

# *i4S*

*Interactive Music Workstation*

## Reference Guide

*by Andrew Lubman*

GENERAL  
**MIDI**  
INSTRUMENT

**ai** AI<sup>2</sup> Synthesis System

# KORG

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# Chapter 1

## Arrangement Play Mode

This is the main performance mode of the Korg *i4S*. The *i4S* will automatically select this mode each time you turn the power switch on.

Arrangement Play mode lets you select the *arrangements* you will play when performing live with the *i4S*. The memory of your *i4S* contains 64 arrangements. You will find a complete list of the arrangement data that was shipped with your *i4S* in the Performance Notes that accompanied this manual.

You can also use this mode to create and perform your own versions of the *i4S* styles. If you need more flexibility, you can load new styles from disks, then arrange them for performance in Arrangement Play mode.

This mode divides its parameters and functions among 16 display pages, which are summarized on the following page of this manual. You can switch through these pages using the PAGE+ and PAGE- keys. You can select pages directly by holding down the ARR PLAY key and pressing the upper row ARRANGEMENT and PROGRAM keys that correspond to the first and second numbers of the desired page. For example, to select Page 4-2, press the 4 key in the upper row of ARRANGEMENT keys followed by the 2 key in the upper row of PROGRAM keys, while holding the ARR PLAY key.

The general procedures for editing parameters and using utility functions are outlined in Chapter 3 of the Player's Guide. Procedures for playing back and editing arrangements are covered in Chapter 1 of the Player's Guide and Applications Guide, respectively.

You can set the MIDI channels for the arrangement backing tracks on Page 2-2 of the Global mode display. The keyboard timbres will use the channels specified by the Global/Keyboard and KBD2 channels. (See page 153 of this manual for details.)

Arrangement editing is similar to the Performance Editing function of Program mode (see page 60) in that you can make changes while an arrangement is playing. However, keep in mind that the changes you make will be lost forever should you mistakenly switch to another mode or select another arrangement. You should store your changes frequently in the *i4S* arrangement memory. You can do this using the *Write* function described on page 18.

## Functions in Arrangement Play mode

The table below shows the layout of the *i4S* Arrangement Play mode. For each display page we list the page title, a brief outline of the page's contents, and the numbers of the pages in this manual where you will find these contents described.

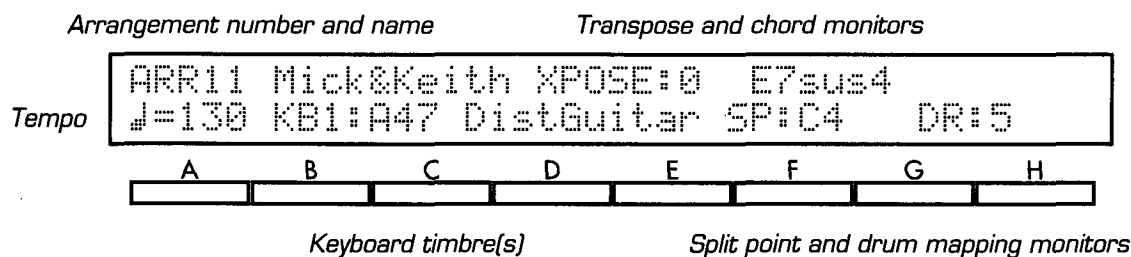
	Page	Title	Contents	Description
Basic Settings and Performance Monitors	1-1	ARRANGEMENT PLAY	Arrangement selection and tempo, performance monitors, and keyboard timbres	3-5
	1-2	STYLE SELECT	Style selection	6
Mute page				7
Mixer page				
Track Settings	2-1	TRACK SOUND	Backing track program, level, panning, and effect send settings	8-9
	2-2	TRACK SETTING	Backing track MIDI output, octave, wrap-around, velocity window, and damper pedal settings	9-11
Drum Parameters	3-1	DRUM PARAMETERS	Manual drum program selection, kick and snare selection	12
Auto-Select Parameters	4-1	DEFAULT DRUM MAPPINGS	Drum map parameters	14
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	8-2	WRITE ARRANGEMENT	Write Arrangement	17

## Basic Settings and Performance Monitors

The first two display pages allow you to select arrangements and styles, as well as programs for the two keyboard timbres. There are also various performance monitors that provide information regarding the current playing status of the *i4S*.

### 1-1 ARRANGEMENT PLAY

A display like the one shown below will appear when you press the ARR PLAY key. While this display is showing, you can use the ARRANGEMENT keys on the front panel to select arrangements to perform with. You can also use this display to adjust the playback tempo as you perform.



This display page contains several *performance monitors* that let you see the current setting of the TRANSPOSE keys, the chord selections, the keyboard split point, and the current drum mapping. These fields all represent selections or settings you can make using the *i4S* keyboard or the controls on the front panel. It is not possible to select these fields using the CURSOR POSITION keys, as you would do with most other settings.

You can use the Keyboard Timbre setting to change octaves and select programs for the two keyboard timbres.

### Arrangement

The number and name of the current arrangement appear at the top of the display. The *i4S* memory contains sixty-four arrangements, which you can choose from using the ARRANGEMENT keys as described on page 28 of the Player's Guide.

#### ☛ Selecting arrangements while playing...

If you select a new arrangement while the *i4S* is playing, the new arrangement will start at the beginning of the next measure, and the Tempo setting will change to that stored in the new arrangement. To prevent the tempo from changing, press the TEMPO LOCK key. Doing so will also retain the current setting of the TRANSPOSE keys.

#### ☛ To select arrangements with a footswitch...

You can also change the arrangement selection using a footswitch or one of the pedals on an EC5 External Controller. These methods for controlling the arrangement selection are enabled by Global mode settings.

To use a footswitch, set the ASSIGNABLE PEDAL parameter to either **ARRANGEMENT UP** or **ARRANGEMENT DOWN** (see page 156). If you have an EC5, select one of the same two settings for the appropriate EC5 SWITCH parameter (see page 156).

### XPOSE

This shows how many steps up or down the *i4S* has been transposed. Positive values indicate that the pitch has been raised; negative values indicate that it has been lowered.

You can transpose the *i4S* up or down to a maximum of eleven semitones using the TRANSPOSE keys. Transposition will affect not only the two keyboard timbres, but also all of the backing tracks and the Chord Scanning function as well.

## Chord Display

This field indicates the chord which the arrangement is currently set to play. The chord will determine how the style is processed by the note transposition tables (see page 18 of the Player's Guide).

When you select a new arrangement, this field will remain empty until you play a chord. You can change the chord setting by playing a chord in the chord-scanning range of the keyboard, and cancel the setting by pressing the RESET key. (See page 11 of the Player's Guide for details on the Chord Scanning function.)

You will find a set of figures illustrating the chords recognized by the *i4S* in Appendix C of this manual (see page 190).

## Tempo

[40...240]

This adjusts the arrangement's playback tempo. You can set the tempo to any value between 40 and 240 beats per minute.

### External clock control

The letters EXT will appear in place of a tempo when the Global mode Clock Source parameter is set to EXT (see page 152). This indicates that the tempo of the *i4S* is being controlled by MIDI clock messages from an external sequencer. You will not be able to change the tempo setting from the front panel while these letters are displayed.

## Keyboard Timbre (KB)

[1, 2]

Each arrangement has two keyboard timbres. To change the program selection or octave of one of these timbres, you must first use the Keyboard Timbre setting to select the timbre you want to edit.

You can select keyboard timbre KB2 only when you select the *layer* or *split* keyboard assign modes. (See page 11 of the Applications Guide for details on these modes.)

## Program

[variable]

This parameter shows the number and name of the program selected for the currently displayed keyboard timbre.

Press the bank keys to switch between program banks. Enter the number of a desired program using the PROGRAM keys. You can also use the VALUE controls to select programs.

Bank	Programs	Comments
A	64	General MIDI programs 1–64 (ROM)
B	64	General MIDI programs 65–128 (ROM)
C	64	<i>i4S</i> preset programs (ROM)
D	64	User programs (RAM)

The *i4S* plays programs assigned to KB1 across the entire keyboard when you use the single or layer keyboard assign modes, or on the upper keyboard alone when you use the split keyboard assign mode.



The *i4S* plays programs assigned to KB2 across the entire keyboard when you use the layer keyboard assign mode, or on the lower keyboard alone when you use the split keyboard assign mode.

**☞ Want to play the drums manually?**

You may have noticed that drum programs are not included in the list of programs above. You must use the *manual drums* keyboard assign mode when you want to play the drums from the keyboard.

When you select the M.DRUMS keyboard assign mode by pressing the KEYBOARD ASSIGN key, the *i4S* will automatically select the drum program specified by the Manual parameter on Page 3-1 of the Arrangement Play display. (See page 12.)

You can use the lower-row PROGRAM keys to change the KB1 program selection to any of the eight *i4S* drum programs (Dr1 through Dr8). Please note, however, that you will not be able to change the drum mapping while you are playing in this mode.

**☞ Other ways to select programs...**

You can change the program selection for a keyboard timbre using a footswitch, one of the pedals on an EC5 External Controller, or MIDI program change messages. All of these program change methods are enabled by Global mode settings. (If you are using the layer or split keyboard assign modes, you must first select the timbre to be changed, as described above.)

To use a footswitch, set the ASSIGNABLE PEDAL parameter to either PROGRAM UP or PROGRAM DOWN (see page 156). If you have an EC5, select one of the same two settings for the appropriate EC5 SWITCH parameter (see page 156).

If you want the *i4S* to recognize MIDI program change messages, make sure the MIDI Filter Program Change parameter is set to ENA (see page 154).

## Split Point (SP)

This indicates the current keyboard split point. All of the keys from the split point on up are known as the *upper keyboard*, and those below it are known as the *lower keyboard*.

The split point divides the upper and lower keyboards for the purpose of chord scanning in the UPPER and LOWER chord scanning modes (see page 11 of the Player's Guide). It is also referred to by the mute buttons described on page 7, regardless of the chord scanning mode.

Finally, the split point will separate the two keyboard timbres—putting KB1 in the upper keyboard, and KB2 in the lower—when you use the *split* keyboard assign mode (see page 11 of the Applications Guide).

You can set the split point by pressing a key on the *i4S* keyboard while holding down the SPLIT POINT key.

## Drum Map (DR)

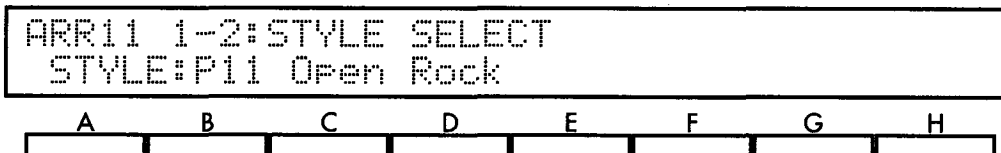
This field shows the number of the drum map that the arrangement is currently using. The drum maps determine what drum instruments are used by the arrangement's drum track, as shown by the Drum Map Tables in Appendix C (see page 194).

You can change the drum map selection by pressing one of the lower-row PROGRAM keys while the DRUM MAPS key is flashing, as described on page 10 of the Player's Guide. You can also set a default drum map for each of the arrangement's variations using the parameters on Page 4-1 DEFAULT DRUM MAPPINGS (see page 14).

## Octave

You can transpose a selected keyboard timbre up or down to a maximum of two octaves using the OCTAVE keys. (See page 33 of the Player's Guide for details.)

## 1-2 STYLE SELECT



## STYLE

This display page shows the number and name of the style that has been selected for playing by the current arrangement.

While on this display page, you can change the style selection using the ARRANGEMENT keys, as described on page 28 of the Player's Guide. The effect of this change will vary, however, depending on whether the arrangement is playing when you make your selection.

### ☛ When you change the style...

If the arrangement is *not* playing when you select a style, the *i4S* will change the Program, Volume, Panpot, and Tempo settings for the arrangement's backing tracks to those of the style you select. It will also reset the Octave and Wrap-Around settings for the bass and accompaniment tracks to 0 and **STY** respectively (see page 9).

If the arrangement *is* playing, the *i4S* will use the new style without changing the backing track settings. This allows you to switch styles as you play without causing abrupt sound changes. The Tempo setting will change to that set as the default for the style, unless the **TEMPO LOCK** key is lit.

### ☛ To select styles with a footswitch...

You can also change the style selection using a footswitch or one of the pedals on an EC5 External Controller. These methods for controlling the style selection are enabled by Global mode settings.

To use a footswitch, set the ASSIGNABLE PEDAL parameter to either **STYLE UP** or **STYLE DOWN** (see page 156). If you have an EC5, select one of the same two settings for the appropriate EC5 SWITCH parameter (see page 156).

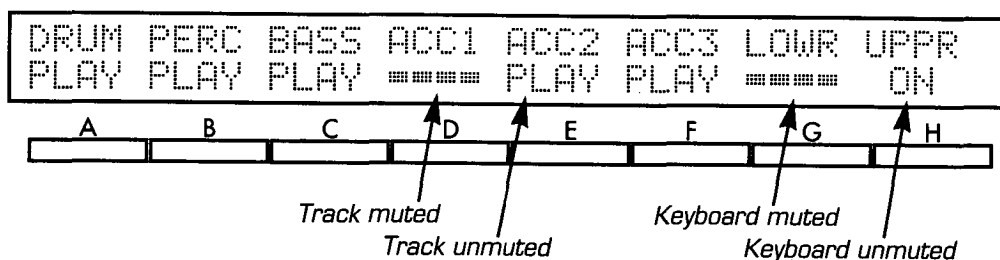
## Mute Page

There are eight *mute buttons* that you can use to mute the backing tracks and the upper and lower keyboards. To access this page, press the MUTE key on the *i4S* front panel. Press the MUTE key a second time to return to the previous display page.

### Mute buttons

[←, PLAY] or [←, ON]

These buttons will appear as a blank bar for tracks or keyboards that are muted. This will switch to the word **PLAY** when you unmute a track, or the word **ON** when you unmute the upper or lower keyboard.



You can toggle the tracks and keyboards between muted and unmuted status by pressing the corresponding cursor keys.

## Mixer Page

The eight fields on this display page let you set volume levels for each of the backing tracks and keyboard timbres. A vertical bar representing the volume level will be shown, in addition to the numerical value.

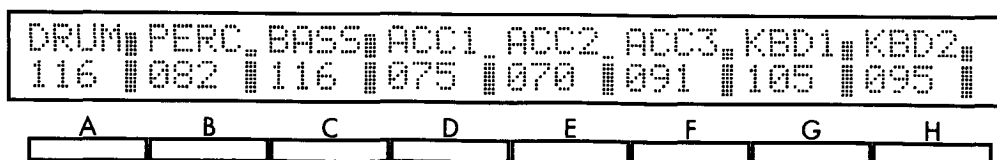
Changes you make on this display page will directly affect the value of the Volume parameter found on Page 2-1. You can use the Mixer page to set the relative volume levels for all tracks, then use the Write function, described on page 18, to store your changes.

To access this page, press the MIXER key on the *i4S* front panel. Press the MIXER key a second time to return to the previous display page.

### Volume

[0-127]

To adjust the volume level of a backing track or keyboard timbre, first press the corresponding cursor key, then use the VALUE controls.

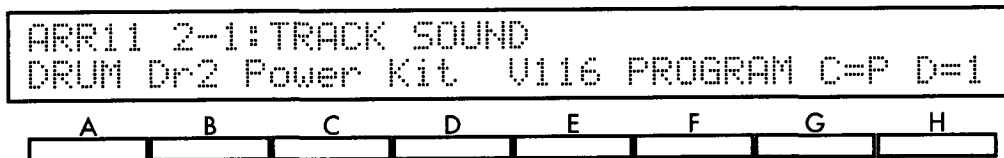


## Track Settings

Pages 2-1 and 2-2 provide a wide array of parameters that control the sound of the tracks, and how they behave in performance situations.

### 2-1 TRACK SOUND

Page 2-1 of the Arrangement Play mode display contains the basic track-related parameters. It lets you set the program selection, the volume, the panning, and effect send levels for each of the six backing tracks and the two keyboard timbres.



Please note that three of these settings—the Program, Volume, and Panpot parameters—can change automatically when you select a new style. Refer to the description of Page 1-2 STYLE SELECT, on page 6 of this manual, for details.

**Track** [DRUM, PERC, BASS, ACC1...ACC3, KB1, KB2]

This parameter lets you choose which track's settings to adjust.

**Program** [A11...Dr8]

This parameter lets you select the program to be played by the corresponding track.

You can change the current program selection using either the VALUE controls or the PROGRAM keys, as described on page 27 and 28 of the Player's Guide.

**Volume (V)** [0...127]

This parameter sets the volume of the corresponding track.

Setting a track's volume to 0 will make it inaudible (although it will still use up some of the polyphonic capacity of your *i4S*). The highest setting of 127 will raise its volume to the maximum level set by the selected program's Level parameters (see page 63).

**☞ Use the mute buttons to mute tracks!**

As stated above, a track whose Volume parameter has been set to 0 will still use up some of the polyphonic capacity of your *i4S*. If you want to mute a track, we suggest using the mute buttons on the Mute display page instead (see page 7).

**Panpot** [OFF, LEFT15...LEFT1, CENTER, RIGHT1...RIGHT15, PROGRAM]

This parameter sets the stereo position of each track. It does this by adjusting the levels of the signals input to the effects system via channels A and B. (For an explanation of these channels and their relationship to the effects system, see pages 142 through 144 of this manual.)

The CENTER setting centers the track. Settings preceded by LEFT move it to the left, whereas those preceded by RIGHT move it to the right. The sound moves farther from the center as the numerical value of the setting increases.

The **OFF** setting lets you turn off the track's output to channels A and B altogether. Finally, a **PROGRAM** setting tells the *i4S* to use the panning specified by the program's Panpot parameters (see page 64).

### Effect Send Level C, D

[0...9, P]

These parameters determine the levels of the backing track signals that are sent to the effects system via channels C or D.

You can set a level from 0 (no signal) to 9 (maximum) for each channel. If you set these parameters to **P**, the *i4S* will use the effect send levels specified by the program's parameters.

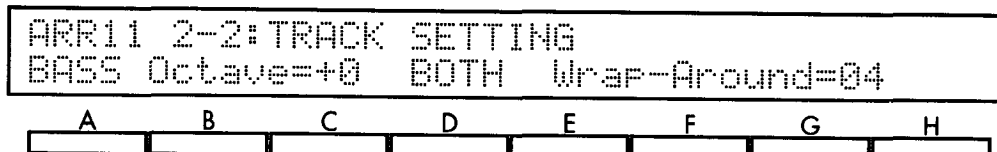
The nature of these effect send channels and their relationship to the stereo channels (A and B) are described in detail on pages 142 through 144.

## 2-2 TRACK SETTING

Page 2-2 of the Arrangement Play mode display contains additional parameters for the backing tracks and keyboard timbres. In addition to settings that select the output destination for each track, there are also parameters that let you adjust the octave in which the bass, accompaniment tracks, and keyboard timbres play.

The bass and accompaniment tracks feature a Wrap-Around parameter which lets you specify the pitch at which each track will drop an octave.

Each keyboard timbre has Velocity Window parameters that let you set the minimum and maximum velocities at which each timbre will play. This is useful for setting up velocity-controlled layers or sound changes. Each timbre also has a Damper parameter which lets you disable the damper switch for each keyboard timbre.



### Track

[DRUM, PERC, BASS, ACC1...ACC3, KB1, KB2]

This parameter lets you choose which track's settings to adjust.

### Octave

[-2...+2]

This parameter lets you raise or lower the octave in which the bass track, accompaniment tracks, and keyboard timbres play, to a maximum of two octaves. A setting of 0 produces the standard pitch for the selected program. This parameter will not appear if **DRUM** or **PERC** is selected as the track to edit.

You can also use the front panel **OCTAVE** keys to change the octave setting for either of the two keyboard timbres. (See page 6.)

### Track Status

[OFF, INT, EXT, BOTH]

This parameter determines whether the *i4S* will play or transmit data for the corresponding backing tracks during arrangement playback.

When you set one of these parameters to **OFF**, the *i4S* will not play back the corresponding track at all. When you select **INT**, it will send the track's data to the internal tone generator, but it will not transmit it from the MIDI OUT jack.

You can select **EXT** when you want the *i4S* to transmit a track's data to an external tone generator without playing the data itself. Finally, the **BOTH** setting lets you send track data to both destinations. This is the normal setting for each track. This parameter will not appear if **KB1** or **KB2** is selected as the track to edit.

## Wrap-Around

[STY, 1...12]

This parameter lets you specify a pitch at which the corresponding track will drop an octave. This prevents the backing tracks from rising to unnaturally high pitches when you play chords pitched high above the tonic.

You can set a pitch from one to twelve semitones above the tonic as the wrap-around point for the bass and each of the accompaniment tracks. You can also select **STY** if you want a track to use the wrap-around setting of the style that is being played. (Each style has “suggested” wrap-around settings for each track.)

The number you select for the Wrap-Around parameter represents an interval relative to the key set for each chord variation in a style. (For the sake of consistency, all *i4S* preset styles have been recorded in the key of C major or C minor. You should note however, that styles created by third-party developers do not always follow suit.)

This parameter will not appear if **DRUM**, **PERC**, **KB1**, or **KB2** is selected as the track to edit.

### ☞ Set different wrap-around points for each track!

It is a good idea to set the wrap-around points to a different value for each track, to increase contrary motion. If you set all of the Wrap-Around parameters to the same value, then all of the backing tracks will drop an octave at the same time, creating a potentially comic effect.

When selecting wrap-around points for an arrangement, you may find it helpful listen to one track only—you can do this by muting all the others with the buttons on the Mute display page—and try out each wrap-around point while playing the chord progression you will use when performing. Do this for each track in turn, and you may come up with a very natural-sounding arrangement.

## Vel Window Top (VW)

[001...127]

This parameter sets the highest velocity at which the corresponding keyboard timbre will play note data. When performing with the *layer* keyboard assign mode, you can use it together with the Vel Window Bottom parameter, described below, to combine the two keyboard timbres in a velocity-switch or velocity-layer arrangement.

For example, you might set the Vel Window Top parameter for **KB1** to **100**, and the Vel Window Bottom parameter for **KB2** to **101**. The tracks would play different programs—muted and picked guitar sounds, for example—to create the overall effect of a guitarist switching between muted and open playing styles.

You can also overlap velocity windows to create layered effects. For example, you might set one track to play a piano sound at all times, and the other to add an organ at higher velocities only.

This parameter will only appear if **KB1** or **KB2** is selected as the track to edit.

## Vel Window Bottom (VW)

[001...127]

This parameter sets the lowest velocity at which the corresponding keyboard timbre will play note data. You can use it in combination with the Vel Window Top parameter, described above.

### ☞ Set these parameters from the keyboard!

You can set the velocity window parameters by playing notes at the desired velocities on the *i4S* keyboard while holding down the cursor key for the corresponding velocity window.

This parameter will only appear if **KB1** or **KB2** is selected as the track to edit.

## Damper

[DISABLE, ENABLE]

This parameter lets you disable the damper switch for the corresponding keyboard timbre.

This can be handy when you will be playing two programs—such as an organ and a piano—in the layer keyboard assign mode. By disabling the damper for the organ timbre, you can use the pedal to sustain the piano without affecting the organ.

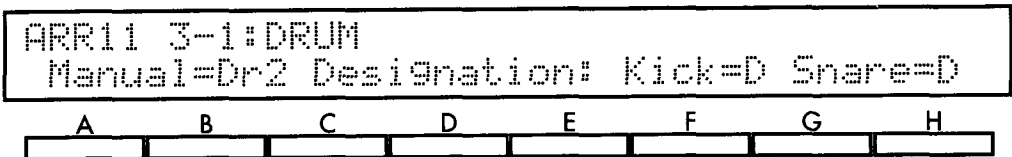
You may also want to prevent your damper switch from holding notes, as it normally does, if you will be using it to control the Chord Latch function. (See the description of the Chord Latch parameter on page 15, for details on this function.)

This parameter will only appear if **KB1** or **KB2** is selected as the track to edit.

## Drum Parameters

Page 3-1 contains parameters that let you choose kick and snare drum sounds for the arrangement, as well as a drum program to be called up automatically when you press the M.DRUMS key.

### 3-1 DRUM PARAMETERS



#### Manual

[Dr1...Dr8]

This parameter lets you set the arrangement's default manual drum program. You can set this parameter to any one of the eight *i4S* drum programs. The program you set here will automatically be selected for KB1 when you press the KEYBOARD ASSIGN key to switch to the *manual drums* keyboard assign mode. (See page 12 of the Applications Guide for details on this mode.)

#### Designation: Kick

[A...D]

This parameter sets the instruments that your arrangement will use for the selected style's kick drum part.

Setting	What you will hear (when using drum maps 2-8)
A	Kick 1 (C2)
B	Kick 2 (B1)
C	Kick 3 (G1)
D	Kick 4 (E1)

This table assumes that the style's kick drum part was recorded using Kick 1 (as is the case with styles P11-P68). The correspondence will shift for styles that use the other kick sounds. See the Kick and Snare Designation tables on page 194 for details.

Please keep in mind that the actual sound produced by each of these instruments depends on the drum program selection.

This parameter has no effect when using drum map 1 (the percussion map).

#### Designation: Snare

[A...D]

This parameter sets the instruments that your arrangement will use for the selected style's snare drum parts.

Setting	What you will hear (when using drum maps 3-8)
A	Snare 1 (D2)
B	Snare 2 (E2)
C	Snare 3 (A1)
D	Snare 4 (F1)



This table assumes that the style's snare drum part was recorded using Snare 1 (as is the case with styles P11–P68). The correspondence will shift for styles that use the other snare sounds. See the Kick and Snare Designation tables on page 194 for details.

Please keep in mind that the actual sound produced by each of these instruments depends on the drum program selection.

This parameter has no effect when using drum map 1 (percussion), or drum map 2 (no snare).

## Auto-Select Parameters

The parameters on Pages 4-1 and 4-2 let you set which drum map will be called up automatically with each variation, and which variation will be automatically selected after playing a fill.

### 4-1 DEFAULT DRUM MAPPINGS

ARR11 4-1:DEFAULT DRUM MAPPINGS							
VAR1=5		VAR2=5		VAR3=6		VAR4=8	
A	B	C	D	E	F	G	H

#### Default Drum Mapping (VAR1...VAR4)

[1...8]

These four parameters select a default drum mapping for each of the arrangement's variations. Set the number of the drum map you want each variation to play.

You can override these defaults while performing with a variation by pressing the DRUM MAPS key, then manually selecting the number of the desired drum map, as described on page 10 of the Player's Guide.

The number of the currently selected drum map will appear in the DR field on Page 1-1 of the Arrangement Play display. See page 5 for details.

### 4-2 VARIATION CHANGE

There are two Variation Change parameters: one for Fill 1, and another for Fill 2. We have described these parameters only once below.

ARR11 4-2:VARIATION CHANGE							
Fill 1:OFF				Fill 2:OFF			
A	B	C	D	E	F	G	H

#### Variation Change (Fill)

[OFF, →1...→4, 1↔2...3↔4, UP, DOWN]

These two parameters let you specify which variation the arrangement should switch to after it plays each of the fills.

You can set one of these parameters to **OFF** when you want the *i4S* to continue with the variation it was playing before the fill. Settings preceded by a one-way arrow will always select the same variation; a fill whose Variation Change parameter is set to →2, for example, will always select Variation 2 when it's done playing.

Settings with two-way arrows will tell a fill to alternate between two variations. If, while playing Variation 2, you select a fill whose Variation Change parameter is set to 2↔3, the *i4S* will follow the fill with Variation 3. Selecting the same fill again will cause it to switch back to Variation 2. If you select the fill while Variation 1 or 4 is playing, however, it will continue playing the same variation.

The **UP** and **DOWN** settings tell the arrangement to follow each fill with the next variation up or down. These settings will cause the variation to cycle: if, while playing Variation 4, you select a fill whose Variation Change parameter is set to **UP**, the *i4S* will switch to Variation 1 when it's done playing the fill.

## Miscellaneous

### 5-1 BASS INVERSION/CHORD LATCH



#### Bass Inversion [ON, OFF]

This parameter tells the *i4S* to play chords with an alternate bass note, such as C/G or D/F#.

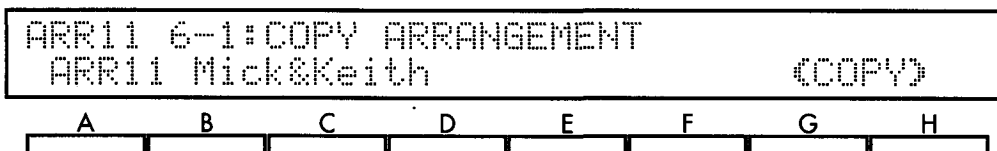
#### Chord Latch [ON, OFF]

This turns the *i4S* Chord Latch function on and off.

The Chord Latch function lets you use a damper switch to prevent the arrangement's chord setting (that is, the one that appears on Page 1-1 of the display) from changing. Doing so will allow you to play chords on the keyboard without changing how the arrangement plays back.

If you will use the Chord Latch function, you may want to prevent the damper switch from acting as a hold pedal for one or both keyboard timbres. You can do this using the Damper parameter, described on page 11.

### 6-1 COPY ARRANGEMENT



#### Copy Arrangement function

This function lets you copy all of the settings from another arrangement into the arrangement you are editing. It copies all of the settings that are saved by the Write Arrangement function.

To use this function, first select the arrangement whose data you want to copy. The number and name of the arrangement you select will appear above cursor keys A through D.

When you have chosen a source arrangement, select [COPY]. The *i4S* will copy the data after asking for confirmation.

## Effects

Pages 7-1 through 7-5 contain the effect settings, which you can use to add a professional touch to your arrangements, as well as utility functions which you can use to copy effect settings from various sources.

### 7-1 through 7-5

Pages 7-1 through 7-3 of Arrangement Play mode let you use two digital signal processors to apply effects to your arrangements. Since both processors can apply two effects simultaneously, you can apply a variety of different effects to the programs playing the arrangement.

ARR11 7-1: EFFECT TYPE				Effect Type			
FX1 01: Hall				:ON Mod: NONE I+00			
A	B	C	D	E	F	G	H

ARR11 7-2: FX PARAM				Reverb Time [s]			
3.2 P060 E62 HD30				L-04 H+00 +75:25			
A	B	C	D	E	F	G	H

ARR11 7-3: EFFECT PLACEMENT				Placenment			
SERIAL C Pan = L				D Pan = R			
A	B	C	D	E	F	G	H

All of the programs played by an arrangement will use the effect settings you make on these pages. You should be aware, however, that the effect settings you select in Arrangement Play mode may differ from those assigned to the programs in Program mode. Hence, if you use Program mode to audition programs before assigning them to an arrangement, you may find that some of them—those that use less common effect settings—will fail to produce the sound you expect when the arrangement plays.

The simplest way around this would be to audition programs in Arrangement Play mode, after first selecting the arrangement's effects. If you find this limiting, however, you may want to try a more involved approach. You could audition the sounds in Program mode, then try to create an effect setup—using dual effects, if necessary—that reproduces as many of the programs' individual effects as possible.

As a third alternative, you could take a course similar to that followed by many recording engineers. First, audition the programs without any effects at all, selecting them for their raw sound qualities. Then, after assigning them to the tracks, add the effects in gradually to create a customized effects setup that brings out the best features of each program.

Pages 7-4 and 7-5 allow you to copy effects settings within an arrangement or from any arrangement, backing sequence, or program into the current arrangement.

Because the Effects pages in Arrangement Play mode present you with the same options as the Backing Sequence, Program, and Song Play modes, the contents of these pages are described in their own chapter. Please refer to Chapter 5 for details on the effect settings.

## Utility

Display pages 8-1 and 8-2 contain functions that let you name your original arrangements or rename existing ones, and write them to the *i4S* memory.

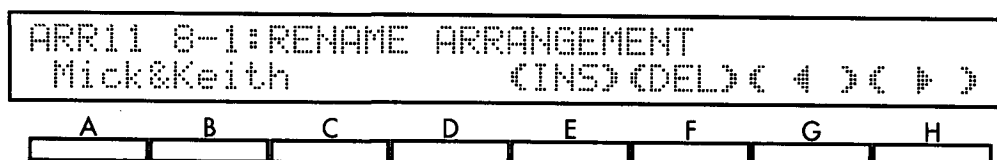
### 8-1 RENAME ARRANGEMENT

#### Rename Arrangement

#### function

You can use this function to change the name of the arrangement you're editing. An arrangement's name can consist of up to ten characters.

When you select this function, the current arrangement name will appear above cursor keys A, B, and C. Change this to the new name as described on page 32 of the Player's Guide.



There is no need to "execute" the name change. The arrangement's name is actually a special kind of parameter. The *i4S* will memorize the new name—together with the settings on the other pages of the Arrangement Play mode display—when you store the arrangement using the Write Arrangement function, described below.

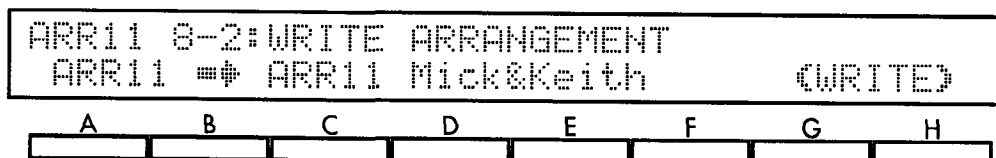
### 8-2 WRITE ARRANGEMENT

#### Write Arrangement

#### function

This function lets you store an arrangement you've edited in the memory of the *i4S*.

When you store an arrangement, the *i4S* will memorize not only the settings you have made in the 16 display pages of this mode, but also the current settings of all front panel keys that you can use to control your arrangement (with the exception of the SYNCHRO START/STOP and TEMPO LOCK keys).



To use this function, enter the arrangement number where you want to save the data above cursor key A. The name of the arrangement already stored under that number will be displayed. Be certain that you don't need this arrangement, or that you have a copy of it elsewhere, as its data will be lost—replaced by your edited arrangement—when you execute the Write Arrangement function.

When you are sure of the destination, select [WRITE]. The *i4S* will store the data after asking for confirmation.

This function will not work if the Arrangement Protect parameter has been turned on in Global mode.

**Another Write function...**

As an alternative to the Write Arrangement function, you can simply press the REC/WRITE key to store your arrangement under the current arrangement number. See below for details.

**Write**

**function**

It is a good idea to store your arrangements frequently while editing, as the changes you make will be lost forever should you mistakenly switch to another mode or select another arrangement.

You can of course do this with the Write Arrangement function described above. But since it would be a bother to flip to the WRITE ARRANGEMENT page frequently, the *i4S* provides a secondary Write function that you can use to quickly store your arrangements to the current arrangement number.

To use this function, just press the REC/WRITE key. The *i4S* will prompt you to confirm the Write operation. Press E or F to store your changes, or G or H if you change your mind.

This function stores not only the settings you have made in the 16 display pages of Arrangement Play mode, but also the current settings of all front panel keys that you can use to control your arrangement (with the exception of the SYNCHRO START/STOP and TEMPO LOCK keys). It is thus like the Write Arrangement function in all ways, except for the fact that you cannot select a destination arrangement number.

This function will not work if the Arrangement Protect parameter has been turned on in Global mode. See page 159.

## Chapter 2

# Backing Sequence Mode

The *i4S* Backing Sequence mode lets you record and perform songs that play arrangements instead of conventional sequence data. At the heart of each *backing sequence* are three tracks known as *arrangement tracks*. Two of these tracks record performance information—which chords you play, which keys you press on the front panel—then use this information to control playback of style tracks using a selected arrangement.

A third arrangement track lets you add a melody line to the accompaniment using the keyboard timbres—though you naturally have the option of leaving this track empty and using the keyboard timbres for live performance. Either way you do it, you can also record additional parts in up to eight tracks known as *extra tracks*.

The Backing Sequence mode divides its parameters and functions among 26 display pages, which are summarized on the following page of this manual. You can switch through these pages using the PAGE+ and PAGE- keys. You can select pages directly by holding down the BACKING SEQ key and pressing the upper row ARRANGEMENT and PROGRAM keys that correspond to the first and second numbers of the desired page. For example, to select Page 4-1, press the 4 key in the upper row of ARRANGEMENT keys followed by the 1 key in the upper row of PROGRAM keys, while holding the BACKING SEQ key.

The general procedures for editing parameters and using utility functions are outlined in Chapter 3 of the Player's Guide. Procedures for recording, playing back, and editing backing sequences are covered in Chapter 1 of that manual and Chapter 2 of the Applications Guide.

The *i4S* sequence memory can hold as many as ten backing sequences, up to a total of 40,000 steps of data. Each backing sequence track is limited to 16,000 steps.

The contents of the sequence memory will be lost when you turn off your *i4S*. After every programming session, you should be sure to save your backing sequences to disk using one of the Save functions described in Chapter 7. (It is also a good idea to save them periodically during the session, to prevent accidental loss in case of a power failure.)

## *Functions in Backing Sequence mode*

The table below shows the layout of the *i4S* Backing Sequence mode. For each display page we list the page title, a brief outline of the page's contents, and the numbers of the pages in this manual where you will find these contents described.

	Page	Title	Contents	Description
Realtime Recording	1-1	REALTIME	Arrangement, programs, chord, backing sequence, tempo, measure, beat, track activity	21
	1-2	PERFORMANCE MONITORS	Arrangement, transpose, split, and drum map monitors	28
	1-3	STYLE SELECT	Style selection	29
	1-4	METRONOME	Switch, lead-in, level, and pan	30
	1-5	RECORDING QUANTIZE/MEMORY	Quantize, bass inversion, and free memory indicator	31
Mute page				32
Mixer page				32
Track Parameters	2-1	TRACK SOUND	Program, volume, panpot, and effect sends	33
	2-2	EXTRA TRACK	MIDI channel, track status, track protect, transpose, detune, pitch bend range	34
	2-3	WINDOWS	Velocity and key windows	36
Track Editing	3-1	STEP RECORDING	Step recording of the keyboard, control, chord, and extra tracks	38
	4-1	EVENT EDIT	Event editing of the keyboard, control, chord, and extra tracks	39
	5-1	DELETE MEASURE	Delete Measure function	40
	5-2	ERASE MEASURE	Erase Measure function	40
	5-3	COPY MEASURE	Copy Measure function	41
	5-4	INSERT MEASURE	Insert Measure function	42
	5-5	BOUNCE TRACK	Bounce Track function	44
Data Modification	6-1	QUANTIZE	Quantize function	45
	6-2	SHIFT NOTE	Shift Note function	46
	6-3	KEY TRANSPOSE	Key Transpose function	47
	6-4	ERASE BACKING SEQUENCE	Erase Backing Sequence function	47
Effects	7-1 through 7-5	Effects pages	Effect parameters, effect placement, Copy All Effects, Copy/Swap FX	Chapter 5
Utilities	8-1	NEXT B.SEQUENCE	Next Backing Sequence	49
	8-2	RENAME BACKING SEQUENCE	Rename Backing Sequence	49





ize the program layout when using the split keyboard assign mode (KB2 on the bottom half of the keyboard and KB1 on the top half).

If you are using the layer or split keyboard assign modes, you must select the timbre to be changed using the Track setting, described below.

Press the bank keys to switch between program banks. Enter the number of a desired program using the PROGRAM keys.

Bank	Programs	Comments
A	64	General MIDI programs 1–64 (ROM)
B	64	General MIDI programs 65–128 (ROM)
C	64	<i>i4S</i> preset programs (ROM)
D	64	User programs (RAM)

The *i4S* plays programs assigned to KB1 across the entire keyboard when you use the single or layer keyboard assign modes, or on the upper keyboard alone when you use the split keyboard assign mode.

The *i4S* plays programs assigned to KB2 across the entire keyboard when you use the layer keyboard assign mode, or on the lower keyboard alone when you use the split keyboard assign mode.

**Want to play the drums manually?**

You may have noticed that drum programs are not included in the list of programs above. You must use the *manual drums* keyboard assign mode when you want to play the drums from the keyboard.

When you press the M.DRUMS key to select this keyboard assign mode, the *i4S* will automatically select the drum program specified by the Manual parameter on Page 3-1 of the Arrangement Play display.

You can use the lower-row PROGRAM keys to change the KB1 program selection to any of the eight *i4S* drum programs (Dr1 through Dr8).

**Other ways to select programs...**

You can change the program selection for a keyboard timbre using a footswitch, one of the pedals on an EC5 External Controller, or MIDI program change messages. All of these program change methods are enabled by Global mode settings. (Also, if you are using the layer or split keyboard assign modes, you must select the timbre to be changed using the Track setting as described below.)

To use a footswitch, set the ASSIGNABLE PEDAL parameter to either PROGRAM UP or PROGRAM DOWN (see page 156). If you have an EC5, select one of the same two settings for the appropriate EC5 SWITCH parameter (see page 156).

If you want the *i4S* to recognize MIDI program change messages, be sure the MIDI Filter Program Change parameter is set to ENA (see page 154).

You can also use the setting on Page 2-1 to select programs to be used by the keyboard timbres.

## Chord

This field indicates the chord that the backing sequence is currently recording or playing. The chord will determine how the style being played is processed by the note transposition tables (see page 18 of the Player's Guide).

You can change the chord setting by playing a chord in the chord-scanning range of the keyboard, and cancel the setting by pressing the RESET key. (See page 11 of the Player's Guide for details on the Chord Scanning function.)

You will find a set of figures illustrating the chords recognized by the *i4S* in Appendix C of this manual (see page 190).

## Backing Sequence

[0...9]

This setting selects the backing sequence to be played or recorded.

The name of the current backing sequence appears in the upper-left corner of the display. You can change the backing sequence's name using the Rename Backing Sequence function described on page 49.

## Tempo

[REC, AUT, 40...240]

This adjusts the backing sequence's playback tempo. You can set the tempo to any value between 40 and 240 beats per minute.

You may find it helpful to record at a slower tempo, then speed it up for playback. You can also record tempo changes as desired while recording.

### To record tempo changes in real time...

To record tempo changes to the Tempo Track, first press the REC/WRITE key. If you want, you can prevent any of the arrangement tracks (the Keyboard, Control, or Chord tracks) from being recorded over by using the track activity bars above cursor keys F, G, and H. Press the DOWN key while holding cursor key B (the Tempo setting). The tempo indication will change to REC. Next, press the START/STOP key to begin recording. The REC indication will change back to the tempo setting, allowing you to adjust it with the VALUE controls. The *i4S* will record any changes you make to the Tempo setting.

When you press the START/STOP key to stop recording, the Tempo setting will automatically change to AUT, allowing you to hear the tempo changes you recorded, the next time you play the backing sequence.

If you want to adjust the tempo manually during playback or recording, switch this parameter back to a number between 40 and 240. The backing sequence will play at the tempo you set, ignoring any changes in the tempo track.

### External clock control

The letters EXT will appear in place of a tempo when the Global mode Clock Source parameter is set to EXT (see page 152). This indicates that the tempo of the *i4S* is being controlled by MIDI clock messages from an external sequencer. You will not be able to change the tempo setting from the front panel while these letters are displayed.

## Measure

[1...999]

This indicates the location at which recording or playback is set to begin. Each track of a backing sequence can contain a maximum of 999 measures.

You can reset the measure pointer to 1 by pressing the RESET key. The *i4S* will reset this pointer automatically whenever it plays a backing sequence all the way to the end.

## Beat

[1/4...16/16]

This setting shows the current time signature of the measure currently playing.

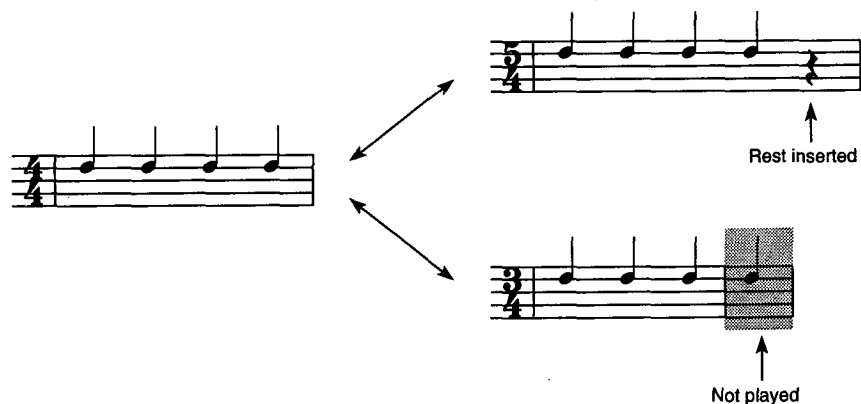
Each time you begin recording a new backing sequence, the Beat parameter will use the time signature of the currently selected style.

### Changing the time signature in a track

If you want to change the time signature in the middle of a track, you must stop recording and adjust the Beat parameter using the Event Edit function.

When you are adding tracks to a backing sequence, the *i4S* will record the new data using the same time signature as the existing tracks. If the existing tracks contain time signature changes in the middle of a backing sequence, the new track will follow these changes.

Be aware, however, that any changes in time signature will apply to *all* tracks that contain data. If you change the Beat parameter for one track, the *i4S* will truncate or expand each measure of data in the other tracks to match the new time signature, as shown below.

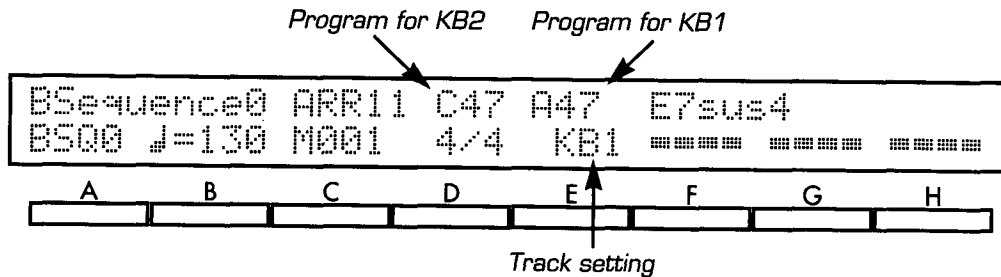


If you should accidentally truncate any measures by changing the beat parameter, don't worry: the *i4S* still has the data for the ends of those measures. Just change the time signature back to the previous setting using the Event Edit function described on page 40—and the other tracks should return to normal.

It is not possible to change the Beat setting during recording or playback.

## Keyboard Timbres

When **KB1** or **KB2** is selected as the Track setting (described on page 25), you can use the PROGRAM keys to select programs for the current keyboard timbre.



You can select keyboard timbre **KB2** only when you select the *layer* or *split* keyboard assign modes. (See page 11 of the Applications Guide for details on these modes.) To change the program selection or octave of one of these timbres, you must first use the Track setting to select the timbre you want to change.

When you select the arrangement tracks for recording, the remaining space on the bottom line will contain three *track activity bars* that let you check (and change) the recording and playback status of the keyboard, control, and chord tracks.

If you select one of the extra tracks for recording, this space will be occupied by one or more record mode settings. These settings are described in the next section.

### Track

[KB1, KB2, ET1...ET8]

This setting specifies the track to be recorded. Select either **KB1** or **KB2** to record data to the keyboard, chord, and control tracks (collectively known as the arrangement tracks), or one of the **ET** settings to record the corresponding extra track.

If you select the arrangement tracks for recording, the *i4S* keyboard will play the programs you have assigned to the keyboard timbres using the Program parameters described on page 4 or page 21. If you select an extra track, the keyboard will play the program you have assigned it using the Program parameter described on page 34.

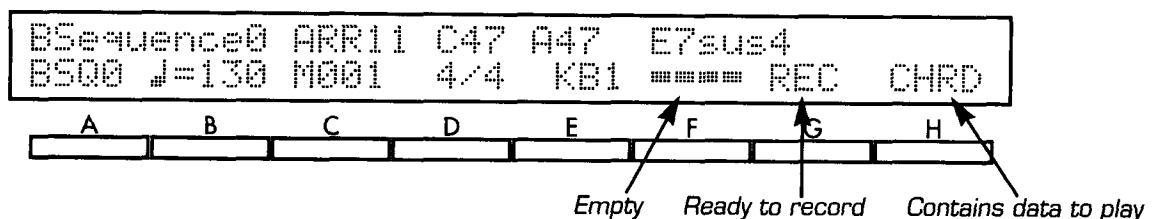
If you have used the Channel parameter described on page 54 to assign other tracks to the same MIDI channel as the selected track, the keyboard will play their programs as well.

The Track setting is also used when specifying the octaves of the keyboard timbres, and programs for the keyboard timbres and extra tracks.

### Track activity

[—, REC, MUTE, KBTr/CTRL/CHRD]

The three bars above keys F, G, and H tell you whether the keyboard, control, and chord tracks are prepared to record or play data.



When a track is empty, this setting will appear as an empty bar. An abbreviation of the track name (**KBTr**, **CTRL**, or **CHRD**) will appear in place of the bars for tracks containing data—even if this data consists of nothing but empty measures.

When you press the **REC/WRITE** key to record the keyboard, chord, and control tracks, the letters **REC** will appear in all three track activity bars. The tracks will begin recording using the *overwrite* record mode—which we describe in the next section—as soon as you press **START/STOP**.

It is possible to record data on only one or two of these tracks. Just move the cursor to any track you don't want to record, and use the **VALUE** controls to switch the letters **REC** back to the empty bar.

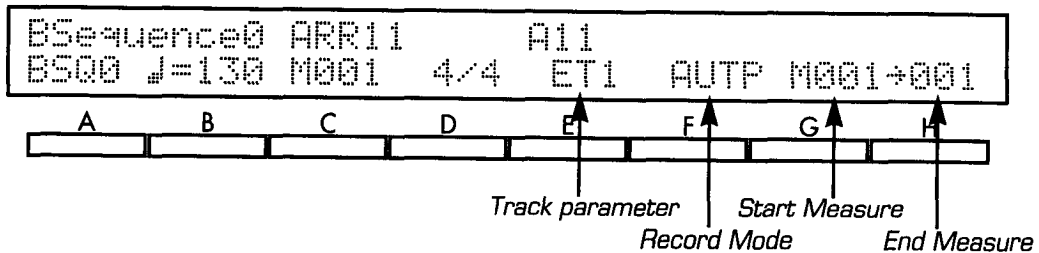
### **Muting tracks**

You can also use the track activity bars to mute the keyboard, chord, and control tracks during playback. To mute a track, simply move the cursor to its track activity bar and use the **VALUE** controls to switch the bar between the track name abbreviation (**KBTr**, **CTRL**, or **CHRD**) and **MUTE**.

Muting the keyboard track will silence that part. If you mute the control track, the backing sequence will be unable to switch between style elements or reproduce any of the other control panel operations that you recorded. If you mute the chord track, the backing sequence will not be able to play chord changes as programmed, however, it will play chord changes you enter in real time from the keyboard.

## Record Mode Settings

If you select one of the extra tracks for recording on the first page of Backing Sequence mode, a Record Mode setting will appear on the bottom line of the display. This setting lets you choose the recording method you will use to record data to the selected track.



If you pick autopunch recording as the recording method, the *i4S* will display a pair of parameters that let you set the start and end points of the segment to be recorded. These parameters will appear at the end of this line.

### Record Mode

[OVWR, OVDB, AOTP, MANP]

This setting selects the realtime recording method you will use to record new backing sequence data. The *i4S* gives you four ways to record data to the extra tracks in real time.

First, there are two straightforward recording methods. You can select the **OVWR** setting to overwrite previous track data, or use the **OVDB** setting to overdub new data on top of the old.

If you need to re-record one or more measures in the middle of a backing sequence, you can choose from one of two punch-in recording methods. Use **AOTP** if you want the *i4S* to punch in and out of record mode automatically, or **MANP** if you would prefer to do it manually.

### Start Measure

[1...999]

This setting is displayed only when you set the Record Mode setting to **AOTP**. When you use autopunch recording, the *i4S* will begin recording at the start of the measure you select here.

### End Measure

[1...999]

This setting is displayed only when you set the Record Mode setting to **AOTP**. When you use autopunch recording, the *i4S* will stop recording at the end of the measure you select here.

To record only one measure, set this parameter to the same value as the Start Measure parameter.

## 1-2 PERFORMANCE MONITORS

BSE00	BSequence0				E7sus4		
ARR11	Mick&Keith	XPOSE:+00	SP:C4	DR:5			
A	B	C	D	E	F	G	H

### ARR

This field shows the number and name of the arrangement that the backing sequence is currently recording or playing.

You can change the arrangement using the ARRANGEMENT keys, as described on page 28 of the Player's Guide. When you do so, most of the backing sequence's arrangement-related parameters—such as the programs and volumes set for the keyboard timbres and backing tracks—will change to those of the new arrangement.

#### To select arrangements with a footswitch...

You can also change the arrangement selection using a footswitch or one of the pedals on an EC5 External Controller. These methods for controlling the arrangement selection are enabled by Global mode settings.

To use a footswitch, set the ASSIGNABLE PEDAL parameter to either **ARRANGEMENT UP** or **ARRANGEMENT DOWN** (see page 156). If you have an EC5, select one of the same two settings for the appropriate EC5 SWITCH parameter (see page 156).

### XPOSE

This shows how many steps up or down the *i4S* has been transposed. Positive values indicate that the pitch has been raised; negative values indicate that it has been lowered.

You can transpose the *i4S* up or down a maximum of eleven semitones using the TRANSPOSE keys. When the Global mode Xpose Pos parameter (see page 150) is set to **POST-KBD**, the TRANSPOSE keys will have no effect on playback data. However, you can use the TRANSPOSE keys while recording to transpose note and chord data before it reaches the keyboard, chord, and extra tracks. The resulting recorded note and chord data will be changed to match the transpose value you specify. TRANSPOSE events will not be recorded by the control track.

When the Global mode Xpose Pos parameter is set to **PRE-OSC**, you can use the TRANSPOSE keys during playback to transpose the *i4S* tone generator. All tracks will be transposed by the amount you specify. TRANSPOSE events will be recorded by the control track when you select the arrangement tracks for recording. When recording an extra track, these events will not be recorded.

The Transpose parameters on Page 2-2 of the Backing Sequence display can also be used to transpose the extra tracks (see page 36). Be aware, however, that the value you specify for these parameters will be added to that of the TRANSPOSE keys when the Global mode Xpose Pos parameter is set to **PRE-OSC**.

### SPLIT (SP)

This indicates the current keyboard split point. All of the keys from the split point on up are known as the *upper keyboard*, and those below it are known as the *lower keyboard*.



The split point divides the upper and lower keyboards for the purpose of chord scanning in the UPPER and LOWER chord scanning modes (see page 11 of the Player's Guide). It is also referred to by the selected arrangement's mute buttons described on page 7, regardless of the chord scanning mode.

Finally, the split point will separate the two keyboard timbres—putting KB1 in the upper keyboard, and KB2 in the lower—when you use the *split* keyboard assign mode (see page 11 of the Applications Guide).

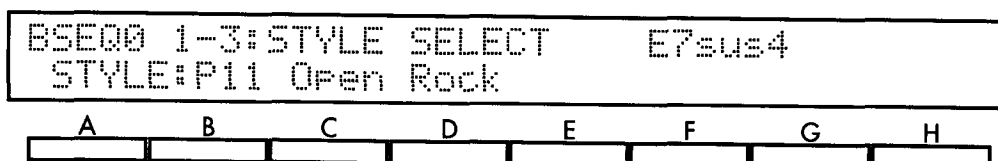
You can set the split point by pressing a key on the *i4S* keyboard while holding down the SPLIT POINT key.

## Drum Map (DR)

This field shows the number of the drum map that the backing sequence is currently using. The drum maps determine what drum instruments are used by the drum track, as shown by the Drum Map Tables in Appendix C (see page 194).

You can change the drum map selection by pressing one of the lower-row PROGRAM keys while the DRUM MAPS key is flashing, as described on page 10 of the Player's Guide. (You can also set a default drum map for each of the arrangement's variations using the parameters on Page 4-1 of the Arrangement Play mode display (see page 14).

## 1-3 STYLE SELECT



## STYLE

This field shows the number and name of the style that the backing sequence is currently recording or playing.

You can change the style selection using the ARRANGEMENT keys, as described on page 28 of the Player's Guide.

When you change the style, the *i4S* will use the new style without changing the backing track settings. This allows you to switch styles as you play without causing abrupt sound changes.

### To select styles with a footswitch...

You can also change the style selection using a footswitch or one of the pedals on an EC5 External Controller. These methods for controlling the style selection are enabled by Global mode settings.

To use a footswitch, set the ASSIGNABLE PEDAL parameter to either STYLE UP or STYLE DOWN (see page 156). If you have an EC5, select one of the same two settings for the appropriate EC5 SWITCH parameter (see page 156).

## 1-4 METRONOME

```

BSE00 1-4:METRONOME
Switch:OFF Lead-In=2 Level=99 Pan: CENTER

```



This display page contains four parameters that let you specify how the metronome will perform while recording and playing the backing sequence you are editing.

**Switch** **[OFF, ON]**

This parameter determines when the metronome will sound. You will never hear it when you select **OFF** for this parameter. If you switch it to **REC**, the metronome will sound during recording but not during playback. It will sound during both recording and playback when you use the **ON** setting.

**Lead-in** **[0...2]**

The Lead-In parameter sets the number of measures the metronome will count off before the *i4S* starts recording whenever you record in realtime. You can specify a lead-in of **0**, **1**, or **2** measures.

**Level** **[0...99]**

The Level parameter lets you set the volume of the metronome sound. Setting this parameter to **0** will make the metronome inaudible (although it will still use up one note of the *i4S* polyphonic capacity). The highest setting of **99** will raise its volume to maximum.


**Pan** **[LEFT, CENTER, RIGHT, C, C+D, D, ALL]**

The Pan parameter lets you select the channels that will output the metronome. The first three settings (**LEFT**, **CENTER**, and **RIGHT**) let you pan the metronome to the left, center, or right on the stereo channels (A and B). The second three settings (**C**, **C+D**, and **D**) do the same for effect send channels C and D. If you select **ALL**, the *i4S* will output the metronome through all four channels.

## 1-5 RECORDING QUANTIZE/MEMORY


B5E00 1-5:RECORDING QUANTIZE/MEMORY							
Quantize:HIGH Bass Inv:ON 100% free							
A	B	C	D	E	F	G	H



### Quantize

[HIGH, ...]

The Quantize parameter sets the degree of accuracy to which the *i4S* will adjust the timing of data as you record it.

You should select **HIGH** for this setting when you want your recorded data to reproduce precisely the timing of the original performance. When you use this setting, the *i4S* will record data using a resolution of 96 pulses per quarter note (PPQN).

Other settings will adjust the timing of all recorded data to the nearest interval specified by the setting. Thus, if you set this parameter to , all of the notes you play will be recorded as quarter notes.

If you record pitch bends or other constantly changing control data with a rough quantization such as  or , the control change will produce an unnatural stepped sound when played back. To avoid this, record the data at the highest quantization, then use the Quantize function on Page 6-1 of the Backing Sequence mode display to correct the timing of the note data alone. (See page 46 for details on the Quantize function.)

### Bass Inv

[OFF, ON]

When the Bass Inversion parameter is set to **ON**, the *i4S* will play chords with an alternate bass note, such as C/G or D/F#.

### Memory

This field shows the current percentage of backing sequence memory that is available for recording. You cannot edit this field as it is for display only.

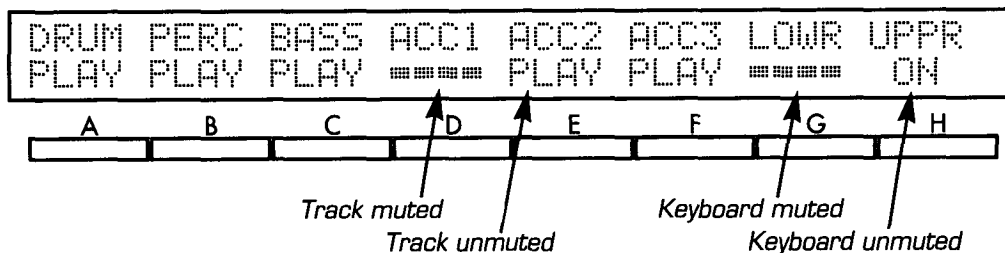
## Mute Page

There are eight *mute buttons* that you can use to mute the backing tracks and the upper and lower keyboards. To access this page, press the MUTE key on the *i4S* front panel. Press the MUTE key a second time to return to the previous display page.

### Mute buttons

[←, PLAY] or [←, ON]

These buttons will appear as a blank bar for tracks or keyboards that are muted. This will switch to the word **PLAY** when you unmute a track, or the word **ON** when you unmute the upper or lower keyboard.



You can toggle the tracks and keyboards between muted and unmuted status by pressing the corresponding cursor keys. The *i4S* will only record changes you make to the backing tracks' mute buttons.

## Mixer Page

The fields on this display page let you set volume levels for each of the backing tracks, keyboard timbres, and extra tracks. A vertical bar representing the volume level will be shown, in addition to the numerical value.

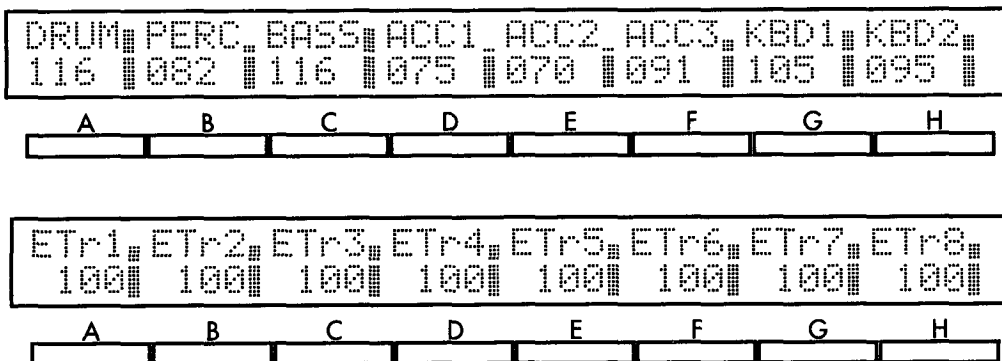
Values found on this page for the backing tracks and keyboard timbres are relative to the backing track volume levels set in each arrangement. Changes you make to extra track volume levels on this display page will directly affect the value of the Volume parameter found on Page 2-1, for those tracks.

To access the volume levels for the backing tracks and keyboard timbres, press the MIXER key on the *i4S* front panel. Press the MIXER key a second time to access the volume levels for the extra tracks. Press the MIXER key a third time to return to the Backing Sequence mode display.

### Volume

[0-127]

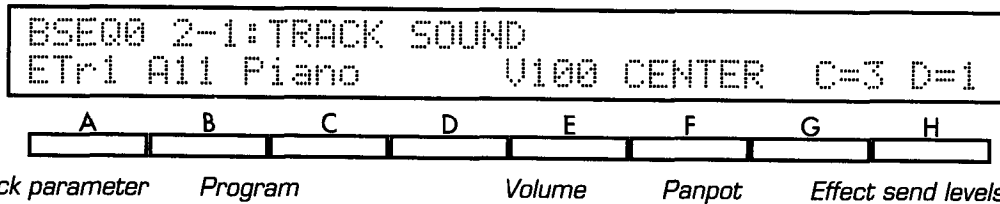
To adjust the volume level of a backing track or keyboard timbre, first press the corresponding cursor key, then use the VALUE controls. The *i4S* will only record volume changes you make to the extra tracks.



## Track Parameters

The parameters on Pages 2-1 through 2-3 let you adjust various settings for the extra tracks, including program, volume, panning, effect send levels, MIDI output, track detuning, and key windows. You can also use the Program parameter on Page 2-1 to set the programs for keyboard timbres KB1 and KB2.

### 2-1 TRACK SOUND



#### Track [KB1, KB2, ETr1...ETr8]

This parameter lets you choose which track's settings to adjust.

#### Program [OFF, A11...Dr8]

This field lets you select the program to be played by the corresponding keyboard timbre or extra track.

You can change the current program selection using either the VALUE controls or the PROGRAM keys, as described on page 27 and 28 of the Player's Guide.

Extra tracks whose Program parameters are set to OFF can be used to control the backing tracks. (See page 19 of the Applications Guide for details.)

#### Volume [0...127]

This field sets the volume of the corresponding extra track.

Setting a track's volume to 0 will make it inaudible (although it will still use up some of the *i4S* polyphonic capacity). The highest setting of 127 will raise the volume to the maximum level set by the selected program's Level parameters (see page 63).

This parameter will not appear if either of the two keyboard timbres has been selected for the Track parameter, described above.

#### Panpot [OFF, LEFT15...LEFT1, CENTER, RIGHT1...RIGHT15, PROGRAM]

This field sets the stereo position of each track. It does this by adjusting the levels of the signals input to the effects system via channels A and B. (For an explanation of these channels and their relationship to the effects system, see pages 142 through 144 of this manual.)

The CENTER setting centers the track. Settings preceded by LEFT move it to the left, whereas those preceded by RIGHT move it to the right. The sound moves farther from the center as the numerical value of the setting increases.

The OFF setting lets you turn off the track's output to channels A and B altogether. Finally, a setting of PROGRAM tells the *i4S* to use the panning specified by the program's Panpot parameters (see page 64).

This parameter will not appear if either of the two keyboard timbres is selected for the Track parameter, described above.

## Effect Send Level C, D

[0...9, P]

These fields determine the levels of the corresponding track signals that are sent to the effects system via channels C and D.

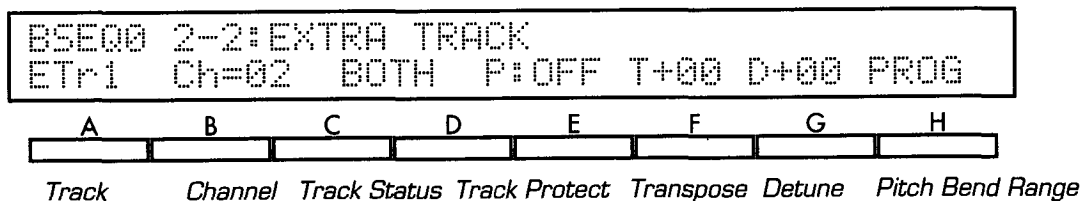
You can set a level from 0 (no signal) to 9 (maximum) for each channel. If you set these parameters to P, the i4S will use the effect send levels specified by the program's parameters.

The nature of these effect send channels and their relationship to the stereo channels (A and B) are described in detail on pages 142 through 144.

These parameters will not appear if either of the two keyboard timbres is selected for the Track parameter, described above.

## 2-2 EXTRA TRACK

Page 2-2 of the Backing Sequence mode display contains parameters for the eight extra tracks. They let you select the MIDI channel used by each track, and the output destination for track data. You can also protect each track's contents, transpose or detune each track, or adjust its pitch bend range.



This page does not let you make any transpose settings for the keyboard timbres. Instead, the current setting of the TRANSPOSE keys will be used to transpose the keyboard timbres.

### Track

[ETr1...ETr8]

This parameter lets you choose which extra track's settings to adjust.

### Channel (Ch)

[1...16]

This parameter sets the MIDI channel for each track. The track will use this channel to receive MIDI data from the keyboard and the MIDI IN jack. It will transmit data on this channel as long as its Track Status parameter (see page 35) has been set to EXT or BOTH.

You can set two or more tracks to use a single MIDI channel. The tone generator will play, in unison, the programs assigned to all tracks set to this channel whenever you select one of the tracks for the Track parameter described on page 25. (It will also play all of the programs when it receives data for that channel via the MIDI IN jack.)

You can also set two or more tracks to use the same MIDI channel, then divide your performance data between the tracks. You might find it convenient, for example, to record note data in one track, and control data such as volume changes and pitch bends in another.

### Track Status

[OFF, INT, EXT, BOTH]

This parameter determines whether the i4S will play or transmit data for the corresponding tracks during backing sequence playback.

When you set one of these parameters to OFF, the i4S will not play back the corresponding track at all. When you select INT, it will send the track's data to the internal tone generator, but it will not transmit it from the MIDI OUT jack.

You can select **EXT** when you want the *i4S* to transmit a track's data to an external tone generator without playing the data itself. Finally, the **BOTH** setting lets you send track data to both destinations. This is the normal setting for each track.

This setting also affects the transmission of notes you play on the *i4S* keyboard when you select one of the extra tracks for recording. If you select a track set to **OFF** or **INT**, the *i4S* will not transmit data for such notes from the MIDI OUT jack. If you select a track set to **EXT**, the *i4S* internal tone generator will not respond to keyboard control.

## Track Protect (P)

[OFF, ON]

These parameters let you protect your recorded track data.

When you turn one of them **ON**, the *i4S* will not let you record new note data, program changes, or volume changes to the corresponding track. Neither will it let you edit the track's current data using the Event Edit function described on page 40.

You will be able to adjust the extra track parameters on Page 2-1 of the Backing Sequence mode display. However, because the *i4S* will not write these changes to memory, you can return the settings to their original values at any time by simply pressing the **RESET** key. The **ON** setting is thus useful when you want to try out program, volume, or panning changes before you actually record them.

This parameter is normally turned **OFF** to enable the recording and editing of backing sequence data.

## Transpose (T)

[-24...+24]

This parameter lets you transpose tracks up or down in steps of one semitone, to a maximum of two octaves. A setting of **0** produces the standard pitch for the selected program.

The relationship of these parameters to the Global mode Scale settings (see page 161), and their effect on data transmitted from the MIDI OUT jack, are determined by the Xpose Pos parameter (see page 150).

### If a track won't play high notes...

Since every multisound has an upper limit to its pitch range, some tracks may produce no sound if you transpose them up and play notes in the higher reaches of the keyboard.

## Detune (D)

[-50...+50]

These parameters adjust the pitch of corresponding tracks in one-cent steps, to a maximum of 50 cents (one-half semitone). They are most effectively used to detune two tracks playing in unison, for a thicker sound.

To achieve this effect, set the Channel parameter for two tracks to the same value, but record data on only one of these tracks (see page 64). Then adjust the Detune parameters for both tracks, raising one and lowering the other by the same amount. (If you detune only one track, the pair of tracks will produce an off-key sound.)

## Pitch Bend Range (B)

[-12...+12, PROG]

These parameters set the ranges in which the corresponding tracks will play or record pitch bend data.

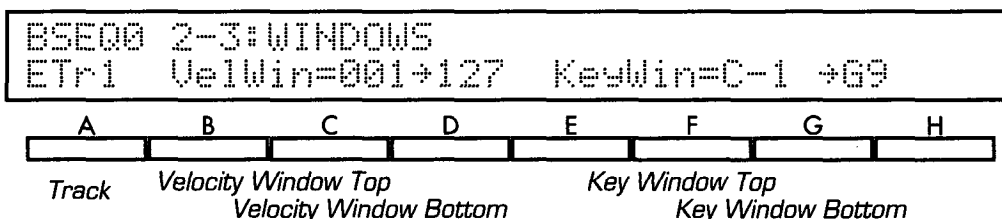
The maximum setting of **12** will let you bend the pitch up or down one octave. Positive settings will cause the pitch to rise when you move the joystick to the right, and drop when you move it to the left. Negative settings will have the

opposite effect.

These parameters are usually set to **PROG**, so that each track will use the pitch bend range settings for the selected program.

## 2-3 WINDOWS

Page 2-3 of the Backing Sequence mode display contains velocity and key window parameters for the extra tracks. These are filters that let you combine two or more programs in a velocity-switch or split-keyboard setup.



This page does not let you set data windows for the keyboard timbres. A backing sequence will automatically use the velocity window settings you have selected for the keyboard timbres in the arrangement being played (see page 10). Key window settings for the keyboard track are replaced by the keyboard assign modes described on page 10 of the Applications Guide.

### Track [ETr1...ETr8]

This parameter lets you choose which extra track's settings to adjust.

### VelWin Top [1...127]

This parameter sets the highest velocity at which the corresponding track will play note data. You can use it together with the VelWin Bottom parameter, described below, to combine tracks in a velocity-switch or velocity-layer arrangement.

For example, you might set the VelWin Top parameter for one track to 100, and the VelWin Bottom parameter for another to 101. The two tracks would play different programs—muted and picked guitar sounds, for example—but both would use the same MIDI channel (set by the Channel parameter described above.)

The first track would record all the data, playing only low-velocity notes, while the second track would play the rest. The overall effect would be one of a guitarist switching between muted and open playing styles.

You can also overlap velocity windows to create layered effects. For example, you might set one track to play a string sound at all times, and another to add a touch of brass at higher velocities only.

### VelWin Bottom [1...127]

This parameter sets the lowest velocity at which the corresponding track will play note data. You can use it in combination with the VelWin Top parameter, described above.

**Set these parameters from the keyboard**

You can set the velocity window parameters by playing notes at the desired velocities on the *i4S* keyboard while holding down the cursor key for the corresponding track.



**KeyWin Top****[C-1...G9]**

This parameter sets the highest note at which the corresponding track will play note data. You can use it together with the KeyWin Bottom parameter, described below, to record and play data with keyboard-switched program changes.

The technique for using this parameter is similar to that described for the VelWin Top parameter, above.

**KeyWin Bottom****[C-1...G9]**

This parameter sets the lowest note at which the corresponding track will play note data. You can use it in combination with the KeyWin Top parameter, described above.

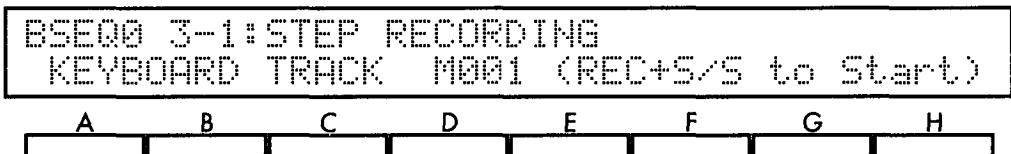
**☛ Set these parameters from the keyboard**

You can set the key window parameters by playing the desired notes on the *i4S* keyboard while holding down the cursor key for the corresponding track.

## Track Editing

Pages 3-1 through 5-5 of Backing Sequence mode provide functions that let you record data in steps rather than in real time, and edit individual events within the backing sequence data you have recorded. These display pages also contain utilities that you can use to delete, erase, copy, or insert measures, and bounce whole tracks.

### 3-1 STEP RECORDING

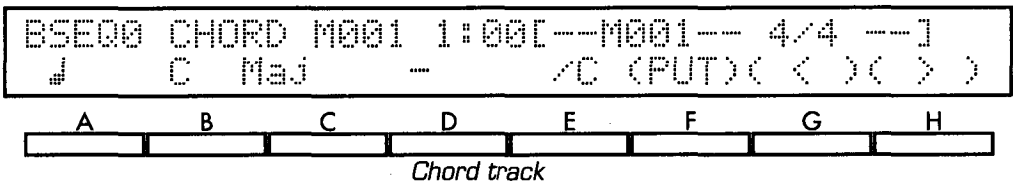
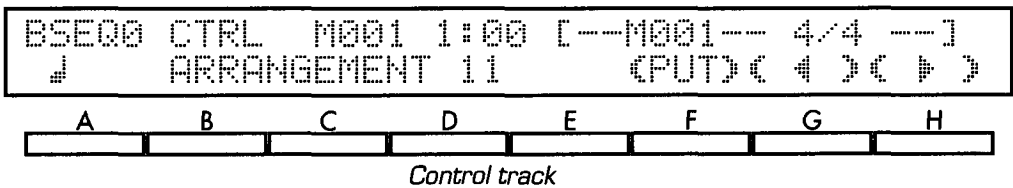
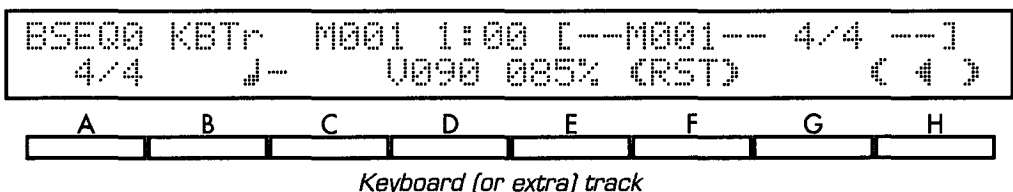


#### Step Recording

#### function

The Step Recording function lets you enter note, control, or chord data one step at a time. If you use this method to record any measures that already contain data, the old data will be replaced by the data you record.

To use this function, first select a track to record above cursor key A, and the measure where you want to start recording above key D. Then press REC/WRITE, followed by START/STOP. The i4S will switch to one of the displays shown below.



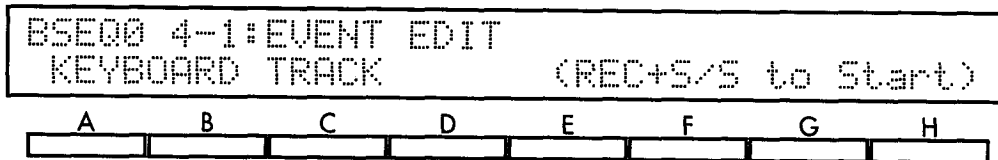
You can use this display to record data in step time. When you are done recording, press the START/STOP key again to exit the Step Recording function.

# 4-1 EVENT EDIT

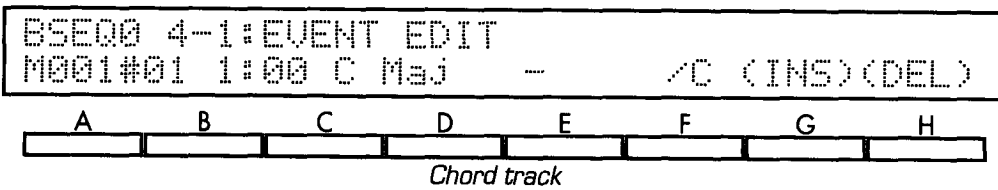
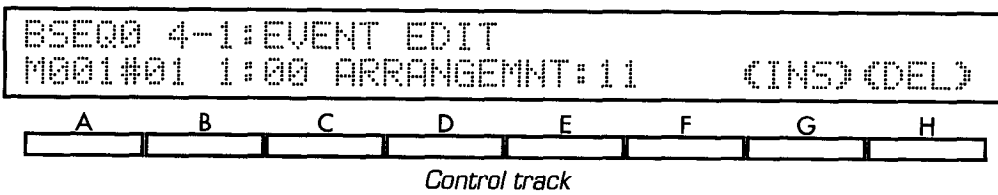
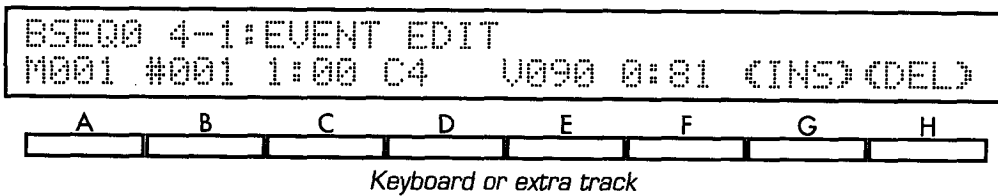
## Event Edit

## function

This function lets you modify the characteristics of individual musical events, such as notes or MIDI control changes. You can also use it to insert or delete events.



To use this function, select the track you want to edit above cursor key B. Then press the REC/WRITE key. Press START/STOP to begin editing. The *i4S* will switch to the display shown below. Use this display to edit the events you have selected.



When you are done editing, press the START/STOP key again to exit the Event Edit function.

## 5-1 DELETE MEASURE

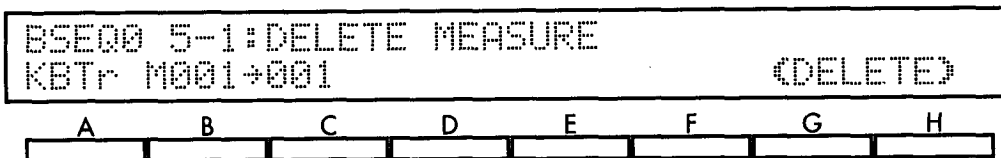
### Delete Measure

### function

This operation cuts one or more measures from the track you specify.

To use this function, first select a track above cursor key A. Choose **ALL** to cut measures from all tracks, including the chord, control, and tempo tracks.

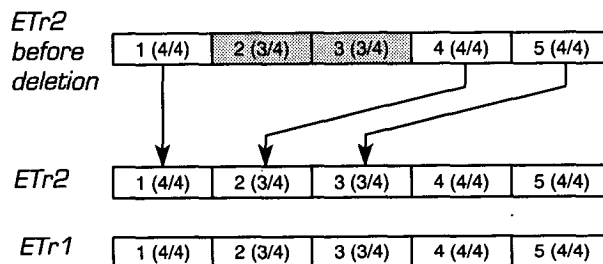
Next, select the first and last measures to be deleted above keys B and C, respectively. (Set the same number for both to delete only one measure. Choose **ALL** above cursor key B to delete the entire track.)



When you are sure of your choices, select [DELETE]. The *i4S* will delete the measures after asking for confirmation.

☛ **If the backing sequence includes changes in time signature**

Any measures following the deleted measures will of course be moved forward. If you delete measures from one track only, the measures that are moved forward will use the same time signature as the corresponding measures of other tracks.



The renumbered measures may thus be truncated or expanded as a result of the deletion. (See the explanation of the Beat parameter for details.)

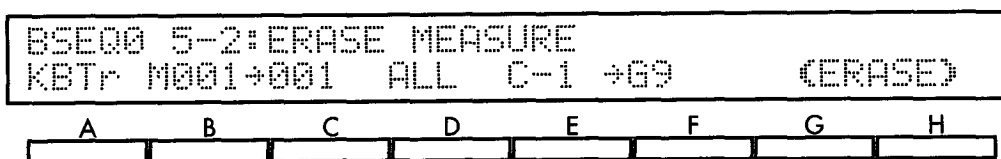
## 5-2 ERASE MEASURE

### Erase Measure

### function

This operation erases some or all data from one or more measures.

To use this function, first select a track above cursor key A. Choose **ALL** to erase data from all tracks, including the chord, control, and tempo tracks. (If you want to erase data from the tempo track alone, use the Event Edit function described on page 40.)



Next, set the first and last measures to be erased above keys B and C, respectively. (Set the same number for both to erase data from only one measure.)

Finally, set the type of data to erase above key D. The table below lists your options.

Setting	Data erased
ALL	All data, including specified note range
NOTE	Note range specified above cursor keys E and F
CTRL	All control change messages
AFTT	All channel and polyphonic aftertouch messages
BEND	All pitch bend messages
PROG	All program change messages

If you select **ALL** or **NOTE**, you can use the Note Bottom and Note Top parameters above cursor keys E and F to specify a note range to be erased. Normally these parameters are set to **C-1** and **G9**, respectively, to erase all notes. You can change both parameters within this range to erase only a limited set of notes.

When you are sure of your choices, select [ERASE]. The *i4S* will erase the specified data from the measures you selected after asking for confirmation.

**Erasing control changes**

Some control changes—such as damper changes or pitch bends—may “stick” if you erase the messages that turn them off. If this happens, you should either erase the messages that are sticking, or use the Event Edit function (see page 40) to correct the data.

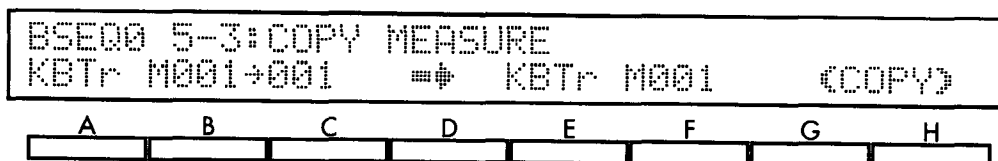
## 5-3 COPY MEASURE

### Copy Measure

### function

This operation copies one or more measures, either within a track or between tracks.

To use this function, first specify the track containing the measures you want to copy above cursor key A. Choose **ALL** to copy the data from all tracks, including the chord, control, and tempo tracks. Then select the first and last measures to be copied above keys B, and C. (Set the same number for both to copy data from only one measure. Choose **ALL** above cursor key B to copy the entire track.)



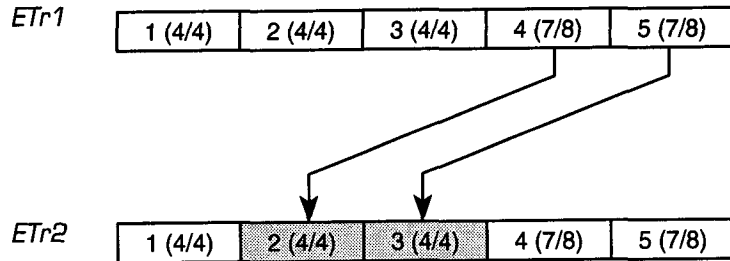
Next, select the destination track above key E. (The *i4S* will select the **ALL** setting automatically if you have selected **ALL** above cursor key A, and likewise for settings of **CTRL** and **CHRD**. If you want to copy data between the keyboard track and one of the extra tracks, first select the extra track. Then select the keyboard track by pressing the DOWN key while holding the appropriate cursor key.) Finally, enter the number of the measure where the *i4S* should place the first of the duplicate measures above key F.

When you are sure of your choices, select [COPY]. The *i4S* will copy the data

after asking for confirmation. If the destination measures already contain data, this data will be replaced by the copied measures.

**☛ If the backing sequence includes changes in time signature**

If tracks other than the destination track contain data for measures corresponding to the destination measures, the copied measures will use the same time signature as the other tracks.



The copied measures may thus be truncated or expanded as a result of the copy operation. (See the explanation of the Beat parameter for details.)

**☛ A quicker way to “copy” tracks**

The Copy Measure function is most useful when you will edit the duplicate track to create a variation, such as a harmony part. If you simply want two instruments to play the same data in unison, however, you don't have to copy the track's data. You can achieve the same effect at a smaller memory cost by adjusting the Channel parameter of an empty track to the same value as that of the track whose data you want it to play (see page 54).

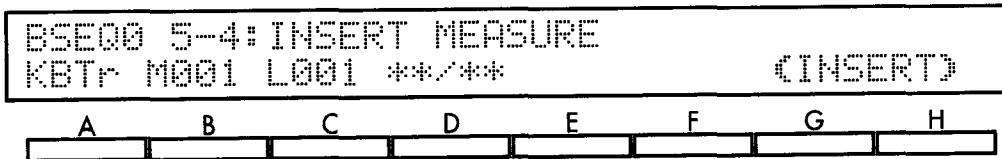
## 5-4 INSERT MEASURE

### Insert Measure

### function

This operation lets you insert one or more measures into a track at a specified location.

To use this function, first select the track to receive the new measures above cursor key A. Choose ALL to insert measures in all of the tracks, including the chord, control, and tempo tracks.



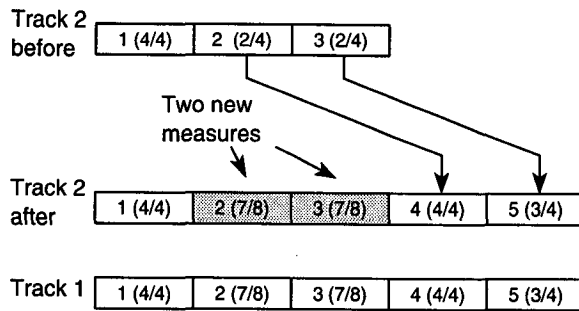
Next, specify the number of the measure *before* which you want to insert the new measures above key B, and the number of new measures to insert above key C. You can also specify a time signature for the new measures above cursor key D—but see the note below.

When you have made your choices, select [INSERT]. The *i4S* will insert the new measures after asking for confirmation.

**☛ If the backing sequence includes changes in time signature**

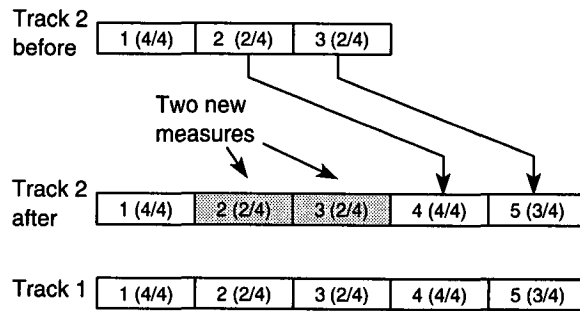
If you select a new time signature above cursor key D, the corresponding measures of all tracks will be truncated or expanded to match this time signature.

Time signature = 7/8 (above cursor key D)



Otherwise, the *i4S* will show **\*\*/\*\*** for this parameter, and the new measures will use the same time signature as the corresponding measures of other tracks that already contain data, or of the following measures if all other tracks are empty.

Time signature = **\*\*/\*\*** (above cursor key D)



Whether you select a new time signature or not, any measures following the inserted measures will be pushed back. If you insert measures to one track only, the measures that are pushed back will use the same time signature as the corresponding measures of other tracks, as shown in the illustrations above.

The renumbered measures may thus be truncated or expanded as a result of the insertion. (See the explanation of the Beat parameter for details.)

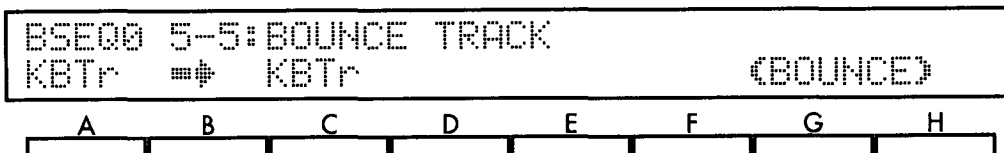
## 5-5 BOUNCE TRACK

### **Bounce Track**

### **function**

This function merges the backing sequence data for one track with that of another. The resulting combined track will use the program assignment, MIDI channel, and other track settings for the destination track. All backing sequence data will be erased from the source track.

If both tracks contain pitch bends, damper changes, or other control change data, these data may create unexpected results when combined. You may want to use the Erase Measure function, described on page 41, to delete all control change data from one track or the other before combining them.



To use this function, select the source track above cursor key A, and the destination track above key C. (You can select only the keyboard track or one of the extra tracks for both of these parameters.) When you have made your choices, select [BOUNCE]. The *i4S* will combine the two tracks after asking for confirmation.



## Data Modification

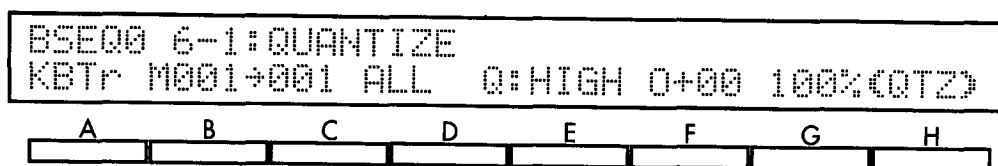
Pages 6-1 through 6-4 of the Backing Sequence display let you modify track data within a specified range of measures. You can correct the timing of recorded data, shift notes, or transpose music to a different key. There is also a function that you can use to erase the current backing sequence.

### 6-1 QUANTIZE

#### Quantize

#### function

You can use the Quantize function to adjust the timing of data you have already recorded.



This function is more flexible than the Quantize parameter on Page 1-5 of Backing Sequence mode (see page 30) in that it lets you select a range of measures and a data type to quantize, leaving other measures or data types unaffected.

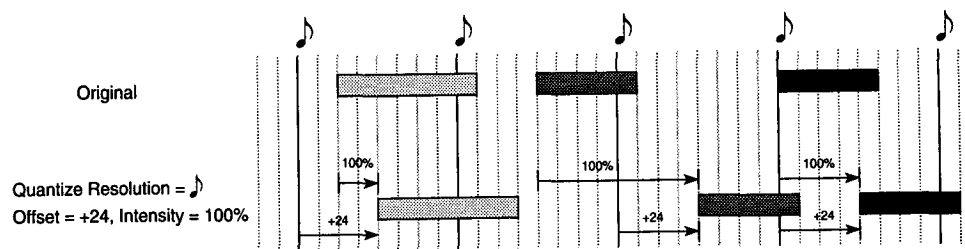
To use this function, first set the track to be quantized above cursor key A. (Select **CHRD**, **CTRL**, or **TEMPO** to quantize the chord, control, or tempo tracks, respectively.) Then set the first and last measures to be quantized above keys B and C.

If you have selected any track other than the chord, control, or tempo tracks, you can specify the type of data to be quantized above key D. The table below lists your options.

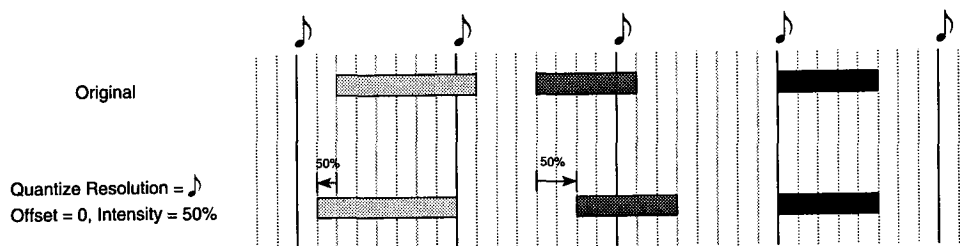
Setting	Data quantized
ALL	All data
NOTE	All note data
CTRL	All control change messages
AFTT	All channel and polyphonic aftertouch messages
BEND	All pitch bend messages
PROG	All program change messages

Finally, set the Quantize, Offset, and Intensity parameters above keys E, F, and G. The Quantize parameter is the same as that used in realtime recording. (See page 30 for details.)

The Offset parameter shifts the quantizing grid away from the note value specified by the resolution. You can set this parameter from **-96** to **+96**, to move the grid either backward or forward by so many pulses per quarter note. Hence, a setting of **+96** will shift the grid forward one whole quarter note.



The Intensity parameter sets the effectiveness of the quantize function as a percentage. It is normally set to 100, to move events all the way to the quantizing grid. You could set this parameter to 50, for example, to move each event only halfway from its recorded position to the grid. Setting it to 0 will disable the Quantize function.



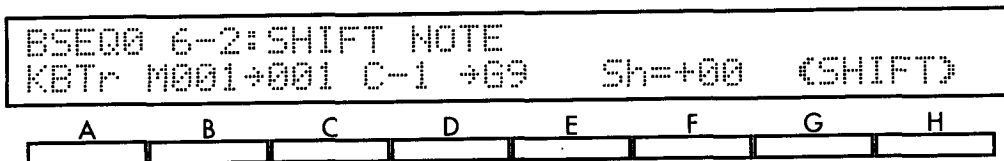
When you are sure of your choices, select [QTZ]. The *i4S* will quantize the data you have specified after asking for confirmation.

## 6-2 SHIFT NOTE

### Shift Note

### function

This operation shifts notes up or down. You can use it to transpose either a specified range of notes, or all notes.



To use this function, first set the track whose notes you want to shift above cursor key A. (You can select the keyboard track or any of the extra tracks.) Then set the first and last measures to be affected above keys B and C.

Next, use the Note Range Bottom and Top parameters above keys D and E to specify the range of notes to be shifted. Normally these parameters are set to C-1 and G9, respectively, to shift all notes. You can change both parameters within this range to shift only a limited set of notes.

(You can set these parameters by playing the desired notes on the *i4S* keyboard while holding down the cursor key for each.)

Finally, set the number of semitones by which the notes will be shifted above key F. You can shift notes up or down a maximum of two octaves.

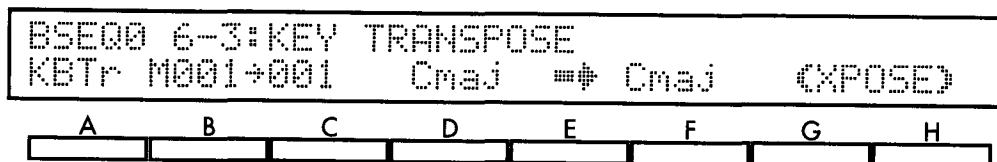
When you have made your choices, select [SHIFT]. The *i4S* will shift the notes after asking for confirmation.

## 6-3 KEY TRANSPOSE

### Key Transpose

function

This operation transposes the key of the music data in a specified range of measures.



To use this function, first set the track whose key you want to transpose above cursor key A. (You can select the keyboard track or one of the extra tracks.) Then set the first and last measures to be affected above keys B and C.

Next, set the current key of the music in the selected measures above cursor key D, and the key you want to transpose it to above key F. You can select any major or minor key for both of these parameters.

(You can set the note portion of the key name for these parameters by playing the desired notes on the *i4S* keyboard while holding down the cursor key for each.)

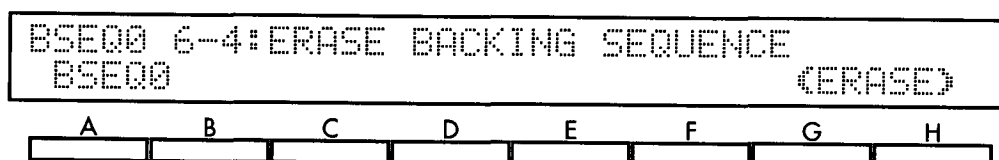
When you have made your choices, select [XPOSE]. The *i4S* will transpose the music after asking for confirmation.

## 6-4 ERASE BACKING SEQUENCE

### Erase Backing Sequence

function

This operation erases all data from the currently selected backing sequence.



To use this function, just select [ERASE]. The *i4S* will erase the backing sequence after asking for confirmation.

## Effects

Pages 7-1 through 7-5 contain the effect settings, which you can use to add a professional touch to your backing sequences, as well as utility functions which you can use to copy effect settings from various sources.

### 7-1 through 7-5

Pages 7-1 through 7-3 of the Backing Sequence mode display let you use two digital signal processors to apply effects to each backing sequence you create. Since both processors can apply two effects simultaneously, you can apply a variety of different effects to the programs playing the backing sequence.

BSEQ00 7-1:EFFECT TYPE				Effect Type			
FX1 01:Hall			:ON	Mod:NONE		I+00	

A	B	C	D	E	F	G	H
---	---	---	---	---	---	---	---

BSEQ00 7-2:FX PARAM				Reverb Time [s]			
3.2 P060 E62	HD30			L-04	H+00	+75:25	

A	B	C	D	E	F	G	H
---	---	---	---	---	---	---	---

BSEQ00 7-3:EFFECT PLACEMENT				Placement			
PARALLEL3	FX1:L0		R0	FX2:L0		R0	

A	B	C	D	E	F	G	H
---	---	---	---	---	---	---	---

All of the programs played by your backing sequence will use the effect settings you make on these pages. Be aware, however, that the effect settings you select in Backing Sequence mode may differ from those assigned to the programs in Program mode or Arrangement Play mode. Hence, if you audition programs in one of these modes before using them in a backing sequence, you may find that they will fail to produce the sound you expect when the backing sequence plays.

The simplest way around this would be to audition programs in Backing Sequence mode, after first selecting the backing sequence's effects. If you find this limiting, however, you may want to try a more involved approach. You could audition the sounds in Program mode, then try to create an effect setup—using dual effects, if necessary—that reproduces as many of the programs' individual effects as possible.

As a third alternative, you could take a course similar to that followed by many recording engineers. First, audition the programs without any effects at all, selecting them for their raw sound qualities. Then, with the signal processors still turned off, go ahead and record the backing sequence. Finally, when all the tracks are ready, add the effects in gradually to create a customized effects setup that brings out the best features of each program.

Pages 7-4 and 7-5 allow you to copy effects settings within a backing sequence or from any arrangement, backing sequence, or program into the current backing sequence.

Because the effect pages in Backing Sequence mode present you with the same effect options as the Arrangement Play, Program, and Song Play modes, the contents of these pages are described in their own chapter. Please refer to Chapter 5 for details on the effect settings.

## Utilities

The final pages of the Backing Sequence mode display contain utility functions that let you name your backing sequence and change other special backing sequence parameters.

There is no need to “execute” the Next Backing Sequence or Rename Backing Sequence functions, as these functions are actually nothing more than special parameters. The *i4S* will record their settings, together with all backing sequence data and the parameters on the other pages of the Backing Sequence mode display, when you save the backing sequence to disk using the ALL or B.SEQ save functions in Disk mode (see page 174 and 175).

### 8-1 NEXT B.SEQUENCE

#### Next Backing Sequence

function

This function lets you specify a backing sequence to be selected—and played—when the currently selected backing sequence ends.

BSEQ0 8-1:NEXT B.SEQUENCE							
BSEQ1 BSequence1 [STOP]							
A	B	C	D	E	F	G	H

This function is actually a pair of parameters. The Next parameter (cursor keys A through D) identifies the number of the backing sequence—**BSEQ0** through **BSEQ9**—that you want the *i4S* to select when it’s done playing the current backing sequence. (The name of each backing sequence will be displayed next to its number.) If you set this parameter to **OFF**, the current backing sequence will remain selected.

The Play/Stop parameter (cursor key F) tells the *i4S* whether it should start playing the specified backing sequence when the current backing sequence ends. If you set this parameter to **STOP**, the *i4S* will select the next backing sequence, but it will not play it back. If you set it to **PLAY**, the *i4S* will begin playback automatically (unless the Next parameter is turned off, in which case it will simply end playback).

This function lets you set a *chain* of backing sequences that will play automatically. To create a continuous *loop* of backing sequences, just set the last backing sequence’s Next parameter to the number of the first backing sequence in the chain, and set the Play/Stop parameter to **PLAY** for all the backing sequences. For example, if you want the loop to repeat backing sequences 0 through 9, set backing sequence 9’s Next parameter to **BSEQ0**.

### 8-2 RENAME BACKING SEQUENCE

#### Rename Backing Sequence

function

You can use this function—which is actually a special parameter—to change the name of the backing sequence you’re editing. The backing sequence name can consist of up to ten characters.



## Chapter 3

# Song Play Mode

The *iAS* Song Play mode lets you play song files—stored in the Standard MIDI File format—directly from a floppy disk. (For more information regarding standard MIDI files, see Chapter 6 in the Applications Guide.)

Song Play mode provides settings for program selection, volume, panning, and effect send levels for each of its sixteen channels. Settings for tempo, transposition, and effect selection are provided as well.

Song Play mode divides its functions among the seven display pages summarized in the table on the following page of this manual. You can switch through these pages using the PAGE+ and PAGE- keys.

You can select pages directly by holding down the SONG PLAY key and pressing the upper row ARRANGEMENT and PROGRAM keys that correspond to the first and second numbers of the desired page. For example, to select Page 3-2, press the 3 key in the upper row of ARRANGEMENT keys followed by the 2 key in the upper row of PROGRAM keys, while holding the SONG PLAY key.

The general procedures for editing parameters and using utility functions are outlined in Chapter 3 of the Player's Guide.

## *Functions in Song Play mode*

The table below shows the layout of the *i4S* Song Play mode. For each display page we list the page title, a brief outline of the page's contents, and the numbers of the pages in this manual where you will find these contents described.

	Page	Title	Functions	Description
Basic Settings	1-1	PLAY	File selection, tempo, transpose	53
	2-1	CHANNEL SOUND	Program selection, volume, panning, and effect send settings	54
Effects	3-1 through 3-5	Effects pages	Effect parameters, effect placement, Copy All Effects, and Copy/Swap FX functions	Chapter 5
Mute page				56
Mixer page				56

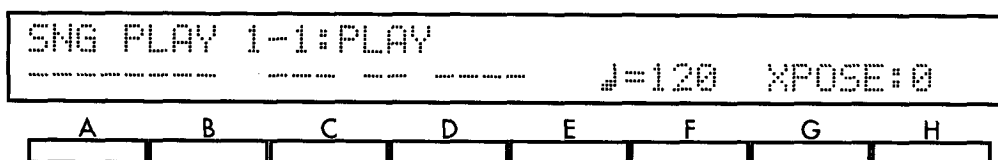
If you should encounter an error message while using one of these functions, see Appendix A for an explanation of the message's meaning and suggested remedies. Also, please refer to page 15 of the Player's Guide for cautions regarding the care and handling of floppy disks.



## Basic Settings

Pages 1-1 and 2-1 of the Song Play mode display let you choose a standard MIDI file to play, and set its tempo and transpose amount, as well as the program, volume, and effect send levels for each channel.

### 1-1 PLAY



#### File

#### variable

To play a single song, press a cursor key from A through E to display the names of the standard MIDI files on the disk. The *i4S* will display only the names of those files that have the .MID extension. The *i4S* will also display the date on which the file was saved. Use the VALUE controls to select a song to play, then press the START/STOP key to start the song.

To play all the songs on the disk one after another, press the START/STOP key when the dashed lines are displayed. The songs will play in the order that they appear in the directory.

Please note that there is no way to rewind, fast-forward, or skip to a particular section of a song.

Song Play mode can only play standard MIDI files saved in format 0.

#### ☛ Can't find a file?

Song Play mode will only recognize files with the .MID extension. If the *i4S* doesn't show the filename of a standard MIDI file created on another instrument or computer, chances are the file's extension is something other than .MID. You can use the RENAME FILE function in Disk mode to change the file's extension.

#### Tempo

#### [40...240]

This adjusts the song's playback tempo. The song will start playback with the tempo saved in the standard MIDI file. You can change the tempo to any value between 40 and 240 beats per minute. The tempo will reset after the song has finished playing.

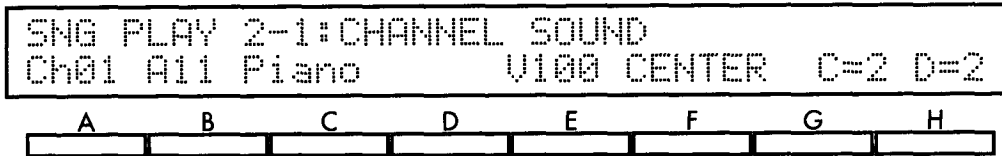
#### XPOSE

This shows how many steps up or down the *i4S* has been transposed. Positive values indicate that the pitch has been raised; negative values indicate that it has been lowered.

In order to hear the effect of the TRANSPOSE keys in Song Play mode, you must first set the Global mode Xpose Pos parameter to PRE-OSC. You can then transpose the *i4S* up or down to a maximum of eleven semitones using the TRANSPOSE keys.

## 2-1 CHANNEL SOUND

When playing a song file, the settings for each channel on this page will change to the values saved with the standard MIDI file. They will reset when the song has finished playing.



### Channel (Ch) [1...16]

This parameter lets you choose which channel's settings to adjust.

### Program

This parameter lets you select the program to be played by the corresponding channel.

You can change the current program selection using either the VALUE controls or the PROGRAM keys, as described on page 27 and 28 of the Player's Guide.

### Volume (V) [0...127]

This parameter sets the volume of the corresponding channel.

Setting a channel's volume to 0 will make it inaudible (although it will still use up some of the polyphonic capacity of your *i4S*). The highest setting of 127 will raise its volume to the maximum level set by the selected program's Level parameters (see page 54 and 63).

#### ☞ Use the mute buttons to mute channels!

As stated above, a channel whose Volume parameter has been set to 0 will still use up some of the polyphonic capacity of your *i4S*. If you want to mute a channel, we suggest using the mute buttons on the Mute display page instead (see page 56).

### Panpot [OFF, LEFT15...LEFT1, CENTER, RIGHT1...RIGHT15, PROGRAM]

This parameter sets the stereo position of each channel. It does this by adjusting the levels of the signals input to the effects system via stereo channels A and B. (For an explanation of these stereo channels and their relationship to the effects system, see pages 142 through 144 of this manual.)

The CENTER setting centers the channel. Settings preceded by LEFT move it to the left, whereas those preceded by RIGHT move it to the right. The sound moves farther from the center as the numerical value of the setting increases.

The OFF setting lets you turn off the channel's output to stereo channels A and B altogether. Finally, a PROGRAM setting tells the *i4S* to use the panning specified by the program's Panpot parameters (see page 64).

### Effect Send Level C, D [0...9, P]

These parameters determine the levels of the standard MIDI file channels that are sent to the effects system via effect send channels C or D.

You can set a level from 0 (no signal) to 9 (maximum) for each effect send channel. If you set these parameters to P, the *i4S* will use the effect send levels specified by the program's parameters.

The nature of these effect send channels and their relationship to the stereo channels (A and B) are described in detail on pages 142 through 144.

## Effects

Pages 3-1 through 3-5 contain the effect settings, which you can use to add a professional touch to songs the *i4S* plays, as well as utility functions which you can use to copy effect settings from various sources.

### 3-1 through 3-5

Pages 3-1 through 3-3 of Song Play mode let you use two digital signal processors to apply effects to songs. Since both processors can apply two effects simultaneously, you can apply a variety of different effects to the programs playing the song.

```
SNG PLAY 3-1:EFFECT TYPE Effect Type
FX1 01:Hall          :ON  Mod:NONE  I+00
```

A	B	C	D	E	F	G	H

```
SNG PLAY 3-2:FX PARAM Reverb Time [s]
3.2 P060 E62  HD30      L-04 H+00 +75:25
```

A	B	C	D	E	F	G	H

```
SNG PLAY 3-3:EFFECT PLACEMENT Placement
PARALLEL3  FX1:L0      R0  FX2:L0      R0
```

A	B	C	D	E	F	G	H

All of the programs played by a song will use the effect settings you make on these pages. You should be aware, however, that the effect settings you select in Song Play mode may differ from those assigned to the programs in Program mode. Hence, if you use Program mode to audition programs before assigning them to a song, you may find that some of them—those that use less common effect settings—will fail to produce the sound you expect when the song plays.

The simplest way around this would be to audition programs in Song Play mode, after first selecting the song's effects. If you find this limiting, however, you may want to try a more involved approach. You could audition the sounds in Program mode, then try to create an effect setup—using dual effects, if necessary—that reproduces as many of the programs' individual effects as possible.

As a third alternative, you could take a course similar to that followed by many recording engineers. First, audition the programs without any effects at all, selecting them for their raw sound qualities. Then, after assigning them to the channels, add the effects in gradually to create a customized effects setup that brings out the best features of each program.

Pages 3-4 and 3-5 allow you to copy effects settings within a song or from any arrangement, backing sequence, or program into the current song.

Because the Effects pages in Song Play mode present you with the same options as the Arrangement Play, Backing Sequence, and Program modes, the contents of these pages are described in their own chapter. Please refer to Chapter 5 for details on the effect settings.

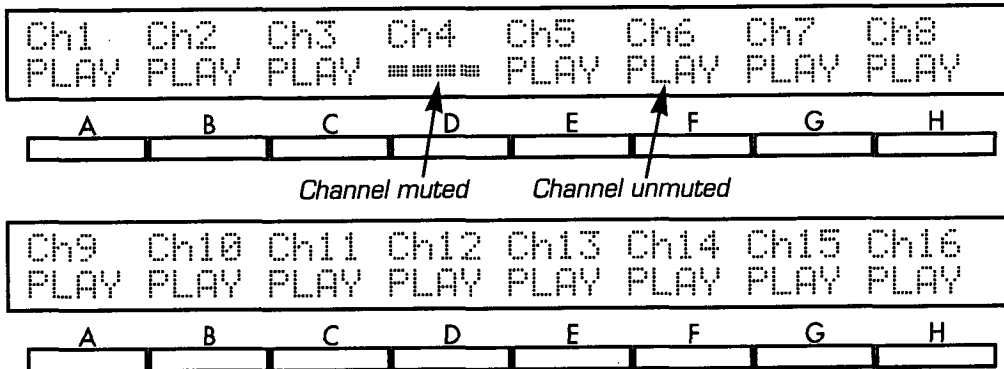
## Mute Page

There are sixteen *mute buttons* that you can use to mute the standard MIDI file's channels. To access the mute buttons for channels 1 through 8, press the MUTE key on the *i4S* front panel. Press the MUTE key a second time to access the mute buttons for channels 9 through 16. Press the MUTE key a third time to return to the Song Play mode display.

### Mute buttons

[—, PLAY]

These buttons will appear as a blank bar for channels that are muted. This will switch to the word **PLAY** when you unmute a channel.



You can toggle the channels between muted and unmuted status by pressing the corresponding cursor keys. When you mute a channel, the program assigned to that channel will be playable from the keyboard.

## Mixer Page

The eight fields on this display page let you set volume levels for each of the standard MIDI file's channels. A vertical bar representing the volume level will be shown, in addition to the numerical value.

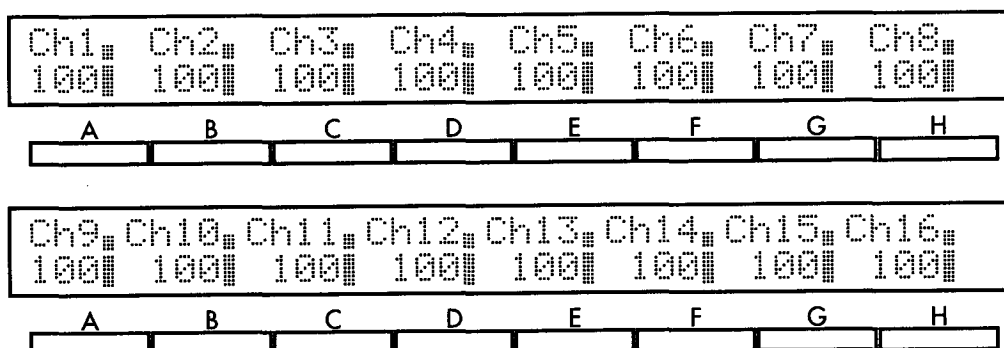
Changes you make on this display page will directly affect the value of the Volume parameter found on Page 2-1. You can use the Mixer page to set the relative volume levels for all channels.

To access the volume levels for channels 1 through 8, press the MIXER key on the *i4S* front panel. Press the MIXER key a second time to access the volume levels for channels 9 through 16. Press the MIXER key a third time to return to the Song Play mode display.

### Volume

[0...127]

To adjust a channel's volume level, first press the corresponding cursor key, then use the VALUE controls.



# Chapter 4

## Program Mode

This mode lets you select *programs* (individual sounds) to edit and play on the *i4S* keyboard. The *i4S* internal memory contains four banks of 64 programs each, plus a fifth bank containing eight drum programs. You will find a complete listing of these programs in the Performance Notes that accompanied this manual.

You can use the TRANSPOSE and OCTAVE keys on the front panel to alter the pitch of any program you play in Program mode. Please see page 33 of the Player's Guide for details on the use of these keys.

The first display page of Program mode gives you a *Performance Editing* function that makes it easy to change some of the more important parameters of the program you're playing. This function is described in detail on pages 60 through 61. You can also use the *Write* function, described on page 61, to save any changes you make. To change any parameters that are not available through Performance Editing, you should edit the program using the parameters found on the other display pages.

The Program mode has a total of thirty-two display pages, whose functions are summarized in the table on the following page of this manual. You can switch through these pages using the PAGE+ and PAGE- keys. You can select pages directly by holding down the PROGRAM mode key and pressing the upper row ARRANGEMENT and PROGRAM keys that correspond to the first and second numbers of the desired page. For example, to select Page 4-2, press the 4 key in the upper row of ARRANGEMENT keys followed by the 2 key in the upper row of PROGRAM keys, while holding the PROGRAM mode key.

The general procedures for editing parameters and using utility functions are outlined in Chapter 3 of the Player's Guide. Specific applications for some of the functions in this mode may be found in Chapter 3 and 4 of the Applications Guide.

While editing, you can press the TEMPO LOCK key to hear the original program as it sounded before you made any changes. You can then begin editing the program from scratch once again, or press TEMPO LOCK a second time—without editing—to return to the data you've already edited.

When you've finished editing your program, you should use the *Write Program* function described on page 87 to store your changes in the *i4S* memory. (If you are editing a user program in bank D, you can save your changes to the current program number by simply pressing the REC/WRITE key.)

If you return to Page 1-1 of Program mode and select another program before storing the one you've edited, you can use the *Recall* function, described on page 61, to retrieve your edited data. Once you switch back to the higher-numbered display pages in Program mode and begin editing the newly selected program, however, all of your previously edited data will be lost.

## *Functions in Program Mode*

The table below shows the layout of the *i4S* Program mode. For each display page we list the page title, a brief outline of the page's contents, and the numbers of the pages in this manual where you will find these contents described.

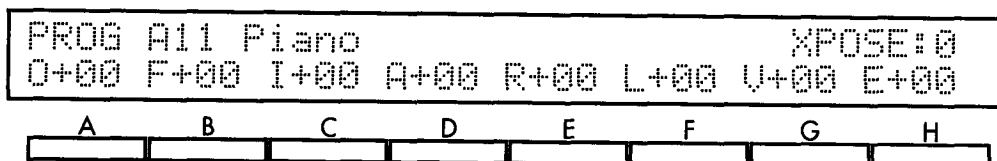
	Page	Title	Contents	Description
Program Play	1-1	PROGRAM PLAY	Program selection and Performance Edit settings	59–61
Oscillator Parameters	2-1	OSC BASIC	Program type and mode settings	62
	2-2	OSC TONE	Basic oscillator parameters	63–64
	2-3	EFFECT SEND	Effect send levels	64
	2-4	OSC2 RELATIVE	Pitch and timing offsets for OSC2	65
	2-5	COPY/SWAP OSC	Copy/Swap Oscillator	65
	3-1	PITCH EG	Pitch EG parameters	66–67
Filter Parameters	4-1	VDF	Basic filter settings	68
	4-2	VDF EG	VDF EG parameters	69–70
	4-3	VDF KBD TRACK	VDF keyboard tracking	70–71
	4-4	VDF TIME KBD	Keyboard tracking control over VDF EG times	71–72
	4-5	VDF VELOCITY	VDF velocity sensitivity	72–73
	4-6	VDF TIME VEL	Velocity control over VDF EG times	73–74
VDA Parameters	5-1	VDA EG	VDA EG parameters	75–76
	5-2	VDA KBD TRACK	VDA keyboard tracking	76–77
	5-3	VDA TIME KBD	Keyboard tracking control over VDA EG times	77–78
	5-4	VDA VELOCITY	VDA velocity sensitivity	78
	5-5	VDA TIME VEL	Velocity control over VDA EG times	79
Modulation and Control	6-1	PITCH MG	Pitch modulation parameters	80–81
	6-2	PITCH MG CONTROL	Joystick and aftertouch control over Pitch MG intensity	82
	6-3	PMG FREQ CONTROL	Joystick and aftertouch control over Pitch MG frequency	82
	6-4	VDF MG	Filter modulation parameters	82–84
	6-5	VDF MG CONTROL	Joystick and aftertouch control over VDF MG intensity	84
	6-6	CONTROLLER	Joystick and aftertouch parameters	84–85
Effects	7-1 through 7-5	Effects pages	Effect parameters, effect placement, Copy All Effects, Copy/Swap FX	Chapter 5
Utilities	8-1	RENAME PROGRAM	Rename Program	87
	8-2	WRITE PROGRAM	Write Program	87
	8-3	INITIALIZE PROGRAM	Initialize Program	88

## Program Play

Page 1-1 of Program mode lets you select programs for playing on the *i4S* keyboard. You can perform simple edits using the Performance Edit settings that appear on this display page.

### 1-1 PROGRAM PLAY

A display like the one below will appear when you press the PROGRAM key. While this display is showing, you can use the VALUE controls to select a program to play on the *i4S* keyboard.



The bottom line of the Program mode display contains the *Performance Editing settings* for the selected program. You can edit any of these settings by pressing the corresponding cursor key. The Performance Editing function is described in detail in the next section.

### Program

[A11...D88, Dr1...Dr8]

The number and name of the selected program appear at the top of the display. The *i4S* internal memory contains the five program banks shown in the table below.

Bank	Programs	Comments
A	64	General MIDI programs 1–64 (ROM)
B	64	General MIDI programs 65–128 (ROM)
C	64	Preset <i>i4S</i> programs (ROM)
D	64	User programs (RAM)
Dr	8	Drum programs (1–6 ROM, 7–8 RAM)

Press the bank keys to switch between program banks. Use the VALUE controls to select the next or previous program within a bank, or enter the number of a desired program using the PROGRAM keys.

#### Other ways to select programs...

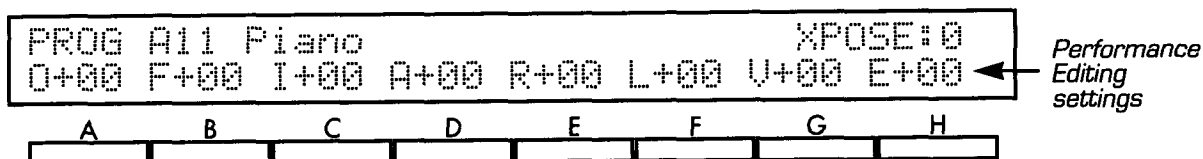
You can change the program selection using a footswitch, one of the pedals on an EC5 External Controller, or MIDI program change messages. All of these program change methods are enabled by Global mode settings.

To use a footswitch, set the ASSIGNABLE PEDAL parameter to either **PROGRAM UP** or **PROGRAM DOWN** (see page 156). If you have an EC5, select one of the same settings for the appropriate EC5 SWITCH parameter (see page 156).

If you want the *i4S* to recognize MIDI program change messages, be sure the MIDI Filter Program Change parameter is set to **ENA** (see page 154).

## Performance Editing

The *i4S* Performance Editing feature lets you adjust some of the more important program parameters without having to get involved with detailed editing. The ability to change program parameters quickly and easily can come in handy during practice sessions and live performances.



The *i4S* shows the Performance Editing settings as values from -10 to +10. Each setting changes one or more parameters for both oscillators (except for the Dry:FX Balance setting, which is not oscillator-specific).

To use the Performance Editing function, press the cursor key under the setting you wish to adjust. Then use the VALUE dial or the VALUE keys to adjust the value of that setting. Press the PROGRAM key when you're done to enable program selection via the VALUE controls once again.

You may change a Performance Editing setting to its minimum or maximum value (-10 or +10) and find that you would like to raise or lower it still further. If this happens, press the PAGE+ key followed by the PAGE- key. This will reset the Performance Editing sliders to their center positions without affecting your earlier adjustments, giving you an additional ten steps' range. Just select the setting again and continue adjusting the value.

### Octave (O)

This setting changes the octave in which the program plays by adjusting the Octave parameters (see page 63) for both oscillators. It raises or lowers the program one octave with each step.

### VDF Cutoff (F)

This adjusts the program's tone by changing the VDF Cutoff parameters (see page 68) for both oscillators. It raises or lowers the values of these parameters five points with each step.

### VDF EG Intensity (I)

This setting adjusts how the program's tone changes over time by changing the VDF EG Intensity parameters (see page 68) for both oscillators. It raises or lowers the values of these parameters three points with each step.

### Attack Time (A)

This adjusts the length of the program's attack by changing the VDA Attack Time parameters (see page 75) for both oscillators. It raises or lowers the values of these parameters five points with each step.

### Release Time (R)

This adjusts the program's release rate by raising the VDF and VDA Release Time parameters (see page 69 and 76) for both oscillators. It raises or lowers the values of these parameters five points with each step.

### VDA Level (L)

This setting adjusts the program's overall volume by changing the VDA Level



parameters (see page 63) for both oscillators. It raises or lowers the values of these parameters by five points with each step.

## Velocity Sensitivity (V)

This setting adjusts the degree to which the program's sound will be affected by note velocity. It does so by changing the VDF and VDA Velocity Sensitivity parameters (see page 78 and 78) for both oscillators. It raises or lowers the values of these parameters five points with each step.

## Dry:FX Balance (E)

This setting adjusts the balance between the program's unprocessed (dry) and processed (wet) sounds by changing the Balance parameters (see Chapter 5) for both effects. It raises or lowers the values of these parameters by five points with each step.

## Write

### function

Once you have changed a program's parameters using the Performance Editing feature, you may want to store your changes for future use. To do so, press the REC/WRITE key. The *i4S* will prompt you to confirm the Write operation. Press E or F to store your changes, or G or H if you change your mind.

#### ☞ User programs only!

You can only use this function to store user programs (that is, the programs in bank D or drum programs 7 and 8). If you edit a ROM program, or if you want to store your changes in a different location to preserve the original data, then you should store them to a RAM program number using the Write Program function described on page 87.

#### ☞ When the program memory is protected...

This function will not work if the Program Protect parameter in Global mode has been set to ON.

## Recall

### function

You can press the TEMPO LOCK key while on Page 1-1 of Program mode to recall the data for a program you have created on Program mode's other display pages. This will not change the current program selection; the data you edited will replace that of the program number you have selected.

Let us say, for example, that you have just created a piano sound using the parameters on the higher-numbered display pages of Program mode, then switched to Page 1-1 and selected a program number containing a brass sound. If you press the TEMPO LOCK key at this point, the piano sound will replace the brass sound as the data for the program number you selected.

#### ☞ Be sure to save recalled data!

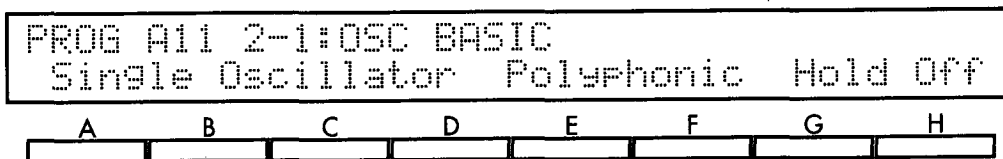
Any data that you recall in this way will be lost as soon as you select a new program number, unless you first store it using either the Write function described above, or the Write Program function described on page 87. Also, the Recall function works just once: when you press the TEMPO LOCK key to recall edited data, the edit buffer is cleared and the data cannot be recalled again.

## Oscillator Parameters

Pages 2-1 through 2-3 contain parameters that let you select the basic program structure, and set the waveforms, volume, panning, and effect send levels for the two oscillators of an *i4S* program. Page 2-4 lets you offset the pitch and timing between OSC1 and OSC2. Page 2-5 provides a useful utility for copying or switching settings between the two oscillators. Finally, Page 3-1 contains the settings for the Pitch EG.

### 2-1 OSC BASIC

Page 2-1 of the Program display lets you select a basic program type—that is, whether the program will use a single oscillator, two oscillators, or a drum kit. In addition, you can specify whether the program will hold notes even after note off messages are received, and whether it will play monophonically or polyphonically.



#### Program Type

[Single Oscillator, Double Oscillator, Drums]

This setting determines the program's basic structure. When it is set to **Single Oscillator**, the program will use only one oscillator. You will be able to play up to 32 simultaneous notes with the program.

When **Double Oscillator** is selected, the program will use two oscillators. This allows you to create more complex sounds, but it also limits the program to a maximum of only 16 simultaneous notes. Parameters pertaining to Oscillator 2 will appear in the display only when this type is selected.

When **Drums** is selected, you will be able to assign a drum kit instead of a multisound to the program's oscillator. (See the description of the Multisound/-Drum Kit parameter, below, for details.)

#### Assign Mode

[Monophonic, Polyphonic]

This determines how many notes the program can play at once in response to note messages received on a single MIDI channel. When set to **Monophonic**, the program will play only one note at a time. When set to **Polyphonic**, it will play chords.

#### Hold

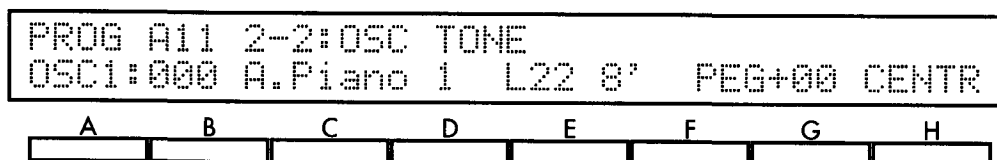
[On, Off]

This parameter determines whether *note off* messages (such as those generated when you release a key on the *i4S* keyboard) will end notes played using the program. When it is set to **Hold On**, notes will continue sounding even after the keys are released. This is useful mainly when playing drum sounds.

You should use the **Hold Off** setting for most programs. If you turn the hold parameter on and set the VDA EG Sustain Level parameter (see page 76) to any value other than 0, the notes played by the program will never end!

## 2-2 OSC TONE

The parameters on this display page let you select the waveform played by the oscillators, and make other oscillator-related settings. Most of these settings will be available regardless of the program type you've selected. Please note, however, that "Drum Kit" will be displayed as the name of the first parameter, and the Panpot parameter will not appear at all, if you've chosen Drums as the program type.



### Oscillator (OSC)

Use this parameter to select which oscillator's parameters you want to edit when the Program Type parameter (described on page 62) is set to **Double Oscillator**. This field will change to **DRUM** if the Program Type parameter is set to **Drums**.

### Multisound (or Drum Kit)

[variable]

This parameter selects the basic waveform played by the oscillator specified above cursor key A. The name and number of the multisound will be displayed. (Multisounds whose names are accompanied by the abbreviation "NT" will always play at the same pitch for any note.)

You will find a complete list of the available multisounds in the Performance Notes that accompanied this manual.

#### ☛ If you are editing a drum program...

If the Program Type parameter has been set to **Drums**, the words "Drum Kit" will appear as the name of this parameter, and you will be able to select a drum kit instead of a multisound. Drum programs use the drum sound assignments and pan settings for the selected drum kit. Other details are handled as for single-oscillator programs. (Drum kit settings are made in Global mode, as described on pages 163 through 165.)

### Level (L)

[0...99]

This parameter sets the overall volume of the sound put out by the VDA for the oscillator specified above cursor key A. Please note that high volume levels may distort some sounds when chords are played. If this happens, lower this setting.

The volume level of an oscillator's output can be adjusted to match the keyboard range of notes that are played, and the velocity at which they are played. Also, the volume of a single note can be varied over time using the VDA EG. See pages 75 through 76 for details.

### Octave

[4', 8', 16', 32']

This sets the basic pitch for the oscillator specified above cursor key A in units of one octave. The standard octave for all multisounds is 8'. You can lower the pitch by one or two octaves, or raise it one octave.

Be sure to set this parameter to 8' when editing a drum program. Other settings will shift the drum kit's key assignments up or down, which could lead to confusion. (See page 164 for details.)

**☞ If your upper keys won't play...**

Please be aware that since every multisound has an upper limit to its pitch range, some multisounds may not produce any sound at the upper end of the keyboard when you set the Octave parameter to 4', especially if you use the OCTAVE or TRANSPOSE keys to raise the pitch of the keyboard even further.

**Pitch EG Intensty (PEG)**

**[-99...+99]**

This determines how deeply the pitch of the oscillator specified above cursor key A will be affected by the pitch EG. Higher settings increase the depth of the pitch change. Negative values invert the pitch change. A setting of 0 disables the pitch EG, resulting in no pitch change at all.

The shape of the pitch EG is determined by the parameters on Page 3-1: Pitch EG. See page 66 for details.

**Panpot**

**[OFF, LFT15...LFT1, CENTR, RGT1...RGT15]**

This parameter sets the stereo position of the oscillator specified above cursor key A. It does this by adjusting the levels of the oscillator signals input to the effects system via channels A and B. (For details on these channels, see the Effect Placement section on pages 142 through 144 of this manual.)

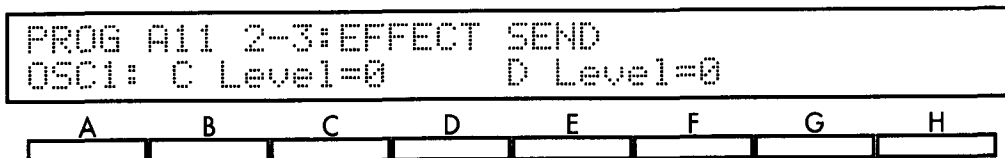
The CENTR setting centers the sound produced by the oscillator specified above cursor key A. Settings preceded by LFT move it to the left, whereas those preceded by RGT move it to the right. The sound moves farther from the center as the numerical value of the setting increases. Finally, an OFF setting lets you turn off the output of the specified oscillator to channels A and B altogether.

**☞ Drum kits have their own pan settings!**

This parameter will not appear in the display for drum programs, as such programs use the pan settings for the individual drum kit instruments instead. (Drum kit pan settings are made in Global mode. See page 165.)

**2-3 EFFECT SEND**

You can use the parameters on this display page to set the amount of signal being sent to effect inputs C and D.



**Oscillator (OSC)**

Use this parameter to select which oscillator's parameters you want to edit when the Program Type parameter (described on page 62) is set to Double Oscillator.

**C Level, D Level**

**[0...9]**

These parameters determine the levels of the oscillator output signals that are sent to the effects system via channels C and D.

The nature of these effect send channels and their relationship to the other effect channels are described in detail on pages 142 through 144.

## 2-4 OSC2 RELATIVE

The Interval, Detune, and Delay parameters are offsets which adjust the action of OSC1 and OSC2 relative to each other.

```

PROG A11 2-4:OSC2 RELATIVE
Interval=+00 Detune=+00 Delay=00
    
```

**Interval** [-12...+12]

This lets you raise or lower the pitch of OSC2 with respect to OSC1, so that the program will play a two-note chord. You can raise or lower OSC2 in chromatic steps, to a maximum of one octave. Positive settings raise OSC2; negative settings lower it.

**Detune** [-50...+50]

This parameter lets you detune OSC1 and OSC2 with respect to each other, to create a richer sound. Positive settings raise OSC2 and lower OSC1 from the standard pitch, whereas negative settings have the opposite effect.

The numerical value of the setting indicates the pitch difference between OSC1 and OSC2 in one-cent steps. This means that one oscillator is raised and the other lowered by half the amount set, as shown in the table below.

DETUNE	OSC1 PITCH	OSC2 PITCH
+50	-25 cents	+25 cents
:	:	:
+0	0 cents	0 cents
:	:	:
-50	+25 cents	-25 cents

**Delay** [0...99]

This parameter lets you delay the onset of OSC2 so that it will start playing after OSC1. You can set a value from 0 (for no delay) to 99 (for maximum delay).

## 2-5 COPY/SWAP OSC

**Copy/Swap OSC** *function*

This function copies or exchanges the parameter values for the two oscillators in the program you are editing.

```

PROG A11 2-5:COPY/SWAP OSC
OSC1 ==> OSC2 (COPY)
    
```

This operation affects most parameters that are related to a specific oscillator. In a swap operation, for example, the *i4S* will exchange all OSC1 settings with those for OSC2; those for VDF1 with those for VDF2; and those for VDA1 with those for VDA2.

The Program Type, Hold, and Assign Mode parameters, the pitch EG parameters, and the effect settings will remain unaffected.

You can use this function with both single-oscillator programs and double-oscillator programs. Although the former do not use the data for OSC2, the OSC2 parameters are nonetheless remembered and can be copied or swapped to OSC1 at any time.

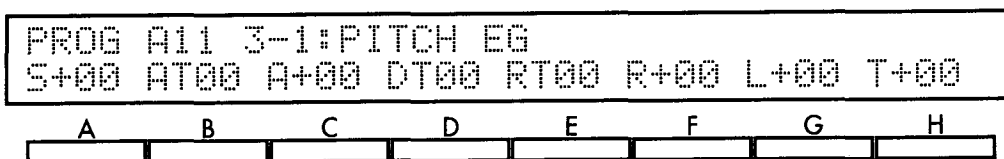
With single-oscillator programs, then, this function lets you swap the unused settings with those you are using. This feature thus makes it easy to compare the effects of changes you make on different parameters.

To use this function, first select the direction in which you will be copying oscillator data. A one-headed arrow pointing in either direction will result in the oscillators having exactly the same settings. When the arrow points in both directions, the function will swap the data for OSC1 with that for OSC2.

When you are sure of your choice, select [COPY] or [SWAP]. The *i4S* will copy or swap the data after asking for confirmation.

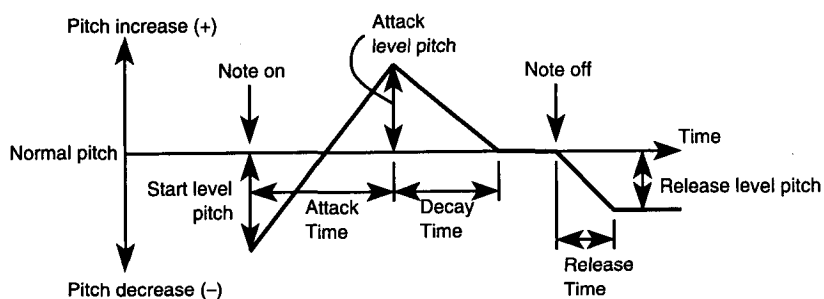
### 3-1 PITCH EG

The parameters on this display page set the shape of the pitch EG, which determines how the pitch of notes played by the program will change over time.



Both oscillators of a double-oscillator program will use the same pitch EG; however, you can adjust the intensity of each oscillator's EG response—and even invert the shape of the EG, if you desire—using the Pitch EG Intensity parameters described in the preceding sections.

Please note that the total of all pitch changes (i.e., all changes produced by the pitch EG, the pitch bend lever, and the pitch MG) is limited to a range of three octaves. Moreover, certain multisounds may have an even narrower pitch range in some instances.



#### Start Level (S)

[−99...+99]

This parameter sets the program's onset pitch level. Positive values raise the pitch from the standard, whereas negative values lower it. Settings of +99 and −99 raise and lower the pitch approximately one octave when the Pitch EG Intensity parameters are set to +99 or −99. When this parameter is set to 0, the program will start each note at its standard pitch.

**Attack Time (AT)** [0...99]

This parameter sets the time required for the pitch to sweep from the start level (S) to the attack level (A). A setting of 0 will result in an instantaneous change, whereas the maximum setting of 99 will produce the slowest change.

**Attack Level (A)** [-99...+99]

This parameter sets the pitch to which the program will sweep as the attack time (AT) elapses. It sets the pitch as described for the Start Level parameter, above.

**Decay Time (DT)** [0...99]

This parameter sets the time it takes the program to sweep from the attack level (A) to the standard pitch for the note. It sets time as described for the Attack Time parameter, above.

**Release Time (RT)** [0...99]

This parameter sets the time it takes the program to sweep from the standard pitch to the release level (R) after the note ends (i.e., the key is released). It sets time as described for the Attack Time parameter, above.

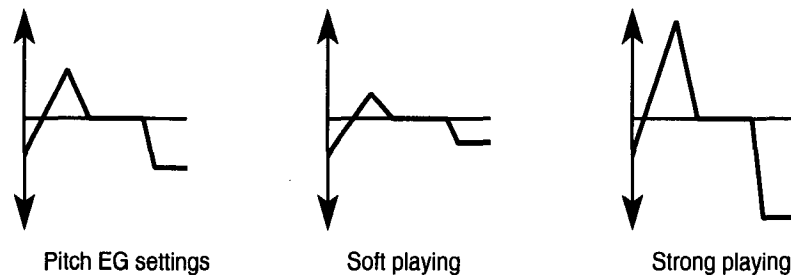
**Release Level (R)** [-99...+99]

This parameter sets the pitch to which the program will sweep as the release time (RT) elapses. It sets the pitch as described for the Start Level parameter, above.

**Level Vel Sense (L)** [0...99]

This parameter lets you specify how the *depth* of the pitch EG will react to note velocity. Higher values will result in greater pitch changes. The pitch EG will not be affected by velocity when this parameter is set to 0.

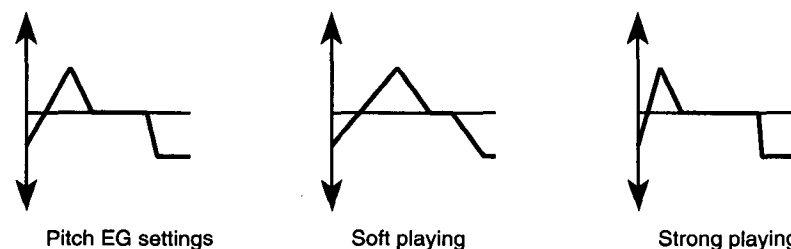
Pitch EG level sensitivity



**Time Vel Sense (T)** [0...99]

This parameter lets you specify how the *speed* of the pitch EG will react to note velocity. Higher values will result in faster pitch changes. The pitch EG will not be affected by velocity when this parameter is set to 0.

Pitch EG time sensitivity

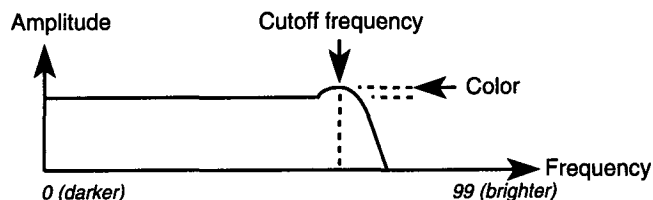
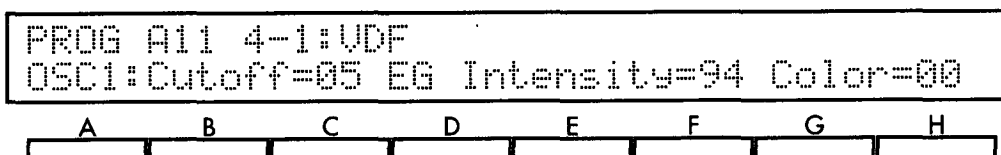


## Filter Parameters

Pages 4-1 through 4-6 of the Program display contain the program's filter parameters. The variable digital filters of the *i4S* adjust the tone of the oscillator output by cutting out some of the high-frequency components of the multisound waveform.

In addition to the Cutoff Frequency and Color parameters, there are *keyboard tracking* settings that let you vary the filtering effect across the keyboard (see page 70) and *velocity sensitivity* settings that adjust the depth and speed of the filter EG in response to note velocity (see page 72). These display pages also include the *VDF EG* parameters, which are described below.

### 4-1 VDF



### Oscillator (OSC)

Use this parameter to select which oscillator's parameters you want to edit when the Program Type parameter (described on page 62) is set to **Double Oscillator**. This field will change to **DRUM** if the Program Type parameter is set to **Drums**.

### Cutoff Frequency

[0...99]

This parameter sets the frequency at which the VDF begins filtering. Lower settings will result in darker tones.

### EG Intensity

[0...99]

This determines how deeply the tone of the oscillator will be affected by the VDF EG. Higher settings will produce more dramatic changes in tone. A setting of 0 will disable the VDF EG, resulting in no tone variation at all.

The shapes of the VDF EGs are set by the parameters at the bottom of the VDF pages. (See page 69 of this manual for details.)

### Color

[0...99]

This parameter increases the resonance of the tone. Higher settings will emphasize the frequencies around the cutoff point, making filter changes (such as those produced by the VDF EG or VDF modulation) easier to notice.



## 4-2 VDF EG

The parameters on this display page set the shape of the VDF EG, which determines how the VDF's cutoff frequency will change over time. Because there is no OSC parameter on this display page, you must use the OSC parameter on one of the other display pages to select the VDF EG for OSC1 or OSC2. The page name will show the number of the VDF EG currently selected for editing.

PROG A11 4-2:VDF 1 EG							
AT00 A+99 DT79 B+70 ST99 S+24 RT93 R+06							
A	B	C	D	E	F	G	H

You can adjust the intensity of an oscillator's EG response using the EG Intensity parameter described on page 68. It is also possible to modify the EG automatically in response to changes in keyboard position or note velocity, using the parameters described in the following sections.

### Attack Time (AT) [0...99]

This parameter sets the time required for the VDF to sweep from the standard cutoff frequency to the attack level (A) when a note is played. A setting of 0 will result in an instantaneous change, whereas the maximum setting of 99 will produce the longest change.

### Attack Level (A) [-99...+99]

This parameter sets the cutoff frequency to which the VDF will sweep as the attack time (AT) elapses. Positive values raise the attack level above the standard cutoff frequency for the note in question, whereas negative values lower it.

### Decay Time (DT) [0...99]

This sets the time it takes the VDF to sweep from the attack level (A) to the break point (B). It sets time as described for the Attack Time parameter, above.

### Break Point (B) [-99...+99]

This sets the cutoff frequency to which the VDF will sweep as the decay time (DT) elapses. It sets the level as described for the Attack Level parameter, above.

### Slope Time (ST) [0...99]

This parameter sets the time it takes the VDF to sweep from the break point (B) to the sustain level (S). It sets time as described for the Attack Time parameter, described above.

### Sustain Level (S) [-99...+99]

This parameter sets the cutoff frequency to which the VDF will sweep as the slope time (ST) elapses. It sets the level as described for the Attack Level parameter, above.

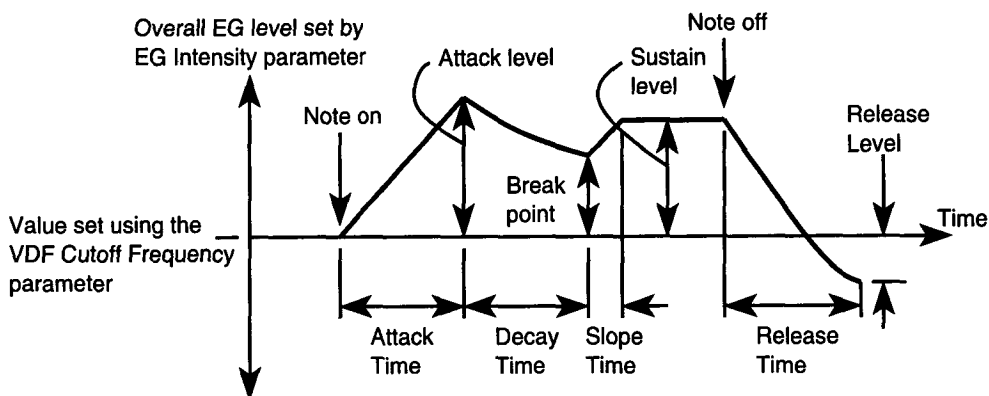
### Release Time (RT) [0...99]

This parameter sets the time it takes the VDF to sweep from the sustain level (S) to the release level (R) after the note ends (i.e., the key is released). It sets time as described for the Attack Time parameter, above.

## Release Level (R)

[−99...+99]

This parameter sets the cutoff frequency to which the VDF will sweep as the release time (RT) elapses. It sets the level as described for the Attack Level parameter, above.



## 4-3 VDF KBD TRACK

The keyboard tracking function adjusts the cutoff frequency to match the keyboard position of each note that is played. This lets you create more realistic simulations of many acoustic instruments, such as those that tend to produce brighter tones at higher pitches. The effect of the tracking function is set by the Kbd Track Amount, Pivot Key, and Mode parameters.

```

PROG A11 4-3:VDF KBD TRACK
OSC1:Kbd Track Amount=-53  F3  ALL
  
```

A	B	C	D	E	F	G	H
---	---	---	---	---	---	---	---

## Oscillator (OSC)

Use this parameter to select which oscillator's parameters you want to edit when the Program Type parameter (described on page 62) is set to **Double Oscillator**.

## KBD Track Amount

[−99...+99]

This parameter specifies how much the cutoff frequency will be changed by keyboard tracking. Higher settings make the notes above the point specified by the Pivot Key parameter progressively brighter, and the notes below it progressively darker. Negative values have the opposite effect.

When this parameter is set to −50, the cutoff frequency of the note specified by the Key parameter will be used as the standard cutoff for *all* notes. When this parameter is set to 0, the cutoff frequency will change in exact proportion to the pitch of each note played. (This produces the same effect as setting the Mode parameter to OFF.)

## Pivot Key

[C−1...G9]

This parameter sets a note which serves as the pivot point for the keyboard tracking function. The way in which this note is used depends on the Mode parameter, described below.

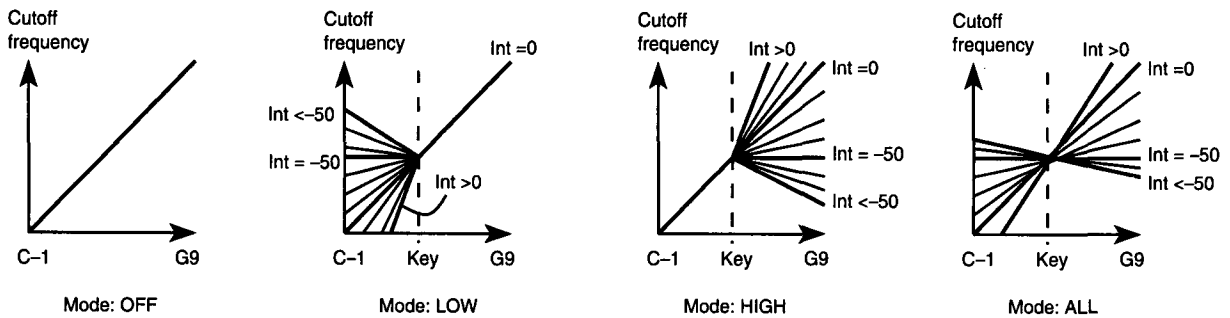
You can set this parameter by pressing a key on the *i4S* keyboard while holding down cursor key F.

## Mode

[OFF, LOW, HIGH, ALL]

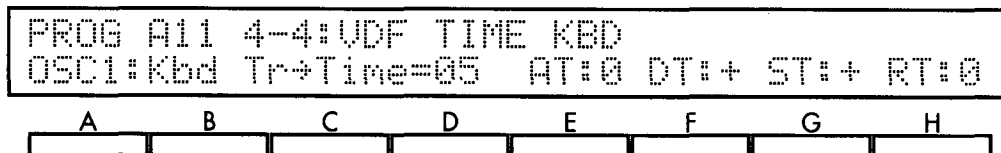
This parameter sets the note range that will be affected by the keyboard tracking function. Setting this parameter to **OFF** produces a proportional keyboard tracking equivalent to that set by an Amount of 0.

When it is set to **LOW**, only notes *below* the pivot point will be affected by the keyboard tracking function. When it is set to **HIGH**, only notes *above* the pivot point will be affected. Finally, a setting of **ALL** adjusts the cutoff frequency of *all* notes, taking that of the pivot-point note as the standard.



## 4-4 VDF TIME KBD

The five parameters on this display page let keyboard tracking vary the speed of the VDF EG as well. Each of the four EG time parameters can be lengthened or shortened depending on the keyboard position of a note.



### Oscillator (OSC)

Use this parameter to select which oscillator's parameters you want to edit when the Program Type parameter (described on page 62) is set to **Double Oscillator**.

### Kbd Tr→Time

[0...99]

This parameter determines how deeply the *speed* of the VDF EG will be affected by keyboard tracking. Higher settings will result in greater variation. The EG speed will not change at all if this parameter is set to 0.

This parameter only sets the *intensity* of the keyboard tracking function's influence on EG speed. You can specify whether keyboard tracking *shortens* or *lengthens* each EG segment using the four parameters below.

### Attack Time (AT)

[-, 0, +]

This specifies how keyboard tracking will affect the Attack Time segment. Keyboard tracking will shorten the attack duration if you use the plus (+) set-

ting, or lengthen it if you use the minus (-) setting. The attack speed will be unaffected by keyboard tracking if you set this parameter to 0.

**Decay Time (DT)** [-, 0, +]

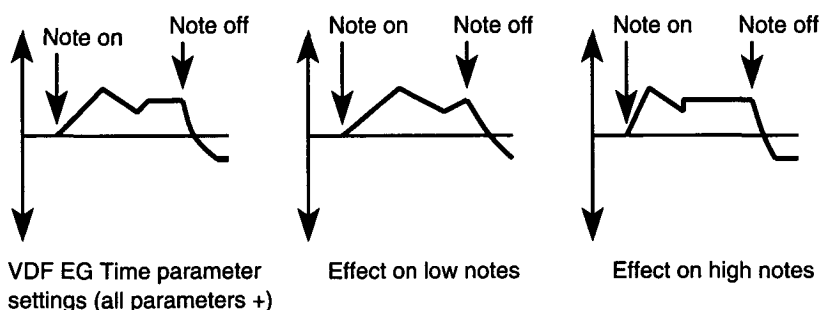
This parameter specifies how keyboard tracking will affect the Decay Time segment. Details are the same as described for the AT parameter above.

**Slope Time (ST)** [-, 0, +]

This parameter specifies how keyboard tracking will affect the Slope Time segment. Details are the same as described for the AT parameter above.

**Release Time (RT)** [-, 0, +]

This parameter specifies how keyboard tracking will affect the Release Time segment. Details are the same as described for the AT parameter above.



## 4-5 VDF VELOCITY

The *i4S* can adjust the VDF EG to match keyboard dynamics or MIDI velocity data received with note messages from an external device. This makes it easy to simulate instruments that produce brighter tones when played louder, as pianos do. You can also create interesting effects by varying filter changes in response to velocity even when the VDA does not change.

```

PROG All 4-5:VDF VELOCITY
OSC1:Vel Sense: EG Int=+63      Color=+00
    
```

A	B	C	D	E	F	G	H

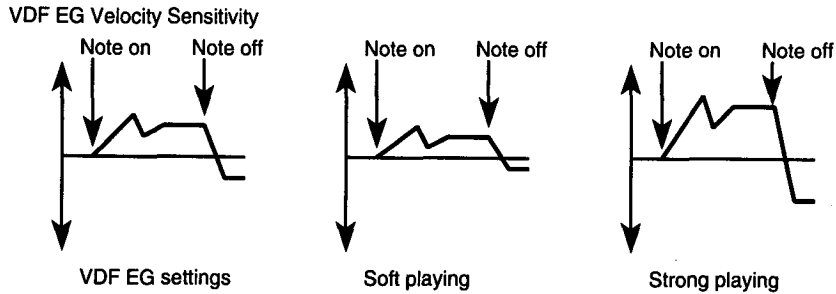
**Oscillator (OSC)**

Use this parameter to select which oscillator's parameters you want to edit when the Program Type parameter (described on page 62) is set to **Double Oscillator**.

**EG Int** [-99...+99]

This lets you specify how the *depth* of the VDF EG will react to note velocity. Positive values will reduce the depth of the EG, for smaller changes in the cut-off frequency, when notes are played softly. Negative values will reduce the depth of the EG when notes are played strongly.

When this parameter is set to 0, the VDF EG will have the depth specified by the EG Intensity parameter described on page 68.



**Color**

**[-99...+99]**

This specifies how the *resonance* of the oscillator's tone will react to note velocity. Positive values will increase the resonance when notes are played strongly, and decrease it when you play softly. Negative values will have the opposite effect.

When you set this parameter to 0, all notes will have the resonance set by the Color parameter described on page 68.

**4-6 VDF TIME VEL**

The five parameters on this display page let velocity vary the speed of the VDF EG. Each of the four EG segments can be lengthened or shortened in proportion to note velocity.

```

PROG A11 4-6:VDF TIME VEL
OSC1:Velocity→Time=18 AT:0 DT:+ ST:0 RT:0
    
```

A	B	C	D	E	F	G	H

**Oscillator (OSC)**

Use this parameter to select which oscillator's parameters you want to edit when the Program Type parameter (described on page 62) is set to **Double Oscillator**.

**Velocity→Time**

**[0...99]**

This parameter determines how deeply the *speed* of the VDF EG will be affected by velocity. Higher settings will result in greater variation. The EG speed will not change at all if this parameter is set to 0.

This parameter only sets the *intensity* of velocity's influence on EG speed. You can specify whether velocity *shortens* or *lengthens* each EG segment using the four parameters below.

**Attack Time (AT)**

**[-, 0, +]**

This specifies how velocity will affect the Attack Time segment. Higher velocities will shorten the attack time (making the attack faster) if you use the plus (+) setting, or lengthen it if you use the minus (-) setting. The attack speed will be unaffected by velocity if you set this parameter to 0.

**Decay Time (DT)**

**[-, 0, +]**

This parameter specifies how velocity will affect the Decay Time segment. Details are the same as described for the AT parameter above.

### Slope Time (ST)

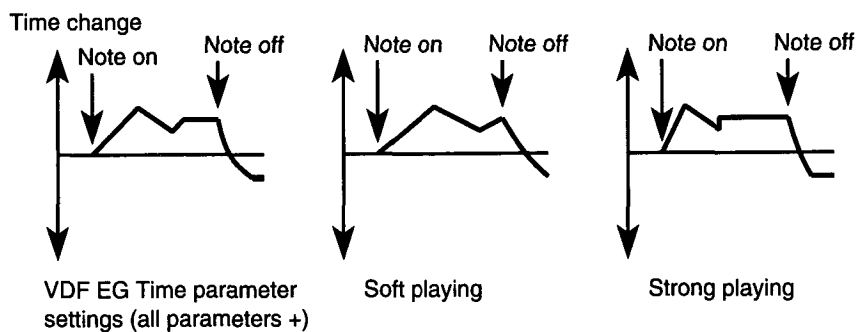
[-, 0, +]

This parameter specifies how velocity will affect the Slope Time segment. Details are the same as described for the AT parameter above.

### Release Time (RT)

[-, 0, +]

This parameter specifies how velocity will affect the Release Time segment. Details are the same as described for the AT parameter above.



## VDA Parameters

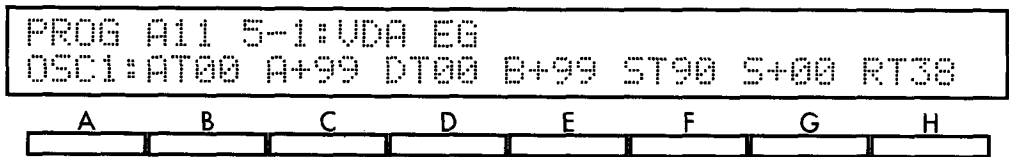
Pages 5-1 through 5-5 of the Program display contain the amplifier parameters. The variable digital amplifiers of the *i4S* determine the volume levels at which the filtered oscillator signals are finally output.

These displays contain no basic amplifier parameters corresponding to the Cutoff Frequency and Color parameters on the VDF pages. You can set the standard volume level for an oscillator using the appropriate Level parameter on the OSC BASIC display page (see page 63 of this manual).

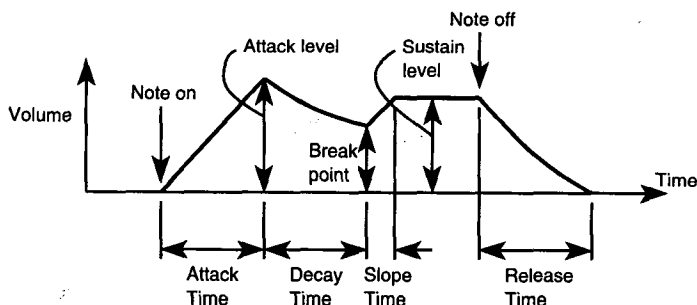
There are, however, *keyboard tracking* settings that let you vary the level across the keyboard range (see page 75) and *velocity sensitivity* settings that adjust the depth and speed of the amplifier EG in response to note velocity (see page 78). These display pages also include the VDA EG parameters, which are described below.

### 5-1 VDA EG

The parameters on this display page set the shape of the VDA EG, which determines how the oscillator's VDA level will change over time.



You can modify the EG automatically in response to changes in keyboard position or note velocity using the parameters described in the following sections.



### Oscillator (OSC)

Use this parameter to select which oscillator's parameters you want to edit when the Program Type parameter (described on page 62) is set to **Double Oscillator**.

### Attack Time (AT)

[0...99]

This parameter sets the time required for the VDA to sweep from zero volume to the attack level (A) when a note is played. A setting of 0 will result in an instantaneous change, whereas the maximum setting of 99 will produce the longest change.

### Attack Level (A)

[+0...+99]

This parameter sets the level to which the VDA will sweep as the attack time (AT) elapses. Higher values raise the attack level, whereas a value of +0 will produce no volume at all, effectively delaying the onset of the note.

**Decay Time (DT)** [0...99]

This parameter sets the time it takes the VDA to sweep from the attack level (A) to the break point (B). It sets time as described for the Attack Time parameter, above.

**Break Point (B)** [+0...+99]

This parameter sets the level to which the VDA will sweep as the decay time (DT) elapses. It sets the level as described for the Attack Level parameter, above.

**Slope Time (ST)** [0...99]

This parameter sets the time it takes the VDA to sweep from the break-point level (B) to the sustain level (S). It sets time as described for the Attack Time parameter, above.

**Sustain Level (S)** [+0...+99]

This parameter sets the level to which the VDA will sweep as the slope time (ST) elapses. It sets the level as described for the Attack Level parameter, above.

**Release Time (RT)** [0...99]

This parameter sets the time it takes the VDA to sweep from the sustain level (S) to zero after the note ends (i.e., the key is released). It sets time in the manner described for the Attack Time parameter, above.

**5-2 VDA KBD TRACK**

The keyboard tracking function adjusts the oscillator's level to match the keyboard position of each note that is played. This is useful in creating simulations of many acoustic instruments, such as wind instruments, which tend to be slightly louder when played at higher pitches.

```

PROG A11 5-2:VDA KBD TRACK
OSC1:Kbd Track Amount=+00 C3 ALL
    
```

A	B	C	D	E	F	G	H

The effect of the tracking function is set by the Kbd Track Amount, Pivot Key, and Mode parameters.

**Oscillator (OSC)**

Use this parameter to select which oscillator's parameters you want to edit when the Program Type parameter (described on page 62) is set to **Double Oscillator**.

**KBD Track Amount** [-99...+99]

This parameter specifies how much the level will be changed by keyboard tracking. (See the explanation of the Mode parameter below.)

When this parameter is set to 0, the same level will be used for all notes. (This produces the same effect as setting the Mode parameter to OFF.)



## Pivot Key

[C-1...G9]

This parameter sets a note which serves as the pivot point for the keyboard tracking function. The way in which this note is used depends on the Mode parameter, described below.

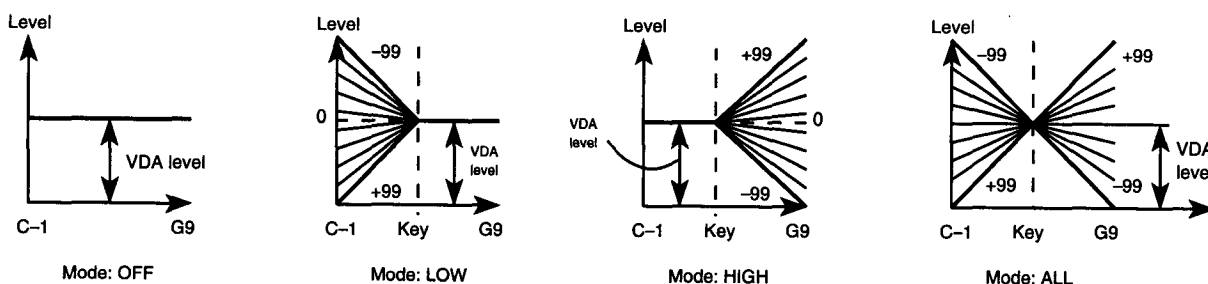
You can set this parameter by pressing a key on the *i4S* keyboard while holding down cursor key F.

## Mode

[OFF, LOW, HIGH, ALL]

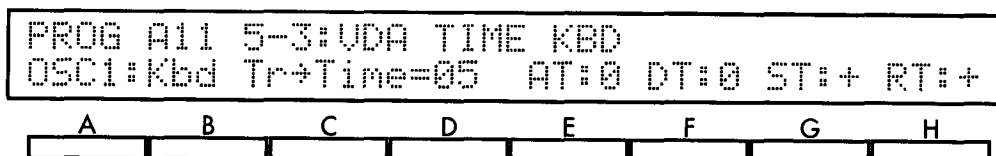
This parameter sets the note range that will be affected by the keyboard tracking function. Setting this parameter to **OFF** disables the keyboard tracking function, so that the same level will be used for all notes.

When it is set to **LOW**, only notes *below* the pivot point will be affected by the keyboard tracking function. When it is set to **HIGH**, only notes *above* the pivot point will be affected. Finally, a setting of **ALL** adjusts the level of *all* notes, with that of the pivot-point note as the standard.



## 5-3 VDA TIME KBD

The five parameters on this display page let keyboard tracking vary the speed of the VDA EG. Each of the four EG segments can be lengthened or shortened depending on the keyboard position of a note.



## Oscillator (OSC)

Use this parameter to select which oscillator's parameters you want to edit when the Program Type parameter (described on page 62) is set to **Double Oscillator**.

## Kbd Tr→Time

[0...99]

This parameter determines how deeply the *speed* of the VDA EG will be affected by keyboard tracking. Higher settings will result in greater variation. The EG speed will not change at all if this parameter is set to 0.

This parameter only sets the *intensity* of the keyboard tracking function's influence on EG speed. You can specify whether keyboard tracking *shortens* or *lengthens* each EG segment using the four parameters below.

### Attack Time (AT)

[-, 0, +]

This specifies how keyboard tracking will affect the Attack Time segment. Keyboard tracking will shorten the attack duration if you use the plus (+) setting, or lengthen it if you use the minus (-) setting. The attack speed will be unaffected by keyboard tracking if you set this parameter to 0.

### Decay Time (DT)

[-, 0, +]

This parameter specifies how keyboard tracking will affect the Decay Time segment. Details are the same as described for the AT parameter above.

### Slope Time (ST)

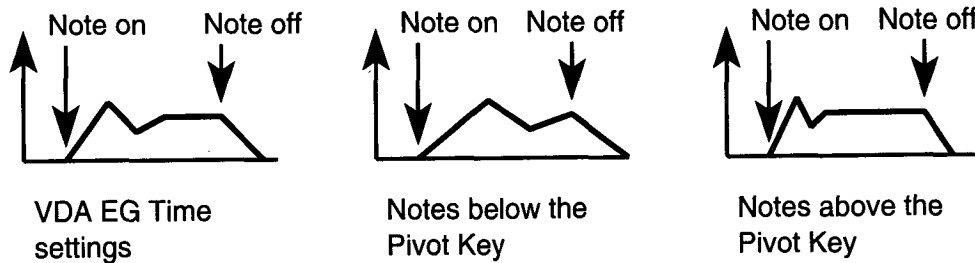
[-, 0, +]

This parameter specifies how keyboard tracking will affect the Slope Time segment. Details are the same as described for the AT parameter above.

### Release Time (RT)

[-, 0, +]

This parameter specifies how keyboard tracking will affect the Release Time segment. Details are the same as described for the AT parameter above.



## 5-4 VDA VELOCITY

The *i4S* can adjust the VDA EG to match keyboard dynamics or MIDI note-on velocities received from an external device. This can be used to make the attack and decay segments more noticeable when notes are played with a heavier touch.

```

PROG All 5-4:VDA VELOCITY
OSC1:VDA Velocity Sensitivity=+68
    
```

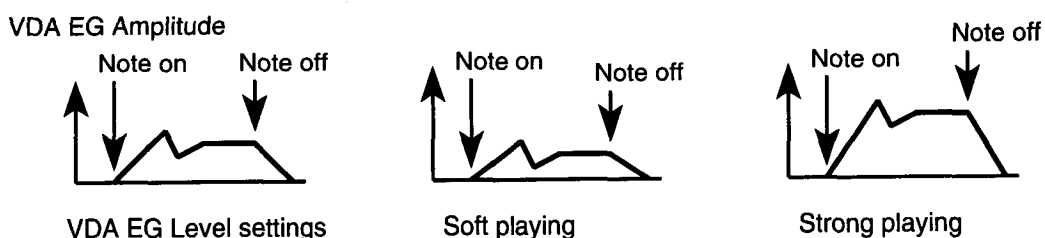
ABCDEFGH

### Sensitivity

[-99...+99]

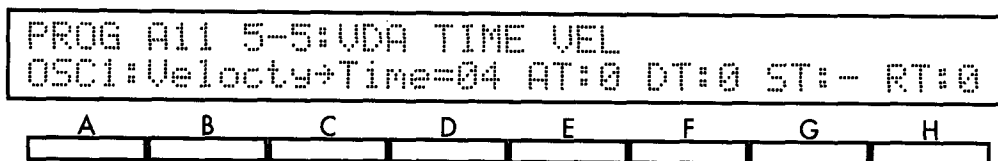
This lets you specify how the *depth* of the VDA EG will react to note velocity. Positive values will reduce the depth of the EG, for smaller changes in level, when notes are played softly. Negative values will reduce the depth of the EG when notes are played strongly.

When this parameter is set to 0, the VDA EG will have the depth specified by the EG parameters described in the following section.



## 5-5 VDA TIME VEL

The five parameters on this display page let velocity vary the speed of the VDA EG. Each of the four EG segments can be lengthened or shortened in proportion to note velocity.



### Oscillator (OSC)

Use this parameter to select which oscillator's parameters you want to edit when the Program Type parameter (described on page 62) is set to **Double Oscillator**.

### Velocity→Time

[0...99]

This parameter determines how deeply the *speed* of the VDA EG will be affected by velocity. Higher settings will result in greater variation. The EG speed will not change at all if this parameter is set to 0.

This parameter only sets the *intensity* of velocity's influence on EG speed. You can specify whether velocity *shortens* or *lengthens* each EG segment using the four parameters below.

### Attack Time (AT)

[-, 0, +]

This specifies how velocity will affect the Attack Time segment. Higher velocities will shorten the attack time if you use the plus (+) setting, or lengthen it if you use the minus (-) setting. The attack speed will be unaffected by velocity if you set this parameter to 0.

### Decay Time (DT)

[-, 0, +]

This parameter specifies how velocity will affect the Decay Time segment. Details are the same as described for the AT parameter above.

### Slope Time (ST)

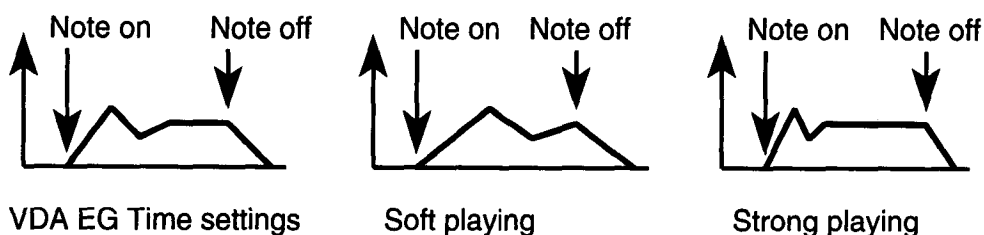
[-, 0, +]

This parameter specifies how velocity will affect the Slope Time segment. Details are the same as described for the AT parameter above.

### Release Time (RT)

[-, 0, +]

This parameter specifies how velocity will affect the Release Time segment. Details are the same as described for the AT parameter above.

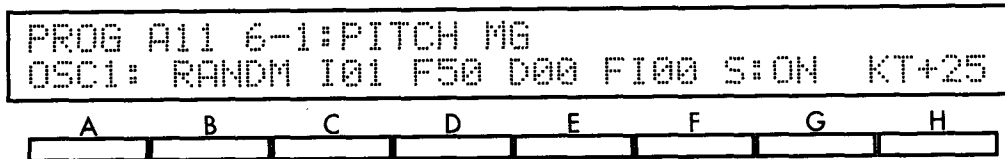


## Modulation and Control

Modulation Generators—known as MGs—can be used to create cyclical effects such as vibrato. Pages 6-1 through 6-3 contain the Pitch MG parameters. Pages 6-4 and 6-5 contain the VDF MG parameters. Page 6-6 contains settings that let you control a program’s pitch, filter cutoff frequency, and level using joystick movements and aftertouch.

### 6-1 PITCH MG

Page 6-1 of the Program display contains settings which control pitch modulation. The pitch of an oscillator can be modulated using one of five waveforms. This function is commonly used to simulate the vibrato effect that can be achieved with many acoustic instruments.



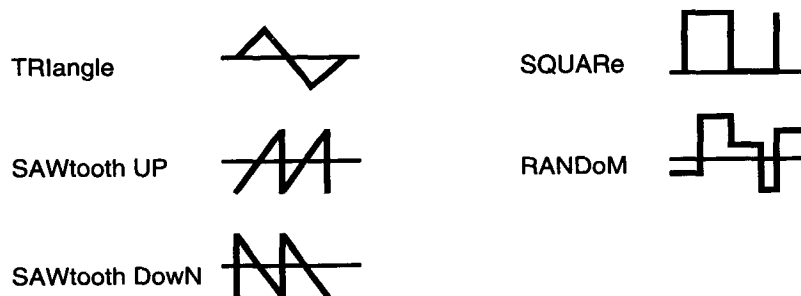
In double-oscillator programs, the pitch of each oscillator can be modulated independently of the other.

#### Oscillator (OSC)

Use this parameter to select which oscillator’s parameters you want to edit when the Program Type parameter (described on page 62) is set to **Double Oscillator**.

#### Waveform

This parameter selects the waveform that will be used to modulate the oscillator’s pitch. You can select from the five waveforms shown below.



#### Intensity (I)

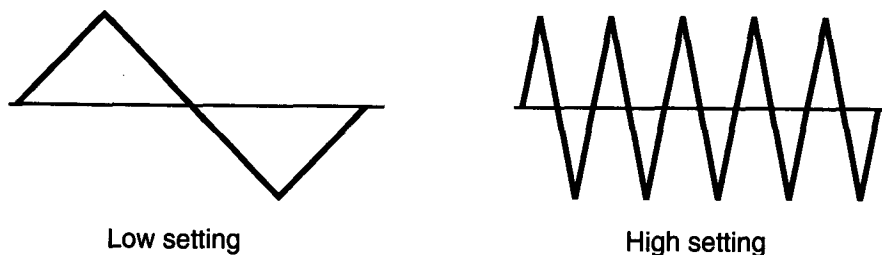
[0...99]

This sets the depth of automatic pitch modulation. The maximum setting of 99 will vary the pitch across a range of one or two octaves, depending on the waveform you’ve selected. A setting of 0 will result in no modulation.

#### Frequency (F)

[0...99]

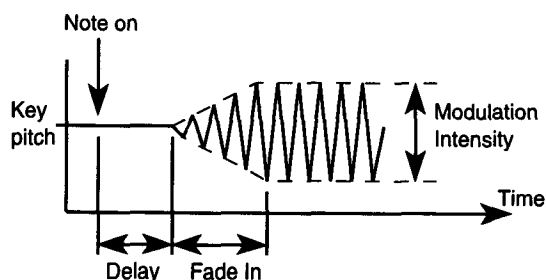
This sets the rate of all pitch modulation. Higher settings produce faster modulation. A setting of 0 disables pitch modulation entirely, so no modulation—whether automatic, joystick-controlled, or aftertouch-controlled—will be possible.

**Delay (DL)****[0...99]**

This parameter lets you delay the onset of automatic pitch modulation. Higher values will delay the modulation longer. A setting of 0 will begin modulation promptly at the start of each note.

**Fade In (FI)****[0...99]**

This parameter lets you fade in the automatic pitch modulation, so that the pitch begins modulating over a shallow depth, and gradually increases to the depth specified by the Intensity parameter. Higher settings produce a longer, more gradual fade-in; a setting of 0 will begin the modulation at full intensity with no fade-in.

**Key Sync (S)****[ON, OFF]**

This parameter determines whether the pitch MG is reset for each note. When it is set to **ON**, the modulation waveform will reset at the start of each note that is played. When it is set to **OFF**, the waveform will continue cycling at the standard frequency, independently of any note onsets.

 **Pitch modulation and chords**

If you will be playing chords, you may want to set this parameter **OFF** so that all of the notes in a chord will modulate in unison even if played with a staggered timing.

**Keyboard Tracking (KBD)****[-99...+99]**

This parameter lets you scale the pitch modulation frequency to match the keyboard range of the notes you play. Higher settings will cause the pitch MG to modulate notes above C4 progressively faster, and notes below it progressively slower. Negative values will have the opposite effect.

## 6-2 PITCH MG CONTROL

```

PROG A11 6-2:PITCH MG CONTROL
OSCI: Joystick Up=00      Aftertouch=00
  
```

A	B	C	D	E	F	G	H
---	---	---	---	---	---	---	---

### Oscillator (OSC)

Use this parameter to select which oscillator's parameters you want to edit when the Program Type parameter (described on page 62) is set to **Double Oscillator**.

### Joystick Up [0...99]

This parameter sets the maximum depth of the modulation you can produce by moving the joystick upward. It is analogous to the Intensity parameter described above, except that the modulation it specifies will not begin until the joystick is moved.

### Aftertouch [0...99]

This parameter sets the maximum depth of the modulation you can produce with aftertouch. It is analogous to the Intensity parameter described above, except that the modulation it specifies will not begin until aftertouch is applied to a note.

## 6-3 PMG FREQ CONTROL

```

PROG A11 6-3:PMG FREQ CONTROL
OSCI: Joystick Up + Aftertouch=0
  
```

A	B	C	D	E	F	G	H
---	---	---	---	---	---	---	---

### Joystick Up + Aftertouch [0...9]

This parameter lets you increase the modulation frequency by either moving the joystick forward or applying aftertouch to a note. Higher settings let you increase the frequency at a faster rate. A setting of 0 disables joystick and aftertouch control of modulation frequency.

## 6-4 VDF MG

The parameters on this display page modify filter cutoff frequencies with one of five waveforms. Unlike pitch, the two VDFs of a double-oscillator program are modulated by a single MG

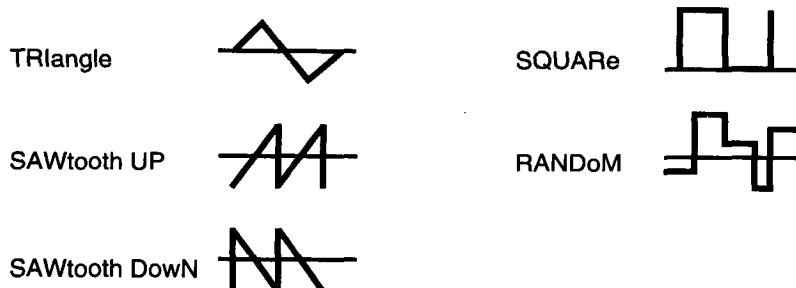
```

PROG A11 6-4:VDF MG
TRI   I00 F50 D00  S:OFF  OFF
  
```

A	B	C	D	E	F	G	H
---	---	---	---	---	---	---	---

## Waveform

This parameter selects the waveform that will be used to modulate the VDF cutoff frequency. You can select from the five waveforms shown below.



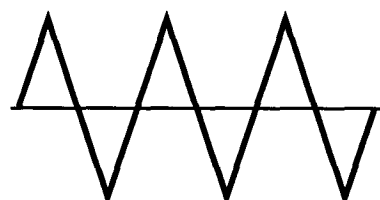
## Intensity (I)

[0...99]

This sets the depth of automatic VDF modulation. A setting of 0 will result in no modulation.



Low setting

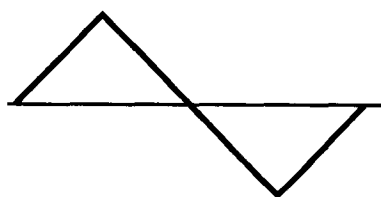


High setting

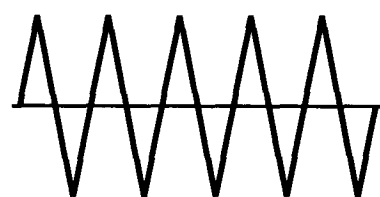
## Frequency (Freq)

[0...99]

This sets the rate at which the cutoff frequency is modulated. Higher settings produce faster modulation. A setting of 0 disables VDF modulation entirely.



Low setting



High setting

## Delay (DL)

[0...99]

This parameter lets you delay the onset of automatic VDF modulation. Higher values will delay the modulation longer. A setting of 0 will begin modulation promptly with the start of each note.

## Key Sync (S)

[ON, OFF]

This parameter determines whether the VDF MG is reset for each note. When it is set to ON, the modulation waveform will reset at the start of each note that is played. When it is set to OFF, the waveform will continue cycling at the standard frequency, independently of any note onsets.

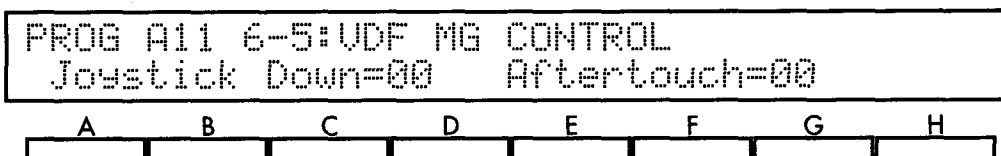
**VDF modulation and chords**

If you will be playing chords, you may want to set this parameter **OFF** so that all of the notes in a chord will modulate in unison, even if played with a staggered timing.

**Oscillator (OSC) [OFF, OSC1, OSC2, BOTH]**

This lets you specify the oscillators to which VDF modulation is to be applied. You can modulate the cutoff frequency for OSC1, OSC2, or both oscillators. Setting this parameter to **OFF** disables the VDF MG.

## 6-5 VDF MG CONTROL



**Joystick Down [0...99]**

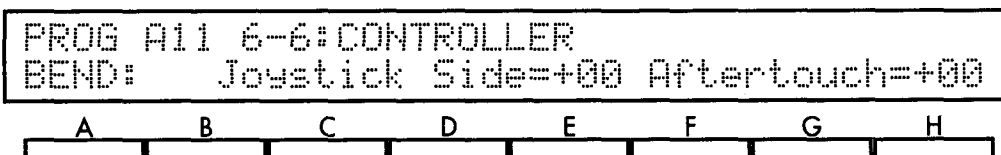
This sets the maximum depth of modulation you can produce by pulling the joystick back. It is analogous to the Intensity parameter described above, except that the modulation it sets will not begin until the joystick is moved.

**Aftertouch [0...99]**

This parameter sets the maximum depth of modulation you can produce with aftertouch. It is analogous to the Intensity parameter described above, except that the modulation it sets will not begin until aftertouch is applied to a note.

## 6-6 CONTROLLER

Page 6-6 contains settings that let you control a program's pitch, filter cutoff frequency, and level using joystick movements and aftertouch. These parameters control direct changes of pitch, cutoff frequency, and volume. They are unlike the Joystick and Aftertouch parameters described in the Pitch MG and VDF MG sections, as the latter are concerned with the amount and speed of modulation.



**BEND:**

**Joystick Side [-12...+12]**

This parameter specifies, in semitones, the range of the pitch change that will occur when you move the joystick to the left or right.

The maximum setting of **12** will let you bend the pitch up or down one octave. Positive settings will cause the pitch to rise when you move the joystick to the right, and drop when you move it to the left. Negative settings will have the opposite effect.



## Aftertouch

[−12...+12]

This parameter specifies, in semitones, the range of the pitch change that will occur when you apply aftertouch to a note.

The maximum setting of 12 will let you bend the pitch up or down one octave. Positive settings will cause the pitch to rise as you press down on the keys. Negative settings will cause the pitch to drop.



## CUTOFF:

### Joystick Side

[−99...+99]

This parameter specifies the maximum range over which you can vary the VDF cutoff frequency by moving the joystick to the left or right.

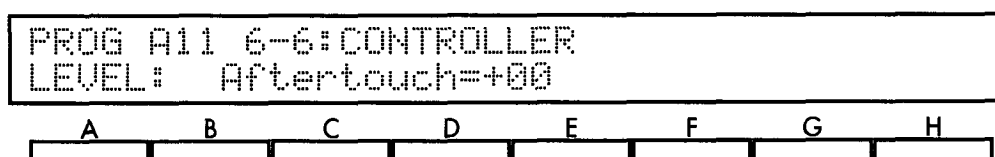
The range of the frequency change will grow as the numerical value of this setting increases. Positive settings will cause the sound to become brighter when you move the joystick to the right, and darker when you move it to the left. Negative settings will have the opposite effect.

### Aftertouch

[−99...+99]

This parameter specifies the maximum range over which you can vary the cut-off frequency by applying aftertouch.

The range of the frequency change will grow as the numerical value of this setting increases. Positive settings will cause the sound to become brighter as you press down on the keys. Negative settings will cause the sound to become darker.



## LEVEL:

### Aftertouch

[−99...+99]

This setting lets you increase or decrease the volume of notes you have played by applying aftertouch.

The range of the volume change will grow as the numerical value of this setting increases. Positive settings will cause the sound to become louder as you press down on the keys. Negative settings will cause the notes to become quieter.

## Effects

Pages 7-1 through 7-3 of the Program display let you use two digital signal processors to apply effects to each program you create in Program mode. This means you can put effects to work as an important part of the sound creation process. They will serve you well as a tool for producing exciting new sounds.

```

PROG A11 7-1:EFFECT TYPE Effect Type
FX1 01:Hall          :ON Mod:NONE I+00
    
```



```

PROG A11 7-2:FX PARAM Reverb Time [s]
3.2 P060 E62 HD30      L-04 H+00 +75:25
    
```



```

PROG A11 7-3:EFFECT PLACEMENT Placement
SERIAL      C Pan = L      D Pan = R
    
```



The program will use the effect settings you make on these pages whenever you play it in Program mode. However, these effects will not be applied to the program when you play it in an arrangement, backing sequence, or song which uses other settings. You should therefore keep your final goal in mind—and perhaps even plan your effect settings in advance—when creating a program specifically for use in an arrangement, backing sequence, or song.

Since the Program mode has the same effect options as the Arrangement Play, Backing Sequence, and Song Play modes, the contents of these display pages are described in their own chapter. Please refer to Chapter 5 for details on the effect settings.

## Utilities

The last pages of the Program display contain several convenient functions that you can use when editing programs. The first two functions let you name your programs and save them. The last function lets you reset all parameters for the current program to their default values, for the purpose of creating programs from scratch.

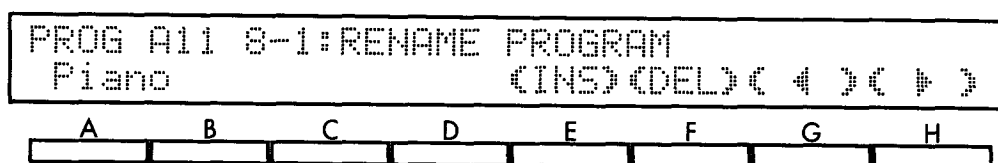
### 8-1 RENAME PROGRAM

#### Rename Program

#### function

You can use this function to change the name of the program you're editing. The program name can consist of up to ten characters.

When you select this function, the current program name will appear on the bottom line of the display above cursor keys A and B. Change this to the new program name as described on page 32 of the Player's Guide.



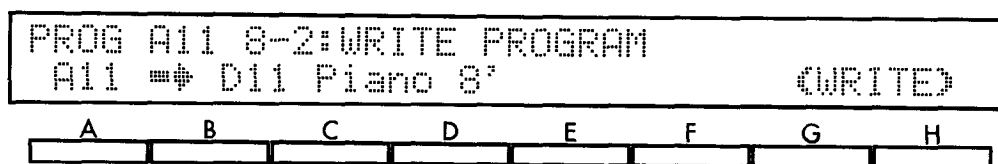
There is no need to "execute" the name change. The program's name is actually a special kind of parameter. The *i4S* will memorize the new name—together with the parameters on the other pages of the Program mode display—when you store the program using the Write Program function, described above.

### 8-2 WRITE PROGRAM

#### Write Program

#### function

This function lets you store a program you've edited in the *i4S* memory.



To use this function, enter the program number where you want to save the data above cursor key H. The program number you select must be in bank D if you are saving a normal program, or program Dr7 or Dr8 if it is a drum program.

The name of the program already stored under the number you select will appear in the upper right corner of the display. Be sure that you don't need this program, or that you have a copy of it elsewhere, as its data will be lost—replaced by your edited program—when you execute the Write Program function.

When you are sure of the program destination, select [WRITE]. The *i4S* will store the data after asking for confirmation.

This function will not work if the Program Protect parameter has been turned on in Global mode.

☞ Another Write function...

As an alternative to the Write Program function, you can simply press the REC/WRITE key if you are editing a program in bank D and want to store it under the current program number. See page 61 of this manual for details.

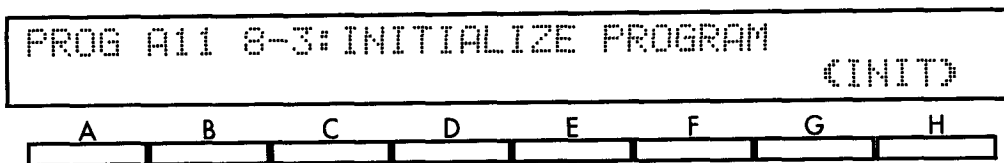
## 8-3 INITIALIZE PROGRAM

### Initialize Program

### function

This function lets you set all of the current program's parameters to their initial values. You may find it useful when you want to start programming from a blank slate.

To use this function, simply select [INIT]. The i4S will initialize the current program after asking for confirmation.



# Chapter 5

## Effects

When you perform in one of the *i4S* sequencing modes, all of the programs will use a single set of effect settings. You can turn some or all of the effects off for certain instruments by routing their output selectively. See Chapters 3 and 4 in the Applications Guide for some examples of this.

Every program also has its own effect settings, which the *i4S* will use when you play it in Program mode. If you enjoy creating programs to play in this mode, you will find effects to be a powerful tool that can help you achieve precisely the sound you're looking for.

We describe the effects in their own chapter because all of the *i4S* performance modes handle effects in the same way. The effect-related parameters for each arrangement, backing sequence, or program are always located on the same three display pages of each mode respectively. (Although the effect pages of Song Play mode are numbered differently than those of the other modes, their contents are the same.) The contents of these display pages are summarized in the next section.

You can use the joystick, a foot pedal, or other controllers to adjust effect parameters while you perform. This capacity for realtime control over effects—or *dynamic modulation*, as it is known—can dramatically broaden the expressive potential of your *i4S*. We explain the effect parameters that control dynamic modulation on page 91.

For each mode that uses effects, there are also two display pages that contain functions that make it easy to copy and swap entire groups of effect settings at once. We explain these utility functions on page 144.

## The Effects Pages

All of the effect settings for each arrangement, backing sequence, or program are located on Pages 7-1, 7-2, and 7-3 of each mode respectively. (In the case of Song Play mode, these effect settings can be found on Pages 3-1, 3-2, and 3-3.) These pages contain three basic types of settings.

Display Page 7-1 contains the *effect type* parameters, which let you select the effect to be applied by each signal processor. These parameters are explained on the following page of this manual. Display Page 7-2 contains the *effect parameters*, which allow you to adjust the performance of the effect selected on Page 7-1. These parameters are explained on pages 93 through 140.

The range of available effects is the same for both processors.

Effect Type	Effect Nos.	Description
No Effect	0	93
Reverb	1-9	94
Early Reflection	10-12	96
Stereo Delay	13-14	98
Dual Delay	15	100
Multitap Delay	16-18	102
Chorus	19-20	104
Quadrature Chorus	21-22	106
Harmonic Chorus	23	108
Symphonic Ensemble	24	110
Flanger	25-27	112
Exciter	28	114
Enhancer	29	116
Distortion	30-31	118
Phaser	32-33	120
Rotary Speaker	34	122
Tremolo	35-36	124
Parametric Equalizer	37	126
Chorused/Flanged Delay	38-39	128
Delay & Reverb	40-41	130
Delay & Chorus	42	132
Delay & Flanger	43	134
Delay & Distortion	44-45	136
Delay & Phaser	46	138
Delay & Rotary Speaker	47	140

Display page 7-3 contains the *effect placement* parameters, which define how signals flow through the effect system. These parameters are explained in detail on pages 142 through 144 of this manual.

## 7-1 EFFECT TYPE

You can switch between the parameters for the first and second signal processors (FX1 and FX2) using the FX Processor setting above cursor key A. The layout of the parameters, described below, is the same for both processors.

ARR11 7-1:EFFECT TYPE      Effect Type							
FX1 01:Hall                    :ON    Mod:NONE      I+00							
A	B	C	D	E	F	G	H

The effect selection to be applied by each processor is found on Page 7-1. It is followed by a Switch parameter that lets you turn the effect on and off, and a pair of parameters that determine how the effect can be controlled with dynamic modulation. These parameters are always displayed, regardless of the effect selection.

### FX Processor (FX)

Use this setting to select which effect processor—FX1 or FX2—you want to edit. The setting you choose here will also govern which parameters you will see on Page 7-2.

### Effect Type

[0...47]

This specifies the effect to be applied by the currently selected processor. The effect selections are described in the following sections (pages 93 through 140).

#### ☛ Overloading the effects...

Some of the *i4S* effects may break up slightly, producing a distorted sound, if overloaded by high-level input signals. If this happens, try lowering the signal levels using the program Level or track Volume parameters for channels A and B, or the C Level and D Level parameters for channels C and D.

### Switch

[ON, OFF]

This turns the effect on and off. If you want to turn an effect on and off while performing, you can assign a footswitch to control this parameter using the ASSIGNABLE PEDAL parameter in Global mode (see page 156).

You can also turn effects on and off with control change messages from a MIDI sequencer. Control change messages 92 and 94 control the Switch parameters for FX1 and FX2, respectively.

#### ☛ How to turn off the shelving equalizers.

Many of the *i4S* effects include two-level shelving equalizers that remain active even when the effect is turned off with the Switch parameter. The exceptions to this rule are the stereo delay (13 and 14), stereo chorus (19 and 20), exciter (28), and tremolo (35 and 36) effects.

If you want to hear the unequalized sound while editing a program, you should turn both processors off by setting **00:No Effect** as the effect selection for each. (See the description of this effect selection in the following section.)

### D. Mod Source (Mod)

This parameter selects the controller you will use to modulate the effect while playing. You can assign dynamic modulation of each effect to any of a number of controllers.

If you want to control dynamic modulation with a foot pedal, you must set the

Setting	Controller	Notes
NONE	No controller	Disables dynamic modulation.
JS UP	Joystick up	Push joystick forward to modulate.
JS DWN	Joystick down	Pull joystick back to modulate.
AFTT	Aftertouch	Apply aftertouch to modulate.
PEDAL	Foot Pedal	Set ASSIGNABLE PEDAL parameter in Global mode (see page 156).
VDA EG	VDA EG	Modulation is controlled by the combined value of all currently playing amplitude envelopes.

ASSIGNABLE PEDAL parameter to **Effect Control** in Global mode (see page 156). It is also possible to modulate effects using MIDI control change messages 12 and 13.

### D. Mod Amount (I)

**[-15...+15]**

This parameter sets the intensity with which dynamic modulation will change the effect. Positive values will cause the depth of the effect to increase when the controller is operated. Negative values will have the opposite effect. Higher numerical values will let you make more drastic changes in the sound of the effect.

## 7-2 FX PARAM

The parameters on Page 7-2 control the effect selected on Page 7-1. The number and variety of parameters displayed on this display page are different for each effect type; they are explained in the following sections (pages 93 through 140), which describe each effect type in turn.

These effect-specific parameters are reset to their default values whenever you select a new effect while creating an arrangement, backing sequence, program, or Song Play mode effect setting.

The effect-specific parameters that you can control with dynamic modulation are indicated by an arrow. (The arrow will not appear when the rotary speaker effects [34 and 47] are selected, but you can still use dynamic modulation to switch between slow and fast speaker rotation.)



---

## No Effect

This setting lets you turn the *i4S* signal processors off when playing an arrangement, backing sequence, program, or standard MIDI file. You will find this setting useful when you want to perform with an unprocessed sound, as well as when editing program parameters.

ARR11 7-1:EFFECT TYPE	Effect Type
FX1 00:No Effect	:ON Mod:NONE I+00

As its name implies, a signal processor using the **00:No Effect** setting will pass all input through without applying any effects. You can thus hear the raw, unprocessed signal when this setting is selected for both signal processors.

It is particularly useful to turn both processors off and listen to the unprocessed sound while editing program parameters. Once you are satisfied with the basic structure of the sound, you can add your effect selections as a final polishing touch.

It is also possible to turn the effect processors off using the Switch parameter, described on page 91. However, many of the *i4S* effects include an equalizer component that remains active even when the effect has been turned off using the Switch parameter. (See the description of this parameter in the previous section.)

For this reason, it may be best to think of the Switch parameter as a means of realtime control that lets you use a footswitch to turn effects off temporarily while performing. If you wish to turn a signal processor off permanently—when editing program parameters or performing with unprocessed sounds, for example—it is better to use the **00:No Effect** setting.

# Reverb

Reverb effects add ambience by simulating a natural acoustic environment, thus making your music sound more natural. You will probably use these effects more than any other effect type, especially when playing the *i4S* in the Arrangement Play, Backing Sequence, or Song Play modes.

```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 01:Hall                :ON  Mod:NONE  I+00
```

```
ARR11 7-2:FX PARAM        Reverb Time [s]
3.2 P060 E62 MD30        L-04 H+00 +75:25
```

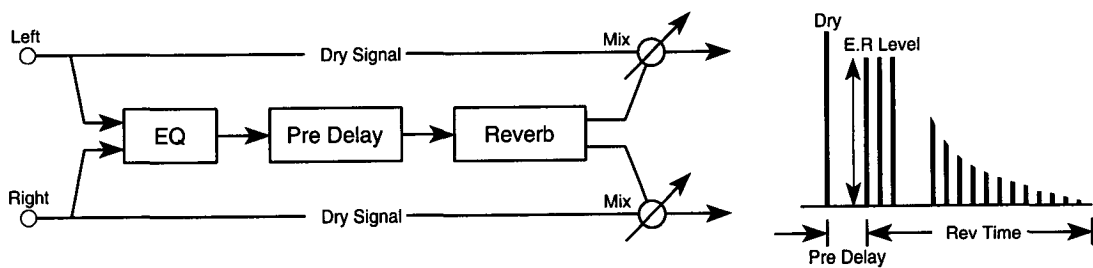


The *i4S* has nine reverb effects. **01:Hall** simulates the acoustic ambience of a small concert hall, where you might hear a string quartet or a live jazz band. **02:Ensemble Hall** is a larger hall, suitable for string and brass ensembles. **03:Concert Hall** gives you the setting for a full-fledged orchestra, with emphasized early reflections.

Effect **04:Room** simulates the ambience of a typical room. **05:Large Room** is a bigger room with emphasized density. This effect will produce results similar to a gated reverb effect when you set the Reverb Time parameter to about 0.5 seconds. Effect **06:Live Stage** produces a sound like you'd hear in a gymnasium, and is useful for recreating the sound of a live rock band.

Effects **07:Wet Plate** and **08:Dry Plate** simulate the plate reverb devices commonly used to emphasize vocals and solo instruments. The former is applied heavily, the latter only lightly. Finally, **09:Spring Reverb** reproduces the sound of the spring reverb device commonly used in guitar amplifiers.

All of the reverb effects are preceded by a two-level shelving equalizer. The reverb effect proper produces a number of initial echoes, known as *early reflections*, followed by a less distinct reverberation that gradually fades away.



## Reverb Time

[variable]

This sets the amount of time over which the reverberation will decay. You can set a time of **0.2 to 9.9** seconds for the hall reverbs, or **0.2 to 4.9** seconds for the room and live stage reverbs. For the plate and spring reverbs, this parameter sets an abstract intensity from **0 to 99**.

## Pre-Delay (P)

[0 ms...200 ms]

This parameter sets the delay between the direct sound and the start of the reverb's initial reflections. Higher values will cause the reverb to stand out, making it more echo-like.

**E.R. Level (E)** [variable]

This sets the volume of the early reflection component of the reverb sound. You can set a level of 0 to 99 for the hall, room, and stage reverbs, or 1 to 10 for the plate and spring reverbs. Higher values will emphasize the reverb slightly, making it more noticeable.

**High Damp (HD)** [0%...99%]

This determines the rate at which the high frequency components of the sound will decay. Higher values will result in faster decay.

**EQ Low (L)** [-12 dB...+12 dB]

This sets the amount by which the low-range shelving equalizer will cut or boost frequencies below 1 kHz.

**EQ High (H)** [-12 dB...+12 dB]

This sets the amount by which the high-range shelving equalizer will cut or boost frequencies above 1 kHz.

**Dry:FX Balance** [DRY, 99:1...1:99, FX]

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that is all reverb. Other settings show the ratio of direct to processed sounds.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

## Early Reflections

These effects reproduce only the *early reflection* portion of natural reverb (see page 94.) Early reflections play an important role in determining the properties of an acoustic environment. You can thus use them to thicken a sound, create echo-like reflections, or add other interesting nuances.

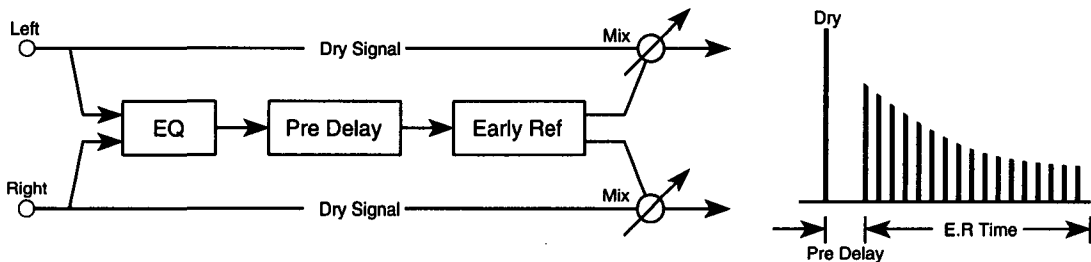
```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 10:Early Ref 1  :ON   Mod:NONE   I+00
```

```
ARR11 7-2:FX PARAM      E.R. Time [ms]
T220      P015          L+03 H-05 +67:33
```



You can use **10:Early Ref 1** to emphasize the low frequency range or to produce gated reverb effects. It is especially useful with drum sounds. **11:Early Ref 2** produces reflections that die out more slowly. **12:Early Ref 3** creates reflections that increase in volume instead of dying out. It can create reversed-tape effects when used on sounds with strong attacks.

All three of the early reflection effects include a two-level shelving equalizer function.



### E.R. Time (T)

[100 ms...800 ms]

This sets the amount of time over which the early reflections will decay. Longer settings will make the early reflections more noticeable.

### Pre-Delay (P)

[0 ms...200 ms]

This parameter sets the delay between the direct sound and the start of the early reflections. Higher values will cause the reflections to stand out, making them sound more like a distinct echo.

### EQ Low (L)

[-12 dB...+12 dB]

This sets the amount by which the low-range shelving equalizer will cut or boost frequencies below 1 kHz.

### EQ High (H)

[-12 dB...+12 dB]

This sets the amount by which the high-range shelving equalizer will cut or boost frequencies above 1 kHz.

---

**Dry:FX Balance****[DRY, 99:1...1:99, FX]**

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that is nothing but early reflections. Other settings show the ratio of direct to processed sounds.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

## Stereo Delay

These effects create stereo delay or “echo” patterns. Because they are stereo effects, you can set different left and right delay times to produce interesting panned echoes. A High Damp parameter lets you adjust the high frequency attenuation to make the repeated delays sound more natural.

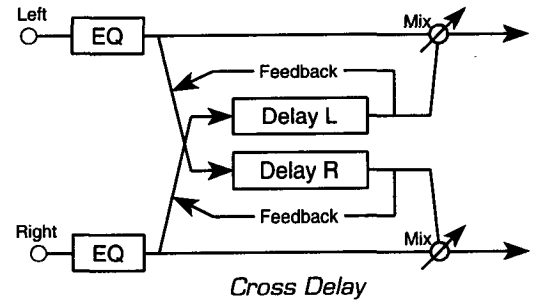
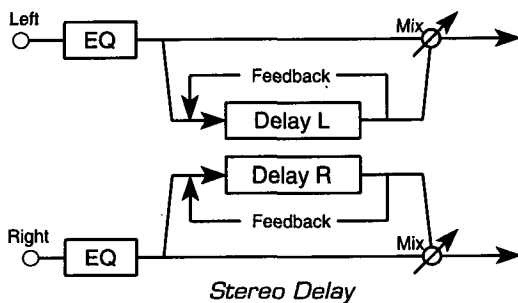
```
ARR11 7-1: EFFECT TYPE      Effect Type
FX1 13: Stereo Delay :ON   Mod:NONE      I+00
```

```
ARR11 7-2: FX PARAM      Delay Time L [ms]
L250 R260 F-40 HD30      L+00 H+00 +75:25
```



Effect 13: **Stereo Delay** applies feedback independently to the right and left channels. 14: **Cross Delay** crosses the delay feedback from the right channel to the left and *vice versa*, making the delay sounds bounce back and forth between the right and left channels.

Both of these effects run the right- and left-channel signals through a two-level shelving equalizer before applying the delay.



**Delay Time L (L)** [0 ms...500 ms]

This parameter sets the length of the delay for the left channel.

**Delay Time R (R)** [0 ms...500 ms]

This parameter sets the length of the delay for the right channel.

**Feedback (F)** [-99%...+99%]

This sets the amount of feedback (that is, the amount of the delay signal that is fed back into the delay). Higher numerical values will produce more delay repetitions, so the echo will take longer to die out. Negative values will invert the phase of the feedback, giving the echoes a harder, less hollow-sounding quality.

**High Damp (HD)** [0%...99%]

This determines the rate at which the high frequency components of the sound will decay. Higher values will result in faster decay.

---

**EQ Low (L)** **[-12 dB...+12 dB]**

This sets the amount by which the low-range shelving equalizer will cut or boost frequencies below 1 kHz.

**EQ High (H)** **[-12 dB...+12 dB]**

This sets the amount by which the high-range shelving equalizer will cut or boost frequencies above 1 kHz.

**Dry:FX Balance** **[DRY, 99:1...1:99, FX]**

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that is all delay echoes. Other settings show the ratio of direct to processed sounds.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

## Dual Delay

The dual delay effect runs the right and left channel signals through independent mono delays. Since you can set all of the delay parameters separately for the right and left channels, you can use it to process two sounds—one played through each channel—with entirely different delays.

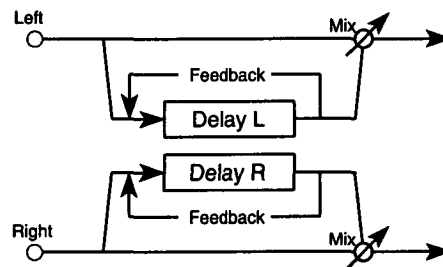
```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 15: Dual Delay      :ON  Mod:NONE  I+00
```

```
ARR11 7-2:FX PARAM      Delay Time L [ms]
250 L+50 HD10+70:30  260 R+50 HD10+70:30
```



The *i4S* has one dual delay effect, **15: Dual Delay**. This effect has four parameters for each channel: the first four (cursor keys A through D) apply to the left channel, the second four (keys E through H) to the right channel. The details of these four parameters are the same for both channels.

This effect does not equalize the input signal for either channel.



### Delay Time L

[0 ms...500 ms]

This parameter sets the length of the delay for the left channel.

### Feedback L (L)

[-99%...+99%]

This parameter sets the amount of feedback (that is, the amount of the delay signal that is fed back into the delay) for the left channel. Higher numerical values will produce more delay repetitions, so the echoes will take longer to die out. Negative values will invert the phase of the feedback, giving the echoes a harder, less hollow-sounding quality.

### High Damp L (HD)

[0%...99%]

This sets the rate at which the high frequency components of the left channel sound will decay. Higher values will result in faster decay.

### Dry:FX Balance

[DRY, 99:1...1:99, FX]

This parameter sets the balance between the direct (DRY) and processed (FX) sounds for the left channel. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that is all echoes. Other settings show the ratio of direct to processed sounds.



---

You can use dynamic modulation to adjust this parameter while performing.  
(See the description of dynamic modulation on page 91.)

**Delay Time R** [0 ms...500 ms]

This parameter sets the length of the delay for the right channel.

**Feedback R (R)** [-99%...+99%]

This parameter sets the amount of feedback for the right channel. Details are the same as described for the Feedback L parameter, above.

**High Damp R (HD)** [0%...99%]

This sets the rate at which the high frequency components of the right channel sound will decay. Higher values will result in faster decay.

**Dry:FX Balance** [DRY, 99:1...1:99, FX]

This parameter sets the balance between the direct (DRY) and processed (FX) sounds for the right channel. Details are the same as described for the Dry:FX Balance parameter, above.

## Multitap Delay

The multitap delay effects run the signals from each effect input through two independent delays. They create a multiple-echo effect that produces a pair of echoes in response to each note you play.

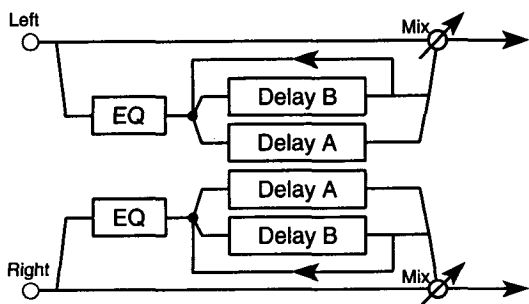
```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 16:Multitap Dly1:ON   Mod:NONE      I+00
```

```
ARR11 7-2:FX PARAM        Delay Time A [ms]
A300      B400      F+50    L+00 H+00 +50:50
```

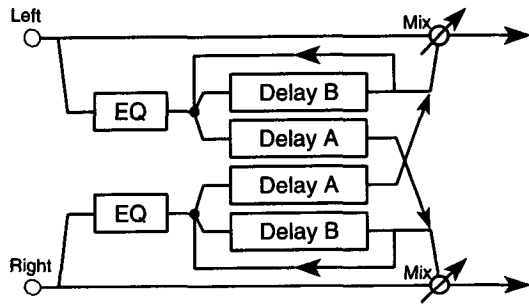


The *i4S* has three multitap effects. **16:Multitap Dly1** is the standard multitap delay. **17:Multitap Dly2** cross-pans the signals, reversing the right- and left-channel signals with each echo. **18:Multitap Dly3** crosses the feedback between the channels, so that the right and left channels reverse with each pair of echoes.

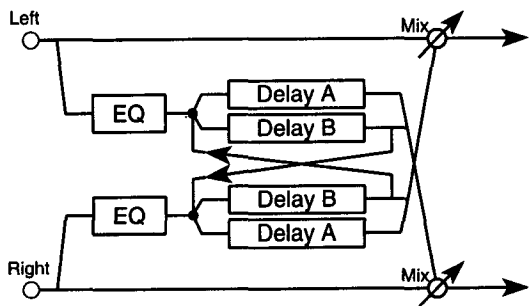
All three of these effects run the right- and left-channel signals through a two-level shelving equalizer before applying the delays.



Multitap Delay 1

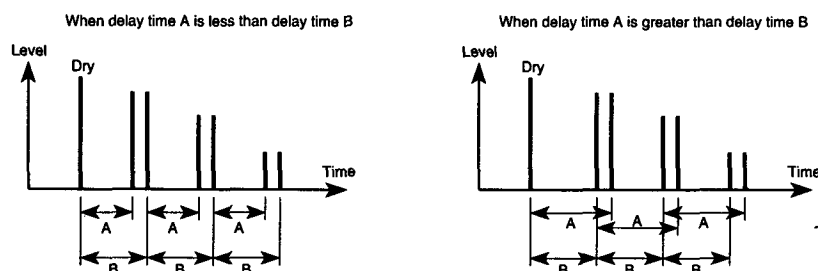


Multitap Delay 2



Multitap Delay 3

The signal from only one of the two delays (DLY B) is fed back to the input. The timing of the secondary and subsequent echoes produced by both delays is thus determined by the Delay Time B parameter, as shown in the illustrations below.

**Delay Time A (A)****[0 ms...500 ms]**

This parameter sets the length of the delay for DLY A.

**Delay Time B (B)****[0 ms...500 ms]**

This parameter sets the length of the delay for DLY B.

**Feedback (F)****[-99%...+99%]**

This sets the amount of feedback (that is, the amount of the signal from DLY B that is fed back into the delays). Higher numerical values will produce more delay repetitions, so the echo will take longer to die out. Negative values will invert the phase of the feedback, giving the echoes a harder, less hollow-sounding quality.

**EQ Low (L)****[-12 dB...+12 dB]**

This sets the amount by which the low-range shelving equalizer will cut or boost frequencies below 1 kHz.

**EQ High (H)****[-12 dB...+12 dB]**

This sets the amount by which the high-range shelving equalizer will cut or boost frequencies above 1 kHz.

**Dry:FX Balance****[DRY, 99:1...1:99, FX]**

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that is all echoes. Other settings show the ratio of direct to processed sounds.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

## Chorus

Chorus effects thicken signals by running them through a short delay whose length is modulated by a low-frequency oscillator (LFO). This delay creates minute fluctuations in pitch which, when combined with the original signal, produce the impression of two or more instruments playing in unison.

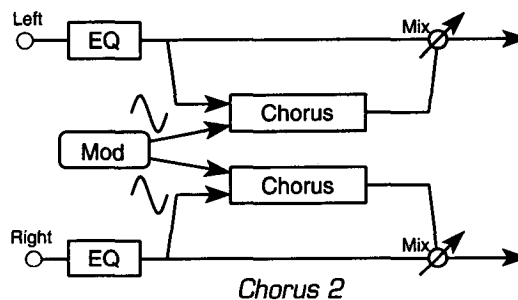
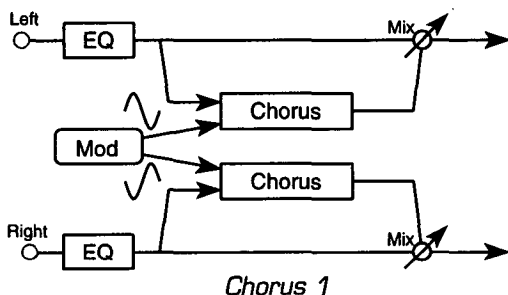
```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 19:Chorus 1          :ON  Mod:NONE  I+00
```

```
ARR11 7-2:FX PARAM      Delay Time [ms]
T010 50.30 M60  TRI     L+00 H+00 +60:40
```



The *i4S* lets you choose from two basic stereo chorus effects, both of which process the left and right channels independently. **19:Chorus 1** modulates the delay of the right and left channels with the opposite phase, giving the sound a shimmering stereo motion. **20:Chorus 2** modulates the delay for both channels with the same phase.

Both of these effects run the right- and left-channel signals through a two-level shelving equalizer before applying the chorus effect.



**Delay Time (T)** [0 ms...200 ms]

This parameter sets the basic length of the delay. The same delay time is used for both channels.

**Mod Speed (S)** [0.03 Hz...30 Hz]

This sets the frequency at which the LFO will modulate the delays. Low values (around 1 Hz) are sufficient for a standard chorus effect.

**Mod Depth (M)** [0...99]

This sets the intensity of the modulation (that is, how far the LFO will vary the delay time). Higher values will make the modulation more noticeable. A value of 0 will disable the chorus effect.

**LFO Waveform** [SIN, TRI]

This selects the waveform with which the LFO will modulate the delay time. You can choose either a sine wave (SIN) or a triangle wave (TRI).

**EQ Low (L)****[-12 dB...+12 dB]**

This sets the amount by which the low-range shelving equalizer will cut or boost frequencies below 1 kHz.

**EQ High (H)****[-12 dB...+12 dB]**

This sets the amount by which the high-range shelving equalizer will cut or boost frequencies above 1 kHz.

**Dry:FX Balance****[DRY, 99:1...1:99, FX]**

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that consists of the chorus effect only. Other settings show the ratio of direct to processed sounds.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

## Quadrature Chorus

Quadrature chorus effects are similar to the stereo choruses described in the previous section. They differ mainly in that the LFO modulates the delays for the right and left channels 90 degrees out of phase with each other. They also let you use different delay times for each channel.

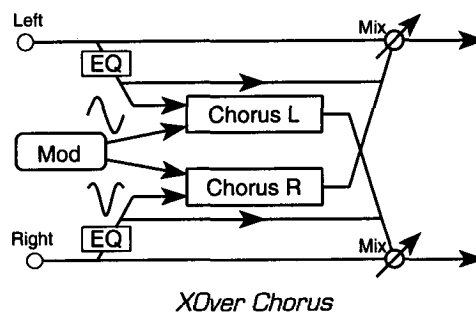
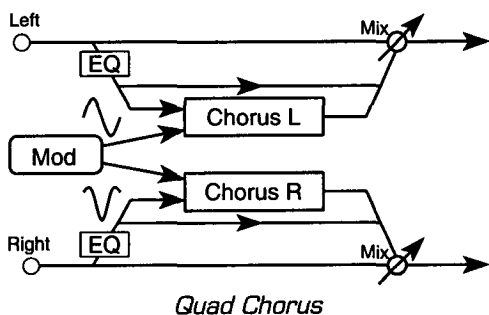
```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 21:Quad Chorus      :ON  Mod:NONE  I+00
```

```
ARR11 7-2:FX PARAM      Delay Time L [ms]
L011 R023 +S33 M50 T+00 L+00 H+00 50:50
```



The *i4S* has two quadrature chorus effects. The basic version, **21:Quad Chorus**, processes the left and right channels independently. **22:XOver Chorus** mixes the chorused signal for each channel into the output of the other channel, producing a crossover effect.

Both of these effects run the right- and left-channel signals through a two-level shelving equalizer before applying the chorus effect.



### Delay Time L (L)

[0 ms...250 ms]

This parameter sets the basic delay length for the left channel.

### Delay Time R (R)

[0 ms...250 ms]

This parameter sets the basic delay length for the right channel.

### Mod Speed (S)

[1...99]

This sets the rate at which the LFO will modulate the delays. Higher values will produce faster oscillation.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

### Mod Depth (M)

[0...99]

This sets the intensity of the modulation (that is, how far the LFO will vary the delay times). Higher values will make the modulation more noticeable. A value of 0 will disable the chorus effect.

**LFO Shape****[T+10...T-10, S-10...S+10]**

This selects the waveform with which the LFO will modulate the delay time. You can choose either a triangle wave (T) or a sine wave (S).

The numerical value adjusts the shape of the modulation waveform. Higher positive values will result in wider high-level peaks. Negative values will create narrower, sharper high-level peaks.

**EQ Low (L)****[-12 dB...+12 dB]**

This sets the amount by which the low-range shelving equalizer will cut or boost frequencies below 1 kHz.

**EQ High (H)****[-12 dB...+12 dB]**

This sets the amount by which the high-range shelving equalizer will cut or boost frequencies above 1 kHz.

**Dry:FX Balance****[DRY, 99:1...1:99, FX]**

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that consists of the chorus effect only. Other settings show the ratio of direct to processed sounds.

## Harmonic Chorus

The harmonic chorus effect is a quadrature chorus that uses a filter to split the input sound into high and low frequency ranges, then applies two choruses to the high range only. It works especially well with low-frequency instruments such as basses.

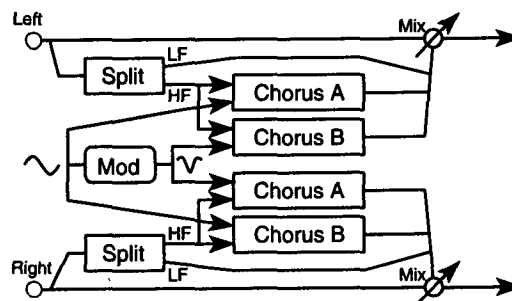
```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 23:Harmonic Cho.:ON   Mod:NONE      I+00
```

```
ARR11 7-2:FX PARAM      Delay Time A [ms]
A022 B046 +S35 M99 SP01  FX
```



The i4S has one harmonic chorus effect, 23:Harmonic Cho. Unlike the other chorus effects, it does not let you set the shape of the waveform used to modulate the delay. However, you can adjust the frequency at which the filter splits the high- and low-range components.

This effect does not equalize the input signal for either channel.



**Delay Time A (A)** **[0 ms...500 ms]**

This parameter sets the basic delay length for chorus unit A.

**Delay Time B (B)** **[0 ms...500 ms]**

This parameter sets the basic delay length for chorus unit B.

**Mod Speed (S)** **[1...99]**

This sets the rate at which the LFO will modulate the delays. Higher values will produce faster oscillation.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

**Mod Depth (M)** **[0...99]**

This sets the intensity of the modulation (that is, how far the LFO will vary the delay times). Higher values will make the modulation more noticeable. A value of 0 will disable the chorus effect.



**Filter Splt Point (SP)****[0...18]**

This parameter represents the frequency at which the filter splits the input signals into high- and low-frequency components. Higher values will raise the split point frequency. The chorus effect will be applied to the components above this frequency only. See the table below for a list of the actual frequencies that correspond to these values.

Value	Frequency
0	160 Hz
1	200 Hz
2	250 Hz
3	320 Hz
4	400 Hz
5	500 Hz
6	640 Hz
7	800 Hz
8	1.00 kHz
9	1.25 kHz
10	1.60 kHz
11	2.00 kHz
12	2.50 kHz
13	3.20 kHz
14	4.00 kHz
15	5.00 kHz
16	6.40 kHz
17	8.00 kHz
18	10.0 kHz

**Dry:FX Balance****[DRY, 99:1...1:99, FX]**

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that consists of the chorus effect only. Other settings show the ratio of direct to processed sounds.

## Symphonic Ensemble

The symphonic ensemble effect works on the same basic principle as the chorus effects described in the preceding sections. It is particularly effective when used with large ensemble sounds such as orchestral string sections.

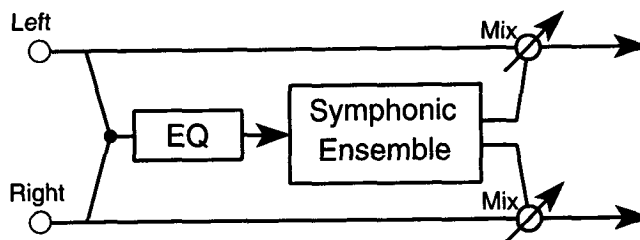
```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 24:Symphonic Ens:ON   Mod:NONE      I+00
```

```
ARR11 7-2:FX PARAM      Mod Depth
M80                      L+00 H+00 +50:50
```



The *i4S* has one symphonic ensemble effect, 24:Symphonic Ens. This effect mixes the input from the right and left channels, then applies the ensemble effect to the mixed input. The output is sent equally to both channels.

The symphonic ensemble effect includes a two-level shelving equalizer function.



This effect cannot be used in combination with other modulated effects. If you select 24:Symphonic Ens as the Effect Selection for one signal processor, you cannot set the other processor to use any of the following effects:

Effect Type	Effect No.
Chorus	19-20
Quadrature Chorus	21-22
Harmonic Chorus	23
Symphonic Ensemble	24
Flanger	25-27
Phaser	32-33
Rotary Speaker	34
Tremolo	35-36

Effect Type	Effect No.
Chorused/Flanged Delay	38-39
Delay & Chorus	42
Delay & Flanger	43
Delay & Phaser	46
Delay & Rotary Speaker	47

### Mod Depth (M)

[0...99]

This sets the intensity of the modulation. Higher values will make the modulation more noticeable. A value of 0 will disable the ensemble effect.

---

**EQ Low (L)** **[-12 dB...+12 dB]**

This sets the amount by which the low-range shelving equalizer will cut or boost frequencies below 1 kHz.

**EQ High (H)** **[-12 dB...+12 dB]**

This sets the amount by which the high-range shelving equalizer will cut or boost frequencies above 1 kHz.

**Dry:FX Balance** **[DRY, 99:1...1:99, FX]**

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that consists of the ensemble effect only. Other settings show the ratio of direct to processed sounds.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

# Flanger

Flanger effects use the same basic principle as the choruses, but add a loop that feeds the output back into the delay. They create chorus-like effects, but they can also add a sense of pitch to non-pitched sounds. They are effective when used to process sounds that contain a lot of high frequency energy, such as cymbals.

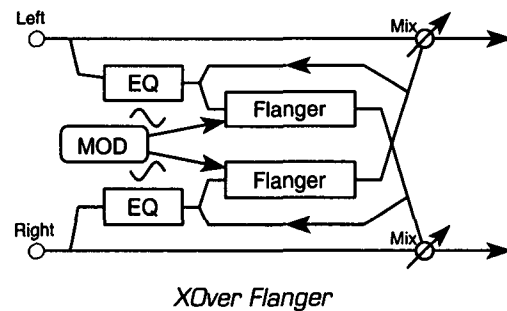
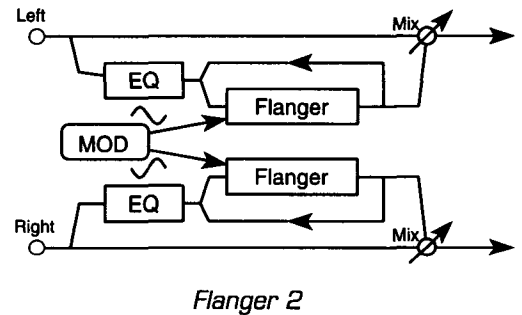
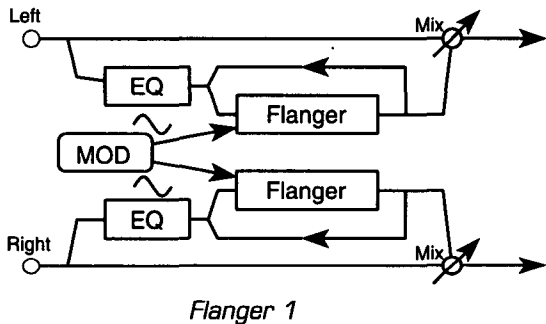
```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 25:Flanger 1          :ON  Mod:NONE  I+00
```

```
ARR11 7-2:FX PARAM        Delay Time
T005 M99  +520            F-85 L+00 H+00 20:80
```



The *i4S* has three stereo flanger effects. 25:Flanger 1 modulates the delays applied to the right and left channels in the same phase. 26:Flanger 2 modulates the delays in the opposite phase, resulting in a wider stereo motion. 27:XOver Flanger also modulates the delays in inverse phases, but each flanger sends its feedback to the other channel.

All three of these effects run the right- and left-channel signals through a two-level shelving equalizer before flanging them.



## Delay Time (T)

[0 ms...200 ms]

This parameter sets the basic length of the delay. The same delay time is used for both channels.

**Mod Depth (M)** [0...99]

This sets the intensity of the modulation (that is, how far the LFO will vary the delay time). Higher values will make the modulation more noticeable. A value of 0 will disable the flanger effect.

**Mod Speed (S)** [1...99]

This sets the rate at which the LFO will modulate the delays. Higher values will produce faster oscillation.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

**Feedback (F)** [-99%...+99%]

This sets the level of the feedback that is returned to the flanger input. Higher numerical values increase the resonance that is produced by the flanger effect. Negative values invert the phase of the feedback, lowering the pitch of the effect by an octave.

**EQ Low (L)** [-12 dB...+12 dB]

This sets the amount by which the low-range shelving equalizer will cut or boost frequencies below 1 kHz.

**EQ High (H)** [-12 dB...+12 dB]

This sets the amount by which the high-range shelving equalizer will cut or boost frequencies above 1 kHz.

**Dry:FX Balance** [DRY, 99:1...1:99, FX]

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting DRY will turn the effect off. The FX setting will result in a sound that consists of the flanger effect only. Other settings show the ratio of direct to processed sounds.

## Exciter

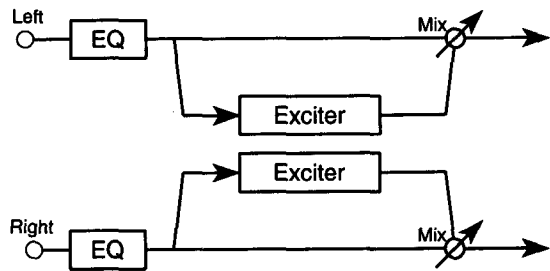
The exciter effect adds harmonics which emphasize a certain frequency of the sound, giving it greater definition and presence. You can use it most effectively with solo instruments such as electric guitars and lead synths, to bring them to the forefront.

```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 28:Exciter             :ON   Mod:NONE   I+00
```

```
ARR11 7-2:FX PARAM        Harmonic Density
D+50      HS05             L+04 H+00 +FX
```



The *i4S* has one exciter effect, **28:Exciter**, which excites the signals for the right and left channels individually. It also runs the right- and left-channel signals through a two-level shelving equalizer before exciting them.



**Harmonic Density (D)** [-99...+99]

This sets the density of the harmonics that are added to the signal. Higher numerical values will increase the depth of the exciter effect. Negative values suppress rather than boost harmonics, producing a tinny sound.

**Hot Spot (HS)** [1...10]

This sets the center of the frequency range to be emphasized by the exciter effect. The harmonics added are based on this frequency. Higher values will raise the excited frequency.

**EQ Low (L)** [-12 dB...+12 dB]

This sets the amount by which the low-range shelving equalizer will cut or boost frequencies below 1 kHz.

**EQ High (H)** [-12 dB...+12 dB]

This sets the amount by which the high-range shelving equalizer will cut or boost frequencies above 1 kHz.

---

## Dry:FX Balance

[DRY, 99:1...1:99, FX]

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that consists of the exciter effect only. Other settings show the ratio of direct to processed sounds.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

## Enhancer

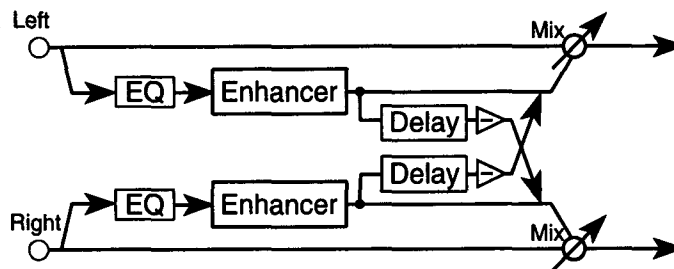
The enhancer effect excites sounds by adding harmonics that make them clearer and more well-defined. It also applies a short inverse-phase delay to each channel, giving the sound a greater sense of breadth.

```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 29:Enhancer           :ON  Mod:NONE  I+00
```

```
ARR11 7-2:FX PARAM        Harmonic Density
D80  H501 SW50 T25        L+01 H+01 +FX
```



The *i4S* has one enhancer effect, **29:Enhancer**, which enhances the signals for the right and left channels individually. It also runs the right- and left-channel signals through a two-level shelving equalizer before applying the exciter and delay effects.



### Harmonic Density (D) [1...99]

This sets the density of the harmonics that are added to the signal. Higher values will increase the depth of the exciter effect.

### Hot Spot (HS) [1...20]

This sets the center of the frequency range to be emphasized by the exciter portion of the effect. The harmonics added are based on this frequency. Higher values will raise the enhanced frequency.

### Stereo Width (SW) [0...99]

This sets the proportion of the delay signal for each channel that is added to the output of the other channel. Higher values will increase the stereo width of the delay effect.

### Delay Time (T) [1...99]

This parameter sets the basic length of the delay. The same delay time is used for both channels.

### EQ Low (L) [-12 dB...+12 dB]

This sets the amount by which the low-range shelving equalizer will cut or boost frequencies below 1 kHz.



**EQ High (H)****[-12 dB...+12 dB]**

This sets the amount by which the high-range shelving equalizer will cut or boost frequencies above 1 kHz.

**Dry:FX Balance****[DRY, 99:1...1:99, FX]**

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that consists of the enhancer effect only. Other settings show the ratio of direct to processed sounds.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

## Distortion

Devised for use with guitars, distortion effects simulate the distortion that occurs when a signal's gain exceeds an amplifier's input capacity. Distortion is often used with solo instruments, as it adds thickness to single notes. It produces a muddy sound when applied to an instrument playing chords.

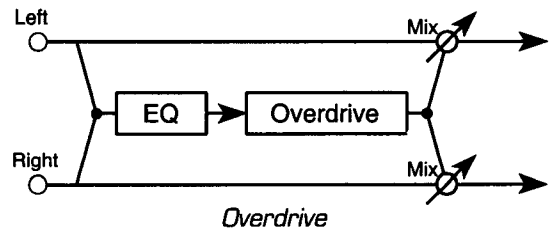
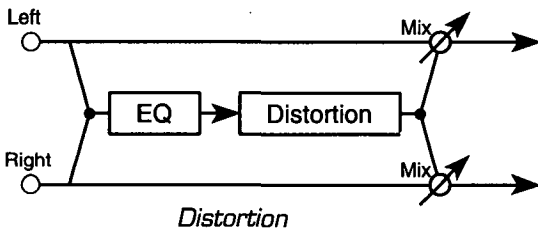
```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 30:Distortion      :ON  Mod:NONE  I+00
```

```
ARR11 7-2:FX PARAM      Drive
D111 →HS05 R00 L+02 H-12  DL10      50:50
```



The *i4S* offers two distortion effects, both of which distort the sound and add a slight wah. **30:Distortion** creates a hard, solid-state distortion frequently used in hard rock and heavy metal. It is especially effective with solo instruments. **31:Overdrive** simulates a warmer tube amp distortion. It produces a nice bluesy effect when used with guitar and organ sounds.

Both of these effects run the right- and left-channel signals through a two-level shelving equalizer before applying the distortion and wah effects.



**Drive (D)** [1...111]

This parameter sets the intensity of the distortion effect. Higher values will increase the level of distortion.

**Hot Spot (HS)** [1...99]

This sets the center of the frequency range to which the wah filter will be applied. Higher values will raise the wah frequency.

You can use dynamic modulation to manipulate this parameter while performing. (See the description of dynamic modulation on page 91.)

**Resonance (R)** [0...99]

This sets the amount of resonance that is added by the wah filter. Higher values will increase the intensity of the wah effect.

**EQ Low (L)** [-12 dB...+12 dB]

This sets the amount by which the low-range shelving equalizer will cut or boost frequencies below 1 kHz.

**EQ High (H)**

[-12 dB...+12 dB]

This sets the amount by which the high-range shelving equalizer will cut or boost frequencies above 1 kHz.

**Distortion Level (DL)**

[0...99]

This sets the output level of the distorted sound. Higher values will increase the distortion. A value of 0 will disable the distortion effect.

**Dry:FX Balance**

[DRY, 99:1...1:99, FX]

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that is all distortion. Other settings show the ratio of direct to processed sounds.

## Phaser

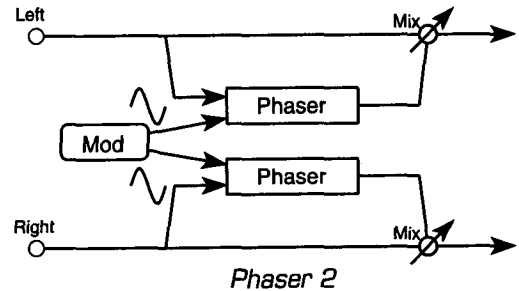
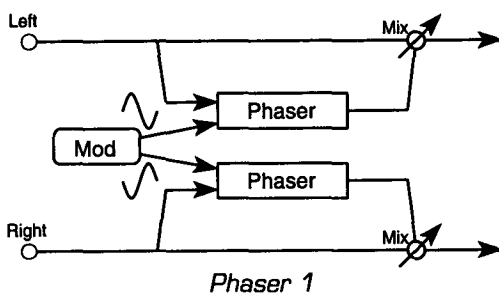
Whereas chorus and flanger effects modulate delays, phasers modulate the phase of the input signal itself, creating an even clearer modulation effect. Phasers—or phase shifters, as they are formally known—are especially suitable for electric pianos and guitars.

```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 32:Phaser 1          :ON  Mod:NONE  I+00
```

```
ARR11 7-2:FX PARAM      Hot Spot
HS99 +50.69 M60 F-75 SIN                25:75
```



The *i4S* has two phaser effects. 32:Phaser 1 modulates the signals of the right and left channels in opposite phases, making the sound shift back and forth in stereo. 33:Phaser 2 modulates the right- and left-channel signals with the same phase.



### Hot Spot (HS)

[0...99]

This parameter sets the center of the frequency range whose phase is to be shifted. Higher values will raise the shifted frequency.

### Mod Speed (S)

[0.03 Hz...30 Hz]

This sets the rate at which the LFO will modulate the phase of the input signal. Higher values will produce faster oscillation.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

### Mod Depth (M)

[0...99]

This sets the intensity of the modulation (that is, how far the LFO will vary the phase). Higher values will make the modulation more noticeable. A value of 0 will disable the phaser effect.

### Feedback (F)

[-99%...+99%]

This sets the amount of feedback (that is, the amount of the delay signal that is fed back into the phaser). Higher numerical values will increase the resonance produced by the phaser effect. Negative values will invert the phase of the feedback, increasing the resonance of the effect.

---

**LFO Waveform****[SIN, TRI]**

This selects the waveform with which the LFO will modulate the signal phase. You can choose a sine wave (**SIN**) or a triangle wave (**TRI**).

**Dry:FX Balance****[DRY, 99:1...1:99, FX]**

This sets the balance between the direct (**DRY**) and processed (**FX**) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that consists of the phaser effect only. Other settings show the ratio of direct to processed sounds.

## Rotary Speaker

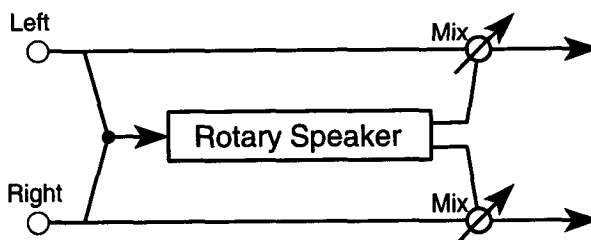
This effect simulates the sound produced by the rotary speakers used with electric organs. These speakers have a motor which rotates the high range speaker horn at one of two speeds. The low speed produces a chorus-like effect, whereas the high speed produces a tremolo effect.

```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 34:Rotary Speakr:ON   Mod:NONE      I+00
```

```
ARR11 7-2:FX PARAM      Vibrato Depth
VIB09      AC04      S25      F70      FX
```



The *i4S* rotary speaker effect, **34:Rotary Speakr**, mixes the input from the right and left channels, then modulates the mixed input using a completely independent low-frequency oscillator (LFO). It does not equalize the input signal for either channel.



You can use dynamic modulation to switch between slow and fast oscillation speeds while performing. The controller you use to switch speeds will act as a two-position switch, rather than a continuous controller. This means that the speed with which you move the controller has no effect on the sound; the rate of change between slow and fast speeds is controlled entirely by the Acceleration parameter.

### Vibrato Depth (VIB) [0...15]

This sets the intensity of the oscillation produced by the effect. (On a real rotary speaker, you would have to change the diameter of the rotating horn to change the depth.) Higher values will produce more noticeable vibrato.

### Acceleration (AC) [1...15]

This sets the time it takes the effect to accelerate from the slow speed to the fast speed (or decelerate from fast to slow) when the oscillation speed is switched using dynamic modulation. Higher values will result in faster acceleration and deceleration.

### Slow Speed (S) [1...99]

This sets the rate of oscillation when the LFO is switched to slow speed. Higher values will result in faster oscillation.

### Fast Speed (F) [1...99]

This sets the rate of oscillation when the LFO is switched to fast speed. Higher values will result in faster oscillation.

---

**Dry:FX Balance****[DRY, 99:1...1:99, FX]**

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that consists of the rotary speaker effect only. Other settings show the ratio of direct to processed sounds.

# Tremolo

The tremolo effect uses a low-frequency oscillator (LFO) to modulate the volume of output sounds. It is extremely effective when applied to instruments playing languid melodies and broad chords, less so when used with detailed phrases.

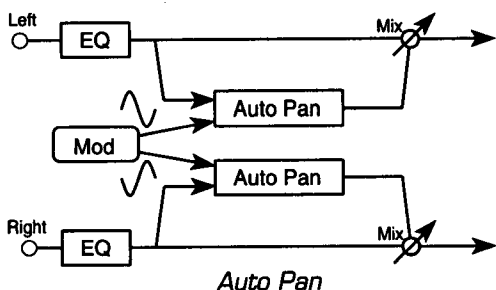
```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 35:Auto Pan           :ON  Mod:NONE  I+00
```

```
ARR11 7-2:FX PARAM        LFO Waveform
SIN W+99  S1.59 M80       L+00 H+00 +FX
```

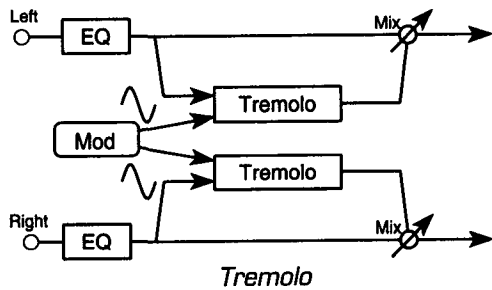


The *i4S* has two tremolo effects. The first, **35:Auto Pan**, modulates the volume of the right and left channels inversely, so that the sound moves as if it were being panned back and forth. **36:Tremolo** modulates both channels with the same phase, for a true tremolo effect.

Both of these effects run the right- and left-channel signals through a two-level shelving equalizer before applying the tremolo.



Auto Pan



Tremolo

## LFO Waveform

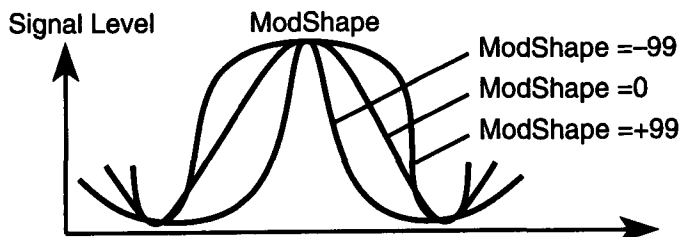
[SIN, TRI]

This selects the waveform with which the LFO will modulate the input signal levels. You can choose either a sine wave (SIN) or a triangle wave (TRI).

## LFO Width (W)

[-99...+99]

This adjusts the shape of the LFO waveform. Higher positive values result in wider high-level peaks. Negative values will create narrower, sharper high-level peaks.





---

**Mod Speed (S)** [0.03 Hz...30 Hz]

This sets the frequency at which the LFO will modulate the input signal levels.

**Mod Depth (M)** [0...99]

This sets the intensity of the modulation (that is, how far the LFO will vary the amplitude). Higher values will make the modulation more noticeable. A value of 0 will disable the tremolo.

**EQ Low (L)** [-12 dB...+12 dB]

This sets the amount by which the low-range shelving equalizer will cut or boost frequencies below 1 kHz.

**EQ High (H)** [-12 dB...+12 dB]

This sets the amount by which the high-range shelving equalizer will cut or boost frequencies above 1 kHz.

**Dry:FX Balance** [DRY, 99:1...1:99, FX]

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the effect off. The **FX** setting will result in a sound that consists of the tremolo effect only. Other settings show the ratio of direct to processed sounds.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

## Parametric Equalizer

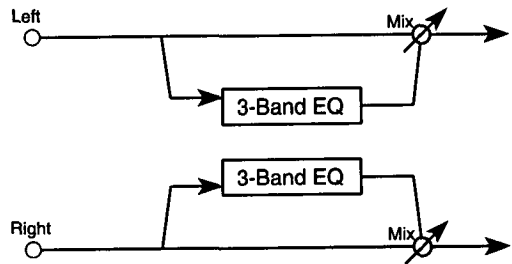
Many of the *i4S* effects include two-level shelving equalizers that let you adjust the high- and low-frequency ranges of the output sound. However, these equalizers use fixed cutoff frequencies that limit their flexibility. For sounds that require more detailed equalization, a parametric equalizer is the answer.

```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 37:Parametric EQ:ON    Mod:NONE      I+00
```

```
ARR11 7-2:FX PARAM        Low Frequency
LF12 G+12 →M08 G+12 W50 HF20 G+12 FX
```



The last single effect, **37:Parametric EQ**, is a three-band parametric equalizer. You can independently adjust both the cutoff or center frequencies and the gain settings for three frequency ranges—low, mid, and high.



### Low Frequency (LF) [0...29]

This parameter sets the cutoff frequency for the low-range filter. Higher values raise the cutoff frequency.

### Low Gain (G) [-12 dB...+12 dB]

This sets the amount by which the low-range filter will cut or boost the frequencies below the cutoff point set by the Low Frequency parameter.

### Middle Frequency (M) [0...99]

This parameter sets the center frequency for the mid-range filter. Higher values raise the center frequency.

You can use dynamic modulation to adjust this parameter, creating a wah effect, while you perform. (See the description of dynamic modulation on page 91.)

### Middle Gain (G) [-12 dB...+12 dB]

This sets the amount by which the mid-range filter will cut or boost the frequency set by the Middle Frequency parameter.

---

**Middle Width (W)** **[0...99]**

This parameter adjusts the bandwidth of frequencies affected by the mid-range filter. Higher values will increase the range of frequencies boosted or cut by this filter.

**High Frequency (HF)** **[0...29]**

This parameter sets the cutoff frequency for the high-range filter. Higher values raise the cutoff frequency.

**High Gain (G)** **[-12 dB...+12 dB]**

This sets the amount by which the high-range filter will cut or boost the frequencies above the cutoff point set by the High Frequency parameter.

**Dry:FX Balance** **[DRY, 99:1...1:99, FX]**

This sets the balance between the direct (DRY) and processed (FX) sounds. Selecting **DRY** will turn the equalizer off. The **FX** setting will result in a sound that consists of equalized sound only. Other settings show the ratio of direct to processed sounds.

## Chorused or Flanged Delay

The effects in this section are dual effects connected in series. That is, they apply two effects—first a mono-in, stereo-out chorus or flanger, then a stereo delay—to both the right and left channels. They are particularly useful with solo instruments.

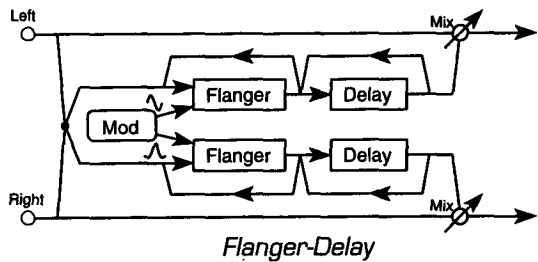
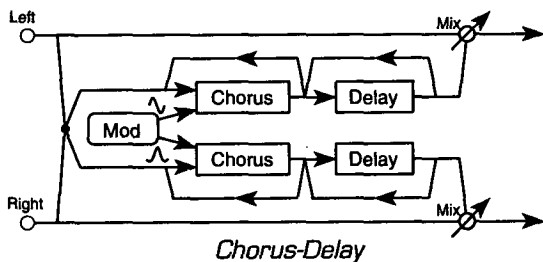
```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 38:Chorus-Delay :ON   Mod:NONE      I+00
```

```
ARR11 7-2:FX PARAM      Delay Time [ms]
T11 F+10  S30  M50  T110 F-10  +70:30
```



**38:Chorus-Delay** serially connects a chorus with a delay. **39:Flanger-Delay** connects a flanger with a delay. Both the chorus and the flanger use quadrature modulation (that is, the right and left channels are modulated 90 degrees out of phase with each other).

These effects do not equalize the input signal for either channel.



### Delay Time (T)

**[0 ms...50 ms]**

This parameter sets the basic length of the delay for the chorus and flanger effects. The same delay time is used for both channels.

### Feedback (F)

**[-99%...+99%]**

This sets the level of the feedback that is returned to the flanger's input. Higher numerical values increase the resonance that is produced by the flanger effect. Negative values invert the phase of the feedback, lowering the pitch of the effect by an octave.

### Mod Speed (S)

**[1...99]**

This sets the rate at which the LFO will modulate the chorus or flanger delays. Higher values will produce faster oscillation.

### Mod Depth (M)

**[0...99]**

This sets the intensity of the LFO modulation (that is, how far the LFO will vary the delay time). Higher values will make the modulation more noticeable. A value of 0 will disable the chorus or flanger effect.

### Delay Time (T)

**[0 ms...500 ms]**

This parameter sets the length of the delay for the delay effect.

---

**Feedback (F)**

[-99%...+99%]

This parameter sets the amount of delay feedback (that is, the amount of the delay signal that is fed back into the delay). Higher numerical values will produce more delay repetitions, so the echoes will take longer to die out. Negative values will invert the phase of the feedback, giving the echoes a harder, less hollow-sounding quality.

**Dry:FX Balance**

[DRY, 99:1...1:99, FX]

This parameter sets the balance between the direct (DRY) and processed (FX) sounds for both the chorus or flanger and delay effects. Selecting **DRY** will turn this effect off. The **FX** setting will result in a sound that consists entirely of chorused or flanged echoes. Other settings show the ratio of direct to processed sounds.

You can use dynamic modulation to adjust this parameter while performing. (See the description of dynamic modulation on page 91.)

## Delay & Reverb

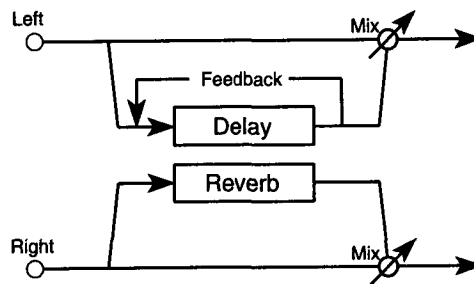
The effects in this section are dual effects whose component effects—a mono delay and a mono reverb—are arranged in parallel. You can use them, for example, to apply a delay to a solo guitar or lead synth on one channel, and reverb to remaining instruments on the other channel.

```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 40:Delay/Hall        :ON  Mod:NONE  I+00
```

```
ARR11 7-2:FX PARAM      Delay Time [ms]
T250 F+50 HD10+70:30  3.5 P055 HD40+60:40
```



The *i4S* has two effects that arrange a delay and reverb in parallel. **40:Delay/Hall** combines the delay with a hall reverb. **41:Delay/Room** combines it with a room reverb. These effects do not equalize the input signal for either channel.



You can use dynamic modulation to control the Dry:FX Balance parameters for both the delay and reverb effects. (See the description of dynamic modulation on page 91.)

**Delay Time (T)** [0 ms...500 ms]

This parameter sets the length of the delay for the delay effect.

**Feedback (F)** [-99%...+99%]

This parameter sets the amount of delay feedback (that is, the amount of the delay signal that is fed back into the delay). Higher numerical values will produce more delay repetitions, so the echoes will take longer to die out. Negative values will invert the phase of the feedback, giving the echoes a harder, less hollow-sounding quality.

**High Damp (HD)** [0%...99%]

This sets the rate at which the high frequency components of the delay sounds will decay. Higher values will result in faster decay.

**Dry:FX Balance** [DRY, 99:1...1:99, FX]

This parameter sets the balance between the direct (DRY) and processed (FX) sounds for the delay effect. Selecting **DRY** will turn this effect off. The **FX** setting will result in a sound that is all echoes. Other settings show the ratio of direct to processed sounds.

---

**Reverb Time** **[variable]**

This sets the amount of time over which the reverberation will decay. You can set a time of **0.2** to **9.9** seconds for the hall reverb, or **0.2** to **4.9** seconds for the room reverb.

**Pre-Delay (P)** **[0 ms...200 ms]**

This parameter sets the delay between the direct sound and the start of the reverb's initial reflections. Higher values will cause the reverb to stand out, making it more echo-like.

**High Damp (HD)** **[0%...99%]**

This sets the rate at which the high frequency components of the reverberation will decay. Higher values will result in faster decay.

**Dry:FX Balance** **[DRY, 99:1...1:99, FX]**

This parameter sets the balance between the direct (DRY) and processed (FX) sounds for the reverb effect. Selecting **DRY** will turn this effect off. The **FX** setting will result in a sound that is all reverberation. Other settings show the ratio of direct to processed sounds.

## Delay & Chorus

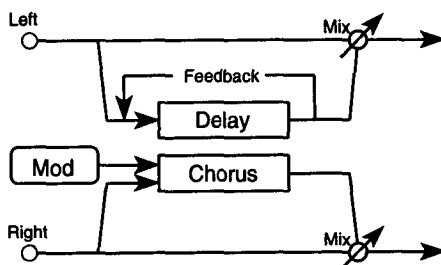
This effect combines two components—a mono delay and a mono chorus—in parallel. You can use it, for example, to apply a delay to a solo guitar or lead synth on one channel, and a chorus to an electric piano on the other.

```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 42:Delay/Chorus :ON   Mod:NONE   I+00
```

```
ARR11 7-2:FX PARAM      Delay Time [ms]
T250 F+50 HD10+70:30  0.30 M60  TRI+60:40
```



The *i4S* has one effect, **42:Delay/Chorus**, that combines a mono delay and a mono chorus in a parallel arrangement. This effect does not equalize the input signal for either channel.



You can use dynamic modulation to control the Dry:FX Balance parameters for both the delay and chorus effects. (See the description of dynamic modulation on page 91.)

**Delay Time (T)** [0 ms...500 ms]

This parameter sets the length of the delay for the delay effect.

**Feedback (F)** [-99%...+99%]

This parameter sets the amount of delay feedback (that is, the amount of the delay signal that is fed back into the delay). Higher numerical values will produce more delay repetitions, so the echoes will take longer to die out. Negative values will invert the phase of the feedback, giving the echoes a harder, less hollow-sounding quality.

**High Damp (HD)** [0%...99%]

This sets the rate at which the high frequency components of the delay sounds will decay. Higher values will result in faster decay.

**Dry:FX Balance** [DRY, 99:1...1:99, FX]

This parameter sets the balance between the direct (DRY) and processed (FX) sounds for the delay effect. Selecting **DRY** will turn this effect off. The **FX** setting will result in a sound that is all echoes. Other settings show the ratio of direct to processed sounds.



---

**Mod Speed** [0.03 Hz...30 Hz]

This sets the frequency at which the LFO will modulate the delay for the chorus. Low values (around 1 Hz) are sufficient for a standard chorus effect.

**Mod Depth (M)** [0...99]

This sets the intensity of the chorus modulation. Higher values will make the modulation more noticeable. A value of 0 will disable the chorus effect.

**LFO Waveform** [SIN, TRI]

This selects the waveform with which the LFO will modulate the delay time. You can choose a sine wave (SIN) or a triangle wave (TRI).

**Dry:FX Balance** [DRY, 99:1...1:99, FX]

This parameter sets the balance between the direct (DRY) and processed (FX) sounds for the chorus effect. Selecting DRY will turn this effect off. The FX setting will result in a sound that consists entirely of the chorus effect. Other settings show the ratio of direct to processed sounds.

## Delay & Flanger

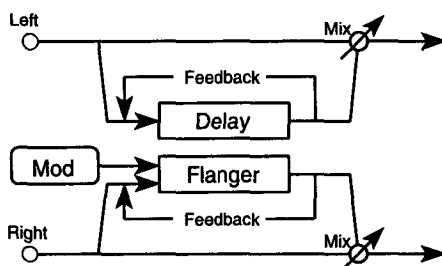
This effect combines two components—a mono delay and a mono flanger—in parallel. You can use it, for example, to apply a delay to a solo guitar or lead synth on one channel, and a flanger to rhythm guitars and drums on the other.

```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 43:Delay/Flanger:ON   Mod:NONE      I+00
```

```
ARR11 7-2:FX PARAM      Delay Time [ms]
T250 F+50 HD10+70:30  0.18 M70 F-75+40:60
```



The *i4S* has one effect, 43:Delay/Flanger, that combines a mono delay and a mono flanger in a parallel arrangement. This effect does not equalize the input signal for either channel.



You can use dynamic modulation to control the Dry:FX Balance parameters for both the delay and flanger effects. (See the description of dynamic modulation on page 91.)

**Delay Time (T)** [0 ms...500 ms]

This parameter sets the length of the delay for the delay effect.

**Feedback (F)** [-99%...+99%]

This parameter sets the amount of delay feedback (that is, the amount of the delay signal that is fed back into the delay). Higher numerical values will produce more delay repetitions, so the echoes will take longer to die out. Negative values will invert the phase of the feedback, giving the echoes a harder, less hollow-sounding quality.

**High Damp (HD)** [0%...99%]

This sets the rate at which the high frequency components of the delay sounds will decay. Higher values will result in faster decay.

**Dry:FX Balance** [DRY, 99:1...1:99, FX]

This parameter sets the balance between the direct (DRY) and processed (FX) sounds for the delay effect. Selecting **DRY** will turn this effect off. The **FX** setting will result in a sound that is all echoes. Other settings show the ratio of direct to processed sounds.

---

**Mod Speed** [0.03 Hz...30 Hz]

This sets the frequency at which the LFO will modulate the delay for the flanger. Low values (around 0.18 Hz) are sufficient for a standard flanger effect.

**Mod Depth (M)** [0...99]

This sets the intensity of the flanger modulation. Higher values will make the modulation more noticeable. A value of 0 will disable the flanger effect.

**Feedback (F)** [-99...+99]

This sets the level of the feedback that is returned to the input of the flanger. Higher numerical values increase the resonance that is produced by the flanger effect. Negative values invert the phase of the feedback, lowering the pitch of the effect by an octave.

**Dry:FX Balance** [DRY, 99:1...1:99, FX]

This parameter sets the balance between the direct (DRY) and processed (FX) sounds for the flanger effect. Selecting **DRY** will turn this effect off. The **FX** setting will result in a sound that consists entirely of the flanger effect. Other settings show the ratio of direct to processed sounds.

## Delay & Distortion

These effects combine two components—a mono delay and a mono distortion or overdrive unit—in parallel. You can use them, for example, to apply a delay to a lead synth on one channel, and distortion to guitars on the other.

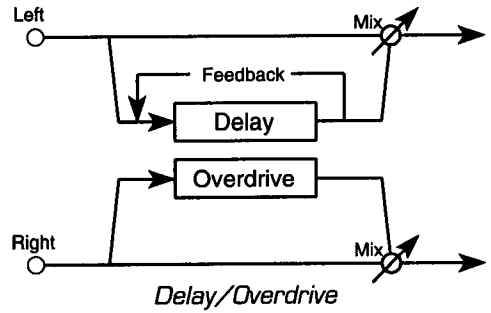
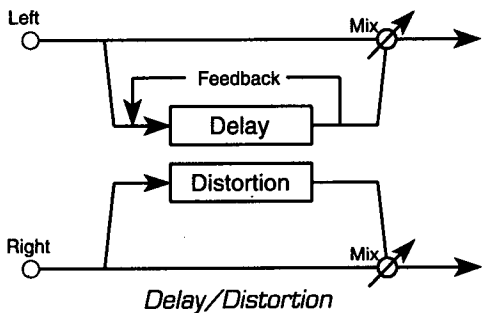
```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 44:Delay/Dist      :ON  Mod:NONE  I+00
```

```
ARR11 7-2:FX PARAM      Delay Time [ms]
T250  F+40      60:40 D111 H550 R75  DL05
```

A	B	C	D	E	F	G	H
---	---	---	---	---	---	---	---

The *i4S* has two effects that arrange a delay and a distortion unit in series. **44:Delay/Dist** combines the delay with distortion. **45:Delay/Overdrv** combines it with overdrive. Both the distortion and the overdrive include a wah effect.

These effects do not equalize the input signal for either channel.



You cannot use dynamic modulation to control any of the parameters for these effects.

**Delay Time (T)** **[0 ms...500 ms]**

This parameter sets the length of the delay.

**Feedback (F)** **[-99%...+99%]**

This parameter sets the amount of delay feedback (that is, the amount of the delay signal that is fed back into the delay). Higher numerical values will produce more delay repetitions, so the echoes will take longer to die out. Negative values will invert the phase of the feedback, giving the echoes a harder, less hollow-sounding quality.

**Dry:FX Balance** **[DRY, 99:1...1:99, FX]**

This parameter sets the balance between the direct (DRY) and processed (FX) sounds for the delay effect. Selecting **DRY** will turn this effect off. The **FX** setting will result in a sound that is all echoes. Other settings show the ratio of direct to processed sounds.

**Drive (D)** **[1...111]**

This parameter sets the intensity of the distortion effect. Higher values will increase the level of distortion.

---

**Hot Spot (HS)** [1...99]

This sets the center of the frequency range to which the wah filter will be applied. Higher values will raise the wah frequency.

**Resonance (R)** [0...99]

This sets the amount of resonance that is added by the wah filter. Higher values will increase the intensity of the wah effect.

**Distortion Level (DL)** [1...99]

This sets the output level of the distorted sound. Higher values will increase the distortion. A value of 0 will disable the distortion effect.

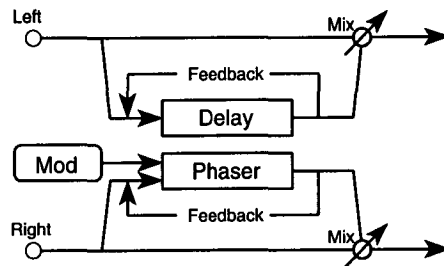
## Delay & Phaser

This effect combines two components—a mono delay and a mono phase shifter—in parallel. You can use it, for example, to apply a delay to a lead synth on one channel, and a phaser to an electric guitar on the other.

```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 46:Delay/Phaser :ON   Mod:NONE      I+00
```

```
ARR11 7-2:FX PARAM      Delay Time [ms]
T250 F+50 HD10+70:30  0.69 M60 F-75+25:75
```

The *i4S* has one effect, **46:Delay/Phaser**, that combines a mono delay and a mono phaser in a parallel arrangement. This effect does not equalize the input signal for either channel.



You can use dynamic modulation to control the Dry:FX Balance parameters for both the delay and phaser effects. (See the description of dynamic modulation on page 91.)

**Delay Time (T)** **[0 ms...500 ms]**

This parameter sets the length of the delay.

**Feedback (F)** **[-99%...+99%]**

This parameter sets the amount of delay feedback (that is, the amount of the delay signal that is fed back into the delay). Higher numerical values will produce more delay repetitions, so the echoes will take longer to die out. Negative values will invert the phase of the feedback, increasing the resonance of the effect.

**High Damp (HD)** **[0%...99%]**

This sets the rate at which the high frequency components of the delay sounds will decay. Higher values will result in faster decay.

**Dry:FX Balance** **[DRY, 99:1...1:99, FX]**

This parameter sets the balance between the direct (DRY) and processed (FX) sounds for the delay effect. Selecting **DRY** will turn this effect off. The **FX** setting will result in a sound that is all echoes. Other settings show the ratio of direct to processed sounds.

**Mod Speed****[0.3 Hz...30 Hz]**

This sets the rate at which the LFO will modulate the phase of the input signal. Higher values will produce faster oscillation.

**Mod Depth (M)****[0...99]**

This sets the intensity of the modulation (that is, how far the LFO will vary the phase). Higher values will make the modulation more noticeable. A value of 0 will disable the phaser effect.

**Feedback (F)****[-99%...+99%]**

This sets the amount of feedback (that is, the amount of the delay signal that is fed back into the phaser). Higher numerical values will increase the resonance produced by the phaser effect. Negative values will invert the phase of the feedback, increasing the resonance of the effect.

**Dry:FX Balance****[DRY, 99:1...1:99, FX]**

This parameter sets the balance between the direct (DRY) and processed (FX) sounds for the phaser effect. Selecting **DRY** will turn this effect off. The **FX** setting will result in a sound that consists entirely of the phaser effect. Other settings show the ratio of direct to processed sounds.

## Delay & Rotary Speaker

This effect combines two components—a mono delay and a mono rotary speaker—in parallel. You can use it, for example, to apply a delay to a solo guitar or lead synth on one channel, and a rotary speaker to an organ sound on the other.

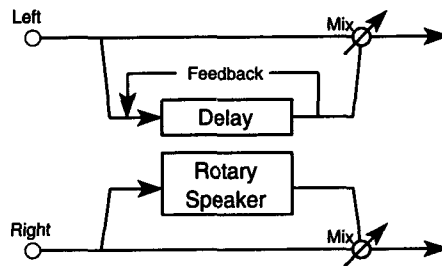
```
ARR11 7-1:EFFECT TYPE      Effect Type
FX1 47:Delay/Rotary :ON   Mod:NONE      I+00
```

```
ARR11 7-2:FX PARAM      Delay Time [ms]
T250  F+40      60:40 AC04 S25 F70  30:70
```

A	B	C	D	E	F	G	H

The *i4S* has one effect, **47:Delay/Rotary**, that combines a delay and a rotary speaker effect in a parallel arrangement. The mono rotary speaker produces a heavier tremolo than the stereo rotary speaker effect, **34:Rotary Speakr**.

This effect does not equalize the input signal for either channel.



You can use dynamic modulation to switch between slow and fast oscillation speeds while performing. The controller you use to switch speeds will act as a two-position switch, rather than a continuous controller. This means that the speed with which you move the controller has no effect on the sound; the rate of change between slow and fast speeds is controlled entirely by the Acceleration parameter.

**Delay Time (T)** [0 ms...500 ms]

This parameter sets the length of the delay.

**Feedback (F)** [−99%...+99%]

This parameter sets the amount of delay feedback (that is, the amount of the delay signal that is fed back into the delay). Higher numerical values will produce more delay repetitions, so the echoes will take longer to die out. Negative values will invert the phase of the feedback, giving the echoes a harder, less hollow-sounding quality.

**Dry:FX Balance** [DRY, 99:1...1:99, FX]

This parameter sets the balance between the direct (DRY) and processed (FX) sounds for the delay effect. Selecting **DRY** will turn this effect off. The **FX** setting will result in a sound that is all echoes. Other settings show the ratio of direct to processed sounds.



---

**Acceleration (AC)** [1...15]

This sets the time it takes the rotary speaker effect to accelerate from the slow speed to the fast speed (or decelerate from fast to slow) when the oscillation speed is switched using dynamic modulation. Higher values will result in faster acceleration and deceleration.

**Slow Speed (S)** [1...99]

This sets the rate of rotary speaker oscillation when the LFO is switched to slow speed. Higher values will result in faster oscillation.

**Fast Speed (F)** [1...99]

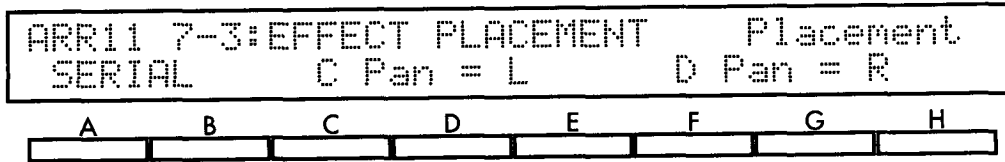
This sets the rate of rotary speaker oscillation when the LFO is switched to fast speed. Higher values will result in faster oscillation.

**Dry:FX Balance** [DRY, 99:1...1:99, FX]

This sets the balance between the direct (DRY) and processed (FX) sounds for the rotary speaker effect. Selecting **DRY** will turn this effect off. The **FX** setting will result in a sound that consists of the rotary speaker effect only. Other settings show the ratio of direct to processed sounds.

## 7-3 FX PLACEMENT

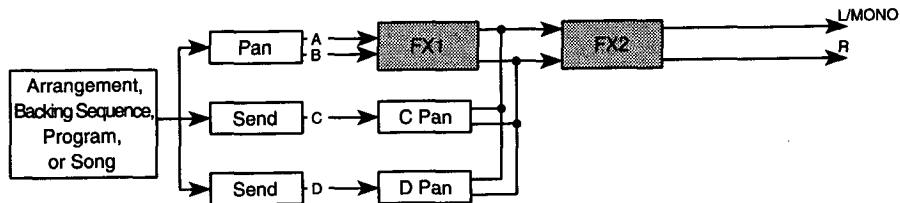
The parameters on this display page let you set the effect placement and the panning (or level) of the output from effect channels C and D. These settings determine how the two processors combine to affect the sound of your *i4S*.



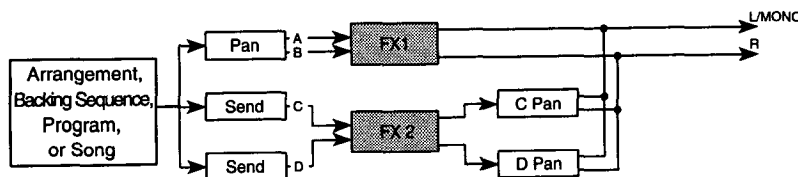
### Effect Placement

This parameter specifies how the two signal processors combine to affect the arrangement, backing sequence, program, or Song Play mode effect setting you are editing. You can choose from among four placement settings: **Serial**, **Parallel 1**, **Parallel 2**, and **Parallel 3**.

Each of these settings applies a different combination of effects to the signals sent to the effects system via the four input channels. The levels of the stereo channel signals (A and B) are set by the Panpot parameters for the arrangement, backing sequence, program, or Song Play mode effect settings you're editing. Those of the individual channels (C and D) are set by the C Pan and D Pan parameters (or the FX1 Level and FX2 Level parameters) described below.

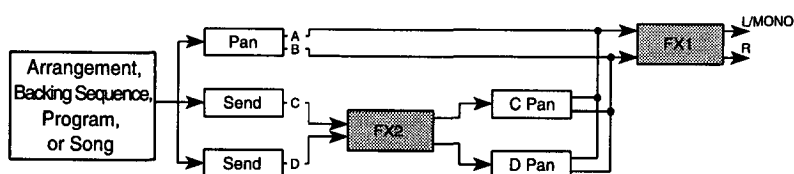


The **Serial** setting applies both signal processors FX1 and FX2 to channels A and B, in that order. Signals routed to channels C and D are mixed in after FX1 (at stereo positions set by the C Pan and D Pan parameters), and so are processed by FX2 only. This lets you avoid applying FX1 to one or more sounds.

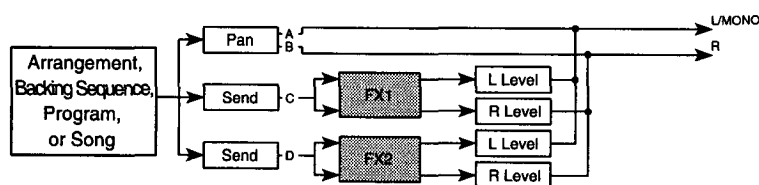


The **Parallel1** setting applies FX1 to channels A and B, and FX2 to channels C and D. Then, after setting the stereo positions of channels C and D as specified by the C Pan and D Pan parameters, it mixes the signals from the two processors for final output.

This setting is handy when you want to apply two stereo effects to two stereo channels. To do this, use the Effect Send Level C and D parameters of your arrangement, backing sequence, program, or Song Play mode effect settings to set stereo positions for all sounds to be processed by FX2. Then, set the C Pan and D Pan parameters to L and R, respectively.



The **Parallel2** setting is, in a sense, the converse of the **Serial** placement. It applies FX2 to channels C and D. After setting the stereo positions of these channels as specified by the C Pan and D Pan parameters, it mixes their output with the dry signals of channels A and B. The resulting signals are then processed by FX1 before final output.



The **Parallel3** setting applies FX1 to channel C and FX2 to channel D. It then mixes the output of these channels with the unprocessed signals of channels A and B. You can thus use this placement to simulate the effect send/return circuit of a standard audio mixer, when you want to set the levels of your dry sounds first and manually mix in the effects later.

To do this, you should set the Dry:FX Balance parameters of both effects to FX, so the output of channels C and D will be completely wet. Then you can add the desired amount of each effect to the dry signals for the right and left channels using the FX1 Level and FX2 Level parameters. Finally, you can adjust the degree to which each effect is applied to each sound using the Effect Send Level C and D parameters of your arrangement, backing sequence, program, or Song Play mode effect settings.

## C Pan

[L, 99:1...1:99, R, OFF]

This parameter appears when **Serial**, **Parallel1**, or **Parallel2** is selected as the effect placement. It sets the stereo position of the signal output from channel C. (You can assign signals to this channel using the Effect Send Level C parameter of the arrangement, backing sequence, program, or Song Play mode effect settings you are editing.)

Selecting **L** for this parameter will pan the signal all the way to the left. The **R** setting will pan it to the right. Numerical settings show the stereo position of this channel as a percentile ratio. Finally, the **OFF** setting turns the channel C signal off altogether.

## D Pan

[L, 99:1...1:99, R, OFF]

This parameter appears when **Serial**, **Parallel1**, or **Parallel2** is selected as the effect placement. It sets the stereo position of the output from channel D. (You can assign signals to this channel using the Effect Send Level D parameter of the arrangement, backing sequence, program, or Song Play mode effect settings you are editing.)

The details of this setting are the same as for the C Pan parameter, above.

**FX1 Level (L, R)**

[0...9]

These parameters appear only when **Parallel3** is selected as the effect placement. They set the levels at which the signals from FX1 are fed into channels A and B, respectively. (You can assign signals to FX1 using the Effect Send Level C parameter of the arrangement, backing sequence, program, or Song Play mode effect settings you are editing.)

Higher values increase the levels at which the signals are fed into channels A and B. A setting of 0 will turn the corresponding signal off.

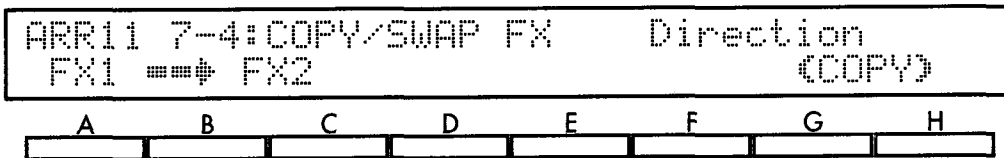
**FX2 Level (L, R)**

[0...9]

These parameters appear only when **Parallel3** is selected as the effect placement. They set the levels at which the signals from FX2 are fed into channels A and B, respectively. (You can assign signals to FX2 using the Effect Send Level D parameter of the arrangement, backing sequence, program, or Song Play mode effect settings you are editing.)

Higher values increase the levels at which the signals are fed into channels A and B. A setting of 0 will turn the corresponding signal off.

**7-4 COPY/SWAP FX**



**Copy/Swap FX**

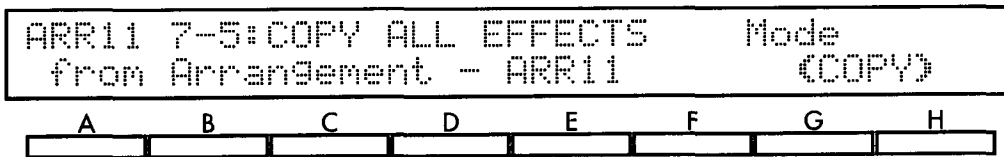
**function**

This function copies or exchanges the parameter values of the effect selections for the arrangement, backing sequence, program, or Song Play mode settings you're editing.

To use this function, first select the direction in which you will be copying effect data. A one-headed arrow pointing in either direction will result in two effects with exactly the same settings. When the arrow points in both directions, the function will swap the data for Effect 1 with that for Effect 2.

When you are sure of your choice, select [COPY] or [SWAP]. The *i4S* will copy or swap the data after asking for confirmation.

**7-5 COPY ALL EFFECTS**



**Copy All Effects**

**function**

This function copies the effect settings from an arrangement, a backing sequence, or a program into the arrangement, backing sequence, or program you are editing.

To use this function, select the type of data from whose effect parameters you want to copy above cursor keys B and C, and the number of the arrangement, backing sequence, or program in question above key E.

When you are sure of your choices, select [COPY]. The *i4S* will copy the data after asking for confirmation.



## Chapter 6

# Global Mode

In Global mode you will find several settings that affect the overall performance of the *i4S*. These include Sound Hold settings, keyboard tuning parameters, LCD contrast adjustment, speaker on/off setting, foot pedal and external controller settings that set the *i4S* response to a connected foot pedal and foot switches, and MIDI parameters that control how the *i4S* sends and responds to MIDI information.

This mode also lets you edit the two *i4S* user drum kits. You can assign drum sounds to different notes on the keyboard, then adjust the pitch, volume, and stereo position of each to suit your preferences. You can also sort or initialize your user kits to make editing easier, or load data from ROM when you want to restore the user drum kits to their factory settings.

Finally, Global mode includes functions that let you transmit bulk data dumps from the *i4S* to a MIDI device capable of receiving it.

Global mode has 18 display pages, whose functions are summarized in the table on the following page of this manual. You can switch through these pages using the PAGE+ and PAGE- keys. You can select pages directly by holding down the GLOBAL key and pressing the upper row ARRANGEMENT and PROGRAM keys that correspond to the first and second numbers of the desired page. For example, to select Page 4-2, press the 4 key in the upper row of ARRANGEMENT keys followed by the 2 key in the upper row of PROGRAM keys, while holding the GLOBAL key.

The general procedures for editing parameters and using utility functions are outlined in Chapter 3 of the Player's Guide. Specific procedures for the use of some functions in this mode may be found in Chapter 5 of the Applications Guide.

Unlike program or arrangement data, you do not have to write Global mode settings into memory. With the exception of four settings—the Xpose Pos parameter described on page 150, the Speaker parameter described on page 151, and the Local Control and Clock Source parameters described on page 152—the *i4S* will remember all of your Global mode settings, even when the power is turned off.

The *i4S* also saves its global settings to disk whenever you create a program file using the ALL or PROGRAM save functions described on page 174. You can reload all global data using the PROGRAM load function described on page 171.

## *Functions in Global mode*

The table below shows the layout of the *i4S* Global mode. For each display page we list the page title, a brief outline of the page's contents, and the numbers of the pages in this manual where you will find these contents described.

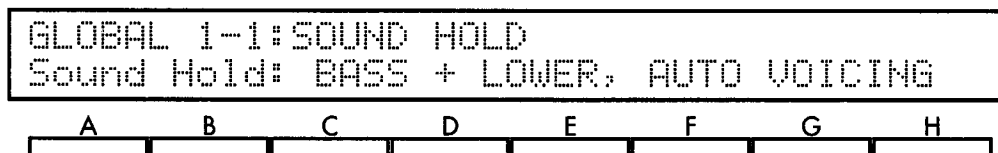
	Page	Title	Contents	Description
Basic Parameters	1-1	SOUND HOLD	Sound Hold parameter	149-150
	1-2	TUNE/XPOSE	Master tuning and transposition position	150-151
	1-3	LCD/SPEAKER	LCD contrast and speaker settings	151
MIDI Parameters	2-1	LOCAL/CLOCK	MIDI configuration settings	152
	2-2	CHANNEL	MIDI channel settings	152-154
	2-3	MIDI FILTER	MIDI data filters	154
Pedal Parameters	3-1	PEDAL FUNCTION	Foot pedal/footswitch and EC5 foot controller settings	156-158
	3-2	DAMPER	Damper switch polarity	158
Memory Protect and Response Curves	4-1	MEMORY PROTECT	Memory protect settings	159
	4-2	RESPONSE CURVES	Response curve settings	159-160
Scales	5-1	SCALE	Main and sub scale settings	161-162
	5-2	USER SCALE	User scale settings	162
User Drum Kits	6-1	DRUM PARAM 1	User kit parameters	163-164
	6-2	DRUM PARAM 2	More user kit parameters	165
	6-3	LOAD DRUM KIT	Load drum kit function	165-166
	6-4	SORT DRUM KIT	Sort drum kit function	166
	6-5	INIT DRUM KIT	Initialize drum kit function	166
MIDI Data Dumps	7-1	MIDI DATA DUMP	Functions for dumping <i>i4S</i> data via MIDI	167-168



## Basic Parameters

On the first group of Global mode display pages you will find a number of parameters that affect the *i4S*'s overall performance. In addition to the Master Tune parameter, which adjusts the *i4S* tuning, these pages contain parameters that adjust the contrast of the LCD display, turn the built-in speakers on and off, and control the behavior of the Sound Hold function when playing arrangements and backing sequences.

### 1-1 SOUND HOLD



#### Sound Hold

**[OFF; BASS+LOWER, ACTUAL VOICING;  
BASS+LOWER, AUTO VOICING; BASS ONLY]**

This function can be used to sustain the sound of the lower keyboard when playing an arrangement or backing sequence. (The sound of the lower keyboard can be either one or two programs, depending on the current keyboard assign mode.)

When the *i4S* is stopped, the sound of the program assigned to the bass track will also play. This bass sound will play the root or bass inversion note of the scanned chord. This feature is particularly useful for song introductions.

There are four possible settings for this parameter: **OFF**; **BASS + LOWER, ACTUAL VOICING**; **BASS + LOWER, AUTO VOICING**; and **BASS ONLY**.

When this parameter is set to **OFF**, the bass and lower keyboard sounds will not sustain.

When set to **BASS + LOWER, ACTUAL VOICING** or **BASS + LOWER, AUTO VOICING**, the sound of the lower keyboard will sustain (as will the bass sound if the *i4S* is stopped).

The **BASS + LOWER, ACTUAL VOICING** setting allows you to play your own chord voicings, whereas the **BASS + LOWER, AUTO VOICING** setting automatically provides full chords, regardless of the actual notes you play in the lower half of the keyboard. For example, if you play a C (single note) with the **BASS + LOWER, ACTUAL VOICING** setting, the sound of the lower keyboard will sustain only the single note C. However, if you play a C (single note) with the **BASS + LOWER, AUTO VOICING** setting, the sound of the lower keyboard will play the notes C–E–G. (In either case, the *i4S* music processor will interpret this single note as a C major chord for the purposes of chord recognition.)

Note that when using the **BASS + LOWER, ACTUAL VOICING** or **BASS + LOWER, AUTO VOICING** settings, the bass and lower keyboard sounds will only sustain when the LOWER chord scanning mode is used. Furthermore, the LOWR mute button on the Mute page must be set to ON in order for the sounds to sustain.

When this parameter is set to **BASS ONLY**, only the bass sound will sustain when the *i4S* is stopped. The sound of the lower keyboard will not sustain, whether the *i4S* is stopped or playing. The bass sound will sustain if you use the LOWER, UPPER, or FULL chord scanning modes. It will also sustain regardless of the setting of the LOWR mute button on the Mute page.

When the CHORD HOLD function is off (the CHORD HOLD key LED is unlit), operation is the same as described above, except that the sounds sustain only when you hold keys in the chord scanning range of the keyboard.

**Note:** The Sound Hold function will not work when playing Intro 1 and Ending 1, as these style elements are not processed by the *i4S* Note Transposition Tables.

**Regarding the Sound Hold function and backing sequences...**

If you are using either of the **BASS + LOWER** settings, the notes you play on the lower keyboard (or those that the *i4S* plays automatically) will be recorded to the Keyboard track as standard note data. Changing the setting of the Sound Hold parameter after recording a backing sequence will have no effect on this data.

Due to the nature of the Sound Hold function, the sound of the program assigned to the bass track will only sustain when the *i4S* is stopped, and therefore cannot be recorded into the backing sequence. You can re-create this effect by recording the bass part into one of the extra tracks.

## 1-2 TUNE/XPOSE



### Master Tune

**[-50...+50]**

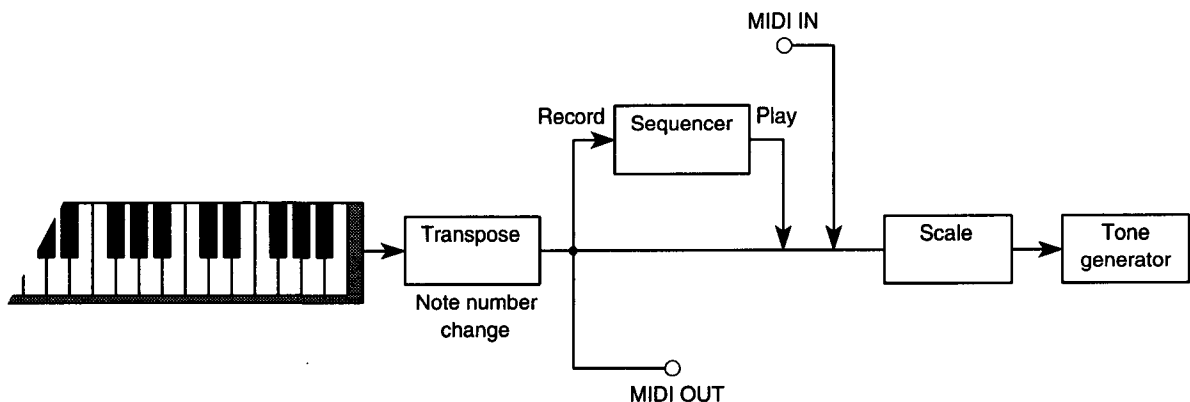
This parameter adjusts the pitch of all notes played by the *i4S*. You can raise or lower the tuning 50 cents (one half of one semitone) to adjust it to that of other instruments.

This pitch adjustment will not affect the pitch of notes that connected MIDI instruments play in response to note messages transmitted from the MIDI OUT jack.

### Xpose Pos

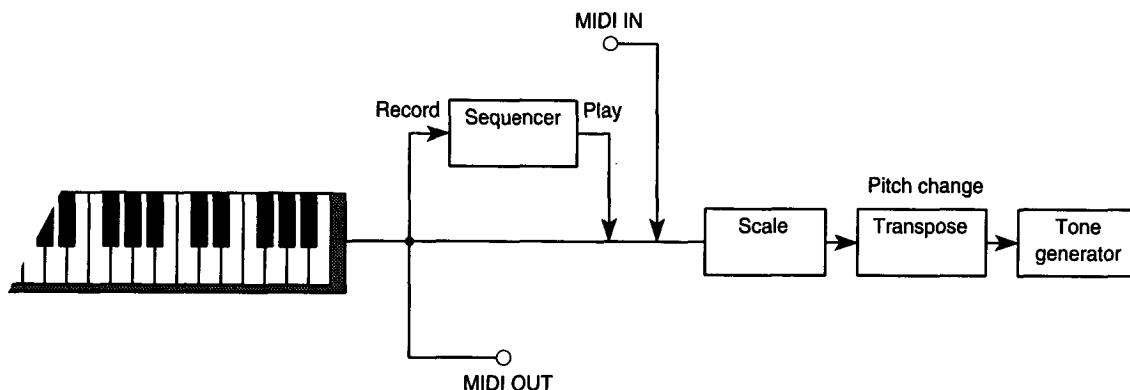
**[POST-KBD, PRE-OSC]**

This parameter determines whether the OCTAVE and TRANSPOSE keys will transpose note information from the keyboard *before* or *after* the notes are transmitted from the MIDI OUT jack.



When you set this parameter to **POST-KBD**, the *i4S* will transpose notes as they leave the keyboard. It will thus send transposed notes to both the tone

generator and to any instruments connected to the MIDI OUT jack. It will not transpose any notes it receives from the MIDI IN jack.

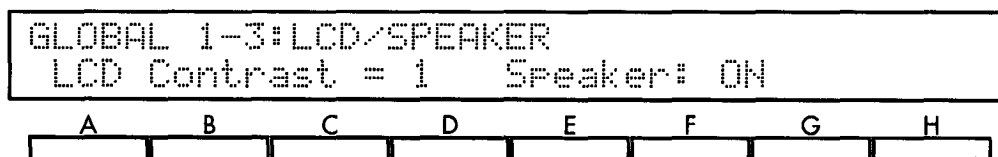


When you use the **PRE-OSC** setting, the *i4S* will transpose the notes just before they reach the tone generator. It will thus play transposed notes, but send untransposed data from the MIDI OUT jack. It will also transpose any notes it receives from the MIDI IN jack.

#### Xpose Pos and the Scale settings

As the above illustrations show, the Xpose Pos setting also affects the sequence of keyboard transposition relative to the Scale parameters described on page 161. Depending on the scale you use, this could produce unexpected results. Please refer to page 58 of the Applications Guide for an explanation of the relationship between these settings.

## 1-3 LCD/SPEAKER



### LCD Contrast

[1...8]

Use this parameter to adjust the contrast of the LCD display. You may need to do so depending on the lighting conditions and viewing angle.

### Speaker

[OFF, ON]

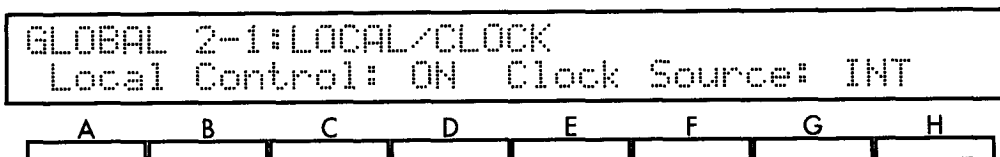
Use this parameter to turn off the built-in speakers of the *i4S*. This is convenient if you want to turn off the built-in speakers of the *i4S* while using an external speaker system. The *i4S* will set this parameter to **ON** whenever you turn the power on.

## MIDI Parameters

Pages 2-1, 2-2, and 2-3 contain various parameters that govern the *i4S*'s behaviour when using it with other MIDI devices.

Page 2-1 contains the Local Control and Clock Source parameters. Use the parameters on Page 2-2 to set the *i4S* MIDI channels. Page 2-3 contains MIDI data filter settings.

### 2-1 LOCAL/CLOCK



#### Local Control

[ON, OFF]

This parameter determines whether the *i4S* tone generator will respond to messages from local controllers.

When this parameter is set to **ON**, the *i4S* will respond normally to the local controllers (which include the keyboard, joystick, and foot pedals.)

Switching this to **OFF** will disconnect the tone generator from the local controllers. It will also prevent the *i4S* backing sequencer from recording any data from these controllers. Likewise, the *i4S* music processor will not be able to scan the keyboard for chords.

You should use the **OFF** setting only to disable local control when you are using the *i4S* keyboard to control other MIDI devices and don't want it to send the notes you play to its own tone generator. The *i4S* will set this parameter to **ON** whenever you turn the power on.

#### Clock Source

[INT, EXT]

This lets you synchronize the *i4S* to another MIDI sequencer.

When this parameter is set to **INT**, the *i4S* will set its own tempo. It will also transmit MIDI clock messages from the MIDI OUT jack whenever it is in a sequencing mode, so you can synchronize other MIDI sequencers to the *i4S*.

Switching this parameter to **EXT** will tell the *i4S* to synchronize to MIDI clock data it receives from another sequencer. The *i4S* will also respond to received start, stop, continue, song select, and song position messages.

The *i4S* tempo settings will have no effect—meaning that the *i4S* will not be able to play sequence data on its own—when you use the **EXT** setting. You should not select this setting if you have not connected a MIDI sequencer to the *i4S* MIDI IN jack.

The *i4S* will automatically set this parameter to **INT** whenever you turn the power on.

## 2-2 MIDI CHANNEL

The *i4S* has nine MIDI Channel parameters that let you select the channels the *i4S* will use to send and receive MIDI messages. You may want to adjust these settings to match those of other instruments you connect to the *i4S* in order to ensure proper communication.

Please note that these settings pertain primarily to the Program, Arrangement Play, and Backing Sequence modes.

GLOBAL 2-2: CHANNEL							
Global/Kbd=01 KB1=01 KB2=02 DRUM=10							
A	B	C	D	E	F	G	H

### Global/Kbd

[1...16]

This MIDI Channel parameter selects the *i4S*'s basic MIDI channel. It is normally set to channel 01. The *i4S* will use this channel to transmit MIDI messages for the notes you play on its keyboard.

In Program mode, the *i4S* will play notes with the currently selected program when it receives note messages on this channel. In Arrangement Play, and Backing Sequence modes, it will play the programs selected for the keyboard timbres.

In Program mode, the *i4S* will change the current program selection in response to program change messages it receives on this channel, as long as it is not filtering program change messages. (See the description of the MIDI Filter parameters in the next section).

In Arrangement Play mode, the *i4S* will change the current arrangement selection in response to program change messages it receives on this channel, as long as this channel is set to a value different from that of the other channel parameters.

The *i4S* will also use the Global/Kbd channel to receive system exclusive messages, as long as these messages are not being filtered. It will ignore system exclusive messages arriving on any other channel.

### KB1

[1...16]

In Arrangement Play mode, the *i4S* will play notes with the program selected for keyboard timbre KB1 when it receives note messages on this channel. The *i4S* will transmit on this channel when you play the keyboard using the SINGLE, LAYER, or M.DRUMS keyboard assign mode, or on the upper keyboard alone when you use the SPLIT keyboard assign mode.

When converting a backing sequence to a standard MIDI file (using the Convert to SMF function on Page 2-3 of Disk mode), this parameter can be used to set the MIDI channel for KB1 data.

### KB2

[1...16]

In Arrangement Play mode, the *i4S* will play notes with the program selected for keyboard timbre KB2 when it receives note messages on this channel. The *i4S* will transmit on this channel when you play the lower keyboard using the SPLIT keyboard assign mode.

When converting a backing sequence to a standard MIDI file (using the Convert to SMF function on Page 2-3 of Disk mode), this parameter can be used to set the MIDI channel for KB2 data.

**Backing Track** [DRUM, PERC, BASS, ACC1, ACC2, ACC3]

This parameter applies only to the Arrangement Play and Backing Sequence modes. Use this parameter to select the backing track whose MIDI channel you want to set using the Backing Track Channel parameter, described below.

**Backing Track Channel** [1...16]

This parameter applies only to the Arrangement Play and Backing Sequence modes. Use this parameter together with the Backing Track parameter, described above, to select the channels the *i4S* will use to transmit data for the backing tracks. The backing tracks are normally set to channels 10 through 15, respectively.

The *i4S* will also respond to note information and program change messages it receives on these channels when it is in Arrangement Play or Backing Sequence mode.

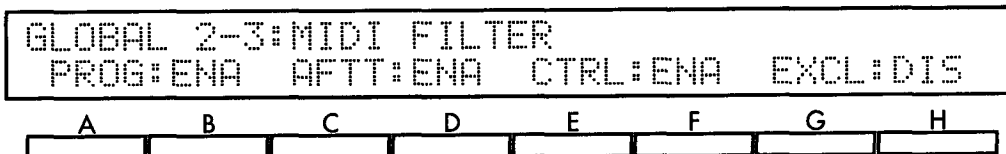
For details on the backing tracks, please see the chapters describing the Arrangement Play and Backing Sequence modes.

**2-3 MIDI FILTER**

This display page contains four settings that let you filter incoming and outgoing MIDI data. You can use these filters to prevent the *i4S* from responding to certain types of MIDI data, such as program change and system exclusive messages.

You may also find them useful when recording, if you need to screen out memory-consuming messages—such as aftertouch and control change data—that you don't need.

You can filter out a particular data type by setting the appropriate parameter to DIS. The *i4S* will neither record nor transmit data types which you disable with this setting. When playing back sequence data that includes a disabled data type, however, it will transmit the disabled data normally.



**Program Change (PROG)** [DIS, ENA, NUM]

This parameter controls the *i4S*'s handling of program change messages. The *i4S* will handle program change messages normally when this parameter is set to ENA. Setting it to DIS will prevent the *i4S* from receiving or transmitting program changes on any channel. Setting it to NUM will instruct the *i4S* to ignore MIDI Bank Change messages.

**Aftertouch (AFTT)** [DIS, ENA]

This controls the *i4S* response to aftertouch. The *i4S* will handle aftertouch normally when this parameter is set to ENA. You can set it to DIS to filter out unwanted aftertouch when recording from the *i4S* keyboard or another MIDI device. Doing so will also prevent the *i4S* from transmitting aftertouch data.

**Control Change (CTRL)** [DIS, ENA]

This controls the *i4S* response to control changes such as pitch bend, volume, sustain pedal, and other controller messages. The *i4S* will handle these messages normally when this parameter is set to ENA. You can set it to DIS to fil-

ter out unwanted control changes when recording from the *i4S* keyboard or another MIDI device. Doing so will also prevent the *i4S* from transmitting these messages to another device.

### **Exclusive (EXCL)**

**[DIS, ENA]**

This controls the *i4S*'s handling of system exclusive messages. These messages are used mainly by personal computer software designed to facilitate editing of the *i4S* program data.

The *i4S* will accept such messages, allowing the computer to change the *i4S*'s data, when this parameter is set to **ENA**. Setting it to **DIS** will prevent your *i4S* parameters from being changed.

## Pedal Parameters

The parameters on Page 3-1 let you assign functions to a footswitch or foot pedal, and an EC5 External Controller connected to the appropriate jacks on the rear of the *i4S*.

The setting on Page 3-2 governs the operation of a damper pedal connected to the DAMPER jack on the rear panel of the *i4S*.

### 3-1 PEDAL FUNCTION

GLOBAL 3-1: PEDAL FUNCTION							
ASSIGNABLE PEDAL : FILL 1							
A	B	C	D	E	F	G	H

#### ASSIGNABLE PEDAL

[see tables below]

The ASSIGN PDL/SW jack on the rear of the *i4S* lets you control a variety of *i4S* functions with a footswitch or expression pedal. If you connect a pedal to this jack, you can set its function using the ASSIGNABLE PEDAL setting. Select pedal functions from the tables below.

Most performers will prefer to use a footswitch with a polarity known as *normally open*—such as the Korg PS-1—for the functions in the Footswitch Functions table. If you use a *normally closed* footswitch, you will have to hold the footswitch down while playing, then release it to execute the assigned function.

We recommend that you use only the Korg EXP-2 or XVP-10 to control the functions in the Expression Pedal Functions table.

If you change this setting, be sure to connect an appropriate pedal before playing. If you want to play without connecting a pedal to this jack, you should set the ASSIGNABLE PEDAL setting to OFF.

#### EC5 SWITCH A...E

[see Footswitch Functions table]

These five settings assign functions to the corresponding pedals on the EC5 External Controller. Select pedal functions from the Footswitch Functions table below.

The EC5 External Controller is an optional control device consisting of five footswitches, which Korg has made available especially for use with *i*-Series keyboards such as the *i4S*. Be sure to plug your EC5 into the EC5 jack before using any of the parameters on this display page. (See page 2 of the Player's Guide for instructions regarding the EC5.)



## Footswitch Functions

Setting	Function
OFF	None
START/STOP	Same as START/STOP key
SYNC START/STOP	Same as SYNCHRO START/STOP key
RESET	Same as RESET key
INTRO/ENDING 1	Same as INTRO/ENDING 1 key
INTRO/ENDING 2	Same as INTRO/ENDING 2 key
FILL 1	Same as FILL 1 key
FILL 2	Same as FILL 2 key
VARIATION 1	Same as VARIATION 1 key
VARIATION 2	Same as VARIATION 2 key
VARIATION 3	Same as VARIATION 3 key
VARIATION 4	Same as VARIATION 4 key
CHORD HOLD	Same as CHORD HOLD key
BASS INVERSION	Same as BASS INVERSION key
SCALE CHANGE	Switches between main and sub scales (see page 161)
ARRANGEMENT UP	Selects next arrangement
ARRANGEMENT DOWN	Selects previous arrangement
STYLE UP	Selects next style
STYLE DOWN	Selects previous style
PROGRAM UP	Selects next program
PROGRAM DOWN	Selects previous program
VARIATION UP	Selects next variation
VARIATION DOWN	Selects previous variation
PUNCH IN/OUT	Punch-in recording switch (see page 27)
EFFECT 1 ON/OFF	FX1 Switch parameter (see page 91)
EFFECT 2 ON/OFF	FX2 Switch parameter (see page 91)
DRUM MUTE	Mutes the drum track
PERC MUTE	Mutes the percussion track
BASS MUTE	Mutes the bass track
ACC1 MUTE	Mutes accompaniment track 1
ACC2 MUTE	Mutes accompaniment track 2
ACC3 MUTE	Mutes accompaniment track 3

## Expression Pedal Functions

Setting	Function
VOLUME	Standard volume of program or selected track
EXPRESSION	Relative volume of program or selected track
VDF CUTOFF	VDF cutoff frequency (brightness)
EFFECT CONTROL	Dynamic modulation of effects
DATA ENTRY	Entry of parameter values (same as VALUE dial)

## 3-2 DAMPER

```
GLOBAL 3-2:DAMPER
Damper Switch Polarity : KORG (-)
```



### Damper Switch Polarity

[REVERSE (+), KORG (-)]

You can connect a footswitch to the DAMPER jack on the rear of the *i4S* for use as a sustain pedal. If you press this switch before releasing a note, the note will continue to play as though you had not released it.

You should set this parameter to match the polarity of your footswitch. Most Korg footswitches, such as the DS-1 and the PS-1, have a *normally open* switch polarity. Select the **KORG (-)** setting when using one of these pedals.

The Korg DS-2 and many pedals made by other manufacturers use the opposite, or *normally closed*, polarity. Select the **REVERSE (+)** setting for these pedals.

If you will use one of the pedals of a Korg PS-2 as a damper, select **KORG (-)** for the right-hand jack and **REVERSE (+)** for the left-hand jack of each pedal. If you have a pedal whose polarity you are not sure of, try using it with one setting, then switch it to the other if the *i4S* holds notes when you're not pressing the pedal.

## Memory Protect and Response Curves

The parameters on Page 4-1 let you safeguard your program, style, and arrangement data from accidental deletion.

You will find a pair of response curve parameters on Page 4-2 that adjust the response of the *i4S* to key velocity and aftertouch.

### 4-1 MEMORY PROTECT

```
GLOBAL 4-1:MEMORY PROTECT
Program:OFF Arrangement:OFF Style:OFF
```



#### Program, Arrangement, Style

[OFF, ON]

You can use the three parameters on this display page to protect your *i4S* internal data from accidental deletion.

Parameter	Protected data
Program	All user programs in bank D
	User drum programs Dr7 and Dr8
Arrangement	All arrangements
Style	User styles U1 through U4

When one of these parameters is set to **ON**, the *i4S* will not let you overwrite the data in the corresponding memory area. This will prevent you from using functions such as Write Program (see page 87) and Write Arrangement (see page 17).

The **ON** setting will also prevent you from loading data from factory data ROM or disks. If you attempt to load data to a protected memory area, the *i4S* will display a message explaining that it cannot accept the data.

The *i4S* will ignore any attempts by other MIDI devices to dump data to a protected memory area.

### 4-2 RESPONSE CURVES

The response curves you select on this page will adjust the response of the *i4S* keyboard to the velocity and aftertouch you apply when playing. This adjustment will affect the data that the keyboard sends to the *i4S* tone generator and transmits from the MIDI OUT jack. It does not affect data received from the MIDI IN jack.

```
GLOBAL 4-2:RESPONSE CURVES
Velocity = 5      Aftertouch = 5
```

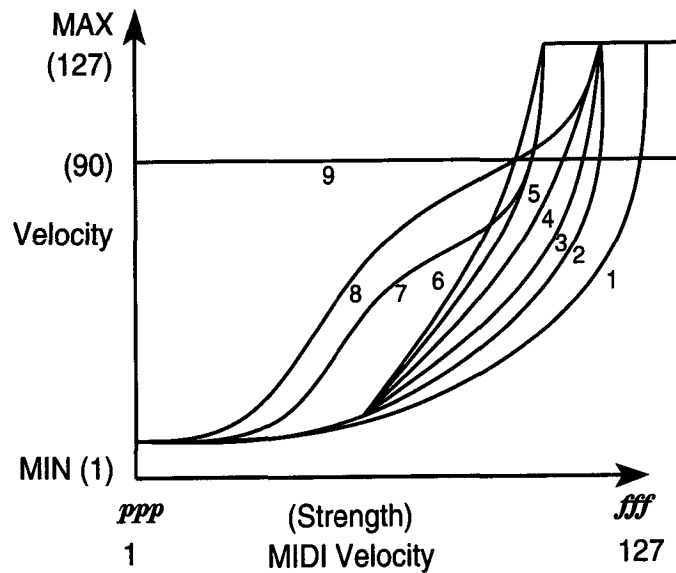


## Velocity

[1...9]

This parameter lets you select one of nine curves that modify the effect of key velocity on the volume or tone of the program you're playing. The curves adjust the performance of the *i4S* as shown in the illustration below.

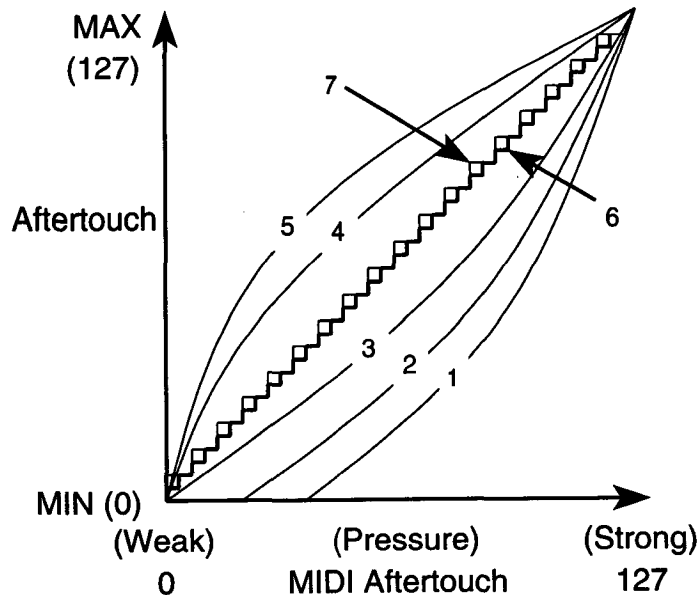
When this parameter is set to 9, all notes that you play from the keyboard will sound at a velocity of 90, regardless of the actual velocities you play. This setting is useful for turning off the *i4S*'s velocity sensitivity. Note that this does not affect the *i4S*'s sensitivity to incoming MIDI note velocities.



## Aftertouch

[1...8]

This parameter lets you select one of eight curves that modify the effect of key pressure on the volume, tone, or pitch of the program you're playing. Curve 8, not pictured in the illustration below, produces random changes in aftertouch and can be used for special effects.

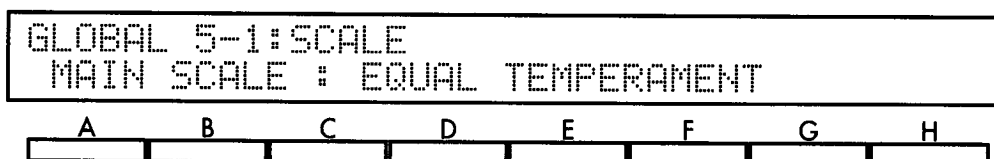


## Scales

The parameters on Page 5-1 let you specify the basic tuning temperaments used by the *i4S* tone generator. You can select main and sub scales, then switch between them using a footswitch or EC5 External Controller, or via MIDI.

In addition to a variety of traditional temperaments—many of which let you optimize the *i4S* tuning for playing a selected key—the *i4S* lets you create your own scale.

### 5-1 SCALE



### MAIN SCALE/SUB SCALE

To select the temperaments the *i4S* will use, first choose which scale you want to set using the **MAIN SCALE/SUB SCALE** setting. Then select the temperament using the **Temperament** setting, described below.

### Temperament

This parameter lets you select which temperament the *i4S* will use for the main scale and the sub scale. The range of settings available is the same for both scales.

If you select a setting other than **EQUAL TEMPERAMENT**, **EQUAL TEMPERAMENT2**, or **USER SCALE**, the *i4S* will display a **Key** parameter above cursor key H so you can select a tonic key for the temperament.

The **EQUAL TEMPERAMENT** setting represents the most widely used temperament. With this temperament, every semitone consists of an equal change in pitch.

**EQUAL TEMPERAMENT2** adds slight, random pitch variations to an equal temperament. It is useful when simulating acoustic instruments with natural irregularities in pitch.

The **PURE MAJOR** setting perfectly tunes major chords in the selected tonic key. **PURE MINOR** does the same for minor chords.

The **ARABIC** setting simulates the quarter tone scales of Arabic music. Set the **Key** parameter to **C** for *rast do/bayati re* tuning, **D** for *rast re/bayati mi*, **F** for *rast fa/bayati sol*, **G** for *rast sol/bayati la*, and **A#** for *rast sib/bayati do*.

The **PYTHAGOREAN** setting simulates an ancient Greek tuning that is useful for playing melodies. **WERKMEISTER** is an essentially equal temperament used in the latter Baroque period. **KIRNBERGER** is a harpsichord tuning developed in the 18th century.

**SLENDRO** and **PELOG** simulate Indonesian gamelan tunings with five notes and seven notes per octave, respectively. Play keys C, D, F, G, and A with the former, and only the white keys with the latter, when the **Key** parameter is set to C. (Other notes are set to standard pitches of the **EQUAL TEMPERAMENT** setting.)

The **USER SCALE** setting lets you use the parameters on Page 5-2 to adjust the pitch of each key over a range of  $\pm 50$  cents. See the description of the **User Scale** parameters, below.

**☞ Xpose Pos and the Scale settings**

When you use a Scale setting other than EQUAL TEMPERAMENT or EQUAL TEMPERAMENT2, the TRANSPOSE keys may shift the tuning away from the desired tonic key, depending on your setting for the Xpose Pos parameter. Please refer to page 58 of the Applications Guide for an explanation of the relationship between these settings.

**Key**

**[C...B]**

The *i4S* will display a Key parameter next to the TEMPERAMENT setting, described above, when you select a scale setting other than EQUAL TEMPERAMENT, EQUAL TEMPERAMENT2, or USER SCALE. Use this parameter to choose a tonic key for the temperament you've selected.

**☞ To switch between the main scale and sub scale...**

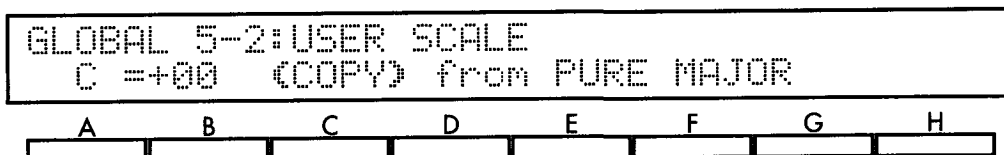
You can select the scales via footswitch or MIDI controller messages.

To use a footswitch, set the Assignable Pedal parameter to SCALE CHANGE (see page 156). If you have an EC5, select this setting for the appropriate EC5 SWITCH parameter (see page 156).

To select the scales via MIDI, use MIDI controller 4. Values from 0 to 63 will select the main scale, while values from 64 to 127 will select the sub scale.

**5-2 USER SCALE**

Use the parameters on this page to adjust the settings of the User Scale. Note that you will not hear the effect of the settings you make here unless you have selected USER SCALE for the Temperament setting on Page 5-1.



**Note**

**[C...B]**

Use this parameter to select the note whose pitch you want to change.

**Tuning**

**[-50...+50]**

This parameter adjusts the tuning of the note selected above cursor key A. You can raise or lower the pitch of each note as much as 50 cents, or one-half semitone, from their standard (equal temperament) pitches. The *i4S* will apply these settings to the entire keyboard range.

**COPY**

**function**

If you want to create a variation on one of the preset scales, you can select the desired scale above cursor key E, then press cursor key C to copy its data to the user scale. You can then edit the user scale settings to suit your taste.

## User Drum Kits

The *i4S* memory contains six ROM drum kits and two user drum kits, which it uses as the waveform sources for its drum programs. The user drum kits let you assign drum sounds to different notes on the keyboard, then adjust the pitch, volume, decay, stereo position, and effect send levels separately for each.

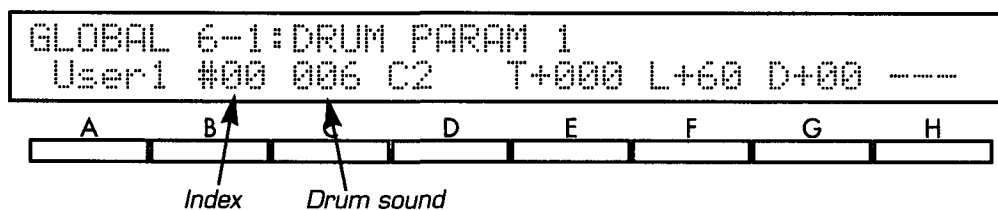
The parameters for tuning, level, decay, and exclusive groups are on Page 6-1 of the Global mode display; those for panning and effect send levels C and D are on Page 6-2. Both pages contain the parameters that let you assign drum sounds to different notes on the keyboard.

Pages 6-3, 6-4, and 6-5 of the Global mode display contain three utility functions that ease the task of editing drum kits. These functions are described starting on page 165.

When you select a drum kit as the waveform source for a program, the *i4S* will play the kit using that program's VDA and VDF settings (see Chapter 4). Like any other program, the drum program will use its own effect settings when you play it in Program mode, or those of any track that plays it in a sequencing mode.

If you play the keyboard while editing a user drum kit in Global mode, the *i4S* will play all instruments using the parameters of the program you last selected in Program mode.

### 6-1 DRUM PARAM 1



#### Drum Kit (User)

[1, 2]

Use this parameter to select which user kit you want to edit.

#### Index (#)

[0...59]

This setting lets you select a drum kit instrument for editing.

When you move the cursor to an index number, the *i4S* will show the name of the drum sound assigned to that index in the upper right corner of the display. (See the Drum Sound parameter for details.)

Use the VALUE controls to select the index numbers. You can also select the index number for an instrument you want to edit by playing the key for that instrument while holding down cursor key B.

#### Drum Sound

[---, 000...163]

This parameter selects the drum sound used by the corresponding instrument.

You can assign one of 164 drum sounds to each index. (You will find a list of the available drum sounds in the Performance Notes that accompanied this manual.) Select the "---" setting for an index number when you don't want the assigned key to play its own drum sound. It will then play the drum sound of the next key up on the keyboard.

When you move the cursor to this parameter, the *i4S* will show the name of the drum sound assigned in the upper right corner of the display. The words "No Drum Sound" will appear for those indexes that have been given a value of "---".


**Key****[C0...G8]**

This parameter lets you assign a key from C0 to G8 to each of the sixty indexes selected by the Index parameter.

The *i4S* will not let you select a key that has already been assigned to another index number. You can, however, assign different keys to several indexes that play the same drum sound. You can then set those keys to play that sound at different pitches or pan positions using the Tune and Pan parameters.

Any key that has not been assigned to an index will play the same drum sound as the next higher key, but at a pitch determined by the Scale parameter. This feature lets you create ranges of chromatically tuned instruments within a drum kit.

You can set this parameter by pressing a key on the *i4S* keyboard while holding down cursor key D.

 **Drum kit keys and the Octave parameter**

The Key parameter shows the name of the note that will play its corresponding instrument at the drum program's standard Octave setting of 8'. If you change the Octave parameter, the note played will shift up or down. Although the displayed key assignment will also change, hitting a key while holding down cursor key B will not call up the desired drum instrument.

Since this could lead to confusion, you should always be sure to select the program that will play the user kit—and set this program's Octave parameter to 8'—before you begin editing.

**Tune****[-120...+120]**

This parameter adjusts the pitch of the corresponding drum sound.

A drum sound will play at its standard pitch when its Tune parameter is set to 0. Raising or lowering this parameter will raise or lower the instrument's pitch by ten cents (that is, one-tenth of a semitone) for each step, to a maximum of one octave either way.

**Level (L)****[-99...+99]**

This parameter adjusts the output level for the corresponding instrument.

Positive values will raise an instrument's volume relative to the program's Level setting; negative values will lower it.

**Decay (D)****[-99...+99]**

This parameter adjusts the decay time for the corresponding instrument.

Positive values will lengthen an instrument's decay relative to the program's VDA EG Decay Time setting; negative values will shorten it.

**Exclusive Group****[---, EX1...EX6, SLF]**

This parameter lets you create six groups of instruments that will play monophonically rather than polyphonically.

All of the drum sounds assigned to the same group will play as if they were one instrument. For example, you might set this parameter to EX1 for both the open and closed hi-hat sounds so that the closed sound will cut off the open sound, just as it does with a real hi-hat.

There is also a SLF setting for instruments that cut themselves off, but are not affected by other instruments. You can use this setting for sounds such as crash cymbals so that a softly played note will mute a preceding crash.

Set this to "---" when you want an instrument to play polyphonically.



## 6-2 DRUM PARAM 2

GLOBAL 6-2:DRUM PARAM 2							
User1 #00 006 C2      CENTER      C=1      D=0							
A	B	C	D	E	F	G	H

**Drum Kit (User)** [1, 2]

See the description of this parameter for Page 6-1, above.

**Index** [0...59]

See the description of this parameter for Page 6-1, above.

**Drum Sound** [---, 000...163]

See the description of this parameter for Page 6-1, above.

**Key** [C0...G8]

See the description of this parameter for Page 6-1, above.

**Panpot** [OFF, LEFT15...LEFT1, CENTER, RIGHT1...RIGHT15]

This parameter sets the stereo position of the instrument. It does this by adjusting the levels of the drum sound signal input to the effects system via channels A and B.

The **CENTER** setting centers the sound. Settings preceded by **LEFT** move it to the left, whereas those preceded by **RIGHT** move it to the right. The sound moves farther from the center as the numerical value of the setting increases. Finally, an **OFF** setting lets you turn off the output of the instrument to channels A and B altogether.

**Effect Send Level (C, D)** [0...9]

These parameters determine the levels of the drum sound signals that are sent to the effects system via channels C and D.

## 6-3 LOAD DRUM KIT

GLOBAL 6-3:LOAD DRUM KIT							
1:Dance Kit      =+ 1:User Kit 1      (LOAD)							
A	B	C	D	E	F	G	H

**LOAD DRUM KIT** *function*

This function loads the data for one drum kit from ROM into the user drum kit memory. You can load data for any of the six factory preset drum kits or the original settings for the two user drum kits.

To use this function, first select the drum kit you want to load above cursor keys A through C. Then select the number of the user kit you want to load it to above keys D through F.

When you are sure of your selections, select [LOAD]. The *i4S* will load the drum kit after asking for confirmation.

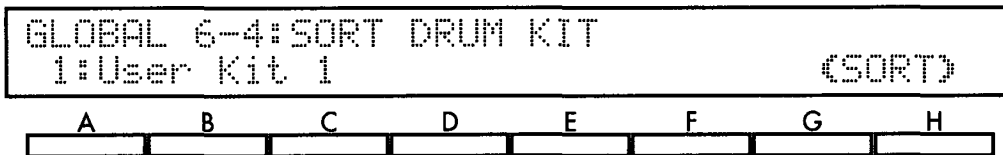
## 6-4 SORT DRUM KIT

### **SORT DRUM KIT**

*function*

This function lets you sort the instruments in your drum kit according to their keyboard order.

When creating a user kit, you may find it convenient to assign keys to indexes out of the keyboard order. This will make it easy, for example, to compare the settings for instruments you have assigned to the same group using the Exclusive Group parameter.



If you find you want to view a kit's instruments in keyboard order, you can use this function to sort the kit. Simply select [SORT]. The *i4S* will ask for confirmation, then sort the kit—renumbering the indexes to match the order of their assigned keys—and display it in the new order.

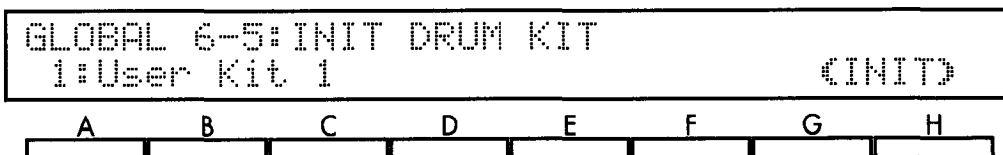
To use this function, first enter above cursor keys A through C the user drum kit you want to sort, then select [SORT]. The *i4S* will sort the drum kit after asking for confirmation.

## 6-5 INIT DRUM KIT

### **INIT DRUM KIT**

*function*

This function lets you reset all of a drum kit's parameters to their initial values. You may find it useful when you want to start programming from a blank slate.



To use this function, first enter above cursor keys A through C the user drum kit you want to initialize, then select [INIT]. The *i4S* will initialize the drum kit after asking for confirmation.

## MIDI Data Dumps

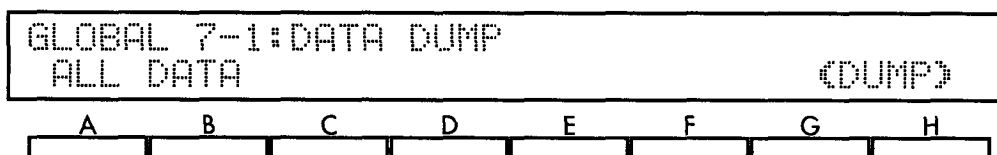
The functions on the last page of the Global mode display let you transmit data from the *i4S* internal memory to another MIDI device. This bulk dump capability lets you share your *i4S* data with another *i4S*, or store it in a computer or MIDI data filer that is capable of receiving exclusive data.

When this display page is showing, the *i4S* can transmit and receive MIDI data dumps regardless of the Exclusive filter setting on Page 2-3 of Global mode. You should make a note of the Global/Kbd channel setting on page 2-2 for future reference. The *i4S* will recognize a data dump only if this channel setting is set to the same value as when the dump was originally sent.

The *i4S* can receive data dumps at any time, as long as the Exclusive filter parameter mentioned above is set to ENA. You should also be sure to turn off the Protect setting for the appropriate memory area, or the *i4S* will simply ignore the dump.

For details on the exclusive message data format, refer to the end of this manual.

### 7-1 DATA DUMP



#### ALL DATA

*function*

This setting transmits a complete set of all data transmitted by the dump settings described below. Select [DUMP] to execute the data dump. The *i4S* will transmit the data without asking for confirmation.

#### PROGRAM

*function*

This setting transmits the data for the 64 programs in bank D, and the two user drum programs Dr7 and Dr8. Select [DUMP] to execute the data dump. The *i4S* will transmit the data without asking for confirmation.

#### DRUM KIT

*function*

This setting transmits the data for the two user drum kits. Select [DUMP] to execute the data dump. The *i4S* will transmit the data without asking for confirmation.

#### GLOBAL

*function*

This setting transmits all global parameters, except for the Local Control and Clock Source settings. Select [DUMP] to execute the data dump. The *i4S* will transmit the data without asking for confirmation.

#### STYLE

*function*

This setting transmits all the data for the four user styles. Select [DUMP] to execute the data dump. The *i4S* will transmit the data without asking for confirmation.

#### ARRANGEMENT

*function*

This setting transmits data for 64 arrangements. Select [DUMP] to execute the data dump. The *i4S* will transmit the data without asking for confirmation.

**BACKING SEQUENCE****function**

This setting transmits data for ten backing sequences. Select [DUMP] to execute the data dump. The *i4S* will transmit the data without asking for confirmation.

Dump type	Size (in bytes)	Approximate time (in seconds)
All Data	29395–155274	9.2–48.6
Program	12371	4.0
Drum Kit	960	0.3
Global	32	—
Style	3831–74880	1.2–24.0
Arrangement	9582	3.1
Backing Sequence	2620–57477	0.8–18.0

# Chapter 7

## Disk Mode

The *i4S* is capable of storing all its internal data on convenient 3.5" double-sided, double-density (2DD) disks. It initializes its disks using the MS-DOS™ format, which enables each disk to hold as many as 112 files, up to a maximum capacity of 720 kilobytes.

The *i4S* stores its data in a variety of file types, each of which holds a different type of data. It distinguishes between file types by adding an *extension*—a three-letter suffix preceded by a period—to the end of each filename. The table below lists these extensions, together with approximate sizes for each file type.

Data Type	Extension	Size (in kilobytes)
Program and global	.PCG	14
Arrangement	.ARR	9
Style	.STY	64 (maximum)
Backing sequence	.BSQ	50 (maximum)
Standard MIDI file	.MID	720 (maximum)
MIDI data	.EXL	48 (maximum)

The first four file types in the table store data in formats particular to the *i4S*. The remaining two are standard formats—one for sequence data, the other for bulk dumps and other system exclusive data—used by a variety of personal computers and MIDI devices.

The *i4S* has functions that let you create files of each type, or load data from these files. It also has a Date For Save function that you can use to adjust the date that will be saved as the creation date for each file (see page 174). Finally, there are utility functions that you can use to delete or rename files, and format disks.

Disk mode divides its functions among the eleven display pages summarized in the table on the following page of this manual. You can switch through these pages using the PAGE+ and PAGE- keys.

You can select pages directly by holding down the DISK key and pressing the upper row ARRANGEMENT and PROGRAM keys that correspond to the first and second numbers of the desired page. For example, to select Page 3-2, press the 3 key in the upper row of ARRANGEMENT keys followed by the 2 key in the upper row of PROGRAM keys, while holding the DISK key.

The general procedures for editing parameters and using utility functions are outlined in Chapter 3 of the Player's Guide.

## Functions in Disk mode

The table below shows the layout of the *i4S* Disk mode. For each display page we list the page title, a brief outline of the page's contents, and the numbers of the pages in this manual where you will find these contents described.

	Page	Title	Functions	Description
Load Functions	1-1	LOAD ALL	ALL	171
			PROGRAM	171
			ARRANG	171
			STYLE	172
			B.SEQ	172
	1-2	LOAD ONE	PROGRAM	172
			ARRANG	173
			STYLE	173
			B.SEQ	173
DRUM			173	
1-3	ERASE STYLE	Erases user styles from memory	173	
Save Functions	2-1	DATE FOR SAVE	Set file save date	174
	2-2	SAVE	ALL	174
			PROGRAM	175
			ARRANG	175
			STYLE	175
			B.SEQ	175
2-3	CONVERT TO SMF	Converts backing sequences to standard MIDI files	175	
MIDI Data Filer Functions	3-1	MIDI LOAD & TRANSMIT	Transmits MIDI system exclusive messages	177
	3-2	MIDIRECEIVE & SAVE	Saves MIDI system exclusive messages	177
Utility Functions	4-1	RENAME FILE	Rename File	179
	5-1	DELETE FILE	Delete File	180
	6-1	FORMAT DISK	Format Disk	180

If you should encounter an error message while using one of these functions, see Appendix A for an explanation of the message's meaning and suggested remedies. Also, please refer to page 15 of the Player's Guide for cautions regarding the care and handling of floppy disks.

## Load Functions

The functions on the first display page in Disk mode load all of the data from the file you select into the *i4S*. To load a single program, arrangement, style, backing sequence, or drum kit, use the appropriate function from the LOAD ONE page, described in the next section.

### 1-1 LOAD ALL

DISK 1-1:LOAD ALL		Data Type	
ALL	-----		(LOAD)
A	B	C	D
E	F	G	H

Be sure to insert a disk in the disk drive before using any of these functions. The *i4S* will display a "No disk in drive" message if you attempt to select a file without first placing a disk in the disk drive.

#### **ALL**

#### **function**

This function loads a complete set of data files into the *i4S*.

To use this function, press C or D, then select a filename. The *i4S* will display the names of any program, arrangement, style, or backing sequence files it finds on the disk. It will not display the extensions for any of these files.

When you have made your selection, select [LOAD]. The *i4S* will load the files after asking for confirmation. Make sure the *i4S* does not contain any unsaved data that you want to keep, as *all* your current data will be irrevocably lost when the new data is loaded.

**Note:** If the disk does not contain a full set of four files bearing the filename you've selected, the *i4S* will tell you which files are missing. You can go ahead and load the rest of the files in the incomplete set, if you wish.

This feature can come in handy when you want to load two or more related files—such as a set of arrangements and the programs they use—with only one load operation. To do this, you must first save the data using the appropriate functions on the SAVE page—ARRANG and PROGRAM, for example. (See pages 174 through 175 for descriptions of the Save functions.)

Be sure to give each file you save exactly the same filename. The *i4S* will then treat these files as an incomplete set of ALL data files, and let you load them using the ALL function on the LOAD ALL page.

#### **PROGRAM**

#### **function**

This function loads a program file, containing data for a complete set of 64 programs from bank D, and the two user drum programs Dr7 and Dr8. It also loads global parameters, including the two user drum kits.

The procedure for using this function is the same as that described for the ALL load function, above. The *i4S* will display the names of only the program files on the disk.

#### **ARRANG**

#### **function**

This function loads an arrangement file (which contains a complete set of data for 64 arrangements) into the *i4S*.

The procedure for using this function is the same as that described for the ALL load function, above. The *i4S* will display the names of only the arrangement files on the disk.

**STYLE**

**function**

This function loads a style file (which contains a complete set of data for four styles) into the *i4S*.

The procedure for using this function is the same as that described for the ALL load function, above. The *i4S* will display the names of only the style files on the disk.

**B.SEQ**

**function**

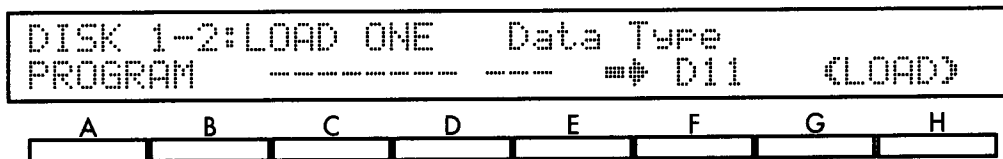
This function loads a backing sequence file (which contains a complete set of data for ten backing sequences) into the *i4S*.

The procedure for using this function is the same as that described for the ALL load function, above. The *i4S* will display the names of only the backing sequence files on the disk.

**1-2 LOAD ONE**

The functions on Page 1-2 of Disk mode load a single program, arrangement, style, backing sequence, or drum kit from the file you select into the *i4S*.

To load entire files, use the functions on page 1-1 LOAD ALL, described in the previous section.



Be sure to insert a disk in the disk drive before using any of these functions. The *i4S* will display a "No disk in drive" message if you attempt to select a file without first placing a disk in the disk drive.

**PROGRAM**

**function**

This function loads a single program from a program file into the *i4S*. It does not load any global parameters or drum kit settings.

To use this function, press C or D and select the name of a program file. The *i4S* will display the names of all the program files on the disk.

Next, select the bank and program number of the program you want to load above cursor key E, and the bank and program number that you want to load it to above key F.

When you are sure of your choices, select [LOAD]. The *i4S* will load the data after asking for confirmation. Make sure the destination you've selected doesn't contain any unsaved data you want to keep, as its current data will be irrevocably lost when the new program is loaded.

**Note:** This function does not load any global data. If you have changed the Scale parameters (see page 161) since you saved the program data, the resulting change in keyboard temperament could make the program you load sound different than it originally did. You should adjust the Scale parameters to the settings you were using when you created the program file.

Likewise, a user drum program that you load may require different user kit settings than those currently available. If you load a drum program, you may also need to load the appropriate user drum kit using the DRUM load function, described below.



**ARRANG****function**

This function loads a single arrangement from an arrangement file into the *i4S*.

The procedure for using this function is the same as that described above for the PROGRAM load function. The *i4S* will display the names of only the arrangement files on the disk.

**STYLE****function**

This function loads a single style from a style file into the *i4S*.

The procedure for using this function is the same as that described for the PROGRAM load function, above. The *i4S* will display the names of only the style files on the disk.

**B.SEQ****function**

This function loads a single backing sequence from a backing sequence file into the *i4S*.

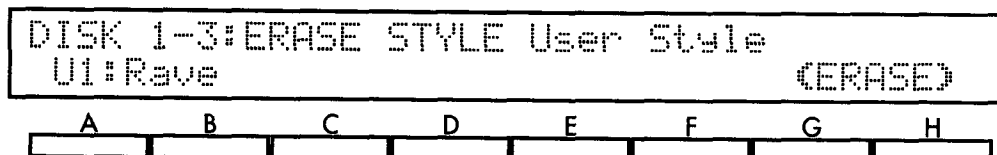
The procedure for using this function is the same as that described for the PROGRAM load function, above. The *i4S* will display the names of only the backing sequence files on the disk.

**DRUM****function**

This function loads a single user drum kit from a program file into the *i4S*.

The procedure for using this function is the same as that described for the PROGRAM load function, above. The *i4S* will display the names of only the program files on the disk.

## 1-3 ERASE STYLE

**Erase Style****function**

The Erase Style function can be used to erase styles from the user-style memory. This is useful if the *i4S* presents you with a "Not enough memory to load" message when you try to load new styles from disk using the STYLE function on Page 1-2.

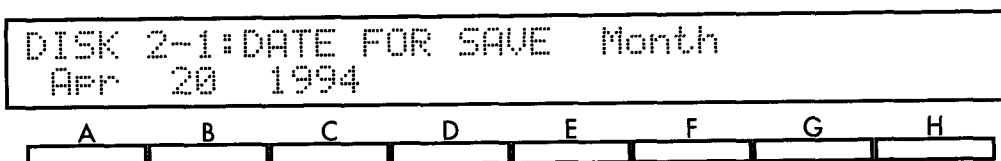
Although the Erase Style function is not a disk-related function, it has been put on this display page for convenience when using the STYLE function on Page 1-2.

## Save Functions

On Page 2-1 of the Disk mode display you will find a Date For Save function, which lets you enter a date that will be recorded as the date stamp for each file the *i4S* saves. Page 2-2 contains the Save functions, each of which saves a complete set of data for its file type. Finally, you can use the Save function on Page 2-3 to convert your backing sequences to standard MIDI files. These standard MIDI files can be read by computers and other MIDI sequencers.

With the exception of the Convert to SMF function on Page 2-3, the *i4S* does not let you save individual programs, arrangements, styles, or backing sequences.

### 2-1 DATE FOR SAVE



#### Date For Save

#### function

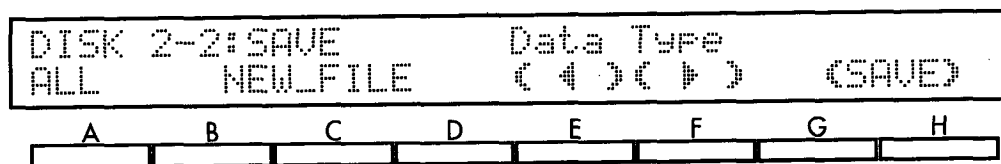
This function lets you specify a date to be recorded as the date stamp for files saved by the *i4S*. This is useful for keeping track of when you created and saved your data.

The *i4S* displays file date stamps when you use the Song Play mode (see Chapter 3) or the Delete File Function (see page 180). You can also view the date stamps if you use a personal computer to read data from your disks.

To use this function, simply enter the month above cursor key A, the date above key B, and the year above key C. There is no need to “execute” this function, as it is really a special parameter like those in Global mode.

The *i4S* will retain the date you set here even when you turn the power off. However, it does not have a time clock and so cannot advance the date automatically. If it's important for your files to be stamped with the correct date, you should be sure to check this setting at the start of every programming session.

### 2-2 SAVE



#### ALL

#### function

This function creates a complete set of *i4S* data files on a disk.

When you select this function, the *i4S* will display the most recently entered filename (or a default filename of `NEW_FILE`) above cursor keys C and D. If you wish, you can change this filename to any name of up to eight characters.

When you have finished entering the filename, select [SAVE]. The *i4S* will save the data after asking for confirmation.

---

If the *i4S* finds a file on the disk with the same name as one it is about to save, it will warn you that it is about to replace that file. Make sure the old file does not contain any data you need before confirming again, as this operation will destroy its contents permanently.

## **PROGRAM**

### ***function***

This function creates a program file containing data for a complete set of 64 programs from bank D, and the two user drum programs Dr7 and Dr8. It also saves global parameters—including the two user drum kits—to this file.

The procedure for using this function is the same as that described for the ALL save function, above. The *i4S* will display the program file extension (.PCG) to the right of the filename you enter.

## **ARRANG**

### ***function***

This function creates an arrangement file containing data for a complete set of 64 arrangements.

The procedure for using this function is the same as that described for the ALL save function, above. The *i4S* will display the arrangement file extension (.ARR) to the right of the filename you enter.

## **STYLE**

### ***function***

This function creates a style file containing data for a complete set of four styles.

The procedure for using this function is the same as that described for the ALL save function, above. The *i4S* will display the style file extension (.STY) to the right of the filename you enter.

## **B.SEQ**

### ***function***

This function creates a backing sequence file containing data for a complete set of ten backing sequences.

The procedure for using this function is the same as that described for the ALL save function, above. The *i4S* will display the backing sequence file extension (.BSQ) to the right of the filename you enter.

## 2-3 CONVERT TO SMF

DISK 2-3: CONVERT TO SMF Backing Sequence							
BSEQ0 ▶BSEQUENC MID ( 4 ) ( ▶ ) (SAVE)							
A	B	C	D	E	F	G	H

### CONVERT TO SMF

### function

This function creates a standard MIDI file containing sequence data for one backing sequence. The *i4S* will expand all style data to normal sequence data as it saves the backing sequence.

The *i4S* will automatically take the first eight characters from the backing sequence name to use as the filename on this display page. Any lower-case letters from the backing sequence name will be changed to upper-case, and any characters that are not numbers or letters will be replaced by underline characters.

If you wish, you can change the filename to any name of up to eight characters. The *i4S* will display its standard MIDI file extension (.MID) to the right of the filename.

Note that backing sequences can only be saved in Standard MIDI File format 0.

When you select [SAVE], the *i4S* will display a "Now saving standard MIDI file..." message, along with an indication of the percent completed.

Please note that this process may take awhile, depending on how much data is contained in the backing sequence.

The *i4S* will assign the DRUM, PERC, BASS, ACC1, ACC2, and ACC3 tracks to those channels specified on Page 2-2 of the Global mode display. The Extra Tracks will be assigned to the channels specified on Page 2-2 of the Backing Sequence mode display for the backing sequence you are converting.

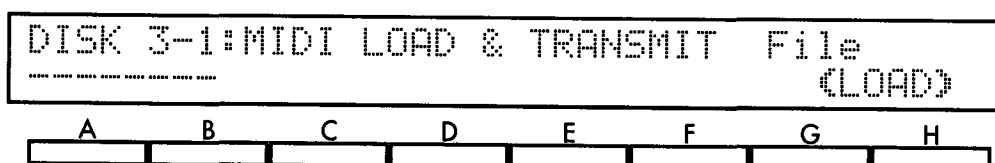
KB1 data will be assigned to the channel set by the KB1 MIDI channel parameter on Page 2-2 of the Global mode display. You can use the KB2 MIDI channel parameter on this display page to assign a channel for the KB2 data. Please note, however, that if you set either of these channels to the same value as any of the other tracks, they will automatically be reassigned to an unused channel.

## MIDI Data Filer Functions

The functions on Pages 3-1 and 3-2 of the Disk mode display let you use your *i4S* disks to store files—up to 64K each—of bulk dumps or other MIDI system exclusive data from another device, then transmit this data back to that device later.

The MIDI Data Filer functions use a 48K memory buffer that they share with Backing Sequence mode. If you try to use one of these functions when the *i4S* memory is full of backing sequence data, the *i4S* will display a “Not enough memory” error message.

### 3-1 MIDI LOAD & TRANSMIT



#### MIDI LOAD & TRANSMIT

*function*

This function loads a MIDI data file from a disk and sends its contents to a keyboard or other device connected to the *i4S* MIDI OUT jack.

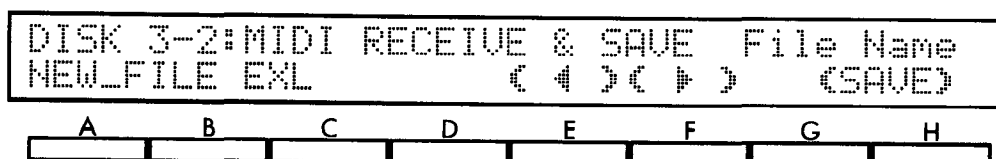
To use this function, press cursor key A or B, then select the name of a data file. The *i4S* will display the names of all the MIDI data files (extension .EXL) it finds on the disk.

When you have chosen a file, select [LOAD]. The *i4S* will load the data after asking for confirmation, then transmit its contents from the MIDI OUT jack.

**Notes:** Be sure to insert a disk in the disk drive before using this function. The *i4S* will display a “No disk in drive” message if you attempt to select a file without first placing a disk in the disk drive.

Also, be sure to connect the receiving device to the MIDI OUT jack before you execute the operation. The *i4S* will transmit the data as soon as it has read it from the disk.

### 3-2 MIDI RECEIVE & SAVE



#### MIDI RECEIVE & SAVE

*function*

This function receives MIDI data from a keyboard or other device connected to the *i4S* MIDI IN jack, then stores this data in a MIDI data file bearing the .EXL extension.

When you select this function, the *i4S* will display the message “Awaiting MIDI data.” You can transmit up to 48K of data to the *i4S* while this message is displayed. This can be several “stacked” dumps or messages, if you like; however, the total volume of the incoming data should never exceed 48K, or the *i4S* will flush all data from the buffer, forcing you to start over.

Each time you send data, the *i4S* will display a “Receiving MIDI data...” message, followed by an indication of how many bytes were received.

Once you have finished transmitting data to the *i4S*, you must save it to a disk file. The *i4S* will display the most recently entered filename (or a default filename of `NEW_FILE`) above cursor keys A and B. You can change this filename to any name of up to eight characters.

When you have finished entering the filename, select [SAVE]. The *i4S* will save the data after asking for confirmation.

If the *i4S* finds a file on the disk with the same name as one it is about to save, it will warn you that it is about to replace that file. Make sure the old file does not contain any data you need before confirming again, as this operation will destroy its contents permanently.

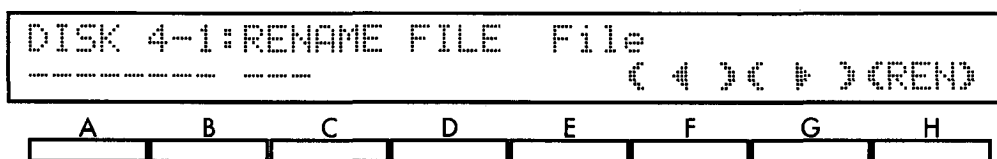
## Utility Functions

Pages 4-1, 5-1, and 6-1 of the Disk mode display contain three utility functions that you can use to prepare and organize your *i4S* data disks. The first two functions let you rename your files, and delete files that you no longer need. You should use the third function, Format Disk, to initialize new floppy disks before attempting to save data to them.

Be sure to insert a disk in the disk drive before using any of these functions. The *i4S* will display a "No disk in drive" message if you attempt to select a file or initialize a disk without first placing a disk in the disk drive.

Please read the instructions below thoroughly, and use the functions on these display pages with care. Reckless use of these functions can result in the irrevocable loss of valuable data.

### 4-1 RENAME FILE



#### RENAME FILE

#### function

This function lets you rename the files on your *i4S* disks. You can use it when you want to reorganize your files, giving them new names which will help you to identify their contents.

To use this function, press cursor key A or B and select the file you wish to rename. Then enter the new name for this file above cursor keys D and E. When you have finished entering the new name, select [REN]. The *i4S* will rename the file after asking for confirmation.

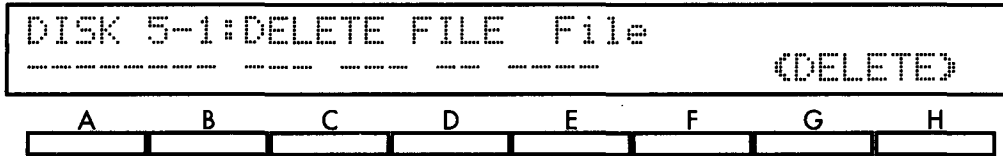
**Note:** Be careful not to change filename extensions—the three characters following the period in the filename—unless you absolutely need to.

You may find it convenient to change the extension of a standard MIDI file (.MID) or a MIDI data file (.EXL) when sharing these files with a personal computer or another device. However, you should keep in mind that, by changing a MIDI data file's .EXL extension, you will render the *i4S* incapable of recognizing the file as one of its own.

Never change a file's extension to one of the other extensions listed on page 169. It would be a bad idea, for example, to rename a file called MYDATA.PCG to MYDATA.ARR. The *i4S* might think the file contains arrangement data—but it would not be able to load it.

The *i4S* will display an error message if you try to give a file a name that is already being used by another file.

## 5-1 DELETE FILE



### **DELETE FILE**

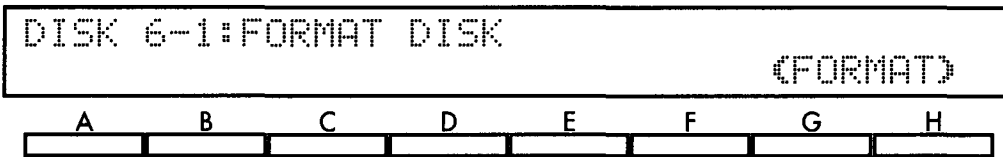
*function*

You can use this function to delete old files that you no longer need. This may come in handy when you need to free up disk space for new data.

To use this function, press a cursor key from A through E, then select the file you want to delete. The *i4S* will display the full name (including the extension) of every file that it finds on the disk. It will also display the date on which each file was saved.

When you have chosen a file, select [DELETE]. The *i4S* will delete the file after asking for confirmation. Make sure that you don't need the contents of the file, as this operation will erase it permanently!

## 6-1 FORMAT DISK



### **FORMAT DISK**

*function*

You should use this function to initialize all new disks for use by your *i4S*. You can also use it to erase and reformat old disks whose contents you no longer need.

To use this function, simply place the disk to be initialized in the disk drive, then select [FORMAT]. The *i4S* will check the disk for data and inform you if it finds any files, then initialize the disk after asking for confirmation. Make sure the disk does not contain any data you need, as this data will be lost forever when the *i4S* initializes the disk!



# Appendix A

## Error Messages

### ***Backing Sequence Editing Functions***

<b>Message</b>	Can't edit empty measure.
<b>Description</b>	You have tried to edit a measure which does not contain any sequence data.
<b>Action</b>	Check your start and end measure settings and retry the operation.

<b>Message</b>	Can't edit empty B.Sequence.
<b>Description</b>	You have tried to edit a backing sequence which does not contain any sequence data.
<b>Action</b>	Check the backing sequence number selection and retry the operation.

<b>Message</b>	Can't edit empty track.
<b>Description</b>	You have tried to edit a track which does not contain any sequence data.
<b>Action</b>	Check your track selection and retry the operation.

<b>Message</b>	Can't edit protected track.
<b>Description</b>	You are trying to edit a track whose Protect parameter has been turned on.
<b>Action</b>	Set the Protect parameter to <b>OFF</b> , then retry the operation. (See page 36.)

<b>Message</b>	Not enough memory.
<b>Description</b>	There is not enough free sequence memory for the <i>i4S</i> to complete the editing operation you have specified.
<b>Action</b>	Save the data in the memory area you are trying to edit using an appropriate Save function (see page 171), then clear some of this data to free up some memory.

<b>Message</b>	Source is empty.
<b>Description</b>	You have selected as the source for a copy, get, or bounce operation measures which have not yet been recorded into, and therefore do not exist. The <i>i4S</i> cannot complete the operation as specified.
<b>Action</b>	Check your track and measure selections.

<b>Message</b>	Source overlaps destination.
<b>Description</b>	You have selected as the destination of a copy or bounce operation measures which overlap with the source measures. The <i>i4S</i> cannot complete the operation as specified.
<b>Action</b>	Check your track and measure selections.

## Disk Functions

<b>Message</b>	Can't find file.
<b>Description</b>	You have switched disks after selecting a file to load, delete, or rename.
<b>Action</b>	Make sure the disk in the drive contains the file you want to load, delete, or rename.

<b>Message</b>	Can't load empty file.
<b>Description</b>	The file you have selected contains no data. The <i>i4S</i> cannot load it.
<b>Action</b>	Such files can be created by faulty disk operations. Delete the file using the Delete File operation described on page 180.

<b>Message</b>	Can't load--not SMF.
<b>Description</b>	You have tried to use the Load Std MIDI File function to load a file which does not comply to a Standard MIDI File format. (See page 57 of the Applications Guide for details on the Standard MIDI File formats.)
<b>Action</b>	Check your file selection.

<b>Message</b>	Can't load SMF format 1.
<b>Description</b>	You have tried to load a standard MIDI file which complies to Standard MIDI File format 1. The <i>i4S</i> can only load standard MIDI files with format 0. (See page 57 of the Applications Guide for details on the Standard MIDI File formats.)
<b>Action</b>	Check your file selection.

<b>Message</b>	Can't load SMF format 2.
<b>Description</b>	You have tried to load a standard MIDI file which complies to Standard MIDI File format 2. The <i>i4S</i> can only load standard MIDI files with format 0. (See page 57 of the Applications Guide for details on the Standard MIDI File formats.)
<b>Action</b>	Check your file selection.

<b>Message</b>	Can't load to protected RAM.
<b>Description</b>	You are trying to load data to a protected memory area.
<b>Action</b>	Check the Protect parameters described on page 159. Set the parameter corresponding to the data you are trying to load to <b>OFF</b> .

<b>Message</b>	Can't read disk.
<b>Description</b>	The format of the disk in the drive has become corrupted, or it is not a format recognized by the <i>i4S</i> .
<b>Action</b>	Re-format the disk using the Format Disk function described on page 180.

<b>Message</b>	Can't replace directory.
<b>Description</b>	The disk in the drive is already using the filename you have entered as the name of a sub-directory.
<b>Action</b>	Sub-directories can only be created or changed using a personal computer. Enter a different filename.

<b>Message</b>	Can't replace system file.
<b>Description</b>	You are trying to create a file with the same name as an MS-DOS™ system file.
<b>Action</b>	Enter a different filename.

<b>Message</b>	Can't save empty B.Sequence.
<b>Description</b>	You have tried to save a backing sequence which contains no data.
<b>Action</b>	Check your backing sequence number selection.

<b>Message</b>	Can't write to protected disk
<b>Description</b>	The write protect tab on the disk in the drive is open.
<b>Action</b>	Close the write protect tab and try again.

<b>Message</b>	Can't write to protected file
<b>Description</b>	You have tried to replace the contents of a file with a "read-only" or "locked" attribute.
<b>Action</b>	File attributes can only be set or changed using a personal computer. Use a computer to change the file's attribute, or enter a different filename.

<b>Message</b>	Can't write--full directory.
<b>Description</b>	The directory of the disk in the drive already contains 112 items.
<b>Action</b>	Delete some files (see page 180) to create more directory space, or use another disk.

<b>Message</b>	Corrupt standard MIDI file.
<b>Description</b>	The file you are trying to load has a proper Standard MIDI File header, but contains inappropriate data.
<b>Action</b>	Check your file selection.

<b>Message</b>	Disk already formatted.
<b>Description</b>	The disk in the drive has already been initialized to a format that the <i>i4S</i> can use. If you proceed with the Format Disk operation, you will lose any data that the disk may currently contain.
<b>Action</b>	Check the disk to make sure it does not contain any data you want to keep. Select [YES] to re-format the disk, or [NO] to cancel the operation.

<b>Message</b>	Disk contains ??? file(s).
<b>Description</b>	The disk in the drive contains the displayed number of data files. If you proceed with the Format Disk operation, you will lose the data in these files.
<b>Action</b>	Check the disk to make sure the files do not contain any data you want to keep. Select [YES] to re-format the disk, or [NO] to cancel the operation.

<b>Message</b>	New filename already in use.
<b>Description</b>	You have tried to rename a file using a filename that is already being used by another file.
<b>Action</b>	Enter a different filename.

<b>Message</b>	No disk in drive.
<b>Description</b>	The <i>i4S</i> could not find a disk in the drive.
<b>Action</b>	Place a disk in the drive before attempting to use Disk mode functions. If the <i>i4S</i> displays this message when a disk is in the drive, eject and then re-insert the disk to make sure it is set properly.

<b>Message</b>	No MIDI data to save.
<b>Description</b>	You have tried to save a MIDI data file without first receiving MIDI data.
<b>Action</b>	See page 177 for details on the use of the Receive & Save function.

<b>Message</b>	Not enough memory.
<b>Description</b>	There is not enough open sequence memory for the <i>i4S</i> to create a buffer for a MIDI data file transfer (see page 177).
<b>Action</b>	Save your songs or backing sequences using an appropriate Save function (see page 171 or 172), then use the Erase Song or Erase B.Sequence function to free up some sequence memory.

<b>Message</b>	Not enough memory to load.
<b>Description</b>	There is not enough room in the <i>i4S</i> memory to hold the contents of the file you are trying to load.
<b>Action</b>	Save the data in the memory area you are trying to load to using an appropriate Save function (see page 171), then clear some of this data to free up some memory.

<b>Message</b>	Not enough room on disk.
<b>Description</b>	The disk in the drive does not have enough room for the file you are trying to create.
<b>Action</b>	Delete some files (see page 180) to free up some disk capacity, or use another disk.

<b>Message</b>	Not <i>i4S</i> disk format.
<b>Description</b>	The disk in the drive has been formatted in a Korg format other than that used by the <i>i4S</i> .
<b>Action</b>	The <i>i4S</i> will display this message if you try to use a disk formatted by a 01/W or other Korg workstation. Re-format the disk using the Format Disk command described on page 180, or use another disk.

<b>Message</b>	Not <i>i4S</i> file format.
<b>Description</b>	The file you have selected has an <i>i4S</i> filename, but contains data that does not conform to the corresponding <i>i4S</i> file format. The <i>i4S</i> cannot load it.
<b>Action</b>	Check your file selection. The <i>i4S</i> will display this message if you try to load a file that does not contain <i>i4S</i> data, but which has been given an <i>i4S</i> extension.

<b>Message</b>	?????????.??? not found.
<b>Description</b>	The <i>i4S</i> could not find the named file while loading files with the Load All Data function.
<b>Action</b>	Select [YES] to continue loading the incomplete file set, or [NO] to cancel the operation.

<b>Message</b>	?????????.??? already exists.
<b>Description</b>	You have asked the <i>i4S</i> to save data using a filename which is already used by a file on the disk.
<b>Action</b>	Select [YES] to replace the old file with the new data, or [NO] to cancel the operation.

## General

<b>Message</b>	Backup battery power is low.
<b>Description</b>	The voltage of the internal backup battery is low.
<b>Action</b>	Contact your Korg dealer or an authorized Korg service center to have the battery replaced. Do not attempt to replace the battery yourself.

<b>Message</b>	Can't write to protected RAM.
<b>Description</b>	You are trying to write data to a protected memory area.
<b>Action</b>	Check the Protect parameters described on page 159. Set the parameter corresponding to the data you are trying to write to OFF.

<b>Message</b>	Corrupt exclusive data.
<b>Description</b>	You have sent MIDI system exclusive data which does not follow the proper data format.
<b>Action</b>	Check your data and try again.



# Appendix B

## General Troubleshooting

Trouble	What To Do
<b>The <i>i4S</i> cannot be powered up.</b>	Check that the power cable is connected to a suitable AC receptacle.
	Check that the <i>i4S</i> 's POWER switch is on.
	Check the power cable plug fuse (if fitted).
	If the <i>i4S</i> still cannot be powered up, consult your Korg dealer.
<b>The <i>i4S</i> appears to be powered up, but nothing is displayed on the LCD.</b>	Adjust the LCD Contrast setting on Page 1-3 of Global mode.
<b>The <i>i4S</i> does not produce any sound.</b>	Make sure the Speaker parameter on Page 1-3 of Global mode is set to ON. (The sound of the speakers will be cut off when headphones are used, regardless of this setting.)
	If you are using an external sound system, check the connections to your amplifier, mixer, etc.
	If you are using an external sound system, check that your amplifier, mixer, etc., is switched on, and the correct settings have been made.
	Check that the <i>i4S</i> MASTER VOLUME slider is up.
	Is Local Control turned off? It should be on. See page 152.
<b>The wrong sounds are produced when playing an arrangement, style, backing sequence, or song.</b>	Have you changed any of the programs in the D bank, or drum programs Dr7 or Dr8? Load the appropriate data.
	Have you modified either of the two user drum kits? Load the appropriate data.
	Have you modified the arrangement? Load the appropriate data.
<b>An arrangement, or backing sequence is playing the wrong music.</b>	Does the arrangement or backing sequence use one of the user styles? If so, have you loaded different styles from disk? Load the appropriate data.
<b>Sound cannot be stopped.</b>	Make sure that the Damper Switch Polarity parameter is set correctly. See page 158.
	Make sure that the current program's Hold parameter is not set to ON. See page 62.
<b>The selected arrangement or backing sequence cannot be played.</b>	Make sure that the MIDI Clock source is set to INT. If you are using an external clock source, make sure that the MIDI Clock Source parameter is set to EXT and the external device is sending the MIDI clock data correctly.
<b>Cannot record in Backing Sequence mode.</b>	If you are recording to an extra track, is the selected track protected? See page 36.
	Make sure that the MIDI Clock source is set to INT. If you are using an external clock source, make sure that the MIDI Clock Source parameter is set to EXT and the external device is sending the MIDI clock data correctly.
<b>The <i>i4S</i> does not respond to incoming MIDI data.</b>	Make sure that all MIDI cables are connected correctly.
	Make sure that the <i>i4S</i> is set to receive MIDI data on the channel that the sending device is using. See page 153.
	Make sure that the <i>i4S</i> is not set to filter out the incoming MIDI data. See page 154.
<b>Cannot write a program.</b>	Is the Program memory protect function set to ON. Set this to OFF. See page 159.
	Are you trying to write the program to a bank other than D (or programs Dr7–Dr8)? Write programs to these locations only.

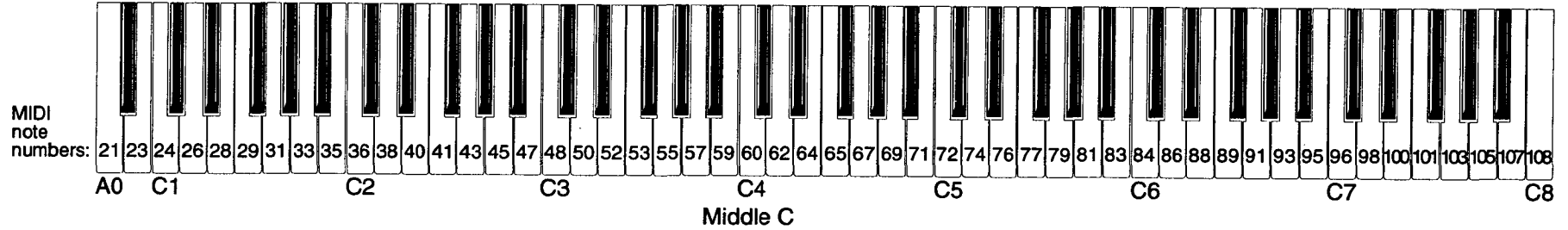
Trouble	What To Do
<b>Some drum sounds do not play.</b>	Check the panpot, effect send level, and effect placement parameters. See page 142 for an explanation of how these parameters interact.
<b>Keys do not play the specified drum sounds.</b>	Make sure the Transpose function is set to +00.
	Make sure the oscillator octave parameter is set to 8'.

### ***Floppy Disk & Style Card Troubleshooting***

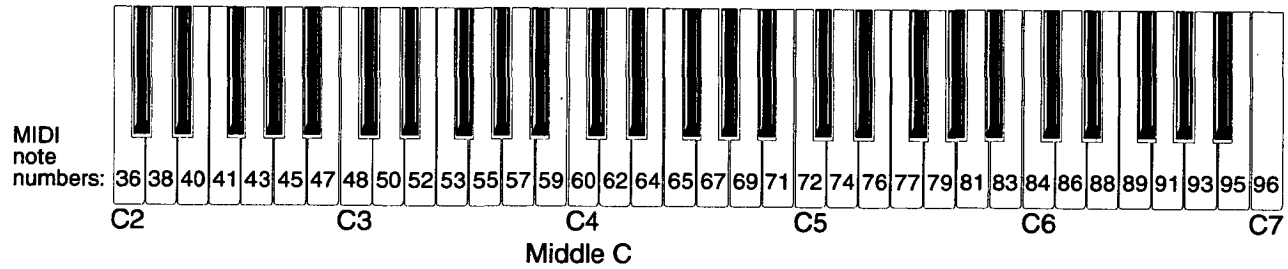
Trouble	What To Do
<b>Cannot format a floppy disk.</b>	Are you using a 3.5 inch 2DD type floppy disk? Use only this type of disk.
	Make sure that the disk is inserted correctly.
	Make sure that the disk's write protect tab is not set to protect.
<b>Cannot save data to a floppy disk.</b>	Make sure that the disk is inserted correctly.
	Make sure that the disk's write protect tab is not set to protect.
<b>Cannot load data from a floppy disk.</b>	Make sure that the disk is inserted correctly.
	Does the disk contain any data?
	Is the program, arrangement, or style memory protected. See page 159.



## Piano keyboard (88 keys)



## *i4S* keyboard (61 keys)

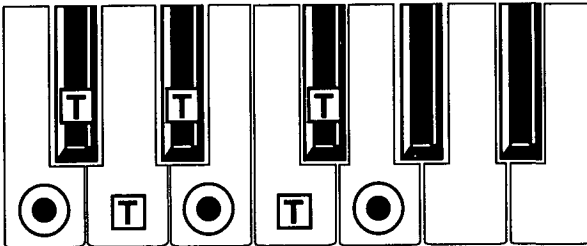


## Recognized Chords

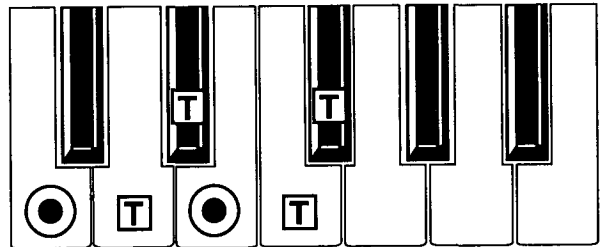
All chords are shown in root position, with a root of C. Please note that in order for the i4S to correctly recognize major 6th and minor 6th chords, you must play them in root position. This is necessary because these chords are made up of the same notes as minor 7th and minor 7th flat 5 chords in the relative minor (for example, C-E-G-A can be either C6 or Am7).

### Major

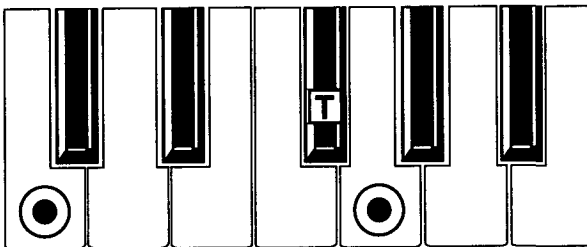
3-note



2-note



2-note

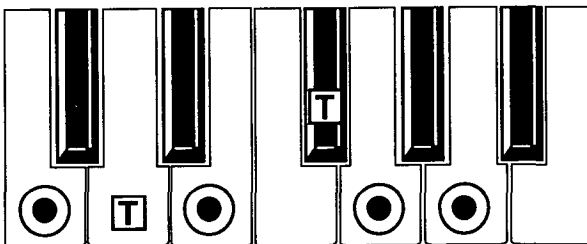


1-note

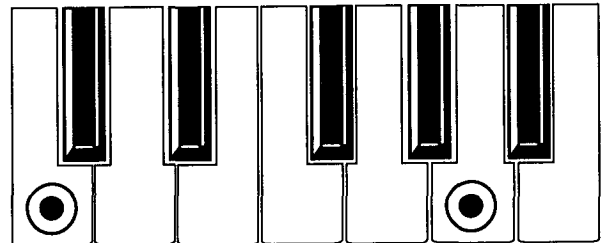


### Major 6th

4-note

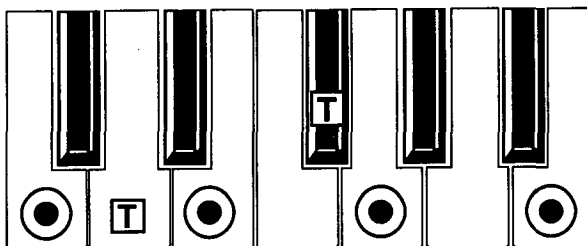


2-note

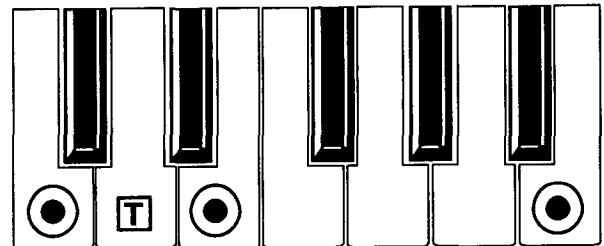


### Major 7th

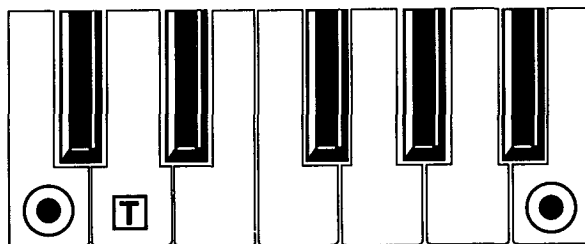
4-note



3-note



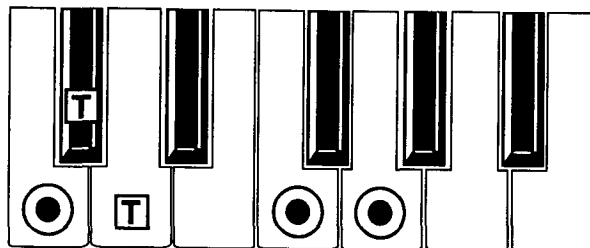
2-note



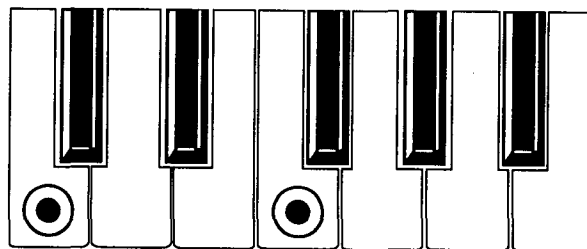
● = chord tone    □ T = available tension

**Sus 4**

3-note

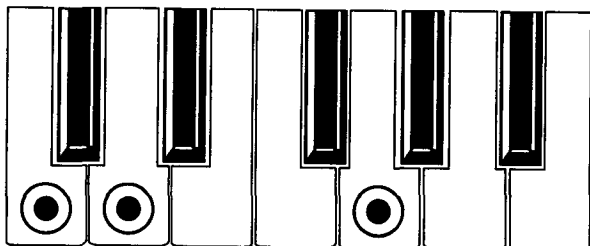


2-note



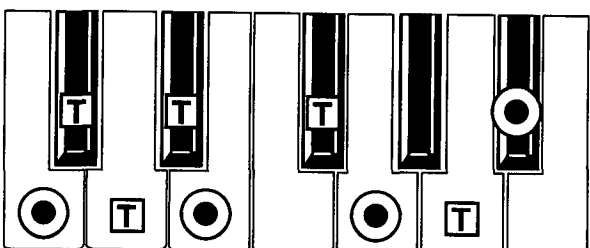
**Sus 2**

3-note

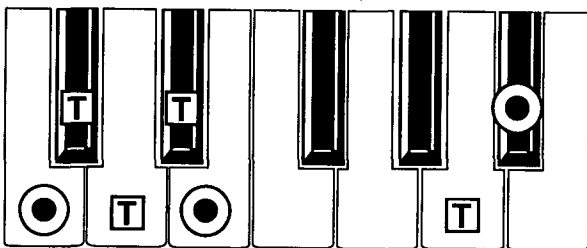


**Dominant 7th**

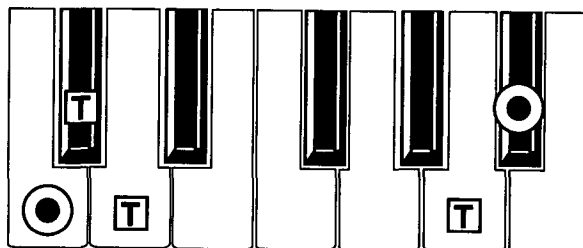
4-note



3-note

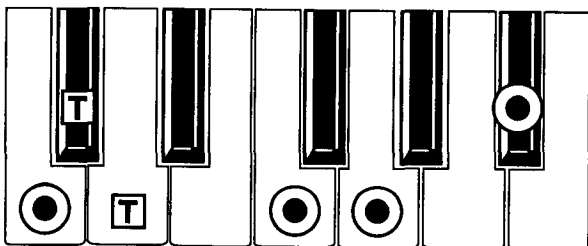


2-note

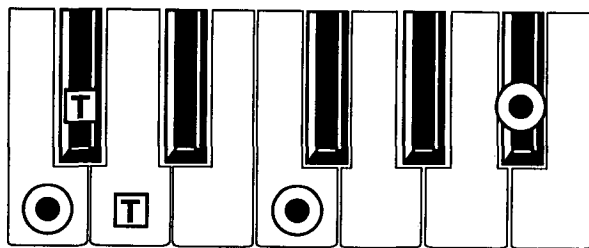


**Dominant 7th Sus 4**

4-note



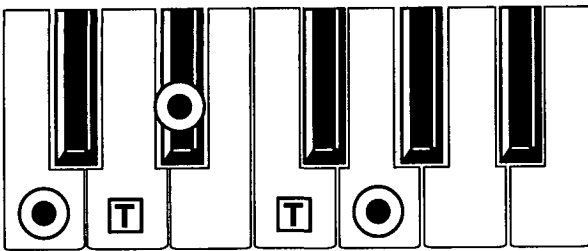
3-note



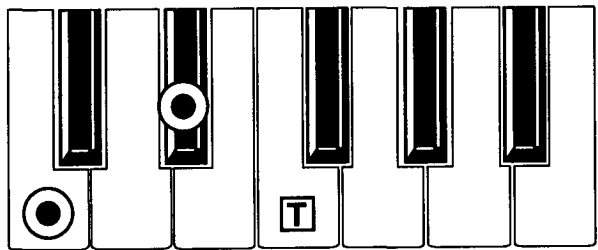
● = chord tone    T = available tension

**Minor**

3-note

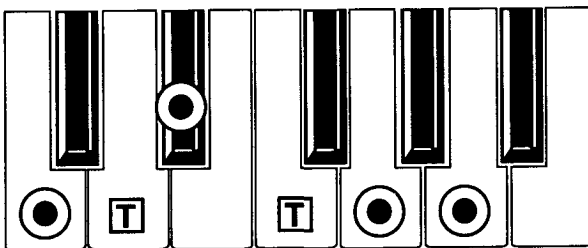


2-note



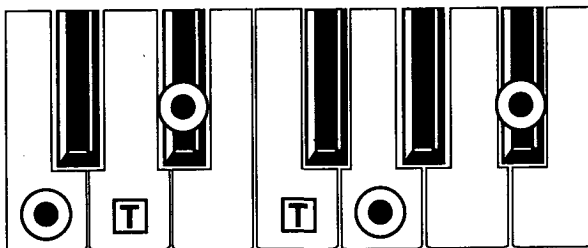
**Minor 6th**

4-note



**Minor 7th**

4-note

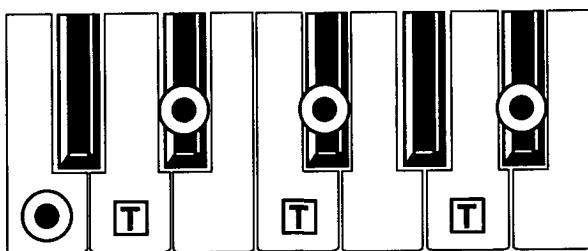


3-note



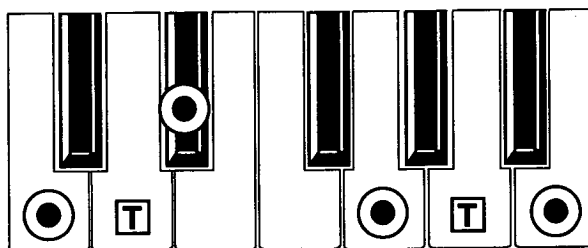
**Minor 7th  $\flat 5$**

4-note

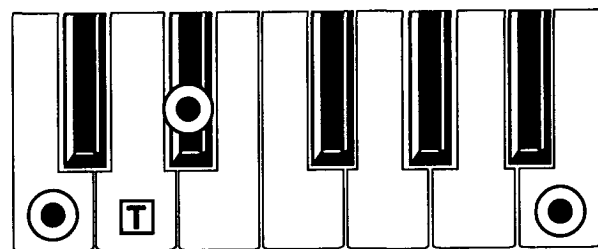


**Minor-Major 7th**

4-note



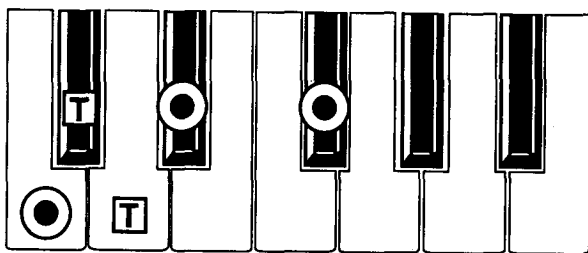
3-note



● = chord tone    T = available tension

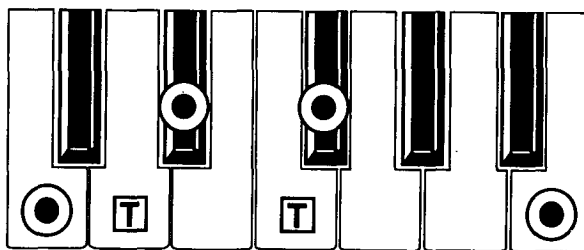
**Diminished**

3-note



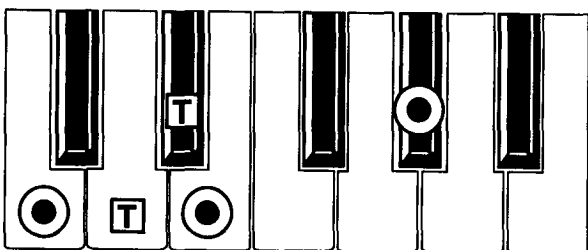
**Diminished Major 7th**

4-note



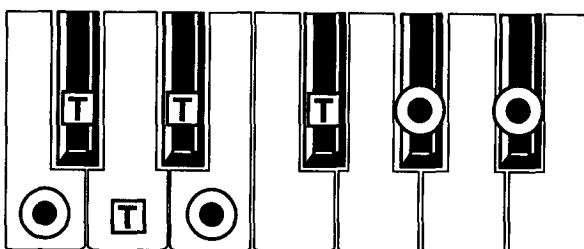
**Augmented**

3-note



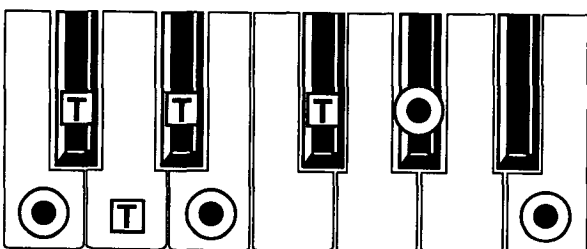
**Augmented 7th**

4-note



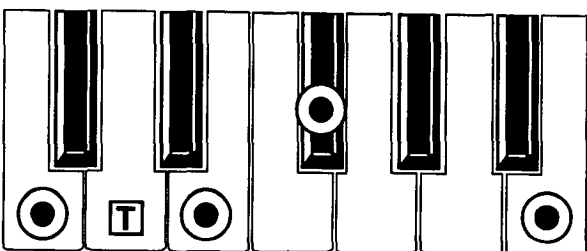
**Augmented Major 7th**

4-note



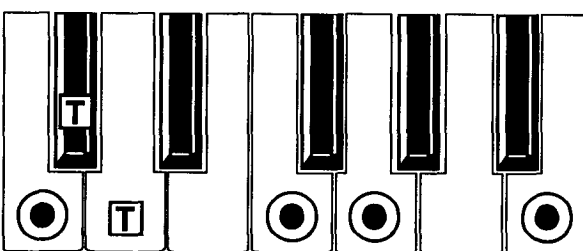
**Major 7th  $\flat 5$**

4-note



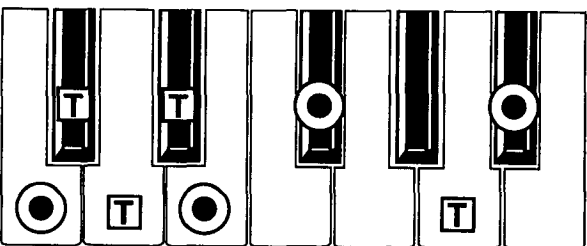
**Major 7th Sus 4**

4-note



**Dominant 7th  $\flat 5$**

4-note



● = chord tone    T = available tension

## Kick and Snare Designation Tables

These tables show how an arrangement's Kick Designation and Snare Designation parameters affect the kick and snare sounds you will hear. The left column of each table represents the drum sound used in the style currently being played.

### Kick Designation

	A	B	C	D
Kick 1	Kick 1	Kick 2	Kick 3	Kick 4
Kick 2	Kick 2	Kick 3	Kick 4	Kick 1
Kick 3	Kick 3	Kick 4	Kick 1	Kick 2
Kick 4	Kick 4	Kick 1	Kick 2	Kick 3

### Snare Designation

	A	B	C	D
Snare 1	Snare 1	Snare 2	Snare 3	Snare 4
Snare 2	Snare 2	Snare 3	Snare 4	Snare 1
Snare 3	Snare 3	Snare 4	Snare 1	Snare 2
Snare 4	Snare 4	Snare 1	Snare 2	Snare 3
Sidestick	Snare 1	Snare 2	Snare 3	Snare 4

## Drum Map Tables

These tables show how the specified drum sounds are changed when you select the drum maps. Drum sounds unaffected by the drum maps do not appear here. For this reason, drum map 5 is not listed, as all of the drum sounds remain unaffected when using this map.

### Drum Map 1 (percussion)

Original note data	Re-mapped to:	Original note data	Re-mapped to:	Original note data	Re-mapped to:
Kick 1 (C2)	Clave	Sidestick (C#2)	Hi Woodblock	Crash 1 (C#3)	Vibraslap
Kick 2 (B1)	Low Woodblock	Snare Roll/ Reversed Snare (A#1)	Bongo Slap	Crash 2 (A3)	Bell Tree
Kick 3 (G1)	Hi Agogo	Closed Hi-hat (F#2)	Shaker	China Crash (E3)	Bell Tree
Kick 4 (E1)	Hi Bongo	Accent Hi-hat (F#1)	Tambourine	Splash (G3)	Jingle
Snare 1 (D2)	Cowbell	Open Hi-hat (A#2)	Cabasa	Hi Tom 1 (D3)	Hi Bongo
Snare 2 (E2)	Castanets	Pedal Hi-hat (G#2)	Maracas	Hi Tom 2 (C3)	Lo Bongo
Snare 3 (A1)	Low Agogo	Ride 1 (D#3)	Muted Triangle	Mid Tom 1 (B2)	Mute Conga
Snare 4 (F1)	Low Bongo	Ride 2 (B3)	Maracas	Mid Tom 2 (A2)	Hi Conga
		Ride Bell (F3)	Open Triangle	Low Tom 1 (G2)	Low Conga
				Low Tom 2 (F2)	Low Timbale

### Drum Map 2 (no snare)

Original note data	Re-mapped to:
Snare 1, 2, 3, 4 (D2, E2, A1, F1)	Pedal Hi-hat
Sidestick (C#2)	Closed Hi-hat
Snare Roll/ Reversed Snare (A#1)	Closed Hi-hat

### Drum Map 3 (sidestick and hi-hat)

Original note data	Re-mapped to:
Snare 1, 2, 3, 4 (D2, E2, A1, F1)	Sidestick
Sidestick (C#2)	*Snare 1, 2, 3, or 4
Snare Roll/ Reversed Snare (A#1)	Sidestick

\*The snare sound you hear will be determined by the Snare Designation setting in the current arrangement.

**Drum Map 4 (sidestick and ride)**

Original note data	Re-mapped to:	Original note data	Re-mapped to:	Original note data	Re-mapped to:
Snare 1, 2, 3, 4 (D2, E2, A1, F1)	Sidestick	Closed Hi-hat (F#2)	Ride 1	Ride 1 (D#3)	Closed Hi-hat
Sidestick (C#2)	*Snare 1, 2, 3, or 4	Accent Hi-hat (F#1)	Ride 2	Ride 2 (B3)	Accent Hi-hat
Snare Roll/ Reversed Snare (A#1)	Sidestick	Open Hi-hat (A#2)	Ride Bell	Ride Bell (F3)	Open Hi-hat

\*The snare sound you hear will be determined by the Snare Designation setting in the current arrangement.

**Drum Map 6 (snare and ride)**

Original note data	Re-mapped to:	Original note data	Re-mapped to:
Closed Hi-hat (F#2)	Ride 1	Ride 1 (D#3)	Closed Hi-hat
Accent Hi-hat (F#1)	Ride 2	Ride 2 (B3)	Accent Hi-hat
Open Hi-hat (A#2)	Ride Bell	Ride Bell (F3)	Open Hi-hat

**Drum Map 7 (open hi-hat)**

Original note data	Re-mapped to:	Original note data	Re-mapped to:
Closed Hi-hat (F#2)	Open Hi-hat	Ride 1 (D#3)	Open Hi-hat
Accent Hi-hat (F#1)	Open Hi-hat	Ride 2 (B3)	Open Hi-hat
		Ride Bell (F3)	Open Hi-hat

**Drum Map 8 (crash)**

Original note data	Re-mapped to:
Accent Hi-hat (F#1)	Crash 2
Open Hi-hat (A#2)	Crash 1





# MIDI Implementation Chart

Function	Transmitted	Recognized	Remarks	
Basic Channel	Default	1 - 16	1-16	Memorized
	Changed	1 - 16	1-16	
Mode	Default		3	
	Messages	X	X	
	Altered	*****		
Note Number:		24 - 108	0-127	When sequencer data is sent: 0 - 127
	True Voice	*****	0-127	
Velocity	Note On	O 9n, V=1 - 127	O 9n, V=1 - 127	When sequencer data is sent: 2 - 126
	Note Off	X	X	
Aftertouch	Polyphonic (Key)	X	X	Sequencer can record and *A play polyphonic aftertouch *A
	Monophonic (Channel)	O	O	
Pitch Bend		O	O	*C
Control Change	0, 32	O	O	Bank Select (MSB, LSB) *P
	1, 2	O	O	Modulation (pitch, cutoff) *C
	4, 64	O	O	Pedal (scale, damper) *C
	6, 38	O	O	Data Entry (MSB, LSB) *C
	7, 11	O	O	Volume, Expression *C
	10, 91, 93	O	O	A:B panpot, send C, D *C
	12, 13	O	O	Effect controller 1, 2 *C
	72, 73, 74	X	O	EG time (Release, Attack), Brightness *C
	92, 94	O	O	Effects 1, 2 on/off *C
	96, 97	O	O	Data Inc, Dec *C
100, 101	X	O	RPN (LSB, MSB) *1	
120, 121	X	O	All sound off, Reset all Cntrls	
0 - 127	O	O	(Sequencer data)	
Program Change	Variable Range	O 0 - 127	O 0-127	*P
		*****	0 - 127	
System Exclusive		O	O	*2 *E
System Common	Song Position	O	O	*3
	Song Select	O 0 - 9	O 0 - 9	*3
	Tune	X	X	
System Real Time	Clock	O	O	*3
	Command	O	O	*3
Aux Messages	Local On/Off	X	O	
	All Notes Off	X	O (123-127)	
	Active Sense	O	O	
	Reset	X	X	
Notes	*C, *P, *A, *E: Sent and received when MIDI Filter (Controller, Program Change, Aftertouch, System Exclusive) is set to ENA. *1: LSB, MSB = 00,65: pitch bend range, =01,65: fine tune, =02,65: course tune *2: Includes Inquiry, GM Mode On/Off, Master Balance, and Master Volume messages. *3: When clock is set to internal, sent but not received. When set to external, received but not sent.			

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 IMPLEMENTATION

## 1. TRANSMITTED DATA

## 1-1 CHANNEL MESSAGES

Status (Hex)	Second (Hex)	Third (Hex)	Description	ENA
1000 nnnn (8n)	0kkk kkkk (kk)	0100 0000 (40)	Note Off kkk kkkk=24~108 ( 61Keys+Transpose )	A
1001 nnnn (9n)	0kkk kkkk (kk)	0vvv vvvv (vv)	Note On kkk kkkk=24~108 ( 61Keys+Transpose ) vvv vvvv=1~127	A
1010 nnnn (An)	0kkk kkkk (kk)	0vvv vvvv (vv)	Poly Key Pressure ( Recorded Seq Data )	T, Q
1011 nnnn (Bn)	0000 0000 (00)	0mmm mmmm (mm)	Bank Select(MSB) ( BANK Key, etc )	*1 P
1011 nnnn (Bn)	0000 0001 (01)	0vvv vvvv (vv)	Modulation 1 ( Joystick(+Y) )	C
1011 nnnn (Bn)	0000 0010 (02)	0vvv vvvv (vv)	Modulation 2 ( Joystick(-Y) )	C
1011 nnnn (Bn)	0000 0100 (04)	0000 0000 (00)	Foot Pedal ( Select Main Scale )	C
1011 nnnn (Bn)	0000 0100 (04)	0111 1111 (7F)	Foot Pedal ( Select Sub Scale )	C
1011 nnnn (Bn)	0000 0111 (07)	0vvv vvvv (vv)	Volume ( Assign Pedal, etc )	C
1011 nnnn (Bn)	0000 1010 (0A)	0vvv vvvv (vv)	Panpot ( by A:B Panpot )	C
1011 gggg (Bg)	0000 1100 (0C)	0vvv vvvv (vv)	Effect Control ( Assignable Pedal )	C
1011 nnnn (Bn)	0010 0000 (20)	0111 1111 (11)	Bank Select(LSB) ( BANK Key, etc )	*1 P
1011 nnnn (Bn)	0100 0000 (40)	0000 0000 (00)	Hold 1 Off ( Damper Pedal )	C
1011 nnnn (Bn)	0100 0000 (40)	0111 1111 (7F)	Hold 1 On ( Damper Pedal )	C
1011 nnnn (Bn)	0ccc cccc (cc)	0vvv vvvv (vv)	Control Data ( Recorded Seq Data )	C, Q
		ccc cccc=00~127		
1100 nnnn (Cn)	0ppp pppp (pp)	---- ----	Program Change ( Prog Change )	*1 P
1101 nnnn (Dn)	0vvv vvvv (vv)	---- ----	Channel Pressure ( Aftertouch )	T
1110 nnnn (En)	0bbb bbbb (bb)	0bbb bbbb (bb)	Pitch Bend ( Joystick(X) )	C

nnnn : MIDI Channel No. (0~15) Usually Global Channel. When using sequencer, each track's channel.

gggg : Always Global Channel No. (0~15)

vvvv : Value

ENA = A : Always Enabled

C : Enabled when Control Filter in GLOBAL Mode is ENA

P : Enabled when Program Filter in GLOBAL Mode is ENA

T : Enabled when Aftertouch Filter in GLOBAL Mode is ENA

Q : Enabled when sequencer is playing (transmitting) or recording (receiving)

T, Q: T and Q

C, Q: C and Q

\*1 : Program : MIDI Out (Hex)

A11~A88: mm. ll. pp = 38. 00. 00~3F

B11~B88: " 38. 00. 40~7F

C11~C88: " 00. 01. 00~3F

D11~D88: " 00. 01. 40~7F

Dr1 : " 3E. 00. 00

Dr2 : " 3E. 00. 10

Dr3 : " 3E. 00. 19

Dr4 : " 3E. 00. 20

Dr5 : " 3E. 00. 28

Dr6 : " 3E. 00. 40

Dr7 : " 3E. 00. 18

Dr8 : " 3E. 00. 30

## 1-2 SYSTEM COMMON MESSAGES

Status (Hex)	Second (Hex)	Third (Hex)	Description
1111 0010 (F2)	0sss ssss (ss)	0ttt tttt (tt)	Song Position Pointer sss ssss : Least significant (LSB) *2 ttt tttt : Most significant (MSB) *2
1111 0011 (F3)	0000 ssss (ss)	---- ----	Song Select ssss : Song No. = 0~9

Transmitted when in Song mode (Internal Clock)

When the number is changed, the i2/i3 transmits [Song Select], then [Bank Select], [Program Change], [Volume], and [Panpot] for each track whose Status = EXT or BOTH. Then [Song Position Pointer].

\*2 : For Example Time Signature = 4/4, 8/8  
tt.ss = 00.10 / Measure

## 1-3 SYSTEM REALTIME MESSAGES

Status (Hex)	Description
1111 1000 (F8)	Timing Clock *3
1111 1010 (FA)	Start *3
1111 1011 (FB)	Continue *3
1111 1100 (FC)	Stop *3
1111 1110 (FE)	Active Sensing

\*3 : Transmits when in Song or Backing Sequence mode (Internal Clock)

## 1-4 UNIVERSAL SYSTEM EXCLUSIVE MESSAGES (DEVICE INQUIRY REPLY)

Byte (Hex)	Description
1111 0000 (F0)	Exclusive Status
0111 1110 (7E)	Non Realtime Message
0000 gggg (0g)	MIDI GLOBAL CHANNEL ( DEVICE ID )
0000 0110 (06)	INQUIRY MESSAGE
0000 0010 (02)	IDENTITY REPLY
0100 0010 (42)	KORG ID ( MANUFACTURERS ID )
0011 1001 (39)	i2/i3/i4S ID ( FAMILY CODE (LSB))
0000 0000 (00)	( " " (MSB))
0000 000* (0*)	( MEMBER CODE (LSB))*4
0000 0000 (00)	( " " (MSB))
0*** **** (**)	ROM No. 1~ ( Minor Ver. (LSB))
0000 0000 (00)	( " " (MSB))
0*** **** (**)	SOFT VER. 1~ ( Major Ver. (LSB))
0000 0000 (00)	( " " (MSB))
1111 0111 (F7)	END OF EXCLUSIVE

Transmits when INQUIRY MESSAGE REQUEST Received

\*4 : 0000 0000 (00h) = i3 / 0000 0001 (01h) = i2 / 0000 0010 (02h) = i4S

## 1-5 STRUCTURE OF KORG SYSTEM EXCLUSIVE MESSAGES

1st Byte = 1111 0000 (F0) : Exclusive Status	] EX. Header
2nd Byte = 0100 0010 (42) : KORG ID	
3rd Byte = 0011 gggg (3g) : Format ID g:Global ch.	
4th Byte = 0011 1001 (39) : i2/i3/i4S ID	
5th Byte = 0fff ffff (ff) : Function Code (See Func Code List)	
6th Byte = 0ddd dddd (dd) : Data	
⋮	
⋮	
⋮	
LastByte = 1111 0111 (F7) : End of Exclusive ..... EOX	

1-6 Transmitted Function Code List

Func	Description	R	D	E	C
42	MODE DATA	○			
4E	MODE CHANGE				○*4
41	PARAMETER CHANGE				○*5
53	DRUM KIT PARAMETER CHANGE				○*6
40	PROGRAM PARAMETER DUMP	○			○*7
4C	ALL PROGRAM PARAMETER DUMP	○	○		
64	ALL ARRANGEMENT PARAMETER DUMP	○	○		
65	ALL STYLE DATA DUMP	○	○		
66	ALL BACKING SEQUENCE DATA DUMP	○	○		
51	GLOBAL DATA DUMP	○	○		
52	DRUMS DATA DUMP	○	○		
50	ALL DATA(GLB. DRM. PRG. ARR. STY. SEQ. BSQ)DUMP	○	○		
28	RECEIVED MESSAGE FORMAT ERROR	○		○	
23	DATA LOAD COMPLETED (ACK)			○	
24	DATA LOAD ERROR (NAK)			○	
21	WRITE COMPLETED			○	
22	WRITE ERROR			○	
67	CHORD			○	

Transmitted when

- R : Request message is received
- D : Data dump from Global mode, Page 9 ( Doesn't respond to Exclusive ENA.DIS)
- E : Exclusive message is received
- C : Mode or No. is changed by switch

Some Request Messages are not received in some modes. See 2-6.

\* When transmitting a series of exclusive messages to the i2/i3, wait until [DATA LOAD COMPLETED] or [WRITE COMPLETED] is received.

\*5 : Transmitted when Mode is changed.

\*6 : Transmitted when editing parameters in EDIT PROGRAM, and PROGRAM ( Performance Edit ) mode.

\*7 : Transmitted when editing drum kit's parameters in GLOBAL mode.

\*7 : Transmitted when entering EDIT PROGRAM mode, or when editing a Performance Edit parameter.

2. RECOGNIZED RECEIVE DATA

2-1 CHANNEL MESSAGES

Status (Hex)	Second (Hex)	Third (Hex)	Description	ENA
1000 nnnn (8n)	0kkk kkkk (kk)	0xxx xxxx (xx)	Note Off	A
1001 nnnn (9n)	0kkk kkkk (kk)	0000 0000 (00)	Note Off	A
1001 nnnn (9n)	0kkk kkkk (kk)	0vvv vvvv (vv)	Note On	A
			vvv vvvv=1~127	
1010 nnnn (An)	0kkk kkkk (kk)	0vvv vvvv (vv)	Poly Key Pressure ( For Seq. Recording )	T. Q
1011 nnnn (8n)	0000 0000 (00)	0mmm mmmm (mm)	Bank Select(MSB)	*1 P
1011 nnnn (8n)	0000 0001 (01)	0vvv vvvv (vv)	Modulation1 Depth ( Pitch Modulation )	C
1011 nnnn (8n)	0000 0010 (02)	0vvv vvvv (vv)	Modulation2 Depth ( Cutoff Modulation )	C
1011 nnnn (8n)	0000 0100 (04)	00vv vvvv(40)	Foot Pedal Off ( Select Main Scale )	C
1011 nnnn (8n)	0000 0100 (04)	01vv vvvv(3F)	Foot Pedal On ( Select Sub Scale )	C
1011 nnnn (8n)	0000 0110 (06)	0vvv vvvv (vv)	Data Entry (MSB) ( For RPN Edit )	C
1011 nnnn (8n)	0000 0111 (07)	0vvv vvvv (vv)	Volume	C
1011 nnnn (8n)	0000 1010 (0A)	0vvv vvvv (vv)	Panpot ( A:B Panpot )	C
1011 nnnn (8n)	0000 1011 (0B)	0vvv vvvv (vv)	Expression	C
1011 gggg (Bg)	0000 1100 (0C)	0vvv vvvv (vv)	Effect Control ( Dyna Mod Src= PEDAL1 )	C
1011 gggg (Bg)	0000 1101 (0D)	0vvv vvvv (vv)	Effect Control ( Dyna Mod Src= PEDAL2 )	C
1011 nnnn (8n)	0010 0000 (20)	0111 1111 (11)	Bank Select(LSB)	*1 P
1011 nnnn (8n)	0010 0110 (26)	0vvv vvvv (vv)	Data Entry (LSB) ( For RPN Edit )	C
1011 nnnn (8n)	0100 0000 (40)	00xx xxxx(40)	Hold1 Off ( Damper Off )	C
1011 nnnn (8n)	0100 0000 (40)	01xx xxxx(3F)	" On ( Damper On )	C
1011 nnnn (8n)	0100 1000 (48)	0vvv vvvv (vv)	Release Time ( Perf Edit Rel Time )*4	C
1011 nnnn (8n)	0100 1000 (48)	0vvv vvvv (vv)	Attack Time ( " " Atk Time )*4	C
1011 nnnn (8n)	0100 1000 (4A)	0vvv vvvv (vv)	Brightness ( " " Cutoff ) *4	C
1011 nnnn (8n)	0101 1011 (5B)	0vvv vvvv (vv)	Reverb Level ( Send C Level )	C
1011 gggg (Bg)	0101 1100 (5C)	0000 0000 (00)	Effect1 Level ( FX1 Off )	C
1011 gggg (Bg)	0101 1100 (5C)	0xxx xxxx(00)	" " ( FX1 On )	C
1011 nnnn (8n)	0101 1101 (5D)	0vvv vvvv (vv)	Chorus Level ( Send D Level )	C
1011 gggg (Bg)	0101 1110 (5E)	0000 0000 (00)	Effect2 Level ( FX2 Off )	C
1011 gggg (Bg)	0101 1110 (5E)	0xxx xxxx(00)	" " ( FX2 On )	C
1011 nnnn (8n)	0110 0000 (60)	0000 0000 (00)	DATA Increment ( For RPN Edit )	C
1011 nnnn (8n)	0110 0001 (61)	0000 0000 (00)	DATA Decrement ( For RPN Edit )	C
1011 nnnn (8n)	0110 0100 (64)	0000 00rr (0r)	RPN Parameter No. (LSB)	*3 A
1011 nnnn (8n)	0110 0101 (65)	0000 0000 (00)	RPN Parameter No. (MSB)	*3 A
1011 nnnn (8n)	0111 1000 (78)	0000 0000 (00)	All Sound Off	C
1011 nnnn (8n)	0111 1001 (79)	0000 0000 (00)	Reset All Controllers	C
1011 nnnn (8n)	0ccc cccc (cc)	0vvv vvvv (vv)	Control Data ( For Seq. Recording )	C. Q
			ccc cccc=00~127	
1011 gggg (Bg)	0111 1010 (7A)	0000 0000 (00)	Local Control Off	A
1011 gggg (Bg)	0111 1010 (7A)	0111 1111 (7F)	Local Control On	A
1011 nnnn (8n)	0111 1011 (7B)	0000 0000 (00)	All Notes Off	A
1011 nnnn (8n)	0111 110x (7x)	0000 0000 (00)	Omi Mode Off/On ( All Notes Off )	A
1011 nnnn (8n)	0111 1110 (7E)	000m mmmm(<11)	Mono Mode On ( All Notes Off )	A
			m mmmm=0~16	
1011 nnnn (8n)	0111 1111 (7F)	0000 0000 (00)	Poly mode On ( All Notes Off )	A
1100 nnnn (Cn)	0ppp pppp (pp)	----	Program Change ( Prog. Comb CHG )	*1.2 P
1101 nnnn (Dn)	0vvv vvvv (vv)	----	Channel Pressure ( Aftertouch )	T
1110 nnnn (En)	0bbb bbbb (bb)	0bbb bbbb (bb)	Bender Change ( Pitch Bend )	C

nnnn : MIDI Channel No. (0~15) ..... Usually Global Channel.

When in SONG Mode, each track's channel.

gggg : Always Global Channel No. (0~15)

x : Random

\*1 : MIDI In (Hex): Program  
 mm. ll. pp = 00. 00. 00~3F : A11~A88  
 00. 00. 40~7F : B11~B88  
 00. 01. 00~3F : C11~C88  
 00. 01. 40~7F : D11~D88  
 00. 02. 00~0F : Dr1  
 00. 02. 10~17 : Dr2  
 00. 02. 18 : Dr7  
 00. 02. 19 : Dr3  
 00. 02. 1A~1F : Dr7  
 00. 02. 20~27 : Dr4  
 00. 02. 28~2F : Dr5  
 00. 02. 30~37 : Dr8  
 00. 02. 38~3F : Dr1  
 00. 02. 40~47 : Dr6  
 00. 02. 48~7F : Dr1  
 38. xx. 00~3F : A11~A88  
 38. xx. 40~7F : B11~B88  
 39. xx. 00~3F : A11~A88  
 39. xx. 40~7F : B11~B88  
 3A~3D. xx. xx : OFF \*1-1  
 3E. xx. 00~0F : Dr1  
 3E. xx. 10~17 : Dr2  
 3E. xx. 18 : Dr7  
 3E. xx. 19 : Dr3  
 3E. xx. 1A~1F : Dr7  
 3E. xx. 20~27 : Dr4  
 3E. xx. 28~2F : Dr5  
 3E. xx. 30~37 : Dr8  
 3E. xx. 38~3F : Dr1  
 3E. xx. 40~47 : Dr1  
 3F. xx. xx : OFF \*1-1

xx : Random

\*1-1: When in PROGRAM Mode, it is ignored.

\*2 : After processing (while Exclusive = ENA) transmits exclusive message [DATA LOAD COMPLETED] or [DATA LOAD ERROR].

\*3 : rr = 0 : Pitch Bend Sensitivity  
 = 1 : Fine Tune ( When Received Ch = Global Ch. Master Tune )  
 = 2 : Coarse Tune ( Transpose )

\*4 : vv ( 40: Fast or Dark  
 = 40: No change  
 ) 40: Slow or Bright

#### 2-2 SYSTEM COMMON MESSAGES

Status (Hex)	Second (Hex)	Third (Hex)	Description
1111 0010 (F2)	0sss ssss (ss)	0ttt tttt (tt)	Song Position Pointer
1111 0011 (F3)	000s ssss (ss)	---- ----	Song Select

Received when in SONG mode (External Clock)

#### 2-3 SYSTEM REALTIME MESSAGES

Status (Hex)	Description	
1111 1000 (F8)	Timing Clock	*5
1111 1010 (FA)	Start	*5
1111 1011 (FB)	Continue	*5
1111 1100 (FC)	Stop	*5
1111 1110 (FE)	Active Sensing	

\*5 : Received when in SONG mode (External Clock)

#### 2-4 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE ( NON REALTIME )

Byte (Hex)	Description	
1111 0000 (F0)	EXCLUSIVE STATUS	
0111 1110 (7E)	NON REALTIME MESSAGE	
0ggg gggg (gg)	MIDI CHANNEL	*6
0000 aaaa (0a)	SUB ID 1	*7
0000 00bb (0b)	SUB ID 2	*7
1111 0111 (F7)	END OF EXCLUSIVE	

\*6 : gg = 0~F : Received if Global Channel  
 = 7F : Received on any Channel

\*7 : a. b = 08. 01 : INQUIRY MESSAGE REQUEST  
 = 08. 01 : GENERAL MIDI MODE ON  
 ( Received anytime except when Seq playing/recording, or when DATA FILER page is selected)

#### 2-5 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE ( REALTIME )

Byte (Hex)	Description	
1111 0000 (F0)	EXCLUSIVE STATUS	
0111 1111 (7F)	REALTIME MESSAGE	
0ggg gggg (gg)	MIDI CHANNEL	*6
0000 0100 (04)	SUB ID 1	
0000 00bb (0b)	SUB ID 2	*8
0vvv vvvv (vv)	VALUE(LSB)	*8
0mmn mmmn (mm)	VALUE(MSB)	*8
1111 0111 (F7)	END OF EXCLUSIVE	

\*8 : b = 01 : MASTER VOLUME ( mm. vv = 00. 00~7F. 7F : Min~Max )  
 = 02 : MASTER BALANCE ( mm. vv = 00. 00~40. 00~7F. 7F : L~Center~R )

2-6 SYSTEM EXCLUSIVE MESSAGES

\* Not received when Sequencer is playing, recording, or when the DATA FILER page is selected.

Function Code List

Func	Description	G	P	A	No.
12	MODE REQUEST	○	○	○	42
10	PROGRAM PARAMETER DUMP REQUEST	○	○	○	40
1C	ALL PROGRAM PARAMETER DUMP REQUEST	⊙	○	○	4C
30	ALL ARRANGEMENT PARAMETER DUMP REQUEST	⊙	○	○	64
31	ALL STYLE DATA DUMP REQUEST	⊙	○	○	65
32	ALL BACKING SEQUENCE DATA DUMP REQUEST	⊙	○	○	66
0E	GLOBAL DATA DUMP REQUEST	⊙	○	○	51
0D	DRUMS DATA DUMP REQUEST	○	○	○	52
0F	ALL DATA(GLB. DRM. PRG. ARR. STY. SEQ. BSQ) DUMP REQ	⊙	○	○	50
11	PROGRAM WRITE REQUEST	○	○	○	21
40	PROGRAM PARAMETER DUMP	○	○	○	23
4C	ALL PROGRAM PARAMETER DUMP	⊙	○	○	23
64	ALL ARRANGEMENT PARAMETER DUMP	⊙	○	○	23
65	ALL STYLE DATA DUMP	⊙	○	○	23
66	ALL BACKING SEQUENCE DATA DUMP	⊙	○	○	23
51	GLOBAL DATA DUMP	⊙	○	○	23
52	DRUMS DATA DUMP	○	○	○	23
50	ALL DATA(GLB. DRM. PRG. ARR. STY. SEQ. BSQ) DUMP	⊙	○	○	23
4E	MODE CHANGE	○	○	○	23
41	PARAMETER CHANGE	○	○	○	23
53	DRUM KIT PARAMETER CHANGE	○	○	○	23
67	CHORD	○	○	○	23

Received when in

G : GLOBAL Mode

(⊙...Does not respond to Exclusive ENA, DIS on DATA DUMP page)

P : PROG, E. PROG mode

A : any other mode

No. : MIDI Out Function No.

(transmitted after the message has been received.)

3. MIDI EXCLUSIVE FORMAT (R : Receive, T : Transmit)

See 1-5 'STRUCTURE OF KORG SYSTEM EXCLUSIVE MESSAGES'

(1) MODE REQUEST R

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0001 0010 (12)	MODE REQUEST	12H
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=42 message.

(2) PROGRAM PARAMETER DUMP REQUEST R

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0001 0000 (10)	PROGRAM PARAMETER DUMP REQUEST	10H
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=40 or Func=24 message.

(3) ALL PROGRAM PARAMETER DUMP REQUEST R

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0001 1100 (1C)	ALL PROGRAM PARAMETER DUMP REQUEST	1CH
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=4C or Func=24 message.

(4) ALL ARRANGEMENT PARAMETER DUMP REQUEST R

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0011 0000 (30)	ALL ARRANGEMENT PARAMETER DUMP REQUEST 30H	
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=64 or Func=24 message.

(5) ALL STYLE DATA DUMP REQUEST R

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0011 0001 (31)	ALL STYLE DATA DUMP REQUEST	31H
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=65 or Func=24 message.

(6) ALL BACKING SEQUENCE DATA DUMP REQUEST R

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0011 0010 (32)	ALL BACKING SEQUENCE DATA DUMP REQUEST 32H	
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=66 or Func=24 message.

(7) GLOBAL DATA DUMP REQUEST R

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0000 1110 (0E)	GLOBAL DATA DUMP REQUEST	0EH
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=51 or Func=24 message.

(8) DRUMS DATA DUMP REQUEST		R
Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0000 1101 (0D)	DRUMS DATA DUMP REQUEST	0DH
1111 0111 (F7)	EOX	

Receives this message and transmits Func=52 or Func=24 message.

(9) ALL DATA (GLB. DRM. PRG. ARR. STY. SEQ. BSQ) DUMP REQUEST		R
Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0000 1111 (0F)	ALL DATA DUMP REQUEST	0FH
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=50 or Func=24 message.

(10) PROGRAM WRITE REQUEST		R
Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0001 0001 (11)	PROGRAM WRITE REQUEST	11H
0ppp pppp (pp)	Write Program No. (0-63.64-65)	
1111 0111 (F7)	EOX	

Receives this message, writes the data and transmits Func=21 or Func=22 message.

(11) PROGRAM PARAMETER DUMP		R, T
Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0100 0000 (40)	PROGRAM PARAMETER DUMP	40H
0ddd dddd (dd)	Data	(NOTE 1.2)
1111 0111 (F7)	EOX	

Receives this message & data, and transmits Func=23 or Func=24 message.

Receives Func=10 message, and transmits this message & data.

This message and data is transmitted when entering EDIT PROGRAM mode, or editing a Performance Edit Parameter.

(12) ALL PROGRAM PARAMETER DUMP		R, T
Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0100 1100 (4C)	ALL PROGRAM PARAMETER DUMP	4CH
0ddd dddd (dd)	Data	(NOTE 1.3)
1111 0111 (F7)	EOX	

Receives this message & data, and transmits Func=23 or Func=24 message.

Receives Func=1C message, and transmits this message & data.

Transmits this message & data when DATA DUMP is executed.

(13) ALL ARRANGEMENT PARAMETER DUMP		R, T
Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0110 0100 (64)	ALL ARRANGEMENT PARAMETER DUMP	64H
0ddd dddd (dd)	Data	(NOTE 1.4)
1111 0111 (F7)	EOX	

Receives this message & data, and transmits Func=23 or Func=24 message.

Receives Func=30 message, and transmits this message & data.

Transmits this message & data when DATA DUMP is executed

(14) ALL STYLE DATA DUMP		R, T
Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0110 0101 (65)	ALL STYLE DATA DUMP	65H
0ddd dddd (dd)	Style Header	(NOTE 1.5-1)
0ddd dddd (dd)	Style Data	(NOTE 1.5-2)
1111 0111 (F7)	EOX	

Receives this message & data, and transmits Func=23 or Func=24 message.

Receives Func=31 message, and transmits this message & data.

Transmits this message & data when DATA DUMP is executed.

(15) ALL SONG DATA DUMP		R, T
Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0100 1000 (48)	ALL SONG DATA DUMP	48H
0sss ssss (ss)	Seq. Data Size	(NOTE 6-1)
0ddd dddd (dd)	Control Data	(NOTE 1.6-2)
0ddd dddd (dd)	Sequence Data	(NOTE 1.6-3)
1111 0111 (F7)	EOX	

Receives this message & data, and transmits Func=23 or Func=24 message.

Receives Func=18 message, and transmits this message & data.

Transmits this message & data when DATA DUMP is executed.

(16) ALL BACKING SEQUENCE DATA DUMP		R, T
Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0110 0110 (66)	ALL BACKING SEQUENCE DATA DUMP	66H
0sss ssss (ss)	Backing Sequence Data Size	(NOTE 7-1)
0ddd dddd (dd)	Control Data	(NOTE 1.7-2)
0ddd dddd (dd)	Backing Sequence Data	(NOTE 1.7-3)
1111 0111 (F7)	EOX	

Receives this message & data, and transmits Func=23 or Func=24 message.

Receives Func=32 message, and transmits this message & data.

Transmits this message & data when DATA DUMP is executed.

(17) GLOBAL DATA DUMP		R, T
Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0101 0001 (51)	GLOBAL DATA DUMP	51H
0ddd dddd (dd)	Data	(NOTE 1.8)
1111 0111 (F7)	EOX	

Receives this message & data, and transmits Func=23 or Func=24 message.

Receives Func=0E message, and transmits this message & data.

Transmits this message & data when DATA DUMP is executed.

(18) DRUMS DATA DUMP R, T

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0101 0010 (52)	DRUMS DATA DUMP	52H
0ddd dddd (dd)	Data	(NOTE 1.9)
...	...	
1111 0111 (F7)	EOX	

Receives this message & data, and transmits Func=23 or Func=24 message.  
 Receives Func=0D message, and transmits this message & data.  
 Transmits this message & data when DATA DUMP is executed.

(19) ALL DATA(GLB. DRM. PRG. ARR. STY. SEQ. BSQ) DUMP R, T

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0101 0000 (50)	ALL DATA DUMP	50H
0sss ssss (ss)	12/13 Sequence Data Size	(NOTE 6-1)
...	...	
0sss ssss (ss)	Backing Sequence Data Size	(NOTE 7-1)
...	...	
0ddd dddd (dd)	Data	(NOTE 1.10)
1111 0111 (F7)	EOX	

Receives this message & data, and transmits Func=23 or Func=24 message.  
 Receives Func=0F message, and transmits this message & data.  
 Transmits this message & data when DATA DUMP is executed.

(20) MODE CHANGE R, T

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0100 1110 (4E)	MODE CHANGE	4EH
0000 mmmm (0m)	Mode Data	(NOTE 11)
1111 0111 (F7)	EOX	

Receives this message & data, changes the Mode, and transmits Func=23 or Func=24.  
 When the mode is changed by switch, this message & data is transmitted.

(21) PARAMETER CHANGE R, T

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0100 0001 (41)	PARAMETER CHANGE	41H
0ppp pppp (pp)	Parameter Page	(TABLE 8)
0111 1111 (F7)		
0ppp pppp (pp)	Parameter Position	(TABLE 8)
0vvv vvvv (vv)	Value (LSB bit6~0)	(NOTE 12)
0vvv vvvv (vv)	Value (MSB bit13~7)	(NOTE 12)
1111 0111 (F7)	EOX	

Receives this message & data, and transmits Func=23 or Func=24 message.  
 When the Parameter No. is changed by switch, this message & data is transmitted.

(22) DRUM KIT PARAMETER CHANGE R, T

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0101 0011 (53)	DRUM KIT PARAMETER CHANGE	53H
0000 000k (0k)	Drum Kit No.	(NOTE 14)
00ss ssss (ss)	Index No. ( ss=00~59 )	
0000 pppp (0p)	Parameter No.	(TABLE 9)
0vvv vvvv (vv)	Value (LSB bit6~0)	(NOTE 12)
0vvv vvvv (vv)	Value (MSB bit13~7)	(NOTE 12)
1111 0111 (F7)	EOX	

(23) MODE DATA T

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0100 0010 (42)	MODE DATA	42H
0000 mmmm (0m)	Mode Data	(NOTE 11)
0000 0000 (00)		
1111 0111 (F7)	EOX	

Receives Func=12 message, and transmits this message & data.

(24) MIDI IN DATA FORMAT ERROR T

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0010 0110 (26)	MIDI IN DATA FORMAT ERROR	26H
1111 0111 (F7)	EOX	

Transmits this message when there is an error in the MIDI IN message (for example, if data length is other than expected).

(25) DATA LOAD COMPLETED ( ACK ) T

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0010 0011 (23)	DATA LOAD COMPLETED	23H
1111 0111 (F7)	EOX	

Transmits this message when DATA LOADING and PROCESSING have been completed.

(26) DATA LOAD ERROR ( NAK ) T

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0010 0100 (24)	DATA LOAD ERROR	24H
1111 0111 (F7)	EOX	

Transmits this message when DATA LOADING and PROCESSING have not been completed (for example, if memory is protected).

(27) WRITE COMPLETED T

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0010 0001 (21)	WRITE COMPLETED	21H
1111 0111 (F7)	EOX	

Transmits this message when DATA WRITE via MIDI has been completed.

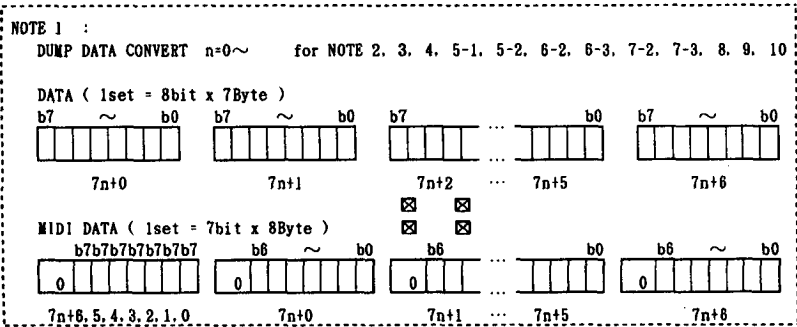
(28) WRITE ERROR T

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0010 0010 (22)	WRITE ERROR	22H
1111 0111 (F7)	EOX	

Transmits this message when DATA WRITE via MIDI has not been completed.

(29) CHORD R, T

Byte	Description	
F0. 42. 3g. 39	EXCLUSIVE HEADER	
0110 0111 (67)	CHORD	67H
0000 rrrr (0r)	Root (C=0)	
0000 bbbb (0b)	Bass (C=0)	
0ccc cccc (cc)	Chord type (LSB)	(NOTE 15)
000c cccc (cc)	Chord type (MSB)	(NOTE 15)
0ttt tttt (tt)	Tension note(s) (LSB)	(NOTE 16)
000t tttt (tt)	Tension note(s) (MSB)	(NOTE 16)
1111 0111 (F7)	EOX	



**NOTE 2 : PROGRAM PARAMETER DUMP FORMAT** ( See TABLE 1, NOTE 1 )  
 [Parameter No.00],.....,[Parameter No.183]  
 164Byte = 7x23+3 → 8x23+(1+3) = 188Byte

**NOTE 3 : ALL PROGRAM PARAMETER DUMP FORMAT** ( See TABLE 1, NOTE 2 )  
 [Prog. D11(164Byte)],.....,[Prog. D88(164Byte)],  
 [Prog. Dr7(164Byte)], [Prog. Dr8(164Byte)]  
 164x(64+2)Byte = 7x1546+2 → 8x1546+(1+2) = 12371Byte ( 4.0Sec )

**NOTE 4 : ALL ARRANGEMENT PARAMETER DUMP FORMAT** ( See TABLE 5, NOTE 1 )  
 [ARR11(131Byte)],.....,[ARR86(131Byte)]  
 131x64Byte = 7x1197+5 → 8x1197+(1+5) = 9582Byte ( 3.1Sec )

**NOTE 5 : ALL STYLE DATA DUMP FORMAT**  
 5-1: Style Header (24Byte) ( See TABLE 6-3, NOTE 1 )  
 5-2: Style Data (3328~65496Byte) ( See TABLE 6-1, TABLE 6-2, NOTE 1 )  
 ∴ MIN= 24+3328Byte = 7x478+6 → 8x478+(1+6) = 3831Byte  
 MAX= 24+65496Byte = 7x9360+0 → 8x9360 = 74880Byte ( 1.2~24.0Sec )

**NOTE 6 : ALL i2/i3 SONG DATA DUMP FORMAT**  
 6-1: Sequence Data Size (2Byte) 4Step(16Byte)/1Size ( See 6-3 )  
 [Data Size (bit6~0)],  
 [Data Size (bit13~7)]  
 6-2: Control Data Dump Format (3702Byte) ( See TABLE 4-1, NOTE 1 )  
 [Control Data (Song Size(296) x 10 = 2980Byte)],  
 [Pattern Data (200Byte)],  
 [Song0-Tr.1 Addr (2Byte)],.....,[Song0-Tr.16 Addr],[Song0-Tempo Track Addr],  
 [Song1-Tr.1 Addr ],.....,[Song9-Tr.16 Addr],[Song9-Tempo Track Addr] (340Byte),  
 [Pattern0 Addr (2Byte)],.....,[Pattern99 Addr] (200Byte),  
 [Pattern End Addr(2Byte)]  
 6-3: Sequence Data Dump Format ( See TABLE 4-2, NOTE 1 )  
 [Sequence 1st Data(4Byte)],.....,[Seq.nth Data]  
 n : Seq. Data Step = 0 ~ 40000  
 3702Byte+4x[Seq. Data Step]Byte = 7xA+B → 8xA+(1+B)Byte  
 ∴ 6-1,6-2,6-3 = 2+8xA+(1+B)Byte ( 1.3~58.5Sec )

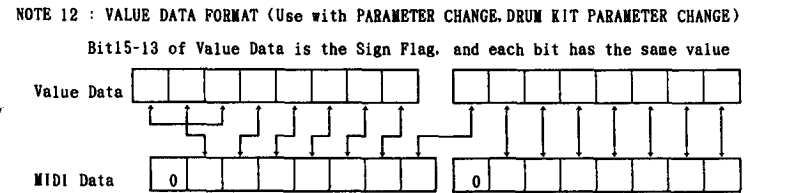
**NOTE 7 : ALL BACKING SEQUENCE DATA DUMP FORMAT**  
 7-1: Backing Sequence Data Size (2Byte) 4Step(16Byte)/1Size ( See 7-3 )  
 [Data Size (bit6~0)],  
 [Data Size (bit13~7)]  
 7-2: Control Data Dump Format (2292Byte) ( See TABLE 7-1, NOTE 1 )  
 [Control Data (BSQ Size(195) x 10 = 1950Byte)],  
 [BSQ0-Tr.1 Addr (2Byte)],.....,[BSQ0-Tr.16 Addr],[BSQ0-Tempo Track Addr],  
 [BSQ1-Tr.1 Addr ],.....,[BSQ9-Tr.16 Addr],[BSQ9-Tempo Track Addr] (340Byte),  
 [End Addr (2Byte)]  
 7-3: Backing Sequence Data Dump Format ( See TABLE 7-2, NOTE 1 )  
 [B. Sequence 1st Data(4Byte)],.....,[BSQ nth Data]  
 n : BSQ Data Step = 0 ~ 40000  
 2292Byte+4x[BSQ Data Step]Byte = 7xA+B → 8xA+(1+B)Byte  
 ∴ 7-1,7-2,7-3 = 2+8xA+(1+B)Byte ( 0.8~58.0Sec )

**NOTE 8 : GLOBAL DATA DUMP FORMAT** ( See TABLE 2, NOTE 1 )  
 [Global Data (28Byte)]  
 28 = 7x4+0 → 8x4 = 32Byte

**NOTE 9 : DRUMS DATA DUMP FORMAT** ( See TABLE 3, NOTE 1 )  
 [Drum Kit Data (7x80x2Byte)]  
 840Byte = 7x120+0 → 8x120 = 960Byte ( 0.3Sec )

**NOTE 10 : ALL DATA (GLB, DRM, PRG, ARR, STY, SEQ, BSQ) DUMP FORMAT** ( See NOTE 1 )  
 [Global Data], ( See NOTE 8 )  
 [Drums Data], ( See NOTE 9 )  
 [All Program Parameters], ( See NOTE 3 )  
 [All Arrangement Parameters], ( See NOTE 4 )  
 [All Style Data], ( See NOTE 5 )  
 [All i2/i3 SONG Data] ( See NOTE 6-2, 6-3 )  
 [All Backing Sequence Data] ( See NOTE 7-2, 7-3 )  
 28+840+10824+8384+sty+3702+4x[Seq. Data Step]Byte+2292+4x[BSQ Data Step]  
 = 7xC+D → 8xC+(1+D)Byte ( 10.5~90.0Sec )

**NOTE 11 :** mmm = 2 : PROGRAM 6 : SONG 10 : ARRANGEMENT  
 4 : GLOBAL 8 : DISK 11 : BACKING SEQUENCE



**NOTE 13 :** kk = 00: DrumKit1  
 01: " 2





GLOBAL PARAMETER		
00	MASTER TUNE	CE~32 : -50~50
01	KEY TRANSPOSE	F4~0C : -12~12
02	DAMPER POLARITY	00 : <del>03</del> 01 : <del>03</del>
03	ASSIGNABLE PEDAL 1	00~0B *8
04	ASSIGNABLE PEDAL 2	00~0B *8
05	MAIN SCALE TYPE	00~0A *9
06	MAIN SCALE KEY	00~0B : C~B
07	USER SCALE	CE~32 : -50~50
18		
19	VELOCITY CURVE	0~7 : 1~8
20	AFTER TOUCH CURVE	0~7 : 1~8
21	SUB SCALE TYPE	00~0A *9
22	SUB SCALE KEY	00~0B : C~B
23	RESERVE	00
27		

DRUM PARAMETERS (TABLE 3)

No.	PARAMETER	DATA(Hex) : VALUE
DRUM KIT 1-INDEX#0		
00	INST NO.	00:OFF, 01~:INT
01	KEY	0C~73 : C0~G8
02	A:B PAN	bit0~4 *10
	EXCLUSIVE ASSIGN	bit5~7 *10
03	TUNE	88~78 : -120~120
04	LEVEL	9D~63 : -99~99
05	DECAY	8D~63 : -99~99
06	D SEND LEVEL	bit0~3 : 0~9
	C SEND LEVEL	bit4~7 : 0~9
DRUM KIT 1-INDEX#1 ~ DRUM KIT 2-#59		
07	SAME AS DRUM KIT 1-#0(00~06)x(60x2-1)	
839		

\*6 : A11~A88 : 00~3F  
 B11~B88 : 40~7F  
 Dr1~Dr6 : 80~85  
 C11~C88 : 86~C5  
 D11~D88 : 00~3F  
 Dr7~Dr8 : 40~41

1 : DOUBLE  
 2 : DRUMS

\*2 : 0 : TRIANGLE  
 1 : UP SAW  
 2 : DOWN SAW  
 3 : SQUARE1  
 4 : RANDOM  
 5 : SQUARE2

\*3 : bit0 : ATTACK TIME SW =0:OFF, =1:ON  
 bit1 : DECAY TIME SW "  
 bit2 : SLOPE TIME SW "  
 bit3 : RELEASE TIME SW "  
 bit4 : ATTACK TIME POLARITY =0:+, =1:-  
 bit5 : DECAY TIME "  
 bit6 : SLOPE TIME "  
 bit7 : RELEASE TIME "

\*4 : bit0.1 ... VDF 0 : OFF  
 bit4.5 ... VDA 1 : LOW  
 2 : HIGH  
 3 : ALL

\*5 : 00 : LI5  
 : CNT  
 1E : R15  
 1F : PRG (When in SONG Mode)  
 FF : OFF

\*7 : bit0 : PROGRAM CHANGE =0:DIS, =1:ENA  
 bit1 : DAMPER "  
 bit2 : AFTERTOUCH "  
 bit3 : CONTROL CHANGE "

bit7=1 : A11~A88  
 : B11~B88  
 : Dr1~Dr6  
 : C11~C88  
 =0 : D11~D88  
 : Dr7~Dr8

# Program is selected by \*6 and \*(bit7)

SONG 0 CONTROL DATA		
00	MIDI Channel(Tr. 1)	00~0F : 1~16
15	MIDI Channel(Tr. 16)	
16	STATUS (Tr. 1)	*11
31	STATUS (Tr. 16)	
32	BEND RANGE (Tr. 1)	00~0C : 00~12
47	BEND RANGE (Tr. 16)	
48	BEAT	*12
49	TEMPO	28~F0 : 40~240
50	PROTECT (Tr. 1)	bit0=0:OFF, =1:ON
51	PROTECT (Tr. 8)	bit7
	PROTECT (Tr. 9)	bit0=0:OFF, =1:ON
	PROTECT (Tr. 16)	bit7
52	NEXT SONG NO.	*13
53	SONG NAME (Head)	20~7F : ' ' ~ ' '
62	SONG NAME (Tail)	
63	( RESERVE )	00
64	EFFECT PARAMETER	*20
92		
TRACK 1 CONTROL DATA		
93	PROGRAM NO.	*6
94	OUTPUT LEVEL	00~7F : 00~127
95	KEY TRANSPOSE	E8~18 : -24~24
96	DETUNE	CE~32 : -50~50
97	A:B PAN	00~1E, 1F, FF *5
98	D SEND LEVEL	bit0~3 : 0~9, PRG
	C SEND LEVEL	bit4~7 : 0~9, PRG
99	KEY WINDOW TOP	00~7F : C-1~G9
100	KEY WINDOW BOTTOM	00~7F : C-1~G9
101	VEL WINDOW TOP	01~7F : 01~127
102	VEL WINDOW BOTTOM	01~7F : 01~127
103	CONTROL FILTER	*7
104	MIDI CHANNEL	00~0F : 1~16
TRACK 2~16 CONTROL DATA		
105	SAME AS TRACK 1(93~104) x 15	
284		
285~290	( RESERVE )	00
291	METRONOME LEVEL	00~63 : 0~99
292	METRONOME PAN	00~1E *5
293	METRONOME LEAD IN	0~2 : 0~2
294	TEMPO TRACK ON/OFF	0:OFF, 1:ON
295	( RESERVE )	00
SONG 1~9 CONTROL DATA		
296	SAME AS SONG 0 (00~295) x 9	
2959		

2880	BEAT	*12
2981	LENGTH	01~83 : 1~99
PATTERN 1~99 PARAMETERS		
2982	SAME AS PATTERN 0(2960,2961) x 99	
3159		
SONG 0, TRACK 1 DATA ADDRESS		
3160	DATA ADDRESS(LSB)	0000 (Start Addr)
3161	" " (MSB)	
SONG 0, TRACK 2 ~ TRACK 16 DATA ADDRESS		
3162	SAME AS SONG 0, TRACK 1 ADDRESS(3160,3161)	
3191		
SONG 0, TEMPO TRACK DATA ADDRESS		
3192	DATA ADDRESS (LSB)	
3193	" " (MSB)	
SONG 1~9 TRACK DATA ADDRESS		
3194	SAME AS SONG 0 TRACK ADDRESS(3160~3193)	x 9
3499		
PATTERN 0 DATA ADDRESS		
3500	DATA ADDRESS (LSB)	
3501	" " (MSB)	
PATTERN 1 ~ PATTERN 99 DATA ADDRESS		
3502	SAME AS PATTERN 0(3500,3501)	
3699		
3700	End Pattern Addr(L)	
3701	" " " (H)	

12/13 SEQUENCE DATA (TABLE 4-2)

No.	PARAMETER	DATA(Hex) : VALUE
SEQUENCE DATA 1		
3702	DATA (1-L)	*15
3703	DATA (1-H)	*15
3704	DATA (2-L)	*15
3705	DATA (2-H)	*15
SEQUENCE DATA 2 ~		
3706	SAME AS SEQUENCE DATA 1(3702~3705)	
...		

\*8 : 0 : OFF  
 1 : PROGRAM UP  
 2 : " DOWN  
 3 : SEQUENCER START/STOP  
 4 : SEQUENCER PUNCH IN/OUT  
 5 : EFFECT 1 ON/OFF  
 6 : " 2 "  
 7 : SCALE CHANGE  
 8 : VOLUME  
 9 : VDF CUTOFF  
 A : EFFECT CONTROL  
 B : DATA ENTRY







\*19-2 : CHORD EVENT

llii iii t	tttt tttt	nnnn nnnn	bbbb rrrr
ChordID	EventTime	TensionNote	Bass Root

ChordID = 0 : No Chord

- 1 : Major
- 2 : Major 6th
- 3 : Major 7th
- 4 : Major 7th Flatted 5th
- 5 : Suspended 4th
- 6 : Suspended 2nd
- 7 : Major 7th Suspended 4th
- 8 : Minor
- 9 : Minor 6th
- 10 : Minor 7th
- 11 : Minor 7th Flatted 5th
- 12 : Minor Major 7th
- 13 : Dominant 7th
- 14 : 7th Flatted 5th
- 15 : 7th Suspended 4th
- 16 : Diminished
- 17 : Diminished Major 7th
- 18 : Augmented
- 19 : Augmented 7th
- 20 : Augmented Major 7th

TensionNote = 0000 0001 : Flatted 9th  
 0000 0010 : 9th  
 0000 0100 : Sharped 9th  
 0000 1000 : 11th  
 0001 0000 : Sharped 11th  
 0010 0000 : Flatted 13th  
 0100 0000 : 13th

Bass = 0~11 (C~B)  
 Root = 0~11 (C~B)

\*20 EFFECT PARAMETERS

No.	PARAMETER	DATA(Hex) : VALUE
(00)	Effect 1 Type No.	0.1~2F:OFF.1~47
(01)	" 2 " "	0.1~2F:OFF.1~47
(02)	" 1 L-Ch E.Balnc	00~64 : 00~100
(03)	" 1 R-Ch " "	00~64 : 00~100
(04)	" 2 L-Ch " "	00~64 : 00~100
(05)	" 2 R-Ch " "	00~64 : 00~100
(06)	Output 3 Pan	00.01~65 *20-1
(07)	" 4 " "	00.01~65 *20-1
(08)	Effect 1/O	bit5~0 *20-2
(09)	Effect 1 Parameters	
(10)	" " " (H)	*20-3
(11)	" " " (H)	
(16)	" " " (H)	
(17)	Effect 1 Mod Source	00~0D *20-4
(18)	Effect 1 Mod Amount	F1~0F : -15~15
(19)	Effect 2 Parameters	
(20)	" " " (H)	*20-3
(21)	" " " (H)	
(26)	" " " (H)	
(27)	Effect 2 Mod Source	00~0D *20-4
(28)	Effect 2 Mod Amount	F1~0F : -15~15

\*20-1 : 00 : Off \*20-2 :  
 01 : R bit0=0:Efct1 L-Ch Off.=1:0n  
 02 : 01:99 bit1=0: " 1 R-Ch Off.=1:0n  
 : bit2=0: " 2 L-Ch Off.=1:0n  
 64 : 99:01 bit3=0: " 2 R-Ch Off.=1:0n  
 65 : L bit4.5=0:Serial  
 1:Parallel  
 2:Parallel 2  
 3:Parallel 3

\*20-3 : Effect Parameters (8Byte) 47 Types

offset	PARAMETER	DATA(Hex) : VALUE
1~3:Hall. ( 4,5:Room, 6:Live Stage )		
(00)	Reverb Time	00~61(2F):0.2~9.9(4.9)
(01)	( NUL )	00
(02)	High Damp	00~83 : 00~99
(03)	Pre Delay	00~C8 : 00~200
(04)	E-R Level	00~63 : 00~99
(05)	( NUL )	00
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

NUL not listed from here on. Value must be 00.

7:Wet Plate. 8:Dry Plate. 9:Spring

(00)	Pre Delay(L)	00~C8 : 00~200
(01)	" " (H)	
(02)	E-R Level	01~0A : 01~10
(03)	Reverb Time	00~63 : 00~99
(04)	High Damp	00~63 : 00~99
(06)	EQ Low	F4~0C : -12~12
(07)	EQ High	F4~0C : -12~12

10~12:Early Reflection 1,2,3

(00)	E-R Time	00~46 : 100~800
(01)	Pre Delay	00~C8 : 00~200
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

13:Stereo Delay, 14:Cross Delay

(00)	Delay Time L (L)	00~1F4 : 00~500
(01)	" " " (H)	
(02)	Feedback	9D~83 : -99~99
(03)	High Damp	00~63 : 00~99
(04)	Delay Time R (L)	00~1F4 : 00~500
(05)	" " " (H)	
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

15: Dual Delay

(00)	Delay Time L (L)	00~1F4 : 00~500
(01)	" " " (H)	
(02)	Feedback L	9D~83 : -99~99
(03)	High Damp L	00~63 : 00~99
(04)	Delay Time R (L)	00~1F4 : 00~500
(05)	" " " (H)	
(06)	Feedback R	9D~83 : -99~99
(07)	High Damp R	00~63 : 00~99

16~18: Multitap Delay 1,2,3

(00)	Delay Time A(L)	00~1F4 : 00~500
(01)	" " " (H)	
(02)	Delay Time B(L)	00~1F4 : 00~500
(03)	" " " (H)	
(04)	Feed back	9D~63 : -99~99
(06)	EQ Low	F4~0C : -12~12
(07)	EQ High	F4~0C : -12~12

18.20: Stereo Chorus 1,2

(00)	Mod Depth	00~63 : 00~99
(01)	Mod Speed	00~D8 *20-3-2
(02)	MG Status *20-3-3	bit0=0:Sin. =1:Tri bit1 ← 1 bit2 ← 0
(04)	Delay Time	00~C8 : 00~200
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

21: Quadrature Chorus, 22: X Over Chorus

(00)	Delay Time L	00~FA : 00~250
(01)	Delay Time R	00~FA : 00~250
(02)	Mod Speed	01~63 : 01~99
(03)	Mod Depth	00~63 : 00~99
(04)	Mod Waveform	EB~14 *20-3-4
(06)	EQ Low	F4~0C : -12~12
(07)	EQ High	F4~0C : -12~12

23: Harmonic Chorus

(00)	Delay Time A (L)	00~1F4 : 00~500
(01)	" " " (H)	
(02)	Delay Time B (L)	00~1F4 : 00~500
(03)	" " " (H)	
(04)	Mod Speed	01~63 : 01~99
(05)	Mod Depth	00~63 : 00~99
(06)	Filter Split Point	00~12 : 00~18

24: Symphonic Ensemble

(00)	Mod Depth	00~63 : 00~99
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

(00)	Delay Time	00~C8 : 00~200
(01)	Mod Depth	00~63 : 00~99
(02)	Mod Speed	01~63 : 01~99
(03)	Feedback	9D~63 : -99~99
(06)	EQ Low	F4~0C : -12~12
(07)	EQ High	F4~0C : -12~12

28:Exciter

(00)	Harmonic density	9D~63 : -99~99
(01)	Hot Spot	00~09 : 01~10
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

29:Enhancer

(00)	Harmonic Density	01~63 : 01~99
(01)	Hot Spot	01~14 : 01~20
(02)	Stereo Width	00~63 : 00~99
(03)	Delay	01~63 : 01~99
(06)	EQ Low	F4~0C : -12~12
(07)	EQ High	F4~0C : -12~12

30:Distortion, 31:Over Drive

(00)	Drive	01~6F : 01~111
(01)	Hot Spot	00~63 : 00~99
(02)	Resonance	00~63 : 00~99
(03)	Distortion Level	00~63 : 00~99
(06)	EQ Low	F4~0C : -12~12
(07)	EQ High	F4~0C : -12~12

32, 33:Phaser 1. (2)

(00)	Mod Depth	00~63 : 01~99
(01)	Mod Speed	00~D8 : *20-3-2
(02)	MG Status *20-3-3	bit0=0:Sin, =1:Tri bit1 ← 1, (0) bit2 ← 0
(03)	Feedback	9D~63 : -99~99
(04)	Hot Spot	00~63 : 00~99

34:Rotary Speaker

(00)	Vibrato Depth	00~0F : 00~15
(01)	Acceleration	01~0F : 01~15
(02)	Slow Speed	01~63 : 01~99
(03)	Fast Speed	01~63 : 01~99

35:Auto Pan. (36:Tremolo)

(00)	Depth	00~63 : 00~99
(01)	Speed	00~D8 : *20-3-2
(02)	MG Status *20-3-3	bit0=0:Sin, =1:Tri bit1 ← 1, (0) bit2 ← 0
(03)	Shape	9D~63 : -99~99
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

37:Parametric EQ

(00)	Low Freq	00~1D : 00~29
(01)	Low Gain	F4~0C : -12~12
(02)	Mid Freq	00~63 : 00~99
(03)	Mid Gain	F4~0C : -12~12
(04)	Mid Width	00~63 : 00~99
(05)	High Freq	00~1D : 00~29
(06)	High Gain	F4~0C : -12~12

(00)	Delay Time	00~32 : 00~50
(01)	Mod Speed	01~63 : 01~99
(02)	Mod Depth	00~63 : 00~99
(03)	Feedback	9D~63 : -99~99
(04)	Delay Time	00~E1 : 00~450
(05)	Feedback / Hall	9D~63 : -99~99

40:Delay / Hall

(00)	Delay Time (L)-----	00~1F4 : 00~500
(01)	Delay Time (H)	00~1F4 : 00~500
(02)	Feedback	9D~63 : -99~99
(03)	High Damp	00~63 : 00~99
(04)	Reverb Time	00~61 : 0.2~9.9
(06)	High Damp	00~63 : 00~99
(07)	Pre Delay	00~96 : 00~150

41:Delay / Room

(00)	Delay Parameter	*20-3-1
(01)	.....	
(02)	.....	
(03)	.....	
(04)	Reverb Time	00~2F : 0.2~4.9
(06)	High Damp	00~63 : 00~99
(07)	Pre Delay	00~96 : 00~150

42:Delay / Chorus. ( 43:Delay / Flanger )

(00)	Delay Parameter	*20-3-1
(01)	.....	
(02)	.....	
(03)	.....	
(04)	Depth	00~63 : 00~99
(05)	Speed	00~D8 *20-3-2
(06)	MG Status *20-3-3	bit0=0:S, =1:T(←0) bit1 ← 0 bit2 ← 0, (←1)
(07)	Feedback	0.(9D~63:-99~99)

44:Delay / Distortion, 45:Delay / Over Drive

(00)	Delay Time (L)-----	00~1F4 : 00~500
(01)	" " (H)	00~1F4 : 00~500
(02)	Feedback	9D~63 : -99~99
(03)	Drive	01~6F : 01~111
(04)	Hot Spot	01~63 : 01~99
(05)	Resonance	00~63 : 00~99
(06)	Distortion Level	01~63 : 01~99

46:Delay / Phaser

(00)	Delay Parameter	*20-3-1
(01)	.....	
(02)	.....	
(03)	.....	
(04)	Depth	00~63 : 00~99
(05)	Speed	00~D8 *20-3-2
(06)	Feedback	9D~63 : -99~99

47:Delay / Rotary Speaker

(00)	Delay Time (L)-----	00~1F4 : 00~500
(01)	" " (H)	00~1F4 : 00~500
(02)	Feedback	9D~63 : -99~99
(03)	Acceleration	01~0F : 01~15
(04)	Slow Speed	01~63 : 01~99
(05)	Fast Speed	01~63 : 01~99

\*20-3-1 : Delay Parameter  
Same as 40-(00)~(03)

\*20-3-2 : Data(Hex) Value[Hz]  
00~63 0.03~ 3.00 (0.03step)  
64~C7 3.1~13.0 (0.1 step)  
C8~D8 14 ~30.0 (1 step)

\*20-3-3 : MG Status  
bit0 : Waveform =0:Sin, =1:Tri  
bit1 : Phase =0:0°, =1:180°  
bit2 : Wave Shape =0: Normal  
=1: for Flanger

\*20-3-4 : Waveform  
EB : T+10  
FF : T-10  
00 : S-10  
14 : S+10

\*20-4 : Dynamic Modulation Source  
0 : None  
1 : Joy Stick (+Y)  
2 : Joy Stick (-Y)  
3 : Aftertouch  
4 : Assignable Pedal 1  
5 : Assignable Pedal 2  
6 : VDA EG

## PROGRAM PARAMETERS: PAGE/POSITION TO OFFSET (TABLE 8)

PAGE	PARAMETER		POSITION												
			A	B	C	D	E	F	G	H					
2 - 1	OSC BASIC		10				11		11						
2 - 2	OSC TONE	OSC1		12		13		65		14		40		86	
		OSC2		15		16		112		17		87		133	
2 - 3	EFFECT SEND	OSC1		82				82							
		OSC2		129				129							
2 - 4	OSC2 RELATIVE		18			19			20						
3 - 1	PITCH EG		21	22	23	24	25	26	28	27					
4 - 1	VDF	OSC1		50		53		83							
		OSC2		97		100		130							
4 - 2	VDF EG	OSC1	57	58	59	60	61	62	63	64					
		OSC2	104	105	106	107	108	109	110	111					
4 - 3	VDF KBD TRACK	OSC1		52				51				85			
		OSC2		99				98				132			
4 - 4	VDF TIME KBD	OSC1		54				78		78		78		78	
		OSC2		101				125		125		125		125	
4 - 5	VDF VELOCITY	OSC1		56				84							
		OSC2		103				131							
4 - 6	VDF TIME VEL	OSC1		55				79		79		79		79	
		OSC2		102				126		126		126		126	
5 - 1	VDA EG	OSC1		71	72	73	74	75	76	77					
		OSC2		118	119	120	121	122	123	124					
5 - 2	VDA KBD TRACK	OSC1		67				66				85			
		OSC2		114				113				132			
5 - 3	VDA TIME KBD	OSC1		69				80		80		80		80	
		OSC2		116				127		127		127		127	
5 - 4	VDA VELOCITY	OSC1		68											
		OSC2		115											
5 - 5	VDA TIME VEL	OSC1		70				81		81		81		81	
		OSC2		117				128		128		128		128	
6 - 1	PITCH NG	OSC1		41	45	42	43	44	41	46					
		OSC2		88	92	89	90	91	88	93					
6 - 2	PITCH NG CONTROL	OSC1		48				47							
		OSC2		95				94							
6 - 3	PMG FREQ CONTROL	OSC1		49											
		OSC2		96											
6 - 4	VDF NG		29	32	30	31	29	29							
6 - 5	VDF NG CONTROL		39				35								
6 - 6	CONTROLLER	BEND		37				33							
		CUTOFF		38				34							
		LEVEL		36											
7 - 1	EFFECT TYPE	FX1		135				135		152		153			
		FX2		136				136		162		163			
7 - 2	FX PARAM	FX1	144	147	148	146		151	150	*1					
		FX2	154	157	158	156		161	160	*2					
7 - 3	EFFECT PLACEMENT		143		141		142								

\*1:137, 138 \*2:139, 140

## DRUM KIT PARAMETERS

PARAM No. for DRUM PARAM CHANGE  
n : 0~59 (Index)

(TABLE 9)

No.	PARAMETER	No. from TABLE 3
0	INST NO.	0+7n
1	KEY	1+7n
2	TUNE	3+7n
3	OUTPUT LEVEL	4+7n
4	DECAY	5+7n
5	EXCLUSIVE ASSIGN	2+7n b5~7
6	A:B PAN	2+7n b0~4
7	C SEND LEVEL	8+7n b4~7
8	D SEND LEVEL	6+7n b0~3



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