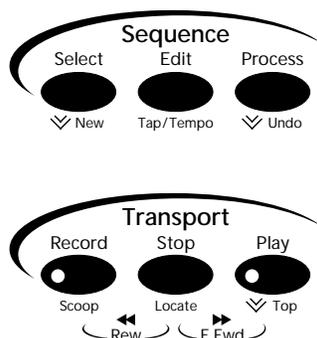


6 Sequencing

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.

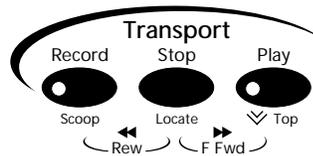
Note: The entire structure of the ASR-X Pro is based on the 16 tracks of the currently active sequence (see Chapter 2 to learn about tracks, including how to select tracks, how to assign sounds to tracks and how to edit them).

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."

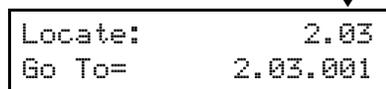
The currently selected track Special information The bar and beat of the current location in the sequence



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.

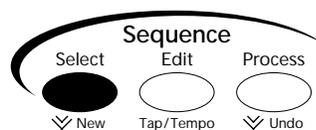
The current location of the sequence



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

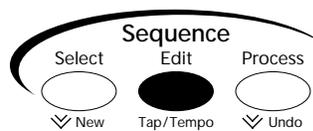
```

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:

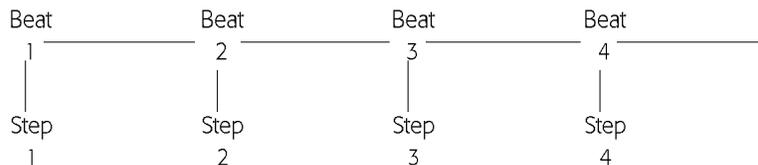
- **Replace**—This is the most basic recording mode, where newly recorded material replaces anything that was previously recorded on the selected track. In Replace mode, the length of a sequence is defined by its longest track.
- **Add**—In Add mode, newly recorded material is combined with anything 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*.

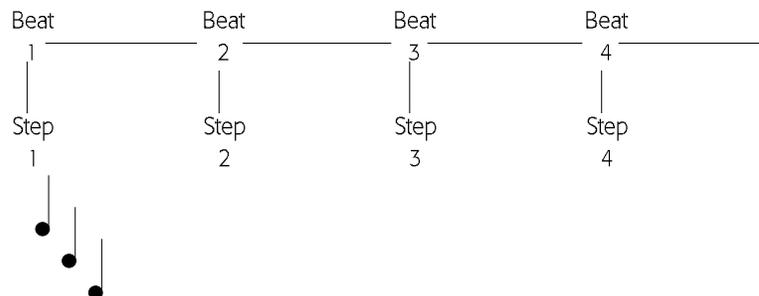
If, for example, a 4/4 track is divided into 1/4 note steps...

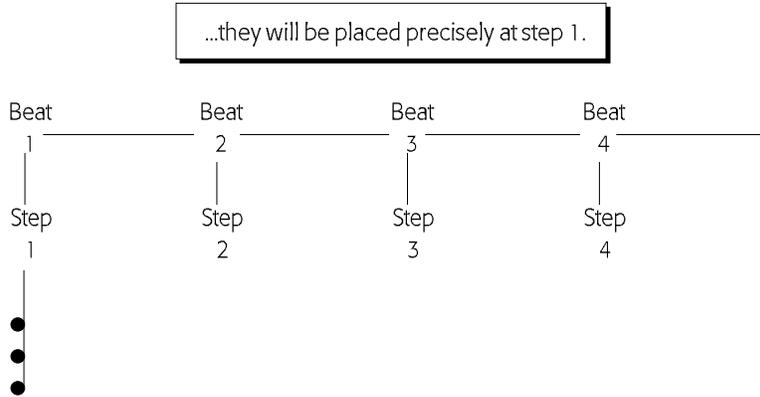


...there will be four steps in each measure.

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...

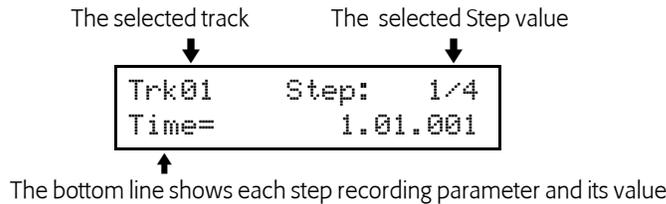




The sequence is then advanced, step-by-step, through the track, as you place the desired notes, chords or sustain/sostenuto pedal presses where you want them. Notes are recorded at the velocity with which they're played on the keyboard. By paying attention to the velocities at which you play your notes,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

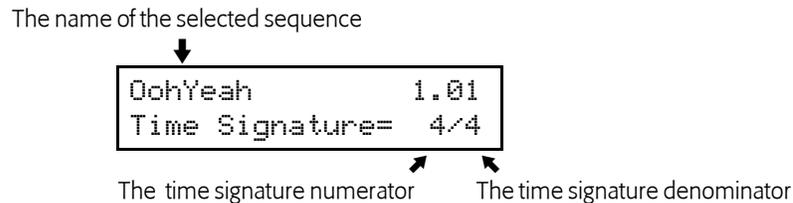
Tip: If you'd like to use the Final Mix mode on a selected group of tracks only, mute all of the sequence's other tracks. Final Mix will only affect the un-muted tracks.

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.

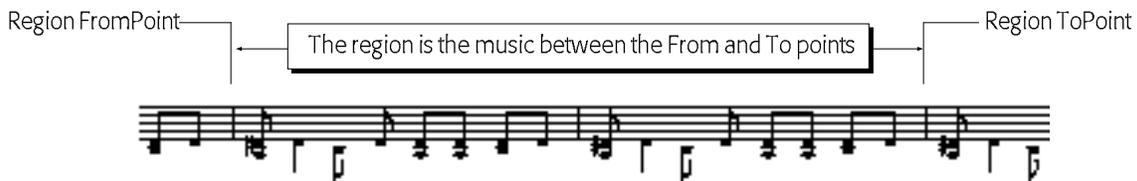
Tip: For your convenience, when you reset the time signature denominator, the denominator for the sequence's metronome click is set to match the new denominator (see “Click Timing” below).

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.)

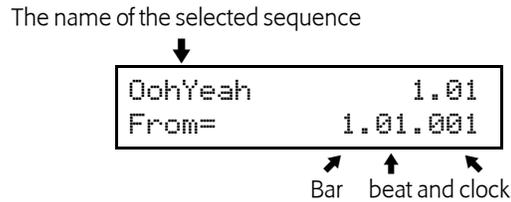
A region is defined by setting and turning on the Region FromPoint and/or Region ToPoint. The FromPoint sets the beginning of the region, while the ToPoint sets its end.



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.

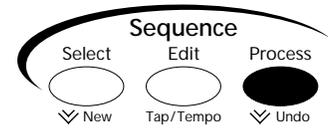
Countoff Bars

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.

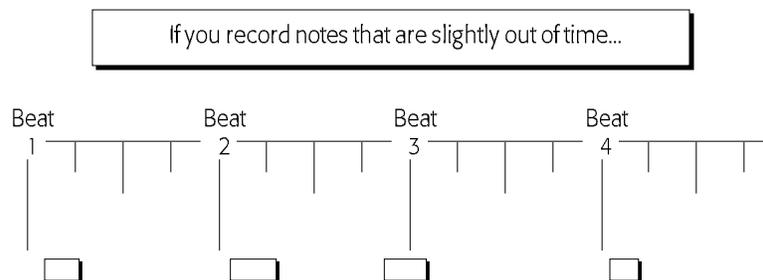
Undo track ?

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.

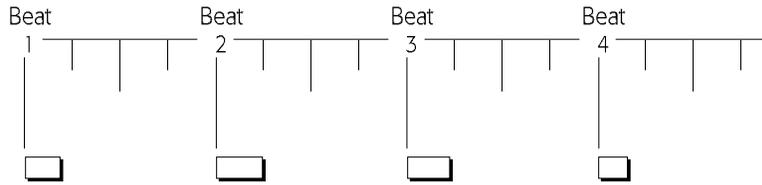
Tip: You can quickly jump to the Undo question at any time by double-clicking the Sequence Process button.

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

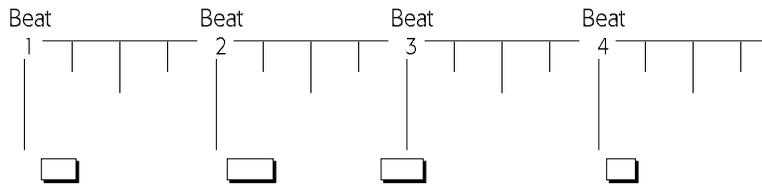
The ASR-X Pro provides complete quantization setups as *templates*. These templates set all of the quantize parameters to sensible settings for the task after which they're named—for a complete list of the quantization templates, see Chapter 9. You can use a template as is, or as a starting point for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

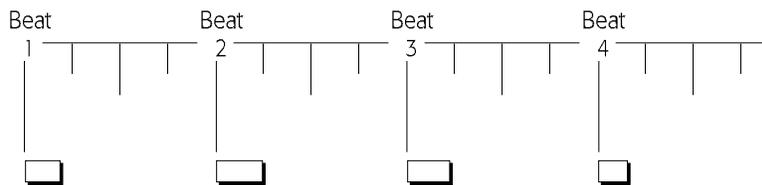
Quantize To

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

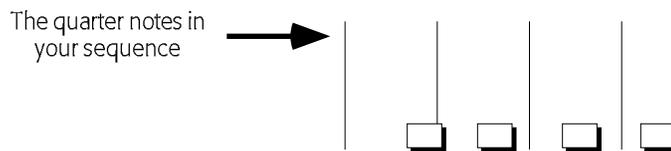
Method

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

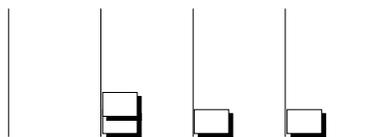
- Normal—to quantize the notes in the selected track using the traditional quantization method: moving the beginning of each note to the nearest occurrence of the Quantize To value.
- Delta—to use a revolutionary ENSONIQ method of quantization first introduced in the MR-61 and MR-76 that preserve's the 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.

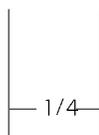
For example, say you've recorded a track that makes sense rhythmically but doesn't fit correctly in your sequence



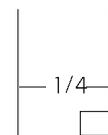
If you'd selected a Quantize To 1/4 note value, conventional, or normal, quantizing would move the beginning of each note to its nearest quarter note, ruining what you played



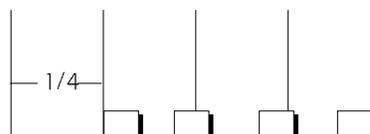
Delta quantize would determine the size of a 1/4 note space...



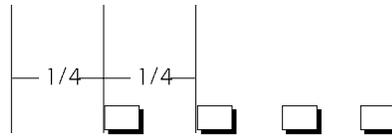
...examine the space between the beginning of the sequence and the first note



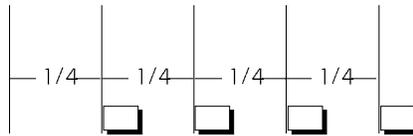
...and align the note to the nearest multiple of the 1/4 note space, moving all the later notes as well...



...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.

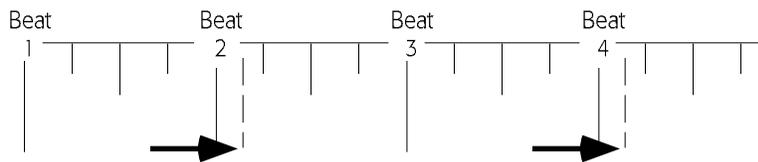
Strength

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.

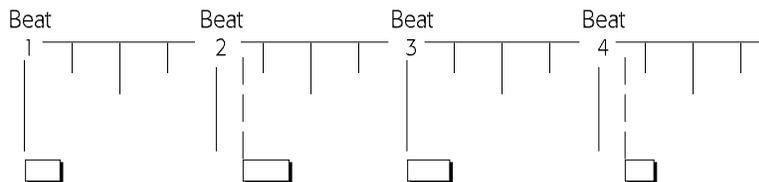
Swing

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.

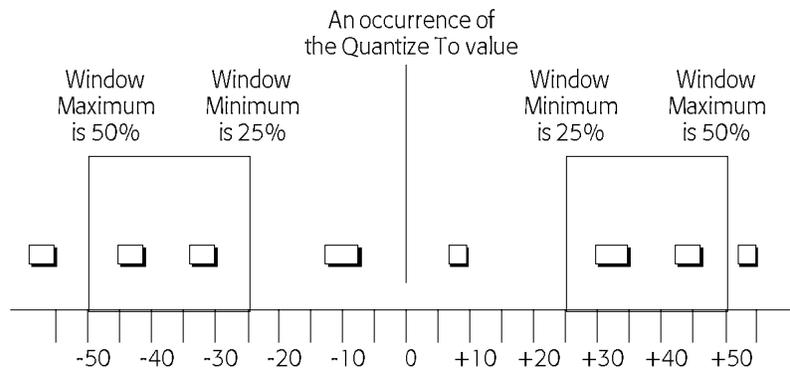
Low Key/High Key

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.

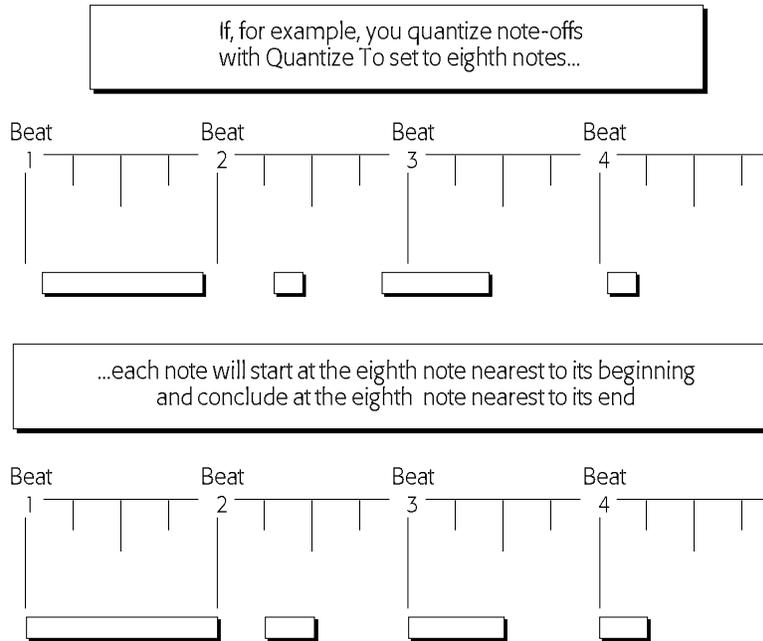
For example, if the quantize window is set from 25% to 50% on either side of the Quantize To value



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”:

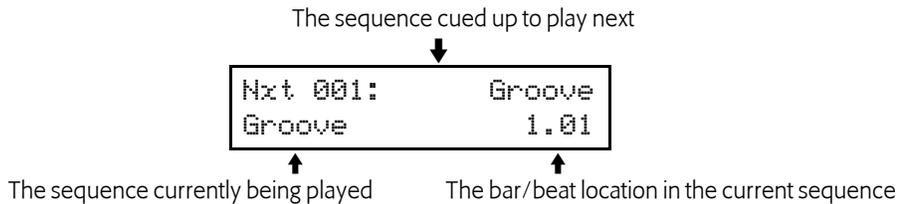
- Entire Seq—With this value, the entire sequence will be erased when you press the Yes button.
- Outside Region—With this value selected, only recorded data that occurs earlier than the region From point (if the Region FromPoint parameter is set to “On”) and/or after the region To point (if the Region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

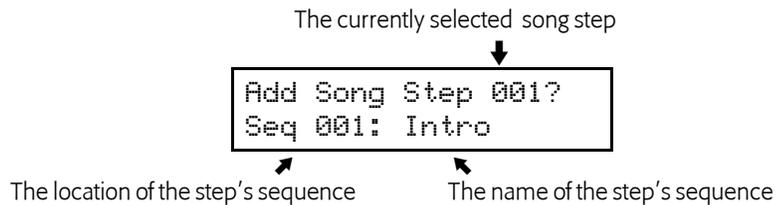
To exit pattern mode, hit the Sequence Stop button and then proceed with normal ASR-X Pro operations.

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.

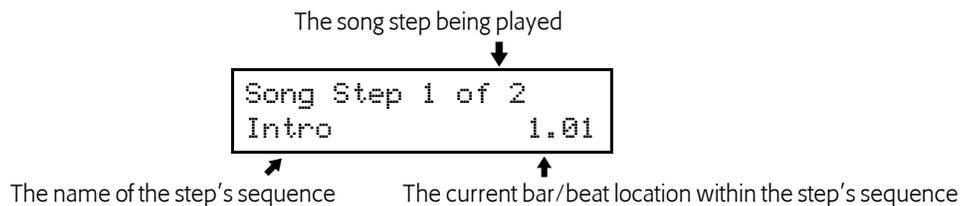
When you enter song mode, the song-creation display is presented:



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.



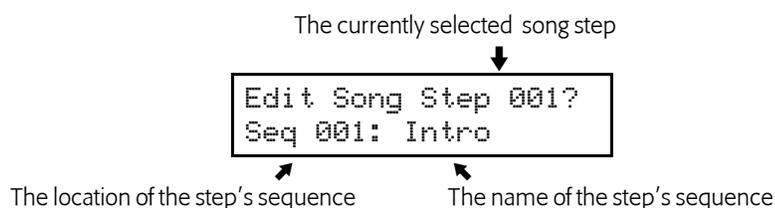
When the song isn't playing, turn the Parameter knob to select any of the song's steps or type the step's number using the Essentials buttons—and press the Play button to start playback from the selected step.

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:



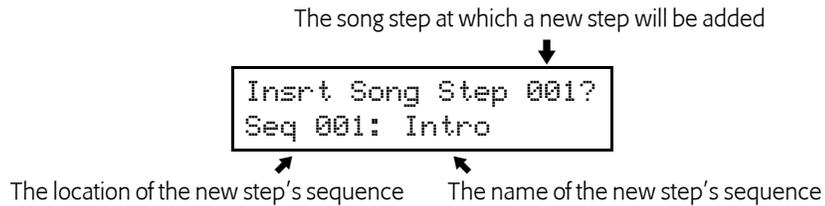
When this display is visible, turn the Parameter knob to select the step to be edited—the bottom line of the display shows the steps' sequence. You can choose a different sequence to be played at the step by turning the Value knob or typing its number on the Essentials buttons and then pressing the Yes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

Adding a Step to the End of a Song

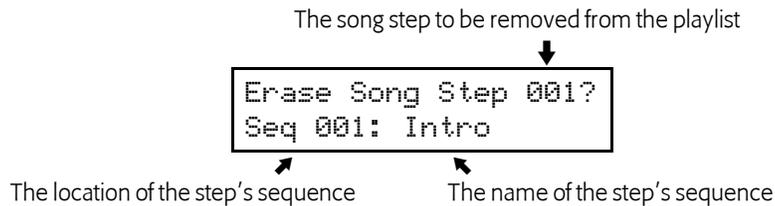
To add a step to the end of a song, turn the Parameter knob one tick past the song's last step—the ASR-X Pro will offer to add a new song step. Turn the Value knob or type the desired sequence's number using the Essentials buttons as a numeric keypad to select the desired sequence and press the Yes button.

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.