KORG

RK-100S 2

KEYTAR

Parameter Guide

Table of contents

Introduction

Thank you for purchasing the Korg RK-100S 2 KEYTAR. To help you get the most out of your new instrument, please read this manual carefully.
This RK-100S 2 parameter guide explains the parameters that you can edit on the RK-100S 2 in addition to providing basic instructions for usage. Read this guide when you want to adjust or refine the settings.

Preparations

You'll use the RK-100S 2 Sound Editor software to edit the RK-100S 2's parameters. Please download the latest version of the RK-100S 2 Sound Editor from the KORG website (http://www.korg.com/) and install it on your computer.

For details on how to install and use the RK-100S 2 Sound Editor software, please refer to the RK-100S 2 Sound Editor owner's manual.

Editing the sound

Before you start editing, you'll need to understand the basics of how the sounds are created. Once you understand how the RK-100S 2's sounds are structured, you'll be able to freely create the sounds you want.

Synthesizer

As shown in the illustration, a synth program consists of timbres 1/2, master effects 1/2, and the arpeggiator.
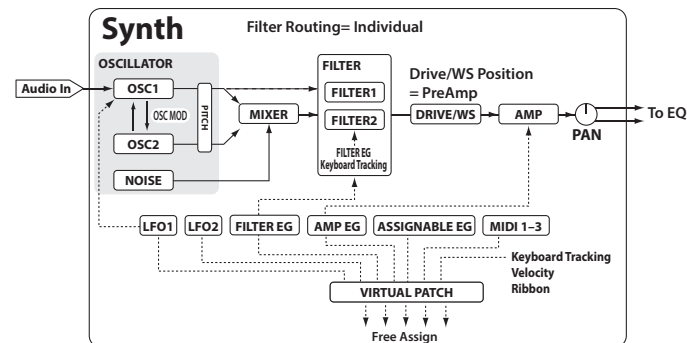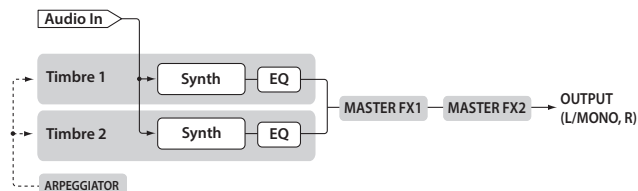
The three elements of sound: pitch, tone, and volume

Sound has three basic elements: pitch, tone, and volume.

Just like the analog synthesizers of the past, the RK-100S 2 analog modeling synthesizer provides "oscillator," "filter," and "amp" (amplifier) sections that control these three elements.

Edit the oscillator settings to change the pitch, the filter settings to change the tone, and the amp settings to change the volume.

Oscillator, filter, and amp

With the RK-100S 2, the basic waveforms are selected with OSC1 and OSC2 in the oscillator section, and their pitches are specified with the PITCH parameters. The volume balance of each waveform selected with OSC1 and OSC2 is adjusted with the MIXER parameters. In the filter section, filters can be applied to the sound produced by the oscillators to adjust the tone. Finally, the overall volume can be adjusted in the amp section.

You can create a basic program by editing the settings in these sections.

EG, LFO, keyboard tracking, virtual patch, and controllers

In addition to the way that it's affected by the oscillator, filter, and amp, a synthesizer sound can also change in various other ways; over the passage of time, according to the pitch you play, or in response to various performance gestures. These changes in the sound are controlled by modulators and controllers such as the EG (envelope generator), LFO (low frequency oscillator), keyboard tracking, virtual patch, and ribbon controller. You can use these modulators and controllers to produce various changes in the basic sound of the program.

Take a look at the illustration that shows the structure of the microKORG XL+. Notice that the signal flows in the order of OSC → FILTER → AMP. You will also notice that these sections can be controlled by things such as EGs and LFOs.

As shown in the illustration, a synth program consists of timbres 1/2, effects, and the arpeggiator.

Timbres (TIMBRE 1/2)

Each timbre consists of an oscillator, filter, amp, EG, LFO, virtual patches, and equalizer. The RK-100S 2+ has two timbres, and you can combine these two timbres to create a richer-sounding program.

Oscillator (OSC1, OSC2, NOISE)

Oscillator 1 (OSC1) lets you choose from seven types of oscillator algorithms, such as the sawtooth wave or square wave familiar from analog synthesizers, as well as formant wave, noise, and PCM/DWGS, and also lets you select the input signal from the INPUT jack.

You can also apply cross modulation, unison, or VPM (Variable Phase Modulation) to a basic analog synthesizer waveform such as sawtooth or square wave. Oscillator 2 (OSC2) lets you choose a waveform from four types of oscillator algorithms, such as sawtooth wave or square wave, and it can also be used as a modulation-type oscillator to create the sync modulation or ring modulation that is distinctive of analog synthesizers.

The noise generator (NOISE) produces white noise. You can use this to simulate breath noise in a wind instrument sound, or to produce sound effects.

Mixer (MIXER)

This section lets you adjust the volume level of oscillator 1 (OSC1), oscillator 2 (OSC2), and the noise generator (NOISE), and sends the resulting mix to the filters (FILTER).

Filters (FILTER 1, FILTER 2)

The filter varies the brightness of the sound by removing or boosting certain portions of the frequency spectrum of the sound generated by the oscillator. Filter settings will have a large impact on the character of the sound.

There are two filters for each timbre, and you can create a wide range of sounds by choosing from four routings (types of connection) for these filters. In addition, you can use the filter envelope generator 1 (FILTER EG) to vary the cutoff frequency of each filter over time.

Amp (AMP)

This section consists of the amp (AMP) and pan (PAN) settings. The amp specifies the volume, and the pan specifies the stereo position of the sound. You can also use envelope generator 2 (AMP EG) to vary the volume over time.

Drive/waveshaping (DRIVE/WS)

Drive and waveshaping both give the tone a hard-edged character. Adjusting the cutoff or resonance of the filter can produce significant changes.

Envelope generators (FILTER EG, AMP EG, ASSIGNABLE EG)

An envelope generator applies time-variant change to parameters that make up the sound. Each envelope generator defines the "shape" of the time-variant change using four parameters: attack time, decay time, sustain level, and release time.

the FILTER EG parameter is assigned to control the filter cutoff frequency, and the AMP EG is assigned to control the amp volume. You are free to assign the ASSIGNABLE EG to any desired parameter by using a virtual patch. FILTER EG and AMP EG can also be used with a virtual patch as an envelope source for other parameters.

LFOs (LFO1, LFO2)

An LFO (Low Frequency Oscillator) applies cyclic change to parameters that make up the sound. Each timbre has two LFOs, each giving you a choice of five waveforms.

For some waveforms that can be selected for oscillator 1 (OSC1), LFO1 is assigned as "control 2" (OSC1 Control 2), and LFO2 is assigned as a pitch modulation source via the short ribbon. You can also use a virtual patch to assign the LFO as a modulation source for other parameters.

Virtual patch (VIRTUAL PATCH)

The virtual patch functionality lets you use not only EG or LFO but also sources such as velocity (keyboard playing strength) and keyboard tracking (the keyboard region that you play) as modulation sources to control the parameters that make up the sound. This gives you a great deal of freedom in creating original sounds. For each timbre, you can create virtual patch settings for five parameters.

Equalizer (EQ)

Each timbre contains a two-band EQ. You can use this to adjust the tonal balance between the two timbres; for example you might accentuate a sound that would otherwise be lost in the mix, or to restrain a sound that stands out too much.

Master effects (MASTER FX)

Each program contains two master effects. By applying these effects to the final mixed sound of the two timbres, you can add the finishing touch to the overall program.

Arpeggiator (ARPEGGIATOR)

The arpeggiator automatically generates an arpeggio (broken chord) when you hold down a chord on the keyboard. For programs that use two timbres, you can apply the arpeggiator to either or both timbres. This is a step arpeggiator with six arpeggio types.

Vocoder

A vocoder analyzes the frequency characteristics of one signal called the "modulator" (such as a human voice input via a mic) and applies these characteristics to a filter that is processing a different signal called the "carrier" (such as an oscillator waveform), thus producing distinctive effects such as an instrument that appears to be talking.

The RK-100S 2 contains a sixteen-band vocoder that can simulate not only the classic vocoder sounds of the past but it can also create original vocoder sounds where the tonal character or the level of each band can be controlled.

As shown in the illustration below, the vocoder consists of the carrier (the signal being modified), the modulator (the signal that controls the modifying), and the vocoder section itself.
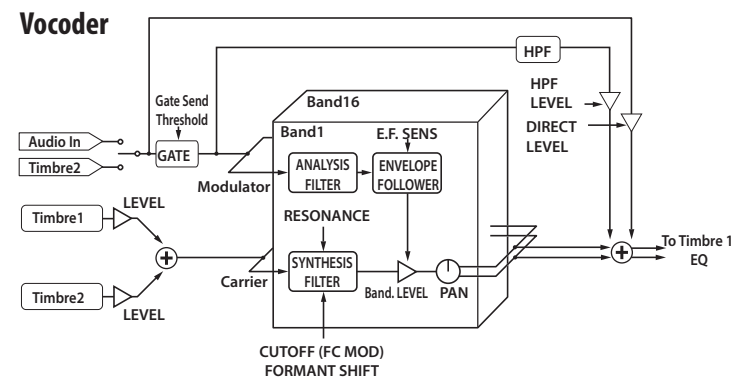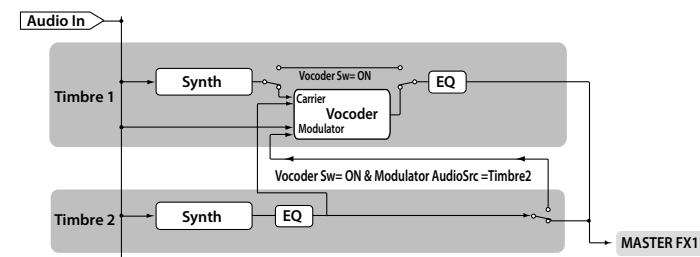
Vocoder

Vocoder section (Vocoder)

This consists of two sets of sixteen bandpass filters (the analysis filter and the synthesis filter) and an envelope follower. The audio signal input to the modulator is sent to sixteen filters (the analysis filter), and an envelope follower will detect the volume envelope (time-variant change) of each frequency band.

The carrier signal is sent to a separate set of sixteen filters (the synthesis filter), and the envelope detected from the analysis filter is used to control the volume of each band in the synthesis filter, thus varying the tonal character of the carrier signal and producing the impression that the carrier signal is talking. It is also possible to shift the frequencies of the carrier bandpass filter. This allows you to raise or lower the frequency response while preserving the character of the modulator, creating dramatic changes in the sound.

Carrier

The most suitable choice as a carrier is a waveform that contains large numbers of overtones, such as a sawtooth wave or pulse wave. The output of timbres 1 and 2 will be mixed and used as the carrier.

Modulator

A human voice is typically used as the modulator, but you can also obtain unique results by using rhythm sounds or another type of waveform. The RK-100S 2 allows you to select either an external input such as mic or rhythm (AUDIO IN) or timbre 2 as the modulator. If you've selected timbre 2, the output of the timbre 2 EQ will be input to the modulator.

PROGRAM

Common parameters

VOICE

Here you can adjust settings that apply to the entire program as well as the settings that specify how the timbres will sound. You can choose whether to use only a single timbre (SINGLE), or how to use two timbres (LAYER, SPLIT, MULTI).

Voice Mode　　　　　　　**[SINGLE, LAYER, SPLIT, MULTI]**
This parameter determines how many timbres a program will use, and how those timbres will be allocated.

SINGLE: Only one timbre will be used.
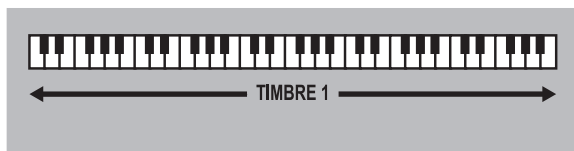
LAYER: Two timbres will be used. When you play the keyboard, both timbres will sound simultaneously. You can edit each timbre individually.
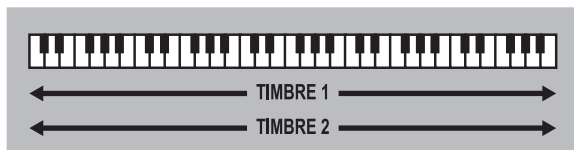
SPLIT: Two timbres will be used. You can specify a range of notes for each timbre, and play each timbre from a different area of the keyboard. Each timbre can be edited separately.
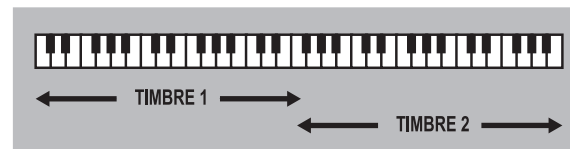
MULTI: Two timbres will be used. This mode is mainly used when playing the RK-100S 2 from an external MIDI device. Each timbre can be edited separately.

SPLIT KEY　　　　　　　　　　　**[C-1...G9]**
This parameter will appear if "Voice Mode" is set to "SPLIT." It specifies the range where each timbre will sound. Notes below the note number you specify will be sounded by timbre 1, and notes above (and including) that number will be sounded by timbre 2.

TIMBRE 2 MIDI CH.　　　　　　　**[GLOBAL, 01...16]**
When the "Voice Mode" is set to either Layer or Multi, this parameter can be used to set the MIDI channel for timbre 2. If you choose Global, the MIDI channel of timbre 2 will match the global MIDI channel.

Note: The Global MIDI channel can be set by the shift function of the RK-100S 2.

Note: The MIDI Channel of timbre 1 will match the global MIDI channel set by the RK-100S 2.

SCALE

SCALE   **[Equal Temp...User Scale]**
Selects the type of scale that the current program will use. You can choose one of ten different scale types.

Equal Temp: Equal temperament, which is the most commonly used scale. Every semitone is spaced an equal pitch distance from the next.

Pure Major: Pure major scale. Major chords in the key specified by "SCALE KEY" will be completely harmonious.

Pure Minor : Pure minor scale. Minor chords in the key specified by "SCALE KEY" will be completely harmonious.

Arabic: Arabic scale. It includes the quarter-tone scale characteristic of Arabian music.

Pythagorean: Pythagorean scale, a scale based on ancient Greek musical theory. It is particularly effective when playing melodies.

Werckmeister : Werckmeister scale, an equal tempered scale used in the late Baroque period.

Kirnberger: Kirnberger scale, created in the 18th century, and used mainly for tuning harpsichords.

Slendro: Slendro scale, an Indonesian gamelan scale that divides the octave into five notes. If the "SCALE KEY" is C, use the C, D, F, G, and A keys.

Pelog: Pelog scale, an Indonesian gamelan scale that divides the octave into seven notes. If the "SCALE KEY" is C, use the C, D, E, F, G, A, and B keys.

User Scale: The scale you created in the Global mode USER SCALE. (page 34 "USER SCALE").

SCALE KEY   **[C...B]**
Specifies the tonic ("key" or "root note") for the scale you selected in "SCALE."

Ribbon parameters

The RK-100S 2 is equipped with two controllers: a long ribbon controller on the front of the keyboard for performing various operations and a short ribbon controller located on the neck for controlling the pitch and modulation with your left hand. With these parameters, various settings can be specified for the long and short ribbon controllers.

LONG RIBBON

In this section, you can specify settings for playing scales and controlling the pitch and filter using the long ribbon controller.

LONG RIBBON SCALE SW   **[Off, On]**
This switches the Scale function on/off for the long ribbon controller. When "Off" is selected, no sound will be produced when the long ribbon controller is used.

LONG RIBBON TIMBRE SELECT   [Timbre 1, Timbre 2, Timbre 1+2]
This specifies the timbre produced by the long ribbon controller.

LONG RIBBON SCALE TYPE   **["Scale Off"...Octave]**
This selects the type of scale produced with the long ribbon controller. There are 35 scale types.

LONG RIBBON SCALE KEY   **[C -...C +]**
This specifies the key of the scale selected with the "LONG RIBBON SCALE TYPE" parameter.

LONG RIBBON SCALE RANGE   [8 Octave (Reverse)...8 Octave]
This specifies the range of the scale played by the long ribbon controller.

LONG RIBBON (PITCH) RANGE [8 Octave (Reverse)...8 Octave]
This specifies the pitch range when the pitch is controlled by the long ribbon controller.

LONG RIBBON (FILTER) INTENSITY   **[-63...+63]**
This specifies the depth of the effect when the filter is controlled by the long ribbon controller.

9

SHORT RIBBON

In this section, you can specify settings for controlling the pitch and modulation using the short ribbon controller.

SHORT RIBBON SETTING   [Pitch, Modulation]

This specifies which parameter will be controlled by the short ribbon controller when the program is switched.

SHORT RIBBON (MODULATION) ASSIGN   [CC#00...CC#127]

This specifies the CC# that is transmitted when the modulation is controlled by the short ribbon controller.

Note: The volume can be controlled without modulation only when CC#07 is selected.

SHORT RIBBON (MODULATION) LOCK   [Lock Off, Lock On]

This parameter will switch the lock on/off the modulation is controlled by the short ribbon controller. When "Lock On" is selected, the modulation effect will remain applied, even after you remove your hand from the short ribbon controller.

Synth parameters

OSCILLATOR1

Oscillators generate the basic waveform. Each timbre has two oscillators. In this section you can adjust settings for oscillator 1.

WAVE   [Saw, Pulse, Triangle, Sine, Formant, Noise, PCM/DWGS, Audio In]

This parameter selects the waveform for oscillator 1. The Saw, Pulse (square), Triangle and Sine are traditional waves associated with analog synthesizers

Saw: A sawtooth wave

Pulse: A pulse wave

Triangle: A triangle wave

Sine: A sine wave

Formant: A formant wave with tonal characteristics similar to that of a human voice

Noise: Generates noise

PCM/DWGS: PCM/DWGS waveforms from acoustic instruments and digital synthesizers

Audio In: The audio signal received at the INPUT jack will be used instead of the oscillator

Note: Pitch-related parameters will not affect the signal received from the INPUT jack.

OSC MOD   [WAVEFORM, CROSS, UNISON, VPM]

Selects the type of modulation being applied to oscillator 1.

Note: The maximum number of playable voices may change depending on the combination of "Wave" and "OSC MOD" settings.

Waveform (Waveform Modulation): Use "Control1" to modify the shape of the waveform.

CROSS (CROSS MODULATION): Cross Modulation uses the output waveform of oscillator 2 (the modulator) to modulate the frequency of oscillator 1 (the carrier) at high speed to produce a modulated sound. The waveform selected by "WAVE" will be the carrier.
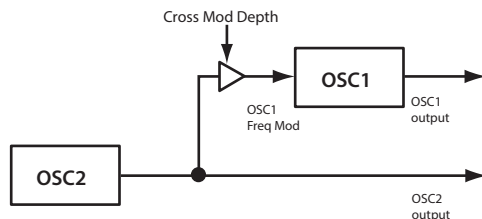
UNISON: Unison simulates skewing the pitch of five stacked oscillators from within a single oscillator, to create a richer sound.
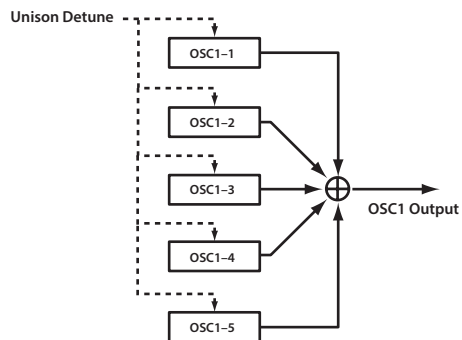
VPM (VARIABLE PHASE MODULATION): VPM produces metallic-sounding overtones, using a sine wave at a harmonic (integer) multiple of oscillator 1's fundamental to modulate the phase of oscillator 1.

Note: If "WAVE" is FORMANT, NOISE, PCM/DWGS, or AUDIO IN, you won't be able to select CROSS, UNISON, or VPM.

Oscillator 1 Control 1   **[000...127/–63...+63/---]**
Oscillator 1 Control 2
     [000...127/–63...+63/LPF63...CNT...HPF63/001...032/---]

The function controlled by this knob is determined by the "WAVE" and "OSC MOD" settings.

Note: Some settings may produce noise.

Note: For OSC1.C1 and OSC1.C2, the parameter and settings will depend on the selected "WAVE" and "OSC MOD." You should also refer to the following table when assigning Oscillator 1 Control 1 or Oscillator 1 Control 2 to "virtual patch," or GLOBAL "CC# MAP."

WAVE	OSC MOD	C1 (OSC1 Control 1)	C2 (OSC1 Control 2)
Saw	WAVEFORM	C1. WAVEFORM	C2. LFO 1 MOD
	CROSS	C1. MOD DEPTH	C2. LFO 1 MOD
	UNISON	C1. DETUNE	C2. PHASE
	VPM	C1. MOD DEPTH	C2. HARMONICS
Pulse	WAVEFORM	C1. PULSE WIDTH	C2. LFO 1 MOD
	CROSS	C1. MOD DEPTH	C2. LFO 1 MOD
	UNISON	C1. DETUNE	C2. PHASE
	VPM	C1. MOD DEPTH	C2. HARMONICS
Triangle	WAVEFORM	C1. WAVEFORM	C2. LFO 1 MOD
	CROSS	C1. MOD DEPTH	C2. LFO 1 MOD
	UNISON	C1. DETUNE	C2. PHASE
	VPM	C1. MOD DEPTH	C2. HARMONICS
Sine	WAVEFORM	C1. WAVE SHAPE	C2. LFO 1 MOD
	CROSS	C1. MOD DEPTH	C2. LFO 1 MOD
	UNISON	C1. DETUNE	C2. PHASE
	VPM	C1. MOD DEPTH	C2. HARMONICS
FORMANT	WAVEFORM	C1. F.WIDTH	C2. F.SHIFT
NOISE	WAVEFORM	C1. RESONANCE	C2. LPF/HPF
PCM/DWGS	WAVEFORM		C2. WAVE SELECT
AUDIO IN	WAVEFORM	C1. GAIN	

1. When Wave: Saw, Pulse, Triangle, Sine and OSC1 Mod: Waveform

CONTROL1: WAVEFORM   [000...127]
This modifies the waveform.

WAVE: Saw
The sawtooth wave is appropriate for creating a wide range of sounds typical of analog synthesizers, including basses and pads. Adjusting the value will modify the shape of the waveform, changing the harmonic content. A setting of 000 produces the original sawtooth wave. Higher setting stress different harmonics; a setting of 127 produces a sawtooth wave one octave higher.

000   063   127
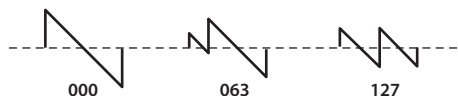
WAVE: Pulse
This is a pulse wave suitable for electronic sounds and wind instruments. By adjusting the pulse width you can produce sounds reminiscent of a clavi or sax. A setting of 000 produces a simple square wave. Higher settings narrow the pulse width, and at a setting of 127, the pulse width will disappear completely (no sound).

000   063   127

WAVE: Triangle
Triangle waves have fewer overtones than sawtooth or square waves, and they're suitable for mild tone such as bass or pads. Adjusting the value will modify the shape of the waveform, changing the harmonic content. A setting of 000 produces a simple triangle wave. Higher setting stress different harmonics; a setting of 127 produces a triangle wave that is one octave and a fifth higher (i.e., the third harmonic).

000   063   127
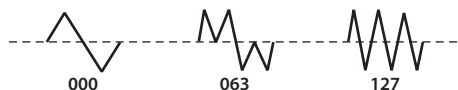
WAVE: Sine
The sine wave is a mild tone that contains only the fundamental frequency with no overtones. A setting of 000 produces a simple sine wave. Increasing this value will modify the waveform, changing the overtone structure as shown below.

000   063   127

CONTROL2: LFO1 MOD   [000...127]
LFO1 will vary the "WAVE" effect (Waveform Modulation.) "Oscillator 1 CONTROL 2" adjusts the depth of this change.

If the LFO1 "WAVE" (see page 24 "LFO1, LFO2") is set to TRIANGLE, this will produce a detune-like effect for a sawtooth wave ("WAVE": SAW). For a pulse wave ("WAVE": PULSE), it will produce a PWM (Pulse Width Modulation) effect, making the sound thicker.

2. When Wave: Formant and OSC1 Mod: Waveform

CONTROL1: FORMANT WIDTH   [000...127]
The formant waveform has a tonal character reminiscent of a human voice. This knob will adjust the frequency components that are characteristic of vocal formants. This is similar to the way vowel sounds change depending on the shape of your mouth.

CONTROL2: FORMANT SHIFT   [–63...+63]
This moves the entire formant frequency spectrum upward or downward. With a setting of 0, the formant locations are unchanged.

3. When Wave: Noise, and OSC1 Mod: Waveform

CONTROL1: RESONANCE   [000...127]
This parameter adjusts the amount of resonance of the filter provided within the noise oscillator. Higher values will emphasize the frequency points for the pitched component within the noise.

CONTROL2: LPF/HPF   [LPF63...CNT...HPF63]
This parameter adjusts the mix balance between the low-pass and high-pass filters; this will vary the brightness of the sound.

4. When Wave: PCM/DWGS and OSC1 Mod: Waveform

CONTROL2: WAVE SELECT   [M1 Piano...SynSine7]
Selects the PCM/DWGS waveform. CONTROL1 and CONTROL2 have no effect.

PCM/DWGS Name	PCM/DWGS Name	PCM/DWGS Name	PCM/DWGS Name
M1 Piano	DW Bell4	OrchHit1	SynWave4
ToyPiano	FM Bell	OrchHit2	SynWave5
Rhds E.P	TowerBell	OrchHit3	SynWave6
Wurly E.P	Steelpan	OrchHit4	SynWave7
DW E.P.1	Tubular	Pizz.Hit	SynWave8
DW E.P.2	Glocken	Lofi Hit	SynWave9
FM E.P	MusicBox	VinylHit	5th Saw
Clavi AC	Karimba	Band Hit	5th Squ
Clavi AD	Mallet	Trap Hit	5th Sine
Cembalo	SlitDrum	FunkyHit	SynWire1
M1 Org.1	GamelanX	Tek Hit1	SynWire2
M1 Org.2	Xylo Pad	Tek Hit2	SynWire3
DW Org.1	Tape Flt	Flt.Wave	SynWire4
DW Org.2	PanFlute	ClarWave	Digi 1
CX3 Full	Feadog	Str.Wave	Digi 2
CX3 888	Bagpipe	SynVox 1	Digi 3
CX3 Pop	Sax Ens	SynVox 2	Digi 4
Perc Org	BrassEns	SynVox 3	Digi 5
VoxOrg.1	Oct.Brs.	SynVox 4	Digi 6
VoxOrg.2	Choir 1	GtrWave1	Digi 7
VoxOrg.3	Choir 2	GtrWave2	Digi 8
FISA Org	Str.Ens	GtrWave3	SynSine1
P.Organ1	PickBass	Lofi Tri	SynSine2
P.Organ2	FingBass	LofiPls1	SynSine3
Acco Key	KickBass	LofiPls2	SynSine4
Musette	KickSine	Lofi Squ	SynSine5
KeyFlute	E.P.Pad	SynStr.1	SynSine6
DigiBell	ZilL Pad	SynStr.2	SynSine7
DW Bell1	Air Vox	SynWave1	
DW Bell2	GlassVox	SynWave2	
DW Bell3	Pala Pad	SynWave3	

Note: For the virtual patch destination, WAVE SELECT can be specified with OSC 1 Control 2.

5. When Wave: Audio In and OSC1 Mod" Waveform

CONTROL1: GAIN   [–63...+63]
This parameter adjusts the volume of the audio input.

CONTROL2:   [HAS NO EFFECT]

6. When Wave: Saw, Pulse, Triangle, Sine and OSC1 Mod: Cross

CONTROL1: Mod Depth (Cross Modulation Depth)   [000...127]
This parameter adjusts the cross modulation depth.

CONTROL2: LFO1 Mod (LFO1 Modulation Intensity)   [000...127]
This parameter adjusts the depth of the additional modulation applied by LFO1 to the cross modulation effect.
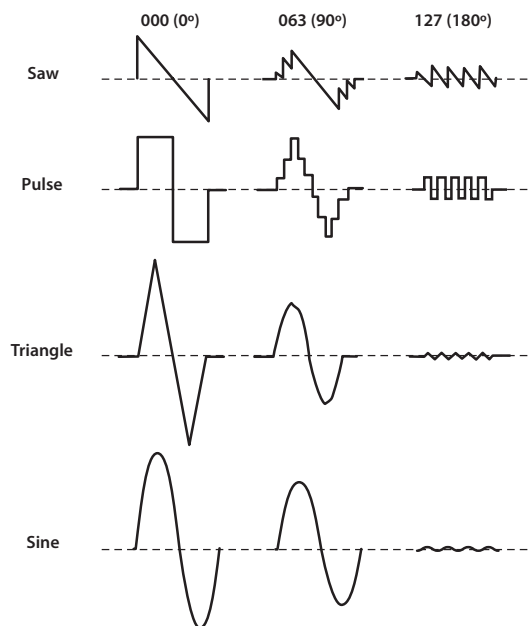
7. When Wave: Saw, Pulse, Triangle, Sine and OSC1 Mod: Unison

CONTROL1: Detune (Unison Detune) [000...127]
This parameter adjusts the difference in pitch between the five unison oscillators. Higher values will broaden the pitch difference between the oscillators, producing a richer sound.

CONTROL2: Phase (Oscillator Phase) [000...127]
Specifies the phase of each oscillator at note-on. This will affect the tone of the attack. A setting of 127 will change the pitch and volume.

8. When Wave: aw, Pulse, Triangle, Sine and OSC1 Mod: VPM

CONTROL1: Mod Depth (VPM Depth) [000...127]
Adjusts the depth of VPM

CONTROL2: Harmonics (Mod Harmonics) [001...032]
Specifies the frequency of the VPM modulator as a harmonic multiple of oscillator 1

OSCILLATOR2

Here you can adjust the settings for oscillator 2. By using this in conjunction with oscillator 1 you can obtain a variety of sounds. For example by adjusting OSC2 SEMITONE and OSC2 TUNE, you can make one oscillator act as an overtone of the other oscillator. Alternatively, you can create a musical interval by setting each oscillator to a different pitch, or create a detuned effect by setting the two oscillators to slightly different pitches. You can also apply ring modulation or oscillator sync to generate complex overtones (this is done using the OSC2 "OSC MOD" parameter).

WAVE [Saw, Pulse, Triangle, Sine]
Selects a waveform for oscillator 2.

Saw: A sawtooth wave.

PULSE: A square wave.

**Triangle:** A triangle wave.

Sine: A sine wave.

If you do not hear the sound of oscillator 2, go to the MIXER and raise "OSC2". If you want to hear only the sound of oscillator 2, lower the "OSC 1" on the MIXER.

OSC MOD   [Off, RING, SYNC, RING+SYNC]

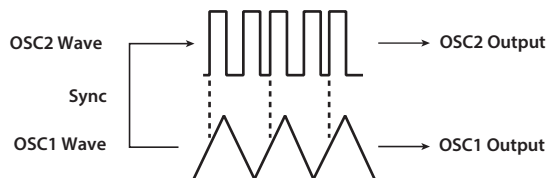This selects the type of oscillator modulation produced by oscillator 2 in conjunction with oscillator 1.

Off: Oscillator modulation will not be used; the sound of oscillator 2 will be output. By adjusting the OSC2 "SEMITONE" and "TUNE" settings you'll be able to create overtone-like components, harmonies, or detune effects.

RING: Oscillator 2 will be used as a ring modulator. By adjusting "SEMITONE" or "TUNE" you can create metallic sounds with little sense of pitch. This is useful for sound effects.
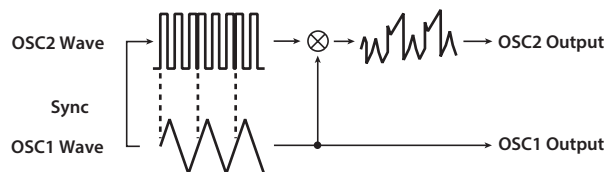
Ring modulation generates the sum and difference of the oscillator 1 and 2 waveforms. For example, select a pulse wave (PULSE for oscillator 1) as the oscillator, set "TRANSPOS" to 0, and "SEMITONE" to 24. Then you can adjust "TUNE" to produce a clear bell-like sound. Using a virtual patch to modulate "OSC2 Tune" from an LFO or EG can also produce distinctive results.

SYNC: An oscillator sync effect will be produced. This is convenient when creating synth-lead sounds.

Oscillator sync is a type of modulation where the phase of oscillator 2 is forcibly synchronized to the phase of oscillator 1. For example, select a sawtooth waveform for the oscillator, and raise the MIXER "OSC2" setting.
Then use "SEMITONE" or "TUNE" to change the pitch, and listen to the result. This will be easier to notice if you raise the pitch of oscillator 2 higher than oscillator 1. You can also produce interesting results by using a virtual patch to modulate "OSC2 Tune" from an LFO or EG.

RING+SYNC: This will apply both RING and SYNC modulation simultaneously.
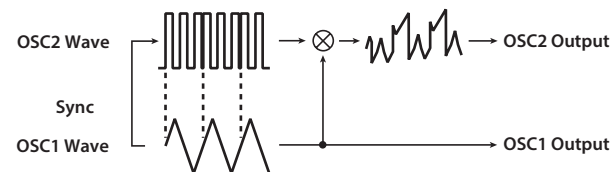
SEMITONE   [−24...+24]
Specifies the detuning (pitch difference) relative to oscillator 1, in semitone steps over a range of plus or minus two octaves.

Note: If you want to use the sound of oscillator 2 as a component in the oscillator 1 overtone structure, try setting it one octave or a fifth higher than oscillator 1. If you want to use oscillator 2 in harmony, you can try intervals such as a third, fourth, or fifth.

TUNE   [−63...+63]
Specifies the amount of detune for OSC2 relative to OSC1. A setting of ±63 produces a pitch difference of ±2 octaves, and ±48 produces a pitch difference of ±1 octave. Values near 0 will make fine adjustments in the pitch.

Note: If the oscillator 2 "OSC MOD" is set to SYNC, adjusting "SEMITONE" or "TUNE" will affect the pitch of the overtones. It will not change the pitch of the fundamental.

VOICE

Here you can adjust settings for the Unison function which "stacks" voices at the same pitch to create a richer sound.

VOICE ASSIGN   [Mono1, Mono2, Poly]

This parameter specifies how notes will be articulated from the keyboard (or MIDI source).

Mono1: The timbre will play monophonically. If you continue holding down the key that you first pressed, the EG will not retrigger when you play the second and subsequent keys. Use this setting when you want to play legato.

Mono2: The timbre will play monophonically. The EG will be retriggered each time you press a key.

Poly: The program will play polyphonically, allowing you to play chords. The maximum polyphony is eight voices.
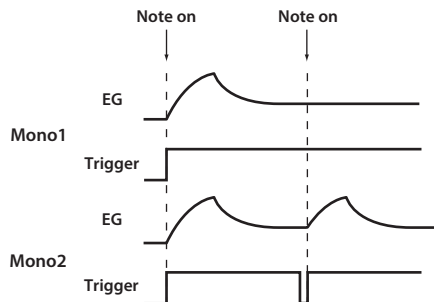
UNISON SW   [Off, 2 Voice, 3 Voice, 4 Voice]

When the Unison Switch is turned on, you can specify the number of voices that will be stacked.

Off: Unison is off.

2 Voice: Unison is on; two voices are stacked.

3 Voice: Unison is on; three voices are stacked.

4 Voice: Unison is on; four voices are stacked.

Note: Depending on other voice-related settings, the number of voices you specify here may not actually be sounded.

Note: Turning on the Unison function will limit the available polyphony.

UNISON DETUNE   [00...99]

This parameter is available when Unison is on (i.e., if "UNISON SW" is 2–4 Voice). It specifies (in units of cents) the amount of detuning that will occur between the stacked voices. Regardless of how many voices are stacked, this parameter will always specify the total range of detuning.
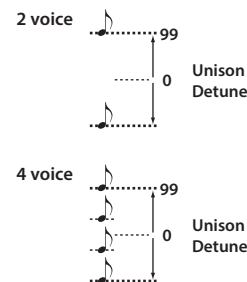
UNISON SPREAD   [000...127]

This parameter is available when Unison is on (i.e., if "UNISON SW" is 2–4 Voice). It controls the width of the stereo spread (panning) of the stacked voices. The number of voices specified by "UNISON SW" will be panned apart at equal spacing according to this setting.

ANALOG TUNING   [000...127]

By adding a slight randomness to the pitch of each note as it is played, this parameter can simulate the pitch instability and oscillator "drift" that was characteristic of vintage analog synthesizers. Higher settings will produce greater variations in pitch.

PITCH

Here you can adjust settings that affect the pitch of the oscillators. These settings are common to oscillators 1 and 2. Set the transpose and tuning parameters to obtain the desired pitch.

Here you can also specify the amount of pitch change that is produced by the short ribbon controller.

TRANSPOSE   [–48...+48]

Adjusts the pitch of the oscillators in semitone steps. The range is four octaves upward or downward.

Note: This setting is related to the pitch of the oscillators themselves; this is not the same as the OCTAVE UP and DOWN buttons on the front panel that change the range of notes available on the keyboard.

BEND RANGE   [–12...+12]

This specifies the amount (in semitone steps) that the pitch changes when the short ribbon controller is used while the SHORT RIBBON button is lit up in red. This value is the amount that the pitch changes when you slide your finger from the center of the ribbon to the right end.

DETUNE   [–50...+50]

Adjusts the pitch of the oscillator in one-cent steps.

VIBRATO INTENSITY   [–2400...+2400]

This specifies the intensity of the vibrato when the short ribbon controller is used while the SHORT RIBBON button is lit up in green.

Note: You can produce a vibrato effect by using LFO2 to modulate the oscillator pitch, causing it to move up and down.

PORTAMENTO TIME   [000...127]

Portamento is a smooth change in pitch from one note to another. This parameter specifies the speed of the portamento effect.

With a setting of 000, there will be no portamento effect. Increasing the value will lengthen the amount of time it takes for the portamento effect to transition from one note to the next.

MIXER

These parameters adjust the volume balance of the oscillator 1 and 2, and the noise generator. These settings will be the input level to the filter section.

OSC1   [000...127]

Sets the output level of oscillator 1.

OSC2   [000...127]

Sets the output level of oscillator 2.

NOISE   [000...127]

Sets the output level of the noise generator. This noise generator creates white noise. This is independent of the white noise that can be selected as a waveform for oscillator 1("WAVE": NOISE.) This does not have filter or resonance as the oscillator 1 noise generator does, but you can use the FILTER section to create the same results as the noise waveform of oscillator 1.

Noise is used to create percussion instrument sounds, or sound effects such as surf.

PUNCH LEVEL   [000...127]

Creates a more "snappy" attack by adjusting the amount of pulse waveform that is added to the oscillator output only during the attack. Increasing this value will emphasize the attack.

FILTER

The filter section changes the tonal character of the oscillators by passing only the desired portion of the sound - either above (Low Pass), below (High-Pass), or centered on (Band Pass) the cutoff frequency. The RK-100S 2 has two filters (filter 1 and filter 2), and you can change their routing to create more complex filter sounds.

FILTER 1

### CUTOFF   [000...127]

Sets the cutoff frequency. Increasing this value will raise the cutoff frequency. "CUTOFF" can be varied by time-variant changes produced by FILTER EG, by keyboard playing dynamics (velocity), and by note location (keyboard tracking).

⚠ If the "CUTOFF" value is set too low, the volume may be extremely low, or you may hear no sound at all.

RESONANCE   [000...127]

Sets the resonance of the filter. This will emphasize the overtones near the cutoff frequency that are specified by "CUTOFF," adding a distinctive character to the sound. Increasing this value will increase the effect. Since movement of the "CUTOFF" knob will affect the overtones that are boosted by resonance, it is best to adjust "CUTOFF" and "RESONANCE" in conjunction with each other.
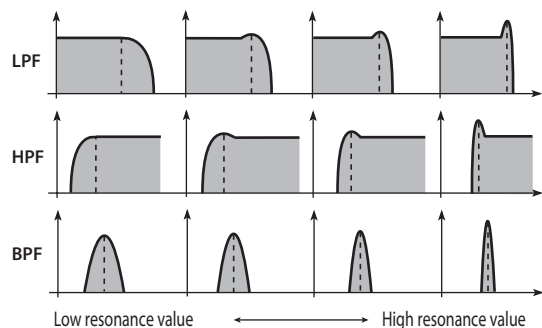
⚠ Depending on the cutoff frequency or the input audio, increasing this value may cause distortion.

BALANCE   [LPF24...LPF12...HPF...BPF...THRU]

Selects the filter type. Intermediate settings will produce a response that is between the two filter types.

LPF12 (–12dB/oct), LPF24 (–24dB/oct): Low Pass Filter. LPF (Low Pass Filter) is the most common type of filter; it passes the frequencies below the cutoff frequency and cuts the region above. Raising the cutoff frequency ("CUTOFF" value) will produce a brighter tone.
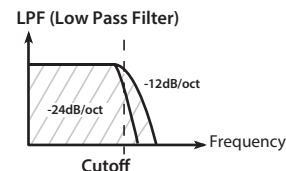
HPF (–12dB/oct): High Pass Filter. HPF (High Pass Filter) passes the frequencies above the cutoff frequency and cuts the region below. Use this when you want to make the tone thinner. However, raising the cutoff frequency too far will drastically reduce the volume.
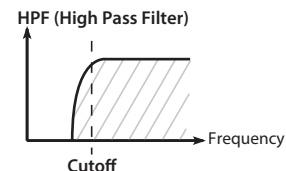
BPF (–6dB/oct): Band Pass Filter. BPF (Band Pass Filter) passes the frequencies in the region of the cutoff frequency, and cuts all other frequency regions. Use this when you want to emphasize only a specific portion of the sound.
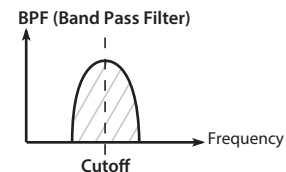
THRU: The sound will output directly, without passing through the filter.

EG INT   [–63...+63]

This specifies how time-variant modulation from the FILTER EG will be applied to the cutoff frequency.
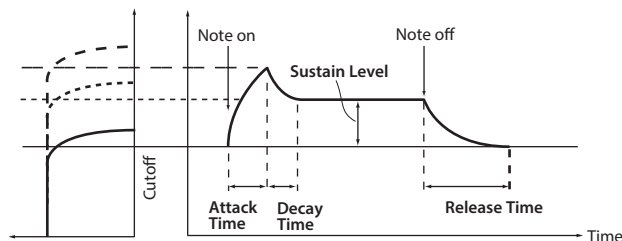
The cutoff frequency will change over time according to the FILTER EG settings, modifying the tone. For example, you can use this to create a sound that gradually begins to brighten when you press the key, and then gradually becomes darker. "EG INT" parameter specifies the depth (sensitivity) to which the FILTER EG will affect the cutoff frequency.

With a setting of 0, the FILTER EG will not affect the cutoff frequency.

Increasingly positive (+) settings will allow the FILTER EG to have a correspondingly greater effect on the cutoff frequency.

Increasingly negative (–) settings will allow a correspondingly greater effect in the opposite direction.
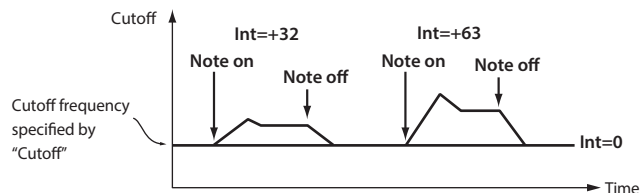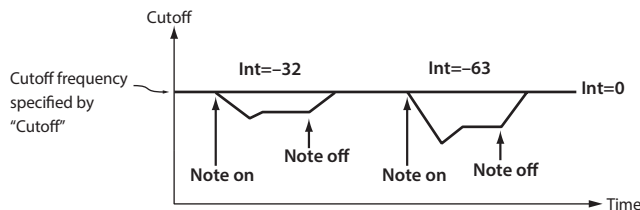

KEY TRACK   [–2.00...+2.00]

This specifies how keyboard tracking (the keyboard location that you play) will affect the cutoff frequency. For example if the sound played by the C4 key has the desired tone but higher notes no longer have resonance or are too mellow-sounding, you can adjust keyboard tracking to compensate so that the cutoff frequency will rise for higher notes.

With positive (+) settings, the cutoff frequency will rise as you play upward from the C4 note, and fall as you play downward.

With negative (–) settings, the cutoff frequency will fall as you play upward from the C4 note, and rise as you play downward.

Note: With a setting of +1.0, the change in cutoff frequency will be proportionate to the change in pitch. With a setting of 0, keyboard tracking will not affect the cutoff frequency.

Note: Keyboard Track functions according to the pitch that is controlled by pitch bend, and transpose. It is not affected by pitch changes produced by vibrato or Virtual Patch.

VELO SENS   [–63...+63]

This parameter specifies how velocity (keyboard playing dynamics) will affect the cutoff frequency.

Positive (+) values will cause the cutoff frequency to rise as you play more strongly.

Negative (–) values will cause the cutoff frequency to fall as you play more strongly.

FILTER2

Here you can adjust the settings of the filter 2 parameters. The ROUTING "Filter Routing" parameter specifies how filter 2 and filter 1 will be connected.

✎ The filter 2 parameters are not shown if "Filter Routing" is Single.

CUTOFF   [000...127]

This is the same as for FILTER 1. See See page 18 "CUTOFF".

RESONANCE   [000...127]

This is the same as for FILTER 1. See See page 18 "RESONANCE".

TYPE **[LPF, HPF, BPF]**

Selects the filter type. See page 18 "BALANCE"

LPF, HPF, BPF: These are the same filter types as for filter 1

EG INT **[−63...+63]**

This is the same as for FILTER 1. See page 19 "EG INT"

KEY TRACK **[−2.00...+2.00]**

This is the same as for FILTER 1. See page 19 "KEY TRACK"

VELO SENS **[−63...+63]**

This is the same as for FILTER 1. See page 19 "VELO SENS"

ROUTING

Filter Routing **[Single, Serial, Parallel, Individual]**

Specifies the routing (connection) between filter 1 and filter 2

Single: Only filter 1 is used.

Seria: Filter 1 and filter 2 are connected in series.
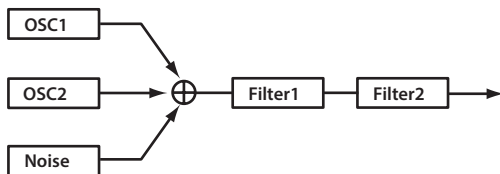
Parallel: Filter 1 and filter 2 are connected in parallel.
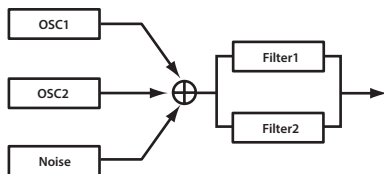
Individual: Filter 1 is applied to oscillator 1, and filter 2 is applied to oscillator 2 and noise.
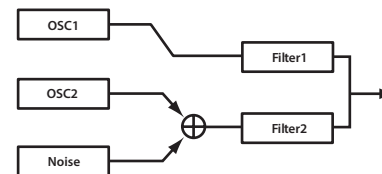
FILTER EG

Here is where you can adjust the settings for the filter EG that causes the sound to vary over time. Adjust the EG settings in this section, and then use filter 1 "EG INT" (see page 19) and filter 2 "EG INT" to specify the amount of the effect that the EG will have. Use the ADSR (Attack, Decay, Sustain, Release) settings to adjust the desired curve for the tone.

Note: FILTER EG can be used as a virtual patch source, allowing you to modulate a parameter other than volume (see page 25).

EG1

[1]: **Attack Time** [3]: **Sustain Level**
[2]: **Decay Time** [4]: **Release Time**
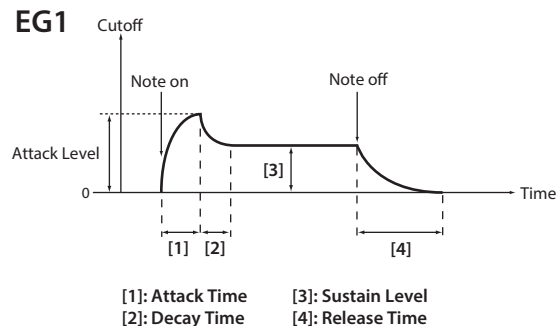
EG (Envelope Generator)

To a significant extent, each sound has its own distinctive volume curve. For example when you play a note on a piano, the note begins at the maximum volume, and gradually diminishes. When you release your finger from the key, the sound will disappear quickly with a brief decay. Volume curves such as this are an important aspect of how we identify the sound of a specific instrument. This type of change also occurs in the tone and pitch, as well as in the volume. On a synthesizer, this type of change is produced by an EG. The RK-100S 2 has dedicated EGs for the filter and for

the amp. However since these EGs can be used as Virtual Patch sources, you are also free to use them to vary the pitch or numerous other aspects of the sound.
Some example amp EG settings are shown below.
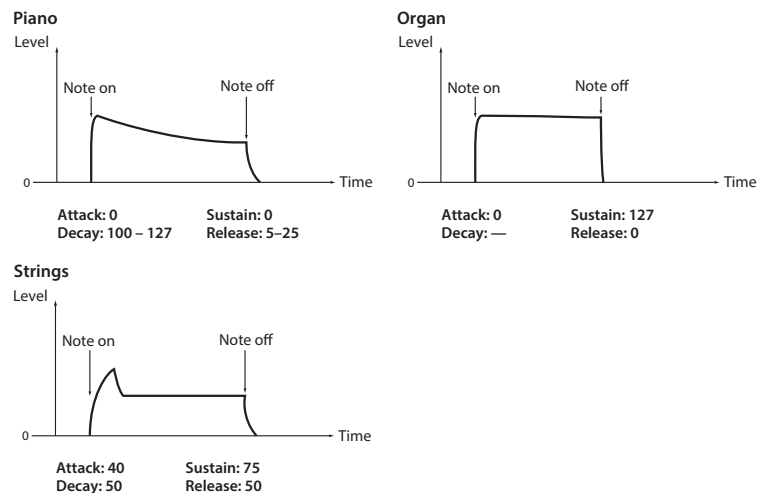
Piano

Level

Note on   Note off

0 ──────────────────── Time

Attack: 0   **Sustain: 0**
Decay: 100 – 127   **Release: 5–25**

Organ

Level

Note on   Note off

0 ──────────────────── Time

Attack: 0   **Sustain: 127**
Decay: —   **Release: 0**

Strings

Level

Note on   Note off

0 ──────────────────── Time

Attack: 40   **Sustain: 75**
Decay: 50   **Release: 50**

AT (Attack Time) [000...127]
Specifies the time from note-on (when the key is pressed) until the attack level (maximum value of the envelope) is reached.

DT (Decay Time) [000...127]
Specifies the time from when the attack level is reached until the sustain level (SUSTAIN) is reached.

SL (Sustain Level) [000...127]
Specifies the cutoff frequency that will be maintained after the decay time has elapsed, until you release the key.

RT (Release Time) [000...127]
Specifies the time from note-off (when the key is released) until the level reaches 0.

LV.VELO (Level Velocity Intensity) [–63...+63]
This specifies how your keyboard velocity (playing strength) will affect the amplitude of the FILTER EG. Higher settings of this parameter will allow changes in your keyboard velocity to produce greater differences in EG amplitude.

AMP (Amplifier)

These parameters control the volume. The sound that is created by passing through the oscillator and filter is amplified by the amp.
In addition, drive or wave shape parameters can be specified. Distortion, etc., can be added to the sound, creating a unique sound with impact.

LEVEL [000...127]
Adjusts the volume of the timbre.

PAN [L63...CNT...R63]
Adjusts the location of the sound in the stereo field. L63 is far left, CNT is center, and R63 is far right.

KEY TRACK [–63...+63]
Specifies how keyboard tracking will affect the volume.
With positive (+) settings, the volume will increase as you play above the C4 note on the keyboard, and will decrease as you play below C4.
With negative (–) settings, the volume will decrease as you play above the C4 note on the keyboard, and will increase as you play below C4.

Note: Keyboard Tracking operates according to the pitch that is controlled by pitch bend, and transpose. It is not affected by pitch changes produced by vibrato or Virtual Patch.

WAVE SHAPE DEPTH [000...127]
Specifies the depth where the drive or wave shape functions will be applied.

WAVE SHAPE TYPE [Off, Drive...Level Boost]
This switches wave shaping on/off, and selects the type. Wave shaping modifies the input waveform by applying a transformation of the type you specify here, and produces an output waveform that includes the components of both the input waveform and the transformation shape. "WS DEPTH" specifies the depth of this effect.

⚠ Some settings may produce noise

Off: Wave Shape/Drive is off.

Drive: Drive will be applied. The amount of distortion is adjusted by the output level of each oscillator in the MIXER section (see page 17).

DEPTH: 000   DEPTH: 064   DEPTH: 127
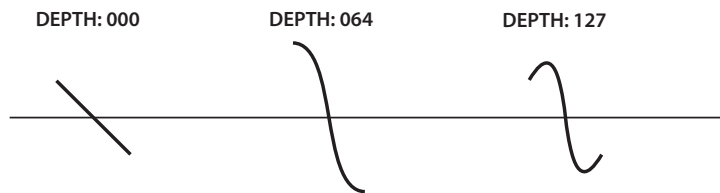
Note: Only the Drive setting differs from the wave shape effect.

Decimator: Lowers the sampling frequency.

DEPTH: 000   DEPTH: 064   DEPTH: 127
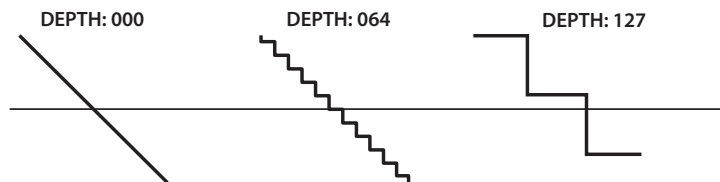
Hard Clip: Flattens any portion of the waveform above the limit.

DEPTH: 000   DEPTH: 064   DEPTH: 127
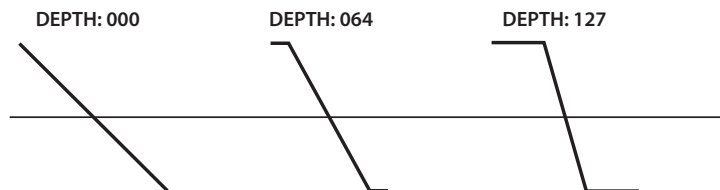
Oct Saw: Cuts the portion of the waveform above the threshold level and inverts it to keep it within limits.

DEPTH: 000   DEPTH: 064   DEPTH: 127
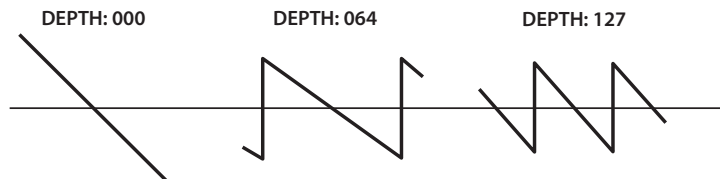
Multi Tri: Sending a sawtooth wave through this will produce a triangle wave.

DEPTH: 000   DEPTH: 064   DEPTH: 127
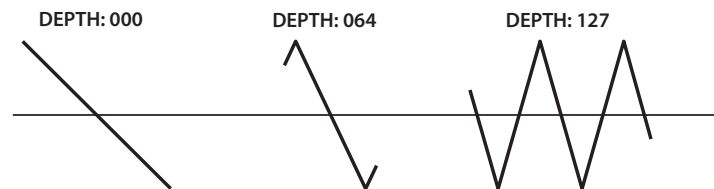
Multi Sin: Sending a sawtooth wave through this will produce a sine wave.

DEPTH: 000   DEPTH: 064   DEPTH: 127
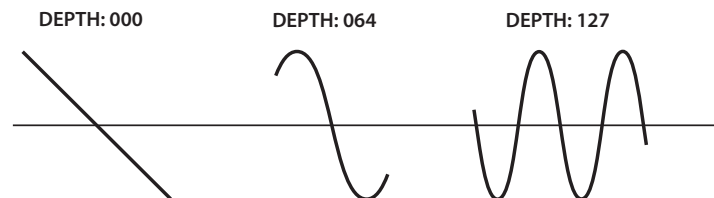
SubOSC Saw, SubOSC Squ, SubOSC Tri, SubOSC Sin:
The selected waveform will sound one octave below oscillator 1. "WAVE SHAPE DEPTH" adjusts the mix amount relative to oscillator 1.

Level Boost: Boosts the output level. "WS DEPTH" adjusts the amount of boost.

DEPTH: 000   DEPTH: 064   DEPTH: 127
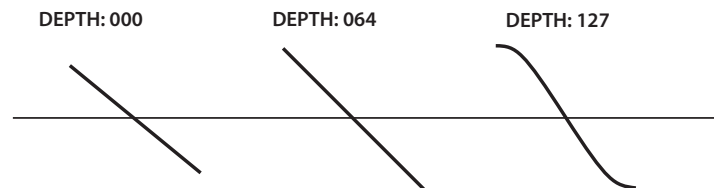
Note: This may produce louder output volumes than other wave shape types.

WAVE SHAPE POSITION   [PRE FILTER1, PRE AMP]

Specifies the position where the drive or wave shape functions will be applied.

PRE FILTER1: Drive or wave shape will be applied before filter 1.

| OSC | → | DRIVE/WS | → | FILTER1 | → | AMP | → |

PRE AMP: Drive or wave shape will be applied after the filter and before the amp.

| OSC | → | FILTER1 | → | DRIVE/WS | → | AMP | → |

AMP EG

Here you can adjust the settings for the AMP EG, which applies time-variant change to the volume. Using the AMP EG settings, you can make the volume change as time passes. Create the desired volume curve by adjusting the ADSR parameters; Attack Time, Decay Time, Sustain Level, Release Time.

Note: You can use AMP EG as a Virtual Patch source to modulate parameters other than volume. (see page 25)

FILTER EG and AMP EG

As the FILTER EG (Filter EG) changes the cutoff frequency, the tone will change. However, the overall character of the sound will also depend on the volume changes produced by the AMP EG (Amplifier EG). For example, setting a long decay for the Filter EG will produce a different sound depending on how the decay is set in the Amp EG. It's a good idea to be aware of both the FILTER EG (tone) settings and the AMP EG (volume) settings as you're editing.

AT (Attack Time)   [000...127]

Specifies the time from note-on (when the key is pressed) until the attack level (maximum value of the envelope) is reached.

DT (Decay Time)   [000...127]

Specifies the time from when the attack level is reached until the sustain level (SUSTAIN) is reached.

SL (Sustain Level)   [000...127]

Specifies the volume that will be maintained after the decay time has elapsed, as long as you continue holding the key.

RT (Release Time)   [000...127]

Specifies the time from note-off (when the key is released) until the level reaches 0.

LV.VELO (Level Velocity Intensity)   [–63...+63]

This specifies how your keyboard velocity (playing strength) will affect the amplitude of the AMP EG. Higher settings of this parameter will allow changes in your keyboard velocity to produce greater differences in EG amplitude.

ASSIGNABLE EG

Here you can adjust the settings of the ASSIGNABLE EG. Create the desired curve by adjusting the ADSR parameters; Attack Time, Decay Time, Sustain Level, Release Time.

Note: You can use ASSIGNABLE EG as a Virtual Patch source to modulate parameters other than filter cutoff (FILTER EG) or volume (AMP EG). (see page 25).

AT (Attack Time)   [000...127]

Specifies the time from note-on (when the key is pressed) until the attack level (maximum value of the envelope) is reached.

DT (Decay Time)   [000...127]

Specifies the time from when the attack level is reached until the sustain level (SUSTAIN) is reached.

SL (Sustain Level)   [000...127]

Specifies the volume that will be maintained after the decay time has elapsed, as long as you continue holding the key.

RT (Release Time)   [000...127]

Specifies the time from note-off (when the key is released) until the level reaches 0.

LV.VELO (Level Velocity Intensity)   [–63...+63]

This specifies how your keyboard velocity (playing strength) will affect the amplitude of the ASSIGNABLE EG. Higher settings of this parameter will allow changes in your keyboard velocity to produce greater differences in EG amplitude.

LFO1, LFO2

Each timbre contains two LFOs. An LFO produces a cyclic change that can be used to modulate the pitch, tone, or volume of the sound.

Note: LFO1 and LFO2 can be used as Virtual Patch sources to apply modulation to a variety of parameters. See page 25.

LFO (Low Frequency Oscillator)

The LFO (Low Frequency Oscillator) is an oscillator that produces a relatively slow (low-frequency) oscillation, and is used to apply cyclic modulation to various aspects of the sound. Some typical ways to use the LFO are vibrato (use LFO to raise and lower the pitch), wah (use LFO to raise and lower the cutoff frequency), and tremolo (use LFO to raise and lower the volume). You can select the LFO as a Virtual Patch source, select the desired parameter as the destination, and apply modulation to produce various effects.

The RK-100S 2 provides special parameters that can be modulated from an LFO. If the OSC1 "OSC MOD" parameter is set to WAVEFORM, LFO1 will be able to modulate the "LFO1 MOD" parameter, and LFO2 will be able to modulate the PITCH "VIBRATO INTENSITY" parameter.

WAVE (LFO1)   **[Saw, Square, Triangle, S&H, Random]**
WAVE (LFO2)   **[Saw, Square+, Sine, S&H, Random]**
Selects the LFO waveform.

Amplitude changes irregularly
(Sample & Hold)
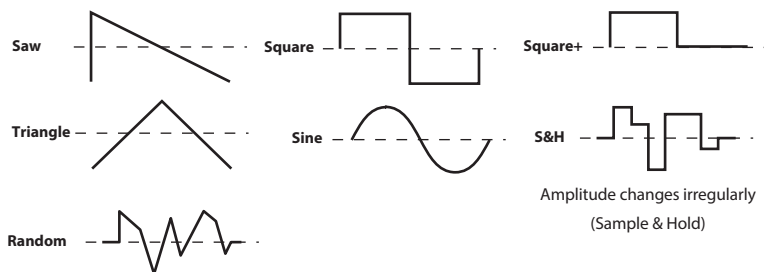
KEY SYNC   **[Off, Timbre, Voice]**
Specifies how the LFO will be applied to a voice when note-on occurs.

Off: The LFO phase will not be reset when note-on occurs.
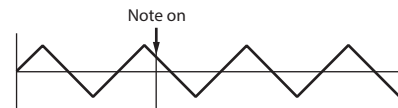
Timbre: The phase of the LFO will be reset by the first note-on that occurs from a condition of no keys being held; it will not be reset for subsequently played voices.
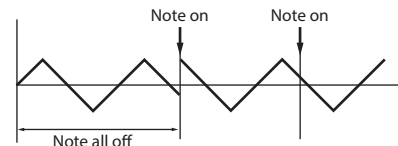
Voice: The LFO phase will be reset at each note-on, and modulation of differing phases will apply to each voice.
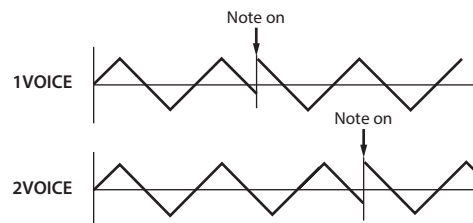
BPM SYNC   **[Off, On]**
Specifies whether the LFO cycle will be synchronized to the internal tempo or to an external MIDI Clock.

Off: The LFO will not be synchronized. It will operate at the frequency specified by the "FREQ" parameter.

On: The LFO will be synchronized to the TAP button or to MIDI Clock messages from an external device.

Note: "BPM SYNC" is On, selecting LFO1 FREQ or LFO2 FREQ as "DESTINATION" in PATCH 1–5 will have no effect.

FREQ (Frequency)   [0.01...100.0Hz]

Specifies the frequency of the LFO. Increasing this value will result in a faster frequency.

Note: This parameter will be displayed and can be set only if "BPM SYNC" is Off.

SYNC NOTE   [8/1...1/64]

This specifies the ratio of the LFO frequency relative to the tempo specified by the TAP button. The specified value (note value) corresponds to one cycle. For example if this is set to 1/4, one cycle of the LFO will occupy one beat. If this is set to 3/4, one cycle of the LFO will occupy three beats.

Note: This parameter will be displayed and can be set only if "BPM SYNC" is On.

VIRTUAL PATCH

To let you create even more sophisticated sounds, the RK-100S 2 provides five virtual patches. Each patch consists of three parameters: the source of the modulation ("SOURCE"), the destination where that modulation will apply ("DESTINATION"), and the intensity of that modulation effect ("INT"). You can produce a variety of changes in the sound by combining these parameters. For example by setting "SOURCE" to LFO2, "DESTINATION" to CUTOFF1, and specifying the amount of effect using "INT," you can produce a cyclic change in tone (wah effect) produced by LFO2.

Virtual Patch

On modular analog synthesizers, the input or output of each module (oscillator, filter, amp, EG, LFO, and other controllers) could be connected ("patched") by a patch cord to any other module as desired, allowing you a great deal of freedom in creating the sound. The Korg MS Series (MS-20, MS-50, MS-10, etc.) went on sale in 1978 and featured this type of patching. The RK-100S 2 lets you perform this patching "virtually" (i.e., without using physical patch cords), so you can assign sources such as EG or LFO to the most important parameters (destinations).

SOURCE   [FILTER EG...MIDI Control 3]

Selects a modulation source

FILTER EG, AMP EG, ASSIGNABLE EG: Filter EG, Amp EG, or Assignable EG.

LFO1, LFO2: LFO1 or LFO2

Velocity: Keyboard velocity (playing dynamics)

Short Ribbon (Pitch): Short Ribbon Controller (SHORT RIBBON button lit up in green)

Short Ribbon (Modulation): Short Ribbon Controller (SHORT RIBBON button lit up in red)

Keyboard Track: Keyboard tracking (position)

Note: Keyboard tracking works according to the pitch as controlled by pitch bend, transpose, and the modulation sequencer. It does not reflect pitch changes produced by vibrato or virtual patching

MIDI Control 1, MIDI Control 2, MIDI Control 3: The function specified for the GLOBAL MIDI parameters "MIDICtrl1," "MIDI Control 2," or "MIDI Control 2." (See page 33)

Long Ribbon (Filter): Long Ribbon Controller (FILTER/HOLD button lit up)

DESTINATION   [Pitch...Long Ribbon (Filter) Int]

Selects the parameter (destination) that will be controlled by the modulation. For example if you select Tune, modulation will be applied to the overall pitch of the timbre.

Pitch	The pitch of the entire timbre.
OSC 2 Tune	OSC2 "TUNE"
OSC 1 Control 1	OSC1 Contorol1 see page 11)
OSC 1 Level	MIXER "OSC1"
OSC 2 Level	MIXER "OSC2"
NOISE Level	MIXER "NOISE"
Filter 1 Balance	FILTER1 "BALANCE"
Filter 1 Cutoff	FILTER1 "CUTOFF"
Filter 1 Resonance	FILTER1 "RESONANCE"
Fiter 2 Cutoff	FILTER2 "CUTOFF"
Drive/WS Depth	DRIVE/WS "DEPTH"

Pitch	The pitch of the entire timbre.
Amp Level	AMP "LEVEL"
Panpot	AMP "PAN"
LFO 1 Frequency	LFO1 "FREQUENCY"
LFO 2 Frequency	LFO2 "FREQUENCY"
Portamento	PITCH "PORTAMENTO TIME"
OSC 1 Control 2	OSC1 CONTROL2 see page 11)
Filter 1 EG Int.	FILTER1 "EG INT"
Filter 1 KeyTrack	FILTER1 "KEY TRACK"
Filter 2 Resonance	FILTER2 "RESONANCE"
Filter 2 EG Int.	FILTER2 "EG INT"
Filter 2 KeyTrack	FILTER2 "KEY TRACK"
Filter EG Attack	FILTER EG "AT"
Filter EG Decay	FILTER 1 "DT"
Filter EG Sustain	FILTER EG "SL"
Filter EG Release	FILTER EG "RT"
AMP EG Attack	AMP EG "AT"
AMP EG Decay	AMP EG"DT"
AMP EG Sustain	AMP EG "SL"
AMP EG Release	AMP EG "RT"
Assignable EG Attack	ASSINABLE EG "AT"
Assignable EG Decay	ASSINABLE EG "DT"
Assignable EG Sustain	ASSINABLE EG "SL"
Assignable EG Release	ASSINABLE EG "RT"
Patch 1 Int	PATCH1 "INT"
Patch 2 Int	PATCH2 "INT"
Patch 3 Int	PATCH3 "INT"
Patch 4 Int	PATCH4 "INT"
Patch 5 Int	PATCH5 "INT"
Long Ribbon (Filter) Int	LONG RIBBON (FITER) INT

INT (Patch Intensity)   [–63...+63]

Specifies the depth of the effect produced by the modulation source.
With a setting of 0, there will be no modulation.

Setting example for "SOURCE" and "DESTINATION"

SOURCE [1] → DEST [2]	
FILTER EG/AMP EG → Pitch	The FILTER EG or AMP EG will vary the pitch of the entire timbre over time.
FILTER EG/AMP EG → Panpot	The FILTER EG or AMP EG will vary the panning over time. By setting two patches to "INT" settings with the opposite (+/–) value you can create more complex panning.
LFO 1/LFO 2 → Pitch	Vibrato will be applied at the LFO1 or LFO2 frequency.
LFO 1/LFO 2 → Cutoff	Wah will be applied at the LFO1 or LFO2 frequency.
LFO 1/LFO 2 → Level	Tremolo will be applied at the LFO1 or LFO2 frequency.
LFO 1/LFO 2 → Panpot	Auto pan will be applied at the LFO1 or LFO2 frequency.
Velocity → Level	Velocity (keyboard playing strength) will affect the volume.
Key Track → Panpot	Keyboard position will gradually change the pan; lower notes at the left, and higher notes at the right.
Short Ribbon (Pitch) → Panpot	The sound will move from one side to the other with pitch bend changes or by using the short ribbon controller while the SHORT RIBBON button is lit up in red.

TIMBRE EQ

Here you can adjust the equalizer settings. The equalizer is a shelving type.

LOW FREQ (Low EQ Frequency)   **[0020Hz...1000Hz]**
Specifies the frequency of the low equalizer.

LOW GAIN (Low EQ Gain)   **[–15.0dB...+15.0dB]**
Specifies the gain of the low equalizer.
Positive (+) values boost the region below the cutoff frequency.
Negative (–) values cut the region below the cutoff frequency.

HIGH FREQ (High EQ Frequency)   **[1.00 kHz...20.0 kHz]**
Specifies the cutoff frequency of the high equalizer.

HIGH GAIN (High EQ Gain)   **[–15.0dB...+15.0dB]**
Specifies the gain of the high equalizer.
Positive (+) values boost the region above the cutoff frequency.
Negative (–) values cut the region above the cutoff frequency.

MASTER EFFECT 1, MASTER EFFECT 2

Here you can adjust settings for the master effects. You can choose from seventeen different types.

FX.TYPE   **[Effect Off...Grain Shifter]**
This selects the effect type used by the master effect. For details on the available effects, refer to page 36 "Effect guide".

FX LONG RIBBON (FILTER) ASSIGN   **[Assign OFF ...]**
If an effect parameter is assigned to the "Long Ribbon (Filter)", it can also be controlled when the filter is controlled with the long ribbon controller.

FX LONG RIBBON (FILTER) POLARITY   **[Forward, Reverse]**
The polarity direction assigned to the "FX LONG RIBBON (FILTER) ASSIGN" can be switched.

Arpeggio parameters

ARPEGGIATOR

Here you can adjust various arpeggio-related settings.

ON/OFF   **[Off, On]**
This turns the arpeggiator on/off.

TIMBRE ASSIGN   **[Timbre1, Timbre2, Timbre1+2]**
Selects the timbre(s) that will be sounded by the arpeggiator.
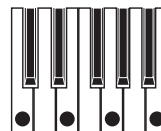
TYPE   **[Up, Down, Alt1, Alt2, Random, Trigger]**
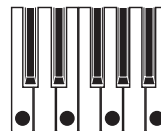Selects the arpeggio type.

Up: Notes will be played consecutively from low pitches to high.

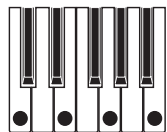**Down:** Notes will be played consecutively from high pitches to low.

ALT1: Up and Down will be alternated. (The highest and lowest notes will be played once.)
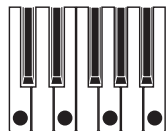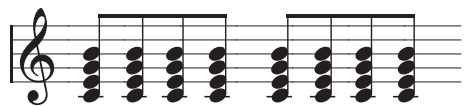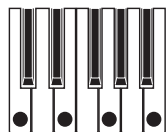
ALT2: Up and Down will be alternated. (The highest and lowest notes will be played twice, once on the way up, and once on the way down.)

Random: Notes will be played randomly.

Trigger: The notes you are holding down will be played simultaneously at the tempo and "RESOLUTION" timing. The "OCTAVE RANGE" setting will be ignored.

Note: If you are holding down more notes than the maximum polyphony of the timbre, the lowest pitches you are holding down will be played, up to the maximum polyphony.

OCTAVE RANGE   [1, 2, 3, 4]
Specifies the range of octaves over which the arpeggio will be played.

RESOLUTION   [1/32...1/1]
Specifies the resolution (spacing of the notes) relative to the tempo specified by TAP button.

1/32: The arpeggio will be played as 32nd notes at the specified tempo.

1/24: The arpeggio will be played as 16th note triplets at the specified tempo.

1/16: The arpeggio will be played as 16th notes at the specified tempo.

1/12: The arpeggio will be played as 8th note triplets at the specified tempo.

1/8: The arpeggio will be played as 8th notes at the specified tempo.

1/6: The arpeggio will be played as quarter note triplets at the specified tempo.

1/4: The arpeggio will be played as quarter notes at the specified tempo.

1/2: The arpeggio will be played as half notes at the specified tempo.

1/1: The arpeggio will be played as whole notes at the specified tempo.

LAST STEP   [1...8]
Specifies the number of valid steps (maximum number of steps) for the arpeggiator.

LATCH   [Off, On]
This specifies how the arpeggiator will behave when you take your hand off the keyboard.

Off: The arpeggiator will stop when you take your hand off the keyboard.

On: The arpeggiator will continue playing even if you take your hand off the keyboard.

KEY SYNC   [Off, On]
Specifies whether the arpeggiator will be synchronized to the keyboard.
If this is On, the arpeggiator will always start from the beginning of the arpeggio pattern when you play the keyboard. If you are performing together with other instruments, you can use this function to ensure that the arpeggio pattern is aligned with the beginning of the measure.

Off: Sync off. The arpeggio pattern will not be reset when you play the keyboard.

On: Sync on. The arpeggio pattern will be reset the moment you play the keyboard.

GATE TIME   [000%...100%]
Specifies the duration (gate time) of the arpeggiated notes, as a percentage (%). With a setting of 001%, each note will be extremely short. With a setting of 100%, each note will continue playing until the next step.

SWING   [−100%...+100%]
Specifies the percentage (%) by which even-numbered notes of the arpeggio will be shifted in timing relative to the first note

STEP EDIT

Here you can turn each step of the arpeggio pattern on/off. This is a way to add more variety to arpeggios that might become boring.

Step 1 SW...Step 8 SW   **[Off, On]**

Specify the on/off status of each step, from 1–8. The number of available steps is specified by the "LAST STEP" setting.

Off: The note at this step will not sound.

On: The note at this step will sound.

Vocoder parameters

ON/OFF   **[Off, On]**

This switches the Vocoder function on/off.

Off: Vocoder is off. The program will not use the vocoder.

On: The vocoder is on. The program will be a vocoder program, and the vocoder parameters will be available for editing.

CARRIER

Here you can set the input level of the audio signal being used as the carrier

TIMBRE 1 LEVEL   **[000...127]**

Specifies the output level of Timbre1 (carrier).

TIMBRE 2 LEVEL   **[000...127]**

Specifies the output level of Timbre2.

MODULATOR

Here you can adjust the settings for the modulator, which applies its character to the carrier audio.

For the modulator, you can use an external audio source such as a microphone or rhythm (INPUT jack) or timbre 2.

AUDIO IN SOURCE   **[Audio Input, Timbre2]**

This selects the audio source that will be sent to the modulator.

Audio Input: The audio source from INPUT jack will be sent to the modulator.

Timbre2: The output of timbre 2 will be input to the modulator.

GATE SENS [000...127]

Specifies the speed at which the gate will operate according to the "GATE THRESHLD" setting. Lower values for this setting will make the gate close more quickly, causing the vocoder sound to decay more quickly. Higher values for this setting will make the gate close more gradually, causing the vocoder sound to have a longer decay.

Note: If the "GATE THRESHLD" value is high, this effect will be applied more readily. If the threshold value is 0, there will be no effect.

GATE THRESHOLD [000...127]

Sets the level where the input source will be cut. By setting this to an appropriate level, you can cut the noise that might be present during times where there is no input. Higher settings will make it more likely that the input source will be cut.

With excessively high settings, it's more likely that the audio input signal itself will be cut, making it difficult for you to apply the vocoder effect as intended.

HPF GATE [Disable, Enable]

The RK-100S 2s vocoder can extract the high-frequency portion from the audio source being input to the modulator, and then mix this into the output of the vocoder. You can specify whether this high-frequency portion will be mixed in only while the internal sound generator (Timbre1) is producing sound, or at all times.

Disable: The high-frequency portion will be mixed whenever the audio source is being input to the modulator.

Enable: The high-frequency portion of the audio source will be mixed only when the internal sound generator (Timbre1) is producing sound.

HPF LEVEL [000...127]

This adjusts the output level from the HPF (High Pass Filter) that extracts the high-frequency components from the modulator input source; these high-frequency components are then mixed into the output of the vocoder. Increase this value if you want to emphasize the consonants of the vocal input source.

FILTER

Here you can adjust the settings for the carrier's sixteen band-pass filters and the modulator's envelope filter. You'll be using these parameters frequently, since they play an important role in determining the character of the vocoder.

FORMANT SHIFT [−2...+2]

Shifts the cutoff frequencies of each of the carrier's band pass filters. This will significantly change the character of the vocoder output.

FC OFFSET [−63...+63]

This continuously shifts the cutoff frequency of each band-pass filter (Synthesis filter) of the carrier.

FORMANT SHIFT and FC OFFSET

When "FORMANT SHIFT"=0 and "FC OFFSET"=0, the response of the carrier filters will match the cutoff frequency of the modulator filters. The filter response is shifted upward or downward in two discrete steps by the "FORMANT SHIFT." This can be adjusted upward or downward a total of another two steps by using "FC OFFSET," giving you a total of four steps of adjustment upward or downward.
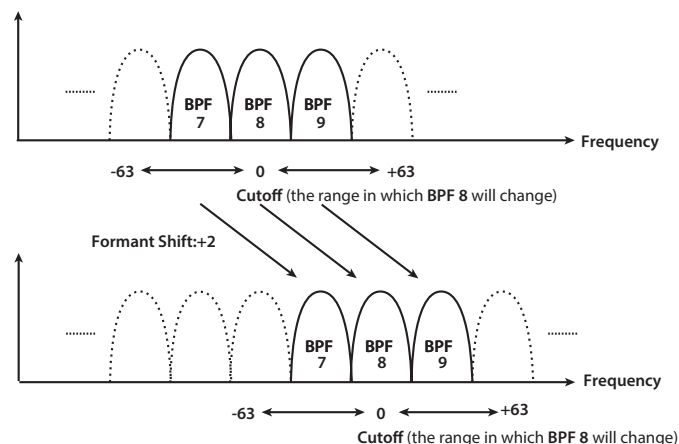
RESONANCE **[000...127]**

This specifies the amount of resonance for each of the carrier's sixteen band-pass filters (the synthesis filter). Higher settings will boost the sound in the region of the cutoff frequency.

FC MOD SOURCE (Fc Modulation Source)

[FILTER EG...MIDI Control 3]

Selects the modulation source that will be applied to the carrier band-pass filter "FC OFFSET."

Note: The sources you can select are the same as the modulation sources for a virtual patch (see page 25"SOURCE"). However, Filter EG, Amp EG, Assignable EG, LFO1–2, Velocity, and Keyboard Track will be the sources for timbre 1. Also, you won't be able to select the Long Ribbon (Filter).

E.F.SENS (Envelope Follower Sens) **[000...126, Hold]**

Specifies the sensitivity of the modulator's Envelope Followers.

Lower settings of this value will allow the attacks of the input signal to be detected more rapidly.

Higher values will produce slower change, creating a sound with a slow attack and a long release.

If you set this to Hold, the character of the signal that is being input at that moment will be held (Formant Freeze). Subsequently, the sound will retain that character regardless of whether there is any input.

If you set this to Hold when there is no input signal present, there will be no output even if an audio signal is subsequently input.

Note: If you write the program with this value set to Hold, the program will memorize the response of the signal that was being held.

FC MOD INT **[–63...+63]**

Specifies the depth of the modulation that is applied to the carrier band-pass filter (Synthesis filter) "FC OFFSET."

AMP

Here are the parameters for modulation and vocoder output.

VOCODER LEVEL **[000...127]**

Sets the output level of the vocoder.

DIRECT LEVEL **[000...127]**

Sets the volume level at which the modulatior input source will be output directly (unaffected).

BAND

These parameters specify the output level and panning (stereo position) for each of the carrier's sixteen band-pass filters (the synthesis filter).

PAN1...16 **[L63...R63]**

Specifies the output level of each band.

LEVEL1...16 **[000...127]**

Specifies the panning of each band.

GLOBAL EDIT

Any changes to settings that are made from the global screen will apply to the entire RK-100S 2.

GLOBAL

Master Tune [430.0Hz...450.0Hz]
Adjusts the overall pitch in 0.1 Hz steps, in terms of A4 as the reference pitch. Use this when you need to tune the pitch of the RK-100S 2 to other instruments.

Transpose [–12...+12]
Adjusts the overall pitch in steps of a semitone (100 cents) over a range of one octave up or down. Use this when you want to transpose to suit the song you are playing.
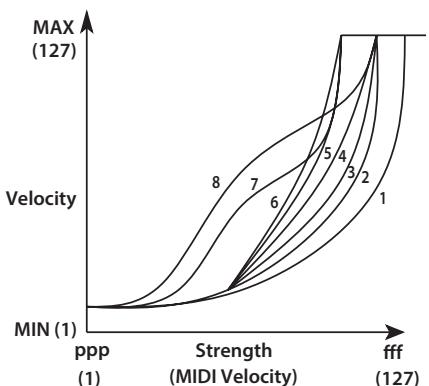
Velocity Curve [1...8, CONST127]
Different velocity curves allow you to tailor the response of the keyboard to your own playing style. Lighter curves are best for heavy-handed players, higher curves may work better for players with a light touch.

1	This curve requires you to play strongly in order to produce an effect.
2, 3	|
4	This is the typical curve.
5	|
6	This curve produces an effect without requiring you to play very strongly.
7	This curve produces a fairly steady effect with little change for medium-strength playing.
8	This curve produces a fairly steady effect with little change for medium-strength playing (a flatter curve than 7).
CONST127	All notes will sound at maximum velocity (127). This setting mimics the behavior of early analog synths.

Curves 7 and 8 produce little change for medium-strength playing. However, these curves will produce a great deal of change with softly played notes, so they may be more difficult to control. Choose the curve that is most appropriate for your playing dynamics or for the effect you want to obtain.

Position [Post KBD, Pre TG]
This specifies the internal routing for MIDI IN/OUT on the RK-100S 2. This includes the transmission/reception of MIDI data as well as the handling of arpeggiator data changes.

Post KBD: The data received from the external MIDI device is sent to the timbre without being affected by the GLOBAL settings. The data output from the keyboard is converted by the GLOBAL settings and sent to the MIDI OUT connector via the arpeggiator.

Pre TG: The data output from the keyboard is sent to the MIDI OUT connector without being affected by the GLOBAL settings and the arpeggiator.

Battery type [Alkali, Ni-MH]
This allows you to select the type of battery to be used.

Alkali.: Alkaline batteries

Ni-MH: Nickel-metal hydride batteries

⚠ If the selected type is different from the type of batteries being used, the remaining amount of battery power will not be correctly indicated.

Power save function   [On, Off]

When engaged, the power save function will automatically turn off the display and LEDs.

On: Enabled

Off: Disabled

Note: With the factory settings, the power save function is Off.

MIDI

Here is where you can adjust MIDI-related settings for the RK-100S 2.

Local Control   [Off, On]

Switches the local setting on and off.

Off: With this setting, controllers such as the keyboard, short ribbon controller and long ribgbon controller will be internally disconnected from the tone generator section. This setting prevents notes from being sounded in duplicate when the RK-100S 2 is connected to a sequencer and the performance data is echoed back from the sequencer. (Echo back is when the performance data transmitted by playing the RK-100S 2 is re-transmitted back to the RK-100S 2 from the sequencer.)

On: Select this setting when you are using the RK-100S 2 by itself.

MIDI Clock   [Auto, Internal, Ext USB, Ext MIDI]

This is set when the RK-100S 2's arpeggiator is synchronized to a connected external MIDI device (e.g., sequencer or rhythm machine). Otherwise, when "BPM SYNC" is On for LFO1/2 or for a delay effect, the LFO rate and delay time are synchronized with the arpeggiator.

Auto: If the MIDI clock is input from a computer connected to the RK-100S 2's USB connector, clock operation will automatically be set to "External". If there is no input, the clock will be set to "Internal".

Internal: The RK-100S 2's internal clock will be the reference. Select this setting when using the RK-100S 2 by itself or when the RK-100S 2 is the master (controller) and synchronized with an external MIDI device.

Note: For details on synchronization-related settings of the external MIDI device, refer to the manual of your device.

MIDI Control 1   **[Pitch Bend, After Touch, CC#00...#95, CC#102...#119, CC#16+/–, CC#17+/–, #CC19+/–, CC#20+/–, CC#21+/–]**

MIDI Control 2   **[Pitch Bend, After Touch, CC#00...#95, CC#102...#119, CC#16+/–, CC#17+/–, #CC19+/–, CC#20+/–, CC#21+/–]**

MIDI Control 3   **[Pitch Bend, After Touch, CC#00...#95, CC#102...#119, CC#16+/–, CC#17+/–, #CC19+/–, CC#20+/–, CC#21+/–]**

The RK-100S 2 virtual patches have a function to control the destination for the source with MIDI messages. This MIDI message setting is called MIDI control. Here you can select the MIDI message assigned to MIDI Control 1, MIDI Control 2 and MIDI Control 3.

The factory settings are "CC#16", "CC#02" and "After Touch", respectively.

If you've selected CC#16+/–, CC#17+/–, CC#19+/–, CC#20+/–, or CC#0216+/–
When using a common external MIDI controller, the values 0–127, depending on the operating range, are transmitted as MIDI control changes. If control changes are used with modulation for a virtual patch, specifying "0" will have no effect, and the modulation effect will increase as the value is increased.
However, you may, for example, want to use the controller with the effect increasing or decreasing from the center, like using a joystick in the X direction. The RK-100S 2 will automatically convert the values 0–127 to –63–63 when control changes are used with virtual patches.

MIDI FILTER

Here you can adjust the the RK-100S 2's MIDI Filter settings.

Program Change   [Disable, Enable]

Selects whether program changes will be transmitted and received.

Disable: Program changes will not be transmitted or received.

Enable: Program changes will be transmitted and received.

Control Change)   [Disable, Enable]

Selects whether MIDI control changes will be transmitted and received.

Disable: MIDI control changes will not be transmitted or received.

Enable: MIDI control changes will be transmitted and received.

Pitch Bend   [Disable, Enable]

Selects whether pitch bend messages will be transmitted and received.

Disable: Pitch bend messages will not be transmitted or received.

Enable: Pitch bend messages will be transmitted and received.

LONG RIBBON

Long ribbon MIDI channel   [Glb, 1...16]

This allows you to specify the MIDI channel when using the long ribbon controller to play.
Specify a setting when using a program with sound generation set to Multi (Voice mode: Multi) or when the external MIDI device that's connected to the MIDI OUT jack is being played using the long ribbon controller, instead of the keyboard.

GLb: The MIDI channel will match the global MIDI channel (see "Global MIDI channel") .

r.01...r.16: 1ch..16ch

✍ When the setting is changed, sound from the RK-100S 2 can no longer be produced with the long ribbon controller.

Long ribbon velocity   [off, 1...127]

This allows you to specify the velocity when using the long ribbon controller to play scales.
The velocity setting range is 1 – 127. If oFF is selected, no sound is produced when the long ribbon controller is used.

USER SCALE

Here you can specify a user-defined scale. You can specify a pitch adjustment of –63 to +63 cents for each note in the octave (C–B).

Key Value   [–63...+63]

This changes the values of the keyboard keys for the notes (C–B) to be specified and sets the pitch.

–63: The note will be 63 cents flatter than standard pitch.

+63: The note will be 63 cents sharper than standard pitch.

FAVORITE PROGRAM

A total of 40 favorite programs (5 banks × 8) can be stored.

(Parameter)   [Bank#1 Fav"A" Prog#...Bank#5 Fav"H" Prog#]
(Value)   [001...200]
This sets the program number to be stored with the favorite program.

CC # MAP

Control changes can be assigned to main parameters.
All parameters assigned with control changes will change simultaneously. In addition, if a parameter concerning the long ribbon controller is specified here, the specified control change will be transmitted. All other main parameters can only be received (see page 57 "MIDI messages").

(Parameter)   **[Portamento...Vocoder.EF.SENS]**
This selects the parameter to be assigned.

(Value)   **[Off, CC#00...CC#119]**
 This specifies the MIDI control change number (CC#) for the parameter selected in the "Parameter" field.

Note: If the timbre parameter is selected, the effect will be applied to timbre 1 and timbre 2.

Note: The MIDI channel of the vocoder parameters is the same MIDI channel for timbre 1.

Effect guide

About the effects

The RK-100S 2 provides a two-band EQ and two master effects. You can use the EQ to modify the sound of each timbre, and use the master effects to apply spatial-type processing to the overall sound.

For each master effect you can choose one of seventeen full-digital effects, which are categorized as follows.

01–05: Filter and dynamics effects such as EQ and compressor

06–10: Delay-type effects

11–17: Pitch and phase modulation effects such as chorus and phaser

About the effect input and output

The master effects are stereo-in and stereo-out. In the "Dry/Wet" balance, the stereo-input Dry signal (the sound not processed by the effect) is passed through to stereo-output. The way in which the Wet signal (the sound processed by the effect) is output will depend on the type of effect, with the following variations.

Wet	**Mono In - Mono Out**	Effect
	Mono In - Stereo Out	Effect
	Stereo In - Stereo Out	Effect / Effect
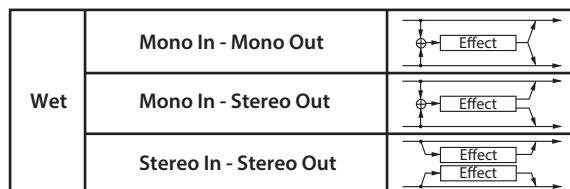
The input/output variation for each effect is shown on the upper left side of the block diagram.

To obtain the best sound quality, you should set the input level to the master effect as high as possible without causing clipping. This is done using the AMP "LEVEL" parameter, the MIXER "OSC1," "OSC2," and "NOISE" parameters, and the "Trim" parameter of each effect. Then use each effect's "Dry/Wet" or "Output Level" parameters to adjust the output level of the effect.

✎ Some effect types do not have a "Trim" or "Output Level" parameter.

✎ There is no input level meter etc. to check the input level to the effect. Insufficient input level will produce a poor S/N ratio, while excessive input level will cause clipping.

About the delay time

Time Ratio

For delay effects, the actual delay time will be the delay time multiplied by the "Time Ratio."

Delay time when Delay Tempo Sync is Off
If "Delay Tempo Sync" is Off, you'll be able to set the delay time in msec units. For example,

• If "Delay Tempo Sync": Off, "L Delay Time": 800ms, "R Delay Time": 400 ms, and "Time Ratio": 50%, then the actual delay time will be 400 ms in the left channel and 200 ms in the right channel.

✎ If the specified delay time multiplied by the "Time Ratio" would exceed the allowable range, the delay time will be set to the maximum possible value.

Delay time when Delay Tempo Sync is On
If "Delay Tempo Sync" is On, the delay time will synchronize with the tempo specified by the TAP button (or by an external MIDI clock). Since the tempo will follow the arpeggiator, this is useful for a live performance.

If "Delay Tempo Sync" is On, you'll be able to set the delay time as a note value. For example,

• If "Delay Tempo Sync": On, "L Delay Time": ♩1/4, "R Delay Time": ♪ 1/8, and "Time Ratio": 50%, then the actual delay time will be an eighth note in the left channel and a sixteenth note in the right channel.

• If "Delay Tempo Sync": On, "Time Ratio": 100%, L Delay Time": ♪ 1/8, and "R Delay Time": ♪ 3/16, then the delay time will be an eighth note in the left channel and a dotted eighth note in the right channel.

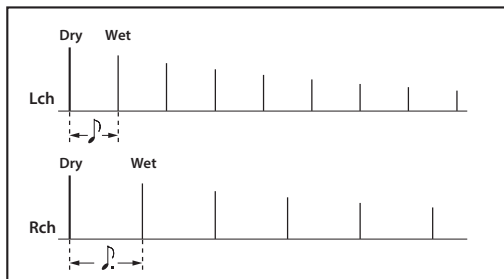⚠ If the specified delay time multiplied by the "Time Ratio" exceeds the allowable range, the delay time will be set to one half of the setting. If this would still exceeds the maximum possible value, the delay time will be further shortened to 1/4, 1/8, 1/16, and so on.

Assigning effect parameters

If an effect parameter is assigned to the "Long Ribbon (Filter)", the effect parameter can also be controlled when the filter is controlled with the long ribbon controller. In addition, the polarity direction assigned to where the effect is applied can be switched by changing the "Long Ribbon Polarity" parameter.

Effect parameters

Compressor

This effect compresses the input signal to regulate the volume level and give a "punchy" effect. This is useful when applied to sounds that have a strong attack. You can link the left and right channels or make them function independently.
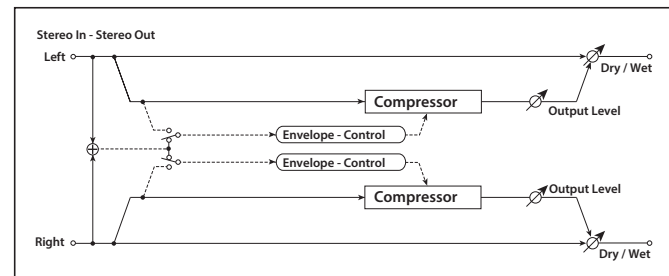
Dry/Wet   [Dry, 99:1...1:99, Wet]
Sets the balance between the effect and dry sounds

Envelope Select   [LR Mix, LR Individual]
When LR Mix is selected for this parameter, the left and right channels are linked to control the Limiter using the mixed signal.
With L/R indiv., the left and right channels control the Limiter individually.

Sensitivity   [001...127]
The "Sensitivity" parameter sets the sensitivity of the compressor. If this parameter is set to a higher value, lower level sounds will be boosted. With a higher sensitivity, the overall volume level is higher. To adjust the final volume level, use the "Output Level" parameter.

37
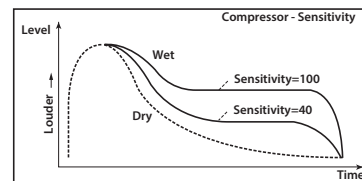
Attack [000.1...500.0ms]
Sets the attack level

Output Level [000...127]
This parameter controls the output level.
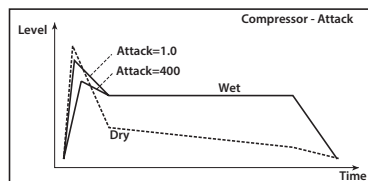
Filter

This is a stereo filter.
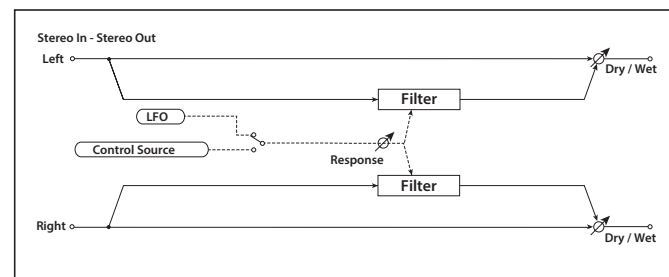
Dry/Wet [Dry, 99:1...1:99, Wet]
Sets the balance between the effect and dry sounds

Filter Type [LPF24, LPF18, LPF12, HPF12, BPF12]
Selects the filter type

See page 18 "BALLANCE"

Cutoff [000...127]
Sets the filter cutoff frequency

See page 18 "CUTOFF"

Resonance [000...127]
Sets the filter resonance amount

See page 18 "RESONANCE"

Trim [000...127]
Sets the input level

Mod Source [LFO, Control]
Selects the modulation source that will control the cutoff frequency.
If you set this to LFO, the LFO will modulate the cutoff frequency.
If you set this to Control, the control source selected by "Control Source" will control the cutoff frequency.

Mod Intensity [−63...+63]

Adjusts the depth of modulation applied by the modulation source

Mod Response [000...127]

Adjusts the response of the modulation effect
A setting of 0 produces slow response.

LFO Tempo Sync [Off, On]

Specifies whether the LFO cycle will synchronize to the tempo set by the TAP button or via the MIDI clock

If this is Off, the LFO will function at the cycle specified by "LFO Frequency"

If this is On, the LFO will synchronize to the tempo or MIDI clock.

Note: This parameter will be displayed and can be set if the "Mod Source" is LFO.

Note: In the Global MIDI "MIDI Clock" setting is Internal, the LFO will synchronize to the tempo specified by the TAP button. If the setting is Auto, the LFO will synchronize to the MIDI clock received from an external MIDI device.

LFO Frequency [0.01...100.0Hz]

Sets the LFO speed. Increasing this value will result in a faster frequency

Note: This parameter will be displayed and can be set if the "Mod Source" is LFO and the "LFO Tempo Sync" is Off.

If this parameter is assigned to the "Long Ribbon (Filter)", it can be switched to "LFO Sync Note" if "LFO Tempo Sync" is On.

LFO Sync Note [8/1...1/64]

Sets the LFO frequency as a proportion of the tempo set by the TAP button

The length of the specified value (note value) relative to the tempo will be one cycle of the LFO. For example if this is 1/4, one cycle will occupy one quarter note.

For example if this is set to 1/4, the LFO cycle will be one beat long. If this is set to 3/4, the LFO cycle will be three beats long.

Note: This parameter will be displayed and can be set if the "Mod Source" is LFO and if "LFO Tempo Sync" is On.

If this parameter is assigned to the "Long Ribbon (Filter)", it can be switched to "LFO Sync Note" if "LFO Tempo Sync" is Off.

LFO Waveform [Saw, Square, Triangle, Sine, S&H]

Selects the LFO waveform

Note: This parameter will be displayed and can be set if the "Mod Source" is LFO.

Amplitude changes irregularly
(Sample & Hold)
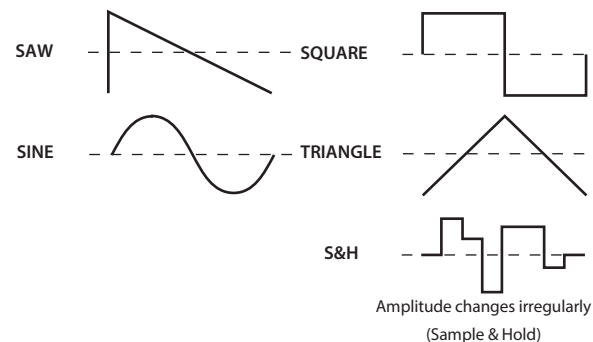
LFO Shape [−63...+63]

Adjusts the shape of the LFO waveform

Note: This parameter will be displayed and can be set if the "Mod Source" is LFO.

LFO KeySync [Off, On]

Specifies how the LFO will be reset at note-on

Note: This parameter will be displayed and can be set if the "Mod Source" is LFO.
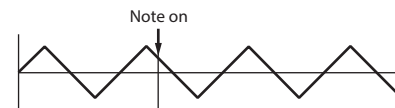
With Off, the LFO phase will not be reset when note-on occurs.

With On, the first note-on from a condition of no keys being pressed will reset the LFO to the phase specified by the "LFO Init Phase" parameter and modulation will be applied at that phase even if subsequent note-ons occur.
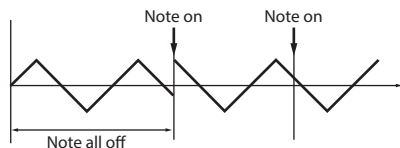
This takes effect when a note-on occurs on the global MIDI channel.

LFO Init Phase   [000...180°]
Specifies the starting position of the waveform

With a setting of 0°, the waveform will start from its beginning at note-on.

With a setting of 180°, the waveform will start from the mid-point of its cycle at note-on.

Note: This parameter will be displayed and can be set if "LFO KeySync" is On.

Control Source   [Off, Velocity...MIDI Control 3]
Selects the control source

The filter will be controlled by the selected source.
This parameter will be displayed and can be set if the "Mod Source" is Control.

Off: Not used

Velocity: Velocity

Short Ribbon (Pitch): Short ribbon controller (When the Short Ribbon button is lit in red)

Short Ribbon (Modulation): Short ribbon controller (When the Short Ribbon button is lit in green)

MIDI Control 1: Source specified by "MIDI Control 1" in Global MIDI

MIDI Control 2: Source specified by "MIDI Control 2" in Global MIDI

MIDI Control 3: Source specified by "MIDI Control 3" in Global MIDI

4Band EQ

This is a stereo EQ. The EQ type can be selected independently.
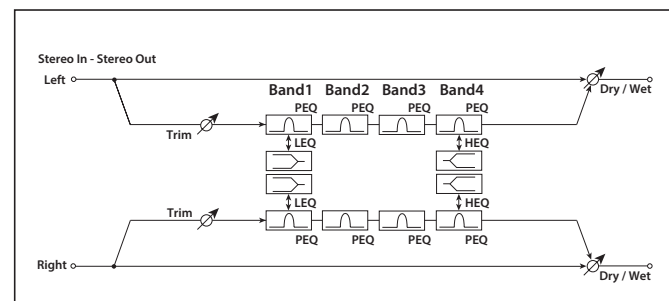
Dry/Wet   [Dry, 99:1...1:99, Wet]
Sets the balance between the effect and dry sounds

Trim   [000...127]
Sets the input level of EQ

B1 Type   [Peaking, Shelving Low]
Selects the EQ type of Band 1

B1 Frequency   [20Hz...20.0kHz]
Sets the center frequency of Band 1

B1 Q   [00.5...10.0]
Sets the bandwidth of Band 1

B1 Gain   **[–18.0...+18.0dB]**
Sets the gain of Band 1

B2 Frequency   **[20Hz...20kHz]**
Sets the center frequency of Band 2

B2 Q   **[00.5...10.0]**
Sets the bandwidth of Band 2

B2 Gain   **[–18.0...+18.0dB]**
Sets the gain of Band 2

B3 Frequency   **[20Hz...20kHz]**
Sets the center frequency of Band 3

B3 Q   **[00.5...10.0]**
Sets the bandwidth of Band 3

B3 Gain   **[–18.0...+18.0dB]**
Sets the gain of Band 3

B4 Type   **[Peaking, Shelving High]**
Selects the EQ type of Band 4

B4 Frequency   **[20Hz...20kHz]**
Sets the center frequency of Band 4

B4 Q   **[00.5...10.0]**
Sets the bandwidth of Band 4

B4 Gain   **[–18.0...+18.0dB]**
Sets the gain of Band 4

Distortion

This is a distortion effect with a three band EQ, giving you a broad range of variations.
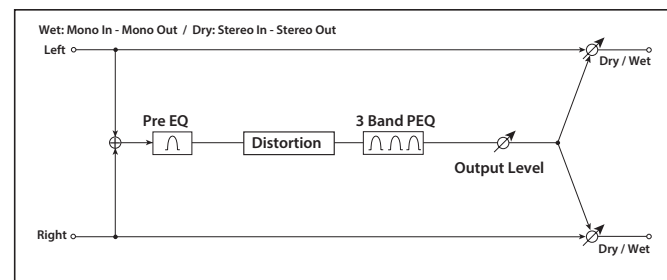
Wet: Mono In - Mono Out / Dry: Stereo In - Stereo Out

Dry/Wet   **[Dry, 99:1...1:99, Wet]**
Sets the balance between the effect and dry sounds

Gain   **[000...127]**
Sets the degree of distortion

Pre EQ Frequency   **[20Hz...20.0kHz]**
Sets the center frequency of Pre EQ

Pre EQ Q   **[00.5...10.0]**
Sets the bandwidth of Pre EQ

Pre EQ Gain   **[–18.0...+18.0dB]**
Sets the gain of Band PreEQ

B1 Frequency   **[20Hz...20kHz]**
Sets the center frequency of Band 1

B1 Q   **[00.5...10.0]**
Sets the bandwidth of Band 1

B1 Gain   **[–18.0...+18.0dB]**
Sets the gain of Band 1

B2 Frequency [20Hz...20kHz]
Sets the center frequency of Band 2

B2 Q [00.5...10.0]
Sets the bandwidth of Band 2

B2 Gain [−18.0...+18.0dB]
Sets the gain of Band 2

B3 Frequency [20Hz...20kHz]
Sets the center frequency of Band 3

B3 Q [00.5...10.0]
Sets the bandwidth of Band 3

B3 Gain [−18.0...+18.0dB]
Sets the gain of Band 3

Output Level [000...127]
Sets the output level

Decimator

This effect creates a rough sound like a cheap sampler by lowering the sampling frequency and data bit length. You can also simulate noise unique to a sampler (aliasing).
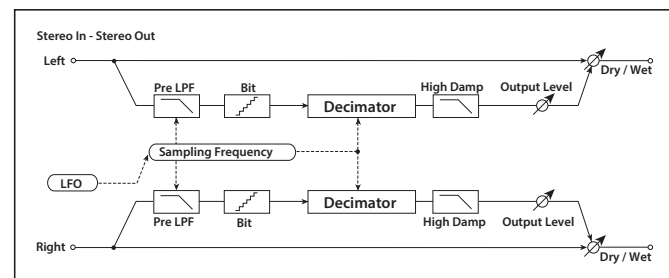
Dry/Wet [Dry, 99:1...1:99, Wet]
Sets the balance between the effect and dry sounds

Pre LPF [Off, On]
Selects whether the harmonic noise caused by a decrease in sampling frequency is generated or not

If a sampler with a very low sampling frequency receives a very high-pitched sound that could not be heard during playback, it could generate pitch noise that is unrelated to the original sound. Set "Pre LPF" to On to prevent this noise from being generated.
If you set the "Fs" to about 3kHz and set "Pre LPF" to Off, you can create a sound like a ring modulator.

High Damp [000...100%]
Sets the ratio of cut from the high range

Fs [01.0...48.0kHz]
Sets the sampling frequency

Bit [04...24bit]
Sets the data bit length
If you set a smaller value for the "Bit" parameter, the sound may be distorted. The volume level may also be changed. Use "Output Level" to adjust the level.

Output Level [000...127]

Sets the output level

Fs Mod Intensity [–63...+63]

Sets the depth of sampling frequency LFO modulation

LFO Tempo Sync [Off, On]

Specifies whether the LFO cycle will synchronize to the tempo specified by the TAP button or MIDI clock

See page 39 "LFO Tempo Sync"

LFO Frequency [0.01...100.0Hz]

Sets the LFO speed

Note: This parameter will be displayed and can be set if "Mod Source" is LFO and if the "LFO KeySync" is Off.

See page 39 "LFO Frequency"

LFO Sync Note [8/1...1/64]

Sets the LFO frequency as a proportion of the tempo set by the TAP button

Note: This parameter will be displayed and can be set if the "LFO Tempo Sync" is On.

See page 39"LFO Sync Note"

LFO Waveform [Saw, Square, Triangle, Sine, S&H]

Selects the LFO waveform

See page 39 "LFO Waveform"

LFO Shape [–63...+63]

Adjusts the shape of the LFO waveform

See page 39 "LFO Shape"

LFO KeySync [Off, On]

Specifies whether the LFO will be reset at note-on

See page 39 "LFO KeySync"

LFO Init Phase [000...180°]

Specifies the starting position of the waveform

Note: This parameter will be displayed and can be set if "LFO KeySync" is On.

See page 40 "LFO Init Phase"

Delay

This is a stereo delay, and can by used as a cross-feedback delay effect in which the delay sounds cross over between the left and right by changing the feedback routing.
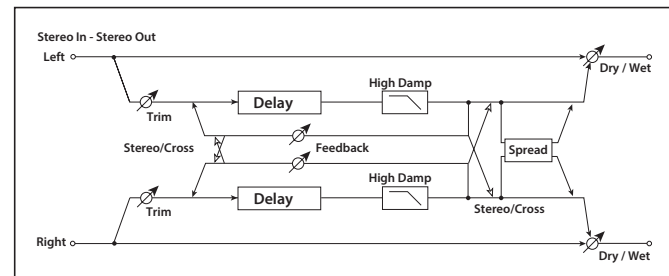
Dry/Wet [Dry, 99:1...1:99, Wet]

Sets the balance between the effect and dry sounds

Type [Stereo, Cross]

Selects the delay type

With the Stereo setting, this will be a conventional stereo delay.
With the Cross setting, this will be a cross-feedback delay in which the delay sound bounces between left and right.

Delay Tempo Sync [Off, On]

Specifies whether the delay time will be synchronized

If this is On, the delay time will synchronize to the tempo specified by the TAP button or MIDI clock.

Time Ratio   **[Delay Tempo Sync Off: 0.5...400.0%/**
Delay Tempo Sync On: 12.5...400.0%]

Sets each delay time as a proportion relative to the "L Delay Time," and "R Delay Time" values

The available range will depend on whether "Delay Tempo Sync" is On or Off. For example if "Time Ratio" is 50%, "L Delay Time" is 500 msec, and "R Delay Time" is 1200 msec, the delay times will be 250 msec, 500 msec, and 600 msec respectively.

⚠ If the specified delay time multiplied by the "Time Ratio" exceeds the allowable range, the delay time will be set to the maximum possible value (page 36 "Time Ratio").

L Delay Time   **[000...1400ms, 1/64... 1/1]**
R Delay Time   **[000...1400ms, 1/64... 1/1]**

These set the left and right channel delay times.
If "Delay Tempo Sync" is Off, these delay times are set in msec units.
If "Delay Tempo Sync" is On, these delay times are set as a timing resolution relative to the tempo specified by the TAP button or the MIDI clock.

Feedback   **[000...127]**

Sets the amount of feedback for the left and right channels
The amount of feedback for the right channel is linked with the proportion of the left and right delay times so that the decay times of the left and right channels will stay the same.

High Damp   **[000...100%]**

Sets the damping amount in the high range

Trim   **[000...127]**

Sets the input level

Spread   **[000...127]**

Sets the width of the stereo image of the effect sound
The stereo image is widest with a value of 127, and the effect sound of both channels is output from the center with a value of 0.

L/C/R Delay

This multitap delay outputs three Tap signals to the left, center, and right respectively. You can also adjust the left and right spread of the delay sound.
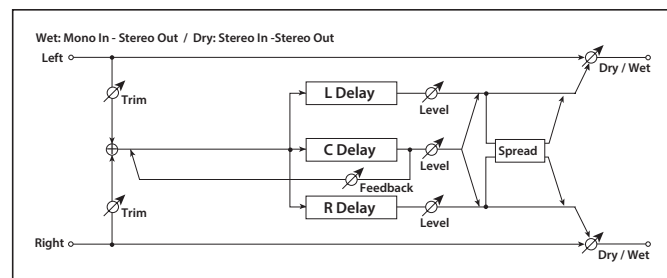
Dry/Wet   **[Dry, 99:1...1:99, Wet]**

Sets the balance between the effect and dry sounds

Delay Tempo Sync   **[Off, On]**

See page 43 "Delay Tempo Sync"

Time Ratio   **[Delay Tempo Sync Off: 0.5...400.0%/**
Delay Tempo Sync On: 12.5...400.0%]

See page 44 "Time Ratio"

L Delay Time   **[0000...1400ms, 1/64... 1/1]**
C Delay Time   **[0000...1400ms, 1/64... 1/1]**
R Delay Time   **[0000...1400ms, 1/64... 1/1]**

These set the L, C, and R delay times
The delay time is determined by these settings and the "Time Ratio" value.

L Delay Level   **[000...127]**
C Delay Level   **[000...127]**
R Delay Level   **[000...127]**

These adjust the output level of the L, C, and R delays

C Feedback [000...127]

Sets the feedback amount of TapC

Trim [000...127]

Sets the input level

Spread [000...127]

Sets the width of the stereo image of the effect sound

The stereo image is widest with a value of 127, and the effect sound of both channels is output from the center with a value of 0.

Auto Panning Delay

This is a stereo delay that uses an LFO to pan the delay sound between left and right.
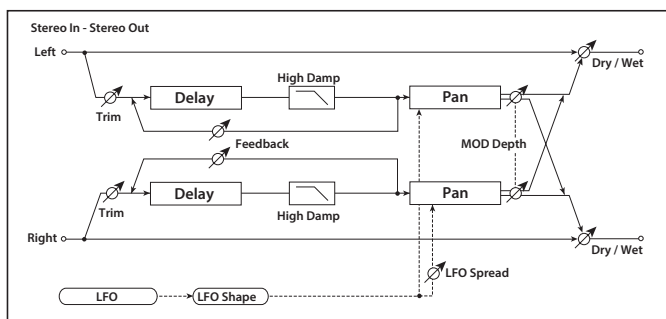
Dry/Wet [Dry, 99:1...1:99, Wet]

Sets the balance between the effect and dry sounds

Delay Tempo Sync [Off, On]

See page 43 "Delay Tempo Sync"

Time Ratio [Delay Tempo Sync Off: 0.5...400.0%/ Delay Tempo Sync On: 12.5...400.0%]

See page 44 "Time Ratio"

L Delay Time [000...1400msec, 1/64... 1/1]
R Delay Time [000...1400msec, 1/64... 1/1]

See page 44 "L Delay Time, R Delay Time"

Feedback [000...127]

See page 44 "Feedback"

Mod Depth [000...127]

Specifies the depth of modulation

LFO Tempo Sync [Off, On]

Specifies whether the LFO cycle will be synchronized with the tempo specified by the TAP button or the MIDI clock

See page 39 "LFO Tempo Sync"

LFO Frequency [0.01...100.0Hz]

Sets the LFO speed

Note: This parameter will be displayed and can be set if "LFO Tempo Sync" is Off.

See page 39 "LFO Frequency"

LFO Sync Note [8/1...1/64]

Sets the LFO frequency as a proportion of the tempo set by the TAP button

Note: This parameter will be displayed and can be set if "LFO Tempo Sync" is On.

See page 39 "LFO Sync Note"

LFO Waveform [Saw, Square, Triangle, Sine, S&H]

Selects the LFO waveform

See page 39 "LFO Waveform"

LFO Shape [−63...+63]

See page 39 "LFO Shape"

LFO KeySync [Off, On]

Specifies whether the LFO will be reset by note-on

See page 39 "LFO KeySync"

LFO Init Phase [000...180°]

Sets the starting location of the waveform

Note: This parameter will be displayed and can be set if "LFO KeySync" is On.

See page 40 "LFO Init Phase"

LFO Spread [−180...+180°]

Sets the phase difference between the left and right channels

High Damp [000...100%]

Sets the damping amount in the high range

Trim [000...127]

Sets the input level

Modulation Delay

This is a stereo modulation delay.
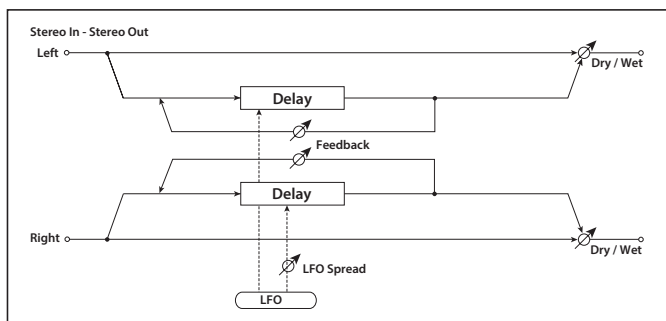
Dry/Wet [Dry, 99:1...1:99, Wet]

Sets the balance between the effect and dry sounds

Delay Tempo Sync [Off, On]

See page 43 "Delay Tempo Sync"

Time Ratio [Delay Tempo Sync Off: 0.5...400.0%/ Delay Tempo Sync On: 12.5...400.0%]

See page 44 "Time Ratio"

L Delay Time [000...1400msec, 1/64... 1/1]
R Delay Time [000...1400msec, 1/64... 1/1]

See page 44 "L Delay Time, R Delay Time"

Feedback [000...127]

See page 44 "L Delay Time, R Delay Time"

Mod Depth [000...127]

Sets the depth of LFO modulation

LFO Frequency [0.01...100.0Hz]

Sets the LFO speed
Increasing this value will result in a faster frequency.

See page 39 "LFO Frequency"

LFO Spread [−180...180°]

Sets the phase difference between the left and right channels

Tape Echo

This effect simulates a tape echo unit. The distortion and tonal change typical of magnetic tape are also reproduced.

Dry/Wet   [Dry, 99:1...1:99, Wet]

Sets the balance between the effect and dry sounds

Delay Tempo Sync   [Off, On]

See page 43 "Delay Tempo Sync"

Time Ratio   [Delay Tempo Sync Off: 0.5...400.0%/
                                   Delay Tempo Sync On: 12.5...400.0%]

See page 44 "Time Ratio"

Tap1 Delay Time   [0000...1400ms, 1/64... 1/1]
Tap2 Delay Time   [0000...1400ms, 1/64... 1/1]
Sets the delay times for Tap1 and Tap2

See page 44 "L Delay Time, C Delay Time, R Delay Time"

Tap1 Level   [000...127]
Tap2 Level   [000...127]
Sets the Tap1 output level and Tap2 output level

Feedback   [000...127]
Sets the Tap1 feedback amount

High Damp   [000...100%]
Sets the damping amount in the high range

Low Damp   [000...100%]
Sets the damping amount in the low range

Trim   [000...127]
Sets the input level

Saturation   [000...127]
Sets the distortion amount

WOW Flutter Frequency   [0.01...100.0Hz]
Sets the frequency where pitch variation will occur in Hz steps

WOW Flutter Depth   [000...127]
Sets the depth of pitch variation

Pre Tone   [000...127]
Sets the tone of the input

Spread   [000...127]
Sets the width of the stereo image of the effect sound

See page 44 "Spread"

Chorus

This effect adds thickness and warmth to the sound by modulating the delay time of the input signal. You can add spread to the sound by offsetting the phase of the left and right LFOs from each other.

Dry/Wet [Dry, 99:1...1:99, Wet]
Sets the balance between the effect and dry sounds

Mod Depth [000...127]
Sets the depth of LFO modulation

LFO Frequency [0.01...100.0Hz]
Sets the LFO speed. Increasing this value will result in a faster frequency

See page 39 "LFO Frequency"

LFO Spread [−180...180°]
Sets the LFO phase difference between the left and right
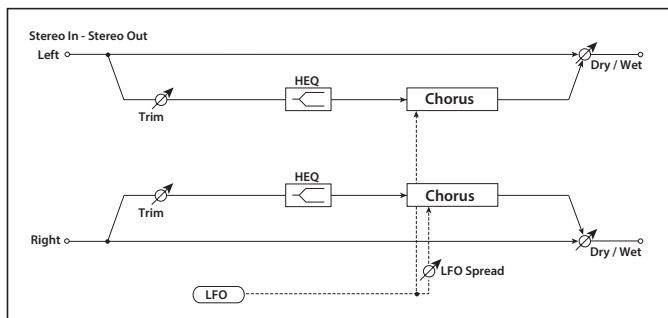
PreDelay L [00.0...50.0ms]
PreDelay R [00.0...50.0ms]
Sets the delay times for the left and right channels

Trim [000...127]
Sets the input level

High EQ Gain [−15.0...+15.0dB]
Sets the gain of High EQ

Flanger

This effect gives a significant swell and movement of pitch to the sound. It is more effective when applied to a sound with a lot of harmonics. This is a stereo flanger.
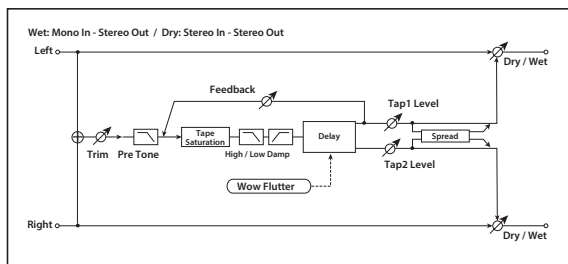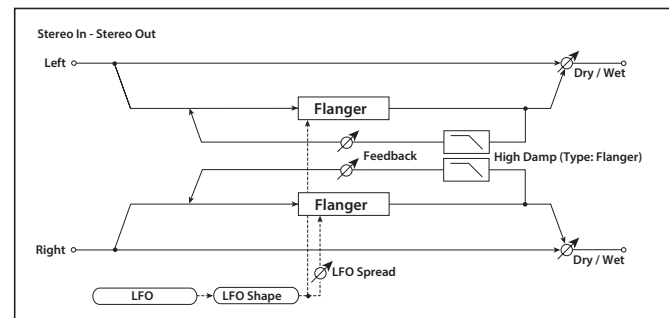

Dry/Wet [Dry, 99:1...1:99, Wet]
Sets the balance between the effect and dry sounds

Delay [000...30.0ms]
Sets the delay time in millisecond steps

Mod Depth [000...127]
Sets the depth of LFO modulation

Feedback [000...127]
Sets the amount of feedback for the left and right channels

Phase [+, −]
This switches the phase of the output and feedback

LFO Tempo Sync [Off, On]
Specifies whether the LFO cycle will be synchronized with the tempo specified by the TAP button or MIDI clock

See page 39 "LFO Tempo Sync"

LFO Frequency **[0.01...100.0Hz]**

Sets the LFO speed

Note: This parameter will be displayed and can be set if "LFO Tempo Sync" is Off.

See page 39 "LFO Frequency"

LFO Sync Note **[8/1...1/64]**

Sets the LFO frequency as a proportion of the tempo set by the TAP button

Note: This parameter will be displayed and can be set if "LFO Tempo Sync" is On.

See page 39 "LFO Sync Note"

LFO Waveform **[Saw, Square, Triangle, Sine, S&H]**

Selects LFO Waveform

See page 39 "LFO Waveform"

LFO Shape **[−63...+63]**

See page 39 "LFO Shape"

LFO KeySync **[Off, On]**

Specifies whether the LFO will be reset by note-on

See page 39 "LFO KeySync"

LFO Init Phase **[000...180°]**

Sets the starting location of the waveform

Note: This parameter will be displayed and can be set if "LFO KeySync" is On.

See page 40 "LFO Init Phase"

LFO Spread **[−180...+180°]**

Sets the LFO phase difference between the left and right channels

High Damp **[000...100%]**

Sets the feedback damping amount in the high range

Vibrato

This effect causes the pitch of the input signal to shimmer

Dry/Wet **[Dry, 99:1...1:99, Wet]**

Sets the balance between the effect and dry sounds

Mod Depth **[000...127]**

Sets the depth of LFO modulation

LFO Tempo Sync **[Off, On]**

Specifies whether the LFO cycle will be synchronized with the tempo specified by the TAP button or MIDI clock

See page 39 "LFO Tempo Sync"

LFO Frequency **[0.01...100.0Hz]**

Sets the LFO speed

Note: This parameter will be displayed and can be set if "LFO Tempo Sync" is Off.

See page 39 "LFO Frequency"

LFO Sync Note **[8/1...1/64]**

Sets the LFO frequency as a proportion of the tempo set by the TAP button

Note: This parameter will be displayed and can be set if "LFO Tempo Sync" is On.

See page 39 "LFO Sync Note"

LFO Waveform   [Saw, Square, Triangle, Sine, S&H]
Selects the LFO waveform.

See page 39 "LFO Waveform"

LFO Shape   [−63...+63]

See page 39 "LFO Shape"

LFO KeySync   [Off, On]
Specifies whether the LFO will be reset by note-on

See page 39 "LFO KeySync"

LFO Init Phase   [000...180°]
Sets the starting location of the waveform

Note: This parameter will be displayed and can be set if "LFO KeySync" is On.

See page 40 "LFO Init Phase"

LFO Spread   [−180...+180°]
Sets the LFO phase difference between the left and right channels

Phaser

This effect creates a swell by shifting the phase. You can add spread to the sound by offsetting the phase of the left and right LFOs from each other.
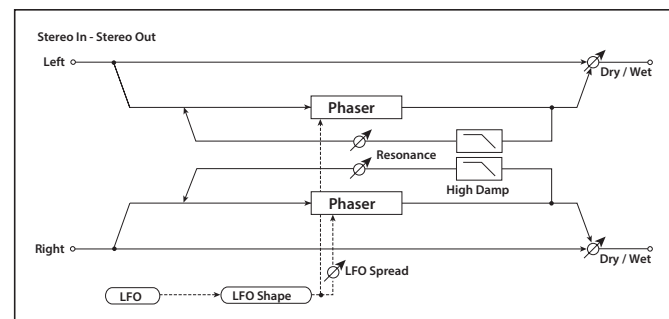
Dry/Wet   [Dry, 99:1...1:99, Wet]
Sets the balance between the effect and dry sounds

Type   [BLUE, U-VB]
Selects the phaser type

Manual   [000...127]
Sets the frequency to which the effect is applied

Mod Depth   [000...127]
Sets the depth of LFO modulation

Resonance   [000...127]
Sets the resonance amount

Phase   [+, −]
Switches the phase of the output and feedback

LFO Tempo Sync   [Off, On]
Specifies whether the LFO cycle will be synchronized with the tempo specified by the TAP button or MIDI clock

See page 39 "LFO Tempo Sync"

LFO Frequency   **[0.01...100.0Hz]**

Sets the LFO speed

Note: This parameter will be displayed and can be set if "LFO Tempo Sync" is Off.

See page 39 "LFO Frequency"

LFO Sync Note   **[8/1...1/64]**

Sets the LFO frequency as a proportion of the tempo set by the TAP button

Note: This parameter will be displayed and can be set if "LFO Tempo Sync" is On.

See page 39 "LFO Sync Note"

LFO Waveform   **[Saw, Square, Triangle, Sine, S&H]**

Selects the LFO waveform

See page 39 "LFO Waveform"

LFO Shape   **[–63...+63]**

See page 39 "LFO Shape"

LFO KeySync   **[Off, On]**

Specifies whether the LFO will be reset by note-on

See page 39 "LFO KeySync"

LFO Init Phase   **[000...180°]**

Sets the starting location of the waveform

Note: This parameter will be displayed and can be set if "LFO KeySync" is On.

See page 40 "LFO Init Phase"

LFO Spread   **[–180...+180°]**

Sets the LFO phase difference between the left and right channels

High Damp   **[000...100%]**

Sets the feedback damping amount in the high range

Tremolo

This effect modulates the volume level of the input signal. The effect is stereo, and offsetting the LFO of the left and right phases from each other produces a tremolo effect between left and right.

Dry/Wet   **[Dry, 99:1...1:99, Wet]**

Sets the balance between the effect and dry sounds

Mod Depth   **[000...127]**

Sets the depth of LFO modulation

LFO Tempo Sync   **[Off, On]**

Specifies whether the LFO cycle will be synchronized with the tempo specified by the TAP button or MIDI clock

See page 39 "LFO Tempo Sync"

LFO Frequency)   **[0.01...100.0Hz]**

Sets the LFO speed

Note: This parameter will be displayed and can be set if "LFO Tempo Sync" is Off.

See page 39 "LFO Frequency"

LFO Sync Note   [8/1...1/64]
Sets the LFO frequency as a proportion of the tempo set by the TAP button

Note: This parameter will be displayed and can be set if "LFO Tempo Sync" is On.

See page 39 "LFO Sync Note"

LFO Waveform   [Saw, Square, Triangle, Sine, S&H]
Selects the LFO waveform

See page 39 "LFO Waveform"

LFO Shape   [–63...+63]

See page 39 "LFO Shape"

LFO KeySync   [Off, On]
Specifies whether the LFO will be reset by note-on

See page 39 "LFO KeySync"

LFO Init Phase   [000...180°]
Sets the starting location of the waveform

Note: This parameter will be displayed and can be set if "LFO KeySync" is On.

See page 40 "LFO Init Phase"

LFO Spread   [–180...+180°]
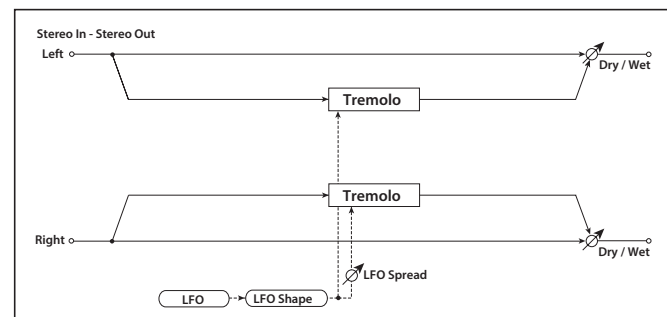Sets the LFO phase difference between the left and right channels

Ring Modulator

This effect creates a metallic sound by applying the oscillators to the input signal. Use the LFO or Dynamic Modulation to modulate the oscillator to create a radical modulation. Matching the oscillator frequency with a note number will produce a ring modulation effect in specific key ranges.
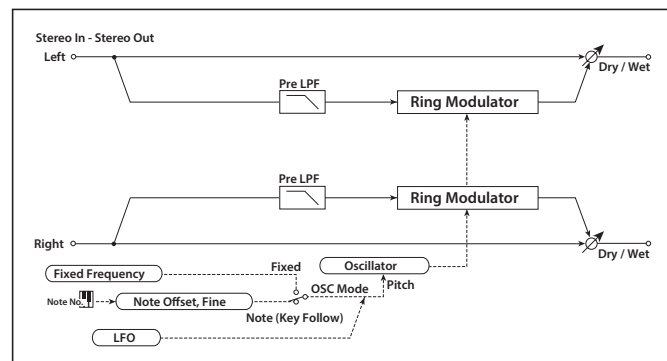
Dry/Wet   [Dry, 99:1...1:99, Wet]
Sets the balance between the effect and dry sounds

OSC Mode   [Fixed, Note]
This parameter switches between specifying the oscillator frequency and using a note number.
If this is set to Note, the oscillator frequency will track the note of the input signal.

Fixed Frequency   [0Hz...12.0kHz]
This parameter sets the oscillator frequency when "OSC Mode" is set to Fixed.

If this parameter is assigned to the "Long Ribbon (Filter)", it can be switched to "Note Offset" if the "OSC MODE" is set to Note.

Note Offset   [–48...+48]
Sets the pitch difference from the original note in semitone steps when the "OSC Mode" is set to Note

Note Fine   **[–100...+100]**

Sets the pitch difference from the original note in cent steps when the "OSC Mode" is set to Note

Note: By setting "Note Offset" and "Note Fine" so that the oscillator frequency will track the note that is input, you can produce a ring modulator effect with a correct scale.

OSC Waveform   **[Saw, Triangle, Sine]**

Selects the ocsillator waveform

LFO Intensity   **[–63...+63]**

Sets the depth of LFO modulation

LFO Tempo Sync   **[Off, On]**

Specifies whether the LFO cycle will be synchronized with the tempo specified by the TAP button or the MIDI clock

See page 39 "LFO Tempo Sync"

LFO Frequency   **[0.01...100.0Hz]**

Sets the LFO speed

Note: This parameter will be displayed and can be set if "LFO Tempo Sync" is Off.

See page 39 "LFO Frequency"

LFO Sync Note   **[8/1...1/64]**

Sets the LFO frequency as a proportion of the tempo set by the TAP button

Note: This parameter will be displayed and can be set if "LFO Tempo Sync" is On.

See page 39 "LFO Sync Note"

LFO Waveform   **[Saw, Square, Triangle, Sine, S&H]**

Selects the LFO waveform

See page 39 "LFO Waveform"

LFO Shape   **[–63...+63]**

See page 39 "LFO Shape"

LFO KeySync   **[Off, On]**

Specifies whether the LFO will be reset by note-on

See page 39 "LFO KeySync"

LFO Init Phase   **[000...180°]**

Sets the starting location of the waveform

Note: This parameter will be displayed and can be set if "LFO KeySync" is On.

See page 40 "LFO Init Phase"

Pre LPF   **[000...127]**

This parameter enables you to set the damping amount of the high range sound input to the ring modulator. If the input sound contains many harmonics, the effect may sound dirty. In this case, cut a certain amount of high range.

Grain Shifter

This effect samples extremely brief fragments of the sound at a specified interval, and plays them as a loop. This is effective when used on external input sounds that are constantly changing.

Wet: Mono In - Mono Out / Dry: Stereo In - Stereo Out
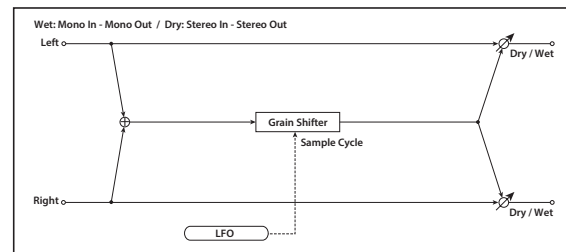
Dry/Wet   **[Dry, 99:1...1:99, Wet]**

Sets the balance between the effect and dry sounds

Duration Tempo Sync   **[Off, On]**

Specifies whether playback of the looped waveform will be synchronized
If this is ON, the looped waveform will play in synchronization with the tempo specified by the TAP button or the MIDI clock.

53

Time Ratio **[Duration Tempo Sync Off: 0.5...400.0%/**
Duration Tempo Sync On: 12.5...400.0%]

This specifies the length of the looped waveform relative to the "Duration" value

Duration **[000...350ms, 1/64... 1/1]**

Sets the duration of the grain
The length of the waveform is determined by this setting and the "Time Ratio" setting.
If "Duration Tempo Sync" is Off, this is set in msec units.
If "Duration Tempo Sync" is On, this is set as a timing resolution relative to the tempo specified by the TAP button or the MIDI clock.

✎ If the "Duration" and "Time Ratio" settings would cause the allowable range to be exceeded, the length of the waveform will be set to the maximum possible setting.

LFO Tempo Sync **[Off, On]**

Specifies whether the LFO cycle will be synchronized with the tempo specified by the TAP button or MIDI clock

See page 39 "LFO Tempo Sync"

LFO Frequency **[0.01...100.0Hz]**

If "LFO Tempo Sync" is Off, this specifies the cycle at which the waveform is switched in Hz units.
The waveform length specified by the "Duration" parameter will play as a loop, and the waveform will switch at each cycle of the LFO.

✎ If this parameter is assigned to the "Long Ribbon (Filter)", it can be switched to "LFO Sync Note" if "LFO Tempo Sync" is On.
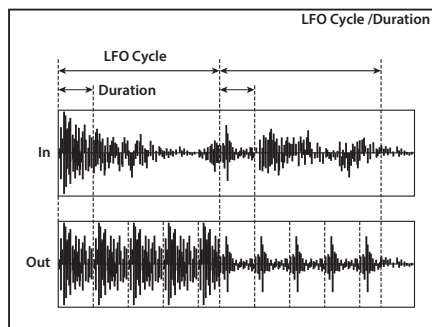
LFO Sync Note **[8/1...1/64]**

Sets the LFO frequency as a proportion of the tempo specified by the TAP button or the MIDI clock

Note: This parameter will be displayed and can be set if "LFO Tempo Sync" is On.

See page 39 "LFO Sync Note"

LFO KeySync **[Off, On]**

Specifies whether the LFO will be reset by note-on

See page 39 "LFO KeySync"

LFO Init Phase **[000...180°]**

Sets the starting location of the waveform

**Note:** This parameter will be displayed and can be set if "LFO KeySync" is On.

See page 40 "LFO Init Phase"

MIDI

Using the RK-100S 2 with other MIDI devices (MIDI)

This is where you can adjust MIDI-related settings for the RK-100S 2. MIDI stands for Musical Instrument Digital Interface, and is a world-wide standard for exchanging various types of musical data between electronic musical instruments and computers. When MIDI cables are used to connect two or more MIDI devices, performance data can be exchanged between the devices, even if they were made by different manufacturers.

The RK-100S 2 lets you assign control change numbers to the major parameters that affect the sound, and control these parameters from an external MIDI sequencer while you play the tone generator. You can also use the assigned ribon controllers or buttons to transmit these control changes to control an external MIDI device. You can synchronize the RK-100S 2's arpeggiator, LFO rate, or the delay time of the delay effect to the MIDI Clock of an external MIDI sequencer.

Connecting MIDI devices/computers

Controlling an external MIDI tone generator from the RK-100S 2

When you want to use the RK-100S 2's keyboard, controllers, and arpeggiator etc. to play an external MIDI tone generator, use a MIDI cable to connect the RK-100S 2's MIDI OUT connector to the MIDI IN connector of the external MIDI tone generator.

RK-100S 2
MIDI OUT
MIDI IN
MIDI Keyboard
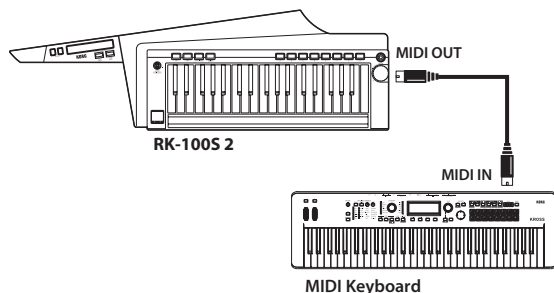
Controlling two or more external MIDI tone generators from the RK-100S 2

You can also use a MIDI patch bay to control multiple MIDI devices.

RK-100S 2
MIDI OUT
MIDI Keyboard
MIDI IN
MIDI tone generator
MIDI OUT
MIDI IN
MIDI OUT
MIDI patchbay
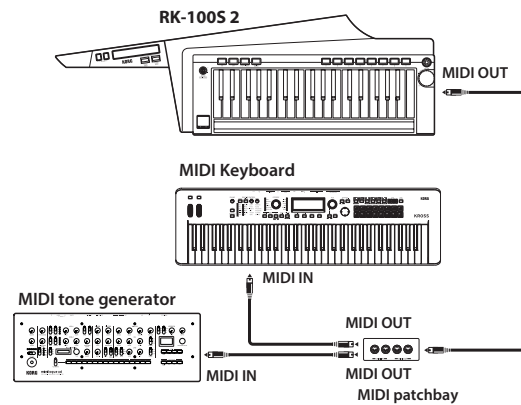
Connecting the RK-100S 2 to your computer via USB

Connect a USB cable to the USB connector of the RK-100S 2 and to your computer.

RK-100S 2
USB
USB cable
Computer
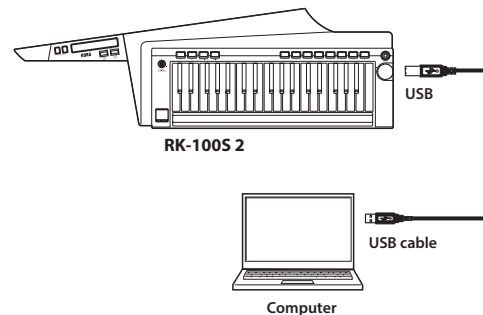
Note: In order to use a USB connection, you must install the Korg USB-MIDI driver in your computer. Download the Korg USB-MIDI driver from the Korg website, and install it as directed by the accompanying documentation.

MIDI-related settings

MIDI channel setting

In order to exchange data with a connected external MIDI device, you must set the RK-100S 2's MIDI channel to match the MIDI channel of the external MIDI device.

Specify the MIDI channel using the following procedure:

1. **Hold down the SHIFT button and press the favorites C button.**
The number of the Global MIDI channel appears in the display.

2. **Use the OCTAVE +/- buttons or the SOUND/FAVORITE BANK lever to specify the Global MIDI channel.**

3. **Press the SHIFT button to exit the shift function.**

4. **Set the MIDI channel of the connected external MIDI device.**

Note: For details on how to set the MIDI channel of the external MIDI device, refer to the owner's manual of the connected device.

Using the RK-100S 2 as a multi-timbral sound module

The MIDI channels for RK-100S 2's two timbres can be specified so that it can be used as a multi-timbral sound module with, for example, sequencer software on the connected computer.

1. **Set VOICE "Voice Mode" to MULTI.**

2. **Use "TIMBRE 2 MIDI CH" to set the MIDI channel for timbre 2.**

3. **Use the RK-100S 2 to set the global MIDI channel, which will be the MIDI channel for timbre 1 (see "MIDI channel setting").**

4. **Use sequencer software on the connected computer, for example, to set the MIDI channel.**

GLOBAL "POSITION" setting

The RK-100S 2's GLOBAL "Position" lets you specify how MIDI IN/OUT will be internally routed. This will affect how the MIDI data will be affected by the "Transpose," "Velocity Curve," and arpeggiator settings.

• Normally when controlling an external MIDI tone generator from the RK-100S 2, you will set "Position" to POST KBD. The various settings listed above will affect the MIDI data that is transmitted. The received data will be processed as "Transpose": 0, "Velocity Curve": Curve 4.

• Normally when controlling the RK-100S 2's tone generator from an external MIDI device, you will set "Position" to PRE TG. The various settings listed above will affect the MIDI data that is received. The transmitted data will be processed as "Transpose": 0 and "Velocity Curve": Curve 4.

MIDI FILTER" settings

The MIDI FILTER setting specifies whether program change, pitch bend, and control change will be transmitted or received (page 34 "MIDI FILTER").

Virtual patch modulation source settings

You can assign three different MIDI control messages (MIDI Control 1, 2, 3) as virtual patch modulation sources. Make the desired assignments in the GLOBAL MIDI section "MIDI Control 1," "MIDI Control 2," and "MIDI Control 3" (see page 33), and then select MIDI Control 1, MIDI Control 2, or MIDI Control 3 as the virtual patch source for the virtual patch settings (PATCH1–PATCH5). This lets you control modulation via MIDI.

The modulation source "FC MOD Source" of the cutoff frequency of the vocoder's carrier band-pass filters can also be controlled via MIDI; simply select MIDI Control 1, MIDI Control 2, or MIDI Control 3 as the virtual patch modulation source.

CONTROL CHANGE" settings

You can assign control change numbers to the major parameters that affect the sound, and use an external MIDI device to perform the same operations as when the ribbon controllers and buttons of the RK-100S 2 are used. Conversely, you can use the RK-100S 2's ribbon controllers and buttons to control an external MIDI device. Use the GLOBAL CC # MAP to assign control change messages to parameters (page 35 "CC # MAP").

MIDI "LOCAL" setting when connecting a computer

If the RK-100S 2 is connected to a computer, and the Echo Back setting of the computer is turned on while the RK-100S 2's Local Control setting is also on, the performance data generated when you play the RK-100S 2's keyboard will be sent to the computer, and will also be echoed-back to sound the RK-100S 2's tone generator a second time. To prevent each note from being sounded twice, once directly from the keyboard and once from the echoed-back note, you must turn the RK-100S 2's Local Control setting off (see page 33 "Local Control").

Recording the MIDI output from the RK-100S 2's arpeggiator onto an external MIDI sequencer or computer

Connect and setting

Connect the RK-100S 2's USB connector to the MIDI IN connector of your computer.
Then turn the RK-100S 2's Local Control off (GLOBAL MIDI "Local Control": Off), and turn on the echo back setting of your computer.

Recording the note data from the arpeggiator onto a computer

Set the GLOBAL "Position" to POST KBD. Turn on the RK-100S 2's arpeggiator (ARP button lit up), play the keyboard, and then record the performance with, for example, sequencer software on the your computer.

If the GLOBAL page "Position" is set to POST KBD, the MIDI note data produced by the arpeggiator will be output from the RK-100S 2, and recorded. Turn the RK-100S 2's arpeggiator off during playback.

Synchronizing the arpeggiator

For information on synchronization-related settings of your external MIDI device, refer to the manual of your device.

Using the RK-100S 2 as master and the external MIDI device as slave. Connect the RK-100S 2's MIDI OUT connector to your external MIDI device's MIDI IN connector.

Set your external MIDI device to receive incoming MIDI clock messages. The external MIDI device (e.g., sequencer or rhythm machine) will function at the tempo specified by the RK-100S 2's TAP button.

MIDI messages

MIDI channels

MIDI uses sixteen channels (1–16), and MIDI messages will be transmitted and received if the channel of the receiving device matches the channel of the transmitting device. This setting will affect the way that channels are handled.

If "Voice Mode" is SINGLE, LAYER, or SPLIT

If the VOICE "Voice Mode" setting is SINGLE, LAYER, or SPLIT, MIDI data is transmitted/received on the global MIDI channel.

If "Voice Mode" is Multi

If the VOICE "Voice Mode" setting is MULTI, MIDI data for timbre 1 is transmitted/received on the global MIDI channel. MIDI data for timbre 2 is transmitted/received on the MIDI channel specified by the VOICE "TIMBRE 2 MIDI CH" setting. Other transmission/reception uses the global MIDI channel.

Note: The global MIDI channel is the basic MIDI channel used by the RK-100S 2 to transmit and receive MIDI data. Use the RK-100S 2 to specify the setting (see page 56 "MIDI channel setting").

Note-on/off

Note-on [9n, kk, vv], Note-off [8n, kk, vv]

(n: channel, kk: note number, vv: velocity)
When you play the keyboard or long ribgon controller of the RK-100S 2, note-on/off messages are transmitted. When the RK-100S 2 receives a note-on message, its internal sound generator will produce sound corresponding to the note number and velocity of that note-on.

The RK-100S 2 does not support note-off velocity. All note-off messages it transmits are sent with a fixed velocity value of 64, and any note-off velocity value it receives will be ignored.

If the GLOBAL "Position" (see page 32) is Post KBD, note-on/off messages will be transmitted by the arpeggiator when it is running.

Program change, Bank select

Program change [Cn, pp]

(n: channel, pp: program number)

When you switch programs, a program change message with a program number for the corresponding 200 programs (001–200) will be transmitted. If you want program changes to be transmitted and received, set the MIDI FILTER "Program Change" parameter to Enable. If this is set to Disable, program change messages will not be transmitted or received.

Bank select MSB (CC#00) [Bn, 00, mm]

Bank select LSB (CC#32) [Bn, 20, bb]

(n: channel, mm: bank number upper bytes, bb: bank number lower bytes)

When you switch programs in Play mode, Bank Select and Program Change messages are transmitted.

Bank (CC#00)MSB	Bank (CC#32)LSB	Program Change value	Bank Number
00	00	000–127 (00–7F)	001–128
00	01	000–071 (00–47)	129–200

You can use Bank select and program change messages to switch the settings of an individual timbre used by a program to the settings of another timbre, one used by a different program. These messages are received on the MIDI channel of the timbre.

Bank (CC#00)MSB	Bank (CC#32)LSB	Program Change value	Timbre Number
32	32	000–127 (00–7F)	001–128 Timbre1
32	33	000–071 (00–47)	129–200 Timbre1
32	34	000–127 (00–7F)	001–128 Timbre2
32	35	000–071 (00–47)	129–200 Timbre2

Pitch bend

Pitch bend change [En, bb, mm]

(n: channel, bb: lower digits of value, mm: upper digits of value)

When pitch bend messages are received, a pitch bend will occur according to the PITCH "BEND RANGE" value. Pitch bend can also be used in a Virtual Patch (PATCH1–PATCH5) for a synth program, as a modulation source for a vocoder program (Vocoder FILTER), or as a control source for a effect parameters. In this case, the message will act as a modulation source where mm=64, bb=00 will be 0 (center value) for the range of –127 – +127. (This message is received on the timbre channel.)

The pitch bend change is transmitted on the global MIDI channel when the short ribbon controller is used while the SHORT RIBBON button is lit up in red.

If you want pitch bend changes to be transmitted and received, set the MIDI FILTER "Pitch Bend" to Enable. If this is set to Disable, pitch bend messages will not be transmitted or received.

Control changes

Control changes [Bn, cc, vv]

(n: channel, cc: control change no., vv: value)

When you use the ribbon controllers or certain buttons, the assigned control change will be transmitted. Conversely, when control change numbers corresponding to the buttons or ribbon controllers are received, the corresponding controller or parameter will be controlled.
If you want control changes to be transmitted and received, set the MIDI FILTER "Control Change" to Enable. If this is set to Disable, control change messages will not be transmitted or received.

Note: Use the CC# MAP to assign control change messages to parameters.

• Modulation depth (CC#01) [Bn, 01, vv]

When a modulation depth message is received, the LFO2 vibrato depth will change according to the value specified for PITCH "VIBRATO INTENSITY" If the value of the received message is the maximum value (127), vibrato will be

applied over the full pitch range specified by "VIBRATO INTENSITY" If the value of the received message is 0, no vibrato will apply.

The modulation depth is transmitted on the global MIDI channel when the short ribbon controller is used while the SHORT RIBBON button is lit up in red.

• Volume (CC#07) [Bn, 07, vv]

If you assign the control change Volume (CC#07) to "AMP LEVEL" in the CC# MAP, incoming Volume messages will control the volume.

• Panpot (CC#10) [Bn, 0A, vv]

If you assign the control change Panpot (CC#10) to "PANPOT" in the CC# MAP, incoming Panpot messages will control the stereo position of the sound.

• Expression (CC#11) [Bn, 0B, vv]

When expression messages are received, the volume of a timbre will be controlled. The volume will be at maximum if the maximum value (127) is received, and at zero if the minimum value (0) is received.

• Damper pedal (CC#64) [Bn, 40, vv]

Incoming damper pedal messages will turn the timbre's damper effect (Hold) on/off (0: Off, 127: On).

• Portamento (CC#65) [Bn, 41, vv]

When portamento messages are received, the portamento effect of a timbre will be switched on/off. If the portamento time is set to 0, there will be no portamento effect. (0: off, 7F: on).

• All note off (CC#123) [Bn, 7B, 00] (value is 00)

When an All Note Off message is received, all currently-sounding notes of that channel will be turned off. Some sound may linger due to the envelope settings.

• All sound off (CC#120) [Bn, 78, 00] (value is 00)

When an All Sound Off message is received, all notes currently sounding on that channel will be silenced. While All Note Off allows the decay of a note to continue, the All Sound Off will silence the sound immediately. However, this message is intended for use in emergencies, and is not for use during a performance.

• Reset all controllers (CC#121) [Bn, 79, 00] (value is 00)

When a Reset All Controllers message is received, all controller values currently running on that channel will be reset. Some parameters assigned using Virtual Patches will not be reset.

Using a control change as a virtual patch modulation source

By selecting CC#cc (cc=00–95, 102–119) as the "SOURCE" for MIDI Control 1, MIDI Control 2, or MIDI Control 3 in the VIRTUAL PATCH, you can use control changes as a modulation source for a virtual patch, vocoder "FC MOD SOURCE," or effect parameter. The actual value of 0–127 will be used without change as the modulation source.

Assigning a control change to a ribbon controller or button

In the CC # MAP, you can assign the control changes CC#00–CC#95 and CC#102–CC#119 to principal parameters that correspond to ribbon controllers or buttons. When you use an assigned ribbon controller or button, the corresponding control change will be transmitted. When that control change is received from an external device, the result will be the same as if that ribbon controller or button had been used with the corresponding value (page 35 "CC # MAP").

Parameters transmitted and received via NRPN

The RK-100S 2's ribbon controllers and buttons other than the controls listed above are assigned NRPN (Non Registered Parameter No.). NRPN messages can be used freely by any musical instrument manufacturer or model.

NRPN editing is performed using the following procedure.

1. **Use NRPN MSB (CC#99) [Bn, 63, mm] and NRPN LSB (CC#98) [Bn, 62, rr] (n: channel, mm, rr: parameter no. upper and lower bytes) to select the parameter.**

2. **Use data entry MSB (CC#6) [Bn, 06, mm] (n: channel, mm: parameter value) to specify the value.**

Note: On the RK-100S 2, only data entry MSB is used.

Controlling the arpeggiator

When an arpeggiator setting is changed with a button or knob on the front panel, the NRPN listed below are transmitted. In addition, when they are received, the arpeggiator settings are specified according to the parameter values. These messages are transmitted and received on the global MIDI channel. Refer to the tables for differences between the parameter values and the RK-100S 2 parameters.

- **ON/OFF: [Bn, 63, 00, Bn, 62, 02, Bn, 06, mm]**

- **LATCH: [Bn, 63, 00, Bn, 62, 04, Bn, 06, mm]**

- **TYPE: [Bn, 63, 00, Bn, 62, 07, Bn, 06, mm]**

- **GATE: [Bn, 63, 00, Bn, 62, 0A, Bn, 06, mm]**

- **SELECT: [Bn, 63, 00, Bn, 62, 0B, Bn, 06, mm]**

(n: channel, mm: parameter value)

	MSB (Hex)	LSB (Hex)	Value (transmitted)	Value (received)
ON/OFF	00(00)	02(02)	0: OFF, 127: ON	0...63: OFF, 64...127: ON
LATCH	00(00)	04(04)	0: OFF, 127: ON	0...63: OFF, 64...127: ON
TYPE	00(00)	07(07)	-	0...21: Up, 22...42: Down, 43...63: Alt1, 64...85: Alt2, 86...106: Random, 107...127: Trigger
GATE	00(00)	10(0A)	-	Refer to "GATE values"
SELECT	00(00)	11(0B)	-	0...42: Timbre1, 43...85: Timbre2, 86...127: Timbre1+2

GATE values

Value (Received)	Gate Time [%]	Value (Received)	Gate Time [%]	Value (Received)	Gate Time [%]	Value (Received)	Gate Time [%]
0	000	33	026	66	052	99	078
1,2	001	34	027	67	053	100	079
3	002	35,36	028	68,69	054	101,102	080
4	003	37	029	70	055	103	081
5	004	38	030	71	056	104	082
6,7	005	39,40	031	72,73	057	105	083
8	006	41	032	74	058	106,107	084
9	007	42	033	75	059	108	085
10	008	43	034	76	060	109	086
11,12	009	44,45	035	77,78	061	110,111	087
13	010	46	036	79	062	112	088
14	011	47	037	80	063	113	089
15	012	48	038	81	064	114	90
16,17	013	49,50	039	82,83	065	115,116	91
18	014	51	040	84	066	117	92
19	015	52	041	85	067	118	93
20,21	016	53	042	86	068	119	94
22	017	54,55	043	87,88	069	120,121	95
23	018	56	044	89	070	122	96
24	019	57	045	90	071	123	97
25,26	020	58,59	046	91,92	072	124	98
27	021	60	047	93	073	125,126	99
28	022	61	048	94	074	127	100
29	023	62	049	95	075		
30,31	024	63,64	050	96,97	076		
32	025	65	051	98	077		

For example if you want to switch the arpeggiator on/off from an external MIDI sequencer, make the following settings.

Off: CC#99: 0, CC#98: 2, CC#6: 0...63

On: CC#99: 0, CC#98: 2, CC#6: 64...127

Controlling the Timbre parameters

These messages are received on the Global MIDI channel.

Virtual Patch Source

Source1...Source5: [Bn, 63, 04, Bn, 62, 00...04, Bn, 06, mm]

(n: channel, mm: parameter value)

	MSB (Hex)	LSB (Hex)	Value (received)
Patch1 Source	04 (04)	00 (00)	**0...9:** FILTER EG, **10...19:** AMP EG,
Patch2 Source	04 (04)	01 (01)	**20...29:** ASSIGNABLE EG, **30...40:** LFO1, **41...48:** LFO2, **49...58:** Velocity, **59...68:** Short ribbon (Pitch),
Patch3 Source	04 (04)	02 (02)	**69...78:** Short ribbon (Modulation), **79...88:** Keyboard Track,
Patch4 Source	04 (04)	03 (03)	**89...97:** MIDI Control 1, **98...107:** MIDI Control 2, **108...117:** MIDI Control 3
Patch5 Source	04 (04)	04 (04)	**118...127:** Long Ribbon (Filter)

Virtual Patch Destination

Destination1...Destination5: [Bn, 63, 04, Bn, 62, 08...0D, Bn, 06, mm]

(n: channel, mm: parameter value)

	MSB (Hex)	LSB (Hex)	Value (received)
Patch1 Destination	04(04)	08(08)	**0...2:** Pitch, **3...5:** OSC2 Tune, **6...9:** OSC1 Control 1, **10...12:** OSC1 Level, **13...15:** OSC2 Level, **16...18:** NOISE Level, **19...21:** Filter1 Type Balance, **22...25:** Filter1 Cutoff, **26...28:** Filter1 Resonance, **29...31:** Filter2 Cutoff,
Patch2 Destination	04(04)	09(09)	**32...34:** Drive/WS Depth, **35...37:** AMP Level, **38...41:** Panpot, **42...44:** LFO1 Frequency, **45...47:** LFO2 Frequency, **48...50:** Portamento, **51...53:** OSC1 Control 2, **54...57:** Filter1 FILTER EG Int,
Patch3 Destination	04(04)	10(0A)	**58...60:** Filter1 Key Track, **61...63:** Filter2 Resonance, **64...66:** Filter2 FILTER EG Int, **67...69:** Filter2 Key Track, **70...73:** FILTER EG Attack, **74...76:** FILTER EG Decay, **77...79:** FILTER EG Sustain, **80...82:** FILTER EG Release, **83...85:** AMP EG Attack, **86...89:** AMP EG Decay,
Patch4 Destination	04(04)	11(0B)	**90...92:** AMP EG Sustain, **93...95:** AMP EG Release, **96...98:** ASSIGNABLE EG Attack, **99...101:** ASSIGNABLE EG Decay, **102...105:** ASSIGNABLE EG Sustain, **106...108:** ASSIGNABLE EG Release,
Patch5 Destination	04(04)	12(0C)	**109...111:** Patch1 Int, **112...114:** Patch2 Int, **115...117:** Patch3 Int, **118...121:** Patch4 Int, **122...124:** Patch5 Int, **125...127:** Long Ribbon (Filter) Int

Controlling the vocoder parameters

These messages are received on the Global MIDI channel.

Fc Modulation Source

FC.MOD.SRC (Fc Modulation Source): [Bn, 63, 04, Bn, 62, 00, Bn, 06, mm]

(n: channel, mm: parameter value)

Fc Mod Sorce	Value (received)
FILTER EG	0...10
AMP EG	11...20
ASSIGNABLE EG	21...31
LFO1	32...42
LFO2	43...52
Velocity	53...63
Short Ribbon (Pitch)	64...74
Short Ribbon (Modulation)	75...84
Keyboard Track	85...95
MIDI Control 1	96...106
MIDI Control 2	107...116
MIDI Control 3	117...127

Band parameters

You can control the output level and pan for each band of the vocoder's synthesis filter.

Level 1...Level16: [Bn, 63, 04, Bn, 62, 40...4F, Bn, 06, mm]

Pan1...Pan16: [Bn, 63, 04, Bn, 62, 50...5F, Bn, 06, mm]

(n: channel, mm: parameter value)

Vocoder Sw

Vocoder Sw: [Bn, 63, 05, Bn, 62, 04, Bn, 06, mm]

(n: channel, mm: parameter value)

MSB (Hex)	LSB (Hex)	Value (transmitted)	Value (received)
Vocoder Sw	05(05)	04(00)	0...63:OFF, 64...127: ON

Other controls

These messages are received on the Global MIDI channel.

Voice Mode

Voice Mode: [Bn, 63, 05, Bn, 62, 00, Bn, 06, mm]

(n: channel, mm: parameter value)

	MSB (Hex)	LSB (Hex)	Value (received)
Voice Mode	05(05)	00(00)	0...31: SINGLE, 32...63: LAYER , 64...95: SPLIT, 96...127: MULTI

System exclusive messages

RK-100S 2 format

F0: exclusive status

42: Korg ID

3n: [n=0–F] MIDI channel

00 01 22: RK-100S 2 model ID

ff: function ID (type of message)

|

F7: end of exclusive

Universal system exclusive

System exclusive messages include a special category of messages whose purpose is officially defined. These are called universal system exclusive messages. Of these universal system exclusive messages, the RK-100S 2 supports Master Volume and Master Fine Tuning.

Master volume [F0, 7F, nn, 04, 01, vv, mm, F7]

(vv: lower byte of value, mm: upper byte of value, [mm, vv=7F, 7F] is Max, [mm, vv=00, 00] is 0)

When a Master Volume message is received, the RK-100S 2 will adjust its overall volume.

Master fine tuning [F0, 7F, nn, 04, 03, vv, mm, F7]

(A value of 8192 [mm, vv=40, 00] is center (0 cent, A4=440.0Hz), 4096 [mm, vv=20, 00] is -50 cents, and 12288 [mm, vv=60, 00] is +50 cents.)

When master fine tuning is received, the value specified for the RK-100S 2's GLOBAL "Master Tune" will be ignored, and the overall pitch will be specified by the data that was received.

Realtime Messages

Starting/stopping the arpeggiator

When the RK-100S 2's arpeggiator is synchronized to a connected external MIDI device, system realtime messages Start and Stop will control the arpeggiator.

Start [FA]

When the Start [FA] message is received, the arpeggio pattern will be reset to its beginning.

Stop [FC]

When a Stop [FC] message is received, the arpeggiator will stop. (It will not be turned off; the arpeggiator will start again when additional notes are played.)

Trouble shooting

If you suspect a malfunction, please check the following points. If this does not resolve the problem, please contact a nearby dealer.

No sound

- Is the VOLUME knob set to a position where sound will be output?
- Is the MIDI "LOCAL Control" setting turned ON?
- Were any volume-related parameters set to a value of 0?
- Could FILTER "CUTOFF" be set to 0 ?
- Could the Vocoder FILTER "EF.SENS" parameter be set to HOLD (FORMANT HOLD) when there is no input to the INPUT jack?

Can't edit

- Can't select timbre 2:
  Have you set the VOICE "Voice Mode" parameter to something other than SINGLE?
- Can't select vocoder parameters in Full Edit mode:
  Is the vocoder turned on?
- If the changes you made to a program or to the global settings have not been remembered, did you turn the power off before executing the Write operation? In the case of a program, your edits will also be lost if you select a different program. Execute the Write operation to save your edits before you switch programs or turn off the power.

Arpeggiator will not start

- Is the arpeggiator on (ARP button lit up)?
- Is the arpeggiator assigned to a timbre?
- Is the GLOBAL MIDI "MIDI Clock" setting correct?

Transpose, velocity curve, and arpeggiator data is not recognized correctly

- Is the GLOBAL "Position" set appropriately?

No response to MIDI messages sent from an external device

- Is the MIDI cable or USB cable connected correctly?
- Does the MIDI channel of the data transmitted from the external MIDI device match the MIDI channel of the RK-100S 2.

Does not respond correctly to MIDI messages sent from an external device

- Is the MIDI FILTER parameter for that type of MIDI message set to Enable?

Can't control two timbres on separate MIDI channels

- The RK-100S 2 uses only one MIDI channel to transmit and receive when the VOICE "Voice Mode" is set to SINGLE, LAYER, or SPLIT. You can use two MIDI channels to play the two timbres independently only when VOICE "Voice Mode" is set to MULTI.

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