KORG Collection

Owner's Manual

microKORG

SYNTHSIZER / VOCODER

E 1

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Introduction

Thank you for purchasing the Korg microKORG software synthesizer. To help you get the most out of your new instrument, please read this manual carefully.

Main features

Two decades have passed since the release of the microKORG in 2002. The original microKORG featured a retro design in a compact form factor. It has been loved throughout the world as a full-fledged analog modeling synthesizer with a built-in vocoder that anyone can play right away. Now, we've recreated the microKORG as a software synthesizer.

In addition to fully recreating the analog modeling sound generator, vocoder and other functionality of the original, this software synthesizer inherits the same familiar retro design, all accessible from an improved user interface that lets you see all of the parameters at once in an easy-to-use package that's suitable for today's music production. This softsynth gives you access to preset sounds that you can use right away, or you can have fun making your own sounds and switching between various color variations. Enjoy delving into the world of the microKORG, our product that's specifically designed for the fun of making sound.

Part names and functions

1. VOLUME

Adjusts the overall volume.

2. SYNTH/VOCODER

Switches the currently selected program between a Synthesizer program and a Vocoder program.

Synthesizer: The program will be a synth program.

You can use two oscillators to create the sound.

Vocoder: The program will be a vocoder program.

You can use sound input from a connected mic to produce "talking" instrument effects.

TIP   The parameters for editing will vary depending on whether Synthesizer or Vocoder is selected here.

3. LAYER

Specifies how many timbres the program will use. This cannot be selected for a vocoder program.

Single: Only one timbre will be used.
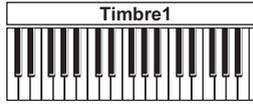
Layer: Two timbres will be used.
When you play the keyboard, both timbres will sound simultaneously.
You can edit each timbre individually.
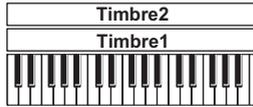
4. PROGRAM SELECT

a. Display
Shows the names of the programs that are currently loaded and other information.

b. Select buttons
Use these buttons to switch to the previous or next program in the list.

c. Sound Name
Shows the name of the program that's now loaded. Click the name to show the browser screen. (→ page 10 "Browser functions")

d. Save As
Saves the sound you are currently playing as a new program.

e. Save
Saves the sound you are currently playing.

f. MENU
From the menu, you can recall and save the controller settings as well as change the screen size, view the version information, view the Owner's Manual and so on. (→ page 12 "Menu")

g. Octave Shift
Shifts the range of notes assigned to the keyboard up or down one octave.

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5. Edit area

Here you can edit the parameters that are shown in each edit page.
Drag or tap each controller to select it, and then edit its parameter. You can also right-click to use the MIDI CC# Learn function.

6. PITCH wheel

This controls the pitch.

7. MOD wheel

This controls the depth of modulation.

8. Keyboard

Use this as an onscreen controller (a virtual keyboard) when playing. When operating this and the other controllers from an external MIDI device, it's useful to set their MIDI control numbers in Global mode.

Browser functions

The microKORG software synthesizer has a browser search function to quickly find and choose the sounds you want out of the wide range of options, filtering by genre.
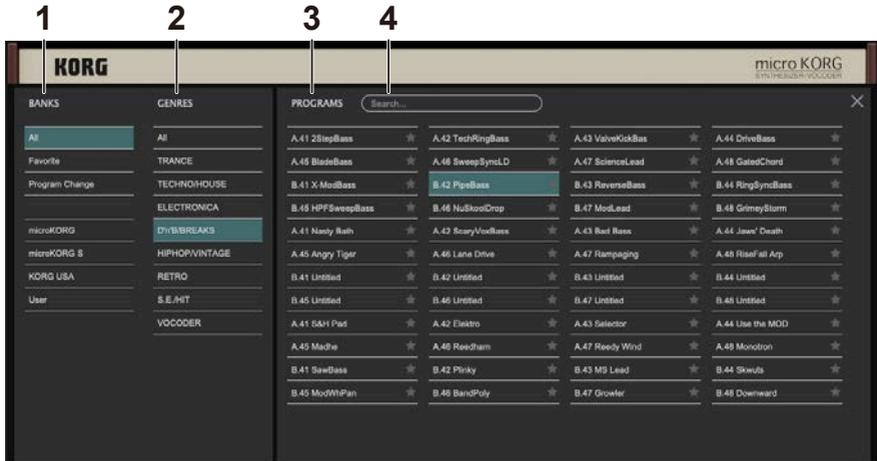
1. BANKS

a. All
Displays all program data.

b. Favorite
Displays only the programs that are added as favorites in the browser.
Click the star (★) icon to the right of the program name to add or remove that program from the favorites.

c. Program Change
Displays the program you want to change with program change messages. To add a program, use the right-click context menu in the Programs tab.

d. Factory
Displays the factory-set (preset) programs. You can't overwrite the factory-set programs.

e. Template
Displays templates that are useful when creating programs. You can't overwrite the template programs.

f. User

Displays the programs that are saved. User programs are saved in the folders shown below.
[macOS]
~/Documents/KORG/microKORG/Presets/User
[Windows]
~/Documents/KORG/microKORG/Presets/User

2. GENRES

Use the genres when you want to narrow down your selection of programs for the selected bank. Only programs that are registered in genres are shown in the presets.

3. PROGRAMS

Selects the program you want to use. You can also register favorites or program changes, or edit the program information.
Right-click to add a preset program to a favorite or to a program change. You can also edit the information for user programs.

4. Search

You can search for programs by typing some text.

Menu

Sound

Open Global Settings

Displays a page for configuring the voice number settings and the settings for MIDI messages.

Load Init Program

Synth
Initializes the currently selected synth program.

Vocoder
Initializes the currently selected vocoder program.

Original Hardware Program

Import (Import a program/bank)

This lets you load and use sound data created on the microKORG hardware synth (.syx files).

Export (Export a program/bank)

Use this to export the sounds you created using this software to a format that's readable by the hardware version of this synth (.syx file).

Enter Send/Recieve Mode

Connect your microKORG (hardware version) via MIDI to transfer and edit sounds to/from your computer. This is only shown in the menu when loading the standalone version.

MIDI CC

Clear Current Assign (All Clear MIDI CC Assign)

Clears the MIDI CC assignments for all of the parameters.

Set Original MK-1 Assign

Assigns the same MIDI CC numbers used by the microKORG hardware to each parameter. This applies only to Synth Timbre 1.

User Interface

Screen Size

Changes the screen size. Any changes to this setting will take effect the next time the softsynth is launched.

Skin

Here you can change the look of the user interface to recreate the color variations of the original microKORG.

Knob Weight

Adjusts the sensitivity of the knobs and sliders when they are operated.

Manual

Shows the manual for the software or the original hardware.

Acknowledgements

Shows the software components used to create this softsynth, as well as acknowledgements of those involved in developing this product.

About microKORG

Shows the software version.

Basic operations

Use the mouse to edit the values of various controllers and parameters.

Keyboard

Click on the keyboard to play notes.

PITCH, MOD Wheel

Drag the wheel up and down to control it.

Knob

Drag the knob to adjust its value.
Double-click a knob to reset its value.

Value slider

Drag the value of the slider up and down to adjust a value.

Toggle switch

Click to toggle the setting ON or OFF.

Combo box

Click on the combo box to select a value from the pop-up menu that appears.

Menu button

Click to select a command from the pop-up menu that appears.

Graphical envelope

Drag each point to adjust its value (level or time).

Quick start

Playing the synthesizer

Use the onscreen keyboard or an external MIDI keyboard to play sounds with the microKORG.

1. **With the SYNTH/VOCODER buttons, select SYNTH.**
2. **Turn the genre select knob or click the sound name in the display to open the browser screen.**
3. **Select the sound you want from the sounds within each genre or from the browser list.**

Using the vocoder

1. **With the SYNTH/VOCODER buttons, select VOCODER.**
2. **Adjust the "Audio In Level" in AUDIO IN.**
3. **Input an audio signal to the input selected in the Audio In settings.**
4. **Try playing the sounds using the software keyboard or an external MIDI keyboard while inputting audio.**

Using the arpeggiator

The arpeggiator is a function that automatically plays the notes of the chord (arpeggio) separately when you hold down a chord on the keyboard. The microKORG's arpeggiator provides six arpeggio types to change various aspects of the arpeggio, such as the length (gate time) of the notes. A "step arpeggiator" is also available for specifying the on/off status for up to eight steps, giving you an even wider range of performance possibilities.

When you hold down a chord, the notes sound as shown at right. (TYPE: UP)

1. **Select a program.**

You can use the arpeggiator with both synth programs and vocoder programs, but in this example we'll select a synth program for trying out this function.

2. **Press the ARPEGGIATOR ON/OFF button to turn the arpeggiator on.**
3. **Hold down a chord on the keyboard to make the arpeggio play.**

Editing the sounds

There are two ways to edit sounds on the microKORG.

- You can select a program that's close to the sound you want, and create the desired program by making the necessary changes.
- You can start making a program from scratch.

The main steps are shown below.

1. **Select the program that you want to edit.**
    To create a program from scratch, initialize the program. (→ page 12 "Load Init Program")

2. **Use the knobs and buttons to edit the parameters for creating your sound.**
    Consider how the sound you have in mind differs from the original program, and then choose the appropriate parameters to edit.
    For instance, if you want to edit a synth program, use the CUTOFF knob in the FILTER section to change the cutoff frequency value, which changes the tone.

Use the RESONANCE knob to change the resonance value, adding a distinctive character to the sound.

You can also try editing parameters like "ATTACK" and "DECAY" in the AMP EG section, "PORTAMENTO" in the PITCH section, or the MOD FX and DELAY parameter values, and check out the results. (For details on the parameters, refer to the Parameter Guide.)

To create a sound from the initialized settings, edit the parameters in the VOICE, PITCH, OSC1/2, MIXER, FILTER, FILTER EG, AMP and AMP EG sections, in that order.

Saving a sound

Save the sounds you create, so that you can recall them anytime.

1. **Click the "Save As" button on the display.**
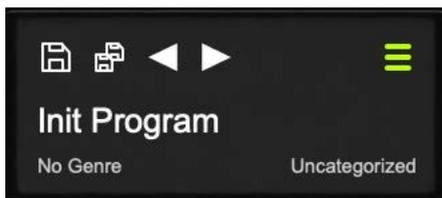
2. **Edit the name of your sound that's shown in the dialog box.**
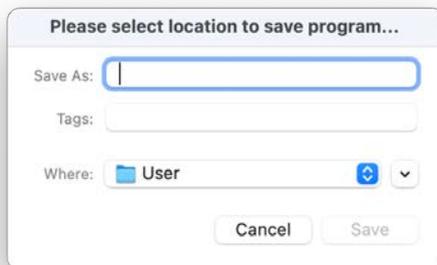
3. **Last, click the Save button in the dialog box.**

Edit guide

● ●

Editing a synth program

Overview

The three attributes of sound: pitch, tone, and volume

Sound has three basic attributes; pitch, tone, and volume.

To control these attributes, the microKORG analog modeling synthesizer provides "oscillator", "filter", and "amp (amplifier)" sections, just as on the analog synthesizers of the past.

The "oscillator" settings vary the pitch, the "filter" settings modify the tone, and the "amp" settings modify the volume.

The microKORG's "oscillator", "filter", and "amp"

On the microKORG, the OSC1, OSC2, and PITCH sections control the "oscillator". The PITCH section specifies the pitch of the waveform that is the basis of the sound, and the OSC1 and OSC2 sections select the waveforms. The waveforms generated here are mixed by the MIXER section.

The microKORG's FILTER section modifies the tone.

The AMP section modifies the volume and outputs the final sound.

These three sections determine the basic sound of the program.

EG, LFO, keyboard tracking, virtual patch, controllers

In addition to the sections described above, the microKORG provides ways in which the sound can be varied according to time, key range, or various types of performance expression. These are controlled by modulators and controllers such as EG (envelope generator: → page 47, page 50), LFO (Low Frequency Oscillator: → page 56), keyboard tracking (→ page 50), Virtual Patch (→ page 59), and the PITCH and MOD wheels (→ page 9). You can use these modulators and controllers to apply changes to the basic sound of the program.

The figure below shows the structure of a synthesizer sound on the microKORG. Look at TIMBRE 1, and notice how the signal flows in the order of OSC → FILTER → AMP. Also notice how modulators such as EG and LFO can affect these blocks.

The structure of a synth program

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

SYNTHESIZER BLOCK DIAGRAM
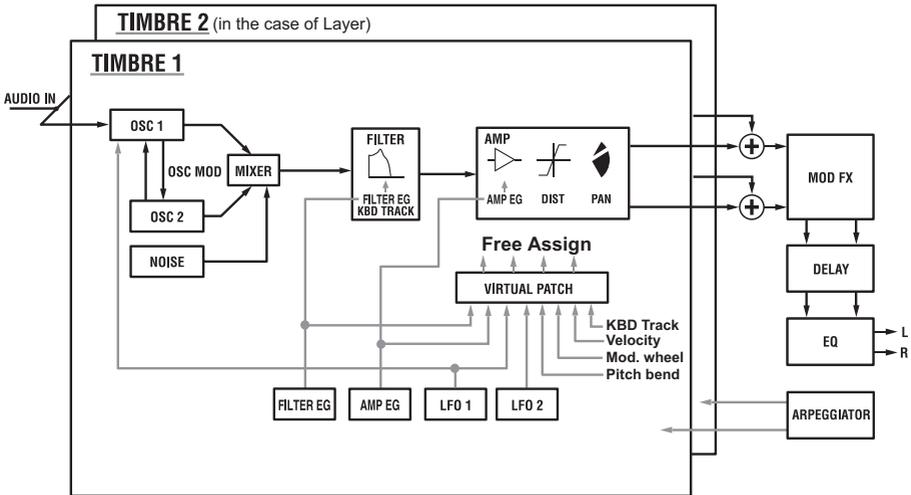
TIMBRE 1/2

Each timbre consists of OSC, FILTER, AMP, EG, LFO, and Virtual Patch blocks. You can create more complex programs by using two timbres together in one program using the Layer feature.

EFFECTS

The output of timbres 1/2 is sent to the modulation effect (MOD FX) → delay effect (DELAY) → equalizer (EQ).
For the modulation effect you can choose from three types of effects, such as chorus.
For the delay, you can choose from three types of delay, such as stereo delay. The EQ is a two-band equalizer.

ARPEGGIATOR

You can apply the arpeggiator to a timbre. If the program uses two timbres, you can apply the arpeggiator to either or both timbres.
This is a step arpeggiator with six arpeggio types.

Editing a vocoder program

Overview

A vocoder is a device that analyzes the character (the frequency response of each band) of a "modulator" signal (typically a human voice from a mic), and applies a filter with the analyzed characteristics to the "carrier" signal (typically a waveform produced by an oscillator), imposing a vocal character on that waveform, and making it seem as though the instrument is talking.

The microKORG contains an eight-channel vocoder (sixteen filters in pairs). In addition to simulating the classic vocoder sounds of the past, you can modify the character of the sound, or edit the level of each frequency band to create truly original vocoder sounds.

As shown in figure below, a vocoder program consists of a carrier (the signal that is modified), a modulator (the signal that modulates the carrier), a vocoder section, effects, and arpeggiator.

VOCODER BLOCK DIAGRAM
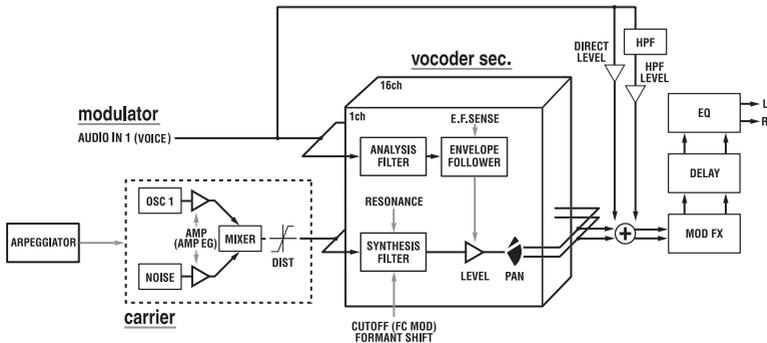
Carrier

The carrier signal that is processed by the vocoder effect can be the microKORG's internal waveform selected by OSC 1 and NOISE. Suitable choices for the carrier waveform are sawtooth waves which contain a rich array of overtones, and the VOX WAVE which has a character similar to human vocal cords.

The volumes of OSC1/NOISE are adjusted by the MIXER, and the combined signal is output to the vocoder section.

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Modulator

The signal that is input to the AUDIO IN will be the modulator. In general, it is most common for a voice to be input to the modulator, but you can create unique effects by inputting rhythm sounds or other waveforms.

Vocoder section (Vocoder sec.)

This consists of two sets of 16 band-pass filters (ANALYSIS FILTER and SYNTHESIS FILTER) and the ENVELOPE FOLLOWER.

The structure of a vocoder program

The audio signal from the AUDIO IN jack (modulator) is input to sixteen bandpass filters (ANALYSIS FILTER), and the ENVELOPE FOLLOWER detects the volume envelope (time-variant change) of each frequency band.

Then, the signal from the internal tone generator is input to the other set of 16 band-pass filters (SYNTHESIS FILTER), and processed by the envelopes detected by the ENVELOPE FOLLOWER to modulate the carrier with the features of the voice, producing the impression that the instrument or sound is talking (vocoder effect).

It is also possible to use the "FORMANT SHIFT" or "CUTOFF" parameters to change each frequency of the carrier band-pass filter. This will cause the frequency response curve to be raised or lowered while preserving the character of the modulator, and will dramatically affect the tone.

EFFECTS

The output from the vocoder section is sent to the modulation effect (MOD FX) → delay effect (DELAY) → equalizer (EQ).

For the modulation effect, you can choose from three types of effects, such as chorus. For the delay, you can choose from three types of delay, such as stereo delay. The equalizer is a two-band equalizer.

ARPEGGIATOR

The arpeggiator can be used to play a vocoder program.

This is a step arpeggiator with six arpeggio types.

Editing the effects and EQ

Overview

The output from the amp section of a synth program or vocoder program is sent to the modulation effect (MOD FX) → delay effect (DELAY FX) → equalizer (EQ). (→ page 22 "SYNTHESIZER BLOCK DIAGRAM", → page 23 "VOCODER BLOCK DIAGRAM")

You can edit the modulation type effect and the delay effect to create the desired sound in the same way as when editing the filter or amp parameters. You can use effects to modify the sound in a variety of ways. Then you can use the two-band EQ to make final adjustments to the tone, before the sound is sent to the L/R outputs.

To bypass any of the effects, set the FX depth (or EQ gain) value to zero.

Modulation-type effect (MOD FX)

Choose one of three effects: Chorus/Flanger, Ensemble, or Phaser.

Delay effect (DELAY FX)

Choose one of three effects: Stereo Delay, Cross Delay, or L/R Delay.

Equalizer (EQ)

This is a two-band EQ.

Editing the arpeggiator

Overview

The microKORG's arpeggiator provides six arpeggio types. You can adjust the duration (gate time) and spacing of the notes played by the arpeggiator. The arpeggiator settings are adjusted by the ARPEG.A and ARPEG.B parameters.

Each of the up to eight steps produced by the ARPEG.A and ARPEG.B settings can be switched on/off using the "step arpeggiator", for even more performance possibilities. (→ page 18 "Using the arpeggiator")

Selecting the timbre(s) that will be played by the arpeggiator

In a synth program that uses two timbres (Layer), you can select the timbre(s) that will be sounded by the arpeggiator. This is specified by ARPEG.B "TARGET TIMBRE". You can arpeggiate both timbres, or only timbre 1 or 2.

Synchronizing the rate of LFO 1/2 or the delay time of the delay effect to the arpeggiator tempo

By synchronizing the LFO 1/2 rate to the tempo of the arpeggio, you can apply modulation that is synchronized to the tempo. You can also specify the time parameter of the delay effect to be a ratio of the tempo, so that the delay time will remain appropriate even if you change the tempo of the arpeggio. This is particularly convenient for live performances.

Since the microKORG's arpeggiator can be synchronized to external MIDI signals, you can also control the LFO 1/2 rate or the delay time via external MIDI signals.

Synchronizing the rate of LFO 1/2 or the delay time of the delay effect to the arpeggiator tempo

You can synchronize the LFO 1/2 rate or the delay time of the delay effect to the arpeggiator tempo. (When "TEMPO SYNC"=ON)

Example 1. LFO1

LFO1 "TEMPO SYNC": ON

LFO1 "SYNC NOTE": 1/4 (1.4)

In this case, one LFO cycle will occupy the same time as one quarter note.
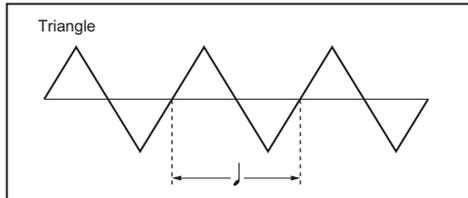
Example 2. Delay time

DELAY "TYPE": Cross Delay

DELAY "TEMPO SYNC": ON

DELAY "SYNC NOTE": 1/8 (1.8)

In this case, the delay time will be set to a time interval of an eighth note, and will alternate between left and right channels.
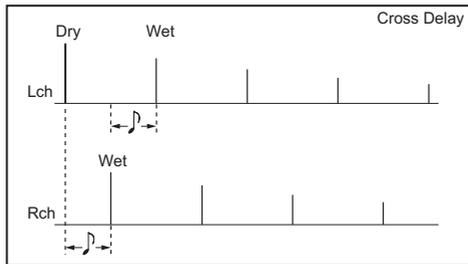
How "SYNC NOTE" and "RESOLUTION" settings correspond to note values

The following table shows how LFO or DELAY "SYNC NOTE" settings and ARPEG.A "RESOLUTION" settings correspond to note values.

The parameters will function according to the tempo specified by ARPEG.A "TEMPO" and the note value corresponding to its setting.

Note	LFO, Delay "Sync Note"	Arpeggio "Resolution"
♬ (32nd)	1/32	————
♬₃	1/24	1/24
♬ (16th)	1/16	1/16
♪₃	1/12	1/12
♬.	3/32	————
♪	1/8	1/8
♪₃	1/6	1/6
♪.	3/16	————
♩	1/4	1/4
♩₃	1/3	————
♩.	3/8	————
♩ (half)	1/2	————
○3	2/3	————
♩. (dotted half)	3/4	————
○	1/1	————

Parameter guide

Synth program

VOICE

VOICE ASSIGN

Specifies how the timbre will be sounded.

MONO: The timbre will sound monophonically. The program will play only one note at a time.

POLY: The program will sound polyphonically, allowing you to play chords. The maximum polyphony depends on the Global Settings.

UNISON: All four voices will sound in unison at the same pitch. Use "UNISON DETUNE" to specify the pitch difference in steps of one cent.

TRIGGER MODE

Specifies whether the EG and LFO will be retriggered when you play the next key while still holding down the previous key.

You can edit this if "VOICE ASSIGN" is Mono or Unison.

MULTI: The EG and LFO will be retriggered each time you press a key.

SINGLE: The EG and LFO will not be retriggered by the second or subsequent key. Use this setting if you want to play legato.
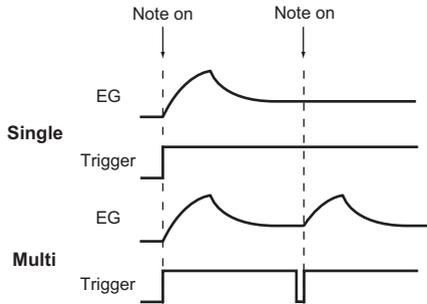
UNISON DETUNE .... [0...99]

Specifies the amount of detuning (in steps of one cent) between the notes sounded by Unison mode.

You can edit this if "VOICE ASSIGN" is set to UNISON.

The detuning method will depend on the number of unison voices.
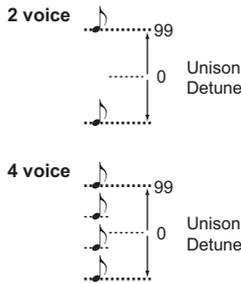
PITCH

TRANSPOSE ....[-24...24]

Adjusts the pitch of the oscillator in semitone (100 cent) steps.
The range is two octaves upward or downward.

TUNE ....[-50...50]

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

PORTAMENTO ....[0...127]

Specifies the speed of the portamento effect (a smooth change in pitch from one note to the next note of a different pitch).
With a setting of 0, there will be no portamento effect. Increasing this value will cause the pitch change to occur over a longer time.

> **Note:** If "VOICE ASSIGN" is set to Mono or Unison, and if "TRIGGER MODE" is set to Single, portamento will not apply to the first-sounded note.

BEND RANGE ....[-12...12]

Specifies the amount of pitch change in semitones that will occur when the pitch bend wheel is operated. This value specifies the amount of change that will occur when you move the pitch wheel all the way forward.

VIBRATO..[-63...63]

Specifies the depth of vibrato that will be applied when you move the modulation wheel all the way forward.

> **Note:** The LFO2 modulates the pitch of the oscillator, raising and lowering it to create vibrato.

OSC1

The oscillator generates the waveform that is the basis of the sound.

The timbre has two oscillators. The settings in this section are for oscillator 1. "WAVE" selects the basic waveform for oscillator 1, and "CONTROL 1" and "CONTROL 2" modify the waveform.

For example if you set "WAVE" to Saw Wave, you'll see how changing the "CONTROL 1" value modifies the sound. The sound changes as shown in the illustration below.

Adjusting "CONTROL 2" will apply LFO1 modulation to the waveform specified by "CONTROL1", producing additional change.

WAVE...
.... [Saw, Square, Triangle, Sine, Vox, DWGS, Noise, Audio In]

Selects the waveform for oscillator 1.

CONTROL 1 ....[0...127/– – –]

Adjusts a parameter specific to the selected waveform.
CONTROL 1 has no effect if "WAVE" is set to DWGS.

CONTROL 2 ....[0...127/1...64]

Adjusts a parameter specific to the selected waveform.

Saw Wave:

This is a sawtooth wave. This waveform is shaped like the tooth of a saw, and contains a rich overtone spectrum.

You can use this to create numerous instrumental sounds such as string and brass sounds, or typical analog synth sounds such as synth bass or synth brass.

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CONTROL 1 .... [0...127]

Adjusting this value will modify the waveform.

A setting of 0 will produce a conventional sawtooth wave, and a setting of 127 will produce a sawtooth wave one octave higher.
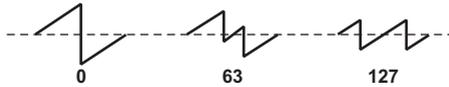
CONTROL 2 .... [0...127]

LFO1 is used to apply modulation to the waveform specified by "CONTROL 1". The "CONTROL 2" setting specifies the depth of the modulation produced by LFO1. For example by setting LFO1 "WAVE" to Triangle (Triangle Wave) and adjusting the LFO speed, you can produce a detune-like effect.

Square Wave:

This is a square wave. It has a rectangular shape, and strictly speaking is actually square only when the top and bottom of the waveform have the same width (a "pulse width" of 50%). If the pulse width is other than 50%, this is also called a pulse wave.

A square wave is used for woodwind sounds such as clarinet, and for wooden percussion sounds. A pulse wave is used for plucked-string sounds and reed-type sounds.

CONTROL 1 .... [0...127]

Adjusts the pulse width.

A setting of 0 produces a pulse width of 50% (square wave), and a setting of 127 produces a pulse width of 0% (there will be no sound).

The sound will become "harder" as you adjust this parameter toward 0%.
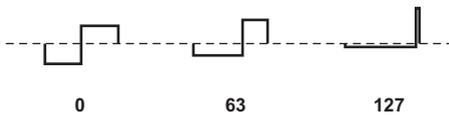
CONTROL 2 .... [0...127]

LFO1 is used to apply PWM (pulse width modulation)*3-1 to the pulse width specified by "CONTROL 1". The "CONTROL 2" setting specifies the depth of the modulation produced by LFO1. For example by setting LFO1 "WAVE" to Triangle (Triangle Wave) and adjusting the LFO speed, you can add depth to the sound.

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*3-1: PWM

Pulse Width Modulation refers to the use of a separate signal to vary the pulse width over time. On the microKORG, you can use PWM to modify the tone via LFO1, or via Virtual Patch from modulation sources LFO2, Filter EG, or Amp EG.

Triangle Wave:

This is a triangle wave, which has weaker overtones and a stronger fundamental than a sawtooth wave or square wave.
It is suitable for mellow bass sounds.

CONTROL 1 .... [0...127]

Adjusting this value will modify the waveform.
A setting of 0 will produce a triangle wave, and a setting of 127 will produce a waveform with a pitch that is one octave and a fifth higher.
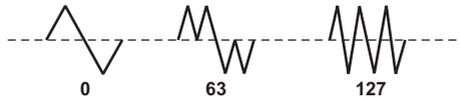
0   63   127

CONTROL 2 .... [0...127]

LFO1 is used to apply modulation to the waveform specified by "CONTROL 1". The "CONTROL 2" setting specifies the depth of the modulation produced by LFO1.

Sine Wave:

This is a sine wave. This waveform contains only the fundamental, and no overtones at all. It can be used to create claves or bass drum sounds. In some synth programs, oscillator 2 is used to perform cross modulation*3-2, creating a more complex overtone structure.
Cross modulation by a sine wave cannot be applied to a vocoder program.
Since a sine wave contains no overtones, the filter will not modify its tone.

CONTROL 1 .... [0...127]

On a synth program, this adjusts the depth of cross modulation.
On a vocoder program, this modifies the waveform.

CONTROL 2 .... [0...127]

On a synth program, this adjusts the depth of additional modulation applied by LFO1 to the cross modulation specified by "CONTROL 1".
On a vocoder program, this adjusts the depth of modulation applied by LFO1 to the waveform that you selected by "CONTROL1".

*3-2: Cross Modulation
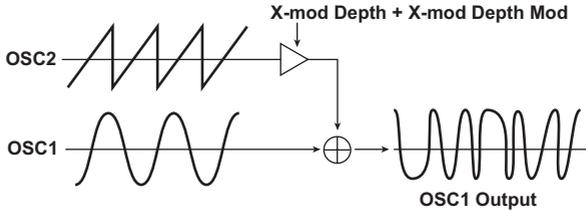
This is a type of oscillator modulation available on analog synthesizers of the past. Normally, a low-frequency signal (such as from an LFO) is used as the modulation source for an oscillator, but Cross Modulation lets you use another oscillator as the modulation source, creating sounds with a complex overtone structure that would not normally be produced otherwise. On the microKORG, you can use oscillator 2 to apply cross modulation if a sine wave is selected for oscillator 1.

Gradually raise the "CONTROL 1" level, and notice how the sound changes. This can produce distorted sounds, or sounds with a metallic character.

You can produce an even wider variety of effects by adjusting the OSC 2 "SEMITONE" or "TUNE" parameters. You can also achieve interesting results by applying sync modulation and cross modulation at the same time.

Vox Wave:

This simulates a waveform similar to human vocal cords. Even if the oscillator pitch is changed, the frequency spectrum will be maintained, which makes this effective when used for vocal-type sounds or as a vocoder oscillator.

Select HPF or BPF as the filter, and adjust "Cutoff" to create a vocal-type sound.

CONTROL 1 .... [0...127]

Adjusting this value will modify the waveform.

0	63	127

CONTROL 2 .... [0...127]

LFO1 is used to apply modulation to the waveform specified by "CONTROL 1". The "CONTROL 2" setting specifies the depth of the modulation produced by LFO1.

DWGS (Digital Waveform Generator System):

This is waveform data created by harmonic additive synthesis. Choose this when you want to create sounds with a distinctive "digital-synth" character, such as synth bass, electric piano, bell, or horn. 64 types of waveform are provided.

CONTROL 1 .... [− − −]

CONTROL 2 .... [1...64]

Selects the DWGS waveform.

DWGS waveform data was first used in the Korg DW-6000 (introduced in 1984), and has continued to be developed since that time.

DWGS List

No.	Name	No.	Name	No.	Name
01	SynSine1	24	5thWave1	47	Clav1
02	SynSine2	25	5thWave2	48	Clav2
03	SynSine3	26	5thWave3	49	Guitar1
04	SynSine4	27	Digi1	50	Guitar2
05	SynSine5	28	Digi2	51	Guitar3
06	SynSine6	29	Digi3	52	Bass1
07	SynSine7	30	Digi4	53	Bass2
08	SynBass1	31	Digi5	54	Bass3
09	SynBass2	32	Digi6	55	Bass4
10	SynBass3	33	Digi7	56	Bass5
11	SynBass4	34	Digi8	57	Bell1
12	SynBass5	35	Endless*	58	Bell2
13	SynBass6	36	E.Piano1	59	Bell3
14	SynBass7	37	E.Piano2	60	Bell4
15	SynWave1	38	E.Piano3	61	Voice1
16	SynWave2	39	E.Piano4	62	Voice2
17	SynWave3	40	Organ1	63	Voice3
18	SynWave4	41	Organ2	64	Voice4
19	SynWave5	42	Organ3		
20	SynWave6	43	Organ4		
21	SynWave7	44	Organ5		
22	SynWave8	45	Organ6		
23	SynWave9	46	Organ7		

* The 35 Endless waveform simulates an endless scale, in which notes one octave apart have the identical pitch. You can play an ascending or descending scale as far as you wish, producing the sensation that a scale of the same pitch is continuing infinitely.

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Noise:

This generates white noise.

Within the oscillator, a LPF (LowPass Filter) is provided to process the noise. You can use this to create percussion sounds, or sound effects such as surf. This can also be used in conjunction with another timbre to simulate the "breath" component of a wind instrument sound.

CONTROL 1 .... [0...127]

This sets the cutoff frequency of the LPF. Adjusting this will affect the noise waveform.

```
                              Resonance
  ┌───────────┐   ┌─────┐
  │   Noise   │→  │ LPF │
  │ Generator │   │     │
  └───────────┘   └─────┘
                         Cutoff
```
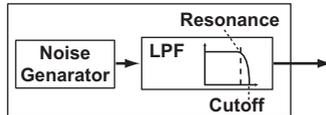
CONTROL 2 .... [0...127]

This controls the resonance of the LPF.

If you raise this enough to produce an identifiable pitch, the cutoff frequency will move according to the keyboard location you play, and the change will be heard as a pitch.

> **Note:** If you want the oscillation produced by resonance to match the reference pitch, set "CONTROL 1" to 24.

Audio In:

The waveform of the audio signal input from the AUDIO IN jack will be used instead of an oscillator.

This lets you apply filtering to a drum phrase, or synthesize a vocal or guitar sound together with oscillator 2.

> **Note:** The parameters of the PITCH section have no effect on the waveform that is input from the AUDIO IN jack.

CONTROL 1 .... [0...127]

CONTROL 2 .... [0...127]

LFO1 is used to apply modulation to the volume balance between AUDIO IN 1 and AUDIO IN 2 that you set by "CONTROL 1". The "CONTROL 2" setting sets the depth of this modulation produced by LFO1.

Processing an external input audio signal

You can use the filter, amp, EG, and LFO etc. to process the signal from a external synthesizer, rhythm machine, or audio device in the same way as an oscillator waveform.

While inputting an audio signal, play the keyboard.

As described in "Edit guide" on page 21, edit the FILTER, AMP, EG, LFO, and effects to modify the sound.

Note: The PITCH-related parameters have no effect on the sound from the AUDIO IN jacks.

OSC2

Here you can make settings for oscillator 2.

You can create a variety of sounds by using two oscillators together. For example you can adjust "SEMITONE" and "TUNE" so that one oscillator acts as though it were part of the overtone structure of the other oscillator, set the pitches of the two oscillators to an interval of harmony, or set both oscillators to the same pitch but slightly detune one of them to create a detuning effect.

You can also use Ring Modulation and Oscillator Sync to create very complex overtone structures. (This is set by "OSC MOD".)

WAVE...[Saw, Square, Triangle]

Selects the waveform for oscillator 2.

Saw Wave:
A sawtooth wave. (→ page 32)

Square Wave:
A square wave. (→ page 33)

Triangle Wave:
A triangle wave. (→ page 34)

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

OSC MOD ....[OFF, Ring, Sync, RingSync]

Selects the type of oscillator modulation that will be produced in conjunction with oscillator 1.

OFF:
The sound will be output without applying oscillator modulation.
You can adjust "SEMITONE" and "TUNE" to produce harmony, detune, or harmonic-component effects.

Ring:
Ring modulation (*4-1) will be applied.
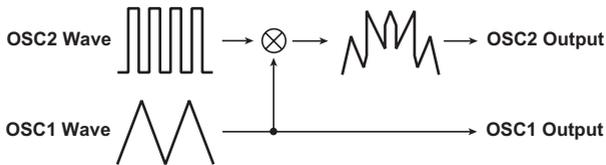
By adjusting "SEMITONE" and "TUNE" you can create metallic sounds with little sense of pitch. This is effective for sound effects.

Sync:

Oscillator sync (*4-2) will be applied.

This is useful for creating synthlead sounds.

OSC2 Wave → OSC2 Output

Sync

OSC1 Wave → OSC1 Output
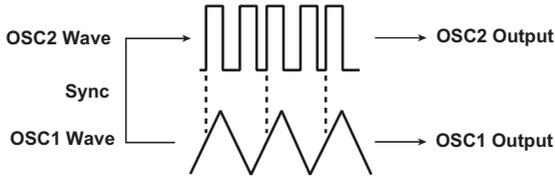
RingSync:

This simultaneously applies Ring and Sync modulation.

OSC2 Wave → ⊗ → OSC2 Output

Sync

OSC1 Wave → OSC1 Output
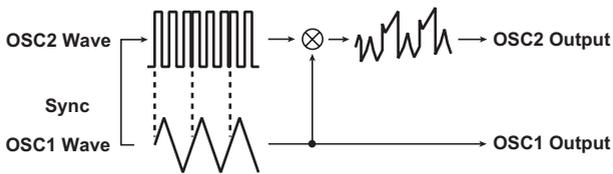
SEMITONE ....[-24...24]

Specifies the detuning (pitch difference) relative to oscillator 1, in semitone steps over a range of 2 octaves upward or downward.

> **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. A value near 0 will make fine adjustments in the pitch.

> **Note:** If "OSC MOD" is set to Sync, adjustments in "Semitone" or "Tune" will change the pitch of the overtones. The pitch of the fundamental will not change.

*4-1: Ring Modulator:

This modulation generates a sum and difference of the oscillator 1 and 2 waveforms.

For example, you can select a square wave for the oscillator, set "TRANSPOSE" to 0, "SEMI-TONE" to 24, and adjust "TUNE" to produce a clear bell-like sound. The effect will be easier to detect if you lower "OSC 1 LEVEL" and raise "OSC 2 LEVEL". You can also create interesting effects by using Virtual Patch to modulate OSC 2 TUNE from LFO or EG.

*4-2: Oscillator Sync:
This modulation forcibly synchronizes the phase of oscillator 2 to the phase of oscillator 1. For example, select sawtooth wave for oscillator 1 and raise the "OSC 2 LEVEL". Then, edit "SEMITONE" and "TUNE" to change the pitch, and notice the result. The effect will be more noticeable if the oscillator 2 pitch is raised above the oscillator 1 pitch. You can also produce interesting effects by using Virtual Patch to modulate OSC 2 Tune from LFO or EG.

MIXER

These parameters adjust the volume balance of the oscillator 1 and 2, and the noise generator.
"OSC 1 LEVEL" sets the output level of oscillator 1, "OSC 2 LEVEL" sets the output level of
oscillator 2, and "NOISE LEVEL" sets the output level of the noise generator.
These settings will be the input level to the filter.

OSC 1 LEVEL..[0...127]

Sets the output level of oscillator 1.

OSC 2 LEVEL ....[0...127]

Sets the output level of oscillator 2.

NOISE LEVEL .... [0...127]

Sets the output level of the noise generator.

This noise generator generates white noise. This is independent of the white noise that can be selected as a waveform for oscillator 1. This does not have filter or resonance as the oscillator 1 noise generator, 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.

FILTER

The filter controls the tonal character of the sound produced by the oscillator. It determines the tone by allowing only the desired portion of the sound to pass. "TYPE" selects the type of filter (i.e., the way in which it will cut the frequency). "CUTOFF" sets the frequency at which the cut will occur. Normally, turning this knob toward the right will brighten the sound, and turning it toward the left will darken the sound. "RESONANCE" emphasizes the frequency region near the cutoff frequency, adding a distinctive character to the sound. Other parameters in this section let you specify the depth of the modulation applied by the filter EG, and the way in which keyboard tracking will affect the cutoff frequency.

Filter oscillation

If you raise the resonance to a high value, it will oscillate (produce a sound) at the frequency specified by the cutoff frequency.

You can use filter oscillation ("self-oscillation") as a sound source. If the filter is oscillating, the "CUTOFF" parameter that normally adjusts the tone will instead control the pitch of the oscillation. This can be used in a variety of ways.

Whistling is a typical example, and can be produced by adjusting the ADSR parameters of the filter EG. You can also try setting "FILTER EG INT" to a negative value. Another possibility is to select the MOD wheel or LFO 1/2 as a source in Virtual Patch, and use it to control "CUT-OFF" as a destination.

TYPE .... [-24dB LPF, -12dB LPF, -12dB BPF, -12dB HPF]

Selects the type of filter.

-24dB LPF: The -24 dB LPF (-24 dB/octave Low Pass Filter) is the most common type of filter; it passes the frequencies that are below the cutoff frequency, and cuts the frequencies that are above.

LPF (Low Pass Filter)

-12dB/oct
-24dB/oct
Frequency
Cutoff
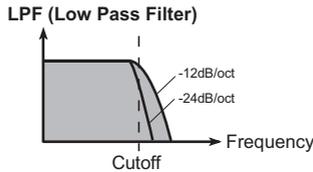
Lowering the cutoff frequency will make the tone darker and more mellow.

-12dB LPF: The -12 dB LPF (-12 dB/octave Low Pass Filter) has a more gentle slope than the -24 dB LPF, producing a more natural-sounding effect. (→"-24 dB LPF")

-12dB BPF: -12dB/oct BPF (Band Pass Filter) allows a frequency band in the region of the cutoff frequency to pass, and cuts the remaining frequencies. It is used when you wish to emphasize only a specific portion of the frequency range. Use this when you want to emphasize just a specific region of the sound.

BPF (Band Pass Filter)
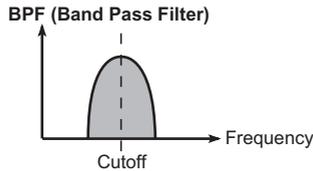
Frequency
Cutoff

-12dB HPF: -12dB/oct HPF (High Pass Filter) allows frequencies above the cutoff frequency to pass, and cuts the lower frequencies. Use this when you wish to make the sound thinner. However if the cutoff frequency is raised excessively, the volume will decrease significantly.

HPF (High Pass Filter)

Frequency
Cutoff

44
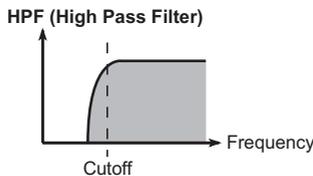
For example you can use the HPF to purposely attenuate the low-frequency region of a sound that will be played together with other low-frequency instruments, in order to differentiate that sound from the other instruments.

CUTOFF .... [0...127]

Sets the cutoff frequency. Increasing this value will raise the cutoff frequency.
"CUTOFF" can be varied by time-variant change 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 .... [0...127]

Sets the resonance of the filter.
This will emphasize the overtones near the cutoff frequency specified by "CUTOFF", adding a distinctive character to the sound. Increasing this value will increase the effect.

The effect of resonance
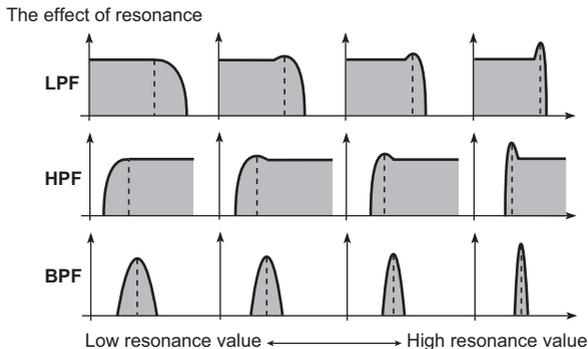
Since movement of the "CUTOFF" knob will affect the overtones that are boosted by resonance, it is best to adjust "CUTOFF" and "RESONANCE" in conjunction with each other.

FILTER EG INT..[-63...63]

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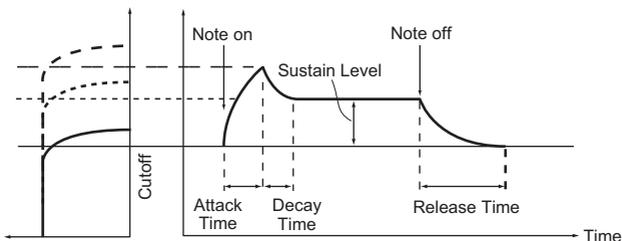
The cutoff frequency will change over time according to the Filter EG settings, modifying the tone. For example, you can use this to create a sound that gradually begins to brighten when you press the key, and then gradually becomes darker.

This INT (Intensity) 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.
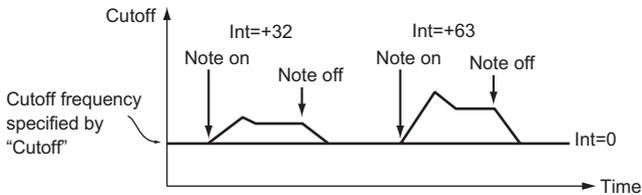
Increasingly negative (-) settings will allow a correspondingly greater effect in the opposite direction.
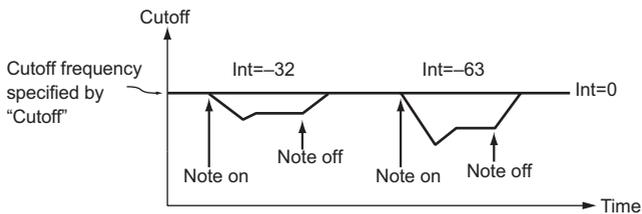
FILTER KEY TRACK ....[-63...63]

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 make compensations 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.

With a setting of +48, 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 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.

FILTER EG

Here you can make settings for the filter EG, which applies time-variant change to the tone.
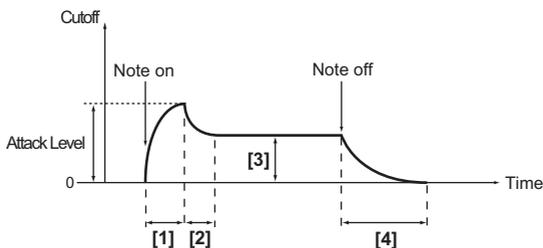
[1]: Attack Time　　**[3]: Sustain Level**
[2]: Decay Time　　**[4]: Release Time**

Make these settings to specify the "shape" of the EG, and use the FILTER parameter "FILTER EG INT" to specify the amount of effect that the EG will have (→ page 45). By making FILTER EG settings, you can make the tone change as time passes. Create the desired tonal curve by adjusting the ADSR parameters; ATTACK, DECAY, SUSTAIN, RELEASE.
For details on how an EG (Envelope Generator) works, refer to AMP EG (→ page 50).

> **Note:** You can use the FILTER EG as a Virtual Patch source to modulate parameters other than the filter cutoff frequency. (→ page 59)

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Filter EG and Amplifier EG

When the Filter EG changes the cutoff frequency, the tone will change. However depending on the volume changes produced by the Amplifier EG, this can be heard in different ways. For example, by changing the speed at which the tone and volume begin (attack) or decay, you can significantly vary the character of the tonal change. It is a good idea to adjust the changes of both the Filter EG (tone) and the Amplifier EG (volume) as you proceed with editing.

ATTACK .... [0...127]

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

DECAY .... [0...127]

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

SUSTAIN .... [0...127]

Specifies the cutoff frequency that will be maintained after the decay time has elapsed, until you release the key.

RELEASE .... [0...127]

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

EG RESET .... [OFF, ON]

Specifies whether or not the EG will be reset for the second and subsequent note-on. If a new note is played before the previous note has finished its release stage, the envelope can either start over from zero, or continue from the current value.

OFF: The note will start from the current EG level.

ON: The second note-on will start from a level of 0.

Note: "EG RESET" sets how the EG works when "VOICE ASSIGN" is set to "Mono" and "TRIGGER" is set to "Single".

AMP

These parameters specify the volume. The sound that is created by passing through the oscillator and filter is amplified by the amp. "LEVEL" adjusts the volume. "KBD TRACK" adjusts how keyboard tracking will affect the volume, and "DISTORTION" specifies whether the sound will be distorted.

You can use "PANPOT" to set the pan (stereo position of the sound).

DISTORTION .... [OFF, ON]

Specifies whether distortion will be applied to the output of the timbre. The degree of distortion is adjusted by the output level of each oscillator in the MIXER.

OFF: Distortion is off.
ON: Distortion is on.

LEVEL .... [0...127]

Adjusts the volume of the timbre.

If the "SINGLE/LAYER" is Layer, this setting will adjust the volume balance between timbre 1 and timbre 2.

KBD 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.

Keyboard Track 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.

PANPOT... [L63...Center...R63]

Adjusts the location of the sound in the stereo field.

L63 is far left, Center is center, and R63 is far right.

AMP EG
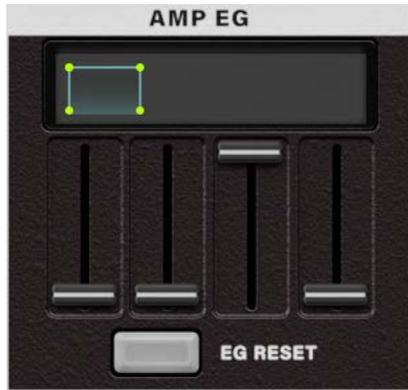
Here you can make settings for the AMP EG, which applies time-variant changes to the volume.

[1]: Attack Time **[3]: Sustain Level**
[2]: Decay Time **[4]: Release Time**
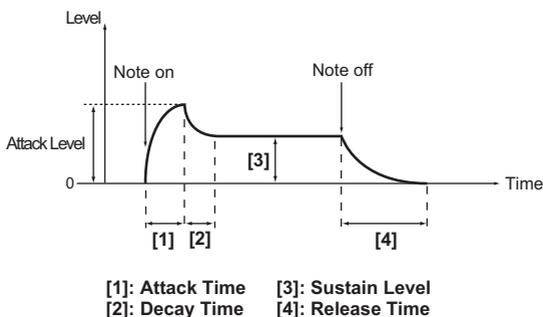
By making AMP EG settings, you can make the volume change as time passes. Create the desired volume curve by adjusting the ADSR parameters; ATTACK, DECAY, SUSTAIN, RELEASE.

You can use AMP EG as a Virtual Patch source to modulate parameters other than volume. (→ page 59 "VIRTUAL PATCH")

ATTACK .... [0...127]

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

DECAY .... [0...127]

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

SUSTAIN .... [0...127]

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

RELEASE .... [0...127]

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

EG RESET .... [OFF, ON]

Specifies whether or not the EG will be reset for the second and subsequent note-on. If a new note is played before the previous note has finished its release stage, the envelope can either start over from zero, or continue from the current value.

OFF: The note will start from the current EG level.

ON: The second note-on will start from a level of 0.

> **Note:** "EG RESET" sets how the EG works when "VOICE ASSIGN" is set to "Mono" and "TRIGGER" is set to "Single".

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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 microKORG 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 settings are shown below.

Piano		Organ		Strings	
Attack: 0	Sustain: 0	Attack: 0	Sustain: 127	Attack: 40	Sustain: 75
Decay: 100 – 127	Release: 5–25	Decay: —	Release: 0	Decay: 50	Release: 50
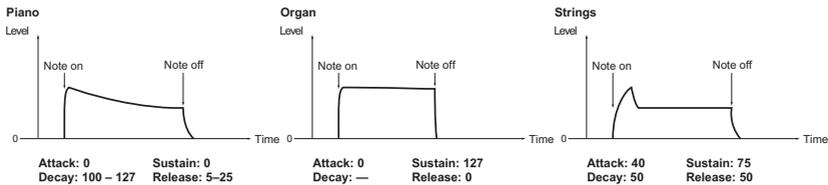
ARPEGGIATOR

Here you can make various arpeggio-related settings. "TYPE" selects the arpeggio type. "TEMPO" sets the tempo of the arpeggiator, and "RESOLUTION" specifies the spacing of the notes relative to the tempo. "GATE" sets the duration of the arpeggiated notes, and "RANGE" specifies the range of pitch (one to four octaves, in one-octave steps) in which the arpeggio will be played. "LAST STEP" sets the number of steps in the arpeggio. "LATCH" specifies how the arpeggiator will operate when you release the keyboard, "SWING" adjusts the sense of

swing, and "KEY SYNC" specifies how the arpeggiator will be synchronized to the keyboard. In addition, "TARGET TIMBRE" specifies which timbre(s) of a Layer synth program will be sounded by the arpeggiator.

TEMPO .... [20...300 / Sync]

Specifies the tempo of the arpeggio. Increasing this value will speed up the arpeggio tempo.

Note: When "Sync to Host" in Global Settings is "ON", the tempo is indicated as "Sync" and this setting value is not used, since the software is following the DAW's tempo.

RESOLUTION..[1/24...1/4]

Specifies the resolution (spacing of the notes) relative to the tempo specified by "TEMPO".
1/24: The arpeggio will be played as sixteenth note triplets of the specified tempo.
1/16: The arpeggio will be played as sixteenth notes of the specified tempo.
1/12: The arpeggio will be played as eighth note triplets of the specified tempo.
1/8: The arpeggio will be played as eighth notes of the specified tempo.
1/6: The arpeggio will be played as quarter note triplets of the specified tempo.
1/4: The arpeggio will be played as quarter notes of the specified tempo.

TARGET TIMBRE................................... [Both, Timbre 1, Timbre 2]

Selects the timbre(s) that will be sounded by the arpeggiator. This can be set only for a Layer program.
Both: Both timbres will be sounded by the arpeggiator.
Timbre 1: Only timbre 1 will be sounded by the arpeggiator.
Timbre 2: Only timbre 2 will be sounded by the arpeggiator.

LAST STEP... [1...8]

Specifies the number of valid steps (maximum number of steps) for the step arpeggiator.

TYPE........ [Up, Down, Alternate 1, Alternate 2, Random, Trigger]

Selects the arpeggio type.
Up: Notes will be played consecutively from low to high pitches.
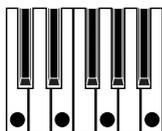
Down: Notes will be played consecutively from high to low pitches.

Alternate 1: Up and Down will be alternated. (The highest and lowest notes will be sounded once.)

Alternate 2: Up and Down will be alternated. (The highest and lowest notes will be sounded twice.)

Random: Notes will be played randomly.

Trigger: The notes you are holding down will be played simultaneously at the tempo and "RESOLUTION" timing. The "RANGE" setting will be ignored.
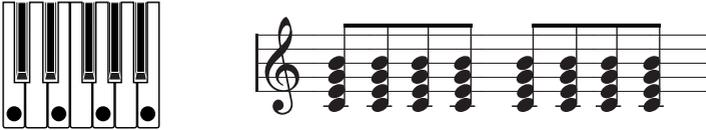
Note: If you are holding down more notes than the maximum polyphony of the timbre, only the lowest pitches will be played, up to the maximum polyphony.

RANGE... [1...4]

Specifies the range of octaves over which the arpeggio will be played.

ARPEGGIATOR .... [OFF, ON]

Switches the arpeggiator on/off.

ARPEGGIATOR TEMPO

Blinks at the tempo of the arpeggiator performance.

LATCH.. [OFF, ON]

Specifies how the arpeggiator will operate when you take your hand off of the keyboard.
OFF: The arpeggiator will stop playing when you take your hand off of the keyboard.
ON: The arpeggiator will continue playing even if you take your hand off of 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 (not synchronized).
ON: Sync on (synchronized).

GATE.. [0...100]

Specifies the duration (gate time) of the arpeggiated notes, as a percentage (%).
With a setting of 0, each note will be extremely short. With a setting of 1–100, 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.
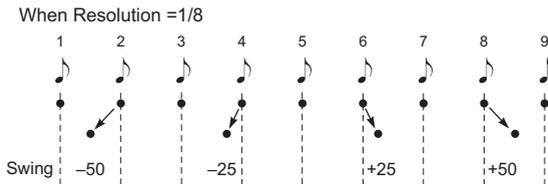
LFO 1, LFO 2

The timbre has two LFOs (Low Frequency Oscillator).

The cyclic change produced by an LFO can modulate various aspects of the sound such as the pitch, tone, or volume.

Use "WAVE" to select the LFO waveform, "TEMPO SYNC" to select the key sync method and to synchronize the LFO cycle to the tempo, and "FREQUENCY"/"SYNC NOTE" to set the LFO frequency.

> **Note:** LFO1 and LFO2 can be used as Virtual Patch sources to apply modulation to a variety of parameters. (→ page 59)

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 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 LFO as a Virtual Patch source, select the desired parameter as the destination, and apply modulation to produce various effects.

The microKORG provides some dedicated parameters for applying modulation from the LFO; for LFO1 you can use OSC1 "CONTROL 2", and for LFO2 you can use PITCH "VIBRATO INT".

WAVE, LFO1, ...[Saw, Square1, Triangle, Sample&Hold]

WAVE, LFO2 ....[Saw, Square2, Sine, Sample&Hold]

Selects the LFO waveform.

Saw:	
Square1:	
Square2:	
Triangle:	
Sine:	
Sample&Hold:	Amplitude changes irregularly (sample & hold)
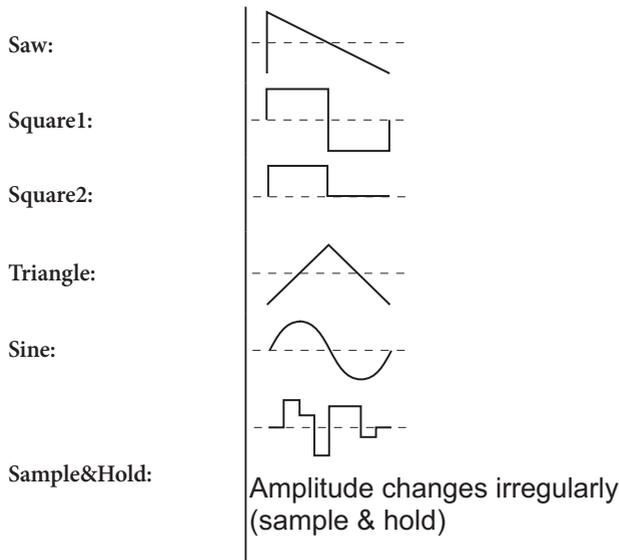
KEY SYNC ....[OFF, Timbre, Voice]

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.
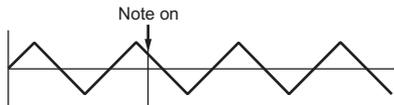
Timbre: The LFO phase will be reset at the first note-on that occurs from a state of no keys pressed. Subsequently, modulation will continue to be applied at the same LFO phase even for subsequent note-on's.
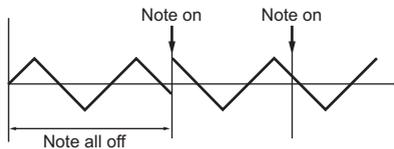
Voice: The LFO phase will be reset at each note-on, and modulation of differing phases will apply to each voice.

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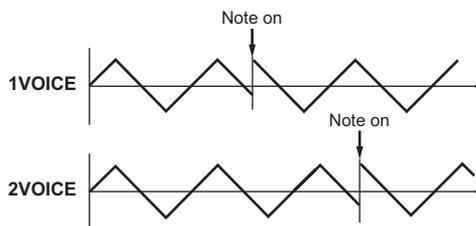
TEMPO SYNC .... [OFF, ON]

Specifies whether the LFO cycle will be synchronized to the tempo or MIDI Clock.

OFF: The LFO will not be synchronized.

It will operate at the frequency specified by the "FREQUENCY" parameter.

ON: The LFO will be synchronized to the ARPEG.A "TEMPO" or to MIDI Clock messages from an external device.

> **Note:** If "TEMPO SYNC" is ON, selecting LFO2 Frequency as "DEST" in PATCH 1–4 will have no effect.

FREQUENCY .... [0...127]

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

This parameter will be displayed and can be set if "TEMPO SYNC" is OFF.

SYNC NOTE .... [1.1...1.32]

Specifies the proportion of the LFO cycle relative to the tempo specified by ARPEG.A "TEM-PO". (→ page 53)

This parameter will be displayed and can be set if "TEMPO SYNC" is ON.

1/1: Four beats will be one cycle.

1/2: Four beats will be two cycles.

1/4: One beat will be one cycle.

1/8: One beat will be two cycles.

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VIRTUAL PATCH

The microKORG provides four Virtual Patch routes that let you create more sophisticated sounds. Each patch lets you select a modulation source "SOURCE" and modulation destination "DESTINATION", and specify the intensity of modulation "MOD INT". By using various patchings you can create a wide variety of changes in the sound.

For example, if you set the modulation source "SOURCE" to LFO2 and set the modulation destination "DESTINATION" to CutOff, and use "MOD INT" to adjust the depth of the effect, LFO2 will create a cyclic change in tone (a "wah" effect).

Virtual Patch

On modular analog synthesizers, the input or output of each module (oscillator, filter, amp, EG, LFO, and other controllers) was connected ("patched") by a patch cord as desired, allowing you a great deal of freedom in creating the sound.

The microKORG 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).

Setting example for "SOURCE" and "DESTINATION"

SOURCE	▶	DESTINATION	
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	▶	Pan	The Filter EG or Amp EG will vary the pan over time. By setting two patches to "MOD 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	▶	Amp	Tremolo will be applied at the LFO1 or LFO2 frequency.
LFO 1/LFO 2	▶	Pan	Auto pan will be applied at the LFO1 or LFO2 frequency.
Velocity	▶	Amp	Velocity (keyboard playing strength) will affect the volume.
Keyboard Track	▶	Pan	Keyboard position will gradually change the pan; lower notes at the left, and higher notes at the right.
Pitch Bend	▶	Pan	PITCH wheel operations or pitch bend change will move the sound between left and right.
Modulation Wheel	▶	CutOff	MOD wheel operations or CC#1 will vary the cutoff frequency.
Modulation Wheel	▶	LFO2 Frequency	MOD wheel operations or CC#1 will vary the LFO2 speed.

SOURCE

Selects a modulation source.

For example if you select Filter EG, the Filter EG will be the modulation source.

FILTER EG: FILTER EG

AMP EG: Amp EG

LFO 1: LFO 1

LFO 2: LFO 2

VEL: Velocity (keyboard playing strength)

KBD Trk: Keyboard tracking (keyboard position)

  Note: Keyboard Track 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.

P.B.WH: PITCH wheel

Mod. WH: MOD wheel

DESTINATION

Selects the parameter (destination) that will be controlled by the modulation.

For example if you select Pitch, modulation will be applied to the overall pitch of the timbre.

Pitch: Overall pitch of the timbre

OSC2 Tune: OSC2 "TUNE"

Ctrl 1: OSC1 "CONTROL 1"

Noise: MIXER "NOISE LEVEL"

Cutoff: FILTER "CUTOFF"

Amp: AMP "LEVEL"

Pan: AMP "PAN"

LFO2 Freq: LFO2 "FREQUENCY"

Note: If LFO "TEMPO SYNC" is ON, selecting LFO2 Freq will have no effect.

INTENSITY..[-63...63]

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

Vocoder program

VOICE

The "VOICE" parameters are the same as for a synth program with a "SINGLE/LAYER" setting of Single (→ page 29).
To use the program as a vocoder program, set "SYNTH/VOCODER" to Vocoder.

PITCH

The "PITCH" parameters are the same as for a synth program (→ page 31). They specify the pitch of the carrier.

OSC1

Here you can select the waveform of the carrier.
The "OSC1" parameters are the same as for a synth program (→ page 32).
By selecting a different waveform for "WAVE" you can change the depth of the effect. Normally, you will set OSC 1 "WAVE" to be a triangle wave which contains a rich set of overtones, or VOX WAVE which simulates a waveform similar to that produced by human vocal cords. Alternatively, you can select DWGS, and use "CONTROL 2" to select waveform number 26 (5th Wave3: a fifth interval), and play a chord to obtain rich sounds.

Editing example for a vocoder program

1. Adjust the audio from the mic input.
Turn knob "THRESHOLD". As you turn the knob toward the right, the sound will be cut more readily. Adjust this so that noise is not obtrusive when you are not speaking into the mic. Then adjust knob "GATE SENSE" so that the vocoder sound that is output is not cut off in an unnatural way.
Turning knob "HPF GATE" toward the right will emphasize the consonants (e.g., "s" sounds) of the input voice.

2. Make filter settings.

Turn knob "EF SENSE" to adjust the sensitivity of the envelope follower. As you turn the knob toward the right, the vocoder output will rise more smoothly, and the release will become longer.

Turning knob "CUTOFF" or knob "FORMANT SHIFT" will vary the cutoff frequency of the band pass filter for the carrier, changing the character of the vocoder output.

You can move the CH LEVEL sliders up and down to change the bandpass filter output levels for each of the eight channels of the carrier.

Also, you can move the CH PAN sliders up and down to adjust the bandpass filter pan for each of the eight channels of the carrier.

AUDIO IN

These parameters adjust the input from AUDIO IN (the modulator).

Adjust "THRESHOLD" so that noise is not heard when you are not speaking, and adjust "GATE SENSE" so that the vocoder sound is not cut off unnaturally. Use "HPF LEVEL" to emphasize the consonants (such as "s" sounds) of the input voice.

GATE SENSE .... [0...127]

Specifies the speed of the gate that will operate according to the "THRESHOLD" setting. Lower values for this setting will make the gate operate more quickly, causing the vocoder sound to decay more quickly. Higher values for this setting will make the gate operate more gradually, causing the vocoder sound to have a longer decay.

If the "THRESHOLD" value is high, this effect will apply more readily. If the threshold value is 0, there will be no effect.

THRESHOLD...[0...127]

Specifies the level at which the audio signal from the AUDIO IN jack will be silenced.
Increasing this value will cause the audio signal to be silenced. This lets you eliminate any noise that might be heard when no input signal is present.
If this setting is set excessively high, the audio signal will also be cut, and it will be difficult for the vocoder effect to apply.

HPF LEVEL..[0...127]

Adjusts the amount of the high-frequency portion of the audio signal input from the AUDIO IN jack that will be mixed into the output of the vocoder.
Increasing this value will emphasize the portion that corresponds to the consonants of speech or singing.

HPF GATE ....[Disable, Enable]

Specifies whether the high-frequency portion of the signal from AUDIO IN that is mixed into the vocoder output will be passed only during the key-on (note-on) duration, or will always be allowed to pass.
Disable: The high-frequency portion of the signal will always be passed.
Enable: The high-frequency portion of the signal will be passed only during the key-on (note-on) duration.
Use this setting if you are applying the vocoder effect only to an internal sound source. (The signal will be passed when a MIDI note-on is received.)

MIXER

This sets the output level of the carrier. The level you specify here will be the input level to the band-pass filter (Synthesis Filter) of the carrier.

OSC 1 LEVEL... [0...127]
Specifies the output level of Oscillator 1 (carrier).

NOISE LEVEL .... [0...127]
Sets the output level of the noise generator.

VOCODER (FILTER)

By using "FORMANT SHIFT" and "CUTOFF" to shift the cutoff frequency of each band pass filter of the carrier (the "synthesis filter"), you can raise or lower the frequency response while maintaining the character of the modulator, thus varying the character of the vocoder output. Both of these knobs do the same thing, and have the same range.

FORMANT SHIFT is indexed to shift from filter to filter, and CUTOFF is continously variable. In addition, you can use "E.F. SENSE" to adjust the sensitivity of the Envelope Follower for the modulator, in order to vary the smoothness of the attack and the length of the release for the vocoder output.

CUTOFF ....[-63...63]

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

FORMANT SHIFT..[0, 1, 2, -1, -2]

Shifts the cutoff frequency of each band-pass filter of the carrier, in units of filters.

RESONANCE .... [0...127]

Specifies the amount of resonance for each band-pass filter of the carrier.
Increasing this value will emphasize the regions near each cutoff frequency.

E.F.SENSE .... [0...126]

Specifies the sensitivity of the Envelope Follower for the modulator. Lower settings of this value will allow the attacks of the input signal to be detected more rapidly.

HOLD

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

Note: The signal information that is maintained in the Hold state can be saved in the program by writing the program.

Note: 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.

Table 6-1

Frequency [Hz]	Band (CH)					
	Formant shift 0		Formant shift +2		Formant shift -2	
39						
50						
65					1	(CH1)
80					2	(CH1)
125	1	(CH1)			3	(CH2)
185	2	(CH1)			4	(CH2)
270	3	(CH2)	1	(CH1)	5	(CH3)
350	4	(CH2)	2	(CH1)	6	(CH3)
430	5	(CH3)	3	(CH2)	7	(CH4)
530	6	(CH3)	4	(CH2)	8	(CH4)
630	7	(CH4)	5	(CH3)	9	(CH5)
780	8	(CH4)	6	(CH3)	10	(CH5)
950	9	(CH5)	7	(CH4)	11	(CH6)
1150	10	(CH5)	8	(CH4)	12	(CH6)
1380	11	(CH6)	9	(CH5)	13	(CH7)
1680	12	(CH6)	10	(CH5)	14	(CH7)
2070	13	(CH7)	11	(CH6)	15	(CH8)
2780	14	(CH7)	12	(CH6)	16	(CH8)

3800	15	(CH8)	13	(CH7)		
5000	16		14			
6400			15	(CH8)		
8100			16			
10510						
12600						

Although the microKORG's editable band-pass filter has eight channels, it internally contains sixteen band-pass filters. These sixteen filters are arranged in pairs (a pair for each channel). Table 6-1 shows how the frequencies adjusted by "FORMANT SHIFT" and "CUTOFF" correspond to the frequencies of the sixteen filters.

"FORMANT SHIFT" and "CUTOFF"

Each parameter allows you to vary the character over a range of two steps upward or downward (a total of four steps upward or downward when used together). If both of these parameters are at 0, the character will match the cutoff frequencies of the modulator band pass filters (the analysis filter).
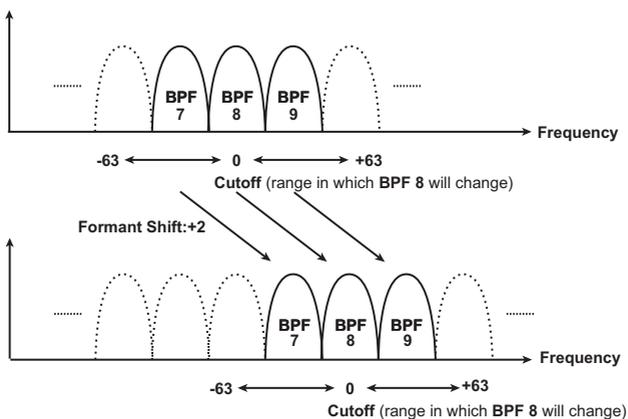
FC MOD

These parameters select the modulation source that will vary the cutoff frequency of the carrier band-pass filter (the synthesis filter), and specify the depth of the modulation. For example, if you set the modulation source "SOURCE" to AMP EG and use "INTENSITY" to adjust the depth of the effect, the AMP EG will produce tonal changes.

SOURCE

Selects the modulation source that will be applied to the carrier bandpass filter "CUTOFF". For example if you select AMP EG, the Amp EG will be the modulation source.

A.EG: Amp EG
LFO 1: LFO 1
LFO 2: LFO 2
VEL: Velocity (keyboard playing strength)
KBD Trk: Keyboard tracking (keyboard position)
P.B. WH: PITCH wheel
Mod. WH: MOD wheel

INTENSITY..[-63...63]

Specifies the depth of the modulation that is applied to the carrier band-pass filter "CUTOFF".

CH LEVEL A, CH LEVEL B

These parameters set the level for each of the eight band-pass filter channels (SYNTHESIS FILTER) of the carrier (→ page 66).
This lets you adjust the output level of the internal carrier sound source (OSC 1, NOISE).

CH 4 LEVEL... [0...127]

CH 5 LEVEL... [0...127]

CH 6 LEVEL... [0...127]

CH 7 LEVEL... [0...127]

CH 8 LEVEL... [0...127]

These parameters set the output level for each of the eight band-pass filter channels of the carrier.

CH 1 PAN .... [L63...Center...R63]

CH 2 PAN .... [L63...Center...R63]

CH 3 PAN .... [L63...Center...R63]

CH PAN A, CH PAN B

These parameters set the pan for each of the eight band-pass filter channels (SYNTHESIS FILTER) of the carrier (→ page 66).
This lets you adjust the stereo position of the internal carrier sound source (OSC 1, NOISE).

CH 4 PAN .... [L63...Center...R63]

CH 5 PAN .... [L63...Center...R63]

CH 6 PAN .... [L63...Center...R63]

CH 7 PAN .... [L63...Center...R63]

CH 8 PAN .... [L63...Center...R63]

These parameters set the pan for each of the eight band-pass filter channels of the carrier. L63 is far left, Center is center, and R63 is far right.

AMP

These parameters specify the volume. "LEVEL" specifies the volume of the internal sound source (OSC 1, NOISE) for the carrier. "KEY TRACK" adjusts how keyboard tracking will affect the volume, and "DISTORTION" specifies whether the sound will be distorted. The "DIRECT LEVEL" specifies the output volume level of the sound that is input from AUDIO IN.

LEVEL .... [0...127]

Specifies the volume level of the internal tone generator (OSC 1, NOISE) for the carrier.

DIRECT LEVEL .... [0...127]

Specifies the volume level of the audio that is output directly from AUDIO IN.

DISTORTION .... [OFF, ON]

Specifies whether distortion will be applied to the OSC 1, NOISE, and AUDIO IN 2 signal.
OFF: Distortion is off.
ON: Distortion is on.

KBD 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 Track operates according to the pitch that is controlled by pitch bend and transpose setting. It is not affected by pitch changes produced by vibrato or Virtual Patch.

AMP EG

The "AMP EG" parameters are the same as for a synth program (→ page 50). They specify the shape of the AMP EG, which creates time-variant change in the volume of the internal carrier sound source (OSC 1, NOISE). Virtual Patches are not available when using vocoder programs.

LFO 1, LFO 2

The "LFO1" and "LFO2" parameters are the same as for a synth program (→ page 56). Cyclic change produced by the LFO can apply modulation to the internal carrier sound source (OSC 1, NOISE). Virtual Patches are not available when using vocoder programs.

Effect parameters

MOD FX

The modulation effect applies various types of cyclic change to the original sound. You can use it to give the sound greater depth, or to produce the impression that multiple sound sources are being heard simultaneously. You can also use LFO modulation to simulate cyclic changes produced by a performer on an instrument, such as breathing on a wind instrument or the strings of a string instrument. "TYPE" selects the type of modulation effect, "EFFECT DEPTH" sets the depth and the amount of feedback for the modulation effect. "LFO SPEED" sets the speed of modulation.

TYPE .... [FLG/CHO, ENSEMBLE, PHASER]

Selects the effect type.

FLG/CH (Flanger/Chorus): This effect modulates the delay time of the input signal to add depth and warmth to the sound.

Increasing the "EFFECT DEPTH" value will produce a flanger effect.

ENSEMBLE: This effect uses multiple chorus units to add three-dimensional depth and spaciousness to the sound.

PHASER: This effect continuously modulates the phase of the sound, creating motion within the sound, a sweeping and twisting sensation.

LFO SPEED .... [0...127]

Specifies the speed of the modulation effect LFO.

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EFFECT DEPTH...[0...127]

Specifies the modulation depth and amount of feedback.
Increasing this value will deepen the modulation effect and also increase the amount of feedback. If you do not wish to apply the effect, set this to 0.
Excessively high settings of this parameter may cause the output to be distorted.
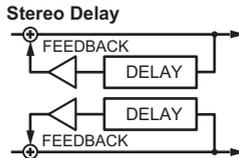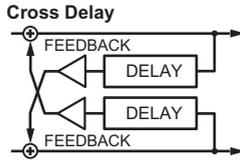
DELAY

The delay effect simulates the delays that occur when sound travels through air.
"TYPE" selects the type of delay effect. "DELAY DEPTH" sets the delay depth and the amount of feedback. "TEMPO SYNC" specifies whether the delay time will be synchronized to the tempo set by the arpeggiator or by an external MIDI clock.

TYPE .... [STEREO, CROSS, L/R]

Selects the delay type.
STEREO (Stereo Delay): This is a stereo delay.

CROSS (Cross Delay): This is a stereo delay where the left and right channels of feedback are interchanged. In a Layer program, it is effective to set the pan of the two timbres to left and right respectively.

Cross Delay

FEEDBACK
DELAY
DELAY
FEEDBACK

L/R (L/R Delay): This is a delay where the delay sound is output to left and right alternately.

L/R Delay

FEEDBACK
DELAY
DELAY
FEEDBACK
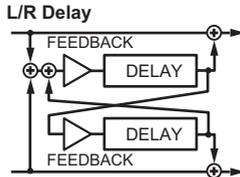
TEMPO SYNC ....[OFF, ON]

Specifies whether the delay time will be synchronized to the tempo.
OFF: Delay off (not synchronized).
The delay will operate according to the "DELAY TIME" value you specify.
ON: Delay on (synchronized).
The delay will synchronize to the ARPEG.A "TEMPO" setting or to MIDI Clock data from an external device.

DELAY TIME .... [0...127]

Sets the delay time.
This parameter is available only if "TEMPO SYNC" is OFF.

SYNC NOTE ....[1.32...1.1]

Specifies the ratio of the delay time relative to the ARPEG.A "TEMPO" value. (→ page 53)
This parameter is available only if "TEMPO SYNC" is ON.

DELAY DEPTH ....[0...127]

Specifies the delay depth and feedback amount.
Increasing this value will make the delay louder and will also increase the amount of feedback.
If you do not wish to apply a delay, set this to 0.
Excessively high settings of this parameter may cause the output to be distorted.

EQ

This is a two-band equalizer. Use EQ FREQ to specify the frequency that you want to adjust, and use EQ GAIN to adjust the gain of each frequency band.

Note: Excessively raising the equalizer gain parameters may cause the output to be distorted.

LOW EQ FREQ... [40Hz...1.00kHz]

Sets the frequency of the low-range equalizer.

LOW EQ GAIN.. [-12...12]

Sets the amount of boost or cut for the low-range equalizer.

HI EQ FREQ... [1.00kHz...18.0kHz]

Sets the frequency of the high-range equalizer.

HI EQ GAIN.. [-12...12]

Sets the amount of boost or cut for the high-range equalizer.

Appendices

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Troubleshooting

Please check the following points if you experience problems.

No sound

- Are the "Audio/MIDI Settings" (shown when you select "System > Preferences" from the menu) correctly configured?
- Is the Master Level or any other volume-related parameters set to 0?
- Is your computer set to produce sound?
  If you're using Windows, open the Control Panel and check [Sound and Audio Device Properties].
  If you're using macOS, check [System Settings] → [Sound] and Application folder → Utility folder → [Audio MIDI Settings] → [Audio Devices].
- If you're using your computer's sound card, is the sound card set up correctly?
- If you've connected an audio device to your computer, is the audio device set up so that sound can be output from it?

The sound has clicks, pops, or noise

- You may experience clicks, pops, or noise if your computer's CPU is experiencing a heavy load. If you are having this type of problem, try the following.
  → If other applications are running, close them.
  → Reduce the maximum polyphony of the synthesizer you're using.
  In the "Audio/MIDI Settings" (shown when you select "System > Preferences" from the menu), increase the audio buffer size. However, increasing this too much will also increase the latency (delay before you hear sound).

Sound is delayed

- Latency is determined by "the number of samples" × "the number of buffers". In the "Audio/MIDI Settings" (shown when you select "System > Preferences" from the menu), set the "Audio buffer size" and the "Sample rate" to the lowest settings that still allow stable operation.

Can't control the software synthesizer from a MIDI device connected to the computer

- Are your computer and MIDI device connected correctly?
- Is the connected MIDI device detected by your computer?
  → If you're using Windows, open the Control Panel and check [Sound and Audio Device Properties] → [Hardware].
  → If you're using macOS, open the Application folder → Utility folder → [Audio MIDI Settings] → [MIDI Device], and make sure that your MIDI device is detected.
- Are the "Audio/MIDI Settings" (shown when you select "System > Preferences" for the menu) correctly configured?

Specifications

Maximum polyphony: 64 notes (depending on the computer's CPU)
Presets: 320
Standalone operation or as a VST3/AU (v2)/AAX plug-in instrument

Operating requirements

for Mac

OS: macOS 10.14 Mojave or later (Latest updates)
CPU: Apple M1 or better, or Intel Core i5 or better (Core i7 or better recommended)
Memory: 8 GB RAM or more (16 GB RAM or more recommended)
Storage: 8 GB or more free space (SSD recommended)
Internet connection
Plug-in: AU (v2), VST3, AAX (Only 64bit plug-in is supported)

for Windows

OS: Windows 10 64bit* or later (Latest updates)
* This software will not run on a 32-bit OS.
CPU: Intel Core i5 or better (Core i7 or better recommended)
Memory: 8 GB RAM or more (16 GB RAM or better recommended)
Storage: 8 GB or more free space (SSD recommended)
Internet connection
Plug-in: VST3, AAX (Only 64bit plug-in is supported)

* Appearance and specifications of this product are subject to change without notice.

Support and service

Information to provide when contacting us

In order for us to help you, we'll need the following information since product support cannot be provided without it:

- Your name
- The name and version of the product
- The name of the device that you're using
- The version of the operating system
- Your question (provide as much detail as possible)

Before you contact us

Before you contact us, check whether this manual or KORG app Help Center has an answer for your question.
Please be aware that we cannot answer questions about products that are not made by Korg, such as basic operation of your hardware device, or general questions about creating songs or sounds.