attack

The Filt Env Attack parameter allows you to lengthen or shorten the attack times of filter envelopes within the selected track's sound. The parameter can be set anywhere from -64 to +63. A value of 0 will leave the attack times of filter envelopes within the track's sound behaving as programmed. Values above 0 will lengthen their attack times, while values below 0 will shorten them.

Filt Env Decay

The Filt Env Decay parameter allows you to lengthen or shorten the decay times of filter envelopes within the selected track's sound. The parameter can be set anywhere from -64 to +63. A value of 0 will

leave the decay times of filter envelopes within the track's sound behaving as programmed. Values above 0 will lengthen the decay times, while values below 0 will shorten them.

Filt Env Release

The Filt Env Release parameter allows you to lengthen or shorten the release times of filter envelopes within the selected track's sound. The parameter can be set anywhere from -64 to +63. A value of 0 will leave the release times of filter envelopes within the track's sound behaving as programmed. Values above 0 will lengthen the release times, while values below 0 will shorten them.

Amp&Filt Env Vel

The Amp&Filt Env Vel parameter allows you to increase or decrease the velocity sensitivity of the amplitude and filter envelopes within the select track's sound. The parameter can be set anywhere from -64 to +63. A value of 0 will not change the responsiveness of the amplitude and filter envelopes in the track's sound. Values above 0 will increase the effect of velocity upon the sound's envelopes, while lower values will decrease its impact.

Key Range Lo, Key Range Hi

The Key Range Lo and Key Range Hi parameters allow you to limit the pitches that the sound on the selected track will play. The Key Range Lo parameter sets the lowest note that will play, while the Key Range Hi parameter sets the highest. Either parameter can be set anywhere from A0 to C8. Middle C is C4. (Some MIDI controller manufacturers refer to Middle C as C3—if you're playing the ASR-X Pro from an external MIDI device, check the device's manual.)

Note: A sound'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.

VelocityRange Lo, VelocityRange Hi

The VelocityRange Lo and VelocityRange Hi parameters allow you to set an allowable velocity range for the selected track. When the track receives velocity values from the pads or via MIDI that fall outside of that range, the track's sound won't play. The VelocityRange Lo parameter sets the lowest allowable velocity; the VelocityRange Hi parameter sets the highest. Either parameter can be set from 0 to 127.

Note: A sound's VelocityRange Lo value should not be set above its VelocityRange Hi setting, nor should its VelocityRange Hi value be set below its VelocityRange Lo setting.

VelocityMode

It's not uncommon for different components of ASR-X Pro sounds to be heard only when the pads are struck, or MIDI notes are received, with particular velocities. The Velocity Mode parameter provides a way to alter sounds so you can reliably produce these values and, therefore, the sounds those velocities produce. When the Velocity Mode parameter is set to any value other than Normal, velocities that fall within the sound's velocity window (see the VelocityRange Lo, VelocityRange Hi parameter description above) are automatically converted to the velocity set with the Velocity Mode parameter. The possible settings for the parameter are Normal, and Fix 001 through Fix 127.

PressureMode

The ASR-X Pro responds to channel and polyphonic pressure messages that it receives via MIDI. The PressureMode parameter allows you to determine how the track's sound will respond to MIDI pressure messages. You can set this parameter to:

- Off—so that the track's sound will not respond to keyboard pressure. If pressure has been assigned as an insert effect modulation source, that response to pressure is also disabled.

- Auto—so that the track’s sound will respond to whichever type of pressure the ASR-X Pro receives via MIDI.
- Channel—so that the track’s sound will only respond to channel pressure.
- Key—so that the track’s sound will only respond to key pressure.

ProgramChngeRecv

The ProgramChngeRecv parameter enables or disables the selected track’s response to received MIDI Program Change messages. The parameter can be set to “On” or “Off.”

Bank Select Recv

The Bank Select Recv parameter enables or disables the selected track’s response to received MIDI Bank Select messages. The parameter can be set to “On” or “Off.”

Data Entry Recv

The Data Entry Recv parameter enables or disables the selected track’s response to received Data Entry (controller #6) messages. The parameter can be set to “On” or “Off.”

Pitch Bend Recv

The Pitch Bend Recv parameter enables or disables the selected track’s response to received Pitch Bend messages. The parameter can be set to “On” or “Off.”

Mod Wheel(1) Recv

The Mod Wheel(1) Recv parameter enables or disables the selected track’s response to received Mod Wheel (controller #1) messages. The parameter can be set to “On” or “Off.”

FootPedal(4) Recv

The FootPedal(4) Recv parameter enables or disables the selected track’s response to received Foot Pedal (controller #4) messages. The parameter can be set to “On” or “Off.”

Volume(7) Recv

The Volume(7) Recv parameter enables or disables the selected track’s response to received Volume (controller #7) messages. The parameter can be set to “On” or “Off.”

Pan(10) Recv

The Pan(10) Recv parameter enables or disables the selected track’s response to received Pan (controller #10) messages. The parameter can be set to “On” or “Off.”

Expressn(11) Recv

The Expressn(11) Recv parameter enables or disables the selected track’s response to received Expression (controller #11) messages. The parameter can be set to “On” or “Off.”

Sustain/SostRecv

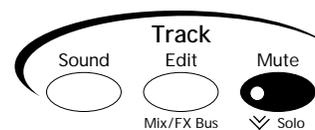
The Sustain/SostRecv parameter enables or disables the selected track’s response to received Sustain or Sostenuto (controllers #64 and #66, respectively) messages. The parameter can be set to “On” or “Off.”

SysCTRL1 Recv, SysCTRL2 Recv, SysCTRL3 Recv, SysCTRL4 Recv,

The SysCtrl1 Recv, SysCtrl2 Recv, SysCtrl3 Recv and SysCtrl4 Recv parameters enable or disable the selected track’s response to received MIDI messages for any of the special user-assignable SysCTRLs (see Chapter 7 to learn more about these definable controllers). The parameters can be set to “On” or “Off.”

Muting and Soloing a Track

The Mute/Solo button provides an easy way to enable or disable the playback of the tracks in a sequence. You can silence, or *mute*, the selected track—or you can *solo* the track by silencing all of the tracks except the selected track.



Tip: The sequencer will automatically record track mutings and un-mutings if they're performed while the track being muted or un-muted is being recorded.

Muting and Soloing from the Front Panel

- To mute the currently selected track, press the Mute button once—the Mute LED will light, and the word “mute” will appear in the display to show that the selected track has been silenced.

↓

```
\01 mute  ROM08:000
PERCSOLO: Thump Kick
```

- To unmute the currently selected track, press the Mute button once—the Mute LED will turn off and the track will once again be audible.
- To solo the currently selected track, double-click the Mute button—the Mute LED will flash, and the word “solo” will flash in the display.

↓

```
\01 solo  ROM08:000
PERCSOLO: Thump Kick
```

- To un-solo the currently selected track, press the Mute button—the Mute LED will turn off and any tracks that were audible prior to soloing the track will once again be audible.
- To solo groups of tracks—this is called a *group-solo*—select each of the tracks in turn and double-click the Mute button for each track.
- To remove the currently selected track from a group-solo, double-click the Mute button.

The ASR-X Pro solo is intelligent in that it remembers if any tracks in the sequence were already muted prior to soloing, and restores them to that state when the solo is disengaged. When a track is soloed, and any track other than the soloed track is selected, the display will flash the word “mute.” Tracks that were already silenced before the solo was engaged will show a non-flashing “mute.”

Muting Tracks via MIDI

Tracks can be muted via MIDI by sending a controller #119 message on the channel whose number corresponds to the track you want to mute. The track will respond to a controller #119 value of:

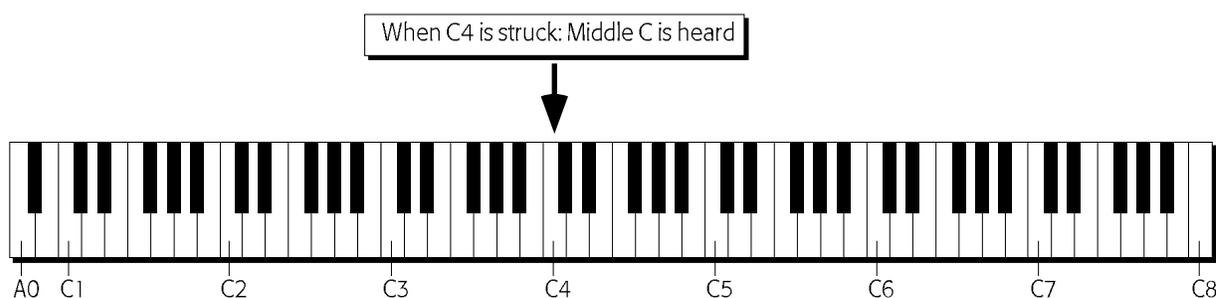
- 127 by muting the track.
- 000 by un-muting the track.
- 064 causes a track that's part of a group-solo to be removed from the solo group.

3 Pads

The Pads: Overview

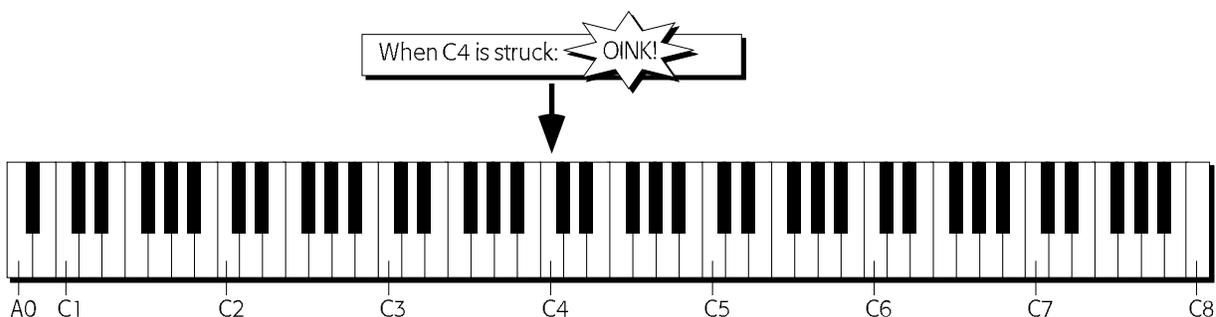
What are the Pads?

All MIDI samplers and MIDI synthesizers—the ASR-X Pro, of course, belongs in both categories—share two fundamental elements: sounds and a way to play them. The most common device used to play sounds is the conventional white-and-black-keys keyboard. Typically, a key on a keyboard will play the note that would be produced by striking the same key on a traditional instrument, such as a piano.



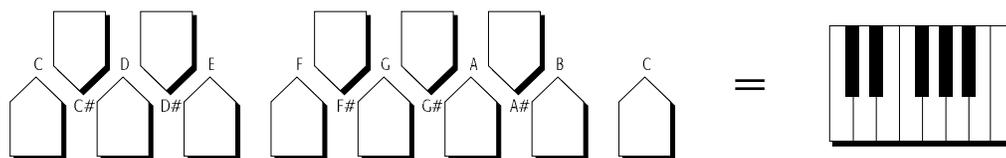
Each semitone is represented by a MIDI note name. The octaves—which begin at each C natural—are numbered, as shown above. The ASR-X Pro can address MIDI notes from A0 to C8.

In the flexible realm of the sampler, however, any sound can be assigned to any MIDI note.



A key on a keyboard connected to a sampler is really nothing more than a switch that plays whatever sound is assigned to the corresponding MIDI note. The ASR-X Pro provides pads instead of a piano-style keyboard for this purpose—the ASR-X Pro is a groove machine, and grooves are most fun when banged into being. (You can also play ASR-X Pro sounds via MIDI from any MIDI controller; see Chapter 2.)

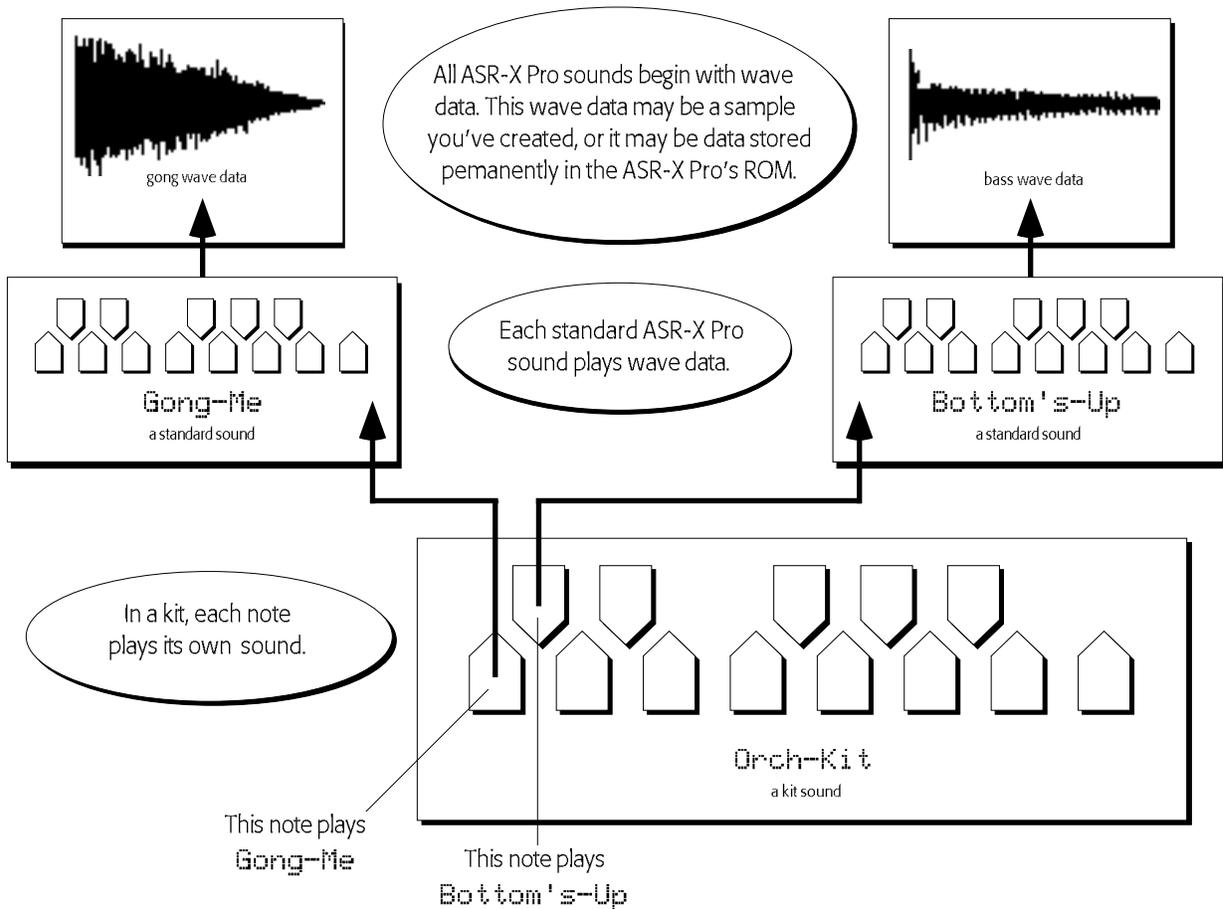
The 13 ASR-X Pro pads trigger 13 adjacent MIDI note numbers, the equivalent of 13 adjacent keys on a piano-style keyboard (unless the Kit Mapper, described later in this chapter, is on). You can use the pads to play single notes or chords.



The pads default to playing the octave beginning at C2, though they can be re-directed up or down to trigger the MIDI note numbers in any octave (see “Octave Transpose Buttons” later in this chapter).

What the Pads Play

The ASR-X Pro provides two major types of sound structures—standard sounds and kit sounds. Precisely what the pads play depends on the structure of the sound assigned to the currently selected track.



Standard Sounds

Standard sounds play digital recordings of audio called *waves*. This can be:

- waves built into your ASR-X Pro ROM.
- waves you've loaded into your ASR-X Pro.
- waves that you've created in the ASR-X Pro.

The waves in standard sounds are arranged in layers comprised of wave data and parameters that shape the data. Some of the ROM standard sounds in your ASR-X Pro are comprised of multiple layers, which may contain groups of related waves in order to accurately reproduce a real-world or synthesized sound. Sounds that play the waves you create on the ASR-X Pro are organized in layers, as well—stereo waves are played by sounds with two layers, mono waves are played by sounds using one layer.

When a standard sound is selected, each pad will play the sound at a different pitch, determined by the setting of the selected track's PitchTb1 parameter (see Chapter 2), and whether or not the Kit Mapper is turned on (the Kit Mapper is described later in this chapter).

Kit Sounds

Kit sounds utilize a powerful structure first introduced in ENSONIQ's MR synthesizer series. In a kit sound, each note from B1 to D7 actually plays its own complete sound—either a standard sound or another kit sound. Therefore, what the pad plays depends on the sound you've assigned to it.

If you've assigned the same standard sound to more than one pad, they play the same sound. Since each pad has its own set of PAD parameters (described later in this chapter), you can program the pads to play

different variations of the same sound, perhaps setting them to play at different pitches. You can also program each pad in a kit to play a sound that's unrelated to what the other pads are playing—in this case each pad triggers something completely unique.

Note: Each pad in a kit defaults to playing its sound at the pitch that would be heard at C4. The Tuning Shift parameter described later in this chapter can change the pitch of the pad's sound.

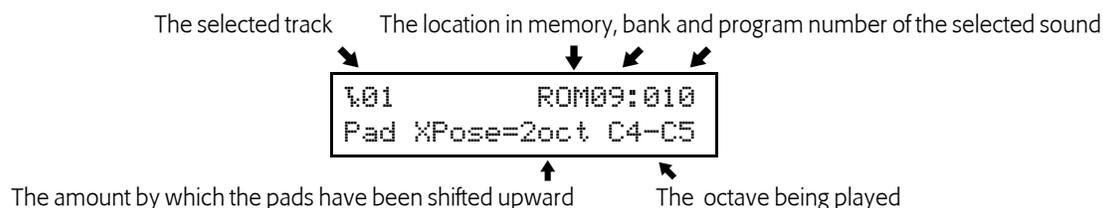
Octave Transpose Buttons

The ASR-X Pro pads default to playing the octave-plus-one-note beginning at the C natural two octaves below Middle C—C2. The Octave Transpose buttons provide a means of changing which of five octaves in the selected sound will be addressed by the 13 pads. You can:



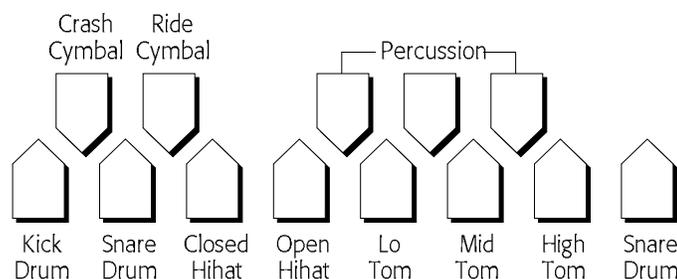
- repeatedly press the either Octave Transpose button to redirect the pads upward or downward.
- press either Octave Transpose button once, and turn the Value knob to select the desired octave.

The Pad Xpose (short for “pad transpose”) display shows you the octave in the currently selected sound that's being played by the pads:



The Kit Mapper

Typically, the pads in the ASR-X Pro play 13 adjacent notes. When you're using a kit sound that conforms to the ENSONIQ drum or percussion maps (described in Chapter 9), these 13 notes may be variations of the same kit component. The Kit Mapper re-assigns the pitches played by the pads so that the important elements of a typical kit—which are mapped to different octaves within the kit—are available at once.



- To turn on Kit Mapper, tap the left Octave Transpose button until the display shows “PadXpose=Kit Mapper.” To turn it off, press the right-hand Octave Transpose button.

Patch Select Buttons

The Patch Select™ buttons provide access to variations of the ASR-X Pro ROM sounds. The layers in these sounds are programmed to supply up to four different versions of the basic sound, or sometimes completely different sounds that complement the basic sound. The Patch Select buttons are used for turning on and off these different sets of layers.



Note: All ENSONIQ samplers since the original EPS have offered the expressive power of Patch Selects. Well-programmed sounds created on those instruments take advantage of this feature.

To hear the effect of the Patch Select buttons, press one or both as you play an ASR-X Pro ROM sound. The four possible Patch Select states are:

- Right—when only the right button is pressed.
- Both—when both buttons are depressed.
- Left—when only the left button is pressed.
- Off—when no Patch Select button is pressed.

The default behavior of the Patch Select buttons is that they are active only when they're being held down. This can be changed by resetting the System/MIDI Patch Selects parameter (see Chapter 7).

Patch Selects and MIDI

The Patch Select states listed above can be invoked via MIDI by sending MIDI controller 70 values on the MIDI channel of the track containing the sound you wish to manipulate. Send the ASR-X Pro a value of:

- 32 to “press” the left Patch Select button.
- 64 to “press” the right Patch Select button.
- 127 to “press” both Patch Select buttons.
- 0 to “press” neither Patch Select button.

Programming the Pads

Overview

The ASR-X Pro allows you to edit the behavior of the pads in any kit sound. You can:

- select a new sound to be played by the pad.
- adjust the manner in which the pad will play its sound by setting volume, panning, effect routing and tuning parameters.

When a pad is playing a sound that uses waves you've created on your ASR-X Pro by sampling or resampling, you can also:

- set the manner in which the pad's sound will play back its wave(s).
- program the sound using an extensive suite of sound-sculpting parameters.
- perform various permanent operations upon the sound's wave data.

Note: If you attempt to perform wave operations by pressing the Pad Process button when the selected sound is not playing an ASR-X Pro-created wave the display will show the “Synthesize Stomper sound?” prompt described later in this chapter.

Any ASR-X Pro sound can be converted into a kit so that it can be edited. The sound will function essentially as it always did—however, you'll be able to re-program the sound pad-by-pad.

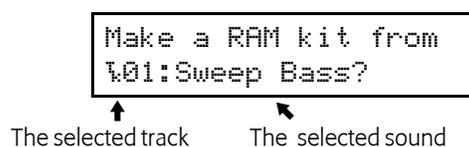
In order to program a sound's pads, two conditions must be met:

1. The sound must be a kit, or converted into a kit for editing.
2. The sound must be in RAM, so that it can be altered (sounds in ROM are unalterable).

The ASR-X Pro has a name for a sound that meets both of these requirements: it's called a *RAM kit*.

To Prepare the Selected Track's Sound for Pad Editing

The ASR-X Pro knows when a sound is ready to be edited. If the selected sound is a RAM kit, it's already editable. When the selected sound is not a RAM kit—if, for example, it's a ROM sound or a non-kit RAM sound—the ASR-X Pro will ask the following question when you press the Pad Sound or Edit buttons:



When you press the “Yes” button in response to this question, the ASR-X Pro creates a copy of the selected sound as a kit in RAM, and assigns it to the selected track. The newly created kit will add an

underscore and a two-digit number to the end of the sound's original name—abbreviating the original name if necessary— to show that it's based on the original sound. The new kit can be found in the USER-SND and DRUM-KIT SoundFinder categories.

Tip: You can rename a RAM kit at any time using the MemoryManager. See Chapter 7.

If the selected sound is a ROM kit sound—so that it already has the desired kit structure for editing, but is a permanent, uneditable ROM sound—you can press the Pad Sound or Edit buttons and press any pad to view the name of the sound it's playing and the settings of its parameters. If you attempt to change the sound played by a pad, the above display will appear, asking if you want to make a RAM copy of the kit.

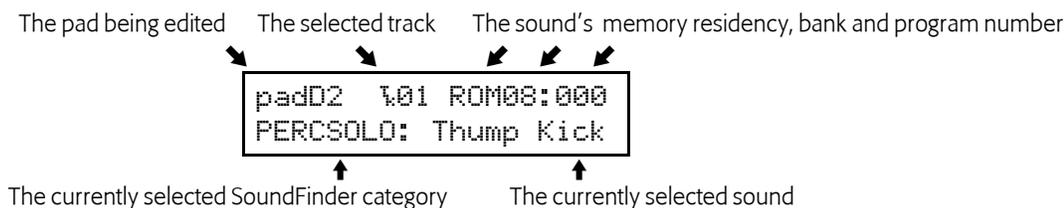
Selecting a Pad for Editing

To edit a pad, you must first press the pad to select it. The displays that relate to the various pad-editing functions all show, in their upper-left corners, the pad that's currently selected. If you'd like to select a pad outside of the current pad octave range, use the Octave Transpose buttons to select the octave in which the pad can be found—then press the desired pad to select it for editing,

Choosing a Pad's Sound

When the selected track contains a RAM kit sound, pressing the Pad Sound button allows you to choose a new sound for any of its pads.

The pad sound-selection resembles the track sound-selection display:



You can choose a new sound for the selected pad by turning the Sound Type knob to pick the type of sound you want, and the Sound Name knob to select the individual sound.

Tip: If the selected track contains a ROM kit sound, you can press the Pad sound button and then press each pad button to view the name of the sound being played by the pad; however, you can only change a pad's sound if you've copied the ROM kit into RAM for editing.

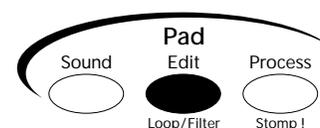
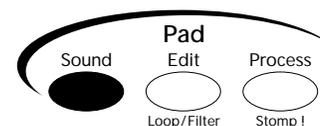
Tip: You can quickly erase a RAM sound from a pad by holding down the Pad Sound button and, while still holding it, pressing the No button. The sound Silence will be assigned to the pad.

Overview of the Pad Edit Parameters

The Pad Edit parameters allow you to determine the behavior of the sound played by each pad in a RAM kit. This includes ROM or RAM sounds that play the ASR-X Pro's built-in sound waves, as well as the waves that you create yourself and have sent to pads. All of these parameters are accessed by pressing the Pad Edit button.

To simplify navigation, the Pad Edit parameters are divided into 12 sub-groups.

The PAD parameters are always available, regardless of the type of sound being played by the selected pad. They allow you to determine the manner in which the pad will play its sound, and are described



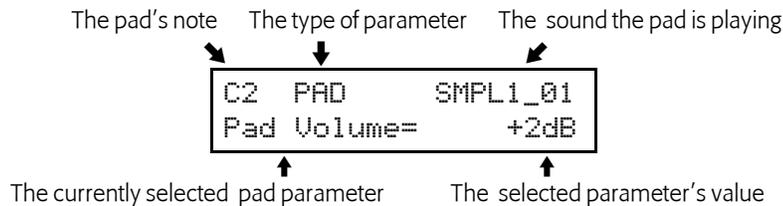
below in “Determining a Pad’s Behavior.” The PAD parameter settings become part of the selected track’s RAM kit.

Tip: You can view the PAD parameter settings for a ROM sound by pressing the Pad Edit button, pressing any pad, and turning the Parameter knob to view the pad’s settings. In the case of non-kit sounds, all of the pad’s will show the same parameter values.

The ASR-X Pro also provides the following groups of sound parameters when the selected pad is playing a sound based on an ASR-X Pro-created wave stored in RAM memory. The settings for these parameters become part of the pad’s sound. The full sample-programming power of the ASR-X Pro is unleashed through the use of these parameters, described later in this chapter in “Editing a Pad’s Sound.”

- WAVE
- PTCH
- ENV1
- FILT
- FLT1
- FLT2
- ENV2
- AMP
- ENV3
- MOD
- MISC

All of the Pad Edit parameters share a common display layout that tells you the note corresponding to the pad being edited, the type of parameter selected, the name of the sound the pad is playing, and the selected parameter’s current value:



Tip: You can jump among the parameter groups by repeatedly pressing the Pad Edit button.

Note: When editing Pad parameters, it’s important to remember that each track can play its sound—or sounds, in the case of kits—in its own way. If editing Pad parameters produces unexpected results, check the track parameters for the currently selected track to see if they’re influencing the sound you’re attempting to edit.

Determining a Pad’s Behavior

PAD Parameters

The PAD parameters allow you to determine the manner in which each pad in the currently selected RAM kit will play its sound. All of the PAD parameters settings are permanently stored in the RAM kit when you save it. When a pad’s sound contains multiple layers, all of its layers are affected simultaneously by PAD parameter edits.

Pad Volume

The Pad Volume parameter allows you to raise or lower the level of the sound being played by the selected pad. The parameter can be set anywhere from -50dB to +14dB. When the Pad Volume parameter is set to 0dB, the pad’s sound will play at its originally programmed volume.

Pad Pan

The Pad Pan parameter allows you to shift the stereo image of the selected pad’s sound leftward or rightward in the stereo field. The parameter can be set anywhere from Left -64 to Right +63. A value of Center 00 will leave the sound’s original stereo placement intact.

Note: This parameter shifts the entire sound being played by the selected pad left or right, so that the sound's internal stereo imaging is preserved.

FX Bus

The FX bus parameter allows you to assign the selected pad's sound to one of the ASR-X Pro's FX busses. The parameter can be set to:

- Prog—so that if the pad is playing a standard sound, the sound's Alt Bus will be used, or if the pad is playing a kit sound, the sound played by each note in the kit will use its own FX Bus setting.
- Insert—to route the pad's sound to the currently selected sequence's insert effect.
- LightReverb—to apply a minimal amount of reverb to the pad's sound.
- MediumReverb—to apply an average amount of reverb to the pad's sound.
- WetReverb—to apply a large amount of reverb to the pad's sound.
- Dry—to leave the pad's sound un-effected.
- AuxOut1, AuxOut2, AuxOut3 or AuxOut4—to send the pad's sound directly to one of the four auxiliary outputs. These values are only available when an X-8 output expansion board is installed.

Note: These values are used whenever the selected track's FX Bus parameter (see Chapter 2) is set to "Prog."

Tuning Shift

The Tuning Shift parameter allows you to raise or lower the note to be played by the pad. In many cases, this parameter will have the effect of raising or lowering the pitch at which the pad's sound will be heard. When the pad is playing a sound that contains more than a single wave—examples of this would be drum kits, or sounds with multiple-sample layers—the parameter will have the effect of pointing the pad to a different note—and therefore, possibly different wave data— within the pad's sound. The parameter can be set anywhere from -64st ("steps") to +63st. When the Tuning Shift parameter is set to 0st, the pad's sound will play at the pitch equivalent to striking a Middle C (C4). When the pad is playing a wave you've created in the ASR-X Pro, the wave will be heard at its original pitch.

Note: The Tuning Shift parameter raises or lowers the note to be played by the pad in semitone steps when the sound employs an equal-temperament tuning table. However, some ASR-X Pro sounds use special tunings. For example, the tuning of drum sounds often varies only by small increments as you move from key to key, in order to simulate the subtle pitch shifts of real-world drums. The effect of the Tuning Shift parameter depends, therefore, on the tuning table used by the pad's sound.

Editing a Pad's Sound

The following groups of parameters allow you to program sounds based on ASR-X Pro waves.

The ASR-X Pro Modulators

Some of the parameters in this section can be changed—or *modulated*—in real time by an external mechanism called a *modulator*. These parameters can be set to:

Off	for no modulation
Full Amt	The maximum amount of modulation is applied to the modulation destination
LFO	the selected wave's LFO
Stepped	a significant amount of random noise modulation at a rate determined by the NoiseSource Rate parameter (see later in this section)
Smoothed	a subtle amount of random noise modulation at a rate determined by the NoiseSource Rate parameter (see later in this section)

Env1	the selected wave's Envelope 1
Env2	the selected wave's Envelope 2
Env3	the selected wave's Envelope 3
Velocity	MIDI velocity: higher values cause greater modulation; lower values cause less modulation
Vel+Press	a combination modulator, with MIDI velocity and pressure messages together achieving maximum modulation amounts
MIDI Key#	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
ModWheel	MIDI modulation wheel (controller #1); maximum values are attained when the mod wheel is pushed all the way forward
Whl+Press	A combination modulator, with MIDI mod wheel and pressure messages together achieving maximum modulation amounts
FootPedal	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 ASR-X Pro's assignable MIDI controllers (see Chapter 7)
SysCTRL2	the second of the ASR-X Pro's assignable MIDI controllers (see Chapter 7)
SysCTRL3	the third of the ASR-X Pro's assignable MIDI controllers (see Chapter 7)
SysCTRL4	the fourth of the ASR-X Pro's assignable MIDI controllers (see Chapter 7)
PatchSel	the Patch Select buttons: the left button produces a modulation value of 32; the right button 64; both buttons 127; neither button 0

WAVE Parameters

The Playback of Waves

The waves you create on your ASR-X Pro are digital recordings of a sound. Digital recording captures audio by taking snapshots of the sound many times per second—44,100 times per second in the ASR-X Pro. Therefore, instead of recording continually, it actually samples the sound many times per second. On playback, the ear perceives these snapshots, or “samples,” as a single sonic entity—in the ASR-X Pro, this single entity is called a “wave.” The ASR-X Pro can play the list of samples that make up a wave forward or backward, play specified sections of samples, or play sections of them over and over for as long as you hold down a pad or key on an external MIDI keyboard. The WAVE parameters control these features.

Parameter	Range	Description
PlayMode	OnceForward, OnceBkwrd, LoopForward, LoopFwd&Bwd	Determines the direction and manner in which the wave will play: OnceForward—the wave will play from beginning to end once and stop. OnceBkwrd—the wave will play from back to front once and stop. LoopForward—the wave will play from the beginning to its loop end point, at which time it will start again from the loop start point and play to the loop end point repeatedly until the pad or key is lifted. LoopFwd&Bwd—the wave will play from the beginning to its loop end point, at which time it will play backwards to the loop start point and then forwards to the loop end repeatedly until the pad or key is lifted.
Start/Loop	00 to 99% for sample start, loop start and loop end points	Provides three editable fields that allow you to set the wave playback start point, loop start point and loop end point as percentages of the wave’s samples. This can be viewed as a coarse adjustment for these three points. Optimal loop points are automatically offered when the System/MIDI AutoZero Cross parameter is set to “On” (see Chapter 7).
Sample Start	0 to the number of samples that comprise the entire wave.	Determines the point from which the wave will play on key-down, expressed as individual samples. This is a fine-adjust for the wave playback start point.
Loop Start	0 to the number of samples that comprise the entire wave.	Determines the point from which the wave will loop when PlayMode is set to LoopForward or LoopFwd&Bwd, expressed as individual samples. This is a fine-adjust for the wave playback loop start point.
Loop End	0 to the number of samples that comprise the entire wave.	Determines the point to which the wave will play, whether the wave is set to loop or not, expressed as individual samples. This is a fine-adjust for the wave playback loop end point.
StartToEndIndex	0 to 127	Allows you to choose one of 128 locations between the Sample Start and Loop End points from which to begin wave playback. A setting of 0 causes the wave to start playback from the Sample Start point.
IndxModSrc	(see modulator list)	Selects a modulator for the StartToEndIndex. See “The ASR-X Pro Modulators” earlier in this section for a list of the available StartToEndIndex modulators.
Index ModAmt	-127 to +127	Determines the degree to which the IndxModSrc will affect the StartToEndIndex.

A Couple of WAVE Ideas

- You can set Sample Start to a higher value than Loop Start. When your wave is a beat loop, this lets you play a few beats from the end of the wave before the loop starts playing.
- By modulating the StartToEnd Index, you can start playback of a wave from a different place within the wave every time you strike its pad. When Envelope 3 is set to Repeat (see later in this chapter), the wave will restart playback from the StartToEnd Index point each time the envelope repeats.

PTCH Parameters

The PTCH parameters—for “pitch parameters”—allow control of the selected sound’s pitch bend, tuning, glide and modulation.

Parameter	Range	Description
Pitch Bend Up	12 down to 12 up, Off	Determines the maximum number of steps by which the pad’s sound will be raised or lowered when the ASR-X Pro receives pitch bend messages from a MIDI pitch bend wheel pushed all the way up (forward).
Pitch Bend Down	12 down to 12 up, Off	Determines the maximum number of semitone steps by which the pad’s sound will be lowered or raised when the ASR-X Pro receives pitch bend messages from a MIDI pitch bend wheel pulled all the way down (back).
PitchBendMode	Normal, Held	Determines whether or not the sound will pitch-bend 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.
SemitoneTuning	-64st to 64st	Lowers or raises the pitch of the pad’s sound by semitones.
Fine Tuning	-127 to +127	Fine tunes the pitch of the pad’s sound by steps of one cent (1/100 of a semitone).
KeybdTrack	various	Determines the pitch response of the pad’s sound to MIDI note numbers. The default setting 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 PitchTbl parameter (see below).
PitchTbl	various, RAM	Selects a pitch table which may be accessed by the sound (see “List of ROM System Pitch Tables” in Chapter 9 for a list of pitch tables). The ASR-X Pro supports the MIDI Tuning Change Standard—pitch tables may be transmitted via MIDI SysEx to the ASR-X Pro’s RAM pitch table (see “ASR-X Pro MIDI Implementation” in Chapter 9 for more details).
Glide Mode	Off, On	Enables/disables glide (portamento) in the pad’s sound. The exact nature of the sound’s glide is determined by the Voice Mode parameter (see below).
Glide Time	0 to 127	Determines the amount of time it takes for the pitch to glide from one note to another when glide is enabled: 0 represents the shortest glide time, 127 the longest. When Voice Mode=Mono (see below), glide in the ASR-X Pro 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.
Voice Mode	Poly, Mono	Determines whether the pad’s sound will be polyphonic or monophonic. When Voice Mode=Poly, notes glide from a random selection of pitches.
PtchModSrc	(see modulator list)	Selects a pitch modulator for the pad’s sound. See “The ASR-X Pro Modulators” earlier in this section for a list of the available pitch modulators.
Pitch ModAmt	-127 to +127	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).
Pitch ModRange	0st to 64st	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 sound’s pitch table.
LFO Pitch ModAmt	0 to 127	Determines the degree to which the LFO will affect the pitch of the pad’s sound.

Env1PitchModAmt	-127 to +127	Env1PitchModAmt provides a special routing that endows Envelope 1 with unique capabilities in the modulation of the sound's pitch. When applied to the sound's pitch via the Env1PitchModAmt parameter, Envelope 1 automatically sustains at the pre-enveloping pitch, regardless of its Sustain Level (4) setting. Instead, its Sustain 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 Sustain Level (4) value will cause the sound to play 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 pad's sound will always sustain at the un-enveloped pitch.
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ENV1 Parameters

The following parameters pertain to the first of the selected sound'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 sound's pitch through the Env1PitchModAmt pitch parameter, it's endowed with some special attributes, described above.

Parameter	Range	Description
Envelope Mode	Normal, Finish, Repeat	Envelope 1 may function in one of three ways: <ul style="list-style-type: none"> • Normal—Envelope 1 plays through normally. When the key is released, the envelope takes the Release 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 Sustain Level (4) stage. When the Decay Time (4) interval is finished, instead of stopping at the Sustain Level (4) stage, the envelope immediately goes into the Release 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 Ramp Time (3) stage, instead of sustaining, Envelope 1 goes immediately back to the beginning and repeats, starting with the Attack Time (1) stage. When the key is released, the envelope stops repeating and moves into the release stage, taking the Release 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.
Attack Time (1)	0 to 99	Determines the time it takes for the envelope's level to travel from zero (when a note-on is received) to Attack Level (1). The higher the value, the longer the time.
Attack Level (1)	0 to 127	Determines the level the envelope will reach at the end of the time defined by Attack Time (1).
Ramp Time (2)	0 to 99	Determines the time it takes the envelope to go from Attack Level (1) to Ramp Level (2).
Ramp Level (2)	0 to 127	Determines the level the envelope will reach at the end of Ramp Time (2).
Ramp Time (3)	0 to 99	Determines the time it takes the envelope to go from Ramp Level (2) to Ramp Level (3).
Ramp Level (3)	0 to 127	Determines the level the envelope will reach at the end of Ramp Time (3).
Decay Time (4)	0 to 99	Determines the time it takes the envelope to go from Ramp Level (3) to the Sustain Level (4) stage. At the end of Decay Time (4,) the envelope will remain at Sustain Level (4) until the key is released.

Sustain Level (4)	0 to 127	Determines the level the envelope will reach at the end of Decay Time (4) and that it will retain until a note-off or sustain-off message is received. When Envelope 1 is used to modulate pitch through the Env 1 Amt parameter, this parameter functions differently—see “Env1PitchModAmt” above.
Release Time (5)	0 to 99	Determines the time it takes the envelope to return to zero after the key has been released.
Keybd TimeScaling	0 to 99	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 Release Time [5]) shorter for keys above F4+, and longer for keys below F4+. Envelope times for F4+ itself are not affected by this parameter.
VelAtckTimeModAmt	0 to 99	Determines the degree to which higher velocities will shorten Envelope 1’s Attack Time (1). This parameter will have no effect if Attack Time (1)=0.
VelRelTimModAmt	-127 to +127	Determines the degree to which higher release velocities will make Envelope 1’s Release Time (5) shorter or longer. When the value is positive, a higher release velocity value will result in a shorter Release Time (5). When the value is negative, a higher release velocity value will result in a longer Release Time (5). This parameter will have no effect if Release Time (5)=0.
Vel Levels ModAmt	-127 to +127	Determines to what degree velocity will affect envelope levels. Values above 0 increase the amount of velocity required to reach the Envelope 1 values determined by its level settings. Vel Curv gives you further control over the velocity response of the envelope.
Vel Curve	Quickrise, Convex1, Convex2, Convex3, Linear, Concave1, Concave2, Concave3, Concave4, LateRise	Selects which of the velocity response curves the envelope will use if the velocity level control (Vel Levels ModAmt) is set to some value other than zero.

FILT Parameters

Each sound in an ASR-X Pro sound has a pair of independently configurable multi-mode dynamic digital filters. The following FILT—for “filter”—parameters determine the overall behavior of the sound’s two filters.

Parameter	Range	Description
Mode	3PoleLP/1PoleLP, Resonant2LP/2LP, Resonant2BP/2BP, FilterBypass	Determines the filter configuration for the sound: 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 sound 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 6 dB per octave, a 2-pole filter at 12 dB, and a 3-pole at 18 dB per octave. The Resonant2LP/2LP value makes both filters resonant; Resonant2BP/2BP creates a combined dual resonant band pass filter.
Link	Independent, FLT2 uses FLT1	When set to On, Filter 2 uses Filter 1’s settings; when Off, Filter 2 uses its own settings.
Resonance (Q)	0-50	When Filter Mode=Resonant2LP/2LP, this sets the loudness of the frequencies at the cutoff points of both filters. When Filter Mode=Resonant2BP/2BP, this sets the width of both of the bands, and the cutoff frequency levels.

FLT1 and FILT2 Parameters

The following parameters are available for both of the selected sound's two filters.

Parameter	Range	Description
Filter Cutoff	0 to 127	Determines the selected filter's cutoff frequency. Filter 1 is always a low-pass filter: frequencies within the selected wave that are lower than the FLT1 Filter Cutoff setting will pass, or be heard. Frequencies above it will be filtered out. Lowering the FLT1 Filter Cutoff value is similar to turning down the treble on a home stereo. The effect of the cutoff frequency in FILT2 will depend on the setting of the FILT Mode parameter.
Keybd Track	Off, various	Determines how the selected filter's cutoff frequency will change as various pitches are played, expressed in ratios. Positive values raise the cutoff as higher notes are played.
TrackBreakpoint	C-1 to G9	Determines which note will be treated as the nominal center of the key track range, and produce neither negative or positive cutoff modulation.
Cut ModSrc	(see modulator list)	Selects a modulator for the selected filter's cutoff frequency. See "The ASR-X Pro Modulators" earlier in this section for a list of the available modulators.
Cutoff ModAmt	-127 to +127	Determines the amount by which the Cut ModSrc will lower or raise the selected filter's cutoff frequency.
Env2CutoffModAmt	0 to 127	Determines the degree to which Envelope 2 will affect the selected filter's cutoff frequency.

ENV2 Parameters

The following parameters pertain to the second of the selected sound's three envelopes. Envelope 2 is typically applied to filter cutoff settings, though it may be used as a modulator for any modulatable parameter. The parameters available for Envelope 2 are identical to those associated with Envelope 1 (see "ENV1 Parameters" earlier in this chapter).

AMP Parameters

The AMP—for "amplifier"—parameters provide control of the selected sound's keyboard rolloff characteristics, volume modulation and stereo panning modulation.

Parameter	Range	Description
Rolloff Mode	Off, Below, Above	Enables/disables a progressive volume reduction for the sound, either above or below the Roll Breakpoint (see below).
Roll Slope	0-127	Determines the extremity of the rolloff when Rolloff Mode is set to "Above" or "Below."
Roll Breakpoint	C-1 to G9	Determines the note above or below which the rolloff occurs when Rolloff Mode is not set to "Off."
Vol ModSrc	(see modulator list)	Selects a modulator for the sound's volume. See "The ASR-X Pro Modulators" earlier in this section for a list of the available modulators. Note that Envelope 3 always affects the sound's volume.
Volume ModAmt	-127 to +127	Determines the degree to which the Vol ModSrc will lower or raise the volume of the sound.
Pan ModSrc	(see modulator list)	Selects a modulation source for the sound's position in the stereo field. See "The ASR-X Pro Modulators" earlier in this section for a list of the available modulators.
Pan ModAmt	-127 to +127	Determines the degree to which the modulator will move the sound's stereo position to the left (negative values) or right (positive values).

Alt Bus	Default, LightReverb, MediumReverb, WetReverb, Dry	Determines the effect bus to which the sound will be routed when it's selected for a track if the System/MIDI AutoSelect FXBus parameter is set to "On."
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ENV3 Parameters

The following parameters pertain to the third of the selected sound's three envelopes. Envelope 3 is typically applied to the sound's volume settings, though it may be used as a modulator for any modulatable parameter. The parameters available for Envelope 3 are identical to those associated with Envelope 1 (see "ENV1 Parameters" earlier in this chapter).

MOD Parameters

The MOD parameters—or "modulation parameters"—control the behavior of the sound's LFO and noise generator.

Parameter	Range	Description
LFO Shape	Triangle, Sine+Tri, Sine, Pos-Tri, Pos- Sine, Sawtooth, Square	Determines the wave shape of the sound's LFO: 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
LFO Start Phase	0 to 127	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 LFO Start Phase=0, this parameter determines what part of the LFO wave will be applied as a fixed modulator upon key-down.
LFO Rate	0 to 99	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.
Rate ModSrc	(see modulator list)	Selects a modulator for the LFO rate. See "The ASR-X Pro Modulators" earlier in this section for a list of the available LFO Rate Mod modulators.
LFO Rate ModAmt	-127 to +127	Determines the degree to which the Rate ModSrc will slow down or speed up the LFO Rate.
LFO Depth	0 to 127	Determines the amplitude of the LFO.
DpthModSrc	(see modulator list)	Selects a modulator for the LFO depth. See "The ASR-X Pro Modulators" earlier in this section for a list of the available LFO Depth Mod modulators.
LFODepth ModAmt	-127 to +127	Determines the degree to which the modulator will decrease or increase the LFO depth.
LFO Delay Time	0 to 99	Determines the time it takes for the LFO to go from zero to the amount determined by the LFO Depth parameter. Values above 0 will cause the LFO to take longer to achieve its full depth.

LFO Key Restart	Off, On	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 location, as determined by the LFO Start Phase parameter, when a note-on is received.
LFO Sync	Normal, various rhythmic divisions of the current sequence tempo or received MIDI clocks	Enables/disables synchronization of the LFO to the currently selected sequence, by providing rhythmic divisions of its pulse. The LFO may be also be synchronized to received MIDI clocks when the System/MIDI ClockSource parameter is set to “MIDI.”
NoiseSourceRate	0 to 127	Determines the speed of the stepped and smooth modulators (see “The ASR-X Pro Modulators” earlier in this section). 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.
Noise Sync	Normal, various rhythmic divisions of the current sequence tempo or received MIDI clocks	Enables/disables synchronization of the stepped and smooth noise modulators to the currently selected sequence, by providing rhythmic divisions of its pulse. The LFO may be also be synchronized to received MIDI clocks when the System/MIDI ClockSource parameter is set to “MIDI.”

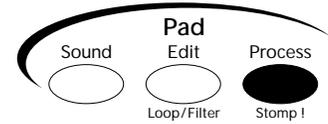
MISC Parameters

The MISC—for “miscellaneous”—parameters are a small assortment of parameters and a sound-re-naming facility.

Parameter	Range	Description
Sustain Pedal	Off, On	Enables or disables the sound’s response to sustain pedal presses.
Key Group Assign	Off, 1 to 16	Allows assignment of the sound to one of 16 monophonic key groups. Key groups are used when you’d like two or more sounds to cut each other off, particularly helpful when emulating real-world situations where two sounds would be mutually exclusive. For example, when programming hi-hat sounds, you can assign your open hi-hat sound and your closed hi-hat sound to the same key group. When these two sounds are played as part of a RAM kit, the last one played will silence the other, as it would in a real hi-hat.
SoundFinder	all SoundFinder categories	Determines the SoundFinder category for the sound.
FinderPref	None, DEMO-SND, USER-SND, USER&DEMO	Enables inclusion of the sound in the DEMO-SND and USER-SND SoundFinder sound type categories. The USER-SND category provides easy access to sounds you’ve created yourself.
Rename Sound?	(see description)	When this display is visible, pressing the Yes button will cause the sound naming page to appear. The top line of the display shows the sound’s current name. You can re-name the selected sound by turning the Parameter knob or pressing the Select Track buttons to choose any of the 11 character positions, and turning the Value knob to dial in the desired character for each position.

Processing a Sound's Wave

When a pad contains a sound based on an ASR-X Pro-created wavesample, or “wave,” the Pad Process button provides access to a number of tools for processing the sound’s wave. In addition, whether or not the pad contains a sound based on a wave, the Pad Process button provides access to Stomper, a unique synthesis algorithm that lets you to create your own new sounds.



Since these tools modify and create wave data, when you perform one of the pad processes:

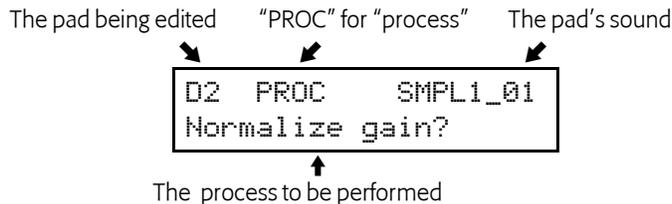
- the ASR-X Pro makes a copy of the wave
- it performs the selected operation
- it places the processed copy on the Scratch Pad. You can then play the scratch pad to audition the results of the process you’ve performed.

If you’re pleased with your pad-processing results, you can send the contents of the Scratch Pad to a pad in your kit (the procedure for sending to pads is described in Chapter 5).

Note: The Stomper algorithm—unlike other pad processes—is available at all times, regardless of the nature of the currently selected pad sound. It’s described at the end of this chapter.

The Pad Process Display

The processes accessed by pressing the Pad Process button share a common display:



This display asks you if you’d like to perform the process shown. For some of these questions—Normalize gain?; Invert Sample data?; Truncate length?—a press of the Yes button initiates the displayed procedure. For the others, pressing the Yes button leads you to further settings that you may want to adjust before performing the procedure. You can cancel the selected process whenever the red/green No/Yes LEDs are flashing by pressing the No button.

As each process takes place, the ASR-X Pro display informs you of its progress.

The Pad Processes

Normalize gain?

The ASR-X Pro can normalize the selected wave to digitally boost its volume to its loudest level short of clipping. This allows the wave to take the fullest possible advantage of the 16 bits available for its reproduction, and helps ensure that you won’t have to over-boost its volume for it to be heard. Normalization seeks out the wave’s loudest sample, multiplies it to the highest acceptable level, and then uses the same multiplication value on the rest of the wave’s samples.

Since the process requires no user input, pressing the Yes button in response to “Normalize gain?” executes the normalization operation.

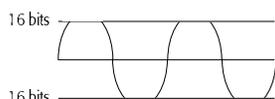
Scale loudness?

The ASR-X Pro lets you lower or raise the overall volume of a wave by percentage you set through the use of its scaling facility. When you press the Yes button in response to “Scale loudness?” two settings

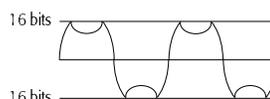
become available that allow you to set the manner in which the wave will be scaled. To view these two settings, turn the Parameter knob; to adjust them, turn the Value knob.

- **Scale factor**—lets you set the percentage by which your wave’s volume will be raised or lowered, from 1% to 200%. A setting of 100% will leave the wave at its present volume. Values lower than 100% will reduce its volume, and values over 100% will increase it.
- **Clip Method**—If the volume of a wave is scaled to a level that requires more than the available 16 bits, the sound will clip. The Clip Method provides two settings—Normal or Warp—that allow you to determine what will happen to such waves:

The Normal clip method squares off excess volume at 16 bits, resulting in standard clipping.



Warp takes the amount by which the wave would exceed 16 bits and applies it as a volume reduction.



Tip: The Warp setting can lead to some interesting distortion effects.

When you’ve set the two scaling parameters to your liking, press the Yes button to scale the wave.

Reduce sample bits?

The ASR-X Pro samples audio at a resolution of 16 bits. While this resolution produces excellent sound, 16-bit data can use up significant amounts of the ASR-X Pro’s RAM. If you lower the resolution of a selected wave, you can free up RAM for more sampling. In addition, there may be times when you’d like a rougher-sounding sample. Reducing sample bits is an excellent way to deliberately “trash” a wave. When you press the Yes button in response to “Reduce sample bits?” the ASR-X Pro presents a display that allows you to set the desired bit resolution of your wave.

```
Reduce      SMPL1_01
Number of bits= 12
```



Turn the Value knob to change this value

When you’ve selected the desired resolution, press the Yes button to reduce the wave’s resolution.

Invert sample data?

The ASR-X Pro can invert a wave’s data, essentially turning it upside-down, in order to make it easier to loop. Inverting a wave does not change its sound.

When this wave is inverted, it starts off looking like this...



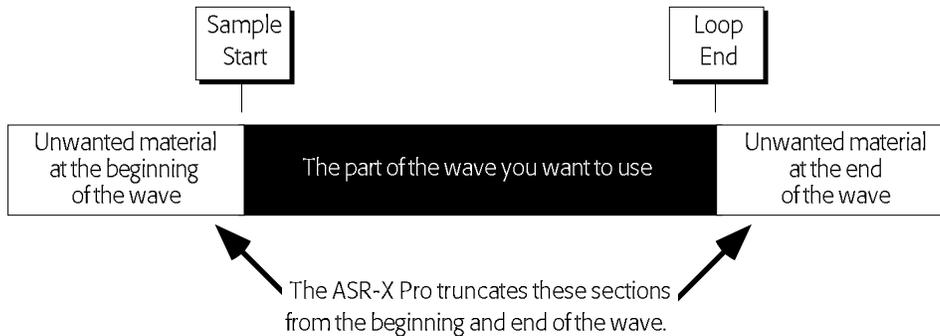
...and ends up looking like this:



Answering the “Invert sample data?” by pressing the Yes button initiates the inversion operation.

Truncate length?

In order to make most efficient use of your ASR-X Pro's memory, you should trim and discard those portions of your wave's data that you don't intend to use, freeing up the memory space they occupy. When you press the Yes button in response to "Truncate length?" the ASR-X Pro deletes all data in your wave that occurs before the Sample Start point and after the Loop End point.



Copy sound?

The ASR-X Pro allows you to copy the selected wave to other pads in the currently selected RAM kit. When you press the Yes button in response to "Copy sound?" the CopyMode display appears, where you can turn the Value knob to select one of two copy modes:

- Params—This copy mode will only copy the selected wave's parameter values without copying the wave itself.
- Params+Data—This copy mode will copy both the wave and its parameters.

Note: You can use this process to create multiple copies of a wave, each with its own loop settings. The original wave's Start/Loop, Sample Start, Loop Start and Loop End parameters are not duplicated along with its other parameter settings so that copies are created ready for re-looping.

When you've selected the desired copy mode, press the Yes button to perform the copy procedure. The ASR-X Pro will show:

The octave that the pads are currently playing

```

C2...0oct..C3 CopyTo
X          Pads?
  
```

The pad from which you're copying

The display top line shows the octave currently selected for playing by the pads. You can press the Octave Transpose buttons to select a different octave's worth of pads to which to copy the selected wave and/or its parameters. The "X" shows you the pad that's currently selected—the pad that contains the data you're about to copy. When the desired octave is displayed, press the pad or pads to which you want to copy your data—a corresponding pad emblem will appear in the display for each pad you press. When you've selected your destination(s), press the Yes button to complete the copy procedure.

Scale time?

The "Scale time?" command alters the duration of a wave without altering its pitch, allowing you to stretch or shrink a wave to fit a particular tempo—such as when you want to re-size rhythms for use as loops. When you press the "Yes" button in response to "Scale time?" the following parameters can be accessed by turning the Parameter knob:

- Amount—This parameter sets the percentage by which the wave's duration will be made longer or shorter. A value of 100% will leave the wave at its current length; values lower than 100% will

shrink the duration of the wave, while values higher than 100% will increase it. Try different values for this parameter to establish the percentage of time scaling required for your situation.

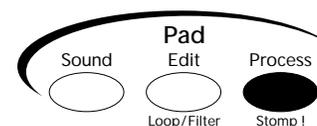
- **Quality**—sets the fidelity of the time-scaled wave. The High(slow) value produces cleaner-sounding waves, but will take a greater amount of time to process. When experimenting with the Amount parameter to determine its correct value for your timing needs, set the Quality parameter to Low(fast) to save time. Once you've settled on an Amount value, set Quality to the desired setting and re-scale the wave.

Stomp!

Stomper is a non-real-time algorithm created by Håkan “Zap” Andersson that allows you to construct your own vintage-synth-style sounds using the ASR-X Pro's processor. You create a Stomper sound by setting parameters that describe the sound's characteristics, and then hit the Yes button to instruct Stomper to build the sound and place it in the Scratch Pad—from there it can be assigned to pads a RAM kit sound in the same manner as any other wave. Stomper allows you to select the sound's waveform content, its filtering—including resonant filtering—and volume, or amplitude, characteristics. Since Stomper creates your sound right in the ASR-X Pro, the resulting 16-bit sound is terrific.

To learn more about Stomper, visit its Web site at <http://www.Master-Zap.com.stomper>

Stomper is accessed by pressing the Pad Process button. When the currently selected pad uses a sound that's not based on a loaded wave, “Synthesize Stomper sound?” is displayed. When the sound on the pad is based on a wave, scroll all the way clockwise after pressing the Pad Process button to reveal “Synthesize sound?” In either case, the displayed question provides access to Stomper's parameters. As you move through the Stomper parameters, the Yes and No LEDs will flash to indicate that you can build your sound at any time by pressing the Yes button, or leave Stomper by pressing the No/Exit button. As the sound is being created, a progress indicator will be displayed.



Sound Type

Stomper provides a set of presets that can be used as is, or as a starting point for your own sounds. Turn the Value knob to select any of the following presets:

KICK1 KICK2 SNARE TOM CRASH HAT

When you change the value of any parameters, an additional USER preset is created.

Oscillator

Each Stomper sound can contain up to four active oscillators, each of which has its own set of parameters and can be configured to function as a waveform oscillator or as a low-pass resonant filter. Before setting up an oscillator, you must first select it by turning the Value knob when the Oscillator # display is visible.

Mode

The Mode display allows you to set the currently selected oscillator as you wish. An oscillator can be set to Off, Oscillator or Filter. Turn the Value knob to the desired setting.

Tip: When an oscillator is set to Filter mode, it filters all lower-numbered oscillators.

Note: The ASR-X Pro presents only those parameters relevant to the selected oscillator's mode. As a result, the remaining Stomper displays you'll see depends on the selected oscillator's mode.

Oscillator Mode Stomper Parameters

The following Stomper parameters are available when the selected oscillator is set to oscillator mode.

<i>Parameter:</i>	<i>What it does:</i>
Waveform	Selects the waveform to be used by the oscillator. Choices are: Sine, Saw, Square, Triangle
Noise Factor	Controls the amount of random frequency deviation applied to the oscillator from 0.00 to 1.00 in 1/100ths steps.
Noise Rate	Sets the rate of the random frequency deviation. A value of 0 is off; a value of 1 means that noise will be applied every sample; 2 would be every second sample, and so on.
Start Time	Sets the oscillator's start time in the final sound in milliseconds. A typical setting would be 0; increasing the value delays the sounding of the oscillator.
End Time	Determines the duration of the oscillator by setting its end point, in milliseconds.
Start Freq	Sets the starting frequency, or pitch, of the oscillator, from 0 to 20,000Hz in steps of 10.
End Freq	Sets the final frequency, or pitch, of the oscillator, from 0 to 20,000Hz in steps of 10.
FreqCurveShape	Sets the shape of the curve as the oscillator travels from its start frequency to its end frequency—this can be set from 0.01 to 10.00 in .01 steps and from 10 to 100 in steps of 1.
Start Amp Scale	Sets the starting amplitude, or volume, of the oscillator, from 0% to 100%.
End Amp Scale	Sets the ending amplitude, or volume, of the oscillator, from 0% to 100%.
AmpCurveShape	Sets the shape of the curve as the oscillator travels from its start amplitude to its end amplitude—this can be set from 0.01 to 10.00 in .01 steps and from 10 to 100 in steps of 1.
Tone CurveShape	Sets the amount of distortion added to the shape of the oscillator's waveform, from 0.01 to 10.00 in .01 steps and from 10 to 100 in steps of 1.

Filter Mode Stomper Parameters

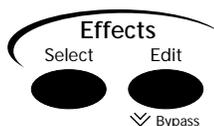
These Stomper parameters are available when the selected oscillator is set to low-pass filter mode.

<i>Parameter:</i>	<i>What it does:</i>
Start Cutoff	Sets the starting cutoff frequency, determining the point above which frequencies will be attenuated at the beginning of the sound. Parameter can be set from 0Hz to 20,000Hz.
End Cutoff	Sets the ending cutoff frequency, determining the point above which frequencies will be attenuated at the end of the sound. Parameter can be set from 0Hz to 20,000Hz.
Start Resonance	Sets the amount of resonance (Q) at the start of the sound, from 0.00 to 0.99 in steps of .1.
End Resonance	Sets the amount of resonance (Q) at the end of the sound, from 0.00 to 0.99 in steps of .1.

4 Effects

Overview of the ASR-X Pro Effects

The ASR-X Pro contains an ENSONIQ ESP2 digital signal processing chip that simultaneously provides two effects for each sequence: an insert effect and a global reverb. One track in each sequence—called the insert control track—can be endowed with some special abilities relating to the sequence's insert effect. These concepts are explained in this overview. Each of the 16 tracks in a sequence can be routed to either of these effects, left un-processed—or *dry*—or sent to one of the auxiliary outputs that are available when an X-8 output expansion board has been installed in the ASR-X Pro. The procedures for taking advantage of these features appear elsewhere in this chapter, unless otherwise noted.



Insert Effects

Insert effects are powerful, highly programmable effects. There are 40 insert effects in the ASR-X Pro, any one of which can be selected for use with any sequence:

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	

Insert effects can be manipulated in real time, allowing exceptionally musical control of their behavior (see "Insert Effect Real-Time Modulation Parameters" later in this chapter).

Tip: See "Insert Effect Parameters" in the ASR-X Pro User's Guide for a description of each insert effect's parameters.

The Insert Control Track

In each sequence, one track can be designated as the insert control track. The insert control track has some special properties:

- Any sound that has been programmed to use an insert effect will automatically install that insert effect into the sequence when the sound is selected for use by the insert control track.
- The insert control track can be used to manipulate the sequence's insert effect in real time. In addition, when an external MIDI device is being used with the ASR-X Pro, MIDI messages received on the insert control track's MIDI channel can also manipulate the insert effect.

Global Reverb

Global reverbs are top-quality programmable reverb effects. There are eight global reverbs, any of which can be selected for use in any sequence:

01 SmoothPlate	05 Small Room
02 Large Hall	06 Reflections
03 Small Hall	07 Bright
04 Big Room	08 Huge Place

FX Busses: How Sounds are Sent to the Effects

Each track and each pad in the ASR-X Pro has its own FX Bus parameter for assigning its sound to one of the FX busses (for “effect busses”). The FX busses are the means by which sounds travel to an effect. There are five FX busses in an ASR-X Pro as it's shipped from the factory:

- the insert FX bus
- the light reverb FX bus
- the medium reverb FX bus
- the wet reverb FX bus
- the dry FX bus

The insert FX bus directs a sound to the sequence's insert effect.

The light reverb, medium reverb and wet reverb busses all direct a sound to the global reverb.

Three busses are provided for this purpose so that each can be set to send a different amount of sound into the global reverb, resulting in three different degrees of reverb available for each sound.

A sound assigned to the dry FX bus will remain un-processed.

There is a sixth option available when assigning a sound to an FX bus, though it's not an FX bus. A “Prog” value is provided that allows the different keys in an ASR-X Pro drum kit to retain their individual FX bus routings.

Chapter 2 describes the method for editing track parameters such as the FX Bus parameter. Chapter 3 describes how to edit the FX Bus parameter for a pad.

Note: When an X-8 output expansion board has been installed, an additional four stereo busses—AuxOut1, AuxOut2, AuxOut3 and AuxOut4—are available. These busses send a track and its sound directly to one of the auxiliary outputs. You can also use these stereo busses as eight mono busses by panning tracks hard left or right (see Chapter 2).

Tip: The ASR-X Pro can automatically select FX busses for sounds as they are assigned to tracks. See Chapter 7.

The Alt Bus

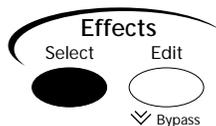
The ASR-X Pro can automatically select an appropriate effect for a sound when it's selected for a track by reading the setting of the sound's Alt Bus parameter—see Chapter 7 to learn about the AutoSelect FXBus parameter, which enables this feature. See Chapter 3 to learn about setting the Alt Bus parameter. The Alt Bus is also used by standard sounds on tracks or pads whose FX Bus parameter is set to “Prog.”

Selecting and Editing a Sequence's Effects

Selecting and editing a sequence's insert effect or global reverb involves the same simple pair of techniques, regardless of the effect being edited.

To Select an Effect

1. Press the Select button in the Effects section of the ASR-X Pro front panel.



2. To select an insert effect, turn the Parameter knob so that the Insert Effect display appears:

This shows that you're on the insert effect selection display

↓

Insert Effect=
 33 Formant Morph

↑

The currently selected insert effect

To select a global reverb, turn the Parameter knob so that the Global Reverb display appears:

This shows that you're on the global reverb selection display

↓

Global Reverb=
 01 User Settings

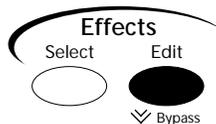
↑

This reflects the current global reverb settings

3. Turn the Value knob to select the insert effect or global reverb you desire.

To Edit an Effect

1. Press the Edit button in the Effects section of the ASR-X Pro front panel.



2. To edit the insert effect, turn the Parameter knob until the display shows:

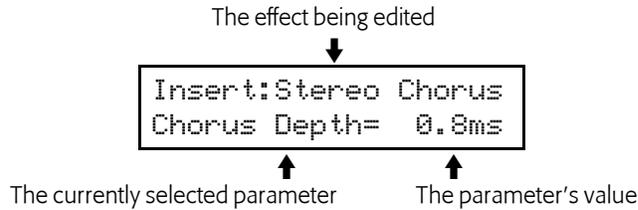
Effects:
 Edit insert effect?

To edit the global reverb, turn the Parameter knob until the display shows:

Effects:
 Edit global reverb?

3. When you've selected the type of effect you'd like to edit, press the Yes button.
4. Turn the Parameter knob to select any of the parameters available for the effect you're editing.

The left-most parameters provide settings that determine the context in which the effect operates (see "Insert Effect and Global Reverb Context Parameters" below). These are followed by parameters relating to the effect itself—the top line of each of these displays shows the name of the effect being edited:



At the end of the parameter list for each insert effect is a set of parameters that enable and control real-time modulation for the effect. See "Insert Effect Real-Time Modulation Parameters" below.

5. Turn the Value knob to change the setting of any parameter .

Tip: For a listing of all of the effect parameters available in the ASR-X Pro, see later in this chapter.

Insert Effect and Global Reverb Context Parameters

In addition to the parameters provided for sound sculpting, each insert effect and global reverb also contains parameters that allow you to determine how the effect will fit into the sequence in which it's being used.

Each insert effect contains these context parameters:

- Insert FX Bus: Input Mix—This parameter allows you to establish the amount of insert effect you want to apply to any sounds routed to the insert FX bus. This is expressed as a wet/dry balance, with "dry" describing sounds prior to being processed by the insert effect, and "wet" describing the output of the insert effect. This parameter can be set anywhere from "Full Dry" to "Full Wet."
- Insert FX Bus: GlobalReverb Amt—The insert FX bus mix (described above) can be fed into the global reverb, so that reverb can be added to sounds processed by the insert effect. This parameter determines the amount of insert FX bus signal sent to the global reverb, and can be set anywhere from 0 to 127.

Each global reverb contains these context parameters:

- LightReverb FX Bus: Global Reverb Amt—This parameter sets the amount of signal sent to the global reverb from the light reverb FX bus. This parameter may be set anywhere from 0 to 63.
- MediumReverb FX Bus: Global Reverb Amt—This parameter sets the amount of signal sent to the global reverb from the medium reverb FX bus. This parameter may be set anywhere from 32 to 95.
- WetReverb FX Bus: Global Reverb Amt—This parameter sets the amount of signal sent to the global reverb from the wet reverb FX bus. This parameter may be set anywhere from 64 to 127.
- Reverb: (selected reverb's name) Return Level—This parameter sets the level of the global reverb output. This can be used as an overall global reverb control that simultaneously raises or lowers the reverb volume for all of the reverb FX busses. Settings from 0 to 127 are available.

Insert Effect Real-Time Modulation Parameters

The ASR-X Pro insert effects can be manipulated in real time, providing the opportunity for animated, expressive effect processing. This manipulation is achieved through the modulation of insert effect parameter settings, using a control device of your choosing on the selected sequence's insert control track. Each insert effect provides a set of parameters that allow you to set up real-time control of the effect.

Note: While a single track in each sequence—the insert control track—controls the real-time modulation of an insert effect, the changes made to the insert effect will be applied to any sounds routed to the insert FX bus.

- **Insert: Mod Src**—This parameter allows you to select a device with which the insert effect will be controlled. A wide range of devices is supported:

Off	There will be no effect modulation.
FullModAmt	The parameter being modulated will be set to its maximum amount.
Velocity	The parameter being modulated will respond to the quickness, or hardness, of keystrokes from the pads or received via MIDI.
Vel+Pressure	The parameter being modulated will respond to the quickness, or hardness, of keystrokes from the pads or received via MIDI, combined with received MIDI poly or channel pressure messages.
+PosMIDIkey#	The parameter being modulated will use the MIDI note number from the most recently struck pad or most recently received MIDI keystroke as its value setting, with 0 being interpreted as the lowest note of the MIDI range and 127 as the highest.
-NegMIDIkey#	The parameter being modulated will use the MIDI note number from the most recently struck pad or most recently received MIDI keystroke as its value setting, with 127 being interpreted as the lowest note of the MIDI range and 0 as the highest.
Pressure	The parameter being modulated will respond to received MIDI poly or channel pressure values.
PitchWheel	The parameter being modulated will respond to received MIDI pitch bend values.
ModWheel	The parameter being modulated will respond to received MIDI mod wheel (MIDI controller #1) values.
Wheel+Press	The parameter being modulated will respond to a combination of received MIDI mod wheel and poly or channel pressure values.
FootPedal	The parameter being modulated will respond to received MIDI foot pedal (MIDI controller #4) values.
Sustain	The parameter being modulated will respond to sustain pedal presses produced by a foot switch connected to the ASR-X Pro or received via MIDI.
Sostenuto	The parameter being modulated will respond to sostenuto pedal presses produced by a foot switch connected to the ASR-X Pro or received via MIDI.
SysCTRL1-4	System Controllers 1-4 are system-wide user-designated real-time modulators (see Chapter 7 for further information).
- **Insert: Mod Src Min** and **Insert: Mod Src Max**—These two parameters allow you to establish a range of values from the control device to which the insert effect will respond. Each of these may be set anywhere from 000% to 100%.
- **Insert: Mod Dest**—This parameter allows you to choose the insert effect parameter you'd like to manipulate.
- **Insert: Mod Dest Min** and **Insert: Mod Dest Max**—These two parameters allow you to set limits for the amount of change that can be made to the setting of the parameter being modulated. If the Mod Dest Min value is set above than the Mod Dest Max value, response to the control device will be inverted: lower control device values will raise the parameter's setting, and vice versa.

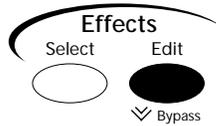
Note: To control an insert effect in real time using an external MIDI device, make sure to set your external control device to the same MIDI channel as the sequence's insert control track.

Setting a Sequence's Insert Control Track

You can designate any of a sequence's 16 tracks as the Insert Control Track, or you can turn the Insert Control Track feature off for the selected sequence.

To Set the Insert Control Track

1. Press the Edit button in the Effects section of the ASR-X Pro front panel.



2. Turn the Parameter knob until the display shows:

```
Effects:
InsertCtrlTrack= 01
```

↑
The number you see here may be different

3. Turn the Value knob to select an insert control track for the currently selected sequence, or select "off" to disable the feature.

Bypassing a Sequence's Effects

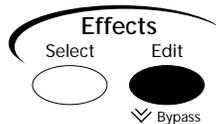
There may be times at which you'll find it useful to temporarily silence a sequence's insert effect or global reverb in order to hear a sound—or sounds—without the effect with which they're associated. This is accomplished by *bypassing* the effects. The ASR-X Pro provides three methods of achieving this:

- You can quickly bypass both the insert effect and global reverb by rapidly double-clicking on the Effect section's Edit button.
- If either "Edit insert effect?" or "Edit global reverb?" are displayed, you can press the Edit Effect button a second time to bypass the displayed effect.
- You can use the Bypass parameter to bypass the insert effect, the global reverb, or both.

When an effect is bypassed, *BYPD* appears on all of the displays with which the effect is associated. If both effects are bypassed "ALL-BYPASS*" is shown.

To Use the Bypass Parameter for Bypassing Effects

1. Press the Edit button in the Effects section of the ASR-X Pro front panel.



2. Turn the Parameter knob until the display shows:

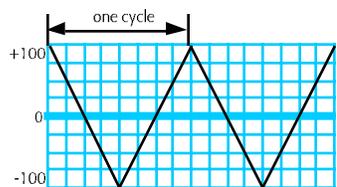
```
Effects:
Bypass=           None
```

↑
The setting you see here may be different

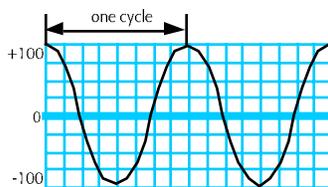
3. Turn the Value knob to select the effect, or effects, you'd like to silence.

LFO Wave Shapes

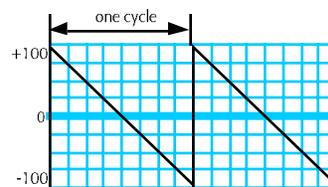
Many insert effects have an LFO Shape parameter that determines how the LFO signal will rise or fall. There are eight possible values:



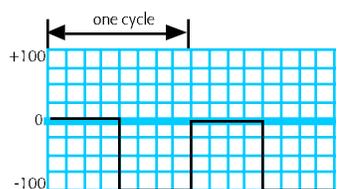
TRIANGLE



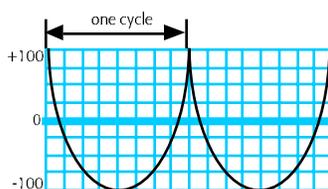
SINE



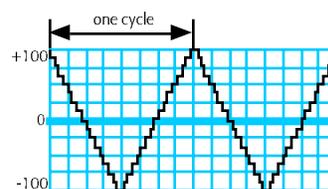
SAWTOOTH



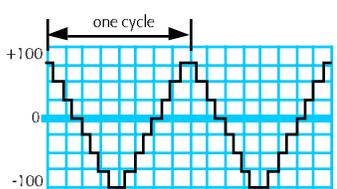
SQUARE



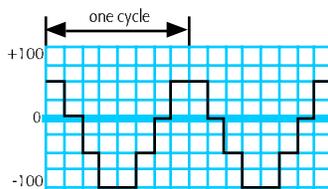
ASYM



16-STEP



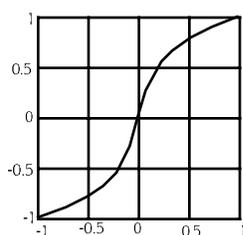
8-STEP



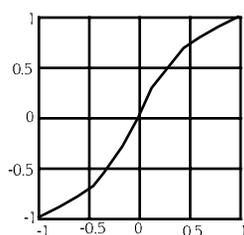
4-STEP

Distortion Curves

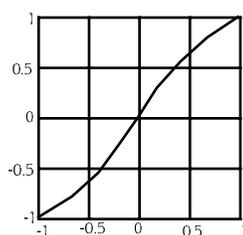
Many distortion-based insert effects have a Dist Curve parameter that determines the type of clipping produced by the distortion. There are five possible distortion curves:



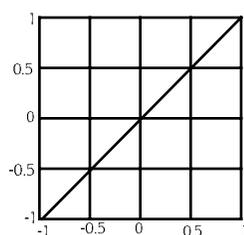
Soft



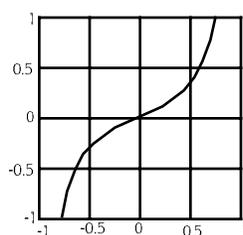
Medium 1



Medium 2



Hard



Buzz

5 Sampling/Resampling

Overview

What is Sampling?

Sampling is the process of digitally recording sound. Digital recording captures sound by taking many brief snapshots of the sound—44,100 snapshots per second in the ASR-X Pro—and storing each of these as numerical data. Each of these snapshots is each called a *sample*. When a sampler plays back the recording the spaces between such quickly occurring samples are imperceivable, and the original sound is faithfully reproduced. In the ASR-X Pro, a digital recording is called a *wave*. In fact, “wave” refers to either a mono wave or a stereo wave, even though a mono wave is comprised of a single digital recording, while a stereo wave is actually made up of two such recordings panned left and right. Waves in the ASR-X Pro are AIF (for “Apple Interchange Format”) files.

What is Resampling?

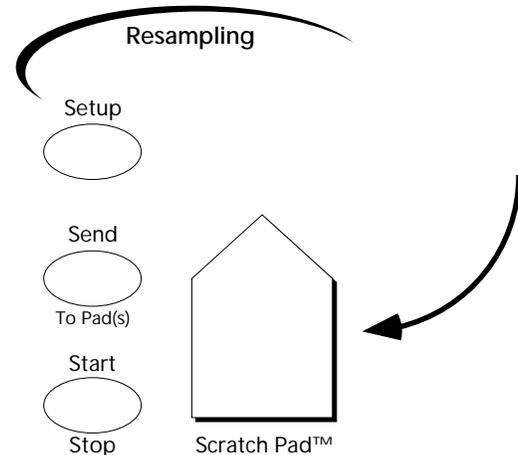
Resampling is, as its name implies, simply sampling something again. The importance of resampling in the ASR-X Pro should not be underestimated, though, since you can resample any sound the ASR-X Pro produces and use the resampled material in your grooves, or as the basis for even more resampling. Used together with the ASR-X Pro’s built in effects and editing tools, resampling is the key to getting the most out of your ASR-X Pro. It’s for this reason that the sampling and resampling section and buttons on the ASR-X Pro front panel are labeled “Resampling.”

What Happens When You Create a Wave

When you sample audio on your ASR-X Pro, the newly created wave is stored invisibly in RAM and becomes playable from the Scratch Pad.

This pad can be played in the same manner as any other pad. The Scratch Pad is unique, however, in that it’s only a temporary means of playing a wave. To make fullest use of a wave, it must be assigned to one or more pads in a RAM kit. Sending to pads is described in detail later in this chapter.

Tip: You can save the contents of the Scratch Pad directly to disk along with a sound that will play them. The procedure is described in Chapter 7.



What can be Sampled in the ASR-X Pro

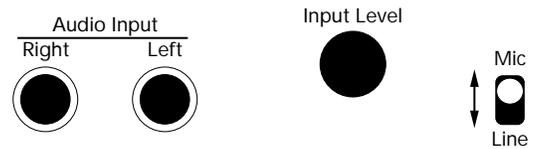
The ASR-X Pro can create stereo or mono waves from:

- its own outputs, letting you easily resample new sounds from its sounds and sequences, taking full advantage of the ASR-X Pro effects.
- the two Audio Input jacks on its rear panel that let you sample anything from a mic, turntable or CD player. You can make these samples with or without adding effects.
- the ASR-X Pro outputs and the audio inputs at the same time.

“Selecting a Source,” later in this chapter describes how to select your audio source.

Using the ASR-X Pro Audio Inputs

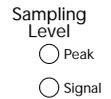
The rear panel of the ASR-X Pro provides two 1/4" input jacks to which you can connect line-level audio sources—such as a turntable or CD player—or a low impedance microphone. You'll also find a Mic/Line switch and an Input Level adjustment knob whose uses are described below.



You can send audio into the ASR-X Pro through either or both of the Audio Input jacks. If you're using a microphone, or microphone-level device, flip the Mic/Line toggle switch upward for the best results. When using a line-level device, flip the switch to its downward position.

Setting the Optimum Audio Input Volume

The volume of audio being sent into the ASR-X Pro's Audio Inputs is shown in the front-panel Sampling Level LED array. When the ASR-X Pro detects incoming audio, the lower green LED flashes. When the audio is in danger of being too loud, causing clipping, the red LED flashes. In the ASR-X Pro, the red LED does not necessarily mean that your input signal is too loud—it means only that you should listen to it carefully to make sure that it's not undesirably clipping or distorting. The red LED lights at -6dB.

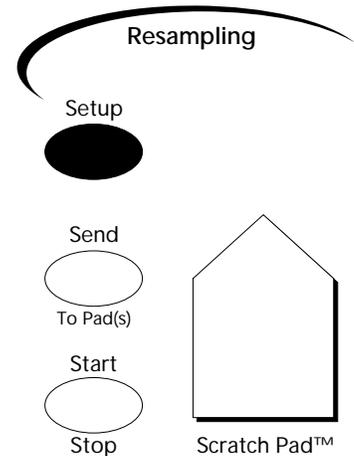


To adjust the volume of the signal being sent into the Audio Inputs, slowly turn the rear-panel Input Level knob to achieve the best setting. You can also turn up or down the actual source of the audio.

Resampling Setup

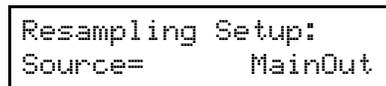
This section describes the first steps of the sampling/resampling process: setting up. All of the features described in this section are accessed by pressing the Resampling Setup button.

Once you've pressed the Setup button, you can turn the Parameter knob to select the parameter you'd like to adjust and turn the Value knob to set the selected parameter. The factory defaults for these parameters are listed in each description in case you want to restore them after using the "Save these settings?" command (Chapter 7).



The Resampling Setup Display

All of the sampling/resampling setup parameters—with the exception of the Trig (for "trigger") parameter and meter—share a common display format in which the phrase "Resampling Setup" appears on the top line, and the parameter being adjusted appears on the bottom line:



↑
The parameter selected for editing

Source

factory default value: MainOut

The first item to determine when you want to sample or resample is the source of the audio to be sampled. When the Resampling Setup Source parameter is displayed, you can set it to:

- MainOut—to resample audio being produced by the ASR-X Pro, including sounds or sequences.
- Input+MainOut—to capture audio being produced by the ASR-X Pro, combined with audio being sent into its Audio Inputs. When this value is selected, an additional In Bus parameter is available

that allows you to send the Audio Inputs' signal into the desired ASR-X Pro effect (see "Selecting an FX Bus when Sampling a Mix of the Audio Inputs and the ASR-X Pro Output" below).

- Input+Insert—to sample the Audio Inputs' signal after it's been processed through the currently selected insert effect.
- Input Dry—to sample the Audio Inputs' signal without any ASR-X Pro effects added.

In Bus

factory default value: Insert

When Resampling Setup Source parameter is set to "Input+MainOut," you select the effect, if any, through which the Audio Inputs' signal will be sampled. The In Bus parameter can be set to:

- Off—to silence the Audio Inputs' signal.
- Insert, LightReverb, MediumReverb, WetReverb—to route the Audio Input's signal into the ASR-X Pro effects (see Chapter 4 to learn more about ASR-X Pro effects).
- Dry—to apply no effects to the Audio Input's signal.

Rec Mode

factory default value: Stereo

The Rec Mode parameter allows you to determine whether you'll be recording a mono or stereo wave. You can set this parameter to:

- Stereo—so that a stereo wave (really a pair of waves panned left and right) will be created from audio produced by the selected source. When the Source parameter is set to "MainOut," the entire stereo image produced by playing the ASR-X Pro's pads or sequencer will be captured. When the Audio Inputs are being used, the incoming audio's stereo image is retained; if only the left or right Audio Input jack is being used, the signal will remain only on the left or right, respectively.
- Left Mono—so that a mono wave will be created from the left side of the selected audio source. The left side of the source will be panned to the center for monitoring purposes and for being sent into the effect and for being routed into the effects when they're being sampled (the left output of the effects will be captured in the wave).
- Right Mono—this functions in the same manner as Left mono, except that it uses the right side of the stereo.

Auto-Normalize

factory default value: Off

The ASR-X Pro can automatically normalize your wave when you create it. Normalizing digitally boosts the wave to its loudest volume short of clipping or distortion in order to achieve the best fidelity and signal-to-noise ratio. The Auto-Normalize parameter turns this automatic volume correction on or off.

Tip: You can normalize a wave after you've sampled it, if you prefer, by utilizing the Pad Process normalization feature (see Chapter 3).

Record Time

factory default value: [maximum time in stereo]

Each wave occupies a portion of the ASR-X Pro's sample memory for as long as the ASR-X Pro is turned on, or until you erase the wave. The longer the duration of the wave, the more memory is required, and stereo waves, since they actually contain two mono waves, take up twice as much memory as mono waves do. If you create stereo waves, you'll consume the available memory twice as fast. The ASR-X Pro's sample memory can be easily expanded to 34 megabytes through the installation of SIMM chips (see Chapter 7).

Tip: You can find out how much memory is available in your ASR-X Pro using the Memory Manager. See Chapter 7.

The ASR-X Pro provides the Record Time parameter to let you limit the amount of sample time you're willing to commit to a wave you're about to sample. You may choose to do this to hold a chunk of memory aside for later sampling, or simply to limit the length of the wave for musical reasons. Record

Time can be set anywhere from 0.5 sec—for “seconds”—to the maximum amount of sampling time remaining in your ASR-X Pro. The parameter shows you the amount of memory available for the type of sampling—stereo or mono—that you’ve selected with the Rec Mode parameter, described above.

Pre-Trigger Time

factory default value: 3ms

The ASR-X Pro will automatically begin sampling/resampling whenever it detects audio of a specified loudness when its Trig mode parameter (see below) is set to “Threshold” or “Note Event.” Pre-triggering allows you to grab audio that occurs during a specified period of time just before your source reaches a volume loud enough to cause sampling to begin. This is possible since the ASR-X Pro continually captures audio into its sample memory behind the scenes once sampling is enabled. Pre-triggering can help ensure that the front of whatever you’re sampling isn’t chopped off before it reaches the threshold volume (see “Setting the Trigger Threshold” below to learn about setting this threshold). You can set the length of pre-trigger time anywhere from 0ms (for “milliseconds”) to 99ms.

Trig Mode

factory default value: Threshold

There are three ways that the ASR-X Pro can begin sampling/resampling what it hears. Each of these choices is represented by a value that can be selected for the Trig (Trigger) Mode parameter:

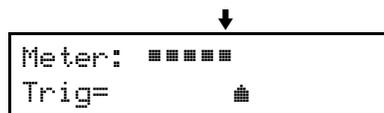
- Manual—With this setting, the ASR-X Pro will only begin sampling when you press the Sample Start/Stop button.
- Threshold—With this setting the ASR-X Pro will begin sampling when it detects audio from the selected source that reaches the threshold set with the Trig parameter, described below.
- Note Event—With this setting, the ASR-X Pro will begin sampling when a pad is played or a MIDI note (note-on) message is received from an external MIDI device on any MIDI channel. This is especially handy when you’re resampling sounds in the ASR-X Pro.

Each of these modes is activated by pressing the Sample Start/Stop button, and de-activated by pressing the Start/Stop button a second time (see “How to Start and Stop Sampling a Wave” below).

Setting the Trigger Threshold

The Trig parameter allows you to set a volume threshold at which the ASR-X Pro will begin sampling/resampling its source when the Trigger Mode parameter (described above) is set to “Threshold.” This parameter is presented in a special display that makes it easy to select a useful volume:

The top line is a meter that shows the volume of notes as you play



The pad symbol shows the current threshold setting

By playing some notes on a pad or via MIDI that represent what you intend to sample, you can see the volume of your audio on the display’s top line. By turning the Value knob, you can move the pad symbol to match the level at which you expect to play the audio you’ll be sampling.

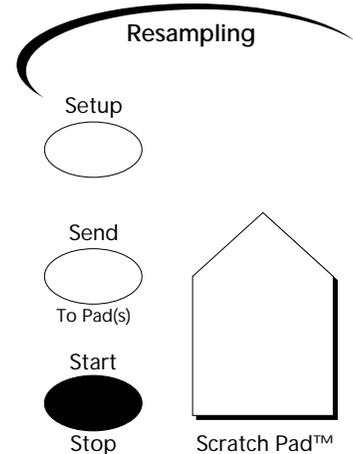
Tip: Take a few moments to find the right Trig setting—if you set the threshold too low, sampling may begin too early; if you set it too high, sampling may not begin when you want it to if you play a pad or key too softly.

Sampling/Resampling a Wave

How to Start and Stop Sampling a Wave

The Start/Stop button is the device that turns sampling/resampling in the ASR-X Pro on and off. When the ASR-X Pro is not sampling, pressing the Start/Stop button engages the sampling function in a manner determined by the setting of the Trig Mode parameter (described above):

- When Trig Mode is set to “Manual,” the ASR-X Pro begins sampling at the moment you press the Start/Stop button.
- When Trig Mode is set to “Threshold,” pressing the Start/Stop button causes the ASR-X Pro to begin listening for a source signal loud enough to trigger the beginning of sampling.
- When Trig Mode is set to “Note Event,” pressing the Start/Stop button causes the ASR-X Pro to wait for a pad to be played, or a MIDI Note message to trigger the beginning of sampling.



Note: After you press the Start/Stop button when Trig mode is set to either “Threshold” or “Note Event,” the display will show waiting for “Waiting For Trigger.” Press Start/Stop a second time to begin sampling without triggering. To disable trigger sampling, press the Exit/No button.

Once sampling begins, the ASR-X Pro display shows you its progress:

```
Sampling In Progress
=====*
```

↑
This graphically shows the amount of sampling time being used

The bottom line of the display becomes a meter that shows how much of the sampling time allotted with the Record Time parameter (see above) has been consumed by the wave you’re creating.

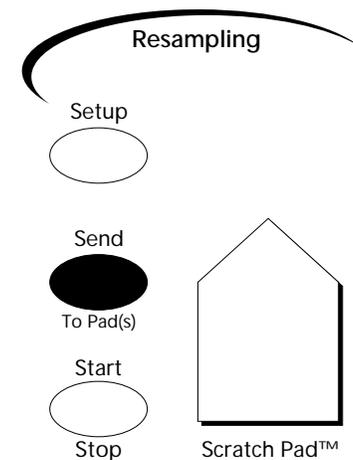
Tip: You can view other areas in the ASR-X Pro as sampling occurs—this can be handy when resampling the sequencer or when tweaking sounds or effects in real-time. “Sampling In Progress” flashes on the display’s top line in alternation with the display pertaining to the non-sampling area of the ASR-X Pro you’ve selected.

When sampling is in progress, pressing the Start/Stop button stops sampling. When sampling is complete, the “SendTo Pads?” display appears (see below to learn about sending a wave to pads). You can audition your new wave at this point by playing it on the Scratch Pad.

Sending a Wave to Pads

When you’ve finished sampling/resampling, the new wave is playable from the Scratch Pad. To make the wave truly usable, however, you’ll want to send it to one or more pads in the currently selected RAM kit.

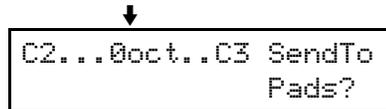
Note: If the currently selected track is not using a RAM kit when you begin sampling, the ASR-X Pro will convert the track’s sound into a RAM kit for you, so that you’ll have somewhere to send your wave. The new kit—which will be named after the original sound with a number added to its end—can be found in the USER-SND and DRUM-KIT SoundFinder categories.



Tip: If you'd like to sample into an otherwise empty kit—a “clean slate,” in other words—select the ROM sound called “Silence” before you sample. This will be converted into a RAM kit that will play only your wave. You can assign any sounds you like to its pads after you've finished sampling and sending your wave to the desired pad or pads.

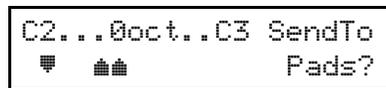
When you press the Resampling Start/Stop button to finish sampling, the “SendToPads?” display automatically appears:

The top line shows the octave to which the pads are currently pointing



If you'd like to send the wave to a pad in an octave other than the one currently being played by the pads, you can select the desired octave using the Octave Transpose button (see Chapter 3 to learn more about using the Octave Transpose buttons). The display will always show you the octave currently being played by the pads.

After selecting the desired octave, press each pad to which you'd like to send your wave. (You can use the Octave Transpose buttons at any time during the SendTo Pads procedure, allowing you to send your wave to any pads in any octaves.) The display will graphically show which pads have been selected.



This shows the second, fifth and sixth pads in the selected octave as having been pressed

If you've selected a pad, but would like to un-select it, press it again—and wave won't be sent to the pad.

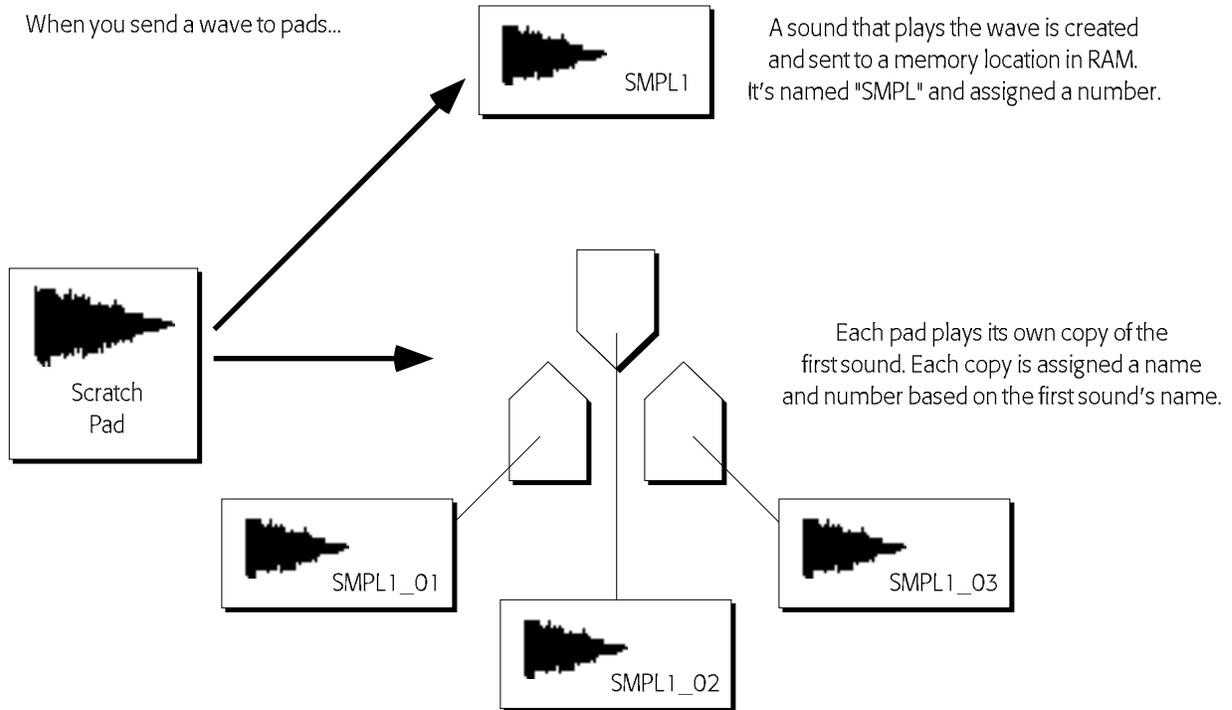
When you've selected all of the pads to which you want to send your wave, press the Yes button. If you'd like to cancel the procedure, press the No button.

Tip: After you've sent a wave to pads, the wave remains in the Scratch Pad until you sample something else or turn the ASR-X Pro off. You can send the contents of the Scratch Pad to a pad in a RAM kit at any time by pressing the Resampling Send To Pad(s) button.

What Happens When You Send a Wave to a Pad or Pads?

When you send a wave to a pad in the selected track's RAM kit, the ASR-X Pro creates a standard RAM sound that plays the wave (see Chapter 3 to learn more about ASR-X Pro standard and kit sounds). The sound is named “SMPL” followed by a number—when you power up, the ASR-X Pro starts back at SMPL1 and raises the SMPL number value each time you sample something new and send it to pads. The SMPL sound is not actually played by any of the pads—it's created as a safety copy of the sound that can be selected from SoundFinder and assigned to a track or pad at any time.

When you send your wave to pads, the ASR-X Pro creates copies of the SMPL sound—one for each pad. Each of these will be named similarly to the sound, but will have an additional underscore and number following its name. For each pad you send the wave to, the number increases by one. This allows you to be able to tell which sound is played by each pad. You can change the name of any of these sounds using the Memory Manager if you like (see Chapter 7).



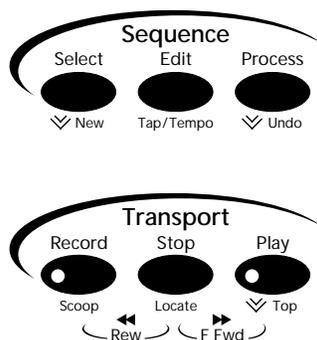
Having each pad play the wave using its own sound allows you to edit each pad's sound separately while keeping the wave on which it's based intact (to learn more about editing pad sounds, see Chapter 3). These sounds are normal ASR-X Pro standard sounds and are stored in the lowest-numbered empty locations in RAM. They can be selected for use by a pad in any RAM kit or by any track in the sequencer.

Automatically Spreading a Wave Across all of a Kit's Pads

There may be times when you'd like to spread your wave across all the pads, with each one playing it at a different pitch. To do this, press the Track Sound button, dial in the *CUSTOM SoundFinder category, and select the original SMPL sound (SMPL1, for example). As a standard sound, it will be played by all the pads. To hear the wave at its original pitch and speed, use the Octave Transpose button to aim one of the pads at Middle C (C4). Middle C is always the root key for a wave.

6 Sequencing

The ASR-X Pro contains a potent 16-track sequencer for the construction of grooves—or any other kind of music. This chapter describes the concepts behind the ASR-X Pro sequencer and how to harness its power. All of the sequence recording, playback and mixing controls are found grouped together on the ASR-X Pro front panel.



There are two sets of sequencing buttons. They are:

- the Sequence buttons—which provide sequence settings as well as sequence and track tools. These are described in “The Sequence Select Button,” “The Sequence Edit Button” and “The Sequence Process Button” later in this chapter.
- the Transport buttons—provide the controls for operating the sequencer. These are described in “Operating the Sequencer” later in this chapter.

Overview

How the ASR-X Pro Sequencer Works

The ASR-X Pro sequencer records the MIDI information generated by the ASR-X Pro pads or by MIDI data received from an external MIDI device. When the sequencer plays this data back, it sends it to the areas within the ASR-X Pro that produce its sounds and effects, and your music is faithfully reproduced. The sequencer can also be synchronized to an external MIDI timing source, such as a computer or stand-alone sequencer (see Chapter 7’s “Edit MIDI Settings?”).

Each musical event the sequencer records takes up space in the ASR-X Pro’s memory. Unlike conventional recording media such as tape, when there’s no musical activity—during rests between notes, for example, or when you’re holding a long note—no data is required and no memory is used.

What is a Sequence?

A sequence is a piece of music recorded by the ASR-X Pro using MIDI technology. Each sequence can contain the separate, synchronized recordings of up to 16 performances, each using its own sound—each of these is called a *track*. Each sequence also has its own insert effect and global reverb to which its tracks can be routed (Chapter 4 explains the ASR-X Pro effects in detail). ASR-X Pro sequences are Standard MIDI Files (SMFs) that can be read from floppy by any Macintosh or PC-compatible computer—when you load an ASR-X Pro sequence into your computer sequencer, you can still use the ASR-X Pro’s sounds by accessing them via MIDI.

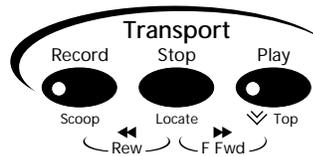
Note: The entire structure of the ASR-X Pro is based on the 16 tracks of the currently active sequence (see Chapter 2 to learn about tracks, including how to select tracks, how to assign sounds to tracks and how to edit them).

There is always a sequence active in the ASR-X Pro, even if you haven't recorded on any of its tracks yet. The ASR-X Pro can hold up to 128 sequences, each of which can be selected in turn (see "The Sequence Select Button" later in this chapter to learn how to select sequences).

Each sequence can be renamed, copied or deleted from memory. Controls are provided that allow you to determine the behavior of a sequence, from its tempo to the nature of its pre-recording countoff, and so on. These sequence settings are described in "The Sequence Edit Button" later in this chapter. The performances contained on the tracks in a sequence can be edited and perfected through the use of various onboard processes, described later in this chapter in "The Sequence Process button."

Operating the Sequencer

The Transport buttons are the means by which most sequencer recording and playback operations are performed.



In general, the Transport controls function in a manner similarly to the controls on any cassette or CD player, tape recorder or VCR.

To accomplish this:	Do this:
Play a sequence	Press the Play button.
Stop playback of a sequence	Press the Stop button.
Jump back to the beginning of a sequence	Press the Play button twice.
Rewind to the top of the sequence	Hold down the Record button and press the Stop button.
Rewind bar by bar	Hold down the Record and Stop buttons.
Fast forward bar by bar	Hold down the Stop and Play buttons.
Record a track	Hold down the Record button and press Play.
To punch in on a track manually.	Press the Play button to start playback. Hold down the Record button and press the Play button at the location at which you want to start recording. Note: You can punch in using a foot switch—see Chapter 7. In addition, the sequencer Region feature provides automated punching-in—see "Using Regions" later in this chapter.
Start from any location within a sequence	Hold down the Stop button, and while continuing to hold it, turn the Parameter knob to select the desired measure or type in the measure's number using the Essentials buttons as a numeric keypad. Press the arrow buttons to select a beat, and turn the Value knob to select a clock. When you've selected a location, let go of the Stop button and press the Play button.
Scoop all instances of a pitch from a track	Select the track from which you'd like to scoop the note. Hold down the Record button and while holding down Record, press the pad, or key on an external MIDI keyboard, for the note you want to remove. The ASR-X Pro will offer to remove all instances of the note. Press the Yes button to complete the procedure.
Scoop out notes as the track plays	In Add mode, select the desired track and hold down the Record button (see "RecordMode" later in this chapter). While continuing to hold down Record, press the Play button. Let go of both buttons. Re-press and hold the Record button, play the pad, or key on an external MIDI keyboard, for the note that you want to remove. As long as you hold down the Record button and the note's pad/key, all occurrences of the note will be removed from the track.

The Transport LEDs

The Play and Record button contain LEDs that provide information about what the sequencer is doing:

- The green LED in the Play button lights whenever the sequencer is playing.
- The red Record LED lights when recording is taking place in the currently selected track.
- The red Record LED flashes when the sequencer is waiting to record, or to scoop notes from a track.

The Transport Displays

When operating the sequencer Transport controls, one of two displays will always appear, except when you're adjusting the sequence setting accessed by pressing the Sequence Edit button. In all other cases:

- When the sequencer is playing, the sequencer track page is displayed. This display tells you what track is currently selected, where you are in the sequence, and the name and SoundFinder category of the track's sound. If a track has not yet been recorded, the display will show the word "Empty" in the special information area shown below. If the track is muted or soloed (see Chapter 2), this area of the display will show "mute" or "solo."

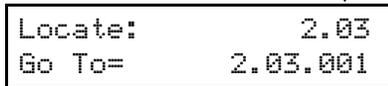
The currently selected track Special information The bar and beat of the current location in the sequence



The SoundFinder category and name of the track's sound

- When you are moving within a sequence in a non-play mode—such as when you're fast forwarding, rewinding or selecting a location within the sequence—the locate display appears.

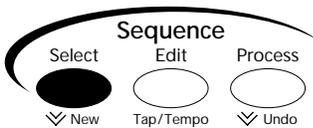
The current location of the sequence



The bar, beat and clock where playback will begin

Note: The location within a sequence is measured in bars—or measures—beats and clocks. A clock is 1/384th of a quarter note. This 384 ppqn (pulse-per-quarter-note) resolution means that the ASR-X Pro sequencer can capture the most subtle of rhythmic nuances. When an SMF recorded at some ppqn other than 384 is loaded into the ASR-X Pro, the ASR-X Pro adjusts its playback timing resolution so that the SMF plays as intended. When additional tracks are recorded in the sequence, they're recorded at the SMF's ppqn.

The Sequence Select Button



The Sequence Select button provides access to sequence selection and creation tools. Each time the Sequence Select button is pressed, one of two displays appears, allowing you to create a new sequence or select one that's currently in the ASR-X Pro's memory.

Creating a New Sequence

When the sequence-creation display appears you can press the flashing Yes button to create a new sequence. The new sequence will be assigned a default name and number that tells you which empty sequence location it will occupy.

```

Create new sequence?
SEQ000002
  
```

The sequence's default name

This number shows the new sequence will be the second one in memory

Tip: To quickly select the sequence creation display, double-click the Sequence Select button.

Tip: See “The Sequence Process Button” later in this chapter to learn how to rename a sequence.

Selecting Sequences

When the ASR-X Pro shows its sequence selection display, you can turn the Value knob to select any of the sequences currently in the ASR-X Pro's memory. You can also select the desired sequence by typing its number using the Essentials buttons as a numeric keypad.

The selected sequence is the first one in memory

The number of sequences in memory

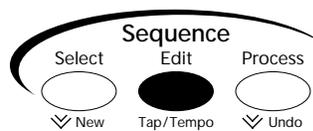
```

Sequence 1 of 4:
Grand Slam
  
```

The name of the selected sequence

When you've selected the desired sequence, press the Enter button to load it into the sequencer, where it can be played or edited.

The Sequence Edit Button



The Sequence Edit button provides access to sequence settings. When you press the Sequence Edit button, the ASR-X Pro displays one of the settings for the currently selected sequence in the form of a parameter. Turn the Parameter knob to access each of these, and turn the Value knob to select the desired value for the displayed parameter.

Tempo

Each sequence has a basic tempo setting that determines how fast it will play, expressed in BPM (“beats per minute”). You can set the current sequence's tempo manually, by selecting the whole-integer or fractional area of the Tempo parameter display and dialing in the desired value, or by tapping out the beat you want at any time on the Sequence Edit button—when you do so, the ASR-X Pro will jump to the Tempo display to let you see the tempo you're playing.

Tip: The Final Mix record mode (see “RecordMode” below) allows you to record full-integer tempo changes—fractional changes are not recorded.

RecordMode

The ASR-X Pro sequencer provides several different recording modes, each of which allows you to perform a different type of recording or mixing task:

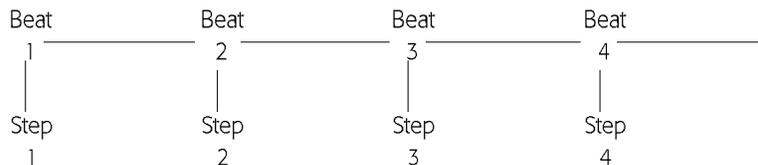
- **Replace**—This is the most basic recording mode, where newly recorded material replaces anything that was previously recorded on the selected track. In Replace mode, the length of a sequence is defined by its longest track.
- **Add**—In Add mode, newly recorded material is combined with anything previously recorded on a track, so that both the new and old material is heard on playback. In Add mode, the length of a sequence is defined by the length of the first track.
- **Step**—The Step mode allows you to use the ASR-X Pro sequencer as a non-real time recording device, where each note or chord is entered one at a time. See “Step Recording” below for details.
- **Track Mix**—Track mix mode allows you to record real-time track parameter changes onto a track. See “Recording Track Parameter Changes” later in this section.
- **Final Mix**—Final Mix mode allows you to record whole-sequence volume and tempo changes. See “Recording Sequence Volume and Tempo Changes” later in this section.

Step Recording

Step recording lets you record notes and chords on a track while the sequencer only moves forward when you instruct it to do so. During playback, a step-recorded track plays at the sequence’s normal tempo, causing all the notes and pedal presses you’ve entered to sound as if they were performed normally. Step recording is ideal for impossible-to-play passages, or for times when a not-quite-human-sounding performance is desired.

In step recording, each track is divided up into divisions of a beat, called *steps*.

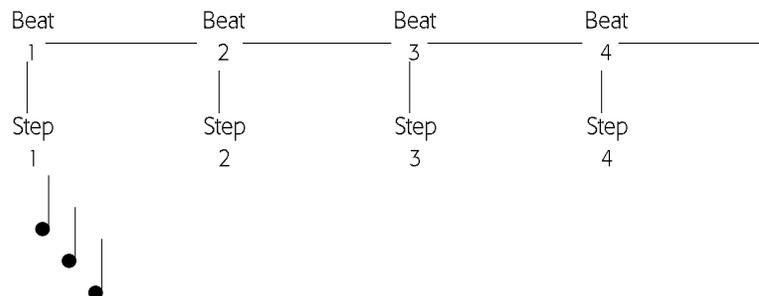
If, for example, a 4/4 track is divided into 1/4 note steps...

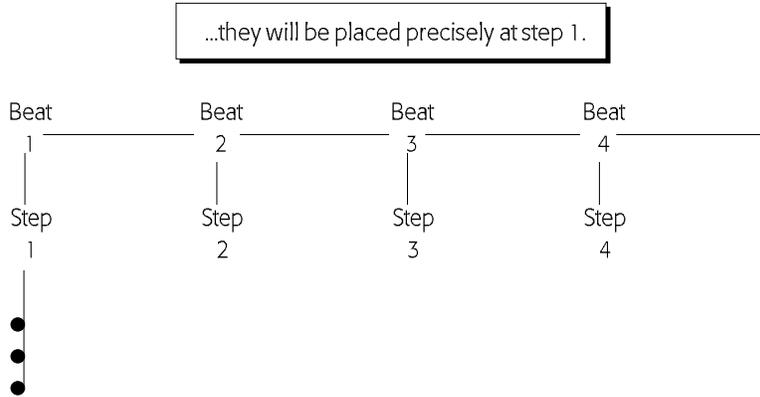


...there will be four steps in each measure.

With the sequence at rest, you enter notes and sustain/ sostenuto pedal presses at their desired locations.

If these notes are step-recorded at step 1...

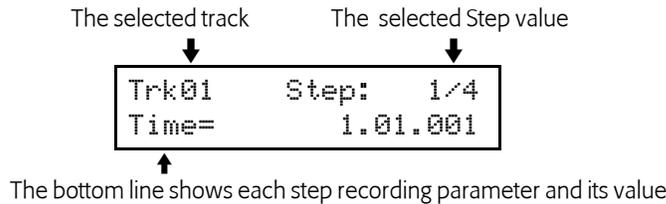




The sequence is then advanced, step-by-step, through the track, as you place the desired notes, chords or sustain/sostenuto pedal presses where you want them. Notes are recorded at the velocity with which they're played on the keyboard. By paying attention to the velocities at which you play your notes, you can help simulate a natural sound.

Tip: Chords can be recorded by playing the notes in the chord simultaneously or one at a time.

The ASR-X Pro provides a suite of step-recording parameters. Turn the Parameter knob to select each parameter, and the Value knob to change the selected parameter's setting. It's best to set up all of the step parameters as you'd like before you play notes on the ASR-X Pro pads or send notes to the ASR-X Pro via MIDI. All of the step recording parameters share a common display format:



Step Record parameter	The parameter's purpose
Time	Shows your current location in the sequence. Notes played on the pads or received via MIDI will be placed at the displayed location..
Step Size	Sets the division of the beat at which notes will be placed. This may be set to: 1/1, 1/1T, 1/2D, 1/2, 1/2T, 1/4D, 1/4, 1/4T, 1/8D, 1/8, 1/8T, 1/16D, 1/16, 1/16T, 1/32D, 1/32, 1/32T, 1/64D, 1/64 and 1/64T. Note: "D"="dotted value"; "T"= "triplet"
Gate Time	Sets the length of each recorded note. This can be set to: 1/1, 1/1T, 1/2D, 1/2, 1/2T, 1/4D, 1/4, 1/4T, 1/8D, 1/8, 1/8T, 1/16D, 1/16, 1/16T, 1/32D, 1/32, 1/32T, 1/64D, 1/64, 1/64T, Step and Held. Note: "D"="dotted value"; "T"= "triplet." When the parameter is set to "Step," the duration of each note will equal the Step size. When the parameter is set to "Held," the duration of each note is set by holding down the note's pad, or key on an external MIDI keyboard, and advancing the Time value, letting go of the pad or key where you want the note to end.

Gate Percentage	When Gate Time is set to any value other than “Held,” the Gate Percentage parameter lets you to shorten the length of recorded notes by reducing the selected Gate Time value by a percentage. Tip: Try a Gate Percentage setting of 80% to approximate a real-time performance.
Auto-Step	Allows you to set the manner in which the sequencer will advance through the track. When Auto-Step is set to “On,” each note played (see tip below about chords) will cause the sequencer to advance to the next step. When it’s set to “Off,” the track will advance to the next step each time you press the Enter button. Tip: You can move to next step using a foot switch, if you like. See Chapter 7’s “Set system prefs?” Tip: The sequencer interprets notes played closely together—within 100 milliseconds of each other—as being a chord. When Auto-Step is on, only notes played further apart will advance the track to the next step. If you’d like to play the notes in a chord one-by-one, turn Auto-Step off.

To begin step recording, turn the Parameter knob counter-clockwise to return to the Time display, hold down the Record button and press the Play button. To end recording, press the Stop button.

Recording Track Parameter Changes

When you hold down the Record button and press the Play button to begin recording in Track Mix mode, the ASR-X Pro shows the Track Mix display for one of the track’s parameters (see in Chapter 2).

```
Trk01 Mixdown 1.01
Mix (Expression)=127
```

Using Track Mix mode, you can record real-time changes for the following parameters, each of which can be altered via a standard MIDI controller:

- Mix (Expression)—controller #11
- Track Pan—controller #10
- Glide Time—controller #84
- Normal LFO Rates—controller #75
- Amp Env Attack—controller #73
- Amp Env Decay—controller #76
- Amp Env Release—controller #72
- Filter Cutoff—controller #74
- Filter Resonance—controller #77

To move among the available parameters, while recording in Track Mix mode, turn the Parameter knob or press either the Exit or Enter button. When the desired parameter is shown, you can turn the Value knob to change its setting—all changes you make will be recorded.

Recording Sequence Volume and Tempo Changes

When you hold down the Record button and press the Play button to begin recording in Final Mix mode, the ASR-X Pro shows one of two Final Mix displays: one for the sequence’s overall volume...

```
Trk01 Mixdown 1.01
Final Mix= 100%
```

...and one for its tempo.

```
Trk01 Mixdown 1.01
Final Tempo= ♩:120
```

To move between the two displays, turn the Parameter knob or press either the Exit or Enter button. When the desired parameter is shown, you can turn the Value knob to increase the sequence’s track mix settings—which rise and fall as a single entity— or its tempo setting. The rate of increase or decrease to the mix setting is expressed as a percentage of its original value.

Note: Use Final Mix for volume changes with care—it would be a good idea to save a safety copy of your work to disk first—since there is no undo available for Final Mix volume changes.

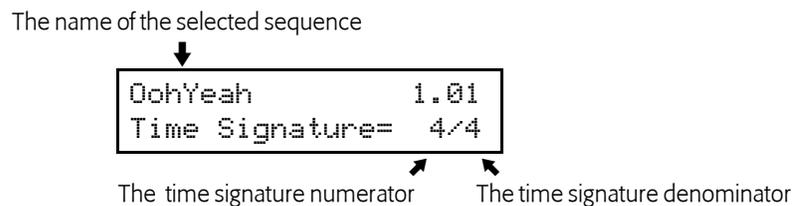
Tip: If you'd like to use the Final Mix mode on a selected group of tracks only, mute all of the sequence's other tracks. Final Mix will only affect the un-muted tracks.

Loop Playback

A sequence can be programmed to play through once to the end and stop, or to loop back to its beginning over and over again until you press the Stop button. The value selected for the Loop Playback parameter—either “No” or “Yes”—determines whether or not the sequence will loop.

Time Signature

The time signature of an ASR-X Pro sequence can be changed whenever the sequence is not playing, either before or after recording has taken place. If you change the time signature after recording, your music will not change—it will merely be interpreted by the sequencer as being at the new time signature.



When Time signature is displayed, you can turn the Parameter knob to select the numerator or denominator—the selected item will flash to show it's selected—and turn the Value knob to dial in the desired value. The numerator can be set from 1 to 99; the denominator can be set to 1, 2, 4, 8, 16, 32 or 64.

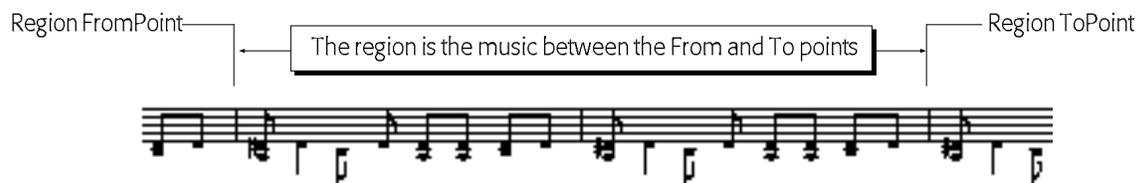
Tip: For your convenience, when you reset the time signature denominator, the denominator for the sequence's metronome click is set to match the new denominator (see “Click Timing” below).

Using Regions

The ASR-X Pro sequencer allows you to define a section of the currently selected sequence as a *region*. A region can have several uses. It can be:

- the only section of the sequence that's heard when you play the sequence.
- the portion of the sequence that gets re-recorded during automated punching in.
- a section of the sequence or of a track upon which you perform one of the sequence processes (see “The Sequence Process Button” later in this chapter.)

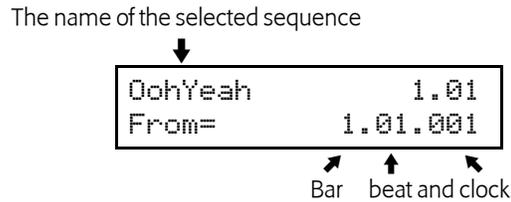
A region is defined by setting and turning on the Region FromPoint and/or Region ToPoint. The FromPoint sets the beginning of the region, while the ToPoint sets its end.



After recording a sequence's first track, Region To is automatically turned on, defining the length of the sequence. To override this—in order to lengthen the sequence—you can turn Region To off.

Tip: You can turn on only the FromPoint or ToPoint if you'd like to use the sequence's original end or beginning, respectively, as the end or beginning of the region.

To turn on and set the Region FromPoint, set the Region FromPoint parameter to “On,” and turn the Parameter knob to display the From= parameter:



Turn the Parameter knob to select the bar number, beat number and clock number you’d like to set, and turn the Value knob to dial in the desired value. The Region ToPoint is set in the same way, using the Region ToPoint and To= parameters.

Tip: You can set the From or To value to the nearest beat by pressing the Enter button.

To accomplish this:	Do this:
Play only a specific section of a sequence	Use the region parameters to define the section of the sequence you want to play. The standard play, rewind and fast forward functions will operate within the region you’ve defined.
Set up an automated punch-in	Use the region parameters to define the section of the sequence you want to record. Hold down the Stop button and turn the Parameter knob all the way counter-clockwise to set the Locate point to 1.01.001. Hold down the Record button and press the Play button. As the sequence plays, the Record LED will flash. When the sequence reaches the Region FromPoint, recording will begin.
Define a section of the sequence a portion of a track for processing.	Use the region parameters to define the section of the sequence you want to process. Each of the processes that can be performed on a sequence or track—except Undo—will offer a “within region” option that allows you to process only the defined region (see “The Sequence Process button” later in this chapter).

RecordQuantize

The RecordQuantize feature allows you to correct the timing of your performances as you record them in the ASR-X Pro sequencer. Quantizing while you record saves you time by eliminating the need to perform standard post-recording quantization. The RecordQuantize parameter must be set prior to recording. It can be set to any of the following values:

- OFF—to disengage input quantization
- 1/2
- 1/2T
- 1/4
- 1/4T
- 1/8
- 1/8T
- 1/16
- 1/16T
- 1/32
- 1/32T
- 1/64
- 1/64T

Edit Click/Countoff?

When “Edit Click/Countoff?” is displayed, responding by pressing the Yes button will call up a collection of parameters that let you to set the nature of the metronome click that can be used as a rhythmic reference while recording or listening to the selected sequence. Also available are parameters that allow you to customize the countoff, if any, that will be heard before the selected sequence plays during recording or playback.. The factory defaults for these parameters are listed in each description in case you want to restore them after using the “Save these settings?” command (Chapter 7).

Note: When a sequence is set to have a countoff, the countoff will be shown in the sequencer displays as negative values climbing upward to the first beat of the sequence.

Click

factory default value: Record Only

The Click parameter determines in what circumstances, if any, the sequence's reference metronome will be heard. It can be set to:

- Off—so that there will be no metronome heard during recording or playback.
- Record Only—so that the metronome will only be heard during recording.
- Play Only—so that the metronome will only be heard during playback.
- Record/Play—so that the metronome will be heard during recording and playback.

Click Sound

factory default value: Click

The Click Sound parameter determines the sound that will be used for the sequence's reference metronome click. It can be set to:

- Click—so that the metronome sound will be a mechanical click.
- Stick—so that the metronome sound will be two drumsticks hitting together.

Volume

factory default value: 100

The click Volume parameter sets the loudness of the sequence's metronome click.

Pan

factory default value: Center 00

The click Pan parameter value sets the stereo position of the metronome click.

FX Bus

factory default value: Dry

The click FX Bus parameter allows you to send the metronome click through one of the ASR-X Pro effects by routing it to:

- Insert—so that the metronome will be heard through the sequence's insert effect.
- LightReverb—so that the metronome will be heard with a small amount of reverb.
- MediumReverb—so that the metronome will be heard with an average amount of reverb.
- WetReverb—so that the metronome will be heard with a large amount of reverb.
- Dry—so that the metronome will not be routed through the ASR-X Pro effects.
- AuxOut1, AuxOut2, AuxOut3, AuxOut4—so that the metronome will be routed to one of the ASR-X Pro's auxiliary outputs and removed from the main mix.

Note: The AuxOut values are available only when an X-8 output expander is installed.

Click Timing

factory default value: 1/4

The Click Timing parameter sets the division of the beat to be played by the metronome, and may be set to 1/2, 1/4, 1/8, 1/16 and 1/32 notes, as well as their triplet values (shown with a "T.")

Countoff

factory default value: Record Only

The Countoff parameter determines in what circumstances, if ever, a countoff will be heard before the sequence begins. It can be set to:

- Off—so that there will be no countoff heard during recording or playback.
- Record Only—so that the countoff will be heard at the beginning of the sequence prior to recording.
- Play Only—so that the countoff will be heard at the beginning of the sequence during playback.
- Record/Play—so that the countoff will be heard before recording or playing back the sequence.

Countoff Sound

factory default value: Click

The Countoff Sound parameter sets the sound to be played as the countoff rhythmic reference. It can be set to:

- Quiet—so that there will be nothing heard during the countoff.

- Click—so that the countoff sound will be a mechanical click.
- Stick—so that the countoff sound will be two drumsticks hitting together.

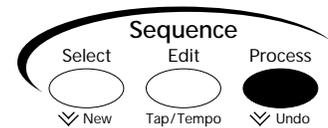
Countoff Bars

factory default value: 1

The Countoff Bars parameter sets the length of the countoff in measures; it can be set to anywhere from 1 to 16 measures.

The Sequence Process Button

The Sequence Process button provides access to various track and sequence editing tools. Each of these performs a particular process on the selected track or sequence, and each is presented as a top-level question that can be answered by pressing the No or Yes button. Pressing No takes you to the sequence selection display described in “The Sequence Select Button” earlier in this chapter. Pressing the Yes button either executes the process or brings you to relevant parameters presented on sub-displays that allow you to determine exactly how the process will be performed. Once you’ve defined the process to be performed by adjusting the parameters offered on these sub-displays, pressing the Yes button will execute the selected process.



Note: The displayed questions relating to processes are not always shown on the display exactly as depicted in the following descriptions—on the display, they include the number of the selected track or sequence where appropriate.

Tip: When you’re using the sequencer’s region feature (see “Using Regions” earlier in this chapter), the sequences processes will conveniently offer “Within Region” values where applicable.

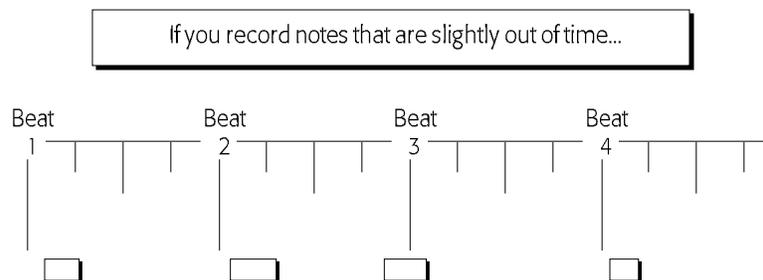
Undo track ?

The ASR-X Pro allows you to undo your last recording or process. Pressing the Yes button in response to this displayed question restores your track to the state it was in before you last recorded on it, or processed it.

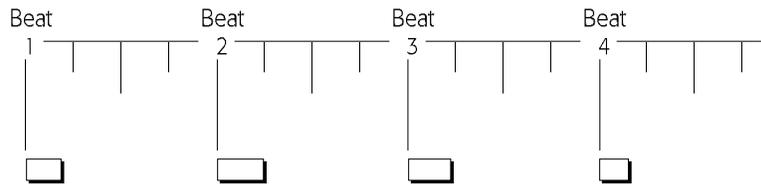
Tip: You can quickly jump to the Undo question at any time by double-clicking the Sequence Process button.

Quantize track?

The ASR-X Pro provides a powerful set of tools for correcting or altering the timing of recorded notes. These processes are described by the general term *quantizing*. When you quantize notes, you shift them in time to line up with specified divisions of the sequence’s tempo, as in this simplified illustration:



...quantizing can correct your timing



The various ASR-X Pro quantization tools are sophisticated, but simple to use. By using them in combination with each other, you can set up some quite elaborate quantizing processes. Each is presented as a parameter on a quantizing sub-display.

Tip: You can execute a quantize process by pressing the Yes button at any time that one of the quantize displays is visible—the current settings for all of the quantize parameters will be used.

Template

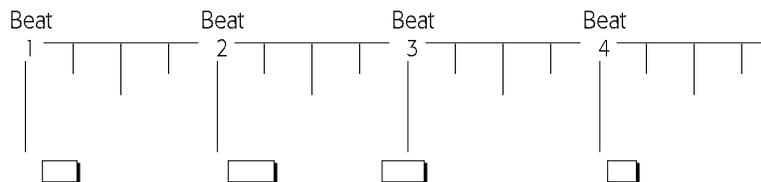
The ASR-X Pro provides complete quantization setups as *templates*. These templates set all of the quantize parameters to sensible settings for the task after which they're named—for a complete list of the quantization templates, see Chapter 9. You can use a template as is, or as a starting point for your quantization programming. When a template has been edited, this will show *****EDITED****.

Tip: You can create and save your own templates that contain quantization settings you'd like to re-use. The first four templates—USER TEMP 1 through 4—are memory locations in which you can store your favorite quantization settings. See "Save quantize as?" later in this section.

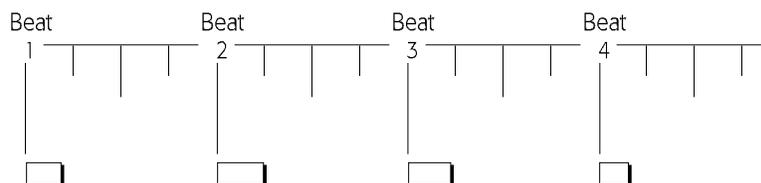
Quantize To

The Quantize To parameter sets the division of a beat to which notes will be aligned during the quantization process.

If you record notes that are slightly out of time...



...setting Quantize To to 1/4 notes can line up the beginning of each note you played to a quarter note in the sequence



The parameter can be set to:

- 1/1—whole notes
- 1/1T—whole-note triplets
- 1/2—half notes
- 1/2T—half-note triplets
- 1/4—quarter notes
- 1/4T—quarter-note triplets
- 1/8—eight notes
- 1/8T—eight-note triplets
- 1/16—sixteenth notes
- 1/16T—sixteenth-note triplets
- 1/32—thirty-second notes
- 1/32T—thirty-second-note triplets
- 1/64—sixty-fourth notes
- 1/64T—sixty-fourth-note triplets

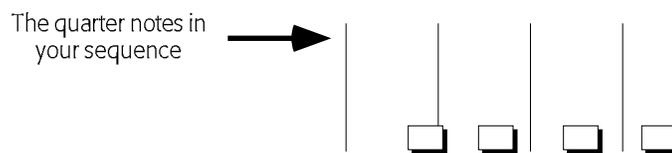
Method

The ASR-X Pro offers two ways to quantize your music. You can set the Method parameter to:

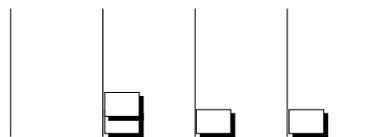
- Normal—to quantize the notes in the selected track using the traditional quantization method: moving the beginning of each note to the nearest occurrence of the Quantize To value.
- Delta—to use a revolutionary ENSONIQ method of quantization first introduced in the MR-61 and MR-76 that preserve's the player's musical intent in a way that normal quantization can't. With delta quantization, if what you've recorded drifts out of time with the sequence, as long as it makes rhythmic sense internally, you can quantize it to perfection.

Delta quantization examines the space—or *delta*—between the beginning of the sequence and the first note and resizes the space to match the nearest multiple of the quantize To value, shifting all of the later notes in the track so that they retain their original relationship to the first note. This process is then repeated for the space between the first and second note, and so on, until all of the notes in the track have been correctly quantized.

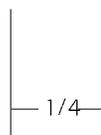
For example, say you've recorded a track that makes sense rhythmically but doesn't fit correctly in your sequence



If you'd selected a Quantize To 1/4 note value, conventional, or normal, quantizing would move the beginning of each note to its nearest quarter note, ruining what you played



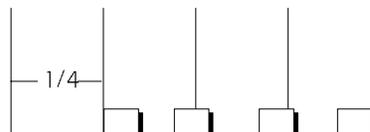
Delta quantize would determine the size of a 1/4 note space...



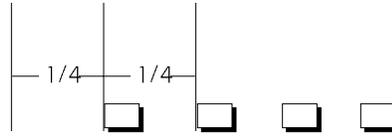
...examine the space between the beginning of the sequence and the first note



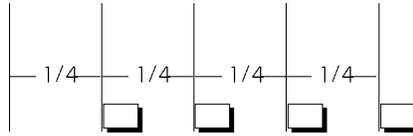
...and align the note to the nearest multiple of the 1/4 note space, moving all the later notes as well...



...and then do the same for the space between the first note and the second...



...and so on, until your quarter notes line up with the quarter notes in the sequence



Note: When Method=Delta, the only additional quantize parameter required—and available—is Quantize To.

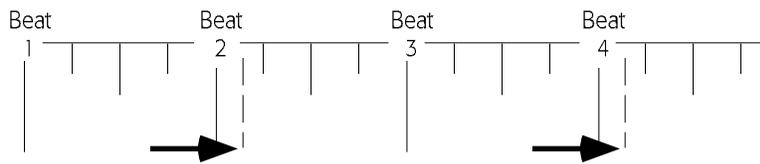
Strength

The Strength parameter determines to what degree the notes in the track will be aligned to the Quantize To value. This parameter allows you to correct the timing of the music on a track to the extent that you desire, without necessarily making it absolutely—some might say “unnaturally”—perfect. Sometimes, a little quantizing help is all that a performance needs. The Strength parameter is expressed in percentages. A value of 100% will line up the beginning of the notes in the track exactly to the division of the beat chosen with the Quantize To value. A Strength setting of 0% will leave the notes unaffected.

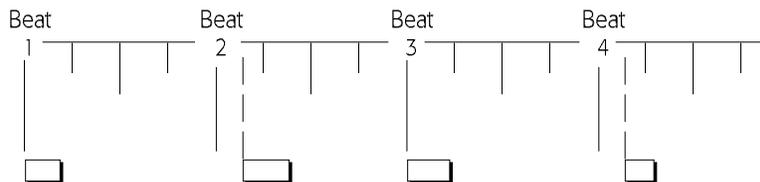
Swing

This parameter allows you to add a “swing” feel to your quantized tracks. Every other occurrence of the type of note set by the Quantize To parameter is altered to sit slightly behind the beat. When the notes in your track are aligned to the resulting combination of even and slightly lagging notes, a swing feel is achieved.

Swing makes every other appearance of the metric value you’ve selected slightly late



...and your notes are lined up with that altered rhythmic reference



The Swing parameter can be set from 50%—for no swing—where each of the Quantize To notes occurs precisely halfway between the note before it and the note after, to 74%, where every other note is pushed nearly halfway towards the following note.

Random

The Random parameter allows you to add aesthetically pleasing timing irregularities to a track as you quantize it. This can help simulate the small rhythmic fluctuations likely to be present in a naturally occurring performance. The irregularities provided by the ASR-X Pro's randomizing function are intelligently created. They don't jump erratically ahead of or behind the beat note by note—instead, randomized notes occur in slightly rushed or lagging groups, as would be the case with a real musician playing around a rigid tempo. The Random parameter can be set from 0%—for no randomization—to 50%, where randomized notes may be as much as half of the Quantize To value ahead of or behind the beat.

Shift

The Shift parameter allows you to move all of the music recorded on a track ahead in time, or back, by as much as the Quantize To value. Shift can be set anywhere from -100% to +100%. A Shift setting of 0% will not shift the music. A setting of -100% will make move it earlier in time by the amount set with the Quantize To parameter +100% will move it later by the same amount.

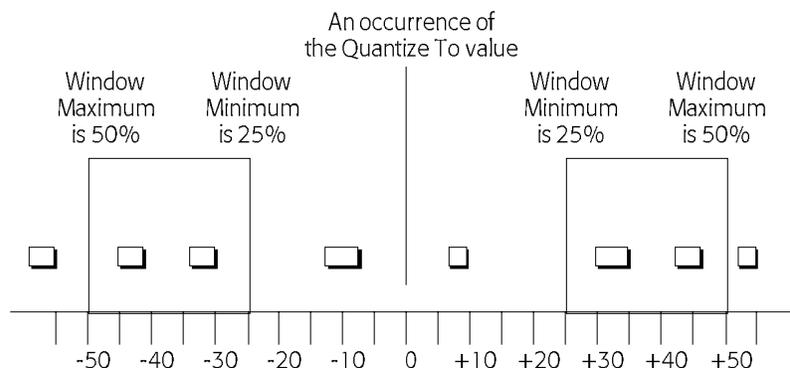
Low Key/High Key

The Low Key and High Key parameters allow you to select a note range to be quantized. All notes outside of this range will be left unaltered when you execute the quantize command. The Low Key parameter determines the lowest note that will be quantized, and the high Key parameter determines the highest.

Window Minimum and Window Maximum

The Window Minimum and Window Maximum parameters allow you to determine by how much notes must deviate from the Quantize To value before they're subjected to quantization. This allows you to correct only the notes in a track that are clearly off, without affecting other unobjectionably placed notes. These parameters are expressed as percentages of deviation from the Quantize To value, and may be set from 0%—no deviation—to 50%, or halfway to the next occurrence of the value selected with the Quantize To parameter. The window created applies to notes that fall both ahead of and behind each occurrence of the value set with the Quantize To parameter. This is shown in the following illustration.

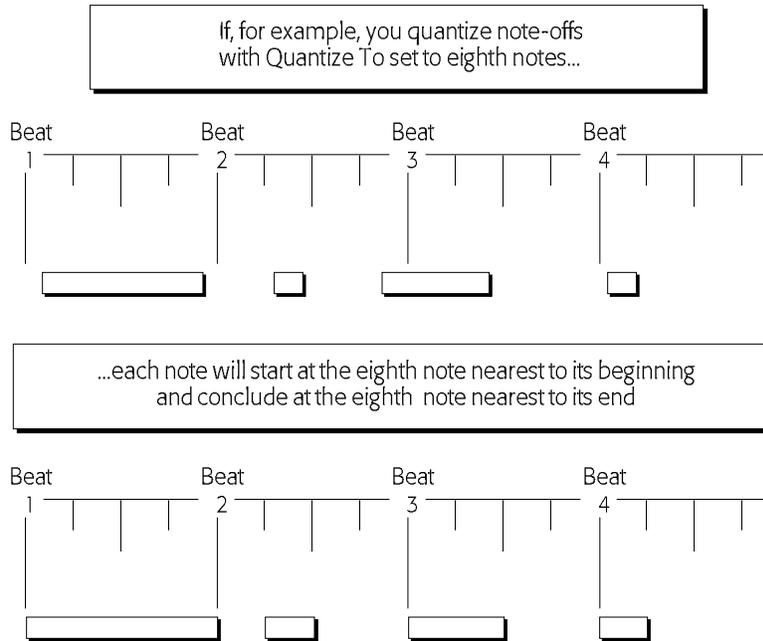
For example, if the quantize window is set from 25% to 50% on either side of the Quantize To value



only these notes—which fall within the quantize window—will be quantized

QuantizeNoteOffs

Quantizing typically affects the beginning of each note—the note-on. In the ASR-X Pro, you can also quantize the ends of notes to the value set with the Quantize To parameter. This has the effect of changing the durations of the notes on the track to the length set with the Quantize To parameter. The QuantizeNoteOffs parameter may be switched on or off.



Move Note Offs

When you quantize the notes on a track, the beginning of each note is lined up to the Quantize To value. If the Move Note Offs parameter is set to On, the entire note will be moved according to the various quantizing parameters—and will remain the same length. If this parameter is switched off, only the beginning of the notes will be moved. The ends of the notes will be unchanged, and, therefore, the length of quantized notes will likely change as only their beginnings are moved to new positions.

Save quantize as?

The ASR-X Pro allows you to save your current quantization settings as a re-usable quantization template. To do this, select USER TEMP 1, 2 3 or 4 and press the Yes button. To use one of your templates, return to the first quantizing sub-display—Template=—and select the desired template.

Tip: USER templates can be stored permanently in FLASH memory or on disk in a SYSTEMSETUP file—see Chapter 7 for details.

Copy track?

The ASR-X Pro offers the opportunity to copy a track, or elements of the track, in a variety of ways to an assortment of destinations. The variety of tasks accomplished using the track copy process utilize a shared set of parameters presented on this process's sub-displays. As you set each of the parameters, the ASR-X Pro offers you additional options based on the values you've already selected.

Tip: Press the Yes button in response to "Copy track?"; set the first parameter displayed as you wish and then turn the Parameter knob clockwise to see if any other parameters are offered. At the point at which no additional parameters appear, press the Yes button to execute the process.

Scope

The Scope parameter is always provided when copying tracks. By setting its value, you determine what will be copied. You can select:

- Entire Track—to copy the whole track, including its track settings and all recorded data.
- TrkParams Only—to copy only the settings for the sequence’s tracks, but no recorded data.
- TrkData Only—to copy the recorded data, but not the settings for the sequence’s tracks.
- Within Region—to copy only the recorded data within the defined region. This value is available only when the Region FromPoint and/or ToPoint parameter is set to “On” (see “Using Regions” earlier in this chapter).

Paste

The Paste parameter determines how the copied material will interact with the data already present in the location to which you’ll be copying it. This parameter is not available when Scope=TrkParams Only. The Paste parameter can be set to:

- Append—to append the beginning of the current track to the end of the destination track.

When you append one track to another,

the beginning of the current track

is attached to the end of

another track

resulting in a longer track:



- Replace—to replace any data already present at the destination with the copied material.

When you copy using the Replace setting,
and there is

data in the destination location

it will be replaced by

the track element you’ve chosen

- Merge—to combine the copied material with anything already present at the destination.

When you merge one track with another,

the track element you’ve chosen

is combined with

any data on the destination track

resulting in a track that contains:

the data on the destination track
and
the track element you’ve chosen

(Destination) Seq

The Seq parameter allows you to choose a sequence other than the currently selected sequence as a destination for your copied material when Paste=Replace or Append. Turn the Value knob to select any of the sequences in the ASR-X Pro's memory.

Destination Track

The Destination Track parameter allows you to select the track to which the track elements you've chosen will be copied. Turn the value knob to select the desired track in the sequence chosen with the (destination) Seq parameter above, or in the currently selected sequence if Paste=Merge.

DestTime

When Paste=Append, the DestTime parameter allows you to select a location within the destination track after the end of its data. The track you're copying will be placed in the destination track at this location. Turn the Parameter knob to select—and the Value knob to set—the desired bar, beat and clock value.

Erase track?

The ASR-X Pro offers the opportunity to erase a track, or elements of the track, with great specificity. As you set each of the parameters provided on this process's sub-displays, the ASR-X Pro offers you additional choices based on the values you've already selected.

To accomplish this:	After responding "Yes" to the top-level question, do this:
Erase all data on the track	Set Scope to "Entire Track" and press the Yes button.
Erase a specific MIDI controller's data	Set Scope to "Trk Data Only." Turn the Parameter knob clockwise and set Event to "Controller." Turn the Parameter knob clockwise and set Cntrl to the desired controller. Press the Yes button.
Erase a specific note range	Set Scope to "Trk Data Only." Turn the Parameter knob clockwise and set Event to "Note Range." Turn the Parameter knob clockwise and set Lo Key to the lowest note you want to erase. Turn the Parameter knob clockwise and set High Key to the highest note you want to erase. Press the Yes button.
Erase any other type of data	Set Scope to "Trk Data Only." Turn the Parameter knob clockwise and set Event to the type of data you want to erase. Press the Yes button.

Tip: When the Region FromPoint and/or ToPoint parameters are set to "On," the track-erasing process also offers a "Within Region" value for its Scope parameter. Use this value to perform all of the above-listed tasks—with the exception of erasing the whole track—on only the portion of the track that falls within the current region From and To points.

Tip: The simplest rule of thumb to follow when using this process is to press the Yes button in response to the top-level question, set the first parameter displayed as you wish and then turn the Parameter knob clockwise to see if any other parameters are offered. At the point at which no additional parameters appear, press the Yes button to execute the process.

Erase trk to end?

Answering "Yes" to this question provides a quick way to clear unwanted music from the end of the selected sequence. This process will erase everything recorded in the sequence that occurs after the currently selected location in the sequence. It's a good idea to hold down the Stop button and verify that you've got the desired location selected before answering Yes to this question. If it isn't, press the Stop button, and while holding it down, turn the Parameter knob to select the desired measure, press the arrow buttons to select a beat, and turn the Value knob to select the desired clock. When you let go of the Stop button, the sequence will go to the location you've dialed in.

Rename sequence?

Any sequence can be renamed at any time by pressing the Yes button in response to this question. Turn the value knob to select each character position and turn the Value knob to dial in the desired character.

Note: You can give a sequence a name of up to 20 characters, even though the sequencer displays on the ASR-X Pro will not typically show all 20 of these characters. The extended name will be visible if you transport your ASR-X Pro sequence—since it's a Standard MIDI File—via floppy to a computer. To view all 20 characters of a sequence's name on the ASR-X Pro, hold down the Sequence Select button. You can turn the Value knob to view the long names of all onboard sequences.

Append sequence?

The ASR-X Pro allows you to attach the currently selected sequence to the end of another sequence in memory. You can construct songs by appending the sections of the song to each other in the correct order. This process offers two sub-displays.

The number of the currently selected sequence

↓

```
Append seq 2 to?
Seq=  1:  Shortie
```

↑ ↑

The number and name of the target sequence

This display allows you to select the sequence to which the currently selected sequence will be attached.

The name of the selected sequence

↓

```
Append seq 2 at?
DestTime=  1.01.001
```

↖ ↑ ↗

Bar beat and clock

When this display is visible, you can at what point after the target sequence the currently selected sequence will be heard. This parameter defaults to attaching the selected sequence at the beginning of the measure following the target sequence's last recorded data. To change this setting, turn the Parameter knob to select the value you'd like to reset, and turn the Value knob to do so.

Tip: When two sequences with different time signatures and/or tempos are attached using the append process, both of their time signatures and/or tempos are retained.

Tip: When sequences are appended to each other, the insert effect and track settings from the destination sequence is used.

Copy this sequence?

The ASR-X Pro allows you to copy the currently selected sequence to the next empty sequence location. You can choose to copy:

- Entire Seq—When this value is selected, everything in the sequence, including all of its tracks' settings and note data, will be copied.
- SeqParams Only—With this value, only the settings for the sequence's tracks will be copied.

Erase this sequence?

The “Erase this sequence?” process allows you to delete the currently selected sequence from memory. It also provides—when the Region FromPoint or Region ToPoint parameters are on (see “Using Regions” earlier in this chapter)—the opportunity to clear unwanted materials from the ends of the sequence. Two choices are offered when either of the above region parameters are set to “On”:

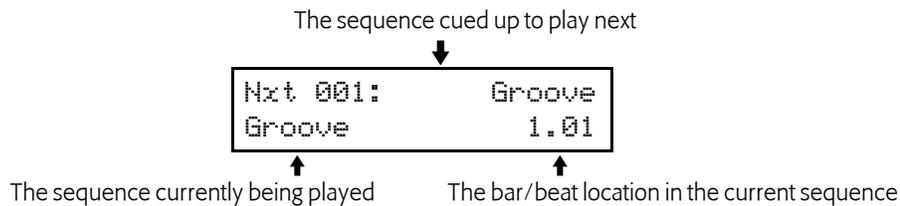
- Entire Seq—With this value, the entire sequence will be erased when you press the Yes button.
- Outside Region—With this value selected, only recorded data that occurs earlier than the region From point (if the Region FromPoint parameter is set to “On”) and/or after the region To point (if the Region ToPoint parameter is set to “On”) will be erased.

Erase all sequences?

This question offer to clear your ASR-X Pro sequencer memory. Press the Yes button to perform this process—a second display will ask you to confirm your decision. Press the Yes button again to erase all sequences currently in the ASR-X Pro’s memory.

Enter pattern mode?

Pattern mode allows you to chain sequences, one after the other, in real time. This can be handy when jamming, in performance, or when trying out song structures. (If you’re ready to actually create a song, use song mode, described below.) You can play along on the pads, and use the Octave Transpose buttons and Patch Selects (the Patch Selects will be reset at the start of each sequence). When you press the Yes button in response to “Enter pattern mode?” the ASR-X Pro will scan the contents of its sequencer memory, and show the pattern mode sequence selection display:



Turn the Value knob or type the desired sequence’s number using the Essentials buttons as a numeric keypad to select the first sequence you want to hear—your selection will be shown on the display’s top line. Press the Enter button to lock in your choice, and press the Play button to start playback.

Tip: You can also choose sequences in pattern mode with the Select Track arrow buttons.

Using any of the methods described above, select the next sequence you want to hear—its name will be shown on the top line of the display—and press the Enter button to lock in your choice. When the currently playing sequence reaches the end, the sequence selected on the top line will start to play. Repeat this process for the next sequence, and so on.

Tip: You can cue up the next sequence in advance when you want to let the currently playing sequence loop for a while before proceeding to the next sequence. To do this, select the desired next sequence without hitting the Yes button. When you’re ready to hear the next sequence, hit the button—the currently playing sequence will play to its end, and the next sequence will play.

Tip: If you’ve selected a next sequence and hit the Yes button, you can hit the No button to prevent it from playing. This allows you to change your next-sequence selection, and will cause the sequence shown on the bottom line to loop.

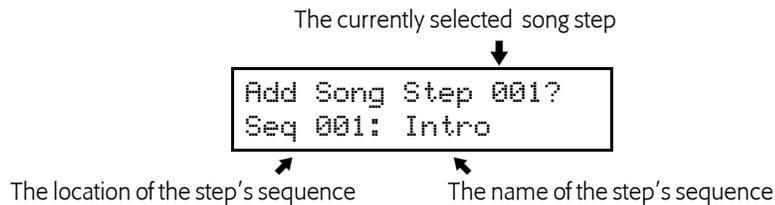
To exit pattern mode, hit the Sequence Stop button and then proceed with normal ASR-X Pro operations.

Create a new song?

Pressing the Yes button in response to “Create a new song?” places the ASR-X Pro in song mode, in which you can chain sequences together to play as songs. This is achieved by creating a playlist made up of song steps—there can be up to 200 steps in a song. Each step plays one of the sequences currently in the ASR-X Pro. While listening to a song, you can play the pads, and use the Octave Transpose buttons and Patch Selects (the Patch Selects will be reset at the start of each new song step).

Note: Each sequence used in a song retains its insert effect—when a step is played, the insert effect associated with its sequence is used.

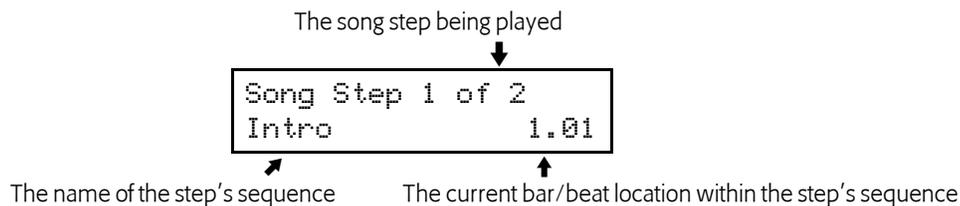
When you enter song mode, the song-creation display is presented:



A song is comprised of steps that will be played back one after the other. The currently selected step is shown on the top line of the display. Turn the Value knob or type the desired sequence's number using the Essentials buttons as a numeric keypad to select the sequence that you want played at the displayed step, and press the Yes button to lock in your setting and advance to the next step.

Playing a Song

In song mode, press the Sequence Play button to cause the ASR-X Pro to build (if necessary) and play the song. As the song plays, the display shows you the step in its playlist that's currently being heard.



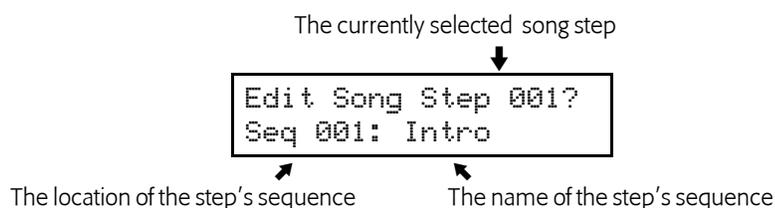
When the song isn't playing, turn the Parameter knob to select any of the song's steps or type the step's number using the Essentials buttons—and press the Play button to start playback from the selected step.

Exiting and Re-Entering Song Mode

You can leave song mode—restoring the ASR-X Pro to its normal sequence mode—by pressing the Sequence Select button. To return to your song, press the Sequence Process button and dial all the way clockwise to select the “Enter song mode?” When this question is displayed, press the Yes button.

Editing a Song

In song mode, press the Sequence Edit button to cause the main song editing display to appear:



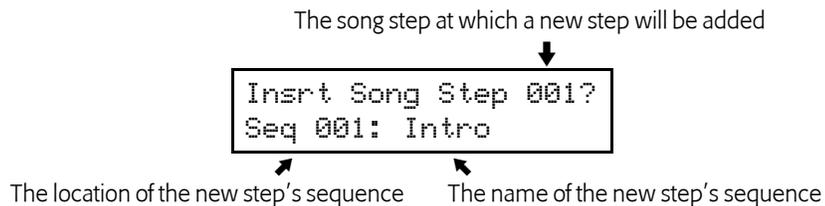
When this display is visible, turn the Parameter knob to select the step to be edited—the bottom line of the display shows the steps' sequence. You can choose a different sequence to be played at the step by turning the Value knob or typing its number on the Essentials buttons and then pressing the Yes button.

Adding a Step to the End of a Song

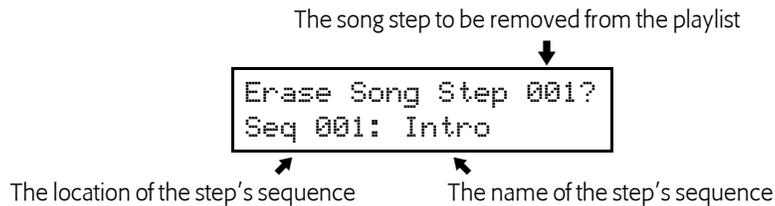
To add a step to the end of a song, turn the Parameter knob one tick past the song's last step—the ASR-X Pro will offer to add a new song step. Turn the Value knob or type the desired sequence's number using the Essentials buttons as a numeric keypad to select the desired sequence and press the Yes button.

Inserting and Erasing Song Steps

You can add or remove steps in the middle of its playlist. When the main song editing display is visible, press the Sequence Process button to toggle between the insert and erase song step displays.



When you insert a step, a new step is added to the playlist at the selected location—the sequence displayed on the lower line of the display will be played by the inserted step. Select the desired location for your new step, select the sequence you want it to play and press the Yes button to insert the step.



When you erase a song step, the selected step is removed from the playlist. Select the song step you'd like to remove and press the Yes button to erase it.

The ASR-X Pro Sequencer and MIDI

Recording into the Sequencer from an External MIDI Device

The ASR-X Pro sequencer is always ready for recording from an external MIDI controller. Each of the 16 tracks in the sequencer receives data on the MIDI channel of the same number.

Incoming MIDI data received on:

MIDI channel 1	will be recorded on	track 1	MIDI channel 9	will be recorded on	track 9
MIDI channel 2	will be recorded on	track 2	MIDI channel 10	will be recorded on	track 10
MIDI channel 3	will be recorded on	track 3	MIDI channel 11	will be recorded on	track 11
MIDI channel 4	will be recorded on	track 4	MIDI channel 12	will be recorded on	track 12
MIDI channel 5	will be recorded on	track 5	MIDI channel 13	will be recorded on	track 13
MIDI channel 6	will be recorded on	track 6	MIDI channel 14	will be recorded on	track 14
MIDI channel 7	will be recorded on	track 7	MIDI channel 15	will be recorded on	track 15
MIDI channel 8	will be recorded on	track 8	MIDI channel 16	will be recorded on	track 16

To record incoming MIDI data, use the same techniques as when recording from the ASR-X Pro pads.

Note: Since recording always occurs on the track, or tracks, corresponding to the MIDI channel(s) on which data is received, keep in mind that the track that's currently selected on the ASR-X Pro has nothing to do with which track(s) will be recorded. Set your incoming MIDI channels/tracks carefully so that you don't inadvertently end up recording over tracks you intend to keep.

Note: The undo function is available after the recording of MIDI data only if a single track was recorded and the track was also selected on the ASR-X Pro.

Transmitting MIDI Data from the Sequencer

MIDI transmission from the each of the ASR-X Pro's tracks is enabled or disabled by assigning a MIDI-OUT sound to the track and via the setting of the TrackMIDIOut track parameter. See Chapter 2.

7 Disk/Global

The Disk/Global Controls

The Disk/Global area of the ASR-X Pro front panel contains two groups of controls that share the common goal of performing operations that affect the entire ASR-X Pro.



The Disk-related buttons—Load and Save—are used for:

- loading files from disk into RAM or FLASH.
- saving files from RAM to disk.

Operation of the Disk controls is described later in this chapter in “The Disk Buttons.”

The System/MIDI button provides access to tools for:

- customizing the system-wide behavior of the ASR-X Pro to suit the way you create music.
- setting up the overall MIDI functionality of the ASR-X Pro.
- getting the most out of the ASR-X Pro RAM.
- performing various disk-file management functions.

The System/MIDI tools are described later in this chapter in “The System/MIDI Button.”

Storage Options

The ASR-X Pro allows the loading and saving of data using:

- a built-in floppy disk drive
- a SCSI interface for connection to external SCSI devices

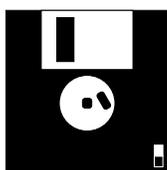
Floppy disk and SCSI storage both have their own advantages and disadvantages:

- Floppy disk storage offers the ease and cost-effectiveness of a built-in drive. In addition, you can automatically load a system set-up file or update to your operating system from floppy at boot-up. On the other hand, saving and loading data can be slow, especially with large files.
- SCSI hard and removable drives are fast and can greatly enhance the ASR-X Pro experience. SCSI CD-ROM drives allow you to load sounds from ENSONIQ, Akai and Roland CD-ROMs—you can also load .wav and AIF files from ISO-9660-format CD-ROMs. On the other hand, SCSI devices must be purchased separately. In addition, SCSI devices can be finicky, and may require troubleshooting.

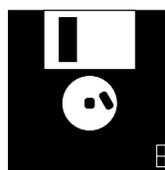
Introduction to Floppy Disk Storage

The Floppy Disk Drive

The ASR-X Pro contains a built-in floppy disk drive. The ASR-X Pro floppy drive can read or write to any 3.5-inch high-density or double-density floppy disk. Floppy disks can be write-protected so that the files they contain cannot be accidentally written over. If you plan to save ASR-X Pro files to a floppy, make sure that its write-protect feature is not engaged. You can tell if a disk is write-protected by flipping it over (so that its label-side down) and examining the small window in its lower right-hand corner.

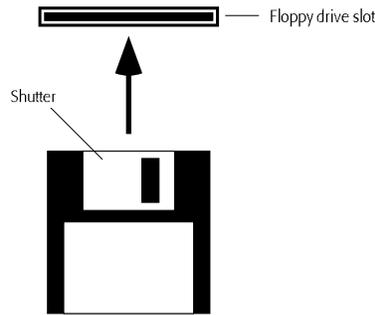


If the tab is in the down position, the write-protect window is open, and the disk is write-protected. It can only be read.

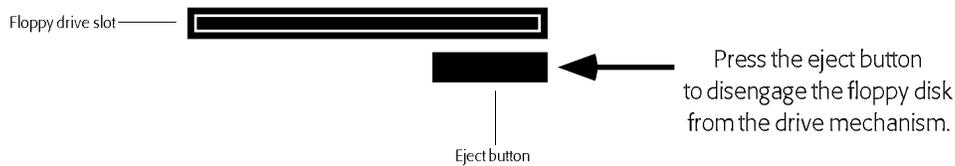


If the tab is in the up position, if the write-protect window is closed, and the disk is not write-protected. It can be both written to and read.

A disk is inserted into the drive—label-side up, with its shutter window to the right—by sliding the floppy into the drive’s slot until the drive grabs the disk and seats it in the drive mechanism.



Disk are removed from the floppy drive by pressing on the button on the face of the drive—this causes the floppy to pop out far enough from the drive mechanism that it can be grasped and removed.



Warning: The floppy disk drive is a sensitive piece of equipment and, as such, should be approached with a measure of care. See “The Care and Feeding of the Floppy Disk Drive” at the front of this manual to learn the proper way to treat a floppy drive.

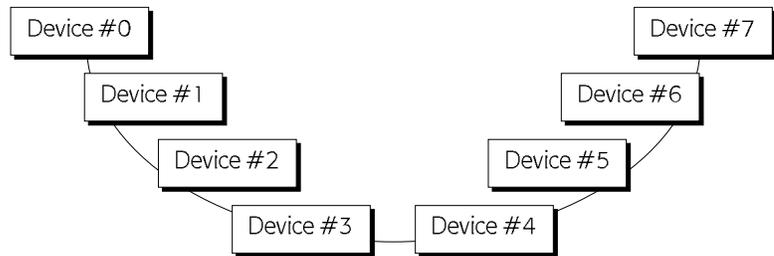
Introduction to SCSI Storage

What is SCSI?

SCSI is circuitry that allows for the high-speed transfer of data between computers and computer peripherals, including CD-ROM drives, scanners, storage devices and musical instruments such as the ASR-X Pro. The word “SCSI”—pronounced “scuzzy”—stands for “Small Computer Systems Interface.”

In addition to internal circuitry, SCSI utilizes its own cables. These cables typically have 25- or 50-pin connectors on one or both ends. SCSI devices are equipped with SCSI jacks to which SCSI cables can be connected.

Up to eight SCSI devices can be interconnected—daisy-chaining one after another—in this manner at any given time. The data conduit created by the cabling that connects a SCSI system’s devices is referred to as a “SCSI bus.”



Most SCSI data is saved to a disk of some sort. Even removable SCSI cartridges contain a disk on which data is stored. Some SCSI devices—such as CD-ROM players—use disks whose contents can’t be changed. These are referred to as “read-only” devices. Other SCSI devices—such as fixed and removable drives—contain *writable* disks to which you can save your data.

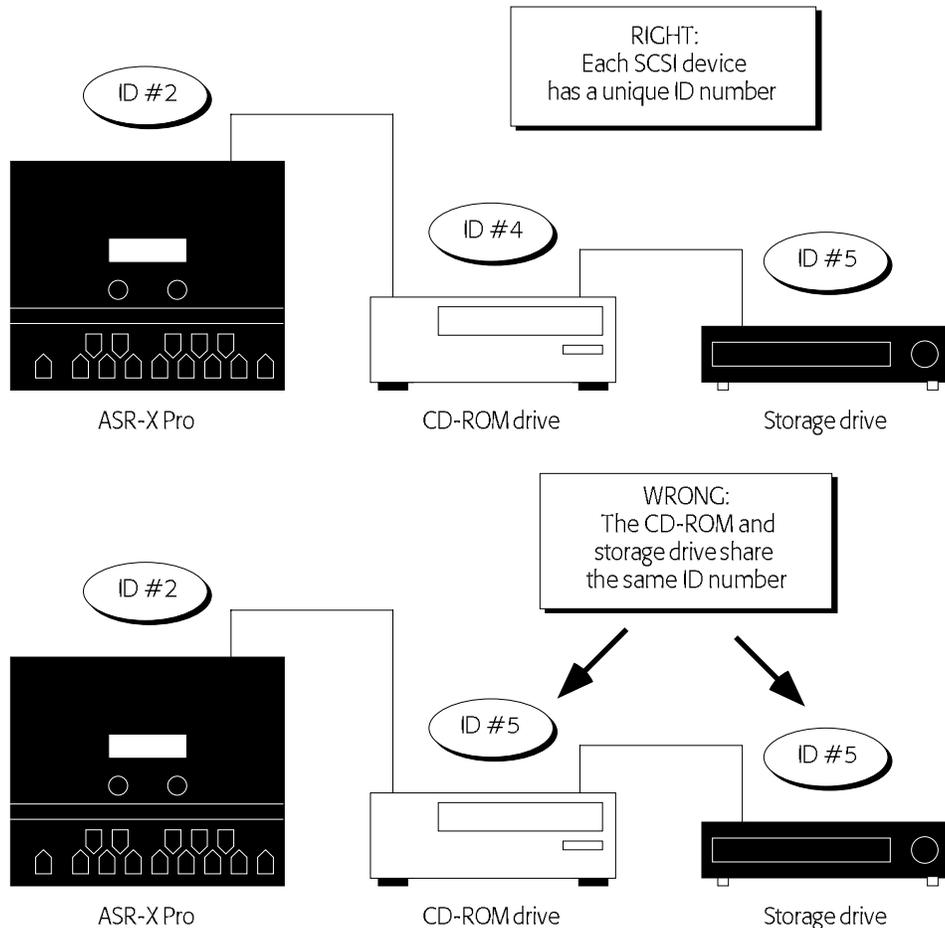
The ASR-X Pro is a SCSI II device—SCSI II is a faster, second-generation version of the original SCSI protocol. If your SCSI cables don’t match the ASR-X Pro’s SCSI interface’s jack, you can purchase the necessary adapter at any computer supply outlet. SCSI II devices are compatible with SCSI and SCSI III devices. This manual refers to SCSI II as “SCSI” for simplicity’s sake.

Note: If you're inexperienced with SCSI systems, read "About Termination" and "About SCSI Device IDs" below. All users should read "Preparing for SCSI" in this chapter before proceeding.

About SCSI Device IDs

Each SCSI device in a SCSI system—including the ASR-X Pro—must be assigned a number from 0 to 7, with the number representing one of the eight possible positions in a SCSI chain. These numbers, called "SCSI device IDs," allow you to identify—and target—the desired device when saving or loading data.

It's very important that no two devices are set to the same ID number—if this occurs, the SCSI bus won't be able to distinguish between the devices. This can cause your entire SCSI system to misbehave.



Some common SCSI devices are pre-configured to use certain SCSI ID numbers. If you'll be connecting your ASR-X Pro to any of these devices, be sure to avoid using these already-taken SCSI device IDs:

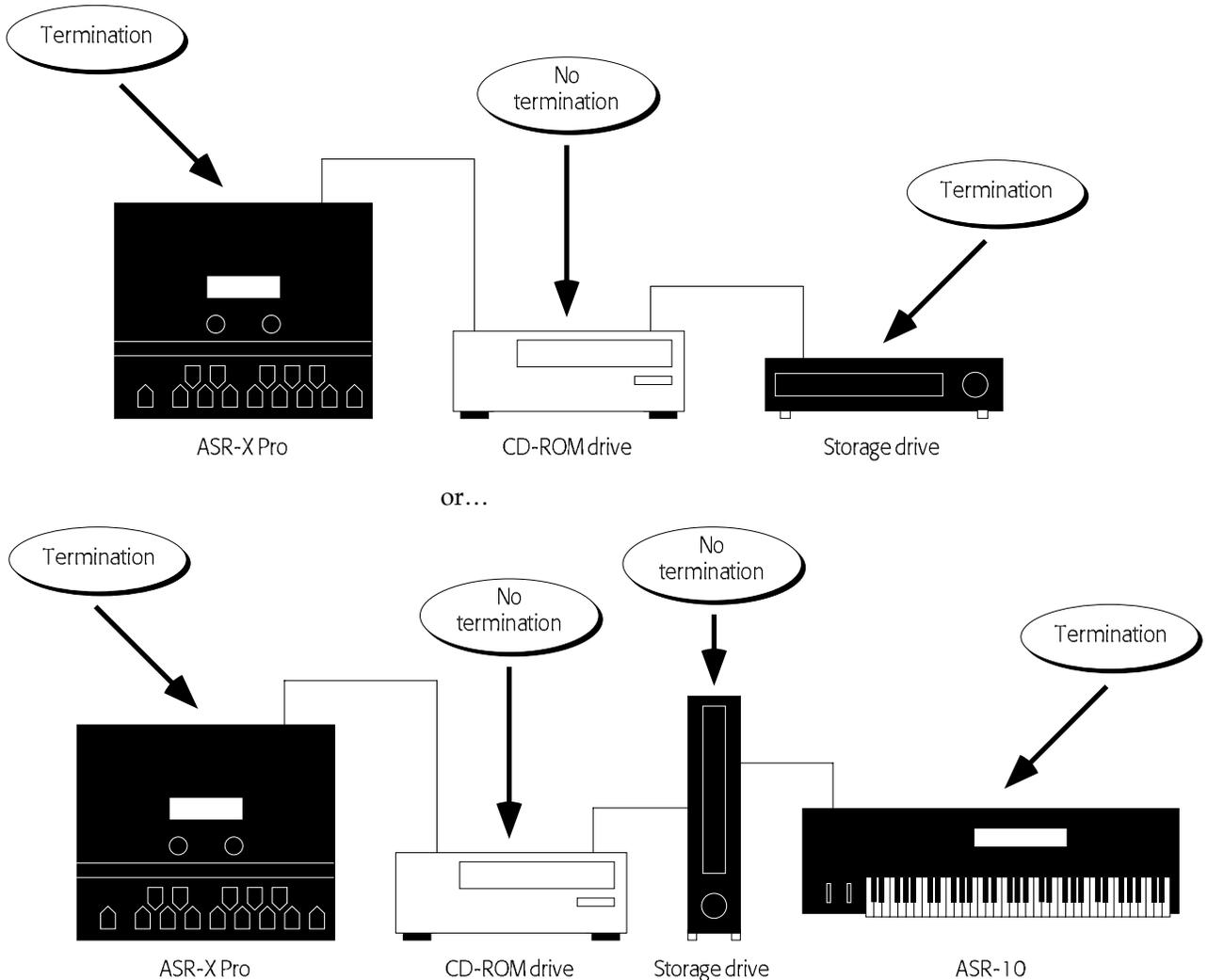
Device	Uses ID	Comment
Macintosh internal hard drives	0	unchangeable
ASR-10/88, TS-10/12, EPS16 PLUS	3	unchangeable
Macintosh internal CD-ROM drives	3	can be reset internally
ENSONIQ CD-ROM drives	4	can be reset via hardware switch
Iomega Zip drives	5 or 6	unchangeable
PC and Macintosh CPUs	7	unchangeable

Tip: If you're connecting your ASR-X Pro to an ASR-10/88 or TS-10 and a CD-ROM drive, it's a good idea to set the CD-ROM drive to ID #4, allowing the ASR-10/88 take advantage of ENSONIQ's DirectMacro™ feature, and to set the ASR-X Pro to some other unused ID number.

The ASR-X Pro's SCSI Device ID parameter can be set to any number, as described later in this chapter.

About Termination

The SCSI bus in any SCSI system is a circuit through which power flows from the first device in the chain to the last. Such a circuit requires a resistor at each of its ends. These resistors, which supply *termination* to the bus, prevent electricity from colliding with either end of the circuit and bouncing back, causing all sorts of problems. Extra termination supplied by devices other than the first and last in the chain is also problematic, since it impedes the easy flow of power up and down the bus. Therefore, the rule is: A SCSI bus requires termination on either end and nowhere else.



Termination can be applied to the first and last device in a SCSI system through the use of:

- jumper connectors installed inside a SCSI device,
- a terminator plug externally installed in a device's spare SCSI jack
- software-switchable termination, as found in the ASR-X Pro.

The ASR-X Pro can supply termination or not, as your setup requires. This is controlled by the SCSI Termination parameter described later in this chapter.

Folders/Directories

Fixed and removable SCSI disks, CD-ROMs and floppies provide open expanses of memory to which data can be stored, and from which it's retrieved. In an effort to aid the organization of all that data, it can be useful to create smaller sub-divisions of memory into which related chunks of data can be stored and from which they can be easily accessed. These sub-divisions are commonly called "directories" or—as in the ASR-X Pro—"folders." Many CD-ROMs organize their files into such folders. Each folder can contain other folders and on and on and on. The ASR-X Pro provides a simple method for digging down through the folders on your SCSI disks to get to the locations and files you seek—see "SCSI Folder Navigation" later in this chapter. See "Creating a New Folder on a SCSI Device Using the ASR-X Pro" and "Creating a New Folder on a SCSI Device Using a Computer" later in this chapter to learn to create your own folders.

Invisible Folders

When the ASR-X Pro saves files to a SCSI disk, it creates a set of folders into which files are automatically saved. These folders are not visible when loading, saving, erasing or renaming disk files on the ASR-X Pro since they're used by the ASR-X Pro's internal automatic filing system. The folders can be seen when an ASR-X Pro disk is viewed on a computer. The names of the invisible folders are:

BANKS SEQUENCE SESSION SOUNDS WAVES

In addition, whenever the ASR-X Pro saves a file to a folder where the default folders don't already exist, it will create a new set of invisible folders into which files can be saved.

Preparing for SCSI

Since the ASR-X Pro provides convenient software-switchable SCSI device ID and termination settings, the following sequence of events must take place in order when setting up the ASR-X Pro for SCSI.

1. Prior to being connected to other SCSI device, the ASR-X Pro must be powered on and its SCSI ID and SCSI Termination system preferences set to their desired values. These parameters are described in "Setting and Saving SCSI System Prefs" later in this chapter.
3. The SCSI ID and Termination parameter setting must be saved to a floppy disk as part of a SYSTEMSETUP file. This procedure is described in "The Save Button" later in this chapter.
4. The ASR-X Pro must be powered off, and then connected to any relevant SCSI devices. See "Attaching SCSI Cables," later in this chapter. Some common SCSI configurations are shown in "Introduction to SCSI" above.
5. Your ASR-X Pro—with the floppy containing the SYSTEMSETUP file already in the floppy drive—must be powered up for use. See "Powering Up SCSI Devices" later in this chapter.

Attaching SCSI Cables

Warning: To avoid damaging your equipment, SCSI cables should be connected and disconnected only when the power is turned off to all devices on the SCSI bus.

The connectors at the end of SCSI cables are shaped in such a way that they can only be plugged into SCSI jacks in the proper direction.

Shape of SCSI cable
connector



Shape of SCSI jack
on device



Powering Up SCSI Devices

The order in which SCSI devices should be turned on varies from setup to setup. A general rule of thumb is to power up your terminated devices first—the devices on either end of your SCSI daisy-chain—and then power up the devices in-between. If the devices in your SCSI system fail to start up properly, or if some devices are not being recognized by other devices, experiment with different power-up sequences.

Troubleshooting Your SCSI System

If your SCSI devices are not working properly, start by ensuring that the following items have been properly set up, since these are the most common causes of SCSI trouble:

- Make sure that you have termination at either end of your SCSI daisy-chain, and *only* at its ends.
- Make sure that no devices are sharing a SCSI device ID number.
- Try turning on your devices in different orders.
- Make sure all of your devices are turned on.

The ASR-X Pro provides a Reset SCSI Bus command that can help straighten out a SCSI bus that's gotten confused for some reason. Its use is described later in this chapter.

If problems persist, try unconnecting your cables and re-connecting them; occasionally, cables that appear to be seated correctly are not. It's also possible that one or more of your SCSI cables have become unreliable. It's a good idea to have some spare SCSI cables around for troubleshooting purposes.

If you need further assistance, 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.

SMDI Transfers

SMDI is a protocol that allows the transfer of sounds and samples from one SMDI-compliant program or product to another via SCSI. The ASR-X Pro can passively receive and transmit sounds via SMDI—there are no actions to be performed on the ASR-X Pro itself when performing a SMDI transfer. Once a sound has been sent to the ASR-X Pro, it can be saved to disk as a standard sound. To avoid competition for its resources, avoid performing SMDI transfers during sampling or sequencing on the ASR-X Pro.

The Disk Buttons

Everything you do on the ASR-X Pro can be stored to disk and loaded back into the ASR-X Pro whenever you wish. ASR-X Pro floppy and SCSI disks use a standard DOS format, so ASR-X Pro sequence and wave files can be loaded into a Macintosh or PC-compatible computer for further work. Most disk operations are performed after pressing the Disk/Global Save or Load buttons. The System/MIDI button provides access to a collection of disk utilities—see “Access disk utils?” later in this chapter.

Note: Before you can save ASR-X Pro files to disk, the disks must be properly formatted. This can be accomplished on a computer or on the ASR-X Pro. To learn how to format a disk on the ASR-X Pro, see “Access disk utils?” later in this chapter.

Storage Device Selection and Navigation

Since the ASR-X Pro can be connected to a large array of SCSI devices—as well as its floppy drive—a system is provided that allows you to select the desired device for any disk-related activity.

1. A load device can be selected from which data can be loaded.
2. A save device can be selected to which ASR-X Pro data can be saved.
3. A device can be selected as the subject of disk utility operations described later in this chapter.

Until power-down, the ASR-X Pro retains the device that's been selected for each of these roles. This spares you from having to re-select devices when you want to load a file from one device and save it to another—the ASR-X Pro remembers the last load device, save device, and so on.

The device-selection process is essentially the same for each activity. When you press the Disk/Global Load or Save buttons, or answer the System/MIDI “Access disk utils?” question by pressing the Yes button, the “Select Device?” display appears. (If it doesn't, you can turn the Parameter knob all the way

counter-clockwise to access the display.) The procedures for selecting a device and navigating through the directories/folders of a SCSI device are described below.

Select Device?

When the Load or Save buttons are pressed—or the disk utilities are accessed—the “Select Device?” display appears after power-up with the floppy disk selected for use, and looking something like this:

This may also read “Select load device?” or “Select save device?”

```

Select device?
Floppy Disk
  
```

The currently selected storage device

The device shown on the bottom line of the display is the device selected for the current task. To select the floppy drive, turn the Parameter knob to select “Floppy Disk” if it’s not already displayed.

To choose a connected SCSI device for use, turn the Value knob clockwise one tick to the right of “Floppy Disk.” The first time that this occurs after power-up, the ASR-X Pro will scan the SCSI bus to learn what devices are connected. The display will show the ASR-X Pro checking each of the seven SCSI IDs to see if they represent connected devices (the ASR-X Pro is already using one of the eight possible SCSI IDs).

When the ASR-X Pro has finished, the SCSI device with the lowest ID number will be selected.

```

Select device?
SCSI 4:CDR-016
  
```

The currently selected storage device The disk in the device

You can turn the Value knob counterclockwise to select any of the other connected SCSI devices.

Note: If a connected SCSI device is shown as *NOT READY*, most likely the device is a CD-ROM player or removable drive and its CD-ROM or cartridge is not currently installed.

Once you’ve selected a device, turn the Parameter knob clockwise by one tick—the ASR-X Pro will read the contents of the disk in the selected device. To jump directly to the files on the disk, hit Enter instead.

Scan SCSI Devices?

If you change something in your SCSI system—if you’ve switched CD-ROMs or removable cartridges, for example—you’ll need to re-scan the SCSI bus so that the ASR-X Pro can see the changes. To do so, turn the Value knob all the way clockwise until you see “Scan SCSI devices?” and press the Yes button.

SCSI Folder Navigation

When you’ve chosen a SCSI device, turn the Parameter knob one tick to the right to view the outer-most folders on the selected device’s disk. The display will look something like this:

This may also say “Save” or Utils” The selected ID# The currently selected disk

```

Load 6:ENSONIQDISK
Folder:GRUVZ
  
```

The name of the currently selected folder “Down” symbol

The upper left-hand area of the display shows the type of operation being performed and the ID number of the selected device.

Turn the Value knob to view the names of the other folders available in this location on the selected disk. The down symbol in the lower right-hand corner of the display indicates that the currently displayed folder can be opened by pressing the Enter button. To close the folder you're in, and to move back upward in the folder hierarchy, press the Exit button.

Turn the Parameter knob clockwise at any time to show the files types available in the selected location. Turn the Value knob to choose individual files of the selected type.

Tip: Turn the Parameter knob fully counter-clockwise to return to the "Select device?" display.

When you've navigated to the folder or file you seek, standard ASR-X Pro loading, saving, erasing and renaming procedures can be used. These procedures are detailed later in this chapter.

Creating a New Folder on a SCSI Device Using the ASR-X Pro

When saving disk files or using the disk utilities, you can create new folders. To do this:

1. While viewing the currently selected SCSI device's name on the "Select Device?" display, turn the Parameter knob so that "Folder" appears in the lower left portion of the display.
2. Turn the Value knob all the way clockwise so that the display shows "Create new?"
3. Press the Yes button.
4. Spell out the new folder's name by using the Parameter knob or left/right arrow buttons to select each character position in turn, and the Value knob to dial in the desired character for each position.

Note: When creating your own folders on an ASR-X Pro disk, do not use the names reserved for the invisible default folders (described in "Invisible Folders" earlier in this chapter).

5. When you've finished, press the Yes button to complete the creation of your new folder.

Note: If you create a new folder inside an invisible folder, the folder you've created will be conveniently accessible at the outermost level of the disk's folder hierarchy.

Creating a New Folder on a SCSI Device Using a Computer

You can use a computer to create folders on an ASR-X Pro disk. When doing so, there are a couple of things to bear in mind to help ensure that the disk will be easy to use with the ASR-X Pro:

- Avoid using the names assigned to the invisible folders so as not to conflict with the ASR-X Pro's automatic filing system.
- It's best not to create a folder within any of the invisible default folders (these folders can be seen on a computer), since the ASR-X Pro will make such a folder visible to provide you access to any folders within it—this may create unnecessary confusion when viewing the disk's contents.

The Save Button

To save an ASR-X Pro file to disk, you:

1. press the Disk/Global Save button.
2. navigate to the desired floppy or SCSI disk and folder.
3. select the type of file to be saved.
4. name the file.
6. press the Yes button to finish saving the file.



Note: If the file or files you're saving require more space than is available on a single disk, the ASR-X Pro will ask if you're ready to proceed, and ask you to supply additional disks as needed.

File Types that can be Saved

When you press the Disk/Global Save button, the ASR-X Pro reads the directory of the disk in the drive, and presents you with a list of the types of files that can be saved to disk.

```
Save to disk?
ALL-SESSION: SSSION
```

↑
The type of file to be saved

To choose a type of file to save, turn the Parameter knob to choose:

- ALL-SESSION—The ALL-SESSION file saves everything currently in RAM as files with a common name. An ALL-SESSION file saves:
 - an ALL-SOUNDS file (see below).
 - all of the waves currently in RAM as separate 1-AIF WAVE files.
 - an ALL-SEQS file (see below).
 - a SYSTEMSETUP file (see below).

Tip: Double-click the Save button to get to the ALL-SESSION saving display at any time.

- ALL-SEQS—An ALL-SEQS file saves all of the sequences currently in RAM as a single disk file.
- 1-SEQUENCE—A 1-SEQUENCE file saves the selected sequence to disk as a Standard MIDI File (SMF). Each track contains SysEx data that allows the track's parameter settings to be reloaded from disk or transmitted to the ASR-X Pro via MIDI from an external sequencer.
- ALL-SOUNDS —An ALL-SOUNDS file saves all of the sounds currently in RAM. The ALL-SOUNDS file type also saves any waves currently in memory as 1-AIF WAVE files.
- 1-SOUND—The 1-SOUND file type saves the currently selected sound to disk. If the sound is playing a wave currently in RAM, the wave is saved to disk as well, as an 1-AIF WAVE file.

Tip: When you save a kit as a 1-SOUND file, all of the sounds and waves it uses are saved as well.

- SYSTEMSETUP—A SYSTEMSETUP file saves the current System/MIDI, Resampling Setup and sequencer Click settings, as well as your current USER quantization templates.
- ESSENTIALS—An ESSENTIALS file saves your current Essentials buttons assignments.

Tip: You can save special ALL-SESSION and SYSTEMSETUP files that will load automatically when stored on a floppy inserted in the ASR-X Pro's drive at power-up. To do this, name the desired SYSTEMSETUP file "SYSSETUP" and/or the desired ALL-SESSION file "AUTOLOAD."

Each file type has its own 3-character DOS extension. As in any DOS-based system, the ASR-X Pro identifies disk files by this extension. Each file is automatically saved into the appropriate folder.

Folder/Directory Name	What's Stored There	File Extensions
SESSION	ALL-SESSION files	.ssx
	SYSTEMSETUP files	.spb
BANKS	ALL-SOUNDS files	.sbx
SEQUENCE	sequence banks files associated with ALL-SESSION files	.mfb
	1-SEQUENCE files	.mid
SOUNDS	1-SOUND files	.sou
WAVES	1-AIF WAVE files	.aif
	alias files that prevent duplicate saving of 1-AIF WAVE files	.als
(current folder)	ESSENTIALS	.fav

Note: Though it's desirable that files be stored in these folders/directories, the ASR-X Pro can "see" and load files from anywhere on a disk.

Saving the Contents of the Scratch Pad to Disk

After you've pressed the Save button and the ASR-X Pro has read your disk's directory, you can save the contents of the Scratch Pad to disk by pressing the Scratch Pad—the ASR-X Pro will create a sound that plays the wave(s) in the Scratch Pad and that you can save to disk.

Naming Disk Files

Each file you save to disk should be given a unique name. The ASR-X Pro will not allow two files with the same name on a single disk—if you save a file that has the same name as a file on the disk, the older file will be replaced by the new one. This allows you to easily update files by resaving them to disk without re-naming them—it also means that you can unintentionally erase a file you meant to keep.

```
Save to disk?
ALL-SESSION: SSSION
```



The character currently selected for editing is underlined

To name a disk file you're saving, press the left and right Select Track buttons to select each of its eight character locations. Turn the Value knob to choose the desired character for each location. If you're naming an ALL-SESSION file, each of its component files will share the name you designate.

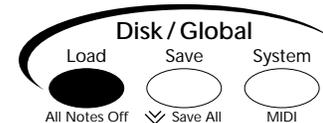
When you've finished naming your file, press the Yes button to save the file to disk.

Note: When you name a disk file, you're not changing the name of the item it contains.

The Load Button

To load a file from disk into the ASR-X Pro, you:

1. press the Disk/Global Load button.
2. navigate to the desired floppy or SCSI disk and folder.
3. select the type of file to be loaded.
4. select the specific file to be loaded.
5. if you're loading a 1-SOUND file, select the RAM location into which you want to load the sound.
6. press the Yes button to load the file.



Note: If files you're loading are on multiple disks, begin loading the files from the first of these disks—the ASR-X Pro will ask for each disk as it needs it.

File Types that can be Loaded

When you press the Disk/Global Load button, the ASR-X Pro reads the directory of the disk in the drive, and presents you with a list of the types of files that can be loaded from disk.

```
Load from disk?
ALL-SESSION: SSSION
```



The type of file to be loaded

To choose a type of file to load, turn the Parameter knob to choose:

- ALL-SESSION—The ALL-SESSION file type restores all of the items that were in RAM when the file was saved. It loads:
 - an ALL-SOUNDS bank.
 - the 1-AIF WAVE files played by sounds in the ALL-SOUNDS bank.
 - an ALL-SEQS file.
 - a SYSTEMSETUP file.
- ALL-SEQS—An ALL-SEQS file loads the sequences that were in RAM when the file was saved.
- 1-SEQUENCE—The 1-SEQUENCE file loads a Standard MIDI File (SMF) created on the ASR-X Pro or any SMF-compliant sequencer.
- ALL-SOUNDS —An ALL-SOUNDS file restores all of the sounds that were in RAM when the file was saved, as well as any 1-AIF WAVE files required to produce the sounds.
- 1-SOUND—The 1-SOUND file type loads a single sound, as well as any 1-AIF WAVE files required to produce the sound.
- 1-WAV WAVE—A 1-WAV WAVE file loads a .wav-format wave file created on an external device. 1-WAV WAVE files are loaded directly into the Scratch Pad, from where they can be sent to pads and incorporated into ASR-X Pro sounds.

Note: The ASR-X Pro converts .wav files to AIF format as it loads them into the ASR-X Pro.

- 1-AIF WAVE— A 1-AIF WAVE file loads an AIF-format wave file created on the ASR-X Pro or an external device. 1-AIF WAVE files are loaded directly into the Scratch Pad, from where they can be sent to pads and incorporated into ASR-X Pro sounds.
- SYSTEMSETUP—The SYSTEMSETUP loads the System/MIDI, Resampling Setup and sequencer Click parameter settings, and USERS quantization templates in place when the file was saved.
- ASR-SND—An ASR-SND file loads a sound saved to a single high-density (HD) or double-density (DD) floppy, or SCSI drive, from an ENSONIQ ASR-10, ASR-88, EPS 16 PLUS or EPS. The ASR-X Pro can also load such sounds stored on disk in Giebler Enterprises' popular .efe and .efa format (to contact Giebler Enterprises, visit their Web site at <http://www.giebler.com>).
- AKAISND—An AKAISND file imports a sound from an AKAI S-1000 SCSI disk.
- SND—A SND file imports a sound from a Roland S-770 SCSI disk.

A Note About Imported Sounds

The ASR-X Pro, ASR-10/88, EPS 16 PLUS, EPS, AKAI S-1000 samplers and Roland S-770 samplers each have their own distinctive voice architecture, with their own set of parameters. You may experience some changes in such sounds when they're played on your ASR-X Pro—a direct translation of every parameter in an imported sound to the ASR-X Pro's architecture is not always possible.

Most ASR-10/88, EPS 16 PLUS and EPS features have counterparts in the ASR-X Pro voice architecture that are translated when a sound is imported. A few features lack such a counterpart, however:

- A-B FADE IN-TO, C-D FADEOUT-TO, and FADECURVE parameters settings are not imported.
- ASR-10/88, EPS 16 PLUS and EPS pitch tables are not imported.
- Only the START, LPSTRT-X and TRANSWAV loop modulators are translated.
- All ASR-10 and ASR-88 sounds are set to the MediumReverb FX Bus when they're imported.
- The ASR-X Pro VelLevels Amount settings for Envelopes 1, 2 and 3 are derived by averaging the HARD VEL LEVELS 1 and 2 and the SOFT VEL LEVELS 1 and 2 for each envelope in the original ASR-10/88 sound.
- When a layer's LYR GLIDEMODE parameter is set to any value other than "OFF" in an ASR-10/88 sound, the layer's Glide Mode is set to "On" and its Voice Mode to "Mono" when it's imported.

Note: EPS sounds do not contain all of the above features.

The amount of time that it takes to import a sound depends on the number of wavesamples in the sound, since each wave's parameters must be translated to the ASR-X Pro architecture—the process can take several minutes to complete. Once imported, a sound becomes a ASR-X Pro standard sound: it can be played, converted to a RAM kit and edited using the PAD parameters, and saved to floppy or SCSI disk.

Selecting an Individual File to be Loaded

Once you've selected the type of file to be loaded, turn the Value knob to select a specific file. Once you've chosen the file you want to load, press the Yes button, and the ASR-X Pro will load the file.

Note: If a file you're loading was created on a computer and its name contains more than the eight characters supported by DOS, the file's name will be truncated according to the following rules: if the file was named on a Macintosh, an exclamation point will appear at the beginning of its name; if it was created on a PC-compatible, the last two characters will be an arrow and a digit.

Selecting a Location into which a Sound will be Loaded

When loading a 1-SOUND file, an additional display appears when you press the Yes button after selecting the file to be loaded.

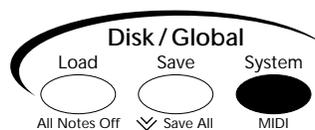
The currently selected RAM bank and program number



The name of the sound currently in the selected location

When this display appears, you can turn the Value knob to select any location in either of the ASR-X Pro's two RAM sound banks—RAM 00 and RAM01. If you select a location that already contains a sound, the sound you're loading will replace the one currently in the location. Unused locations show ****EMPTY.**** When you've selected a location, press the Yes button to load the sound.

The System/MIDI Button



The System/MIDI button provides access to parameters and tools for setting up your overall ASR-X Pro environment and for memory and disk file management. These various items are grouped into several broader categories, each of which is accessed by pressing the System/MIDI button, turning the Parameter knob to view and then pressing the Yes button to respond to a displayed question. The questions are:

- Set system prefs?—Pressing the Yes button in response to this question reveals parameters that control the response of the pads, what occurs when you select new track sounds, SCSI ID and termination, the Patch Select buttons and foot switches, and the zero-cross loop-finding feature.
- Alter system pitch?—Pressing the Yes button in response to this question causes the ASR-X Pro to display parameters that determine its response to received MIDI pitch bend messages, that allow you to fine-tune the overall pitch of the ASR-X Pro, and set the ASR-X Pro's tuning table.
- Edit MIDI settings?—Press the Yes button in response to this question to display parameters that set the base MIDI channel for the ASR-X Pro, its response to and transmission of sequencer synchronization data, its response to several types of received MIDI messages, its System Exclusive ID number and allows you to define four special system-wide real-time MIDI controllers.

- Access disk utils?—Pressing the Yes button in response to this question causes the ASR-X Pro to display an assortment of utilities for formatting disks, copying and optimizing SCSI disks, resetting a SCSI bus, erasing disk files, renaming disk files, determining how files will be displayed, and also provides a read-out of the free space available on the currently select disk.
- Enter MemoryManager?—Press the Yes button in response to this to display informational displays showing how much free memory is currently available and the name of an installed expansion board, as well as a set of tools for onboard memory management that provide the ability to clear the onboard memory banks, erase or rename a sound and change a sound’s SoundFinder category.
- Save these settings?—Pressing the Yes button saves your current System/MIDI, Resampling Setup and sequencer Click settings, as well as USER quantization templates, to FLASH memory.

Some of these parameters are accessed by responding “Yes” to questions posed on sub-displays under the top-level question. To exit from a sub-display or from the System/MIDI displays altogether, press the Exit button each time you want to move up a level back out to the ASR-X Pro front panel. The factory default value for each parameter is listed with its description in case you want to restore the default after using the “Save these settings?” command described later in this chapter.

Set system prefs?

Touch Curve

factory default value: Table-2

The ASR-X Pro pads are velocity-sensitive, responding with tremendous accuracy to how hard or soft you play. The Touch Curve parameter allows you to adjust the velocity response of the pads to match your playing style and technique. There are six available Touch Curve settings:

- Table-1—With this setting, the pads offer an easily controllable, compressed dynamic response. Table-1 is optimized for players with a light touch.
- Table-2—This setting is similar to Table-1, but designed for players who play hard.
- Table-3—With this setting, the pads offer a full dynamic range for musicians with a high degree of control over the force with which they play. Table-3 is optimized for players with a light touch.
- Table-4—This setting is similar to Table-3, but designed for players who play hard.
- Fixed 64—This setting causes the pads to always respond as if you’ve hit them precisely half as hard as they can be hit. This can be useful in simulating vintage synthesizers with no velocity control.
- Fixed127—This causes the pads to always respond as if you’ve hit them as absolutely hard as they can be hit. This is good for drum/percussion parts in which you don’t want dynamic changes.

Patch Selects

factory default value: Live

The ASR-X Pro Patch Select buttons can be set to operate in one of two modes, each of which is invoked by one of two values for the Patch Selects parameter:

- Live—With this setting, the Patch Select buttons are momentary switches. This means that the sound changes caused by pressing either, or both, of the Patch Select buttons lasts for only as long as the button is physically held down.
- Held—With this setting, playing a note from the pads or via MIDI locks in the Patch Select button or buttons being held when the note is played. To release the button(s), tap either of the Patch Select button; subsequent notes will sound as they should when no Patch Select buttons are being pressed.

FtSw L and FtSw R (“Foot Switch Left, Right”)

factory default values: FtSwL=Unused; FtSwR=Sustain

The ASR-X Pro can accommodate either a dual foot switch with two pedals—such as the ENSONIQ SW-10—or a single foot switch with one pedal—such as the ENSONIQ SW-2 or SW-6. The FtSw L and FtSw R parameters allow you to assign a broad range of functions to any pedals you’re using. When a dual foot switch is connect, both the FtSw L and FtSw R parameters are active, controlling the behavior of the left and right pedals, respectively. When a single foot switch is connected, FtSw R controls its behavior.

Tip: To learn how to connect foot switches to the ASR-X Pro, see Chapter 1.

FtSw L and FtSw R can be set to any of the following values:

- Unused—pressing the pedal will have no effect.
- Sustain—holding the pedal will cause notes to continue sounding after the key is released.
- Sostenuto—any keys that are held down when you press the pedal will sustain until you release the pedal; keys pressed down after you press the pedal will not sustain.
- SysCTRL1—pressing the pedal down will send a value of 127 to any aspect of a sound or effect that’s modulated by the controller designated as CTRL1; releasing the pedal will send a value of 0 to any aspect of a sound or effect that is modulated by the controller designated as CTRL1. (For details on setting the CTRL1 parameter and descriptions of CTRL1 settings, see “CTRL1, CTRL2, CTRL3 and CTRL4” later in this chapter.)
- SysCTRL2—This functions in the same manner as the SysCTRL1 value described above, except that it applies to CTRL2 instead of CTRL 1.
- SysCTRL3— This functions in the same manner as the SysCTRL1 value described above, except that it applies to CTRL3 instead of CTRL 1.
- SysCTRL4— This functions in the same manner as the SysCTRL1 value described above, except that it applies to CTRL4 instead of CTRL 1.
- Play/Stop—pressing the pedal will have the same effect as pressing the Stop button if a sequence is playing; it will have the same effect as pressing the Play button if a sequence isn’t playing.
- PlayTop/Stop—pressing the pedal once will have the same effect as double-clicking the sequencer Play button; pressing it twice will stop the sequence if it’s playing.
- RecPlay/Stop—pressing the pedal will start recording on the currently selected track. If the sequencer is already recording, pressing the pedal down will stop recording. This setting can be used for punching ins on a track.
- Record—pressing the pedal will have the same effect as pressing the sequencer Record button.
- Stop—pressing the pedal will have the same effect as pressing the sequencer Stop button.
- Rewind—pressing the pedal acts like pressing the sequencer Stop and Record buttons together.
- FastForward—pressing the pedal acts like pressing the sequencer Stop and Play buttons together.
- Mute—pressing the pedal will have the same effect as pressing the track Mute button.
- Step Advance—pressing the pedal will advance a track currently being step-recorded by one step.
- PrevEssntial—pressing the pedal will select the previous Essential sound. When the first Essential is selected, tapping the pedal once will select the last Essential sound.
- NextEssntial—pressing the pedal will select the next Essential sound. When the last Essential is selected, tapping the pedal once will select the first Essential sound.

Warning: If you’re using a single foot switch, FtSw L should always be set to “Unused.”

AutoSelect FXBus

factory default value: On

The AutoSelect FXBus parameter allows you to program the ASR-X Pro to assign an appropriate effect to a sound when it’s chosen for use by a track. Each sound in the ASR-X Pro has a parameter called the Alt Bus that assigns it to a non-insert effect routing. If AutoSelect FXBus is set to “On”:

- when you select a sound that contains an insert effect for use by a track other than the Insert Control Track, the sound is routed to the FX bus designated by its Alt Bus value.
- when you select a sound that doesn’t contain an insert effect for use by any track, the sound is routed to the FX bus designated by its Alt Bus value.

When the AutoSelect FXBus parameter is set to “Off,” the track’s FX Bus routing is unchanged when a new sound is selected for the track.

Tip: To learn about the Insert Control Track , see Chapter 4. To learn how to program the Alt Bus for sounds you’ve sampled, see Chapter 3.

Track ParamReset

factory default value: On

The Track ParamReset parameter determines whether or not certain track parameters will be reset to their default values when a new sound is selected for a track. This helps ensure that each sound will be heard as its programmers intended when it's selected for a track; on the other hand, if you've set a track's parameters just so, you may want them to remain in place when a new sound is selected. A list of the affected track parameters—and their default values—can be found in Chapter 9. When Track ParamReset is set to "On," these parameters will be reset whenever a new sound is selected for a track; when it's set to "Off," each track's parameters will be unaffected by the selection of a new sound for the track.

Auto-Zero Cross

factory default value: Off

The Auto-Zero Cross parameter enables or disables the ASR-X Pro's zero-crossing search feature. This feature automatically offers locations within waves that are most likely to produce trouble-free loops when the Loop Start and Loop End Pad parameters (see Chapter 3) are adjusted.

SCSI Device ID

factory default value: 2

Each device in a SCSI system must be assigned its own SCSI device ID number so that it can be identified by the other devices in the system. The ASR-X Pro can be set to any of the eight possible SCSI device IDs, numbered as 0 through 7. Some ID numbers should be avoided in certain circumstances—see "About SCSI Device IDs" earlier in this chapter for more information. The default ASR-X Pro SCSI Device ID is 2.

SCSI Termination

factory default value: On

A SCSI system is an electrical circuit that requires resistors on either end that supply termination to the SCSI bus. The ASR-X Pro can be set to provide termination according to the setting of its SCSI Termination parameter. The parameter's default setting—for situations where the ASR-X Pro is at either end of your SCSI chain—is On. The parameter should be set to "Off" only when the ASR-X Pro is placed in the middle of a SCSI chain through the use of a SCSI splitter connector.

Note: You can save a SYSTEMSETUP file to floppy that restores your SCSI system prefs automatically on power-up. See "File Types that can be Saved" earlier in this chapter.

Alter system pitch?

The System Pitch Bend Setup

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.

ASR-X Pro sounds are programmed to respond to MIDI Pitch Bend messages in ways appropriate to the sound. The ASR-X Pro also offers a system pitch bend setup that can be accessed by setting any track's Pitch Bend Up and Pitch Bend Down parameters to the "Sys" setting (see Chapter 2). There are three parameters that determine the behavior of the system pitch bend setup.

The system Pitch Bend Up parameter can be set to:

- 1-12dn or 1-12up—the pitch of any sound on a track whose Pitch Bend Up parameter is set to "Sys" will be lowered or raised by the number of equal-temper semitones set here when a Pitch Bend value of 127 is received. The factory default setting is 2up.
- Off—the pitch of any sound on a track whose Pitch Bend Up parameter is set to "Sys" will ignore MIDI messages received from a Pitch Bend Wheel pushed forward.

The system Pitch Bend Down parameter can be set to:

- 1-12dn or 1-12up—the pitch of any sound on a track whose Pitch Bend Down parameter is set to "Sys" will be lowered or raised by the number of equal-temper semitones set here when a Pitch Bend value of 0 is received. The factory default setting is 2dn.

- Off—the pitch of any sound on a track whose Pitch Bend Down parameter is set to “Sys” will ignore MIDI messages received from a Pitch Bend Wheel pulled all the way back.

The PitchBendMode parameter unlocks a powerful feature that allows you to decide which notes will be affected by received Pitch Bend messages. It can be set to one of three values:

- Normal—received Pitch Bend messages will affect all notes currently sounding.
- Held—received 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.
- Prog—the system Pitch Bend will respect the Normal/Held settings programmed into sounds using the system pitch bend set-up. This is the factory default setting.

Tip: This PitchBendMode feature can be used to create guitar-style pitch bends or to “paint” with pitch, leaving different notes sustaining at different pitches.

Fine Tuning

factory default value: 0cents

The Fine Tuning parameter allows you to raise or lower the overall pitch of sounds in cents—100ths of a semitone. This parameter can lower pitch by as much as -50 cents or raise it by up to +49 cents.

PitchTbl

factory default value: EqualTemper

The intervals (or relationships) between notes in a scale can be altered to create special pitch tables. The ASR-X Pro pitch tables have a tuning resolution of 256 cents per semitone. You can select from a large assortment of traditional, modern, ethnic, and exotic pitch tables in the ASR-X Pro. A detailed list of these pitch tables can be found in Chapter 9.

The ASR-X Pro 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 ASR-X Pro via SysEx. This feature is described in detail in Chapter 9.

The ASR-X Pro provides a system pitch table that can be accessed by setting a track’s PchTbl parameter to the “Sys” setting (see Chapter 2). The System/MIDI parameter allows you to select the tuning that will be used by the system pitch table. Any built-in pitch table or the RAM pitch table can be selected.

Edit MIDI settings?

Local-Off Operation of the ASR-X Pro

The Pads Play Local and Local Off Channel parameters allow you to disable the ASR-X Pro’s response to its pads, Patch Select buttons and foot switch while using them to send data to an external MIDI sequencer—the external sequencer can then send the data back to the ASR-X Pro sounds via MIDI. Turning off the ASR-X Pro’s response to the pads when working with an external sequencer ensures that what you hear is being correctly captured and played by the external sequencer; it also prevents the accidental simultaneous playing of ASR-X Pro sounds from two MIDI sources.

The Pads Play Local parameter enables or disables the ASR-X Pro’s response to the pads, Patch Select buttons and foot switch. It can be set to:

- On—causing the pads, Patch Select buttons and foot switch to function normally in the playing, creation and editing of sounds. MIDI data can be sent on a track using a MIDI-OUT sound, according to the setting of the TrackMIDIOut parameter (see Chapter 2). This is the default setting.
- Off—the pads, Patch Select buttons and foot switch function only as MIDI controllers transmitting data on the MIDI channel determined by the Local Off Channel parameter.

The Local Off Channel parameter sets the MIDI channel on which the ASR-X Pro will transmit data from the pads, Patch Select buttons and foot switch when the Pads Play Local parameter is set to “Off.” The factory default setting is 01.

ClockSource

factory default value: Internal

Various activities in the ASR-X Pro depend on a timing source, or clock. Obviously, the sequencer needs such a reference; in addition, synchronized LFOs and noise generators within sounds, and certain effects such as delays, also depend on a timing reference. The ASR-X Pro contains its own internal clock—it can also use timing information received from an external MIDI device that transmits MIDI clocks. The ClockSource parameter determines which timing reference will be used. The parameter can be set to:

- Internal—so that ASR-X Pro’s internal clock is used. When this is the case, the sequencer tempo sets the timing of synchronized LFOs, noise generators and effects.
- MIDI—so that received MIDI clocks control the timing of the sequencer, LFOs, noise generators and effects. With this setting, the ASR-X Pro responds to Song Position Pointer messages.

Xmit MIDI Clocks

factory default value: Off

The ASR-X Pro can generate MIDI clocks to provide a timing reference for external MIDI devices, allowing them to be synchronized to its sequencer. The Xmit MIDI Clocks parameter enables or disables transmission of MIDI clocks when the ASR-X Pro is running. The parameter also enables or disables transmission of MIDI Song Position Pointer messages from the ASR-X Pro sequencer.

Bank&ProgChgRecv

factory default value: On

Each track has parameters that allow you to enable or disable the track’s response to Bank Select and Program Change messages. The Bank&ProgChgRecv parameter provides a master switch for this feature, simultaneously enabling or disabling all 16 tracks’ response to Bank Select and Program Change messages. The parameter may be set to “Off” or “On.”

ResetControlRecv

factory default value: On

The ResetControlRecv System parameter allows you to determine how the ASR-X Pro will respond to Reset All Controllers MIDI messages. When the parameter is set to “On,” and the ASR-X Pro receives a Reset All Controllers message, 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, the ASR-X Pro will not respond to Reset All Controllers messages. For more information on the ASR-X Pro’s response to Reset All Controllers messages, see “Reset All Controllers (MIDI controller 121) Reception Behavior” in Chapter 9.

AllNotesOff Recv

factory default value: On

The ASR-X Pro can respond to All Notes Off (controller 123) and All Sounds Off (controller 120) MIDI control messages. When the ASR-X Pro receives either of these messages, any notes that are currently sounding are silenced. When the AllNotesOff Recv parameter is set to “On,” the ASR-X Pro will respond to these messages—when it’s set to “Off,” it will ignore them.

SysEx Device ID

factory default value: 000

When sending System Exclusive messages to the ASR-X Pro in a MIDI system that contains more than one ASR-X Pro, it’s vital to have a way of distinguishing one ASR-X Pro from another. To accomplish this, each ASR-X Pro should be set to its own SysEx ID number. The SysEx Device ID parameter may be set from 000 to 127.

CTRL1, CTRL2, CTRL3 and CTRL4

The ASR-X Pro responds 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, you can define four additional real-time MIDI controllers: CTRL1, CTRL2, CTRL3 and CTRL4. These can be assigned to any MIDI controller number, and can be used to modulate the ASR-X Pro

sounds or effects. (see Chapters 3 and 4, respectively, to learn about modulation). Each track offers parameters for enabling or disabling the track's response to any of the four CTRLs. See Chapter 2.

When the ASR-X Pro is shipped from the factory, the CTRLs are set to the following default values:

- CTRL1 is assigned to Breath Controller (MIDI controller #002).
- CTRL2 is assigned to FXControl1 (MIDI controller #012). This is the controller transmitted by the FX-SW modulator on ENSONIQ's TS-10 and TS-12.
- CTRL3 is assigned to PatchSelct (MIDI controller #070). The Patch Select buttons can be used for real-time modulation when you select CTRL3 as a sound or effect modulator.
- CTRL4 is assigned to Timbre (MIDI controller #071).

Tip: Some of the ENSONIQ-programmed sounds in the ASR-X Pro use CTRL3 as the mechanism by which they respond to the front-panel Patch Select buttons. If you'd like to use an external MIDI controller—such as a continuous controller—instead of the Patch Select buttons, you can change CTRL3 to any controller number that's convenient. Remember, however, that this will have the effect of disabling the Patch Select buttons on the ASR-X Pro for these sounds.

Access disks utils?

Format disk?

Before a disk can be used by the ASR-X Pro to store data, it must be in DOS format. You can use the ASR-X Pro to format any HD (high-density) floppy disk that's been properly inserted into its drive, or any writable SCSI disk. When you press the Yes button in response to "Format disk?" the ASR-X Pro presents a second display as a safety feature to make sure you're prepared to erase the selected disk. The formatting process can take anywhere from a few to 20 minutes (or longer with a very high-capacity SCSI disk). As formatting occurs, "Formatting disk. Please wait..." will be displayed. (When certain SCSI devices—such as Iomega's Zip and Jaz drives—are being formatted, a percentage display will appear, showing the progress of the formatting procedure.)

Warning: Make sure that any disk you format does not contain anything that you want to keep. All data on a disk will be lost when the disk is formatted.

You can format DD floppy disks on any device capable of DOS formatting using the DOS command "format (the letter designator of your floppy drive): /F:720".

Copy [disk name] disk?

"The "Copy [disk name] disk?" utility allows to you to copy a SCSI disk using one or more drives. You can copy all files between two DOS-formatted disks of different sizes, or perform a sector-by-sector copy between any two disks of the same size. Each method has its advantages and disadvantages.

When copying a DOS-formatted disk to another DOS-formatted disk of a different size, the ASR-X Pro copies the data from the source disk file-by-file. This has the advantage of allowing you to copy the data on your source disk to a destination disk that already contains files; this can be handy when compiling archive disks containing important files. It may be that you have files on your destination disk that have the same names as files on the source disk—the ASR-X Pro will offer you a choice of whether or not you want to replace such files with copied files, or leave them intact.

The only disadvantage to a file-by-file copy is that, since it uses DOS, only file names of up to eight characters are supported. If you've created long folder or file names on a computer, those names will be truncated during the copying procedure.

Tip: If the destination already contains files you want to discard, wipe the disk clean by formatting it prior to performing the disk copy.

When copying a disk of any format to another disk of the same size, the ASR-X Pro copies the source disk sector-by-sector. The resulting copy is an exact duplicate of the original source disk. This method has the advantage of supporting any disk format, and of preserving long file names. The disadvantage is that the copying procedure causes all files on the destination disk to be completely erased.

The formatting and relative sizes of the disk being copied and the disk to which the copy is being made determine the nature of the copy to be made. The ASR-X Pro refers to the disk being copied as the source (abbreviated as “src”) and the disk on which the copy will be made as the destination (“dest”).

Important: See “A Note About the SCSI Copy and Optimize Utilities” below before proceeding.

To copy a SCSI disk:

1. After accessing the disk utilities and selecting the SCSI device containing the disk you want to copy, turn the Parameter knob until “Copy [the name of the selected device] disk?” is displayed.
2. Press the Yes button—the ASR-X Pro will present a display that allows you to select the SCSI device that will contain the new copy of your disk.
3. Turn the Value knob to select the desired SCSI device.
 - If you want to copy a disk from one DOS-formatted SCSI device to another, select the SCSI device on which you want to make the copy.
 - If you want to make a copy of a removable disk using a single SCSI device by swapping disks during the copying procedure, select the same SCSI device you selected in Step 1.
4. Press the Yes button to make the disk copy. The ASR-X Pro will offer you a confirmation question verifying that you want to proceed with the copying procedure.
5. If you’re copying a removable disk using a single SCSI device, the ASR-X Pro:
 - will tell you how many times you’ll need to swap the source and destination disks to complete the copying procedure and ask if you want to proceed. The number of swaps depends on the size of the disk being copied and the amount of free RAM that you have in your ASR-X Pro.
 - will ask you to insert each disk as it’s needed.

Optimize [disk name] disk?”

During normal usage, a SCSI disk’s files become scattered across the disk’s surface as files are written, edited and re-written to disk. When a disk becomes fragmented in this manner, loading its data takes more time. The “Optimize [disk name] disk?” utility de-fragments the selected SCSI disk to the degree possible given the available amount of free space remaining on the disk, thus optimizing its performance. To perform an optimization, read “A Note About the SCSI Copy and Optimize Utilities” below, and then press the Yes button when “Optimize [disk name] disk?” is visible. The process can take a while, depending on the size of your disk and the amount of RAM available in the ASR-X Pro.

A Note About the SCSI Copy and Optimize Utilities

The copy and optimize utilities are available only when there is at least one writeable SCSI device active on your SCSI bus, since the procedures require such a device. If your writeable device uses a removable disk, a disk must be present in the drive for the ASR-X Pro to recognize it as a write-capable device. Also, the ASR-X Pro uses available RAM as it shuffles disk data during these procedures—it’s recommended that you clear your RAM of all waves and sounds before using the utilities. This will allow the ASR-X Pro to perform these operations more quickly, since it will be able to hold larger chunks of disk data in RAM.

Reset SCSI bus?

SCSI busses handle large chunks of data flowing in between complex computer-based devices. Sometimes the bus itself becomes confused as a result of minor malfunctions, power fluctuations, or unstable connections. Symptoms of a scrambled SCSI bus would include the inability to access a SCSI device, failed data-saving operations, failed loading operations, SCSI devices that appear to be “stuck” in some mode of operation, or failed attempts at ejecting removable cartridges. These symptoms don’t

necessarily mean that there's anything wrong with your data—resetting the bus will often solve the problems you're experiencing. When you press the Yes button in response to "Reset SCSI bus?" a second display will be presented as a safety feature to make sure you want to do this.

Warning: Do not reset the SCSI bus when any of your SCSI devices are performing any reading or writing operations. Doing so could result in damage to your data and/or SCSI devices.

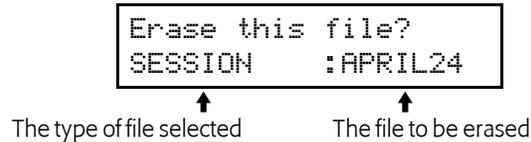
Some devices may need to rescan the SCSI bus after it's been reset by the ASR-X Pro.

Write-Protect

Some SCSI devices—such as Iomega's Zip and Jaz drives—support software write-protection, a software parameter that will prevent the accidental writing of data to the selected disk. If the currently selected SCSI device supports this feature, the Write Protect parameter will be available. Set the parameter to "Yes" to ensure that you won't over-write important data on the currently selected disk.

Erase disk files?

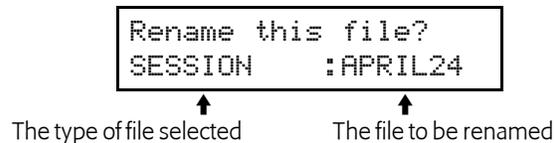
The "Erase disk files?" feature lets you permanently delete any file from the currently selected disk. When you answer the question by pressing the Yes button, the following display appears:



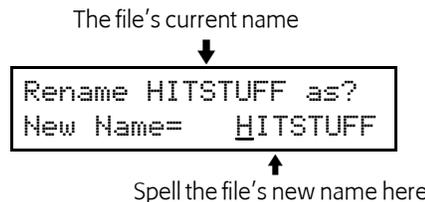
Turn the Parameter knob to select the type of file you want to erase, and then the Value knob to select a specific file. When you've selected the file you want to delete from the disk, press the Yes button. A display will appear asking you if you're sure—press the Yes button to erase the file.

Rename disk files?

The ASR-X Pro allows you to rename any files you've already saved to disk by pressing the Yes button in response to "Rename disk files?" When you've done this, the display will show:



Turn the Parameter knob to select the type of file you want to re-name, the Value knob to select a specific file, and press the Yes button. The ASR-X Pro will present the file-naming display:



Turn the Parameter knob to select each character location in turn—the selected character will be underlined—and then turn the Value knob to select the desired character for that location. When you've finished spelling out the new name for the file, press the Yes button to write the name to disk.

Note: It's recommended that you do not rename files saved as part of a SESSION—if you do so, the ASR-X Pro will not be able to locate renamed files when the SESSION file is reloaded.

Directory Sorted

The Directory Sorted parameter allows you to display files on the selected disk in alphabetical order. When the parameter is set to “Off,” files are displayed in the order in which they were saved to disk.

Free

The Free display shows how much free space—in bytes—is available on the currently selected disk.

Enter MemoryManager?

Show free memory?

The ASR-X Pro Memory Manager provides a handy way to keep track of how much RAM is available for sequences and waves. Pressing the Yes button in response to “Show free memory?” reveals two read-only sub-displays:

- Sound & Wave RAM—This shows the amount of free RAM currently available for sounds and waves. The amount displayed will depend on the amount of memory installed in your ASR-X Pro. A stock ASR-X Pro will show 37,778 bytes free when all of its memory is available.
- Sequencer RAM—This shows the amount of free memory currently available for sequencing.

Erase memory banks?

The ASR-X Pro Memory Manager allows you to easily clear the sound and wave RAM, or the sequencer RAM. Pressing the Yes button in response to “Erase memory banks?” reveals the following sub-display, from which you can turn the Value knob to select either “All Sounds&Waves” or “All Sequences”:

```
Erase memory banks?
* All Sounds&Waves *
```

↑
What will be erased is shown here

When you’ve selected the type of RAM you’d like to erase, press the Yes button.

Erase sound?

The ASR-X Pro allows you to erase any sound from RAM by pressing the Yes button in response to “Erase sound?” When you do so, the display will show:

The amount of memory allocated to the selected sound The sound’s bank and program number

```
Erase  0.4k?  00:000
SOUND   :Garbage Kit
```

↑
The sound to be erased

Turn the Value knob to select the sound you’d like to delete, and press the Yes button to erase it.

Rename sound?

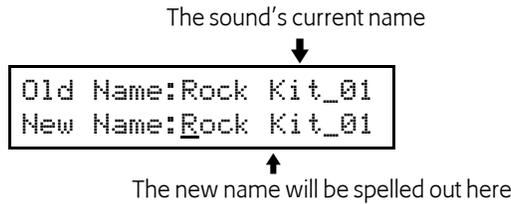
To rename a sound in RAM, select “Rename sound?” and press the Yes button. The display will show:

The sound’s bank and program number

```
Rename ?    00:000
SOUND   :Rock Kit_01
```

↑
The sound to be renamed

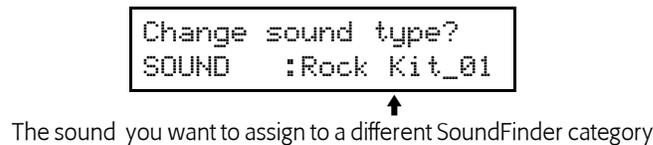
Turn the Value knob to select the sound you'd like to rename, and then press the Yes button to invoke the sound-renaming display:



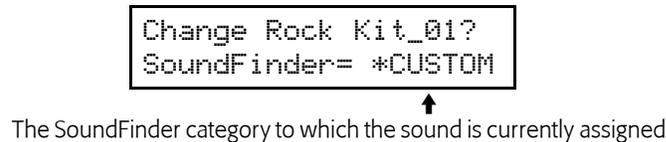
Turn the Parameter knob to select each character location in turn—the selected character will be underlined—and then turn the Value knob to select the desired character for that location. When you've finished spelling out the new name for the sound, press the Yes button to finish renaming it.

Change sound type?

The MemoryManager allows you to change the SoundFinder category to which a sound is assigned. Press the Yes button in response to "Change sound type?" and the following display appears:



Turn the value knob to select the sound whose category you'd like to change, and press the Yes button. The display shows:



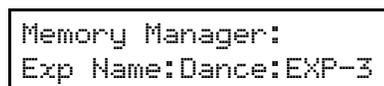
Turn the Parameter knob clockwise to reveal the FinderPref parameter, which allows you to assign the selected sound to the USER-SND and/or DEMO-SND SoundFinder types. Turn the Value knob to select:

- None—to assign the selected sound to neither the USER-SND or DEMO-SND category.
- DEMO-SND—to assign the selected sound to the DEMO-SND category.
- USER-SND—to assign the selected sound to the USER-SND category.
- USER+DEMO—to assign the selected sound to both USER-SND and DEMO-SND categories.

Turn the Value knob to select the desired SoundFinder designations, and press the Yes button to re-assign the sound to the new categories.

Exp Name

The EXP Name is a read-only display that shows the name of the ENSONIQ EXP Series Wave Expansion Board you've installed in your ASR-X Pro.



Save these settings?

Pressing the Yes button in response to "Save these settings?" stores the current System/MIDI, Resampling Setup and sequencer Click settings, as well as USER quantization templates, to FLASH memory, where they will remain in place permanently, or until you save new settings.

8 Expanding the ASR-X Pro

Overview

The ASR-X Pro provides some exciting opportunities for expansion, described in this chapter—follow all of the instructions provided carefully, to ensure that you don't injure your ASR-X Pro, or yourself.

An Important Note About Electro Static Discharge

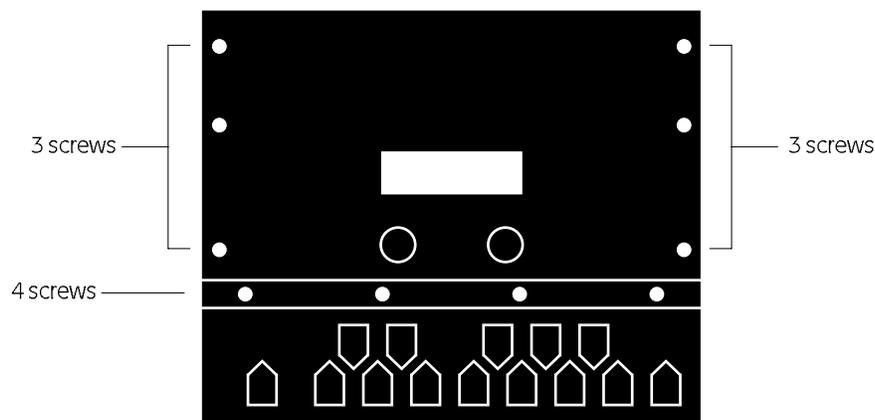
Many of the internal components in the ASR-X Pro and areas of its expansion boards are susceptible to Electro Static Discharge (ESD), commonly known as "static." Electro static discharge can damage or destroy electronic devices. Here are some procedures you can follow when handling electronic devices in order to minimize the possibility of causing ESD damage:

- Before opening your ASR-X Pro 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 any unpainted metal surface within the ASR-X Pro.
- Avoid any unnecessary movement, such as scuffing your feet when handling electronic devices, since most movement can generate additional charges of static electricity.
- 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.
- 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 installation of ASR-X Pro expansion options, or for additional technical support, please contact your authorized ENSONIQ dealer or 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.

Opening the ASR-X Pro

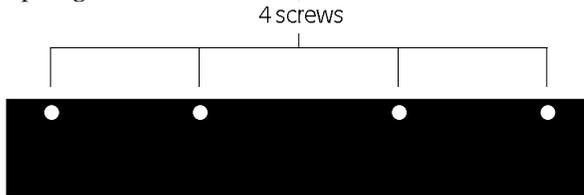
1. Turn off the ASR-X Pro's power and unplug the AC cable from its rear-panel jack.
2. Place your ASR-X Pro on a flat surface, normal-side up, leaving an empty space on the surface to the left of the ASR-X Pro left equal to the width of the ASR-X Pro.
3. Locate the ten hex screws along the left, right and lower edges of the ASR-X Pro's upper panel.



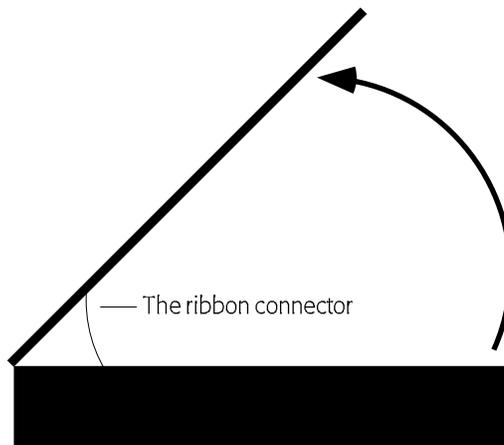
The ASR-X Pro when viewed from the top

4. Using the hex wrench supplied in your ASR-X Pro accessory kit, remove the ten screws. Put the screws in a safe location—you'll need them again when you close up the ASR-X Pro.

- Turn the ASR-X Pro around so that its rear panel is facing you, and locate the four Phillips-head screws along its top edge.



- Remove the four screws, and place them with the first ten.
- Rotate the ASR-X Pro back to its original position.
- Gently lift the right-hand edge of the ASR-X Pro's lid, opening it out and towards the left as you would a book. Be careful—the lid is not hinged to the chassis of the ASR-X Pro—take care not to break or damage the ribbon connector connecting the lid to the ASR-X Pro's main board.



Carefully lift the lid as you would open a book.

- Rest the lid, display-side-down, on the surface to the left of the ASR-X Pro.

Installing Additional Sampling/Resampling Memory

The ASR-X Pro ships from the factory with 2 MB (megabytes) of memory in which you can store sampled/resampled waves and sequencer data. You can install up to 64 additional MB of memory (for a total of 66 MB) by installing standard 4, 8, 16 or 32 megabyte SIMM chips.

Amount of memory installed	approx. mono sampling time	approx. stereo sampling time
2 MB (as shipped from the factory)	15 seconds	7 seconds
6 MB (with 4-MB SIMM installed)	63 seconds	31 seconds
10 MB (with 8-MB SIMM installed)	107 seconds	53 seconds
18 MB (with 16-MB SIMM installed)	202 seconds	101 seconds
34 MB (with 32-MB SIMM installed)	392 seconds	196 seconds
50 MB (with a 32 and 16 MB SIMM installed)	583 seconds	291 seconds
66 MB (with two 32 MB SIMMs installed)	773 seconds	386 seconds

Note: When memory is increased to 10 MB or higher, sequence memory is automatically expanded to 512 kilobytes.

What is a SIMM Chip?

“SIMM” is an acronym for “Single In-line Memory Module.” A SIMM is a small circuit boards onto which have been placed smaller DRAM—for “dynamic random access memory”—chips.

Which SIMMs Can be Installed in the ASR-X Pro?

The ASR-X Pro accepts any standard 72-pin SIMM that meets these standards:

- The SIMM is 70ns (nanoseconds) or faster.
- The SIMM is a 5-volt chip (3-volt SIMMs will not properly fit the ASR-X Pro SIMM socket).
- Either extended data output (EDO) or non-EDO SIMMs can be used.
- The SIMM is either a x32 or x36 chip.

Note: The two sockets have different SIMM memory size requirements—see “Installing Memory in the Proper SIMM Sockets” later in this chapter.

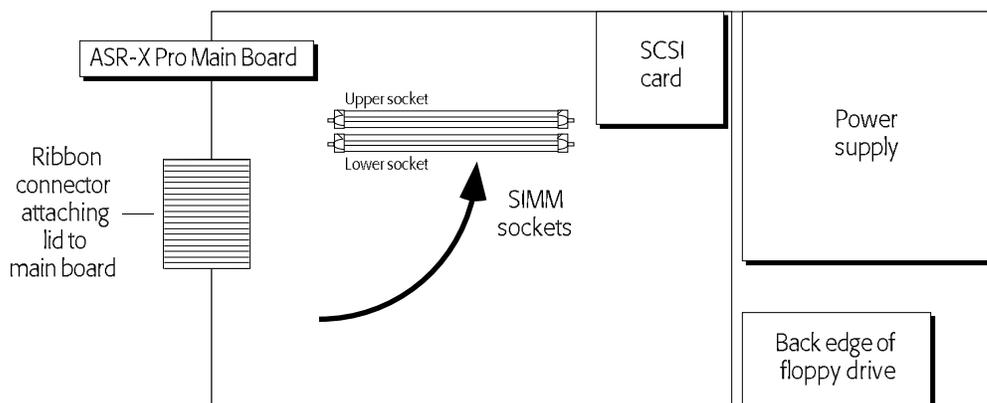
SIMM Installation Procedure

Warning: It’s worth reading through the following procedures before actually performing them, so you’ll know what to expect along the way. Don’t forget to follow the guidelines in “An Important Note About Electro Static Discharge” at the beginning of this chapter.

Locating the SIMM Sockets on the ASR-X Pro Main Board

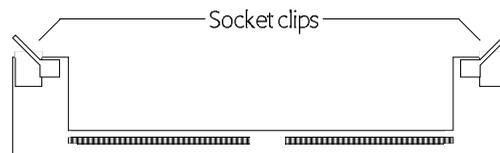
Before proceeding, follow the instructions in “Opening the ASR-X Pro,” earlier in this chapter.

1. Looking down into the ASR-X Pro with the pads towards you, the SIMM sockets are located as shown by the arrow in the illustration below:



The main board contains many elements not shown.
Drawing not to scale.

2. Viewed from the front, each SIMM socket looks something like this:



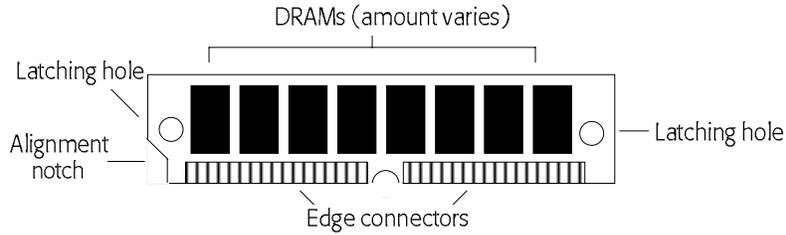
Installing Memory in the Proper SIMM Sockets

To increase your ASR-X Pro's memory up to 34 MB, use only the lower socket—this socket can accommodate 4, 8, 16 and 32 MB SIMMs. When the lower socket contains a 32 MB SIMM, you can install a 16 or 32 MB SIMM in the upper socket to increase the ASR-X Pro's memory to 50 or 66 MB.

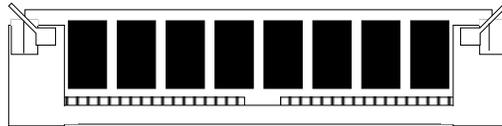
Installing a SIMM chip into a SIMM Socket

Before proceeding, see "Opening the ASR-X Pro," and "Locating the SIMM Sockets on the ASR-X Pro Main Board."

1. Orient your SIMM chip so that its edge connector is downward, and its alignment notch is facing to the left, as shown.



2. Approaching the SIMM socket from its back side—the side closest to the ASR-X Pro's rear-panel connectors—place your chip's edge connector in the slot in the center of the socket.



3. Using two hands, gently press the upper edge of the back of your chip so that it tilts forward between the two metal clips on the socket.
4. Continue pressing forward until both socket clips snap into place against the front edge of the chip—you'll hear a click when this occurs.
5. Replace the ASR-X Pro's lid and eight screws removed in Steps 3-6 of "Opening the ASR-X Pro," earlier in this section.
6. Reconnect the ASR-X Pro's AC power.
When you turn your ASR-X Pro back on, your new memory will be available for use.

SIMM Removal Procedure

Before proceeding, you'll need to open your ASR-X Pro. Follow the instructions in "Opening the ASR-X Pro," earlier in this chapter. "Locating the SIMM Sockets on the ASR-X Pro Main Board" tells you how to find the SIMM socket.

1. Gently pull outward each of the SIMM socket's metal clips, one at a time—you'll be able to hear or feel when each clip lets go of the chip's edge.
2. When both clips have let go of the SIMM's edges, you can lift the chip out of the socket.
3. Replace the ASR-X Pro's lid and eight screws removed in Steps 3-6 of "Opening the ASR-X Pro."
4. Reconnect the ASR-X Pro's AC power.

Installing an ENSONIQ EXP-Series Wave Expansion Board

The ASR-X Pro can accommodate an ENSONIQ EXP expansion board. These boards add new wave data and sounds to the ASR-X Pro. For more information on the EXP-Series Wave Expansion boards, call ENSONIQ at 610-647-3930 or visit the ENSONIQ World Wide Web site at <http://www.ensoniq.com>.

EXP-Series Wave Expansion Board Installation Procedure

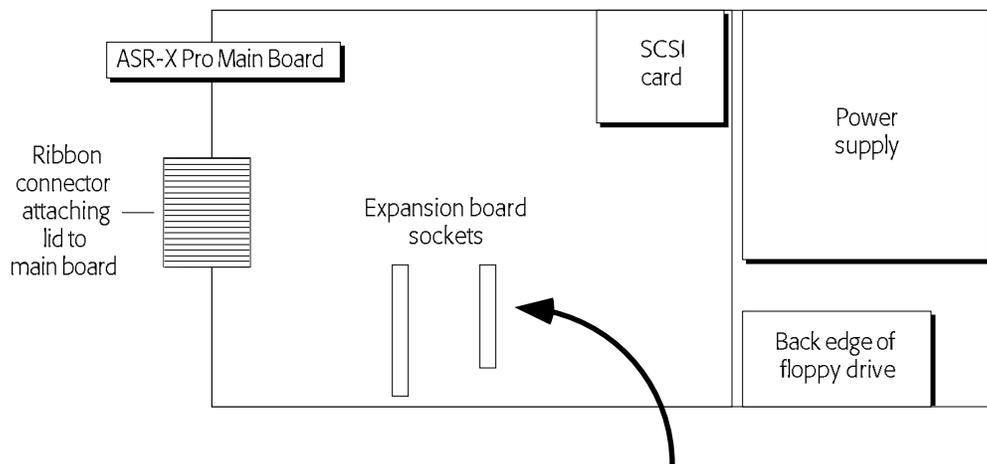
Warning: It's worth taking a moment to read through the following procedures before actually performing them, so you'll know what to expect along the way. Follow the guidelines in "An Important Note About Electro Static Discharge" at the beginning of this chapter.

Locating the Wave Expansion Board Sockets on the ASR-X Pro Main Board

Before proceeding, you'll need to open your ASR-X Pro.
Follow the instructions in "Opening the ASR-X Pro," earlier in this chapter.

1. Looking down into the ASR-X Pro with the pads towards you, the expansion board sockets are located as shown by the arrow in the illustration below:

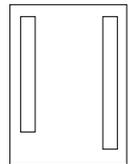
The main board contains many elements not shown.
Drawing not to scale.



Installing an EXP-Series Wave Expansion Board

Before proceeding, you'll need to open your ASR-X Pro by following the instructions in "Opening the ASR-X Pro," earlier in this chapter. "Locating the Wave Expansion Board Sockets on the ASR-X Pro Main Board," above, tells you how to find the EXP board sockets.

1. Examine your expansion board. Notice that it has a 50-pin and a 40-pin connector. When you turn the expansion board over, connector-side-down, its connectors will line up with the sockets in the ASR-X Pro. It's in this position that the board is installed.
2. Align your expansion board above the sockets on the ASR-X Pro main board.
4. Press the expansion board down firmly into the main board sockets so that it makes a physical (and electrical) connection with your ASR-X Pro. The expansion board's connectors must be inserted into both of the main board's sockets in order to work properly.
5. Replace the ASR-X Pro's lid and screws, reconnect its power cord, power up and follow the instructions in "To Identify an Installed Expansion Board," below, to verify that the ASR-X Pro is properly recognizing the expansion board.



Note: To remove an expansion board, lift it gently from its sockets on the main board.

To Identify An Installed Expansion Board

1. Press the System/MIDI button.



2. Turn the Parameter knob until the display shows:

```
System/MIDI:
Enter MemoryManager?
```

3. Press the Yes button.
2. Turn the Parameter knob until the display shows:

```
MemoryManager:
Exp Name:Dance:EXP-3
```

↑
The name of the board you've installed

This will show the name of the installed expansion board.

Note: If you've installed an expansion board and the ASR-X Pro does not show its name, carefully repeat the instructions in "Installing an EXP-Series Wave Expansion Board." If the ASR-X Pro still doesn't recognize the expansion board, call your authorized ENSONIQ dealer or ENSONIQ Customer Service at 610-647-3930.

Updating the ASR-X Pro Operating System

With most electronic devices, operating system (O.S.) upgrades have become common. For ENSONIQ products, an operating system upgrade provides system enhancements, and often, additional features. The ASR-X Pro O.S. is stored in its FLASH memory, and can be updated by loading a new version of the O.S. from a floppy disk. The contents of FLASH are retained even when the ASR-X Pro is turned off.

You can find information about—and download—the latest version of the ASR-X Pro operating system from ENSONIQ's World Wide Web site at <http://www.ensoniq.com>.

Tip: If you're not connected to the Internet, call ENSONIQ Customer Service at 610-647-3930, or contact your authorized ENSONIQ dealer. 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, call 1-503-227-6848).

Operating System Updating Procedure

Learning The Version Number Of the Currently Installed Operating System

1. Press the Disk/Global Save and hold it down.
2. While continuing to hold down the Save button, press the System/MIDI button.



The display briefly shows you the version number of the operating system in your ASR-X Pro:

```
ENSONIQ ASR-X Pro
O.S. Version: 1.00
```

Preparing the Operating System Floppy Disk

1. Download the operating system update from the ENSONIQ Web site (URL).
2. On your computer, DOS-format an HD floppy disk, naming the floppy "ASRXOSDISK."
3. Copy the downloaded O.S. file to the floppy.

Loading an Operating System into FLASH

1. Power down the ASR-X Pro.
2. Insert the floppy containing the O.S. into the ASR-X Pro's floppy drive.
3. Turn on the ASR-X Pro—when it detects an operating system version different than the one currently written to FLASH it will present this display:

```
Load OS from disk?
Press YES or NO
```

4. Press the Enter/Yes button—the process of loading the O.S. will take about a minute.

Note: If you power up the ASR-X Pro with the O.S. floppy inserted and encounter the above message, but don't wish to change your operating system version, press the Exit/No button.

9 Supplemental Information

List of ROM Waves

KEYBOARD	ELEC PIANO		JAMM SNARE		CONGA LOW
	PERC ORGAN		LIVE SNARE		CONGA MUTE
	DRAWBAR ORGAN		LUDWIG SNARE		CONGA SLAP
	PAD SYNTH		MUTT SNARE		CUICA
STRING-SOUND	STRING HIT		REAL SNARE		ETHNO COWBELL
	MUTE GUITAR		RIMSHOT		GUIRO
	MUTE GUITARWF		SLANG SNARE		MARACAS
	GTR-SLIDE		SPAK SNARE		SHAKER
BRASS+HORNS	HORN HIT		WOLF SNARE		SHEKERE DN
WIND+REEDS	BARI SAX HIT		ZEE SNARE		SHEKERE UP
BASS-SOUND	UPRIGHT BASS		BRUSH SLAP		SLAP CLAP
	BS HARMONICS		SIDE STICK 1		TAMBOURINE DN
	FM BASS		SIDE STICK 2		TAMBOURINE UP
	ANALOG BASS 1		STICKS		TIMBALE HI
	ANALOG BASS 2		STUDIO TOM		TIMBALE LO
	FRETLESS BASS		ROCK TOM		TIMBALE RIM
	MUTE BASS		909 TOM		TRIANGLE HIT
	SLAP BASS		SYNTH DRUM		VIBRASLAP
DRUM-SOUND	2001 KICK	CYMBALS	808 CLOSED HT		WHISTLE
	808 KICK		808 OPEN HAT		WOODBLOCK
	AMBIENT KICK		909 CLOSED HT	TUNED-PERCUS	BIG BELL
	BAM KICK		909 OPEN HAT		SMALL BELL
	BANG KICK		HOUSE CL HAT		GAMELAN BELL
	BBM KICK		PEDAL HAT		MARIMBA
	BOOM KICK		PZ CL HAT		MARIMBA WF
	COSMO KICK		R&B CL HAT	SOUND-EFFECT	SCRATCH 1
	ELECTRO KICK		SMACK CL HAT		SCRATCH 2
	MUFF KICK		SNICK CL HAT		SCRATCH 3
	PZ KICK		STUDIO CL HAT		SCRATCH 4
	SNICK KICK		STUDIO OPHAT1		SCRATCH 5
	THUMP KICK		STUDIO OPHAT2		SCRATCH 6
	TITE KICK		TECHNO HAT		SCRATCH LOOP
	WILD KICK		TIGHT CL HAT	WAVEFORM	SAWTOOTH
	WOLF KICK		TRANCE CL HAT		SQUARE WAVE
	WOO BOX KICK		CR78 OPENHAT		TRIANGLE WAV
	808 SNARE		COMPRESS OPHT		SQR+SAW WF
	808 RIMSHOT		CRASH CYMBAL		SINE WAVE
	909 SNARE		CRASH LOOP		ESQ BELL WF
	BANG SNARE		RIDE CYMBAL		BELL WF
	BIG ROCK SNAR		RIDE BELL		DIGITAL WF
	CHILL SNARE		CHINA CRASH		E PIANO WF
	CLASSIC SNARE	PERCUSSION	808 CLAP		DIG VOCAL WF
	CLEAN SNARE		808 CLAVE		DEEP PAD WF
	COSMO SNARE		808 COWBELL	INHARMONIC	HISS
	GATED SNARE		AGOGO		NOIZZZ
	HOUSE SNR 1		BONGO		TEXTURE
	HOUSE SNR 2		CABASA	TRANSWAVE	BROKEN TWF
	HOUSE SNR 3		CLAVE		
			CONGA HIGH		

List of SoundFinder Categories

If there are no sounds of a particular type in the ASR-X Pro memory, the type will not be displayed:

Category	Description
USER-SND	This special category is ideal for storing the sounds you create—sounds will also appear in their appropriate SoundFinder musical instrument type list. All RAM kits are designated as USER-SNDs.
DEMO-SND	Demo sounds are designed to demonstrate the scope of sounds in the ASR-X Pro. Whenever this is selected, the first sound in the type will be selected; the ASR-X Pro will not reselect the last sound selected in the DEMO-SND type. Demo sounds also appear in their appropriate Sound Type list.
EXP-SND	Expansion board sounds.
DRM-SND	ROM drum key sounds.
ROM-SND	All sounds in ROM.
RAM-SND	All sounds in RAM.
ALL-SND	All sounds.
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	Hits of all kinds.
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 discontinuous 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, bandoneon, shakuhachi, bagpipes, harmonica, accordion, melodica, didjeridoo).
*UTILITY	Utility resources (e.g., default template sounds used for programming and other special non-musical purposes).
*CUSTOM	The category in which the sounds that play waves are stored. When you send waves to pads, the pad sounds that play the waves are stored in this category.

Drum and Percussion Maps

ENSONIQ Drum Map

ZONE	KEY RANGE	DESCRIPTION
1 (6 keys)	B1 to E2 KICK	The key C#2 allows for non-finish envelope sounds.
2 (10 keys)	F2 to D3 SNARE	Includes sidestick—the keys from A2-C3 allow for non-finish envelope sounds (Snare rolls, brush swirls, etc.)
3 (10 keys)	D#3 to C4 HATS	The keys G#3 and B3 allow for non-finish envelope sounds (closed hats first, opens on A#3 and B3; foot closed on C4).
4 (9 keys)	C#4 to A4 CYMBL	The key A4 allows for non-finish envelope sounds (rides C#4 to E4; followed by crashes).
5 (9 keys)	A#4 to F#5 TOMS	All keys in finish envelope mode.
6 (7 keys)	G5 to C#6 PERC1	Shaken or small hits—tambourine (G5 to A5); shaker, cabasa, or maracas (A#5 to C6); claps (C#6); snap; woodblock
7 (6 keys)	D6 to G6 PERC2	Latin non-pitched Percussion—bongo; conga slap; low conga; high conga; timbale
8 (7 keys)	G#6 to D7 PERC3	Pitched and Bell-like Percussion—Triangle (A6 closed, A#6 long); cowbell (G#6); high agogo; low agogo; claves (B6, or at D#6 if there are no congas); vinyl surface noise (C7). The keys from B6-D7 allow for non-finish envelope sounds.

ENSONIQ Percussion Map

ZONE	KEY RANGE	DESCRIPTION
1 (6 keys)	B1 to E2	Low Drums—the key C#2 allows for non-finish envelope sounds.
2 (10 keys)	F2 to D3	Medium drums such as Conga, Tabla, Udu—the keys from A2-C3 allow for non-finish envelope sounds.
3 (10 keys)	D#3 to C4	Small things that keep time (shakers, small drums, etc) Clave (G#3); sleighbells, castanets (C4). The keys G#3 and B3 allow for non-finish envelope sounds.
4 (9 keys)	C#4 to A4	Small time-keeping instruments including ride cymbals and instruments like Guiro (C#4 to E4); crash cymbals, or other accent instruments like windchime, vibra-slap, gong (F4 to A4). The key A4 allows for non-finish envelope sounds.
5 (9 keys)	A#4 to F#5	Things struck that play fills—like timbali, woodblocks, log drums, small pitched drums.
6 (7 keys)	G5 to C#6	Tambourines or similar shaken instruments (G5-A5); small high-pitched shakers like maraccas, egg shakes (A#5 - C6); claps, clave (C#6)
7 (6 keys)	D6 to G6	Multi hits of bongos, high drums, cuica, guiro (D6-E6); multi hits of agogo, or other metallic inst. (F6-G6)
8 (7 keys)	G#6 to D7	Cowbell (G#6); Triangle (A6 closed, A#6 long); Long sounds like rainsticks (B6-D7) The keys from B6-D7 allow for non-finish envelope sounds.

GM Kit Map

MIDI Note #		GM Kit
35	B1	AcousticKick
36	C2	Bright Kick
37	C#2	SideStick 1
38	D2	Snare-GM
39	D#2	HouseClap1
40	E2	Rock Snare
41	F2	Dry Tom 1
42	F#2	4xCl Hat3
43	G2	Dry Tom 1
44	G#2	Pedal Hat
45	A2	Dry Tom 1
46	A#2	OpenHat-GM
47	B2	Dry Tom 1
48	C3	Dry Tom 1
49	C#3	Crash 1-GM
50	D3	Dry Tom 1
51	D#3	Ride 1-GM
52	E3	China 1-GM
53	F3	RideBell-GM
54	F#3	Tambourine
55	G3	Splash1-GM
56	G#3	Cowbell
57	A3	Crash 1-GM
58	A#3	Vibraslap
59	B3	Ride 1-GM
60	C4	Bongo
61	C#4	Bongo
62	D4	Conga Mute
63	D#4	Conga High
64	E4	Conga Low
65	F4	Timbali
66	F#4	Timbali
67	G4	Agogo
68	G#4	Agogo
69	A4	Cabasa
70	A#4	Maracas
71	B4	Whistle B
72	C5	Whistle A
73	C#5	Guiro Short
74	D5	Guiro Long
75	D#5	Clave
76	E5	Woodblock 1
77	F5	Woodblock 1
78	F#5	Cuica 1
79	G5	Cuica 5
80	G#5	Tri Mute-GM
81	A5	Tri Open-GM
82	A#5	Shaker
83	B5	Sleighbell
84	C6	WindchimeGM
85	C#6	Castanets 1
86	D6	Mt Surdo-GM
87	D#6	Op Surdo-GM
	E6	Silence

List of Quantize Templates

The following is a list of all the quantize parameters and their settings for the available quantize templates (there is no data recorded for High Key and Low Key):

Name	Q. to:	Strength	Swing	Random	Shift	Win. Min	Win. Max.	Q Offs?	Move Offs?	Deltas
Strict 1/4	1/4	100	50	0	0	0	50	off	on	off
Strict 1/8	1/8	100	50	0	0	0	50	off	on	off
Strict 1/16	1/16	100	50	0	0	0	50	off	on	off
Strict 1/8T	1/8T	100	50	0	0	0	50	off	on	off
Tighten 1	1/8	5	50	0	0	0	50	off	on	off
Tighten 2	1/8	20	50	0	0	0	50	off	on	off
Tighten 3	1/8	50	50	0	0	0	50	off	on	off
Tighten 4	1/8	70	50	0	0	0	50	off	on	off
Tighten 5	1/16	5	50	0	0	0	50	off	on	off
Tighten 6	1/16	20	50	0	0	0	50	off	on	off
Tighten 7	1/16	50	50	0	0	0	50	off	on	off
Tighten 8	1/16	70	50	0	0	0	50	off	on	off
Randomize 1	1/8	50	50	3	0	0	50	off	on	off
Randomize 2	1/8	60	50	15	0	0	50	off	on	off
Randomize 3	1/16	50	50	3	0	0	50	off	on	off
Randomize 4	1/16	60	50	15	0	0	50	off	on	off
Note Offs 1	1/8	100	50	0	0	0	50	on	on	off
Note Offs 2	1/16	100	50	0	0	0	50	on	on	off
Swing 1	1/16	90	55	0	0	0	50	off	on	off
Swing 2	1/16	92	57	1	0	0	50	off	on	off
Swing 2	1/16	100	63	0	0	0	50	off	on	off
Humanize 1	1/16	75	51	2	0	0	50	off	on	off
Delta 1/8	1/8	100	50	0	0	0	50	off	on	on

What Is MIDI?

Musical instrument and computer manufacturers have agreed upon a set of standards that allows their products to communicate with each other. It's called "MIDI," an acronym for "Musical Instrument Digital Interface." There are two basic aspects to the MIDI standards: the kind of wiring to be used for connecting MIDI devices, and the nature of messages that will be sent through those wires.

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:

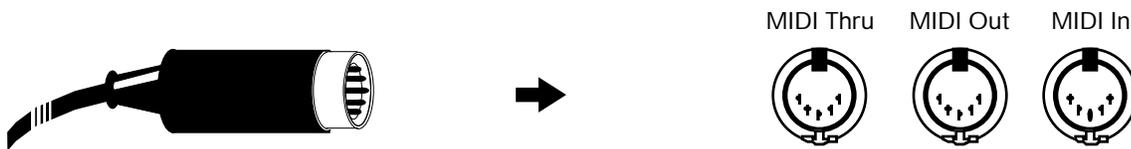
- Musicians can record their performances into MIDI recorders—called *sequencers*—which are found in keyboard workstations, groovestations such as the ASR-X Pro, in stand-alone boxes, and in computers. Once recorded, MIDI-recorded performances can be tweaked and nudged to perfection. Musical arrangements can be re-orchestrated after they've been recorded. Full-blown multi-instrument recordings can be easily created.
- Keyboardists can connect their instruments to a myriad of sound-producing MIDI boxes. 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 specific external MIDI devices. These same capabilities are available to computer users. Actually, pretty much any musical instrument can be outfitted to control MIDI devices.

- Musicians can benefit from the communication possible between MIDI instruments and computers to program sounds for their instruments on their computers, taking advantage of the computers' large graphic displays.
- Internal data from one MIDI device can be transmitted to another for storage.
- Recording engineers can control mixing consoles and effects devices with MIDI.

Understanding MIDI

MIDI Hardware

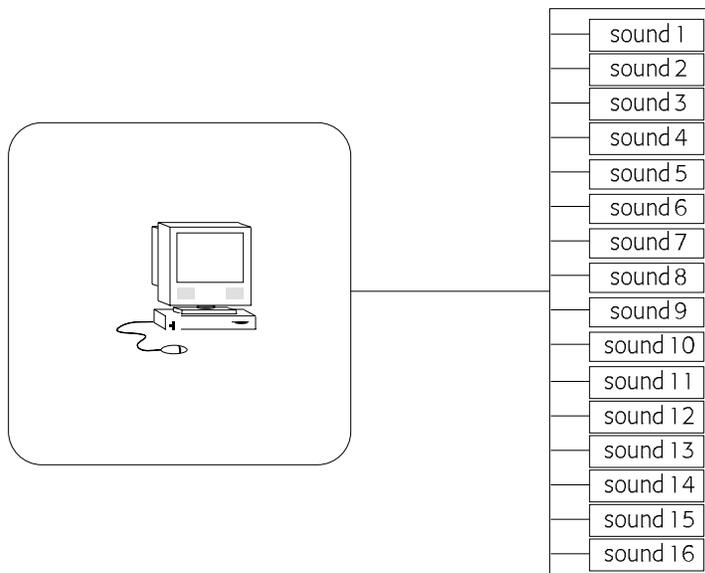
The architects of MIDI had to settle, first of all, on the MIDI hardware: the wires. All MIDI cables have the same kind of plug on either end. There are three MIDI sockets, or jacks, on the back of most MIDI instruments. The MIDI Thru jack is for MIDI data that passes through the instrument unchanged, on its way to some other MIDI device. The instrument sends out its own MIDI information through the MIDI Out jack. The MIDI In jack is for MIDI information coming into the instrument.



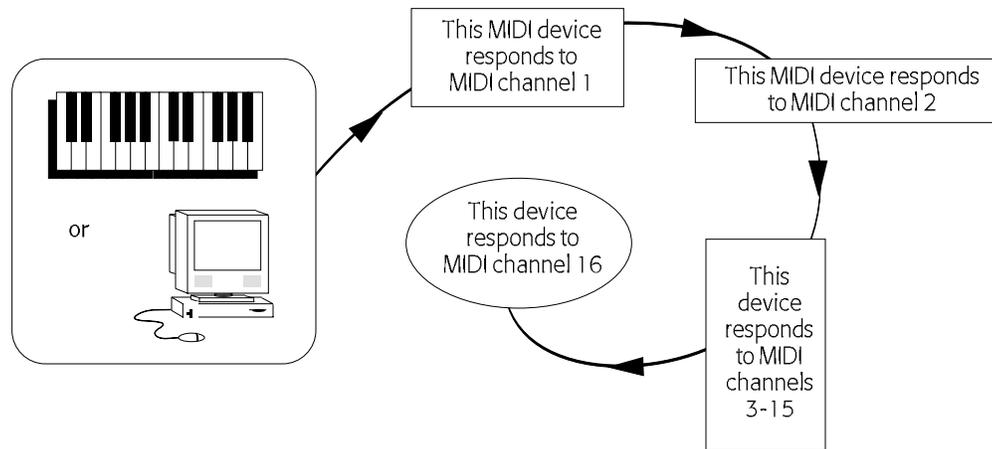
The MIDI cable itself can carry 16 independent channels of MIDI information that travel together through the wire. This means that you can have 16 separate MIDI conversations going on at once among instruments and/or computers connected together with MIDI cables.

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 such as a keyboard or your personal computer to control each instrument individually. Some instruments—such as the ASR-X Pro—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.



MIDI messages travel up and down all these channels, 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, whose sheets of hole-punched paper told the keyboard mechanism which keys to press down and when. It's not sound that's sent through MIDI cables; it's 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* (or “note-on”) 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. It's as simple as 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 velocity—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 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.

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.

List of MIDI Controller Names

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	SoundCntl10#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	

ASR-X Pro MIDI Implementation

The ASR-X Pro features an extensive MIDI (Musical Instrument Digital Interface) implementation. For most applications, you will find all the information you need regarding the ASR-X Pro's MIDI functions in this manual—additional information is supplied in the following MIDI Implementation Chart.

ASR-X Pro		MIDI Implementation Chart		Version: 1.00
Function...		Transmitted	Recognized	Remarks
Basic Channel	Default	1	1-16	
	Changed	1-16	1-16	
Mode	Default	POLY	MULTI	
	Messages	X	X	
	Altered	X	X	
Note Number	True voice	36-96	21-108	Note reception is filtered by Key Lo and Key High track parameters
Velocity	Note On	0	0	Note On velocity reception is filtered by VelocityRange Lo and VelocityRange Hi track parameters
	Note Off	0	0	Transmitted Note Off velocity is always 64
After Touch	Key	0	0	Sounds and sequencer only
	Channel	0	0	
Pitch Bend		X	0	supports held mode
Control Change		0-119	0-119	see "MIDI Controllers Reception Behavior" below
Program Change		0-127	0-127	select sounds from the currently selected bank
	True#	0-127	0-127	
System Exclusive		0	0	see ASR-X Pro SysEx Specification recognizes MIDI Tuning Dump Standard and Single-Note Tuning Change messages
System Common	Song Position	0	0	
	Song Select	X	X	
	Tune Request	X	X	
System Real Time	Clock	0	0	
	Commands	X	X	
Aux Messages	Local On/Off	X	X	
	All Notes Off	0	0	
	Active Sensing	X	X	
	System Reset	X	X	
Notes	Response to received Controllers varies depending on the nature of the ASR-X Pro parameter affected—see parameter descriptions for details.			

Mode 1: Omni On, Poly
Mode 3: Omni Off, Poly

Mode 2: Omni On, Mono
Mode 4: Omni Off, Mono

O : Yes
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	Sostenuto	
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
77	Resonance	Filter Resonance
91	Effects 1 Depth	FX Bus Select, described in Chapter 2.
98	Non-Reg. Param. Select LSB	Track parameter descriptions in Chapter 2 list track 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
119	Mute	values mute or un-mute track corresponding to MIDI channel: 127=mute track; 000=un-mute track; 064=remove track from group solo

Reset All Controllers (MIDI controller #121) Reception Behavior

When the system ResetControlRecv=Off, the reset all controllers message will be ignored.

When system ResetControlRecv=On, the following MIDI messages and parameters on all tracks 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=127	Controllers 066 to 069=000	

When Track ParamReset=Off:

Controllers 005, and 070 to 079 will be left unchanged.

When Track ParamReset=On:

Controllers 005, and 070 to 079 will be reset to the values listed above.

Note: Track MIDI reception filters do not affect reception of the Reset All Controllers message.

Track ParamReset Behavior

When the System/MIDI Track ParamReset parameter is set to “On,” selecting a new sound for a track causes certain parameters on the track to reset to default values. The following details the behavior of all of the track parameters in this regard.

Track parameter	Is parameter reset on sound selection?	Parameter's default value
Track Volume	no	n/a
Mix (Expression)	no	n/a
Vol/MixPolarity	no	n/a
Track Pan	no	n/a
FX Bus	see “AutoSelect FXBus “	n/a
Pitch Bend Up	yes	Prog
Pitch Bend Down	yes	Prog
Octave Shift	yes	0oct
Semitone Shift	yes	0st
Fine Tuning	yes	0cents
PitchTbl	yes	Prog
Glide Mode	yes	Prog
Glide Time	yes	Prog
Delay Offset	yes	0ms
SyncLFO&Noise	yes	Prog
Normal LFO Rates	yes	0
LFO Depth	yes	0
LFO Delay Time	yes	0
Amp Env Attack	yes	0
AmpEnv Decay	yes	0
AmpEnv Release	yes	0
Filter Cutoff	yes	0
Filter Resonance	yes	0
FiltEnv Attack	yes	0
FiltEnvDecay	yes	0
FiltEnvRelease	yes	0
Amp&Filt Env Vel	yes	0
Key Range Lo	no	n/a
Key Range Hi	no	n/a
VelocityRange Lo	no	n/a
VelocityRange Hi	no	n/a
VelocityMode	no	n/a
PressureMode	yes	Auto
ProgramChngeRecv	no	n/a
Bank Select Recv	no	n/a
Data Entry Recv	no	n/a
Pitch Bend Recv	no	n/a
Mod Wheel (1) Recv	no	n/a
FootPedal (4) Recv	no	n/a
Volume (7) Recv	no	n/a
Pan (10) Recv	no	n/a
Expressn (11) Recv	no	n/a
Sustain/SostRecv	no	n/a
SysCtrl1 Recv	no	n/a
SysCtrl2 Recv	no	n/a
SysCtrl3 Recv	no	n/a
SysCtrl4 Recv	no	n/a

Using RPNs and NRPNs to Edit Parameters

MIDI allows for a special category of controllers called RPNs (for “Registered Parameter Numbers”) and NRPNs (for “Non-Registered Parameter Numbers”). Many sound 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. If a parameter is displayed while being edited via MIDI, the display will reflect the changes you make.

RPN MIDI messages must adhere to a specific structure in order to be properly understood by receiving devices such as the ASR-X Pro. They must include the following components:

- A continuous controller status byte for the appropriate MIDI channel—this will be the MIDI channel of the selected track (see Chapter 2)
- 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 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 ASR-X Pro, beginning from 000, to locate the corresponding Data Entry value you’ll want to send to the ASR-X Pro.

NRPN MIDI messages must also adhere to a specific structure in order to be properly understood by receiving devices such as the ASR-X Pro. They must include the following components:

- A continuous controller status byte for the appropriate MIDI channel—this will be the MIDI channel of the selected track (see Chapter 2)
- 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 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 ASR-X Pro, beginning from 000, to locate the corresponding Data Entry value.

Registered Parameters

Registered parameters 0, 1 and 2 are received multi-timbrally by the ASR-X Pro. When received on a track’s MIDI channel, RPN 0 affects the track’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 track’s MIDI channel.

Registered parameters must be transmitted to the ASR-X Pro as a continuous controller status byte followed by three consecutive continuous controller messages: The registered parameter MSB and LSB values select the track parameter to be edited, and a Data Entry value invokes the parameter’s 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 track parameter setting

Registered Parameters

Number	Name	ASR-X Pro 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 ASR-X Pro, affecting track parameters when received on the track's MIDI channel.

Non-registered parameters must be transmitted to the ASR-X Pro as a continuous controller status byte followed by three consecutive continuous controller messages. The non-registered parameter MSB and LSB select the track parameter, and a data entry value invokes the track parameter's desired setting.

Controllers

Number	Name	Value
99	Non-Registered Parameter Select MSB (Most Significant Byte)	always 0
98	Non-Registered Parameter Select LSB (Least Significant Byte)	see track parameter descriptions in Chapter 2 for each parameter's Non-Registered parameter LSB value
6	Data Entry MSB	0-127, desired track parameter setting

List of RPNs and NRPNs

Track Parameter	Editing via MIDI
Expression	Responds to MIDI controller 011 and NRPN LSB 034.
FX Bus assignment (Insert, LightReverb, MediumReverb, WetReverb, Dry)	Responds to MIDI NRPN LSB 033.
Pitch Bend Up	Responds to MIDI NRPN LSB 022 (also responds to RPN LSB 000).
Pitch Bend Down	Responds to MIDI NRPN LSB 023 (also responds to RPN LSB 000).
Octave Shift (-4oct to +4oct)	Responds to MIDI NRPN LSB 011.
Semitone Shift	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 Offset (positive-only)	Responds to MIDI NRPN LSB 024.
SyncLFO&Noise (system tempo time division)	Responds to MIDI NRPN LSB 025.
Normal LFO Rates	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.
Filter Cutoff (lo-pass & hi-pass)	Responds to MIDI controller 074 and NRPN LSB 012.
Filter Resonance	Responds to MIDI controller 077 and NRPN LSB 013.
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.
VelocityMode	Responds to MIDI NRPN LSB 035.
Pressure Mode	Responds to MIDI NRPN LSB 030.
Mute button	Responds to MIDI NRPN LSB 036 (0=normal muted, 1=unmuted, 2=solo muted, 3=solo, 4-127=solo).

Pitch Tables and the MIDI Tuning Standard Format

Pitch tables created using an external computer can be downloaded into the ASR-X Pro's RAM pitch table using the MIDI Tuning Standard format. The ASR-X Pro can accommodate one user-defined RAM pitch table in addition to the many alternate pitch tables stored in ROM. The ASR-X Pro's pitch tables can be accessed by any of its 16 tracks through the setting of the track's PitchTbl parameter, or via NRPN LSB 021 values sent on the track'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 ASR-X Pro's response to the Single-Note Tuning Change message has been extended to allow users to apply a single tuning change to the ASR-X Pro'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	Just Intonation Network
c/o Tom White, President	535 Stevenson Street
P.O. Box 3173	San Francisco, CA 94103
La Habra, CA 90632-3173	Phone: (415) 824-5325
Phone/FAX: (310) 947-4569	FAX: (415) 864-8726
email: mma@earthlink.net	WWW: http://www.dnai.com/~jinetwk

List of ROM System Pitch Tables

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. (There are many variations of these tunings, almost as many as there are gamelan ensembles. These tunings 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 equal-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	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 equal-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	Derived mathematically by Wendy Carlos in the search for scales with the maximum purity of primary intervals. This 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.
CarlosBeta	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 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 lowest notes at the top. Hours of fun.
Bagpipe	This is the tuning of a traditional Scottish bagpipe.
ShonaMbira1	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	An octave-repeating stretched scale invented by John Pierce which is derived from a pure twelfth divided into thirteen steps.
WS1	The WS scales are 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	Each note has been “tweaked” by + or - up to 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 for more information about RAM pitch tables.

Index

- .wav files, 91
- 1-AIF WAVE, 91
- 1-SEQUENCE, 89, 91
- 1-SOUND, 89, 91
- 1-WAV WAVE, 91
- 8-VoiceChorus. *See* User's Guide
- A**
- AC power, 2
- Access disks utils?, 98
- Accessories
 - in box, 1
 - optional, 6
- Add, 61
- Adding memory, 104
- AIF, 49, 89
- AKAI S-1000 sounds
 - loading, 91
 - translation, 91
- AKAISND, 91
- All Notes Off button, 6
- All Notes Off, enabling reception, 97
- All Sounds Off, enabling reception, 97
- ALL-BYPASS, 46
- Allocating memory, 6
- ALL-SEQS, 89, 91
- ALL-SESSION, 89, 91
 - automatic loading of, 89
- ALL-SND, 8
- ALL-SOUNDS, 89, 91
- als, 89
- Alt Bus, 34, 42
- Alter system pitch?, 95
- Amp Env Attack, 16
- Amp Env Decay, 16
- Amp Env Release, 16
- Amp&Filt Env Vel, 17
- Analog synth sounds. *See* Stomper
- Append sequence?, 75
- Architecture overview, 4–6
- Arrow, downward-pointing, 87
- ASR-10 and ASR-88 sounds
 - loading, 91
 - translation, 91
- ASR-SND, 91
- ASR-X Pro User's Guide, 1
- Assignable controllers, setting up, 97
- Attack Level (1), 31
- Attack Time (1), 31
- Audio Inputs
 - using, 50
- Audio Outputs, 1
- Auto-locating, 58
- Automatic loading of settings, 89
- Auto-punching, 65
- AutoSelect FXBus, 94
- Auto-Step, 63
- Auto-Zero Cross, 95
- Aux Out jacks, 1
- Auxiliary outs
 - overview, 42
 - routing sounds to
 - from pads, 27
 - from tracks, 13
- AuxOut1-4, 13, 27, 42
- B**
- Bank Select Recv, 18
- Bank&ProgChgRecv, 97
- Banks, defined, 8
- Bypassing effects, 46
- BYPD, 46
- C**
- Categories. *See* SoundFinder
- CD-ROM drive, using. *See* SCSI
- Chaining sequences. *See* Pattern mode
- Change sound type?, 102
- Chatter Box. *See* User's Guide
- Chorus→Rev. *See* User's Guide
- Clearing RAM, 101
- Click, 66
 - adding an effect, 66
 - and time signatures, 64
 - choosing its sound, 66
 - saving settings to FLASH, 102
 - sending it to the Aux Outs, 66
 - setting its beat, 66
 - setting its loudness, 66
 - setting its panning, 66
 - turning on and off, 66
- Click Timing, 66
- ClockSource, 97
- Comp→Dist→DDL. *See* User's Guide
- Connecting SCSI cables, 85
- Controllers list, 118
- Controlling an external sequencer, 97
- Copy [disk name] disk?. *See*
- Copy sound?, 38
- Copy this sequence?, 75
- Copy track?, 72
- Copying a SCSI disk. *See*
- Copying tracks
 - (Destination) Seq, 74
 - Destination Track, 74
 - DestTime, 74
 - overview, 72
 - Paste
 - Append, 73
 - Merge, 73
 - Replace, 73
 - Scope, 73
- Countoff
 - choosing its sound, 66
 - setting its length, 67
 - setting when it occurs, 66
- Countoff, 66
- Countoff Bars, 67
- Countoff Sound, 66
- Create a new song?, 77
- Create new sequence?, 60
- Creating a New Sequence, 60
- CTRL1, CTRL2, CTRL3 and CTRL4, 97
- CTRL3 and Patch Select buttons, 98
- CUSTOM category
 - quick selection, 9
- Cut ModSrc, 33
- Cutoff ModAmt, 33
- D**
- Data Entry Recv, 18
- DDL→Chorus. *See* User's Guide
- DDL→EQ. *See* User's Guide
- DDL→Flanger. *See* User's Guide
- DDL→Phaser. *See* User's Guide
- Decay Time (4), 31
- Defragmenting. *See* Optimizing a SCSI disk
- Delay Offset, 15
- Delta quantizing, 69–70
- Demo, playing, 4
- DEMO-SND, 102
- Destination Track, 74
- DesfTime, 74, 75
- Device ID. *See* SCSI device IDs
- Directories. *See* Folders
- Directory Sorted, 101
- Disk storage
 - copying SCSI disks, 98
 - de-fragmenting SCSI disks, 99
 - erasing disk files, 100
 - Floppy
 - overview, 81
 - formatting disks, 98
 - free space on disk, 101
 - loading files
 - computer files with long names, 92
 - procedure, 90
 - selecting a file, 92
 - selecting a memory location, 92
 - types of files, 90
- overview of options, 81
- renaming disk files, 100
- resetting SCSI bus, 99
- saving files
 - naming files, 90
 - procedure, 88
 - types of files, 89
- SCSI
 - bus
 - defined, 82
 - resetting, 99
 - connecting cables, 85
 - device IDs
 - explained, 83
 - setting the ASR-X Pro's, 95
 - folders
 - creating new, 88
 - default, 85
 - explained, 85
 - invisible, 85
 - navigating, 87
 - overview, 82–85
 - powering up, 85
 - preparing for, 85
 - scanning SCSI bus, 87
 - termination
 - explained, 84
 - setting the ASR-X Pro's, 95
 - troubleshooting, 86
 - selecting device, 86–87
 - write-protecting SCSI disks, 100
- Disk utilities
 - checking free space, 101
 - copying SCSI disks, 98
 - de-fragmenting SCSI disks, 99
 - erasing disk files, 100
 - formatting disks, 98
 - renaming disk files, 100
 - resetting SCSI bus, 99
 - write-protecting a SCSI disk, 100
- Dist→Auto Wah. *See* User's Guide
- Dist→Chorus. *See* User's Guide
- Dist→DDL→Trem. *See* User's Guide
- Dist→Flanger. *See* User's Guide
- Dist→Phaser. *See* User's Guide
- Dist→VCF→DDL. *See* User's Guide
- Distortion curves in effects, 47
- Down arrow symbol, 87
- DpthModSrc, 34
- Drum mapping, 23, 113
- Dry, 13
- Dry, defined, 41
- E**
- Edit Click/Countoff?, 65
- Edit global reverb?, 43
- Edit insert effect?, 43
- Edit MIDI settings?, 96
- Editing
 - any parameter, 3
 - any value, 3
- EDM sounds, loading, 91
- efa, 91
- efe, 91
- Effect bus. *See* FX Bus
- Effects
 - adding to pad sounds
 - changing busses, 27
 - adding to track sounds
 - changing busses
 - from front panel, 13
 - via MIDI, 13
 - bypassing, 46
 - distortion curves, 47
 - editing, 43
 - LFO waveshapes, 47
 - overview, 41–42
 - global reverb, defined, 42
 - insert control track, 41
 - insert effects

- defined, 41
 - list, 41
- real-time modulation, 44
 - modulators list, 44
- selecting, 43
- setting the insert control track, 46
- Effects Edit button, 43, 46
- Effects Select button, 43
- Electro Static Discharge, 103
- ENSONIQ Drum Map, 113
- ENSONIQ Percussion Map, 113
- ENSONIQDISK, 87
- Enter button, 3
- Enter MemoryManager?, 101
- Enter pattern mode?, 76
- Env1PitchModAmt, 31
- Env2CutoffModAmt, 33
- Envelope Mode, 31
- EPS and EPS 16 PLUS sounds
 - loading, 91
 - translation, 91
- EQ→Chorus→DDL. *See* User's Guide
- EQ→Comp→Gate. *See* User's Guide
- EQ→Reverb. *See* User's Guide
- Erase all sequences?, 76
- Erase disk files?, 100
- Erase memory banks?, 101
- Erase sound?, 101
- Erase this sequence?, 76
- Erase track?, 74
- Erase trk to end?, 74
- Erasing ASR-X Pro RAM, 101
- Erasing tracks
 - a MIDI controller, 74
 - a note range, 74
 - all recorded data, 74
 - assorted data, 74
 - only within a region, 74
- ESD, 103
- ESP2, 41
- ESSENTIALS, 89
- Essentials buttons
 - assigning favorite sounds to, 9
 - default sound assignments, 9
 - in sound selection, 9
 - saving sound assignments to disk, 89
 - to FLASH, 102
- Exit button, 3
- EXP Expansion Boards, 6
- Exp Name, 102
- Expansion options, 103
- Expressn(11) Recv, 18
- EXP-SND, 8
- F**
- Fast-forwarding in a sequence, 58
- fav, 89
- FDX-100, 1
- Filt Env Attack, 16
- Filt Env Decay, 16
- Filt Env Release, 17
- Filter Cutoff, 16, 33
- Filter Resonance, 16
- Final Mix mode, 63
- FinderPref, 35
- Fine Tuning (global), 96
- Fine Tuning (sound), 30
- Fine Tuning (track), 14
- Flanger →Rev. *See* User's Guide
- FLASH
 - saving settings to, 102
- FLASH, defined, 6
- Floppy disk
 - selecting for use, 86
- Floppy disks
 - advantages/disadvantages, 81
 - formatting, 98
 - inserting in drive, 82
 - removing from drive, 82
 - write-protection, 81
- Folders
 - creating new
 - using ASR-X Pro, 88
 - using computer, 88
 - explained, 85
 - invisible folders, 85
 - navigation, 87
 - where disk files are saved, 89
- Foot switch
 - assigning functions, 93
 - connecting, 2
- FootPedal(4) Recv, 18
- Formant Morph. *See* User's Guide
- Format disk?. *See* Free, 101
- Free, 101
- Free space
 - in RAM, 101
 - on disk, 101
- From= parameter, 65
- FtSw L and FtSw R, 93
- FX Bus
 - defined, 42
 - pad parameter, 27
 - track parameter, 13
- FX Bus (click), 66
- G**
- Gate Percentage, 63
- Gate Time, 62
- Gated Reverb. *See* User's Guide
- Glide Mode, 15, 30
 - changing via MIDI, 15
- Glide Time, 15, 30
- Global pitch bend, 95
- Global pitch table, 96
- Global reverb
 - defined, 42
 - editing, 43
 - Light, Medium, Wet, 42
 - list, 42
 - selecting, 43
- Global Reverb=, 43
- GM Kit Map, 114
- Group solo, 19
- Guitar Amp. *See* User's Guide
- H**
- Hall Reverb. *See* User's Guide
- Hard disk. *See* SCSI
- Held pitch bend, 96
- Hex wrench, 103
- I**
- In Bus, 51
- Index ModAmt, 29
- IndxModSrc, 29
- Input Level knob, 50
- Insert, 13
- Insert control track
 - defined, 41
 - setting, 46
- Insert effect parameters. *See* User's Guide
- Insert Effect=, 43
- Insert effects
 - adding to pad sounds, 27
 - adding to track sounds, 13
 - defined, 41
 - editing, 43
 - in song mode, 77
 - list, 41
 - real-time modulation, 44
 - modulators list, 44
 - selecting, 43
- Insert FX Bus
 - GlobalReverb Amt, 44
 - Input Mix, 44
- Insert: Mod Dest, 45
- Insert: Mod Dest Min and Max, 45
- Insert: Mod Src, 45
- Insert: Mod Src Min and Max, 45
- Installing
 - additional sample memory, 104–6
 - an EXP wave expansion board, 106–8
- Installing expansion options, 103
- Invert sample data?, 37
- Invisible folders. *See* Folders
- K**
- Key Group Assign, 35
- Key Range Hi, 17
- Key Range Lo, 17
- Keybd TimeScaling, 32
- Keybd Track, 33
- KeybdTrack, 30
- Kit Mapper, 23
- Knobs
 - Parameter and Value, 3
 - Sound Type and Sound Name, 3
- L**
- Large Plate. *See* User's Guide
- Large Room. *See* User's Guide
- Layers, in sounds, 22
- LEDs
 - flashing
 - Exit/No and Enter/Yes, 3
 - Mute/Solo, 19
 - Play and Record buttons, 59
 - Sampling Level, 50
- LFO Delay Time, 16, 34
- LFO Depth, 16, 34
- LFO Key Restart, 35
- LFO Pitch ModAmt, 30
- LFO Rate, 34
- LFO Rate ModAmt, 34
- LFO Shape, 34
- LFO Start Phase, 34
- LFO Sync, 35
- LFODepth ModAmt, 34
- LFOs in effects, 47
- LightReverb, 13
- LightReverb FX Bus, 44
- Lights. *See* LEDs
- Link, 32
- Load button, 90
- Load from disk?, 90
- Loading .wav files, 91
- Local Off Channel, 96
- Locating within a sequence, 58
- Location in sequence, 59
- Loop End, 29
- Loop Playback, 64
- Loop Start, 29
- Looping waves, 29, 95
- Low Key/High Key, 71
- M**
- Main Out jacks, 1
- Make a RAM kit from...?, 24
- Making a new sequence, 60
- Maximum number of notes, 6
- MediumReverb, 13
- MediumReverb FX Bus, 44
- Memory. *See* Sample memory
- Memory Manager, 101
 - Change sound type?, 102
 - Erase memory banks?, 101
 - Erase sound?, 101
 - EXP Name, 102
 - Show free memory?, 101
- Method, 69
- Metronome. *See* Click
- mfb, 89
- Mic/Line switch, 50
- mid, 89
- Middle C, 17
- MIDI
 - All Notes Off, 97
 - All Sounds Off, 97
 - ASR-X Pro note range, 21
 - Bank Selects
 - numbers, 8, 10
 - changing FX bus, 13
 - changing Glide Mode, 15
 - channels, described, 116
 - controllers
 - list, 118
 - reception behavior, 120

- editing track parameters, 12
 - enabling track reception
 - of Bank Selects, 18
 - of CTRL1-4 messages, 18
 - of Data Entry messages, 18
 - of Expression messages, 18
 - of Foot Pedal messages, 18
 - of Mod Wheel messages, 18
 - of Pan messages, 18
 - of Pitch Bend messages, 18
 - of Program Changes, 18
 - of Sustain/Sostenuto messages, 18
 - of Volume messages, 18
 - enabling transmission of data, 13
 - hardware, 116
 - implementation, 119
 - implementation chart, 119
 - jacks, 2
 - Local-off operation, 96
 - muting tracks, 19
 - note names/numbers, 21
 - playing sounds from, 10
 - Program Changes
 - numbers, 8, 10
 - recording to external sequencer, 96
 - Reset All Controllers, 97, 120
 - selecting sounds, 10
 - Song Position Pointer
 - receiving and transmitting, 97
 - synchronizing to external sequencer, 97
 - Tuning Standard
 - further info, 124
 - using, 124
 - using RPNs and NRPNs, 122
 - MIDI-OUT sounds
 - programming and using, 10
 - Mix (Expression), 12
 - Mixdown, 63
 - Mod Wheel(1) Recv, 18
 - Mode, 32
 - Modulators
 - sound modulators list, 27
 - Mono, using the ASR-X Pro in, 1
 - Move Note Offs, 72
 - Multiple ASR-X Pros, using, 97
 - Multi-Tap DDL. *See* User's Guide
 - Multi-timbral, defined, 116
 - mute, 19
 - Mute/Solo button, 19
 - Muting a track
 - using Mute/Solo button, 19
 - via MIDI, 19
- N**
- No button, 3
 - Noise Sync, 35
 - NoiseSourceRate, 35
 - NonLinReverb1. *See* User's Guide
 - NonLinReverb2. *See* User's Guide
 - Non-Registered Parameters. *See* NRPNs
 - Normal LFO Rates, 15
 - Normalize gain?, 36
 - Normalizing, defined, 51
 - NRPNs
 - defined, 122
 - list, 123
 - using, 123
- O**
- Octave Shift, 14
 - Octave Transpose buttons
 - using, 23
 - what they do, 23
 - when sending to pads, 54
 - Offset, defined, 11
 - On switch, 2
 - Opening the ASR-X Pro, 103
 - Operating system
 - defined, 108
 - upgrading, 108-9
 - What version am I using?, 108
 - What's the most recent version?, 108
 - Optimize [disk name] disk?, 99
 - Optimizing a SCSI disk, 99
 - OS. *See* Operating system
 - Outputs, 1
 - Override, defined, 11
- P**
- Pad Edit button, 25
 - Pad Pan, 26
 - Pad Process button, 36
 - Pad Sound button, 25
 - Pad Volume, 26
 - Pad Xpose, 23
 - Pads
 - editing, 24
 - PAD parameters, 26
 - editing pad sounds, 27
 - AMP parameters, 33
 - ENV1 parameters, 31
 - ENV2 parameters, 33
 - ENV3 parameters, 34
 - FILT parameters, 32
 - FLT1 & FLT2 parameters, 33
 - MISC parameters, 35
 - MOD parameters, 34
 - modulators, 27
 - PITCH parameters, 30
 - WAVE parameters, 29
 - processing waves
 - copying waves, 38
 - inverting data, 37
 - normalizing, 36
 - overview, 36
 - reducing sample bits, 37
 - time-scaling waves, 38
 - truncating, 38
 - volume scaling, 36
 - selecting sounds, 25
 - what pads play, 21
 - a whole kit at once, 23
 - resetting, 23
 - Pads Play Local, 96
 - Pan (click), 66
 - Pan ModAmt, 33
 - Pan ModSrc, 33
 - Pan(10) Recv, 18
 - Parameter knob, 3
 - Parameter, defined, 3
 - Parameters
 - editing track parameters, 11
 - Parametric EQ. *See* User's Guide
 - Paste, 73
 - Patch Select buttons
 - and CTRL3, 98
 - and MIDI, 24
 - as modulation devices, 98
 - modes
 - Live or Held, 93
 - what they do, 23
 - Patch Selects, 93
 - Pattern mode. *See* Pattern mode
 - Patterns. *See* Pattern mode
 - Pedals. *See* Foot switch
 - Percussion mapping, 113
 - Phaser →Rev. *See* User's Guide
 - Phones jack, 1
 - Pitch Bend Down, 30
 - Pitch Bend Recv, 18
 - Pitch Bend Up, 30
 - Pitch Bend Up, Pitch Bend Down (global), 95
 - Pitch Bend Up, Pitch Bend Down (track), 14
 - Pitch bend wheel, described, 95
 - Pitch Detuner. *See* User's Guide
 - Pitch ModAmt, 30
 - Pitch ModRange, 30
 - Pitch tables
 - creating, 124
 - list, 124
 - PitchBendMode, 30, 96
 - PitchTbl (global), 96
 - PitchTbl (sound), 30
 - PitchTbl (track), 14
 - Play/Top button, 58
 - Playing a sequence, 58
 - Playing the ASR-X Pro Demo, 4
 - PlayMode, 29
 - Polyphony, 6
 - Powering up ASR-X Pro, 2
 - when using SCSI, 85
 - ppqn, 59
 - Pre-quantization, 65
 - PressureMode, 17
 - Pre-Trigger, 52
 - PROC, 36
 - Prog, 12, 13, 27, 42
 - ProgramChngeRecv, 18
 - Protecting a SCSI disk, 100
 - PtchModSrc, 30
 - Punching in
 - manually, 58
 - with a foot switch, 94
- Q**
- Q, 32
 - Quantize To, 68
 - Quantize track?, 67
 - QuantizeNoteOffs, 72
 - Quantizing tracks
 - adding randomness, 71
 - adding swing, 70
 - as you record, 65
 - in a specific key range, 71
 - method
 - Normal or Delta, 69
 - moving the ends of notes, 72
 - overview, 67
 - setting the quantization value, 68
 - setting the strength, 70
 - setting which notes are quantized, 71
 - shifting the whole track, 71
 - templates
 - described, 68
 - list of templates, 115
 - saving your own, 72
 - to FLASH, 102
 - the lengths of notes, 72
- R**
- RAM kit
 - defined, 24
 - how it's named, 25
 - where it goes, 24
 - RAM pitch table, 124
 - RAM, defined, 5
 - Ramp Level (2), 31
 - Ramp Level (3), 31
 - Ramp Time (2), 31
 - Ramp Time (3), 31
 - RAM-SND, 8
 - Random, 71
 - Rate ModSrc, 34
 - Real-time modulation, 44
 - Rec Mode (sampling/resampling), 51
 - Record Mode, 61
 - Record Time, 51
 - Record/Scoop button, 58
 - Recording. *See* Sequencing
 - RecordQuantize, 65
 - Reduce sample bits?, 37
 - Region FromPoint, 65
 - Region ToPoint, 65
 - Regions
 - defined, 64
 - end
 - To=, 65
 - ToPoint, 65
 - start
 - From=, 65
 - FromPoint, 65
 - Registered Parameters. *See* RPNs
 - Release Time (5), 32
 - Removable drive. *See* SCSI
 - Rename disk files?, 100
 - Rename sequence?, 75
 - Rename Sound?, 35, 101
 - Renaming a sound, 101
 - Replace, 61

- Resampling. *See* Sampling/Resampling
 - Resampling Setup button, 50
 - Reset All Controllers
 - enabling reception, 97
 - reception behavior, 120
 - Reset SCSI bus?, 100
 - ResetControlRecv, 97
 - Resolution of sequencer, 59
 - Resonance (Q), 32
 - ResVCF→DDL. *See* User's Guide
 - Retro synth sounds. *See* Stomper
 - Rev→Chorus. *See* User's Guide
 - Rev→Flanger. *See* User's Guide
 - Rev→Phaser. *See* User's Guide
 - Reverb. *See* Global reverb
 - adding to pad sound, 27
 - adding to track sound, 13
 - Reverb Return Level, 44
 - Rewinding to the beginning of a sequence, 58
 - Roland S-770 sounds
 - loading, 91
 - translation, 91
 - Roll Breakpoint, 33
 - Roll Slope, 33
 - Rolloff Mode, 33
 - ROM Pitch Tables list, 124
 - ROM sounds list. *See* User's Guide
 - ROM waves list, 111
 - ROM, defined, 5
 - ROM-SND, 8
 - RotarySpeaker. *See* User's Guide
 - RPNs
 - defined, 122
 - using, 122
- S**
- Sample memory
 - as shipped from factory, 104
 - expansion options for the ASR-X Pro, 104
 - Sample Start, 29
 - Sample, defined, 49
 - Samples. *See* Waves
 - Sampling In Progress, 53
 - Sampling Level LEDs, 50
 - Sampling/Resampling
 - available sampling time, 104
 - building your own kit, 54
 - how sounds are named, 54
 - making a sample, 53
 - overview
 - Audio Inputs, 50
 - audio sources, 49
 - resampling, defined, 49
 - sampling, defined, 49
 - Scratch Pad, 49
 - wave, defined, 49
 - sending to pads
 - explained, 54–55
 - process, 53–54
 - setting up, 50–52
 - automatic normalization, 51
 - saving setup to FLASH, 102
 - selecting a source, 50
 - selecting an effect bus, 51
 - setting sampling time, 51
 - setting the pre-trigger time, 52
 - setting the trigger level, 52
 - setting the trigger mode, 52
 - stereo or mono?, 51
 - where sounds go, 54
 - Save button, 89
 - Save quantize as?, 72
 - Save these settings?, 102
 - Save to disk?, 89
 - Saving your own quantizing template, 72
 - sbx, 89
 - Scale loudness?, 36
 - Scale time?, 38
 - Scan SCSI devices?, 87
 - Scoop, 58
 - Scope, 73
 - Scratch Pad
 - described, 49
 - playing, 53
 - saving contents to disk, 90
 - when it's erased, 54
 - SCSI
 - advantages/disadvantages, 81
 - bus
 - explained, 82
 - not functioning, 99
 - terminating correctly, 84, 95
 - unscrambling, 99
 - using proper device IDs, 83, 95
 - cables
 - connecting, 85
 - device Ids
 - explained, 83
 - setting the ASR-X Pro's, 95
 - disk
 - selecting for use, 86
 - scanning SCSI bus, 87
 - disks
 - formatting, 98
 - folders
 - creating new
 - using ASR-X Pro, 88
 - using computer, 88
 - explained, 85
 - default, 85
 - invisible, 85
 - navigating, 87
 - powering up system, 85
 - preparing for, 85
 - termination
 - explained. *See* setting the ASR-X Pro's. *See*
 - troubleshooting, 86
 - utilities
 - disk copying, 98
 - disk formatting, 98
 - disk optimization, 99
 - re-setting SCSI bus, 99
 - write-Protection, 100
 - What is SCSI?, 82
 - SCSI Device ID, 95
 - SCSI II. *See* SCSI
 - SCSI Termination, 95
 - Select Device?, 87
 - Select Track buttons, 7
 - Selecting Sequences, 60
 - Semitone Shift, 14
 - SemitoneTuning, 30
 - Send to Pads button, 54
 - Sending to pads, 53–55
 - Seq parameter, 74
 - Sequence banks, 89, 91
 - Sequence Edit button, 60
 - Sequence length, 64
 - Sequence names, 75
 - Sequence Process button, 67
 - Sequence Select button, 59
 - Sequencing
 - chaining sequences, 76
 - changing time signatures, 64
 - creating a new sequence, 60
 - creating songs, 77–78
 - looping a sequence, 64
 - metronome click and countoff, 65–67
 - operating the transport controls, 58
 - overview, 57–58
 - playing part of a sequence, 65
 - processing
 - part of a track, 65
 - processing sequences
 - appending, 75
 - copying, 75
 - erasing all sequences, 76
 - erasing current sequence, 76
 - overview, 67
 - renaming, 75
 - processing tracks
 - copying, 72–74
 - erasing, 74
 - overview, 67
 - quantizing, 67–72
 - undoing, 67
 - quantizing as you record, 65
 - recording fade-outs, etc., 63
 - recording from MIDI, 79
 - undoing tracks, 79
 - recording modes, 61
 - recording tempo changes, 63
 - recording track parameter changes, 63
 - resolution, 59
 - selecting a sequence, 60
 - setting tempo
 - by tapping, 60
 - with parameter, 60
 - step recording, 61
 - using regions, 64
 - Sequencing overview
 - What's a sequence?, 58
 - What's a sequencer?, 57
 - Set system prefs?, 93
 - Shift, 71
 - Show free memory?, 101
 - Shrinking samples. *See* Scale time?
 - SIMM chips
 - installation procedure, 104–6
 - overview, 105
 - requirements, 105
 - Small Plate. *See* User's Guide
 - Small Room. *See* User's Guide
 - SMDI, 86
 - SMF, 89
 - SND, 91
 - solo, 19
 - Soloing a track
 - using Mute/Solo button, 19
 - Song mode, 77
 - creating a song, 77
 - editing a song, 77–78
 - exiting, 77
 - playing a song, 77
 - Song Position Pointer
 - transmission and reception, 97
 - sou, 89
 - Sound Name knob, 3
 - Sound Type knob, 3
 - SoundFinder, 8, 35
 - changing a sound's type; sound is assigned. Press the Yes button is response to, 102
 - list of sound types, 112
 - SoundFinder parameter, 102
 - Sounds
 - changing SoundFinder type, 102
 - USER-SND and DEMO-SND, 102
 - erasing all sounds, 101
 - erasing from a pad
 - shortcut, 25
 - erasing from a track
 - shortcut, 11
 - using the Memory Manager, 101
 - listing of ROM sounds. *See* User's Guide
 - renaming a sound, 101
 - selecting
 - for a pad, 25
 - for a track
 - via MIDI, 10
 - selecting for a track
 - from front panel, 8–9
 - structures
 - illustration, 22
 - kit sounds, defined, 22
 - standard sounds, defined, 22
 - types, 8
 - list, 112
 - Source, 50
 - spb, 89
 - Spinner→Rev. *See* User's Guide
 - ssx, 89
 - Standard MIDI File, 89
 - Standard sounds, 22
 - Start demo playback?, 4
 - Start/Loop, 29
 - Start/Stop button, 53

- StartToEndIndex, 29
- Static warning, 103
- Step recording, 61
 - chords, 63
 - overview, 61
- Step Size, 62
- Stereo
 - panning a pad sound, 26
 - panning a track sound, 13
- Stereo Chorus. *See* User's Guide
- Stomp!, 39
- Stomper, 39–40
- Stop/Locate button, 58
- Stopping a sequence, 58
- Storage device selection, 86
- Strength, 70
- Stretching samples. *See* Scale time?
- Sustain Level (4), 32
- Sustain Pedal, 35
- Sustain/SostRecv, 18
- SW-10 foot switch, 6
- SW-2 foot switch, 6
- SW-6 foot switch, 6
- Swing, 70
- SyEx Device ID, 97
- Synchronizing
 - effects, 97
 - LFOs and noise generators, 97
 - to external sequencer, 97
- SyncLFO&Noise, 15
- Synthesize sound?, 39
- Synthesize Stomper sound?, 39
- SysCTRL1-4 Recv, 18
- SysCtrls
 - setup, 97
- SyEx data on SMF tracks, 89
- System pitch bend, 95
- System pitch table, 96
- System/MIDI button, 92
- System/MIDI parameters
 - overview, 92
- SYSTEMSETUP, 89, 91
 - automatic loading of, 89
- T**
- Template, 68
- Templates list, 115
- Termination. *See* SCSI Termination
- Threshold, defined, 52
- Time, 62
- Time compression/stretching. *See* Scale time?
- Time Signature, 64
- Timing correction. *See* Quantizing tracks
- TK symbol, 7
- To= parameter, 65
- Touch Curve, 93
- Track Edit/Mix/FX Bus button, 11
- Track Mix mode, 63
- Track Pan, 13
- Track ParamReset, 95
- Track ParamReset Behavior, 121
- Track Sound button, 7
- Track Undo, 67
- Track Volume, 12
- TrackBreakpoint, 33
- TrackMIDIOut, 13
- Tracks
 - introduction, 7
 - parameters
 - editing, 11
 - resetting, 8
 - selecting, 7
- Tracks
 - and Track Param Reset, 121
 - and Track ParamReset, 95
 - parameters
 - recording changes, 63
 - resetting, 121
 - selecting sounds, 8–11
- Transfers via SMDI, 86
- Transport buttons, 58
- Trig Mode, 52
- Trigger, 52
- Truncate length?, 38
- Tunable Spkr. *See* User's Guide
- Tuning Shift, 27
- Tuning Tables
 - creating, 124
- Turning click on or off, 66
- Turning on ASR-X Pro, 2
- U**
- Undo track ?, 67
- USER TEMP, 72
- USER-SND, 102
 - quick selection, 9
- Using RPNs, NRPNs to Edit Parameters, 122
- V**
- Value knob, 3
- Value, defined, 3
- Vel Curve, 32
- Vel Levels ModAmt, 32
- VelAtckTimeModAmt, 32
- Velocity Mode, 17
- VelocityRange Hi, 17
- VelocityRange Lo, 17
- VelRelTimModAmt, 32
- Voice Mode, 30
- Vol ModSrc, 33
- Vol/MixPolarity, 13
- Volume, 2
 - of a pad, 26
 - of a track, 12
- Volume (click), 66
- Volume knob, 2
- Volume ModAmt, 33
- Volume(7) Recv, 18
- W**
- Waiting For Trigger., 53
- wav files, 91
- Wave expansion board
 - installation procedure, 106–8
 - name, 102
- Waves
 - copying, 38
 - defined, 49
 - inverting, 37
 - list of built-in, 111
 - normalizing
 - automatically, 51
 - manually, 36
 - playing a wave on all pads, 55
 - processing, 36–39
 - reducing sample bits, 37
 - scaling loudness, 36
 - time-scaling, 38
 - truncating, 38
- WetReverb, 13
- WetReverb FX Bus, 44
- What can be sampled?, 49
- What Is MIDI?, 115
- Where did my track settings go?, 8
- Why do I only hear a few drum sounds?, 23
- Why don't the pads do anything?, 96
- Why is my edit doing nothing?, 12
- Why won't my SCSI drive work?, 86
- Window Minimum and Maximum, 71
- World Wide Web, 1
- Wrench, 103
- Writable disks, explained, 82
- Write-Protect, 100
- X**
- X-8 output expander, 6
- X-Audio audio CDs, 6
- XMit MIDI Clocks, 97
- Y**
- Yes button, 3



LEADING THE WORLD IN SOUND INNOVATION