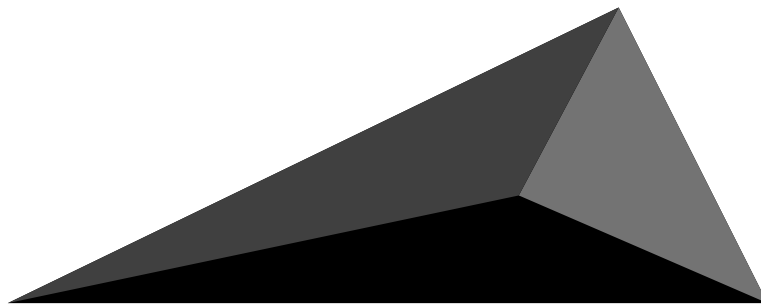


Effect Guide



T R I N I T Y
MUSIC WORKSTATION DRS
TRINITY / TRINITY plus / TRINITY pro / TRINITY proX



Advanced Control Combined Synthesis System



Multi Oscillator Synthesis System



KORG

Ⓔ ①

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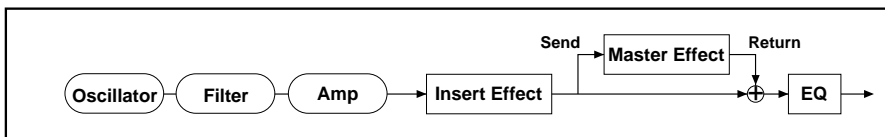
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Overview

The TRINITY series has two types of effects: **Insert Effects** and **Master Effects**.

As shown in the figure below, you can use the Insert Effects in the process of sound creation after the Oscillator, Filter, and Amp. Then, reverberation and other effects are applied through the Master Effects. **One hundred** Insert Effects and **fourteen** Master Effects enable highly flexible sound production.



The TRINITY series does not have an input level meter to recognize the effect input level. Please note that if the input level is not high enough, the S/N ratio may be reduced, and if the input level is excessive, clipping may occur.

To obtain the optimum degree of effects, first set the input level of the Insert Effect and Master Effect to the maximum possible without clipping, then adjust the effect output level using the Wet/Dry parameter of the Insert Effects, and the Output Level parameter and/or Return 1 and 2 of the Master Effects.

The following table shows the parameters that can be used to adjust the input/output levels:

	Program Edit mode	Combination Edit mode	Sequencer mode
Input	OSC1/2 High, Low Level (P1) Filter1/2 A/B Gain (P3) Amp1/2 Level (P5) Send1/2 (P5 or P7) Trim Parameter (P7, P8)*	Volume (P1) Send1/2 (P1) Trim Parameter (P7, P8)*	Volume (P1) Send1/2 (P1)
Output	Wet/Dry (P7) Output Level (P8) Return1, 2 (P8)	Wet/Dry (P7) OutPut Level (P8) Return1, 2 (P8)	Output Level (P8) Return1, 2 (P8)

* Certain effects may not utilize some of these parameters.

Insert Effects

Insert Effects are used as part of the sound creation process.

You can select any effects from the effect library, which contains **100 effects**, ranging from effects that change tone and dynamics, such as the equalizer, limiter, exciter, etc.; to effects that simulate particular characteristics of certain musical instruments, such as amp simulation, rotary speaker, and piano body/damper simulation; effects that create conventional effect sounds, such as ring modulator, talking modulator, vocoder, and pitch shifter; completely new types of effects, such as decimator and resonator; and classic effects, such as reverberation, chorus, delay, and overdrive.

Insert Effects employ the concept of “**size**”, which allows for more flexible effect routing appropriate for your own application.

In Program mode, you can use up to **three effects in series** (or up to **four effects in series/parallel** for a Drum mode Program).

In the Combination and Sequencer modes, you can use up to **three effects** in series for each Timbre or Track (or up to **four effects in series/parallel** for each Timbre or Track that uses a Drum mode Program).

In total, you can use up to **eight effects** for all Timbres/Tracks.

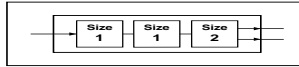
For more detailed information, refer to the block diagrams and explanations below for each mode.

Effect Size

Insert Effects utilize effect sizes of 1, 2, and 4.

Program (Single or Double mode Program):

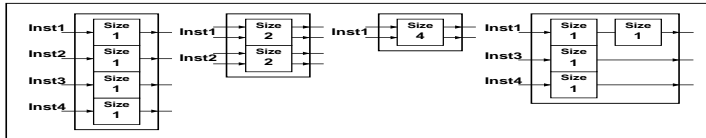
Up to three effects with a total effect size of four or less can be inserted in series.



Program (Drum mode Program):

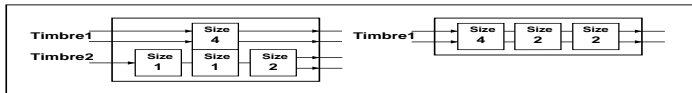
Up to four effects with a total effect size of four or less can be inserted in series/parallel.

Use P5 (DrumKit) in Global mode to assign the DrumKit sounds to Insts 1-4 for each key.



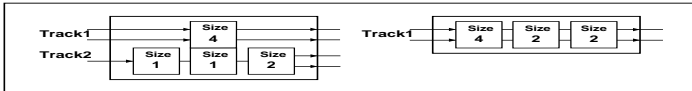
Combination:

Up to eight effects with a total effect size of eight or less can be inserted.



Sequencer:

Up to eight effects with a total effect size of eight or less can be inserted.



Effect Input/Output

The following table shows the input/output of the **Dry** sound (the sound without any effect applied) and the **Wet** sound (the sound with an effect applied) for each size.

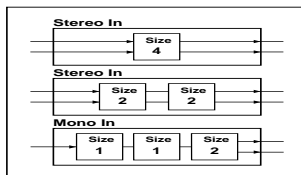
size1	Dry	Mono In - Mono Out	
	Wet	Mono In - Mono Out	
size2	Dry	Stereo In - Stereo Out	
	Wet	Mono In - Mono Out	
size4	Dry	Stereo In - Stereo Out	
	Wet	Mono In - Stereo Out	
	Dry	Stereo In - Stereo Out	
	Wet	Stereo In - Stereo Out	

Shown on the upper left corner of the effect block diagrams.

The Size 1 effects are all monaural in/monaural out for both dry and wet sounds. Therefore, Size 1 effects have monaural input as shown in the figure on the next page. If the Effect On/Off parameter is turned Off, the effect is bypassed. When a size 1 effect is selected, the bypass sound becomes monaural.

MIDI Regardless of the Effect On/Off setting, you can turn all Insert Effects Off by sending the Effect 2 Control message (Controller #92). When the Controller value is 0, all effects turn Off. They turn On with a value of 1-127.

When you want to preserve the stereo image of a Double mode Program, use Insert Effects of size 2 or 4.



Grouping

You can use the grouping function in the Combination and Sequencer modes to use the Insert Effects efficiently. The effect **grouping** function places the Timbres/Tracks into one group so that the same Insert Effects will be applied to all of them.

Note the following when you are trying to place Timbres/Tracks that use Single or Double mode Programs, and Timbres/Tracks that use Drum mode Programs into a group:

- When you are adding Timbres/Tracks that use Single or Double mode Programs to a group of Timbres/Tracks that use Drum mode Programs:
The Timbres/Tracks will be grouped (input) to Insert Effect inst1 of the Timbres/Tracks that use Drum mode Programs.
- When you are adding Timbres/Tracks that use Drum mode Programs to a group of Timbres/Tracks that use Single or Double mode Programs:
Only DrumKit sounds that have been assigned to inst1 in P5 of Global mode will be grouped (input) to the Insert Effects of the Timbres/Tracks that use Single or Double mode Programs.

Master Effects

Master Effects use a **send** and **return** routing regardless of the modes, and consist of **two types of effects**: modulation and reverberation/delay, both **mono-in/stereo-out**. These fourteen effects can be used to provide overall ambience. It is possible to route the modulation effects and reverb/delay effects in series.

Send levels are set for each oscillator, or after the Insert Effects are applied. In the Combination and Sequencer modes, you can set the send levels for each Timbre/Track, allowing you to use the unit as a mixer to create a spacious effect for entire Programs, Combinations, or Songs.

A Low/High-type **shelving EQ** is located before the output connectors 1/L/MONO and 2/R, and allows you to “fine-tune” the tone of your sound.

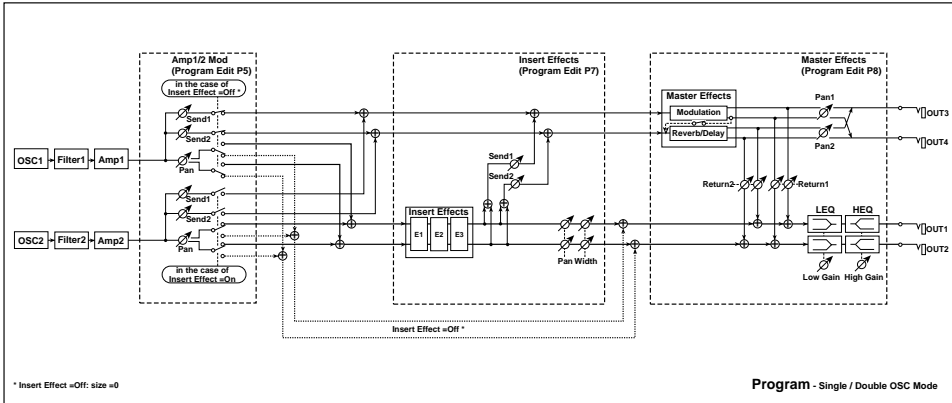
The Master Effect parameters are set for each Program, Combination, and Song. (Use P8 in each mode.)

- MIDI** The Effect 4 Control message (Controller #94) will turn the modulation effects on/off, and the Effect 5 control message (Controller #95) will turn the reverb/delay effects on/off. Both control messages are sent on the Global MIDI Channel. With a control value of 0, the effect is turned off, and with a value of 1–127, the effect is turned on.
- The Effect 3 Level message (Controller #93) will adjust the send level of the modulation effects, and the Effect 1 Level message (Controller #91) will adjust the send level of the reverb/delay effects.
- The control messages for Programs are sent on the Global MIDI Channel, and control messages for Combinations and Sequences are sent on the MIDI Channels specified for each Timbre and Track.

Program

You can use the Insert Effects as long as the total of the effect size is four or less in Program mode. The configuration of the Insert Effects is different when using a Single or Double mode Program than when using a Drum mode Program.

Program - Single/Double OSC mode

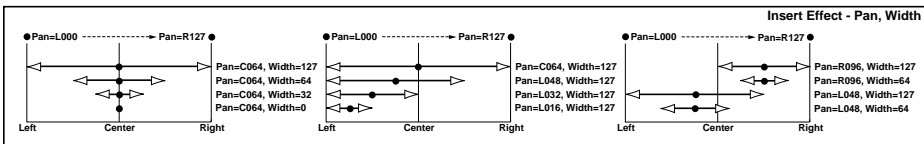


Insert Effects

You can insert up to **three** effects in series as long as the total of the effect sizes is **four or less** when you are using a Program with the Oscillator Mode parameter (1-1c) set to single or double (shown as E1, E2, and E3 in the center of the figure above).

If you insert a size 1 effect, the input/output becomes monaural. In this case, the oscillator's Pan parameter (P5 in Program Edit mode) becomes ineffective, and the pan setting will be in the center. Adjust the stereo pan position using the Pan parameter that comes after the Insert Effects (P7 in Program Edit mode).

If the Insert Effect output is in stereo, you can control the width of the effect (such as the width of reverberation) using the Width parameter (P7 in Program Edit mode). If you wish to make the oscillator's Pan setting (P5 in Program Edit mode) effective, set the Pan setting that comes after the Insert Effects to C064 and set the Width to 127.



Master Effects

The input level of the Master Effects is set by Send 1 and 2.

Since the destination of the send routing changes depending on whether the Insert Effects have been inserted or not, the parameters will change accordingly.

If you have inserted Insert Effects, the Send 1 and 2 parameters of P7 in Program Edit mode will become effective (those of P5 will be ignored). If you have not inserted Insert Effects, the Send 1 and 2 parameters of P5 in Program Edit mode will become effective.

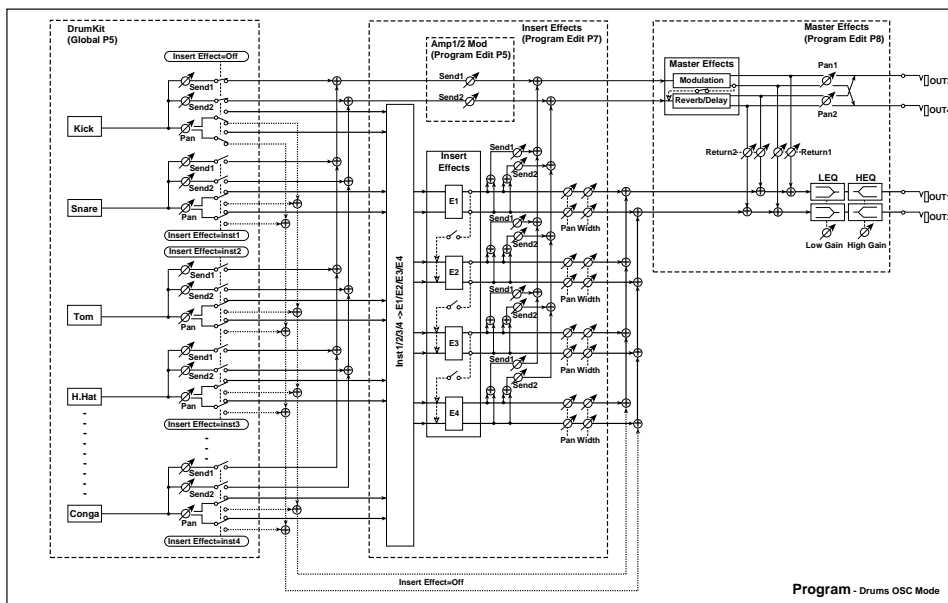
The Send 1 and 2 parameters are also used to set the level of the signal appearing at output connectors 3 and 4.

Only the Master Effect sound will be sent to output connectors 3 and 4. If you wish to output dry sound (without the Master Effects applied), set the Master Effect parameters of P8 in Program Edit mode to "Off." In this case, however, the Master Effects will not be applied to the signal at outputs 1 and 2.

If output connectors 3 and 4 are used for stereo output, you can set the stereo position of Send 1 and 2 using the Pan 3 and 4 parameters (P8 in Program Edit mode).

To set the Master Effect return level, use the Return 1 and 2 parameters (P8 in Program Edit mode). If you check the check box located between Send 1 and Send 2 in the upper left corner of the LCD, the serial routing of Modulation → Reverb/Delay will be added. That is, the Right modulation output will be added to the Reverb/Delay input. In this case, you can still set the Return 1 and 2 parameters independently.

Program - Drums OSC mode



Insert Effects

You can insert up to **four** effects in series or parallel as long as the total of the effect sizes is **four or less** when you are using a Drum mode Program (shown as E1, E2, E3, and E4 in the center of the figure above).

You can select Insert On/Off, and inst 1–4 (using E1–E4 input), and set the Pan and Send 1/2 parameters for each Drum sound in P5 of Global mode for each key. The final send setting will use the value set here multiplied by the Send setting set in P5 of Program Edit mode.

If you insert a size 1 effect, the input/output becomes monaural. In this case, the DrumKit's Pan parameter (P5 in Global mode) becomes ineffective, and the sound will be panned in the center. Adjust the stereo position using the Pan parameter (P5 of Program Edit mode) that comes after the Insert Effects (P7 in Program Edit mode).

If the Insert Effect output is in stereo, you can control the width of the effect (such as the width of reverb) using the Width parameter (P7 in Program Edit mode). If you wish to make the DrumKit's Pan setting (P5 in Global mode) effective, set the Pan setting that comes after the Insert Effects to C064 and set the Width to 127.

Master Effects

The input level of the Master Effects is set by Send 1 and 2.

Since the destination of the send routing changes depending on whether the Insert Effects have been inserted or not, the parameters will change accordingly.

If you have inserted Insert Effects, the Send 1 and 2 parameters of P7 in Program Edit mode will become effective (those of P5 will be ignored). If you have not inserted Insert Effects, the Send 1 and 2 parameters of P5 in Global mode and P5 in Program Edit mode will become effective.

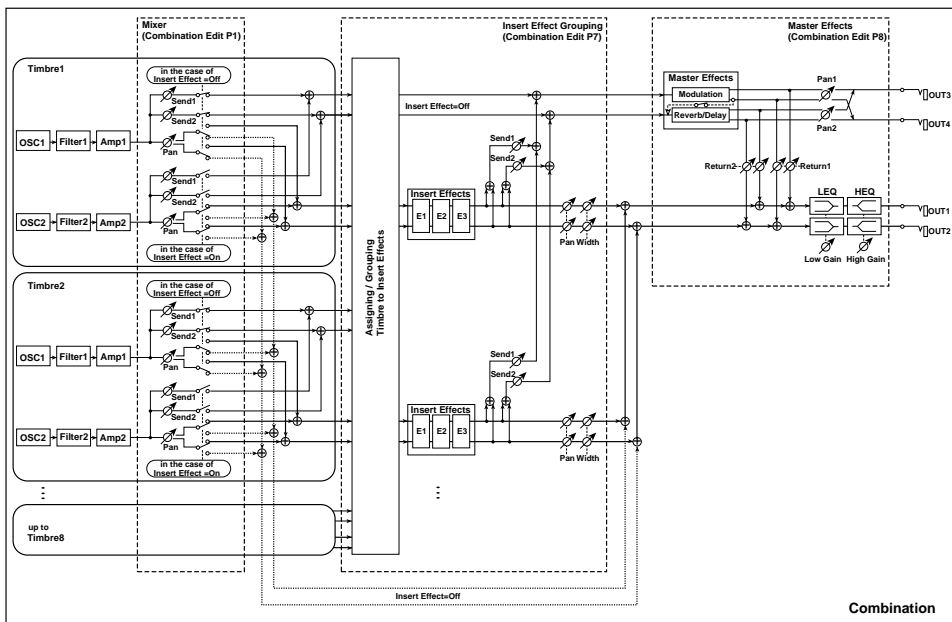
The Send 1 and 2 parameters are also used to set the level of signal appearing at output connectors 3 and 4.

Only the Master Effect sound will be sent to output connectors 3 and 4. If you wish to output dry sound (without the Master Effects applied), set the Master Effect parameters of P8 in Program Edit mode to "Off." In this case, however, the Master Effect will not be applied to the signal at outputs 1 and 2.

If output connectors 3 and 4 are used for stereo output, you can set the stereo position of Send 1 and 2 using the Pan 3 and 4 parameters (P8 in Program Edit mode).

To set the Master Effect return level, use the Return 1 and 2 parameters (P8 in Program Edit mode). If you check the check box located between Send 1 and Send 2 in the upper left corner of the LCD, the serial routing of Modulation → Reverb/Delay will be added. That is, the Right modulation output will be added to the Reverb/Delay input. In this case, you can also set the Return 1 and 2 parameters independently.

Combination



Insert Effects

The Insert Effects selected in Program Edit mode are **not used** in Combination Edit mode. Instead, you can set Insert Effects for up to eight Timbres in a Combination.

Go to P7 in Combination Edit mode, and set the Insert Effect's Off, size (1, 2, 4, 8), and grouping parameters for each of Timbres 1–8.

If you wish to use a Program's Insert Effect settings by using the Copy function, first select a size for the corresponding Timbre equal to or greater than the size of the effects used in the Program.

You can route up to **three** Insert Effects for each Timbre **in series**. (If the Program is using a DrumKit, you can use up to **four** effects **in series or parallel**.)

The total effect size for all the Timbres must be **eight or less**.

You can also set the total effect size for a single Timbre to eight. However, if you are routing three Insert Effects in series, you cannot place an effect of size 4 on the second position. For a Timbre that uses a Drum mode Program, you can set the total effect size to eight. However, if you are routing three Insert Effects in series, you cannot place the effect of size 4 on the second position. If you are routing four effects in series, you cannot place an effect of size 4 on the second or third position.

If you insert a size 1 effect, the input/output becomes monaural. In this case, the Timbre's Pan parameter (P1 Timb Param1 in Combination Edit mode) becomes ineffective, and the pan setting will be in the center. Adjust the stereo pan position using the Pan parameter (P7 in Combination Edit mode) that comes after the Insert Effects.

If the Insert Effect output is in stereo, you can control the width of the effect (such as the width of reverberation) using the Width parameter (P7 in Combination Edit mode). If you wish to make the oscillator's Pan setting (P5 in Program Edit mode) effective, set the Pan setting that comes after the Insert Effects to C064 and set the Width to 127.

Refer to the "Program - Drums OSC mode" section for information regarding the setting of Programs that use a DrumKit.



When you are adding Timbres/Tracks that use Single or Double mode Programs to a group of Timbres/Tracks that use Drum mode Programs, they will be grouped (input) into Insert Effect inst1 of the Timbres/Tracks that use Drum mode Programs.

When you are adding Timbres/Tracks that use Drum mode Programs to a group of Timbres/Tracks that use Single or Double mode Programs, only DrumKit sounds that have been assigned to inst1 in P5 of Global mode will be grouped (input) into the Insert Effects of the Timbres/Tracks that use Single or Double mode Programs.

Master Effects

You need to set the Master Effects in the Combination, since the Master Effects set in Program Edit mode are ineffective here.

The input levels of the Master Effects are set by Send 1 and 2.

Since the destination of the send routing changes depending on whether Insert Effects have been inserted or not, the parameters will change accordingly.

If you have inserted Insert Effects, the Send 1 and 2 parameters of P7 in Combination Edit mode will become effective (those of P1 Timb Param1 will be ignored). If you have not inserted Insert Effects, the Send 1 and 2 parameters of P1 Timb Param1 in Combination Edit mode will become effective.

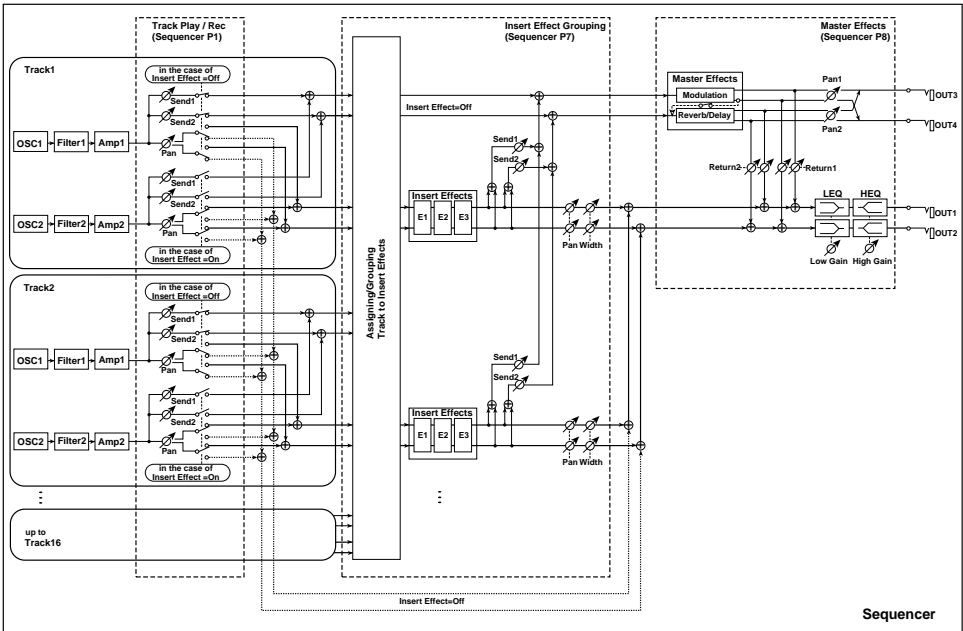
The Send 1 and 2 parameters are also used to set the level of signal appearing at output connectors 3 and 4.

Only the Master Effect sound will be sent to output connectors 3 and 4. If you wish to output dry sound (without the Master Effects applied), set the Master Effect parameters of P8 in Combination Edit mode to "Off." In this case, however, the Master Effects will not be applied either to the output 1 or 2 signal.

If output connectors 3 and 4 are used for stereo output, you can set the stereo position of Send 1 and 2 using the Pan 3 and 4 parameters (P8 in Combination Edit mode).

To set the Master Effect return level, use the Return 1 and 2 parameters (P8 in Combination Edit mode). If you check the check box located between Send 1 and 2 in the upper left corner on the LCD, the serial routing of Modulation → Reverb/Delay will be added. That is, the Right modulation output will be added to the Reverb/Delay input. In this case, you can still set the Return 1 and 2 parameters independently.

Sequencer



Insert Effects

The Insert Effects selected in Program Edit mode are **not used** in Sequencer mode. Instead, you can set Insert Effects for up to eight Tracks in the Sequencer.

Go to P7 in Sequencer mode, and set the Insert Effect's Off, size (1, 2, 4, 8), and grouping parameters for each of Tracks 1–16.

If you wish to use a Program's Insert Effect settings by using the Copy function, first select a size for the corresponding Track equal to or greater than the size of the effects used in the Program.

You can route up to **three** Insert Effects for each Track **in series**. (If the Program is using a DrumKit, you can use up to **four** effects **in series or parallel**.)

The total effect size for all the Tracks must be **eight or less**.

You can also set the total effect size for a single Track to eight. However, if you are routing three Insert Effects in series, you cannot place an effect of size 4 on the second position. For a Track that uses a Drum mode Program, you can set the total effect size to eight. However, if you are routing three Insert Effects in series, you cannot place an effect of size 4 on the second position. If you are routing four effects in series, you cannot place an effect of size 4 on the second or third position.

If you insert a size 1 effect, the input/output becomes monaural. In this case, the Track's Pan parameter (P1 Track Play/Rec in Sequencer mode) becomes ineffective, and the pan setting will be in the center. Adjust the stereo pan position using the Pan parameter (P7 in Sequencer mode) that comes after the Insert Effects.

If the Insert Effect output is in stereo, you can control the width of the effect (such as the width of reverb) using the Width parameter (P7 in Sequencer mode). If you wish to make the oscillator's Pan setting (P5 in Program Edit mode) effective, set the Pan setting that comes after the Insert Effects to C064 and set the Width to 127.

Refer to the "Program - Drums OSC mode" section for information regarding the setting of Programs that use a DrumKit.



When you are adding Timbres/Tracks that use Single or Double mode Programs to a group of Timbres/Tracks that use Drum mode Programs, they will be grouped (input) into Insert Effect Inst1 of the Timbres/Tracks that use Drum mode Programs.

When you are adding Timbres/Tracks that use Drum mode Programs to a group of Timbres/Tracks that use Single or Double mode Programs, only DrumKit sounds that have been assigned to Inst1 in P5 of Global mode will be grouped (input) into the Insert Effects of the Timbres/Tracks that use Single or Double mode Programs.

Master Effects

You need to set the Master Effects for each song in the Sequencer mode, since the Master Effects set in Program Edit mode are ignored here.

The input levels of the Master Effects are set by Send 1 and 2.

Since the destination of the send routing changes depending on whether Insert Effects have been inserted or not, the parameters will change accordingly.

If you have inserted Insert Effects, the Send 1 and 2 parameters of P7 in Sequencer mode will become effective (those of P1-3 Mix 1-8 and P1-4 Mix 9-16 will be ignored). If you have not inserted Insert Effects, the Send 1 and 2 parameters of P1-3 Mix 1-8 and P1-4 Mix 9-16 in Sequencer mode will be used instead.

The Send 1 and 2 parameters are also used to set the level of the signal appearing at output connectors 3 and 4.

Only the Master Effect sound will be sent to output connectors 3 and 4. If you wish to output dry sound (without the Master Effects applied), set the Master Effect parameters in P8 of Sequencer mode to "Off." In this case, however, you cannot apply the Master Effects to output connectors 1 and 2.

If the output connectors 3 and 4 are used for stereo output, you can set the stereo position of Send 1 and 2 using the Pan 3 and 4 parameters (P8 of Sequencer mode).

To set the Master Effect return level, use the Return 1 and 2 parameters (P8 of Sequencer mode).

If you check the check box between Send 1 and 2 located in the upper left corner of the LCD, the serial routing of Modulation → Reverb/Delay will be added. That is, the Right modulation output will be added to the Reverb/Delay input. In this case, you can still set the Return 1 and 2 parameters independently.

Dynamic Modulation

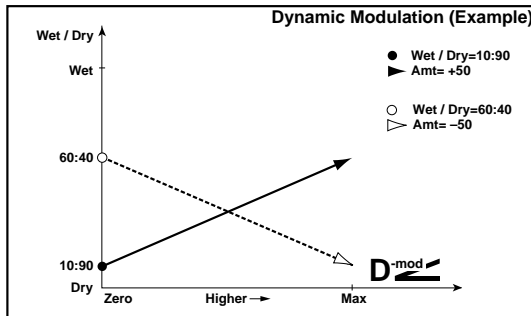
You can control certain effect parameters using the joystick, ribbon controller, etc. “on the fly.” For example, you can use the After Touch effect to speed up the LFO of the chorus and flanger, or you can use the ribbon controller to activate the wah effect. In this way, you will be able to make the most out of the expression created by the effects as part of your instrument.

Most of the parameters with dynamic modulation consist of the parameter value, **Src** (source), and **Amt** (amount). The Src field selects the modulation source, and Amt sets the amount of dynamic modulation effect. When the modulation source is set to the maximum value, the actual degree of the effect will be **the parameter value plus the Amt value**.

MIDI Dynamic modulation of the Program’s Insert Effects and Master Effects is controlled via the Global MIDI Channel. Dynamic modulation of the Insert Effects for Combinations and Sequences is controlled via the MIDI Channels specified for each Timbre and Track. Dynamic modulation of the Master Effects is controlled via the Global MIDI Channel.

e.x.
 Wet/Dry=10:90
 Src=Aftr Touch
 Amt=+50

In this case, the effect balance is 10:90. As you apply After Touch, the percentage of the effect sound will increase. When After Touch is at its maximum, the effect balance will be 60:40.



! If you are controlling the effect parameters using any source other than AUTOFADE, the dynamic modulation effect will not be affected if you modify the Amt value while the dynamic modulation is being applied. The modification will become effective when you operate the dynamic modulation source again.

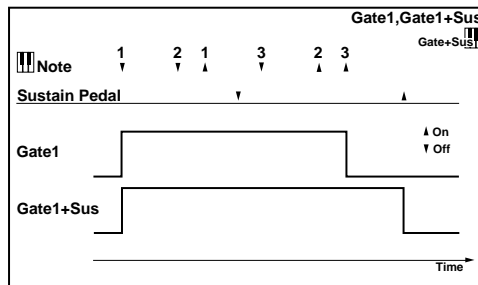
Refer to the corresponding effect section for an explanation of other dynamic modulation parameters. **D-mod** is marked on the right of the effect parameter table to indicate that the parameter has dynamic modulation.

Source	
None	Dynamic modulation is not used.
Gate1	Note On/Off ☞P.11
Gate1+Sus	Note On + Sustain pedal On/Off ☞P.11
Gate2	Note On/Off (retrigger) ☞P.11
Gate2+Sus	Note On + Sustain pedal On/Off (retrigger) ☞P.11
Note No.	Note number.
Velocity	Velocity
AftrTouch	Channel After Touch
JS(+Y)	Joystick - upward

Source		
JS(-Y)	Joystick - downward	
JS(X)	Joystick - horizontal direction	
Ribbon(X)	Ribbon controller - horizontal direction	
Ribbon(Z)	How strongly you press the ribbon controller	
SW1	Assignable Panel Switch 1 (CC#80)	☞ P.12
SW2	Assignable Panel Switch 2 (CC#81)	☞ P.12
Foot SW	Assignable Foot Switch (CC#82)	☞ P.12
Foot Pedal	Assignable Foot Pedal (CC#04)	☞ P.12
SustainPdl	Sustain Pedal	
MIDI Vol	MIDI Volume (CC#07)	
MIDI Pan	MIDI Pan (CC#10)	
MIDI Exp	MIDI Expression Control (CC#11)	
MIDI Cnt1	MIDI Effect Control 1(CC#12)	
MIDI Cnt2	MIDI Effect Control 2(CC#13)	
Slider	Value Slider (CC#18)	
MIDI CC#19	MIDI Control Change (CC#19)	
Tempo	Tempo information specified by the sequencer or MIDI clock	☞ P.12
AUTOFADE	Auto Fade (only for some effects)	☞ P.12

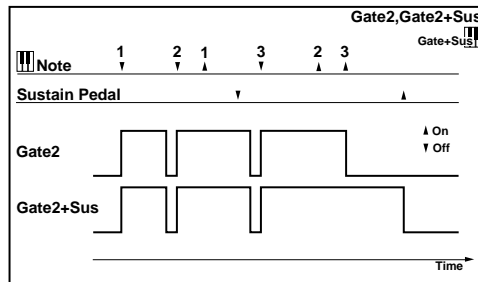
Gate1
Gate1+Sus

The effect amount is at maximum during Note-on. When you release all the keys, the effect will stop. For Gate 1+Sus, the maximum effect level will be maintained as long as you press the sustain pedal, even after you release the keys.



Gate2
Gate2+Sus

These are almost the same as Gate 1, and Gate 1+Sus. However, if you are using this as a source for, say, the EG of size 1, 17: Envelope Flanger, or the AUTO-FADE of size 2, 13: Stereo Chorus, every Note On message will trigger the effect. (With Gate 1, and Gate 1+Sus, only the first Note On data will trigger the effect.)



SW1
SW2 If the switches on the panel are assigned as a dynamic modulation source, set SW1 to Modulation (CC#80) and SW2 to (CC#81) in P1 of Program Edit mode, or P4 of Combination Edit mode.

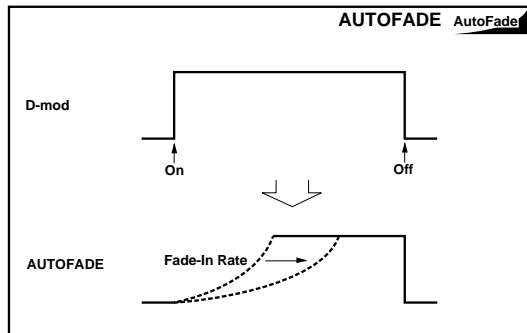
Foot SW If the assignable foot switch is assigned as a dynamic modulation, set Foot Switch to Modulation (CC#82) in P1 of Global mode.
Then, you can control the effect from a footswitch connected to the SWITCH terminal.

Foot Pedal If the assignable pedal is assigned as a dynamic modulation, set Foot Pedal to Foot Controller (CC#04) in P1 of Global mode.
Then, you can control the effect from a foot pedal connected to the PEDAL terminal.

AUTOFADE You can use AUTOFADE only for some effects such as size 2, 13: Stereo Chorus. The effect is triggered by Note On data or the assignable switch. AUTOFADE allows the modulation effect amount to fade in automatically. You cannot select AUTOFADE as a modulation source for the effects/parameters that do not have the AutoFade function.

In the parameter table, the **AutoFade** mark appears to the right of the effect parameters that have the AutoFade function.

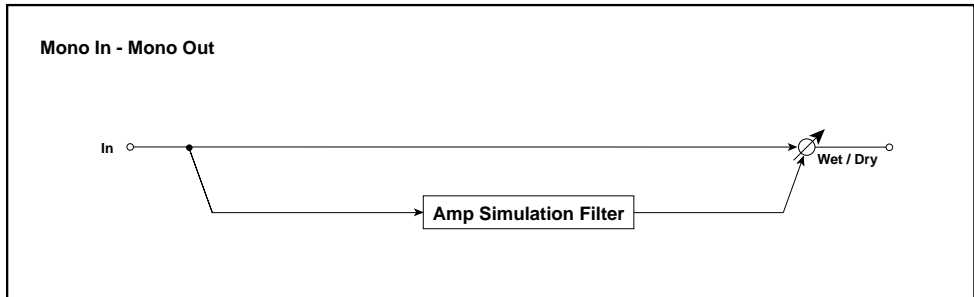
MIDI The effect is off when a value for the dynamic modulation source specified for the AUTOFADE Src parameter is smaller than 64, and the effect is on when the value is 64 or higher. The AutoFade function is triggered when the value changes from 63 or smaller to 64 or higher.



Tempo The modulation sources ranging from “Note number” to “MIDI CC#19” listed on the table on pages 10 and 11 can be controlled via MIDI Control messages 0 through ± 127 . On the other hand, Tempo information specified on the sequencer or from the MIDI clock is used as a BPM value for the Tempo. Therefore, a Tempo value of 127 (BPM) will create the same effect as created by the maximum value (+127) of MIDI Control message.

00: Amp Simulation

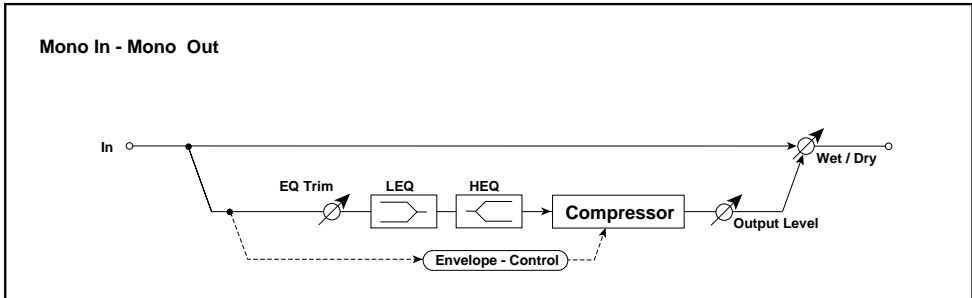
This effect simulates the frequency response characteristics of guitar amplifiers. You can obtain a realistic guitar amplifier sound. It is also effective for organ sounds.



a	Amplifier Type	SS, EL84, 6L6	Selects the type of guitar amplifier.
	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
b	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

01: Compressor

This effect compresses the input signal to regulate the level and give a “punchy” effect. It is useful for guitar, piano, and drum sounds.

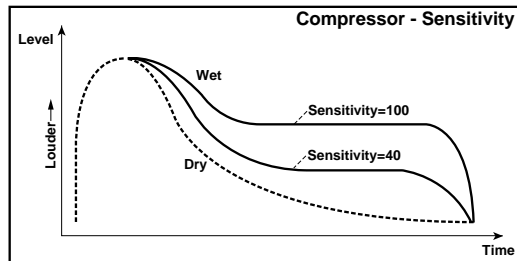


a	Sensitivity	1...100	Sets sensitivity. P.14
b	Attack	1...100	Sets attack amount. P.14
c	EQ Trim	0...100	Equalizer input level
d	Pre LEQ Gain [dB]	-15.0...+15.0dB	Low EQ gain
e	Pre HEQ Gain [dB]	-15.0...+15.0dB	High EQ gain
f	Output Level	0...100	Compressor output level. P.14
g	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance



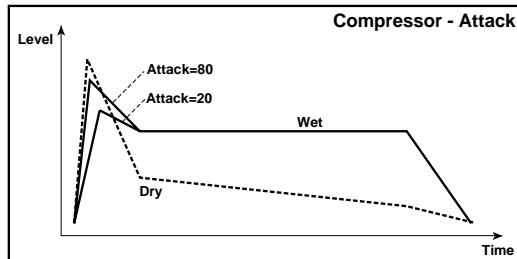
- a: Sensitivity
- f: Output Level

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.



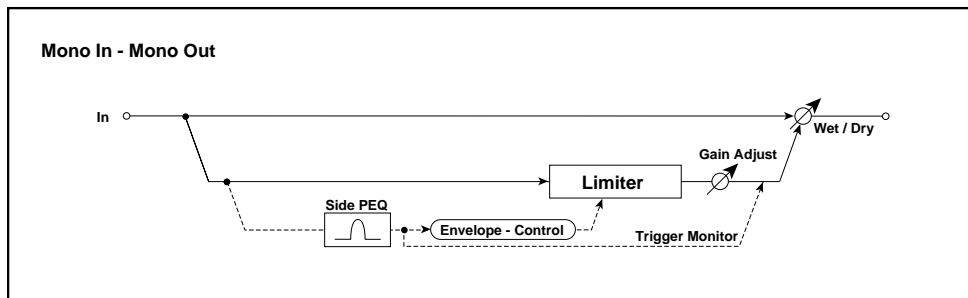
- b: Attack

This parameter controls the attack level.



02: Limiter

The Limiter regulates the input signal level. It is similar to the Compressor, except that the Limiter compresses only signals that exceed the specified level to lower unnecessary peak signals. The Limiter applies a peaking-type EQ to the trigger signal (which controls the degree of the Limiter effect), allowing you to set any band width to be covered.



a	Ratio	1.0:1...50.0:1, Inf:1	Sets the signal compression ratio. P.15
b	Threshold [dB]	-40...0dB	Sets the signal level above which compression is applied. P.15
c	Attack	1...100	Sets attack time. P.16
d	Release	1...100	Sets release time. P.16
e	Gain Adjust [dB]	-16...+24dB	Sets output gain. P.15
f	Side PEQ Insert	Off, On	Switches the trigger signal EQ on/off. P.16
g	Side PEQ Cutoff [Hz]	20...12.00kHz	Center frequency of the trigger signal EQ P.16
	Q	0.5...10.0	Band width of the trigger signal EQ
	Gain [dB]	-18.0...+18.0dB	Gain of the trigger signal EQ
h	Trigger Monitor	Off, On	Switches effect output/trigger signal monitor on/off. P.16
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

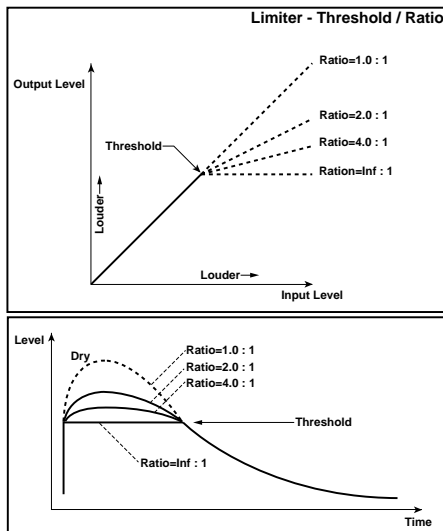
a: Ratio

b: Threshold [dB]

e: Gain Adjust [dB]

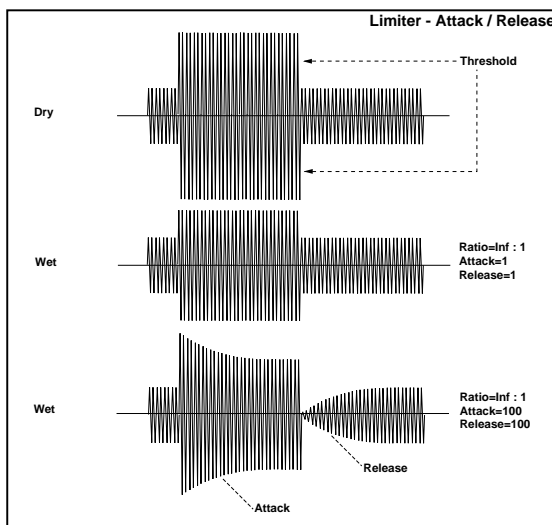
This parameter sets the signal compression ratio. Compression is applied only when the signal level exceeds the Threshold value.

Adjust the output level using the Gain Adjust parameter, since compression causes the entire level to be reduced.



- c: Attack
- d: Release

These parameters set the attack time and release time. A higher attack time will cause the compression to be applied more slowly.



- f: Side PEQ Insert
- g: Side PEQ Cutoff [Hz]
- g: Q
- g: Gain [dB]

These parameters are used to set the EQ applied to the trigger signal.

The Limiter determines whether the compression is applied or not, based on the sound post-EQ. Setting the equalizer allows you to set the Limiter to respond to any frequency band.

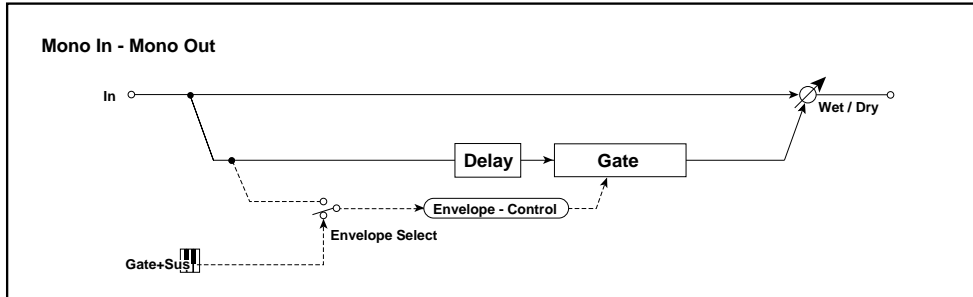
- h: Trigger Monitor

Setting this parameter On will cause the trigger signal to be output, instead of the Limiter signal. Use this parameter to check the trigger signal with EQ applied.

Usually, set this to Off.

03: Gate

The Gate effect mutes signals with a level lower than the specified threshold. You can also use this effect to create Gated Reverb by routing it after the Reverb effect. The Gate can be turned on/off directly by Note On/Off.



a	Envelope Select	D-mod, Input	Toggles between control by Modulation Source and control by input signal. P.17
	Src	None...Gate2+Sus	Modulation Source that controls Gate when Envelope Select is set to D-mod.
b	Threshold	0...100	Sets the signal level below which Gate is applied. P.17
c	Attack	1...100	Sets attack time. P.17
d	Release	1...100	Sets release time. P.17
e	Delay Time [msec]	0...100msec	Delay time for gate input P.18
f	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

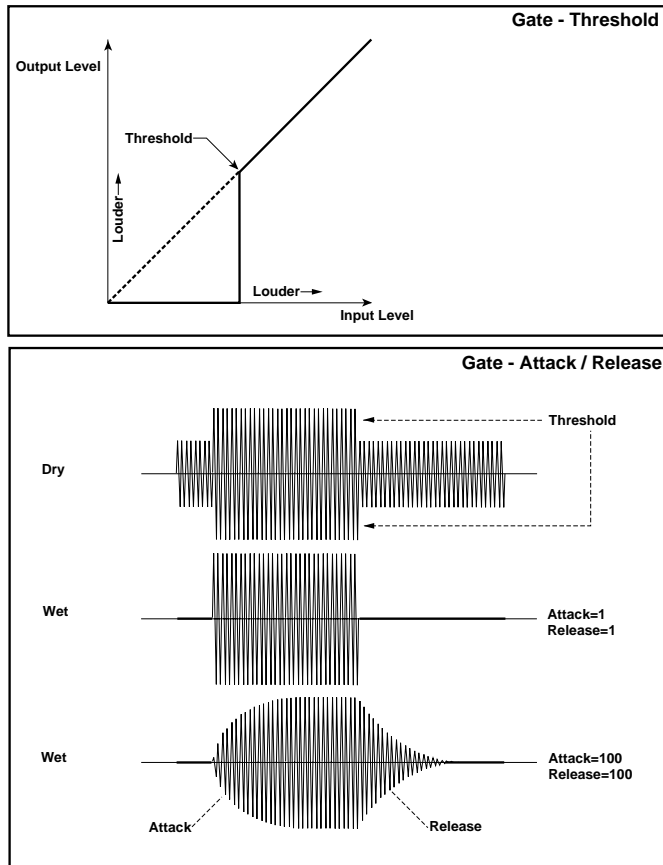
a: Envelope Select
a: Src

The Envelope Select parameter determines whether the Gate is on/off based on the level of input signal or by using a modulation source. The Src parameter is available only when you have selected D-mod for the Envelope Select parameter. Selection ranges from None to Gate2+Sus.

b: Threshold
c: Attack
d: Release

This parameter sets the signal level below which Gate is applied when Envelope Select is set to Input.

The Attack and Release parameters set the Gate attack time and release time.

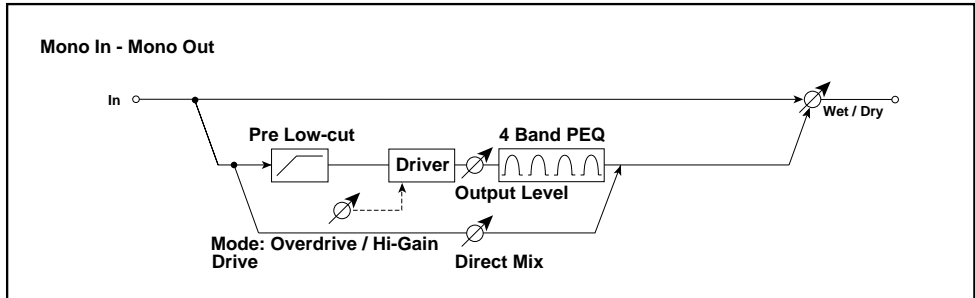


e: Delay Time

This parameter sets the delay time of the Gate input. If the sound has a very fast attack, increase the delay time so that the signal will be input after the Gate is opened. This will preserve the attack part of the sound.

04: Overdrive/Hi-Gain

This distortion effect utilizes an Overdrive mode and a Hi-Gain mode. Controlling the 4-band EQ will allow you to create versatile distortion sounds. This effect is suitable for guitar and organ sounds.



a	Mode	Overdrive, Hi-Gain	Switches between overdrive and hi-gain distortions.
b	Drive	0...100	Sets the degree of distortion. P.19
c	Output Level	0...50	Sets the output level. P.19
d	Pre Low-cut	0...10	Amount of cut in low range at the distortion input. P.19
e	Band1 Cutoff [Hz]	20...1.0kHz	Center frequency of EQ band 1
	Q	0.5...10.0	Band 1 bandwidth P.19
	Gain [dB]	-18...+18dB	Band 1 gain
f	Band2 Cutoff [Hz]	50...5.00kHz	Band 2 center frequency
	Q	0.5...10.0	Band 2 bandwidth P.19
	Gain [dB]	-18...+18dB	Band 2 gain
g	Band3 Cutoff [Hz]	300...10.00kHz	Band 3 center frequency
	Q	0.5...10.0	Band 3 bandwidth P.19
	Gain [dB]	-18...+18dB	Band 3 gain
h	Band4 Cutoff [Hz]	500...20.00kHz	Band 4 center frequency
	Q	0.5...10.0	Band 4 bandwidth P.19
	Gain [dB]	-18...+18dB	Band 4 gain
i	Direct Mix	0...50	Mix amount of dry sound routed to Distortion
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

b: Drive

c: Output Level

The degree of distortion is determined by the level of input signal and the setting of Drive. Raising the Drive setting will cause the entire volume level to increase. Use the Output Level parameter to adjust the volume level. The Output Level parameter uses the signal level input to the 4-Band EQ. If clipping occurs at the 4-Band EQ, adjust the Output Level parameter.

d: Pre Low-cut

Cutting the signal in the low range before it is input to the Distortion will create a sharp distortion.

e: Q

f: Q

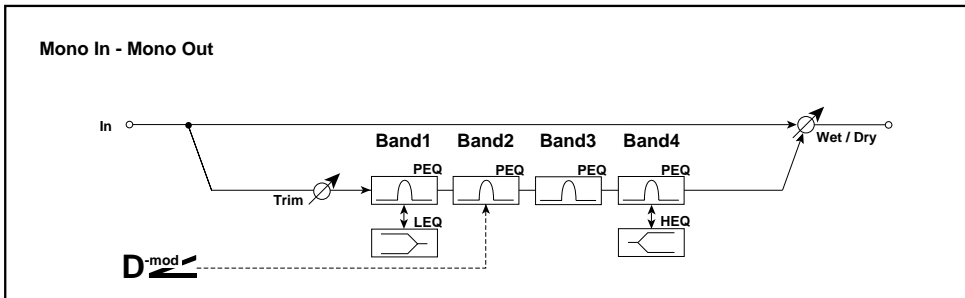
g: Q

h: Q

These parameters set the bandwidth of each band filter. The higher the value, the narrower the band becomes.

05: Parametric 4EQ (Parametric 4-Band EQ)

This effect is a four-band parametric equalizer. You can select either a peaking type or a shelving type for Band 1 and 4. Band 2 allows for gain control via dynamic modulation.

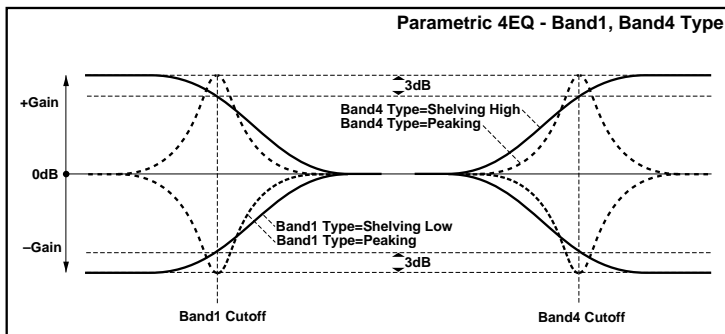


a	Trim	0...100	Sets the input level.
b	Band1 Type	Peaking, Shelving-Low	Selects Band 1 type. P.20
c	Band4 Type	Peaking, Shelving-High	Selects Band 4 type. P.20
d	Band2 Dynamic Gain Src	None...Tempo	Modulation source for Band 2 gain P.21
	Amt [dB]	-18.0...+18.0dB	Amount of Band 2 gain modulation
e	Band1 Cutoff [Hz]	20...1.0kHz	Sets the Band 1 center frequency.
	Q	0.5...10.0	Sets the Band 1 bandwidth. P.19
	Gain [dB]	-18.0...+18.0dB	Sets the Band 1 gain.
f	Band2 Cutoff [Hz]	50...10.00kHz	Sets the Band 2 center frequency.
	Q	0.5...10.0	Sets the Band 2 bandwidth. P.19
	Gain [dB]	-18.0...+18.0dB	Sets the Band 2 gain. P.21
g	Band3 Cutoff [Hz]	300...10.00kHz	Sets the Band 3 center frequency.
	Q	0.5...10.0	Sets the Band 3 bandwidth. P.19
	Gain [dB]	-18.0...+18.0dB	Sets the Band 3 gain.
h	Band4 Cutoff [Hz]	500...20.00kHz	Sets the Band 4 center frequency.
	Q	0.5...10.0	Sets the Band 4 bandwidth. P.19
i	Wet/Dry	Dry, 1:99...99:1, Wet	Balance between the effect sound and dry sound.



b: Band1 Type
c: Band4 Type

Selects a filter type for Band 1 and 4.

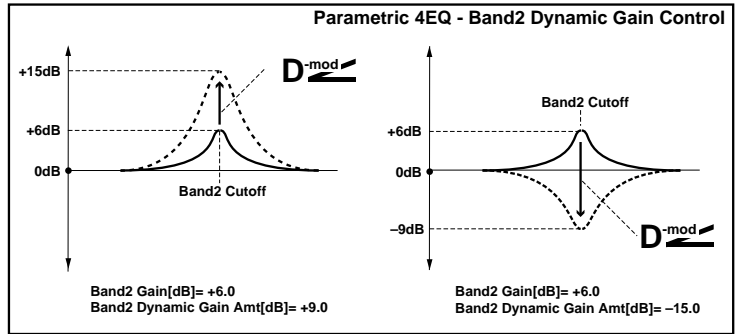


d: Band2 Dynamic Gain You can control the gain of Band 2 using the modulation source.

Src

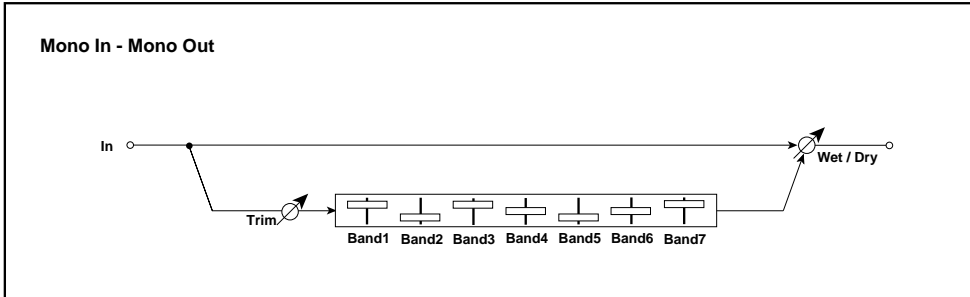
d: Amt [dB]

f: Gain [dB]



06: Graphic 7Band EQ

This effect is a seven-band graphic equalizer. The bar graph of the gain setting for each band gives you a clear, visual idea of frequency responses. You can select a center frequency setting for each band from twelve types, according to the sound.



a	Type	1:Wide 1 2:Wide 2 3:Wide 3 4:Half Wide 1 5:Half Wide 2 6:Half Wide 3 7:Low 8:Wide Low 9:Mid 10:Wide Mid 11:High 12:Wide High	Selects a combination of center frequencies for each band. P.22
b	Trim	0...100	Sets the input level.
c	Band1 [dB]	-18.0...+18.0dB	Sets Band 1 gain.
d	Band2 [dB]	-18.0...+18.0dB	Sets Band 2 gain.
e	Band3 [dB]	-18.0...+18.0dB	Sets Band 3 gain.
f	Band4 [dB]	-18.0...+18.0dB	Sets Band 4 gain.
g	Band5 [dB]	-18.0...+18.0dB	Sets Band 5 gain.
h	Band6 [dB]	-18.0...+18.0dB	Sets Band 6 gain.
i	Band7 [dB]	-18.0...+18.0dB	Sets Band 7 gain.
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance



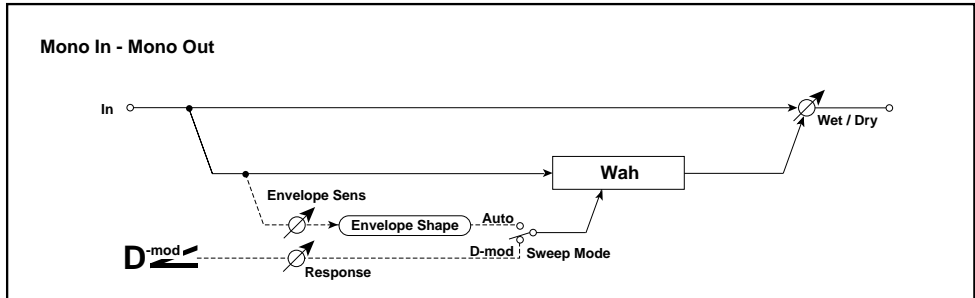
a: Type

This parameter selects a combination of center frequencies for each band. Each center frequency is shown on the right edge of the LCD.

You can configure a 21-Band Graphic EQ ranging from 80Hz to 18kHz if you route three Graphic 7Band EQ effects in series, with a setting of 7:Low, 9:Mid, and 11:High for each EQ.

07: Wah/Auto Wah

This wah effect allows you to create sounds from vintage wah pedal simulation to auto-wah simulation, and much broader range settings. You can select Band Pass or Low Pass for the wah filter.



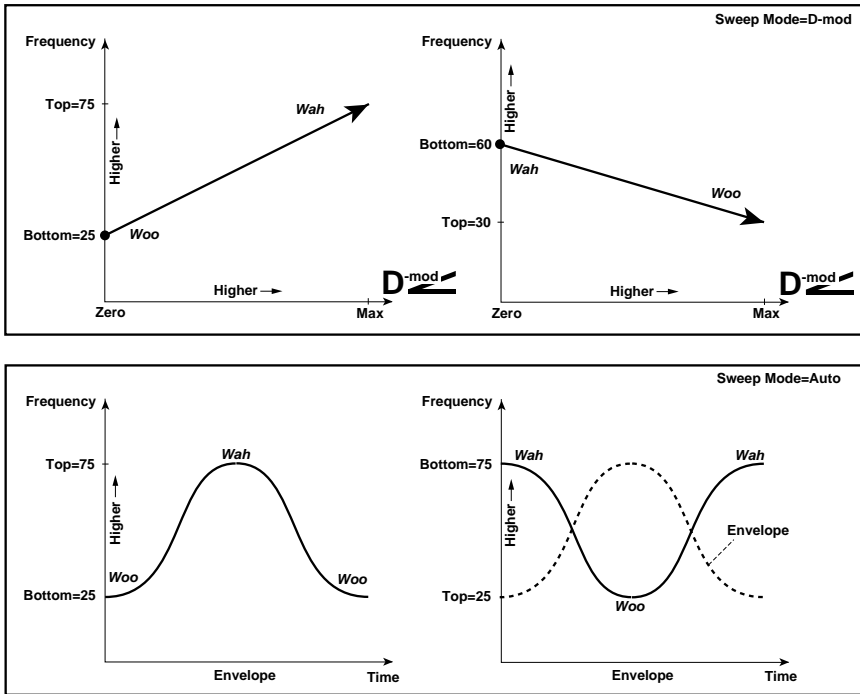
a	Frequency Bottom	0...100	Sets the lower limit of the wah center frequency. P.24
b	Frequency Top	0...100	Sets the upper limit of the wah center frequency. P.24
c	Sweep Mode	Auto, D-mod	Switches between auto-wah control and modulation source. P.24
	Src	None...Tempo	Modulation source used to control wah when Sweep Mode is set to D-mod.
	Response	0...10	How quickly the wah effect responds to dynamic modulation.
d	Envelope Sens	0...100	Sets the sensitivity of auto-wah. P.24
e	Envelope Shape	-100...+100	Sets the sweep curve of auto-wah. P.24
f	Resonance	0...100	Sets the resonance amount.
g	Filter Mode	Band Pass, Low Pass	Selects the wah filter type.
h	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

D-mod

D-mod

- a: Frequency Bottom
- b: Frequency Top

The sweep width and direction of the wah filter are determined by the Frequency Top and Frequency Bottom settings.



c: Sweep Mode

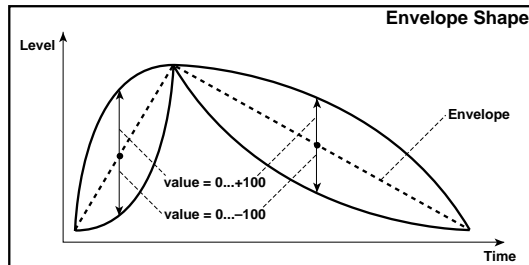
This parameter changes the wah control mode. Setting Sweep Mode to Auto will select an auto-wah that sweeps according to envelope changes in the input signal level. Auto-wah is frequently used for funk guitar parts and clav sounds. When Sweep Mode is set to D-mod, you can control the filter directly via the modulation source in the same way as a wah pedal.

d: Envelope Sens

This parameter sets the sensitivity of auto-wah. Increase the value if the input signal is too low to sweep. Reduce the value if the input signal is so high that the filter is stopped temporarily.

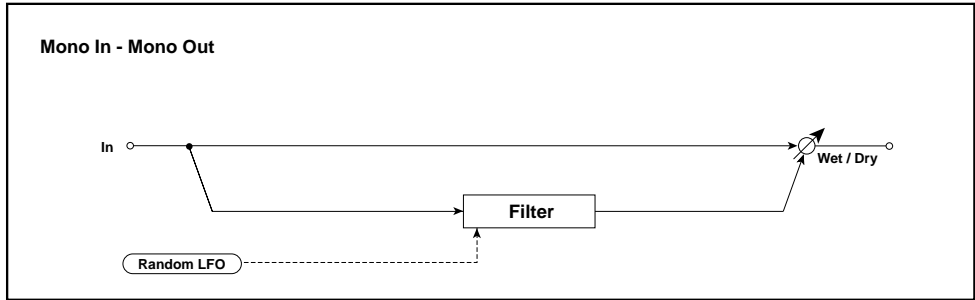
e: Envelope Shape

This parameter determines the sweep curve for auto-wah.



08: Random Filter

The filter frequency changes randomly. You can create a special effect from filter oscillation.



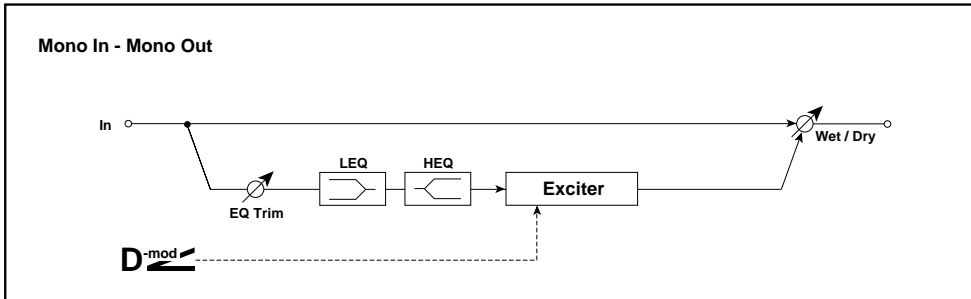
a	LFO Frequency [Hz]	0.05...50.00Hz	Speed of LFO that modulates the filter	D-mod
	Src	None...Tempo	Modulation source of LFO speed	
	Amt	-50.00...+50.00Hz	Modulation amount of LFO speed	
b	Cutoff	0...100	Filter center frequency	D-mod
c	Depth	0...100	Modulation depth of filter center frequency	
	Src	None...Tempo	Modulation source of filter modulation	
	Amt	-100...+100	Modulation amount of filter modulation	D-mod
d	Resonance	0...100	Sets the resonance amount.	
e	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. ☞ P.25	
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

e: Wet/Dry

The effect sound's phase will be reversed when you set this parameter in the range of values from -Wet to -1:99.

09: Dyna Exciter

This effect gives a frame to a sound and emphasizes the outline. You can control the intensity of the effect using dynamic modulation.



a	Blend	-100...+100	Sets the intensity (depth) of the Exciter effect. <small>ⓘ</small> P.26	D-mod
	Src	None...Tempo	Modulation source of the Exciter intensity	
	Amt	-100...+100	Modulation amount of the Exciter intensity	
b	Emphatic Point	0...140	Sets the frequency to be emphasized. <small>ⓘ</small> P.26	D-mod
	Src	None...Tempo	Modulation source of the frequency to be emphasized	
	Amt	-100...+100	Modulation amount of the frequency to be emphasized	
c	EQ Trim	0...100	2-band EQ input level	
d	Pre LEQ Gain [dB]	-15.0...+15.0dB	Low EQ gain	
e	Pre HEQ Gain [dB]	-15.0...+15.0dB	High EQ gain	
f	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

a: Blend

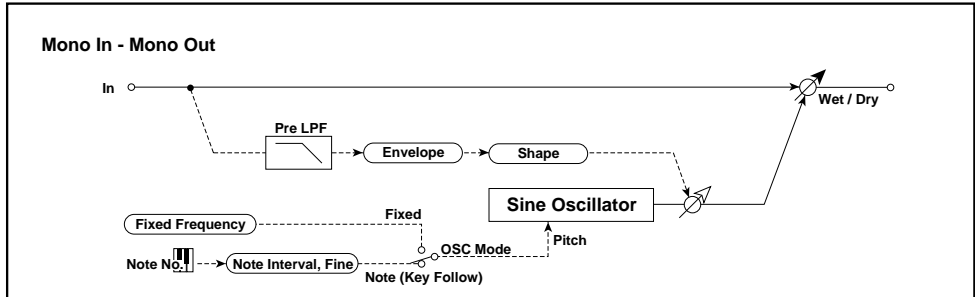
This parameter sets the depth (intensity) of the Exciter effect. Positive values give a frequency pattern (to be emphasized) different from negative values.

b: Emphatic Point

This parameter sets the frequency to be emphasized. Higher values will emphasize lower frequencies.

10: Sub Oscillator

This effect adds very low frequencies to the input signal. It is very useful when simulating a roaring drum sound or emphasizing powerful low range harmonics. You can also adjust the oscillator frequency to match a particular note number, for use as an octaver.



a	OSC Mode	Note (Key Follow), Fixed	Determines whether the oscillator frequency follows the note number or whether it is fixed. P.27
b	Note Interval	-48...0	When OSC Mode = Note (Key Follow), this parameter sets the pitch difference from the note number. P.27
	Src (fixed)	Note No.	Note number information source (fixed to Note #).
c	Note Fine	-100...+100	Fine adjustment of the oscillator frequency. P.27
d	Fixed Frequency [Hz]	10.0...80.0Hz	When OSC Mode = Fixed, this parameter sets the oscillator frequency. P.27
	Src	None...Tempo	Oscillator frequency modulation source when OSC Mode = Fixed.
	Amt	-80...+80Hz	Oscillator frequency modulation amount when OSC Mode = Fixed.
e	Envelope Pre LPF	1...100	The upper limit of the frequency range for which very low harmonics are added. P.27
f	Envelope Sens	0...100	Sets the sensitivity with which very low harmonics are added.
g	Envelope Shape	-100...+100	Sets the oscillator's volume envelope curve.
h	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

a: OSC Mode

b: Note Interval

b: Src

c: Note Fine

The OSC Mode parameter selects the oscillator operation mode. When Note (Key Follow) is selected, the oscillator's frequency is determined based on the note number, allowing you to use it as an octaver. The Note Interval parameter sets the pitch offset from the original note number by semitone steps. The Note Fine parameter allows you to fine-tune in steps of cents.

The Src parameter is fixed to the Note #, and you cannot select another source.

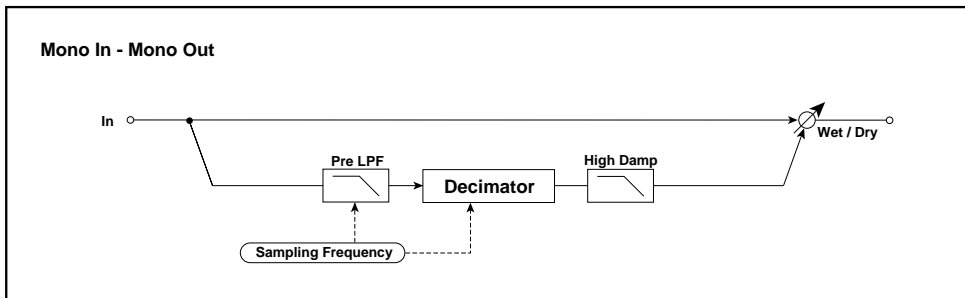
d: Fixed Frequency [Hz] The Fixed Frequency parameter sets the frequency when you select "Fixed" for the OSC Mode parameter.

e: Envelope Pre LPF

This parameter sets the upper limit of the frequency range to which very low harmonics are added. Adjust this parameter if you do not want to add lower harmonics to the higher range. For example, you can create a nice effect by adding very low harmonics only to the bass drum sound, not to the snare sound.

11: Decimator

This effect creates a rough sound like a cheap sampler by lowering the sampling frequency. You can also simulate noise unique to a sampler (aliasing).



a	Pre LPF	Off, On	Selects whether the harmonic noise caused by decrease in sampling frequency is generated or not. <small>☞ P.28</small>	
b	Sampling Freq [Hz] (Sampling Frequency)	1.00k...24.00kHz	Sets the sampling frequency.	D-mod
	Src	None...Tempo	Sets the modulation source of the sampling frequency.	
	Amt	-24.00k...+24.00kHz	Sets the modulation amount of the sampling frequency.	
c	High Damp [%]	0...100%	Ratio of cut of the high range	
d	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

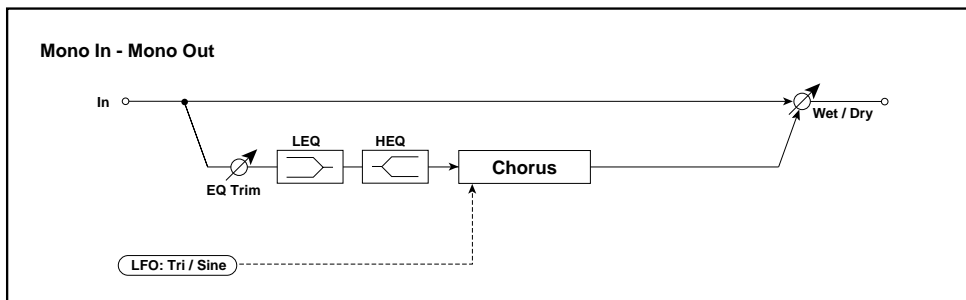
a: Pre LPF

If you input a sound containing high frequencies (that cannot be sampled) to a sampler with a low sampling frequency, a noise with a pitch unrelated to the original sound will be generated. When Pre LPF = ON, this type of noise will not be generated.

You can create a sound similar to a ring modulator if you set Pre LPF to OFF, with a Sampling Freq of 3kHz.

12: Chorus

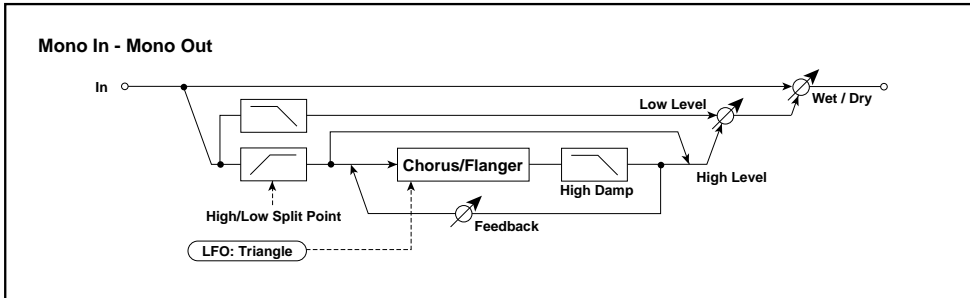
This effect adds thickness and warmth to the sound by modulating the delay time of the input signal.



a	LFO Waveform	Triangle, Sine	Selects LFO Waveform.	
b	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed	D ^{mod}
	Src	None...Tempo	Modulation source of LFO speed	
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	
c	Pre Delay [msec]	0.0...50.0msec	Delay from the original sound	
d	Depth	0...100	Depth of LFO modulation	D ^{mod}
	Src	None...Tempo	Modulation source of the LFO modulation depth	
	Amt	-100...+100	Modulation amount of the LFO modulation depth	
e	EQ Trim	0...100	EQ input level	
f	Pre LEQ Gain [dB]	-15.0...+15.0dB	Low-EQ gain	
g	Pre HEQ Gain [dB]	-15.0...+15.0dB	High-EQ gain	
h	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. P.25	D ^{mod}
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

13: Harmonic Chorus

This effect applies chorus only to higher frequencies. This can be used to apply a chorus effect to a bass sound without making the sound thinner. You can also use this chorus block with feedback as a flanger.



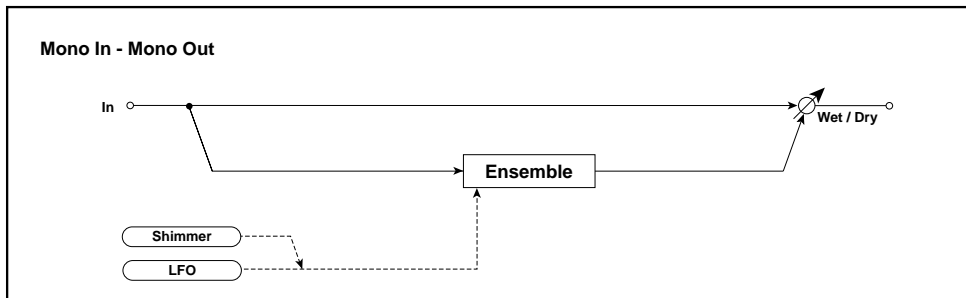
a	LFO frequency [Hz]	0.02...20.00Hz	LFO speed	D-mod
	Src	None...Tempo	Modulation source of LFO speed	
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	
b	Pre delay [msec]	0.0...50.0msec	Delay from the original sound	D-mod
c	Depth	0...100	Depth of LFO modulation	
	Src	None...Tempo	Modulation source of the LFO modulation depth	
	Amt	-100...+100	Modulation amount of the LFO modulation depth	
d	High/Low Split Point	1...100	Frequency split point between the low and high range P.30	D-mod
e	Feedback	-100...+100	Feedback amount of the chorus block P.30	
f	High Damp [%]	0...100%	Chorus block damping amount in the high range	
g	Low Level	0...100	Output level in the low range	D-mod
h	High Level	0...100	Output level in the high range (chorus)	
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

d: High/Low Split Point This parameter sets the frequency that splits the low and high range. Only the high range will be sent to the chorus block.

e: Feedback Sets the feedback amount of the chorus block. Increasing the feedback will allow you to use the effect as a flanger.

14: Ensemble

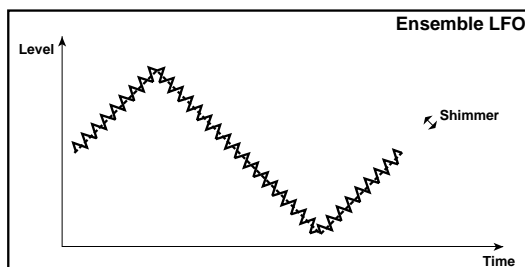
This chorus effect is created by a subtle shimmering LFO, and adds richness and thickness to the sound. It is most effective on the string sounds.



a	Speed	1...100	LFO speed	D-mod
	Src	None...Tempo	Modulation source of LFO speed	
	Amt	-100...+100	Modulation amount of LFO speed	
b	Shimmer	0...100	Amount of shimmering of the LFO waveform <small>Ⓒ P.31</small>	D-mod
c	Depth	0...100	Depth of LFO modulation	
	Src	None...Tempo	Modulation source of the LFO modulation depth	
	Amt	-100...+100	Modulation amount of the LFO modulation depth	
d	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

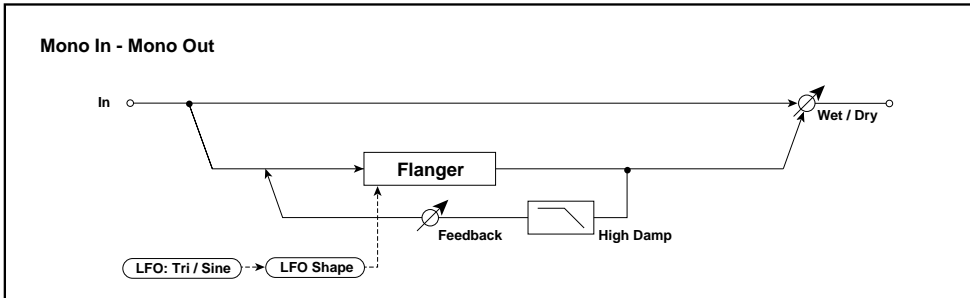
b: Shimmer

This parameter sets the amount of shimmering of the LFO waveform. Increasing this value makes more shimmering, making the chorus effect more complex and richer.



15: Flanger

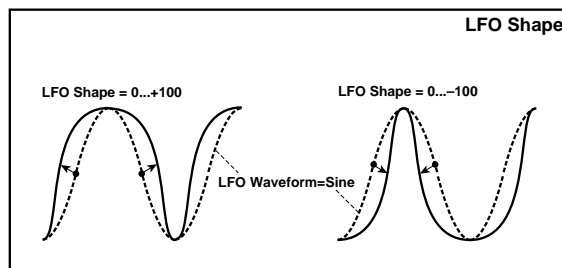
This effect gives a significant swell and movement of pitch to the sound. It is more effective when applied to a sound with a lot of harmonics, such as cymbals or electric guitar sounds.



a	Delay Time [msec]	0.0...50.0msec	Delay from the original sound	
b	LFO Waveform	Triangle, Sine	Selects the LFO Waveform.	
c	LFO Shape	-100...+100	Determines how much the LFO waveform is changed. ☞ P.32	
d	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed	D-mod
	Src	None...Tempo	Modulation source of LFO speed	
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	
e	Depth	0...100	Depth of LFO modulation	
f	Feedback	-100...+100	Feedback amount☞ P.32	
g	High Damp [%]	0...100%	Feedback damping amount in the high range ☞ P.32	
h	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. ☞ P.25, 32	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

c: LFO Shape

Changing the LFO waveform shape controls the peak sweep of flanging effects.



f: Feedback
h: Wet/Dry

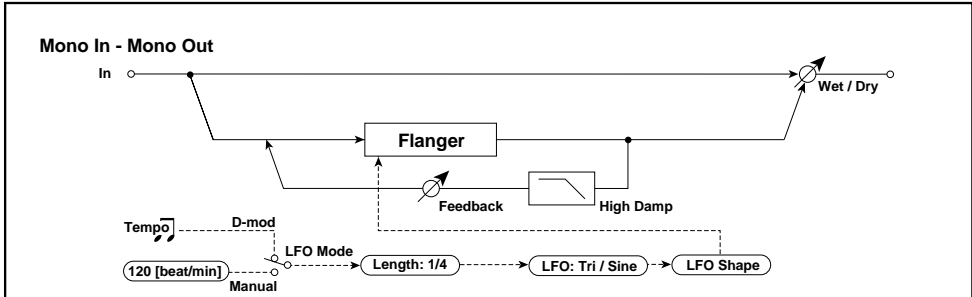
The peak shape of the positive and negative Feedback value is different. The harmonics will be emphasized when the effect sound is mixed with the dry sound if you set a positive value for both Feedback and Wet/Dry, and if you set a negative value for both Feedback and Wet/Dry.

g: High Damp [%]

This parameter sets the amount of damping of the feedback in the high range. Increasing the value will cut high-range harmonics.

16: Tempo Flanger

This Flanger allows you to match the LFO cycle with a song's tempo. For example, you can apply the Flanger synchronizing to a sequencer rhythm pattern, or you can input a tempo before a live performance so that the flanging effect will match the song tempo. The LFO cycle can be set in steps of one note.



a	Delay Time [msec]	0.0...50.0msec	Delay from the original sound
b	LFO Waveform	Triangle, Sine	Selects the LFO waveform.
c	LFO Shape	-100...+100	Determines how much the LFO waveform is changed. ☞ P.32
d	LFO Mode	Manual, D-mod	Switches between the specified tempo and clock sync. ☞ P.33
	Src (fixed)	Tempo	Source when LFO Mode = D-mod (fixed to Tempo)
e	Tempo [beat/min]	30...250 beat/min	Tempo when LFO Mode = Manual ☞ P.33
f	Length	1...16/1...16	Sets the LFO cycle. LFO Cycle = Length x Whole Note. ☞ P.33
g	Depth	0...100	Depth of LFO modulation
h	Feedback	-100...+100	Feedback amount ☞ P.32
i	High Damp [%]	0...100%	Feedback damping amount in the high range ☞ P.32
j	Wet/Dry	-Wet...-1.99, Dry, 1.99...Wet	Sets the balance between the effect and dry sounds. ☞ P.25, 32
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

d: LFO Mode
d: Src (fixed) This parameter selects the LFO operation mode. When Manual is selected, the LFO refers to the value set in e: Tempo. When D-mod is selected, the LFO will synchronize to the internal MIDI clock. This is useful for performance using a sequencer.

When D-mod is selected for the LFO mode, the source is fixed to Tempo and cannot be changed.

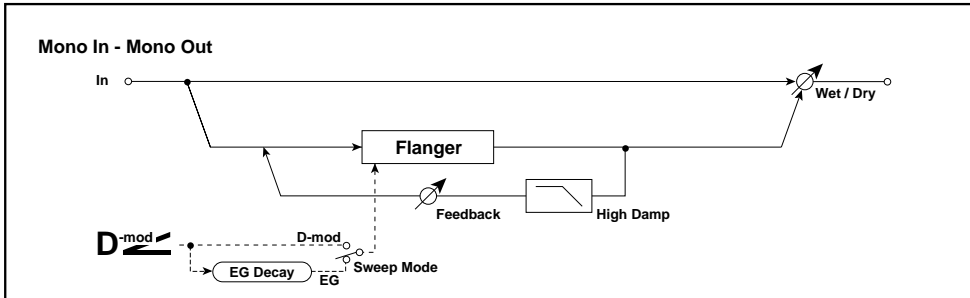
e: Tempo [beat/min] This parameter sets the tempo when Manual is selected for the LFO Mode.

f: Length This parameter sets the LFO cycle. The cycle is calculated by multiplying the length of a whole note by the value of Length.
For example, when Length is set to 1/4, the Flanger will sweep at an interval of one quarter note.

D-mod

17: Envelope Flanger

This Flanger uses an envelope generator for modulation. You will obtain the same pattern of flanging each time you play. You can also control the Flanger directly using the modulation source.



a	Delay Bottom [msec]	0.0...50.0msec	Sets the lower limit of Delay Time. P.24
b	Delay Top [msec]	0.0...50.0msec	Sets the higher limit of Delay Time. P.24
c	Sweep Mode	EG, D-mod	Determines whether the flanger is controlled by the envelope generator or by the modulation source. P.34
	Src	None...Tempo	Modulation source that triggers the EG (when EG is selected for Sweep Mode), or modulation source that causes the flanger to sweep (when D-mod is selected for Sweep Mode).
d	EG Decay	1...100	Sets the EG decay speed. P.34
e	Feedback	-100...+100	Feedback amount P.32
f	High Damp [%]	0...100%	Feedback damping amount in the high range P.32
g	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. P.25, 32
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

D-mod

D-mod

c: Sweep Mode
c: Src

This parameter switches the flanger control mode. With Sweep Mode = EG, the flanger will sweep using the envelope generator. This envelope generator is included in the envelope flanger, and not related to the Oscillator EG, Filter EG, or Amp EG.

The Src parameter selects the source that starts the envelope generator. If you select, for example, Gate, the envelope generator will start when the note-on message is received.

When Sweep Mode = D-mod, the modulation source can control the flanger directly. Select the modulation source using the Src parameter.

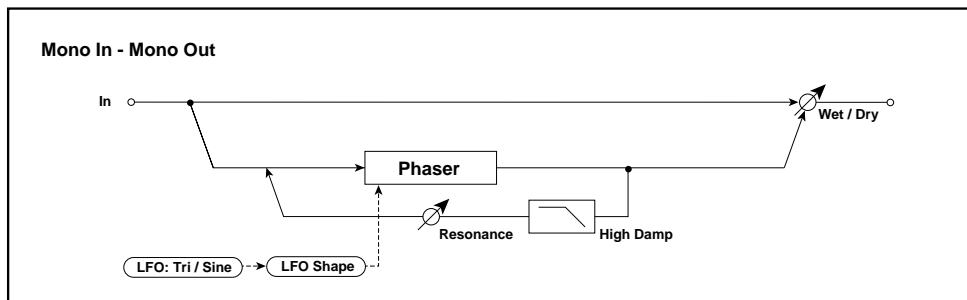
d: EG Decay

Decay speed is the only adjustable parameter on this EG.

MIDI The effect is off when a value for the modulation source specified for the Src parameter is smaller than 64, and the effect is on when the value is 64 or higher. The Envelope Generator is triggered when the value changes from 63 or smaller to 64 or higher.

18: Phaser

This effect creates a swell by shifting the phase. It is very effective on electric piano sounds.



a	LFO Waveform	Triangle, Sine	Selects the LFO Waveform.
b	LFO Shape	-100...+100	Determines how much the LFO waveform shape is changed. P.32
c	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed
	Src	None...Tempo	Modulation source of LFO speed
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed
d	Manual	0...100	Sets the frequency to which the effect is applied.
e	Depth	0...100	Depth of LFO modulation
f	Resonance	-100...+100	Sets the resonance amount. P.35
g	High Damp [%]	0...100%	Resonance damping amount in the high range P.35
h	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. P.25, 35
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

f: Resonance
h: Wet/Dry

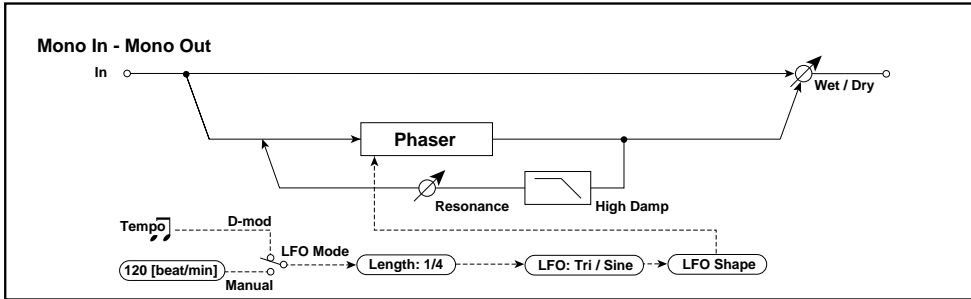
The peak shape of the positive and negative Feedback value is different. The harmonics will be emphasized when the effect sound is mixed with the dry sound, if you set a positive value for both Resonance and Wet/Dry, and if you set a negative value for both Resonance and Wet/Dry.

g: High Damp [%]

This parameter sets the amount of damping of the resonance in the high range. Increasing the value will cut high-range harmonics.

19: Tempo Phaser

This Phaser allows you to match the LFO cycle with the song tempo. For example, you can synchronize the Phaser to a sequencer rhythm pattern, or you can input a tempo before a live performance so that the phasing effect will match the song tempo.

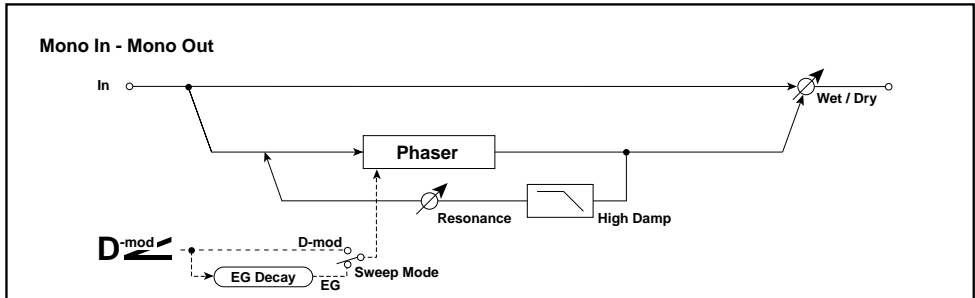


a	LFO Waveform	Triangle, Sine	Selects the LFO waveform.
b	LFO Shape	-100...+100	Determines how much the LFO waveform is changed. ☞ P.32
c	LFO Mode	Manual, D-mod	Switches between the specified tempo and clock sync. ☞ P.33
	Src (fixed)	Tempo	Source when LFO Mode = D-mod (fixed to Tempo)
d	Tempo [beat/min]	30...250 beat/min	Tempo when LFO Mode = Manual ☞ P.33
e	Length	1...16/1...16	Sets the LFO cycle. LFO Cycle = Length x Whole Note.
f	Manual	0...100	Sets the frequency to which the effect is applied.
g	Depth	0...100	Depth of LFO modulation
h	Resonance	-100...+100	Sets the resonance amount. ☞ P.35
i	High Damp [%]	0...100%	Sets the resonance damping amount in the high range. ☞ P.35
j	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. ☞ P.25, 35
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

D-mod

20: Envelope Phaser

This Phaser uses an envelope generator for modulation. You will obtain the same pattern of phasing each time you play. You can also control the Phaser directly using the modulation source.



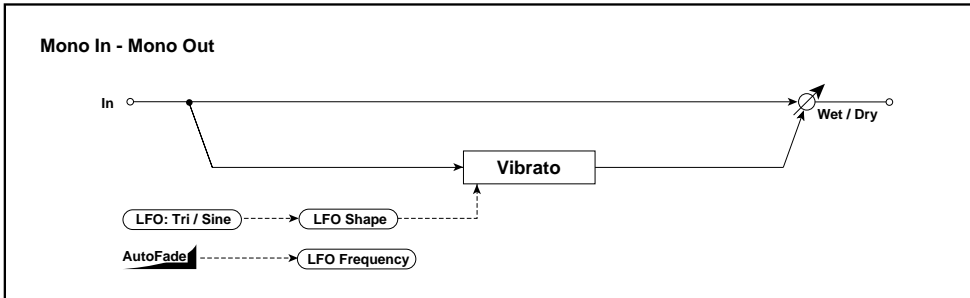
a	Manu Bottom (Manual Bottom)	0...100	Sets the lower limit of the frequency range to which the effect is applied. P.24
b	Manu Top (Manual Top)	0...100	Sets the higher limit of the frequency range to which the effect is applied. P.24
c	Sweep Mode	EG, D-mod	Determines whether the phaser is controlled by the envelope generator or by the modulation source. P.34
	Src	None...Tempo	Modulation source that triggers the EG (when EG is selected for Sweep Mode), or modulation source that causes the phaser to sweep (when D-mod is selected for Sweep Mode).
d	EG Decay	1...100	Sets the EG decay speed. P.34
e	Resonance	-100...+100	Sets the resonance amount. P.35
f	High Damp [%]	0...100%	Sets the resonance damping amount in the high range. P.35
g	Wet/Dry	-Wet, -99...-1, Dry, 1...99, Wet	Sets the balance between the effect and dry sounds. P.25, 35
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance









D-mod

D-mod

21: Vibrato

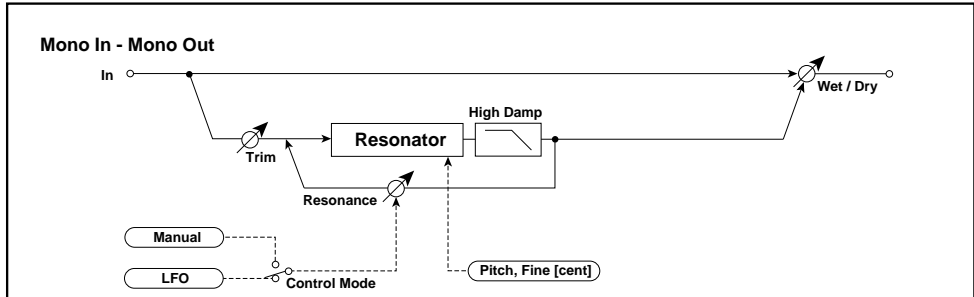
This effect causes the pitch of the input signal to shimmer. Using the AutoFade allows you to increase or decrease the shimmering speed.



a	AUTOFADE Src	None...Tempo	Sets the modulation source that starts AutoFade. P.78	 
	Fade-In Rate	1...100	Sets the rate of fade-in.	
b	LFO Waveform	Triangle, Sine	Selects the LFO Waveform.	
c	LFO Shape	-100...+100	Determines how much the LFO waveform shape is changed. P.32	
d	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed	 
	Src	None...AUTOFADE	Modulation source of LFO speed. AutoFade is available.	
e	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	
	Depth	0...100	Depth of LFO modulation	 
	Src	None...Tempo	Modulation source of the LFO modulation depth	
f	Amt	-100...+100	Modulation depth of the LFO modulation depth	
	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	 
	Src	None...Tempo	Modulation source of effect balance	
Amt	-100...+100	Modulation amount of effect balance		

22: Resonator

This effect resonates the input signal at a specified pitch. For example, the Resonator will add a unique character to a string sound by emphasizing certain harmonics, or give a “pitch” to a drum sound. You can control the resonance intensity via an LFO.



a	Contol Mode	Manual, LFO	Switches the control of resonance intensity. P.39
b	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed
c	LFO Depth	-100...100	Amount of resonance intensity control via LFO
d	Trim	0...100	Input level to the Resonator
e	Pitch	C0...B8	Pitch for resonance P.39
f	Fine [cent]	-50...+50cent	Fine adjustment of pitch for resonance P.39
g	Resonance	-100...+100	Sets the intensity of resonance when Control Mode = Manual. P.39
h	High Damp [%]	0...100%	Damping amount of resonant sound in the high range P.39
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

a: Contol Mode
g: Resonance

This parameter determines whether the resonance intensity is controlled by an LFO or not.

With Control Mode = Manual, the Resonance parameter sets the intensity of resonance. If the Resonance parameter has a negative value, harmonics will be changed, and resonance will occur at a pitch one octave below.

With Control Mode = LFO, the intensity of resonance varies according to the LFO. The LFO sways between positive and negative values, causing resonance to occur between specified pitches an octave apart in turn.

e: Pitch
f: Fine [cent]

The Pitch parameter specifies the pitch of resonance by note name. The Fine parameter allows for fine adjustment in steps of cents.

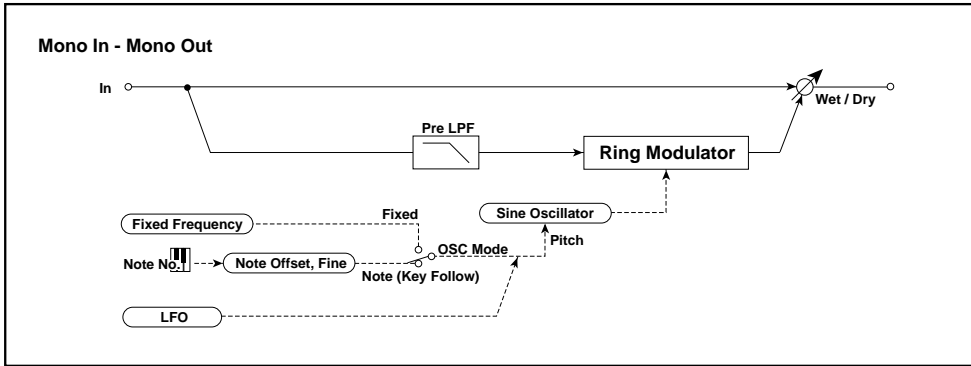
h: High Damp [%]

This parameter sets the damping amount of resonant sound in the high range. Lower values will make a metallic sound with a higher range of harmonics.

D-mod

23: Ring Modulator

This effect creates a metallic sound by routing the input signal to an Oscillator. You will obtain a very radical modulation by modulating or operating the Oscillator using an LFO or dynamic modulation. Since the Oscillator frequency can match the note number, you can create a ring modulation effect that follows the scale.



a	Pre LPF	0...100	Sets the damping amount of the sound input to the Ring Modulator in the high range. P.40	
b	OSC Mode	Fixed, Note (Key Follow)	Determines whether the Oscillator frequency is specified or the note number is followed. P.40	
c	Fixed Frequency [Hz]	0...12.00kHz	Oscillator frequency when OSC Mode = Fixed P.41	D-mod
	Src	None...Tempo	Modulation Source of the Oscillator frequency when OSC Mode = Fixed	
	Amt	-12.00...+12.00kHz	Modulation Amount of the Oscillator frequency when OSC Mode = Fixed	
d	Note Offset	-48...+48	Pitch difference from the note number when OSC Mode = Note (Key Follow) P.41	D-mod
	Src (fixed)	Note No.	Note number information source (Fixed to Note #) P.41	
e	Note Fine	-100...+100	Fine adjustment of the Oscillator frequency P.41	
f	LFO Frequency [Hz]	0.02...20.00Hz	Speed of LFO that modulates the Oscillator frequency	D-mod
	Src	None...Tempo	Modulation source of LFO speed	
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	
g	Depth	0...100	Depth of LFO modulation applied to the Oscillator frequency	D-mod
	Src	None...Tempo	Modulation source of modulation depth	
	Amt	-100...+100	Modulation amount of modulation depth	
h	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

a: Pre LPF

This parameter sets the damping amount of the sound input to the Ring Modulator. If the input signal contains a lot of harmonics, the effect sound tends to be dirty. In this case, cut a certain amount of the high range.

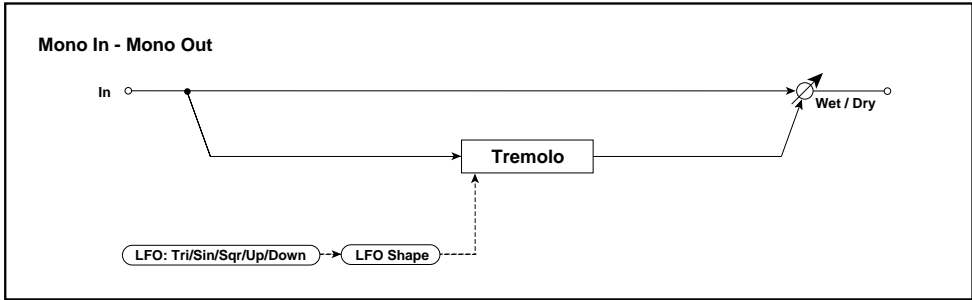
b: OSC Mode

This parameter determines whether the Oscillator frequency follows the note number.

-
- d: Note Offset** These are used to set the oscillator when OSC Mode is set to Note (Key Follow).
e: Note Fine The Note Offset parameter specifies the pitch difference from the original note number in steps of semitones. The Note Fine parameter is used to “fine-tune” this setting in steps of cents. When the oscillator frequency follows the note number, you will obtain a ring modulation effect in the correct scale.
- d: Src** The Note Number information source is fixed to Note #, and you cannot select other sources.
- c: Fixed Frequency [Hz]** This parameter sets the oscillator frequency when OSC Mode is set to Fixed.

24: Tremolo

This effect modulates the volume level of the input signal.



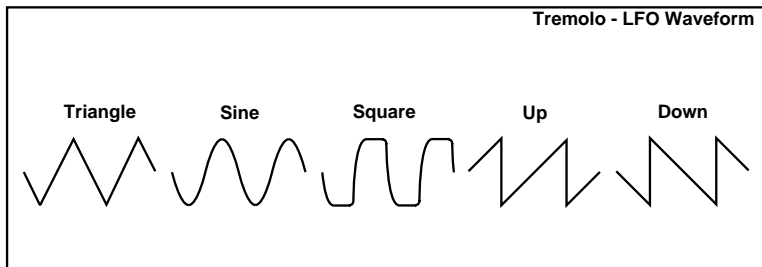
a	LFO Waveform	Triangle, Sine, Square, Up, Down	Selects LFO Waveform. P.42
b	LFO Shape	-100...+100	Determines how much the shape of LFO waveform is changed. P.32
c	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed
	Src	None...Tempo	Modulation source of LFO speed
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed
d	Depth	0...100	Depth of LFO modulation
	Src	None...Tempo	Modulation source of the depth of modulation
	Amt	-100...+100	Modulation amount of the depth of modulation
e	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance



a: LFO Waveform

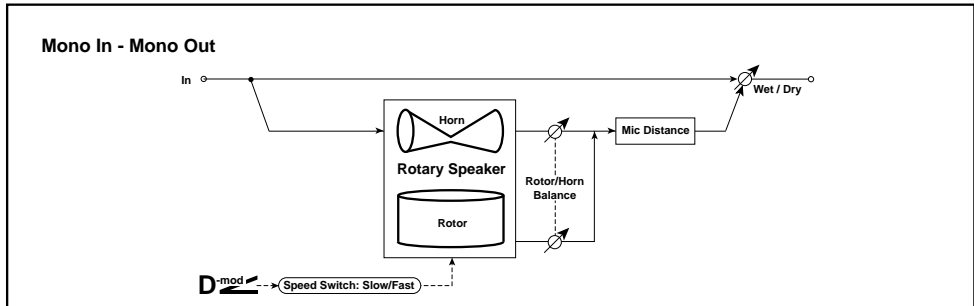
This parameter selects the LFO waveform.

Square wave simulates the characteristics of the tremolo created on a guitar amplifier. Combining this effect with the Amp Simulation will make a realistic, vintage tremolo amplifier sound.



25: Rotary Speaker

This effect simulates a rotary speaker which is essential to organ sounds. This size 1 Rotary Speaker effect is monaural. You can change the speed of speaker rotation via dynamic modulation. The effect also simulates the microphone settings.



a	Speed Switch	Slow, Fast	Switches the speaker rotation speed between slow and fast.
	Src	None...Tempo	Modulation source that toggles between slow and fast
	Sw	Momentary, Toggle	Selects switching mode of the modulation source that toggles between slow and fast. P.43
b	Horn Acceleration	0...100	How quickly the horn rotation speed in the high range is switched. P.43
c	Horn Ratio	Stop, 0.5...2.0	Adjusts the (high-range side) horn rotation speed. Standard value is 1.0. Selecting "Stop" will stop the rotation.
d	Mic Distance	0...100	Distance between the microphone and rotary speaker. P.43
e	Rotor/Horn Balance	Rotor, 1...99, Horn	Sets the volume level balance between the low-range rotor and high-range horn.
f	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

a: Sw This parameter sets how the rotation speed (slow and fast) is switched via the modulation source.

When Sw = Momentary, the speed is usually slow. It becomes fast only when you keep the pedal depressed or hold the joystick in position.

MIDI When a value for the modulation source is less than 64, "slow" speed is selected, and when the value is 64 or higher, "fast" is selected.

When Sw = Toggle, the speed is switched between slow and fast each time you press the pedal or operate the joystick.

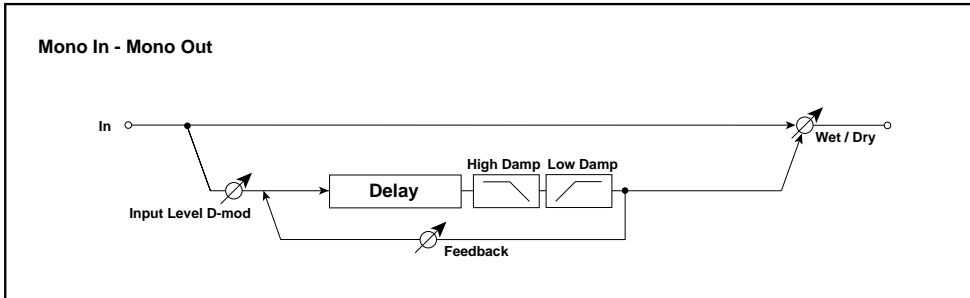
MIDI Each time the value of the modulation source exceeds 64, the speed is switched between slow and fast.

b: Horn Acceleration On a real rotary speaker, the rotation speed is accelerated or decelerated gradually after you switch the speed. The Horn Acceleration parameter sets the speed at which the rotation is accelerated or decelerated.

d: Mic Distance This simulates microphone settings, specifying the distance between the microphone and rotary speaker.

26: Delay

This delay effect delays the input signal over time. You can change the character of the delay sound by setting the feedback damping amount separately for the low range and high range.

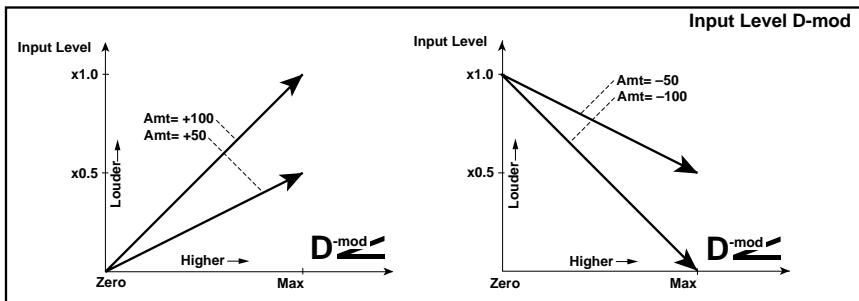


a	Delay Time [msec]	0.0...680.0msec	Sets the delay time.	
b	Feedback	-100...+100	Sets the feedback amount.	D-mod
	Src	None...Tempo	Modulation source of the feedback amount	
	Amt	-100...+100	Modulation amount of the feedback amount	
c	High Damp [%]	0...100%	Damping amount in the high range P.44	
d	Low Damp [%]	0...100%	Damping amount in the low range P.44	
e	Input Level D-mod: Src	None...Tempo	Modulation source of the input level P.44	D-mod
	Amt	-100...+100	Modulation amount of the input level	
f	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

c: High Damp [%]
d: Low Damp [%]

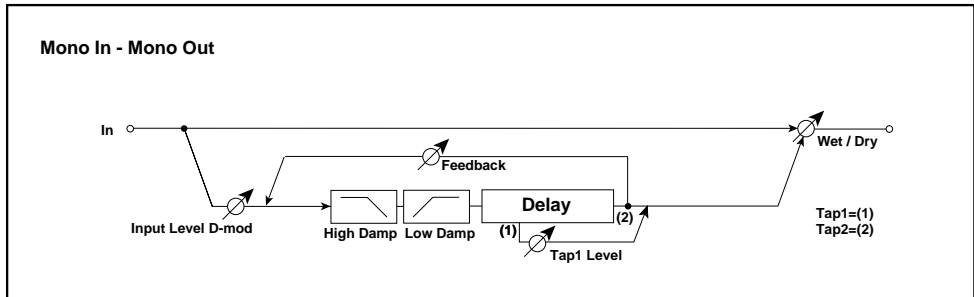
These parameters set the damping amount for the high range and low range respectively. Each time feedback is input, the tone of the delay sound becomes darker, or lighter.






e: Input Level D-mod: Src: These parameters set dynamic modulation of the input level.
e: Amt



27: Multitap Delay

This Multitap Delay has two taps for delay. With various delay time settings, you can create complex delay sounds.



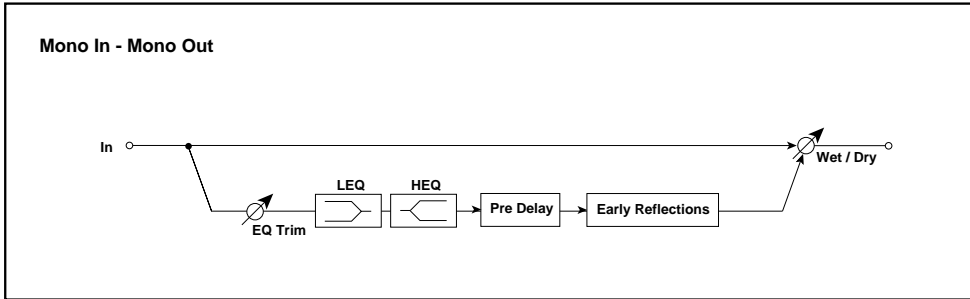
a	Tap1 Time [msec]	0.0...680.0msec	Sets the Tap1 delay time.
b	Tap2 Time [msec]	0.0...680.0msec	Sets the Tap2 delay time.
c	Tap1 Level	+0...+100	Tap1 output level 
d	Feedback	-100...+100	Sets the Tap2 feedback amount.
	Src	None...Tempo	Modulation source of the Tap2 feedback amount
	Amt	-100...+100	Modulation amount of the Tap2 feedback amount
e	High Damp [%]	0...100%	Damping amount in the high range 
f	Low Damp [%]	0...100%	Damping amount in the low range 
g	Input Level D-mod: Src	None...Tempo	Modulation source of the input level 
	Amt	-100...+100	Modulation amount of the input level
h	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance 
	Amt	-100...+100	Modulation amount of effect balance

c: Tap1 Level

This parameter sets the output level of Tap1. Creating a difference in the volume level from Tap2 will add a groove feeling to a somewhat monotonous delay and feedback.

28: Early Reflections

This effect is only the early reflection part of a reverberation sound, and adds presence to the sound. You can also create sounds such as gated reverb and reversed effects by selecting the decay curve of the early reflection.

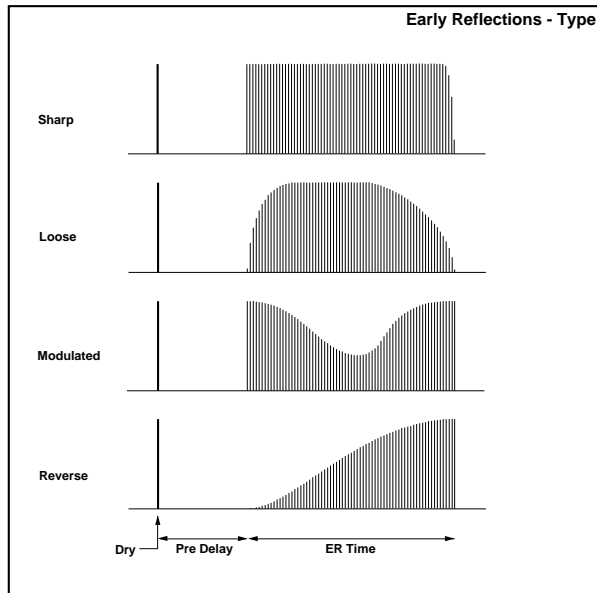


a	Type	Sharp, Loose, Modulated, Reverse	Selects the decay curve for the early reflection. P.46
b	ER Time [msec]	10...400msec	Time length of early reflection
c	Pre Delay [msec]	0...200msec	Time taken from the original sound to the first early reflection
d	EQ Trim	0...100	Input level of EQ applied to the effect sound
e	Pre LEQ Gain [dB]	-15.0...+15.0dB	Low range EQ gain
f	Pre HEQ Gain [dB]	-15.0...+15.0dB	High range EQ gain
g	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance



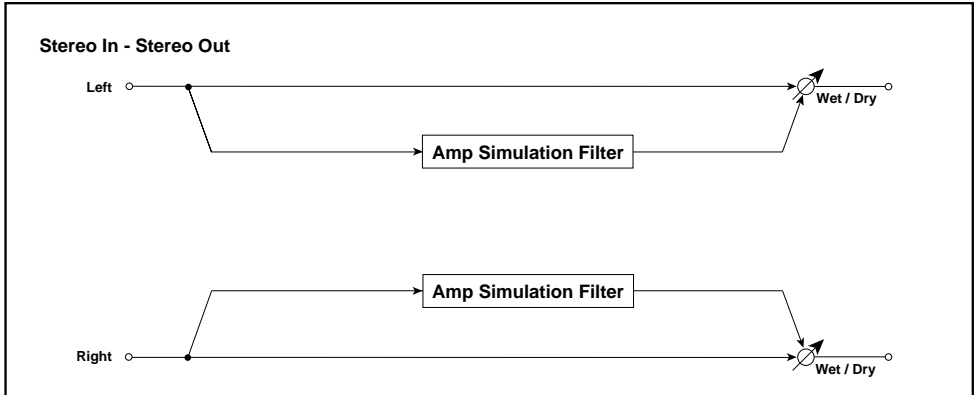
a: Type

This parameter selects the decay curve for the early reflection.



00: St. Amp Simulation (Stereo Amp Simulation)

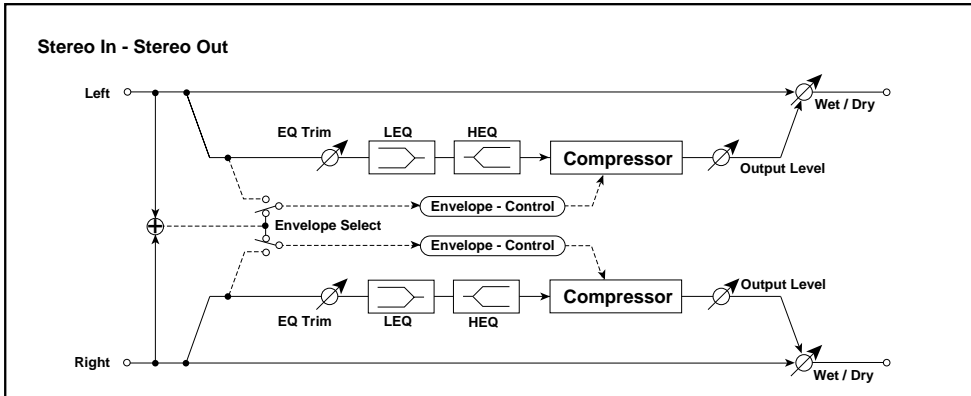
This is a stereo amp simulator.



a	Amplifier Type	SS, EL84, 6L6	Selects the type of guitar amplifier
b	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

01: Stereo Compressor

This is a stereo compressor. You can link left and right channels, or use each channel separately.



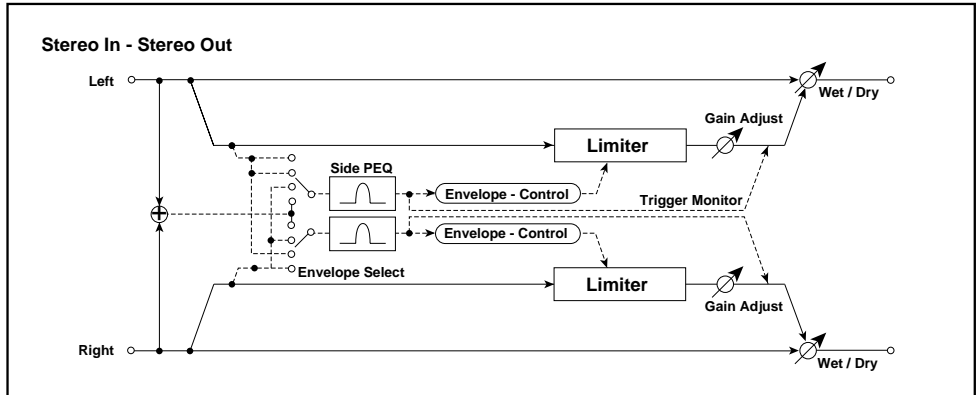
a	Envelope Select	L/R Mix, L/R Individually	Determines whether the left and right channels are linked or used separately. P.48
b	Sensitivity	1...100	Sets the sensitivity. P.14
c	Attack	1...100	Attack level P.14
d	EQ Trim	0...100	Input level to EQ
e	Pre LEQ Gain [dB]	-15.0...+15.0dB	Low EQ gain
f	Pre HEQ Gain [dB]	-15.0...+15.0dB	High EQ gain
g	Output Level	0...100	Output level from the compressor P.14
h	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

a: Envelope Select

This parameter selects whether the left and right channels are linked to control both signals simultaneously, or whether each channel is controlled independently.

02: Stereo Limiter

This effect is a stereo limiter. You can link left and right channels, or use each channel individually.



a	Envelope Select	L/R Mix, L Only, R Only, L/R Individually	Selects from linking both channels, controlling only from left channel, only from the right channel, or controlling each channel individually. P.49
b	Ratio	1.0:1...50.0:1, Inf:1	Sets the signal compression ratio. P.15
c	Threshold [dB]	-40...0dB	Sets the level above which the compressor is applied. P.15
d	Attack	1...100	Sets the attack time. P.16
e	Release	1...100	Sets the release time. P.16
f	Gain Adjust [dB]	-16...+24dB	Sets the output gain. P.15
g	Side PEQ Insert	Off, On	Toggles between trigger signal's EQ on/off. P.16
h	Side PEQ Cutoff [Hz]	20...12.00kHz	Trigger signal's EQ center frequency P.16
	Q	0.5...10.0	Trigger signal's EQ bandwidth
	Gain [dB]	-18.0...+18.0dB	Trigger signal's EQ gain
i	Trigger Monitor	Off, On	Switches between effect output monitor and trigger signal monitor. P.16
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

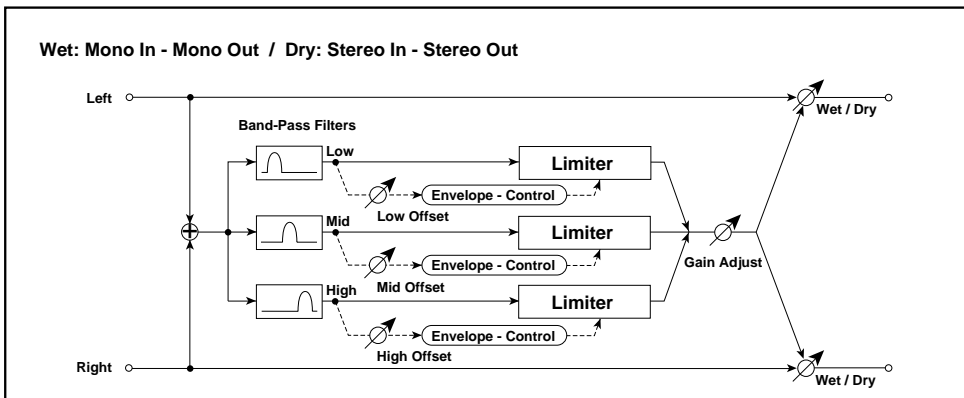
a: Envelope Select

When L/R Mix is selected for this parameter, the left and right channels are linked to control the Limiter using the mixed signal. If L Only (or R Only) is selected, the left and right channels are linked, and the Limiter is controlled via only the left (or right) channel.

With L/R individually, the left and right channels control the Limiter individually.

03: Multiband Limiter

This effect applies the Limiter to the low range, mid range, and high range of the input signal. You can control dynamics for each range to adjust the sound pressure of the low range, mid range, and high range in a different way from the EQ.



a	Ratio	1.0:1...50.0:1, Inf:1	Sets the signal compression ratio. P.15
b	Threshold [dB]	-40...0dB	Sets the level above which the compression is applied. P.15
c	Attack	1...100	Sets the attack time. P.16
d	Release	1...100	Sets the release time. P.16
e	Low Offset [dB]	-40...0dB	Gain of the low-range trigger signal P.50
f	Mid Offset [dB]	-40...0dB	Gain of the mid-range trigger signal P.50
g	High Offset [dB]	-40...0dB	Gain of the high-range trigger signal P.50
h	Gain Adjust [dB]	-16...+24dB	Sets the output gain. P.15
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance



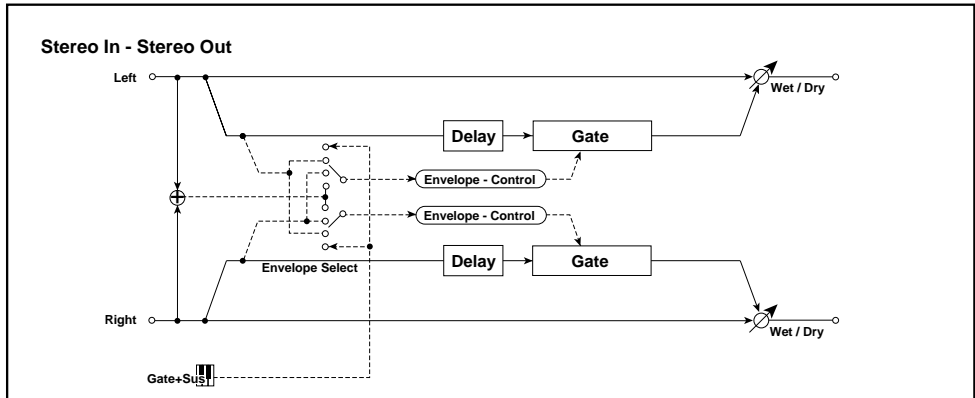
- e: Low Offset [dB]
- f: Mid Offset [dB]
- g: High Offset [dB]

These parameters set the input gain of the trigger signal.

For example, if you do not want to apply compression to the high range, reduce the High Offset value down below the Threshold level. In this way, the high range limiter will not respond, and compression will not be applied.

04: Stereo Gate

This is a stereo gate effect. Three types are available to turn the gate on/off. This effect features a Hold function that keeps the gate open for a specified period of time.



a	Type Select	Level(Hold time is not available), Trigger Attack, Trigger Release	Selects from No hold, Hold from attack, and hold from release. P.51
b	Envelope Select	D-mod, L/R Mix, L Only, R Only	Selects from Control via the modulation source, mixing the left and right signals, Only left, and Only right. P.52
	Src	None...Gate2+Sus	Modulation source that controls the gate when Envelope Select = D-mod
c	Polarity	+, -	Switches between non-reversed and reversed Gate on/off. P.52
d	Threshold	0...100	Sets the level to which the Gate is applied. P.17
e	Hold Time [msec]	0...3000msec	Gate hold time P.51
f	Attack	1...100	Sets attack time. P.17
g	Release	1...100	Sets release time. P.17
h	Delay Time [msec]	0...100msec	Delay time of gate input P.18
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

a: Type Select

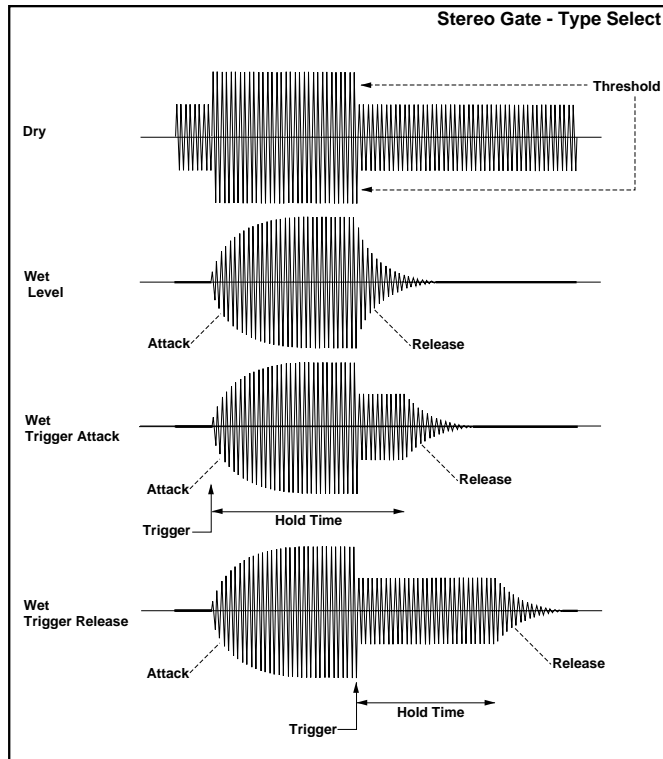
e: Hold Time [msec]

This parameter selects the gate type.

With Type Select = Level, the gate is opened when the input signal level exceeds the specified Threshold value, and the gate is closed when the level is below the Threshold. Hold Time is not effective.

With Type Select = Trigger Attack, the gate is open only during the period specified in the Hold Time field, after the input signal level exceeds the Threshold value. Once the gate is closed, it remains closed until the input level exceeds the Threshold value again.

With Type Select = Trigger Release, the gate is open when the input signal level exceeds the Threshold value. The gate is closed for a period specified in the Hold Time field after the level falls below the Threshold.



b: Envelope Select
b: Src

The Envelope Select parameter selects whether the gate on/off is triggered by the level of the input signal, or controlled directly by the modulation source. The Src parameter specifies the modulation source, selected from None to Gate2+Sus.

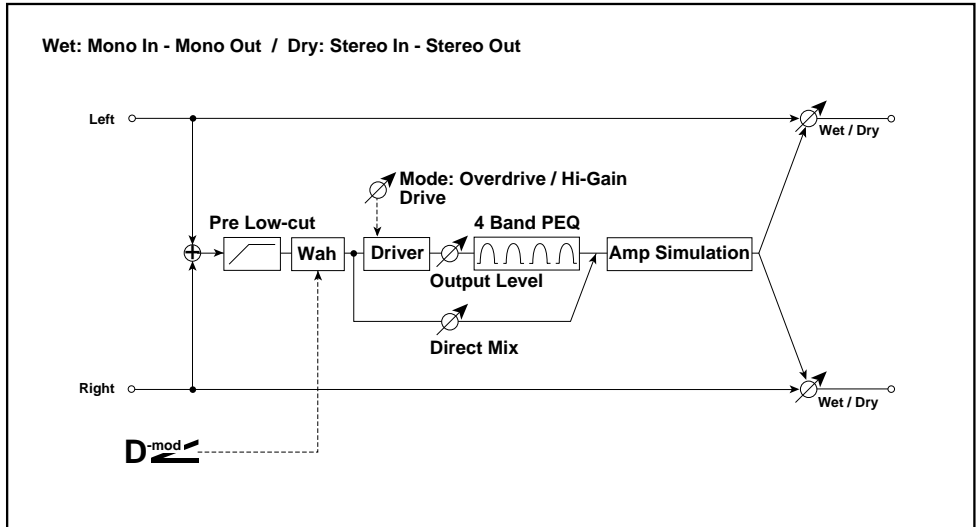
With Envelope Select = L/R Mix, the left and right channel signal mixture will trigger the gate on/off. When L Only or R Only is selected, the gate is controlled by either of the channel signals.

c: Polarity

This parameter reverses the Gate on/off operation. With a negative value, the gate is closed when the input signal level exceeds the Threshold. The gate operation controlled by the modulation source is also reversed.

05: OD/Hi-Gain Wah (Overdrive/Hi-Gain Wah)

This effect is a distortion with wah, 4-band EQ and amp simulator.

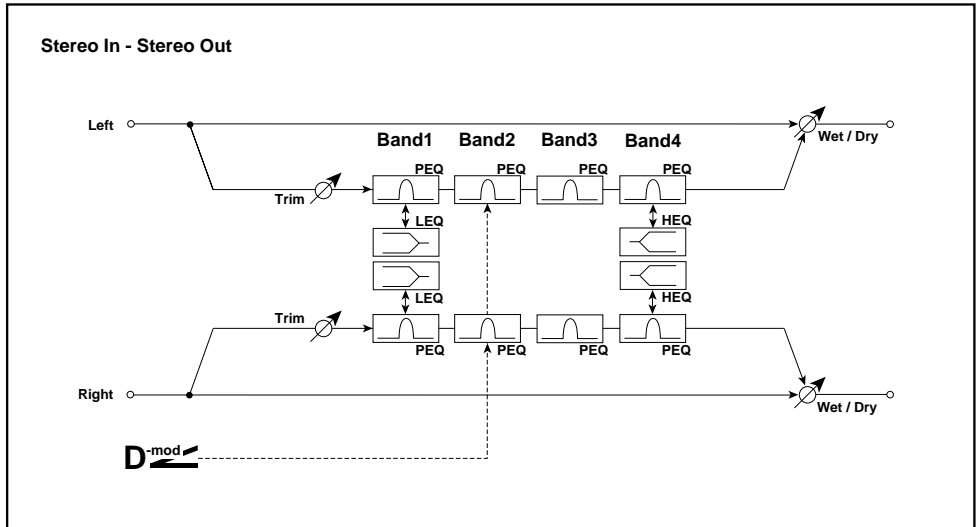


a	Wah	Off, On	Switches Wah on/off. P.54
	Src	None...Tempo	Modulation source that controls the Wah.
b	Wah Sweep Range	-10...+10	Sets the range of Wah. P.54
c	Drive Mode	Overdrive, Hi-Gain	Switches between overdrive and hi-gain distortion.
	Pre Low-cut	0...10	Low range cut amount of the distortion input P.19
d	Drive	1...100	Sets the degree of distortion. P.19
	Output Level	0...50	Sets the output level.
e	Band1 Cutoff [Hz]	20...1.0kHz	Equalizer - Band 1 center frequency
	Q	0.5...10.0	Band 1 bandwidth P.19
	Gain [dB]	-18...+18dB	Band 1 gain
f	Band2 Cutoff [Hz]	50...5.00kHz	Band 2 center frequency
	Q	0.5...10.0	Band 2 bandwidth P.19
	Gain [dB]	-18...+18dB	Band 2 gain
g	Band3 Cutoff [Hz]	300...10.00kHz	Band 3 center frequency
	Q	0.5...10.0	Band 3 bandwidth P.19
	Gain [dB]	-18...+18dB	Band 3 gain
h	Band4 Cutoff [Hz]	500...20.00kHz	Band 4 center frequency
	Q	0.5...10.0	Band 4 bandwidth P.19
	Gain [dB]	-18...+18dB	Band 4 gain
i	Direct Mix	0...50	Amount of the dry sound mixed to the distortion
	Speaker Simulation	Off, On	Speaker simulation on/off
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

- a: Wah** The Wah parameter switches the wah effect on/off. The wah center frequency can be controlled by the modulation source specified in the Src parameter.
- a: Src**
- b: Wah Sweep Range** This parameter sets the sweep range of the wah center frequency. A negative value will reverse the direction of sweep.

06: St. Parametric 4EQ (Stereo Parametric 4-Band EQ)

This is a stereo 4-band parametric equalizer. You can select peaking type or shelving type for Band 1 and 4. The gain of Band 2 can be controlled by dynamic modulation.



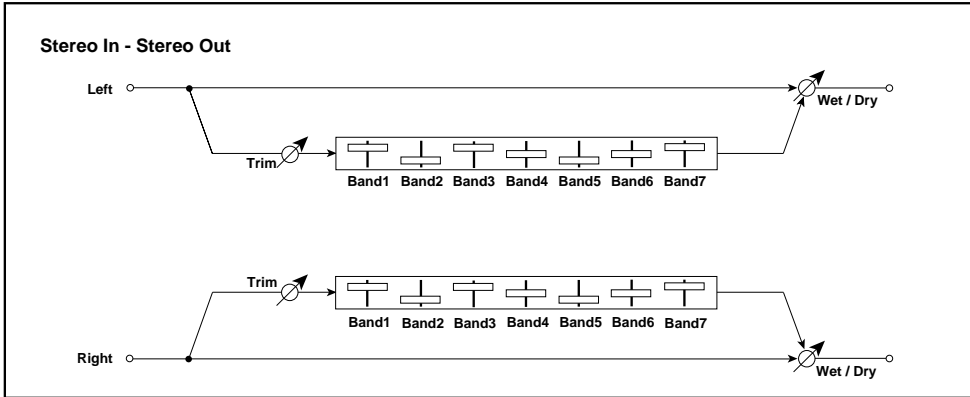
a	Trim	0...100	Sets the input level.
b	Band1 Type	Peaking, Shelving-Low	Selects the type for Band 1. <small>☞ P.20</small>
c	Band4 Type	Peaking, Shelving-High	Selects the type for Band 4. <small>☞ P.20</small>
d	Band2 Dynamic Gain Src	None...Tempo	Modulation source of the Band 2 gain <small>☞ P.21</small>
	Amt [dB]	-18.0...+18.0dB	Modulation amount of Band 2 gain
e	Band1 Cutoff [Hz]	20...1.0kHz	Sets the center frequency for Band 1.
	Q	0.5...10.0	Band 1 bandwidth <small>☞ P.19</small>
	Gain [dB]	-18.0...+18.0dB	Sets the gain of Band 1.
f	Band2 Cutoff [Hz]	50...10.00kHz	Sets the center frequency for Band 2.
	Q	0.5...10.0	Band 2 bandwidth <small>☞ P.19</small>
	Gain [dB]	-18.0...+18.0dB	Sets the gain of Band 2. <small>☞ P.21</small>
g	Band3 Cutoff [Hz]	300...10.00kHz	Sets the center frequency for Band 3.
	Q	0.5...10.0	Band 3 bandwidth <small>☞ P.19</small>
	Gain [dB]	-18.0...+18.0dB	Sets the gain of Band 3.
h	Band4 Cutoff [Hz]	500...20.00kHz	Sets the center frequency for Band 4.
	Q	0.5...10.0	Band 4 bandwidth <small>☞ P.19</small>
	Gain [dB]	-18.0...+18.0dB	Sets the gain of Band 4.
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.

size2

D-mod

07: St. Graphic 7EQ (Stereo Graphic 7-Band EQ)

This is a stereo 7-band graphic equalizer. The bar graph of the gain setting for each band gives you a clear, visual idea of frequency responses. You can select a center frequency setting for each band from twelve types, according to the sound.

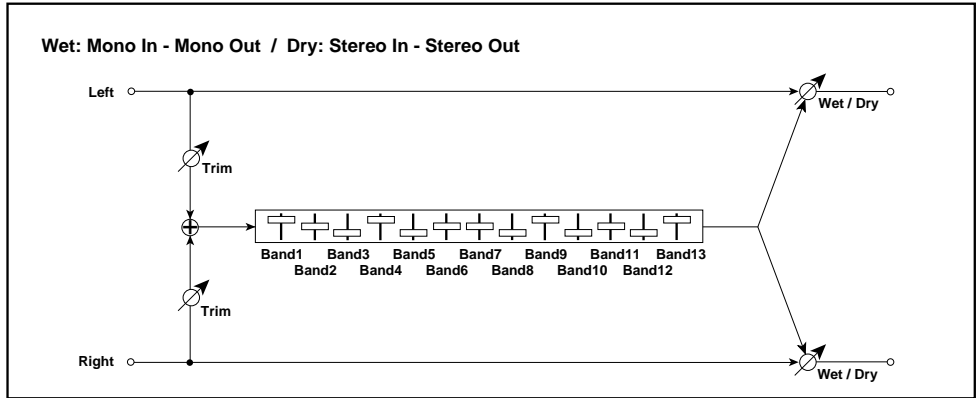


a	Type	1:Wide 1 2:Wide 2 3:Wide 3 4:Half Wide 1 5:Half Wide 2 6:Half Wide 3 7:Low 8:Wide Low 9:Mid 10:Wide Mid 11:High 12:Wide High	Selects a combination of center frequencies for each band. ☞ P.22
b	Trim	0...100	Sets the input level.
c	Band1 [dB]	-18.0...+18.0dB	Sets Band 1 gain.
d	Band2 [dB]	-18.0...+18.0dB	Sets Band 2 gain.
e	Band3 [dB]	-18.0...+18.0dB	Sets Band 3 gain.
f	Band4 [dB]	-18.0...+18.0dB	Sets Band 4 gain.
g	Band5 [dB]	-18.0...+18.0dB	Sets Band 5 gain.
h	Band6 [dB]	-18.0...+18.0dB	Sets Band 6 gain.
i	Band7 [dB]	-18.0...+18.0dB	Sets Band 7 gain.
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance



08: Graphic 13Band EQ

This effect is a 13-band graphic equalizer that allows for finer equalization. Two types of settings are available for the center frequency of each band.



a	Type	A, B	Selects a combination of center frequencies for each band. ☞ P.57
b	Trim	0...100	Sets the input level.
c	Band1 [dB]	-18.0...+18.0dB	Sets Band 1 gain.
d	Band2 [dB]	-18.0...+18.0dB	Sets Band 2 gain.
e	Band3 [dB]	-18.0...+18.0dB	Sets Band 3 gain.
f	Band4 [dB]	-18.0...+18.0dB	Sets Band 4 gain.
g	Band5 [dB]	-18.0...+18.0dB	Sets Band 5 gain.
h	Band6 [dB]	-18.0...+18.0dB	Sets Band 6 gain.
i	Band7 [dB]	-18.0...+18.0dB	Sets Band 7 gain.
j	Band8 [dB]	-18.0...+18.0dB	Sets Band 8 gain.
k	Band9 [dB]	-18.0...+18.0dB	Sets Band 9 gain.
l	Band10 [dB]	-18.0...+18.0dB	Sets Band 10 gain.
m	Band11 [dB]	-18.0...+18.0dB	Sets Band 11 gain.
n	Band12 [dB]	-18.0...+18.0dB	Sets Band 12 gain.
o	Band13 [dB]	-18.0...+18.0dB	Sets Band 13 gain.
p	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

a: Type

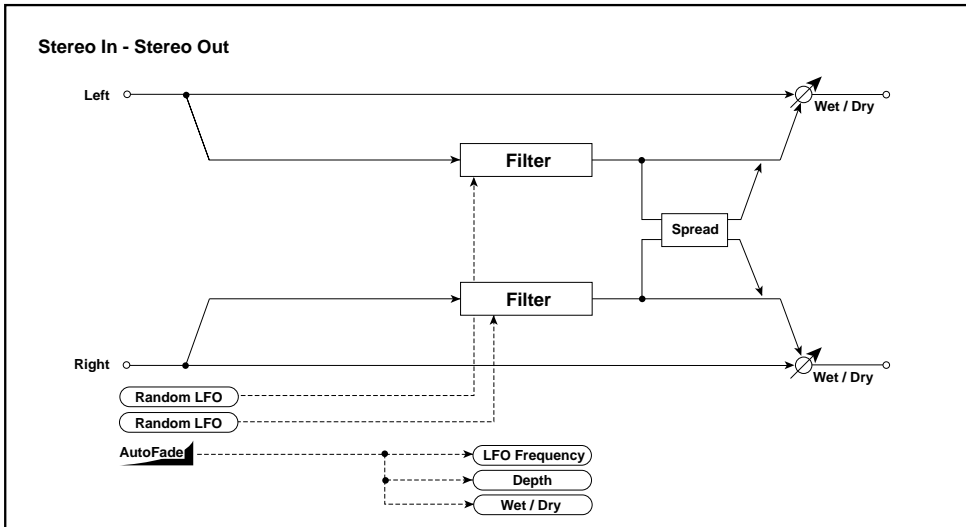
This parameter selects a combination of center frequencies for each band. Each center frequency is shown on the right edge of the LCD.

size2

D-mod

09: St. Random Filter (Stereo Random Filter)

This effect is a stereo random filter. You can also fade in the effect sound using Auto-Fade, or change the LFO speed.



a	AUTOFADE Src	None...Tempo	Selects the modulation source that triggers AutoFade. ☞ P.59	D-mod AutoFade
	Fade-In Rate	1...100	Sets the rate of fade-in.	
b	LFO Frequency [Hz]	0.05...50.00Hz	Speed of LFO that modulates the filter	D-mod AutoFade
	Src	None...AUTOFADE	Modulation source of LFO speed. AutoFade is available	
	Amt	-50.00...+50.00Hz	Modulation amount of LFO speed	
c	Cutoff	0...100	Filter center frequency	
d	Depth	0...100	Modulation depth of filter center frequency	D-mod AutoFade
	Src	None...AUTOFADE	Modulation source of filter modulation. AutoFade is available	
	Amt	-100...+100	Modulation amount of filter modulation	
e	Resonance	0...100	Sets the resonance amount.	
f	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. ☞ P.25	D-mod AutoFade
	Src	None...AUTOFADE	Modulation source of effect balance. AutoFade is available	
	Amt	-100...+100	Modulation amount of effect balance	

a: AUTOFADE Src
a: Fade-In Rate

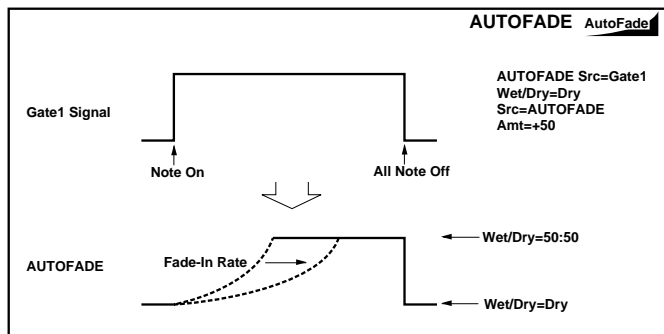
If AutoFade is selected for the LFO speed, depth of modulation, and Effect Balance, you can use the AutoFade function to apply modulation.

The AUTOFADE Src parameter selects the modulation source that triggers AutoFade. The Fade-in Rate parameter specifies the rate of fade-in.

The following is an example of fade-in where the effect balance is increased from “Dry” to “50” when a note-on message is received.

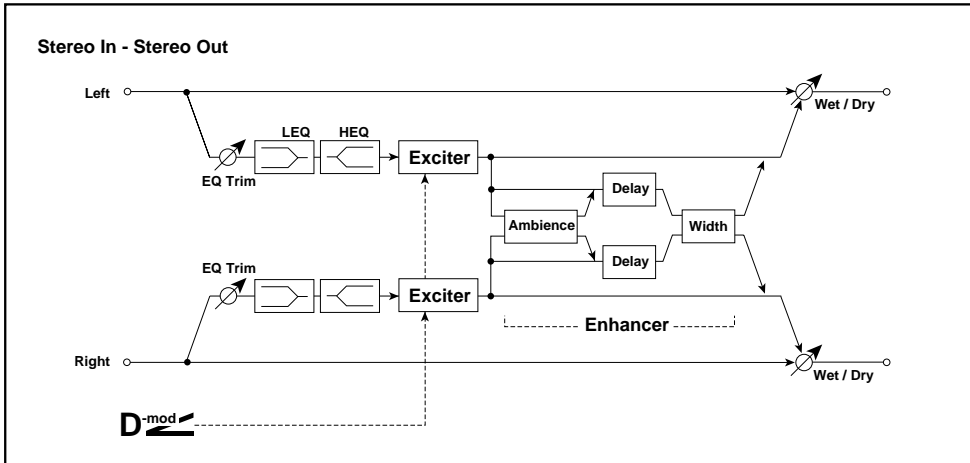
a: AUTOFADE Src = Gate1
f: Wet/Dry = Dry
f: Src = AUTOFADE
f: Amt = +50

MIDI The effect is off when a value for the dynamic modulation source specified for the AUTOFADE Src parameter is smaller than 64, and the effect is on when the value is 64 or higher. The AutoFade function is triggered when the value changes from 63 or smaller to 64 or higher.



10: Stereo Enhancer

This effect spreads and adds presence to the sound, and also functions as a stereo exciter. It is useful when you wish to emphasize a stereo image of the input signal or create a stereo image from a monaural source.



a	Exciter Blend	-100...+100	Sets the intensity (depth) of the Exciter effect.
	Src	None...Tempo	Modulation source of the Exciter intensity
	Amt	-100...+100	Modulation amount of the Exciter intensity
b	Emphatic Point	0...140	Sets the frequency to be emphasized.
	Src	None...Tempo	Modulation source of the frequency to be emphasized
	Amt	-100...+100	Amount of modulation of the frequency to be emphasized
c	Enhancer Dly L [msec]	0...50.0msec	Delay time for the Enhancer left channel
d	Enhancer Dly R [msec]	0...50.0msec	Delay time for the Enhancer right channel
e	Enhancer Width	-100...+100	Determines to what degree the Enhancer effect is applied
	Src	None...Tempo	Modulation source of the Enhancer width
	Amt	0...+100	Modulation amount of the Enhancer width
f	Enhancer Ambience	0...100	Determines to what degree the Enhancer ambience effect is applied.
g	EQ Trim	0...100	2-band EQ input level
h	Pre LEQ Gain [dB]	-15.0...+15.0dB	Low EQ gain
i	Pre HEQ Gain [dB]	-15.0...+15.0dB	High EQ gain
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

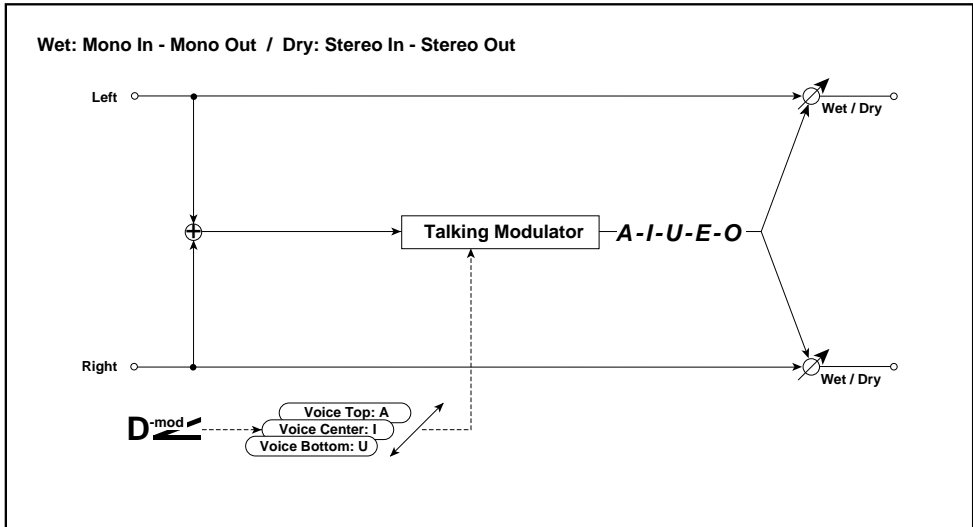
c: Enhancer Dly L [msec] These parameters set the delay time for the Enhancer left and right channel.

d: Enhancer Dly R [msec] Specifying a slightly different delay time for the left and right channel will add a stereo image, depth, and width to the sound.

f: Enhancer Ambience This parameter determines to what degree the Enhancer ambience effect is applied. The ambience effect will create a wider stereo image. However, if e: Enhancer Width is set to 0 or the input source is monaural, this effect is not created.

11: Talking Modulator

This effect adds an unusual character, like a human voice, to the input signal. Modulating the tone via dynamic modulation, you can create an interesting effect that sounds as if the instrument is talking.



a	Manual Voice Control	Bottom, 1...49, Center, 51...99, Top	Voice pattern control
	Src	None...Tempo	Modulation source that controls the voice pattern
b	Voice Top	A, I, U, E, O	Selects a vowel sound at the top end of control. P.61
c	Voice Center	A, I, U, E, O	Selects a vowel sound in the center of control. P.61
d	Voice Bottom	A, I, U, E, O	Selects a vowel sound at the bottom end of control. P.61
e	Formant Shift	-100...+100	Adjusts the frequency to which the effect is applied. P.62
f	Resonance	0...100	Level of resonance of the voice pattern
g	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

- b: Voice Top
- c: Voice Center
- d: Voice Bottom

These parameters assign vowel sounds to the top, center, and bottom of the controller.

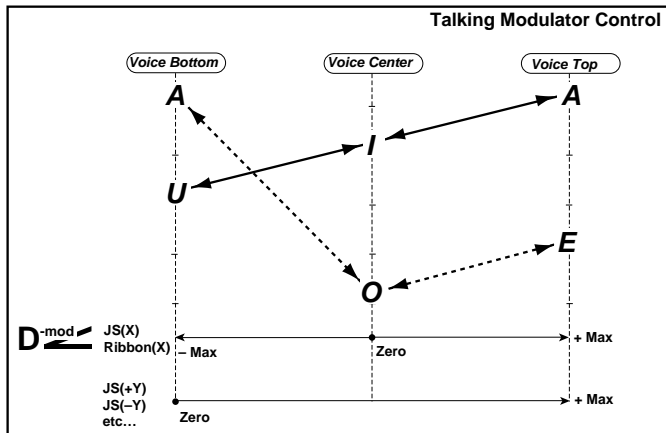
For example, if Ribbon (X) is selected as the modulation source:

With Voice Top = A, Voice Center = I, and Voice Bottom = U, moving the finger on the ribbon controller from the right edge to the left edge will produce the vowel sounds "a", "i", then "u."

size2

D-mod

D-mod



e: Formant Shift

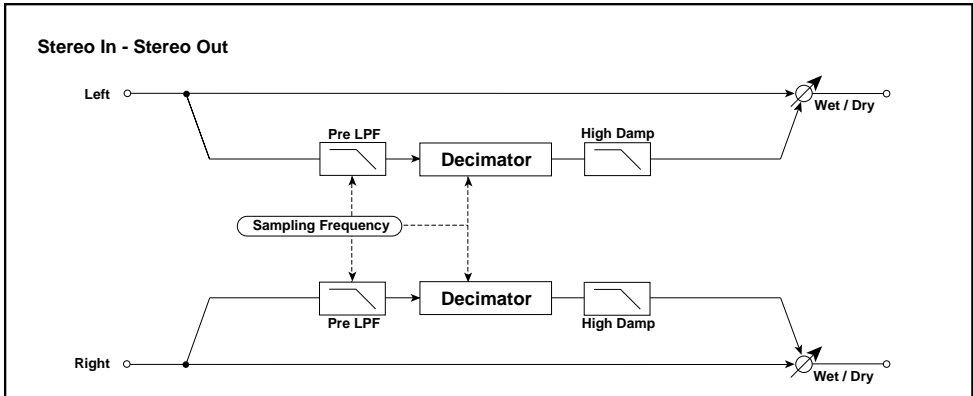
This parameter adjusts the frequency level to which the effect is applied. If you wish to apply the effect to a higher-range sound, set this parameter to a higher value; to apply the effect to a lower-range sound, set this to a lower value.

f: Resonance

This parameter sets the intensity of resonance for the voice pattern. A larger value will add more character to the sound.

12: Stereo Decimator

This is a stereo decimator.



a	Pre LPF	Off, On	Selects whether the harmonic noise caused by a decrease in sampling frequency is generated or not. P.28
b	Sampling Freq [Hz] (Sampling Frequency)	1.00k...24.00kHz	Sets the sampling frequency.
	Src	None...Tempo	Sets the modulation source of the sampling frequency.
	Amt	-24.00k...+24.00kHz	Sets the modulation amount of the sampling frequency.
c	High Damp [%]	0...100%	Ratio of cut of the high range
d	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

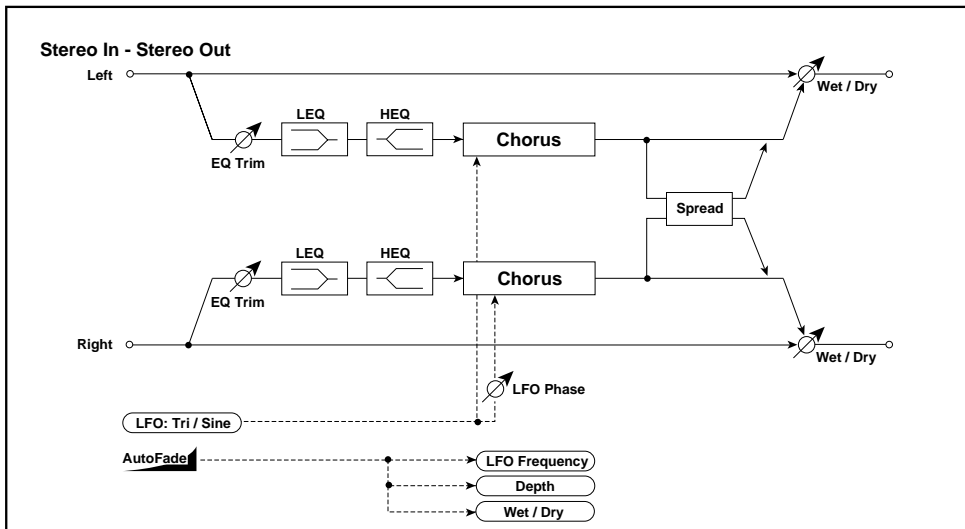
size2

D-mod

D-mod

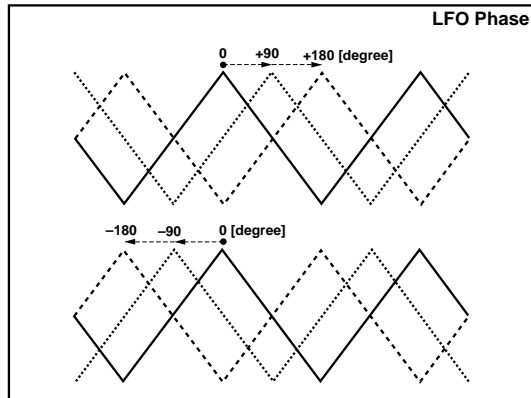
13: Stereo Chorus

This is a stereo chorus. You can add spread to the sound by offsetting the phase of the left and right LFOs from each other. The chorus effect can fade-in by means of the AutoFade function.



a	AUTOFADE Src	None...Tempo	Selects the modulation source that triggers AutoFade. ☞ P.59	
	Fade-In Rate	1...100	Sets the rate of fade-in.	
b	LFO Waveform	Triangle, Sine	Selects LFO Waveform.	
	LFO Phase [degree]	-180...+180	LFO phase difference between the left and right ☞ P.65	
c	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed	
	Src	None...AUTOFADE	Modulation source of LFO speed. AutoFade is available	D-mod AutoFade
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	
d	L Pre Delay [msec]	0.0...50.0msec	Delay time for the left channel ☞ P.65	
e	R Pre Delay [msec]	0.0...50.0msec	Delay time for the right channel ☞ P.65	
f	Depth	0...100	Depth of LFO modulation	D-mod AutoFade
	Src	None...AUTOFADE	Modulation source of the LFO modulation depth. Auto-Fade is available	
	Amt	-100...+100	Modulation amount of the LFO modulation depth	
g	EQ Trim	0...100	EQ input level	
h	Pre LEQ Gain [dB]	-15.0...+15.0dB	Low-EQ gain	
	Pre HEQ Gain [dB]	-15.0...+15.0dB	High-EQ gain	
i	Spread	-100...+100	Sets the spread of stereo image of the effect sound. ☞ P.65	
j	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. ☞ P.25	D-mod AutoFade
	Src	None...AUTOFADE	Modulation source of effect balance. AutoFade is available	
	Amt	-100...+100	Modulation amount of effect balance	

- b: LFO Phase [degree]** Shifting the left and right LFOs' phase will cause modulation to be applied differently for the right and left, spreading and swelling the effect sound between the left and right.

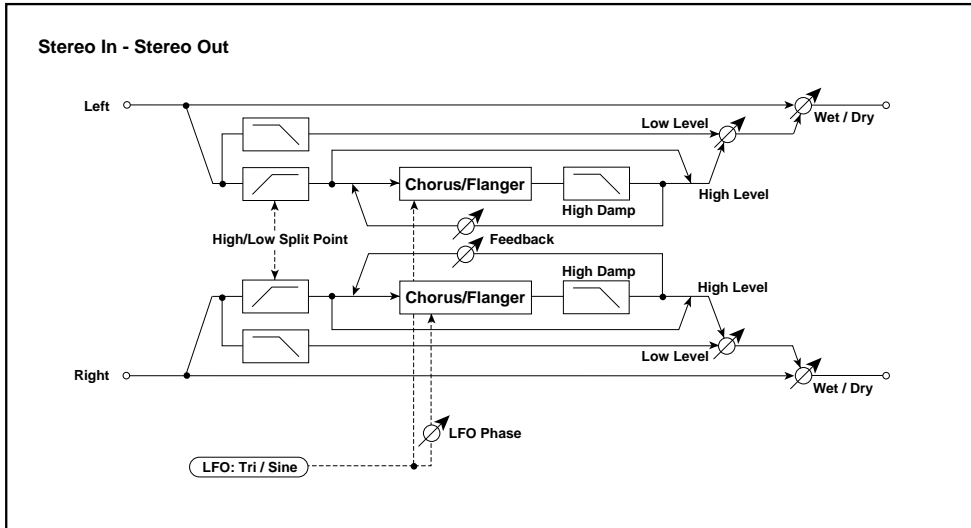


- d: L Pre Delay [msec]** Setting the left and right delay time individually allows you to control the stereo image.
e: R Pre Delay [msec]

- i: Spread** This parameter sets the width of stereo image of the effect sound. A value of +100 gives the widest spread, and a value of 0 causes the effect sound of both channels to be output from the center. A negative value will reverse the left and right channels of the effect sound.

14: St. Harmonic Chorus (Stereo Harmonic Chorus)

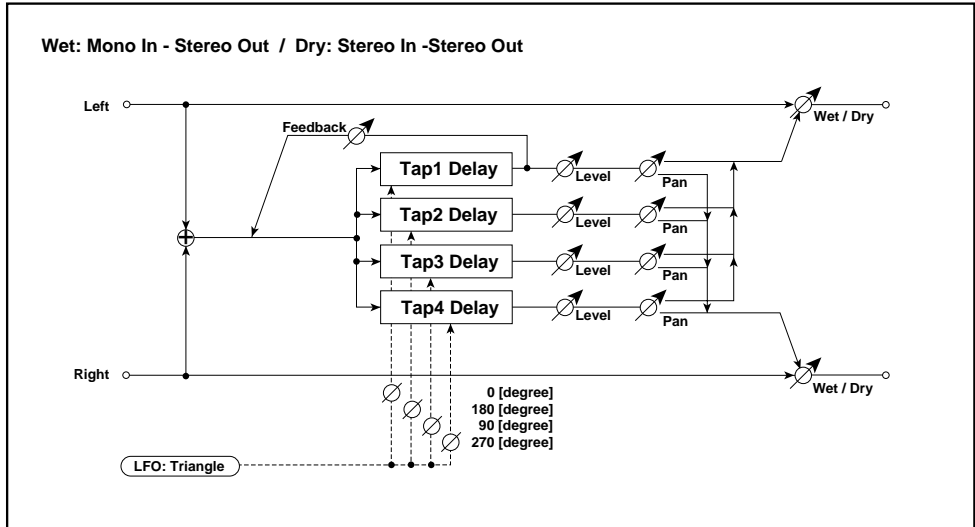
This is a stereo harmonic chorus. Shifting the left and right LFO phases from each other will add spread to the sound.



a	LFO Waveform	Triangle, Sine	Selects LFO Waveform.	
b	LFO Phase [degree]	-180...+180	LFO phase difference between the left and right <small>☞ P.65</small>	D-mod
	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed	
c	Src	None...Tempo	Modulation source of LFO speed	D-mod
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	
d	Pre Delay [msec]	0.0...50.0msec	Delay from the original sound	
e	Depth	0...100	Depth of LFO modulation	D-mod
	Src	None...Tempo	Modulation source of the LFO modulation depth	
	Amt	-100...+100	Modulation amount of the LFO modulation depth	
f	High/Low Split Point	1...100	Frequency split point between the low and high range <small>☞ P.30</small>	
g	Feedback	-100...+100	Feedback amount of the chorus block <small>☞ P.30</small>	
h	High Damp [%]	0...100%	Chorus block damping amount in the high range	
i	Low Level	0...100	Output level in the low range	
h	High Level	0...100	Output level in the high range (chorus)	
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

15: Multitap Chorus/Dly (Multitap Chorus/Delay)

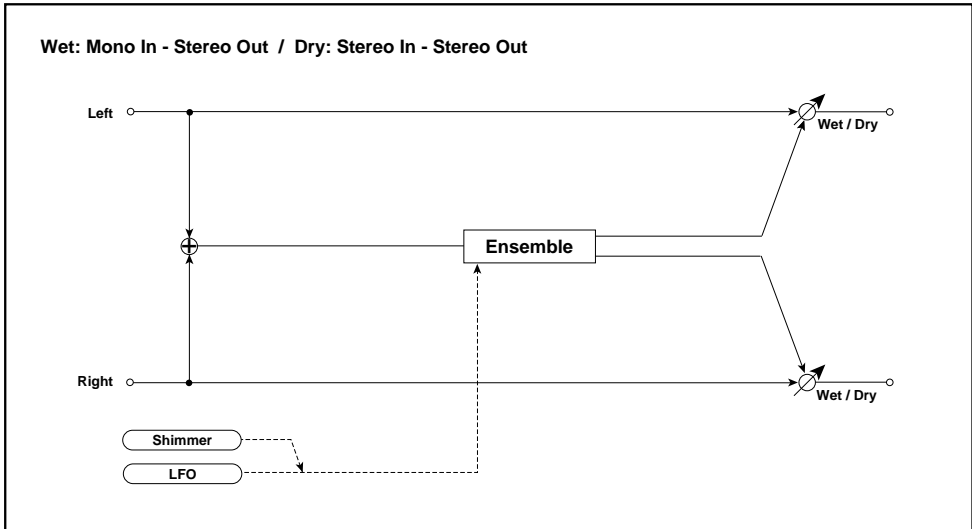
This effect has four chorus blocks with a different LFO phase. You can create a complex stereo image by setting each block's delay time, depth, output level, and pan individually. You can also fix some of the chorus blocks to combine the chorus and delay effects.



a	LFO Frequency [Hz]	0.02...13.00Hz	LFO speed
b	Tap1(000) [msec]	0...570msec	Tap1 (LFO phase=0 degrees) delay time
	Depth	0...30	Tap1 chorus depth
	Level	0...30	Tap1 output level
	Pan	L6...L1, C, R1...R6	Tap1 stereo image
c	Tap2(180) [msec]	0...570msec	Tap2 (LFO phase=180 degrees) delay time
	Depth	0...30	Tap2 chorus depth
	Level	0...30	Tap2 output level
	Pan	L6...L1, C, R1...R6	Tap2 stereo image
d	Tap3(090) [msec]	0...570msec	Tap3 (LFO phase=90 degrees) delay time
	Depth	0...30	Tap3 chorus depth
	Level	0...30	Tap3 output level
	Pan	L6...L1, C, R1...R6	Tap3 stereo image
e	Tap4(270) [msec]	0...570msec	Tap4 (LFO phase=270 degrees) delay time
	Depth	0...30	Tap4 chorus depth
	Level	0...30	Tap4 output level
	Pan	L6...L1, C, R1...R6	Tap4 stereo image
f	Tap1 Feedback	-100...+100	Tap1 feedback amount
	Src	None...Tempo	Modulation source of Tap1 feedback amount and effect balance
	Amt	-100...+100	Tap1 feedback amount and modulation amount
g	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Amt	-100...+100	Modulation amount of effect balance

16: Ensemble

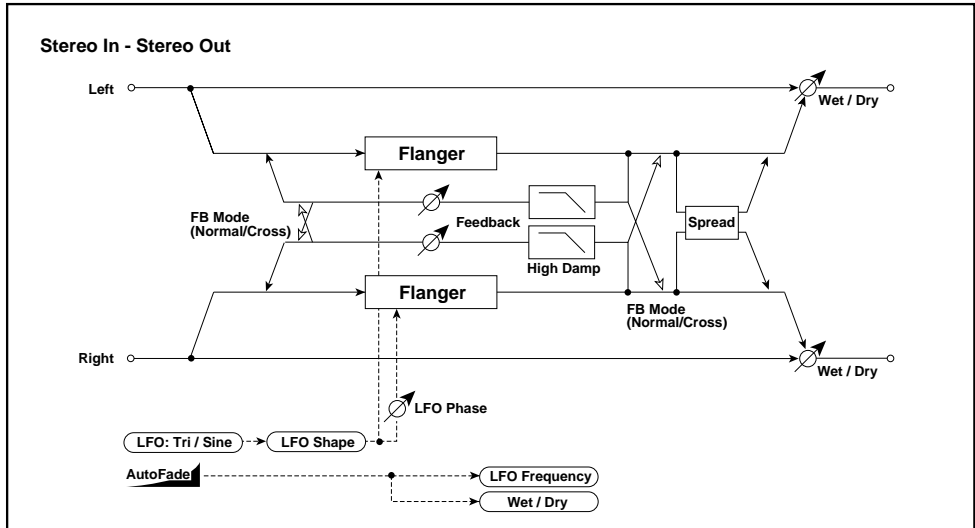
This Ensemble effect has three chorus blocks, and gives three dimensional depth and spread to the sound, because the signal is output from the left, right, and center.



a	Speed	1...100	LFO speed	D-mod
	Src	None...Tempo	Modulation source of LFO speed	
	Amt	-100...+100	Modulation amount of LFO speed	
b	Shimmer	0...100	Amount of shimmering of the LFO waveform <small>P:31</small>	
c	Depth	0...100	Depth of LFO modulation	D-mod
	Src	None...Tempo	Modulation source of the LFO modulation depth	
	Amt	-100...+100	Modulation amount of the LFO modulation depth	
d	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

17: Stereo Flanger

This is a stereo flanger. You can add spread to the sound by offsetting the phase of the left and right LFOs from each other. The flanging effect can fade-in by means of the AutoFade function.



a	AUTOFADE Src	None...Tempo	Selects the modulation source that triggers AutoFade. ☞ P.59
	Fade-In Rate	1...100	Sets the rate of fade-in.
b	Delay Time [msec]	0.0...50.0msec	Delay from the original sound
c	LFO Waveform	Triangle, Sine	Selects LFO Waveform.
	LFO Shape	-100...+100	Determines how much the LFO waveform is changed. ☞ P.32
d	LFO Phase [degree]	-180...+180	LFO phase difference between the left and right ☞ P.65
e	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed
	Src	None...AUTOFADE	Modulation source of LFO speed. AutoFade is available
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed
f	Depth	0...100	Depth of LFO modulation
g	Feedback	-100...+100	Feedback amount ☞ P.32
	FB Mode	Normal, Cross	Sets the feedback routing. ☞ P.69
h	High Damp [%]	0...100%	Feedback damping amount in the high range ☞ P.32
i	Spread	-100...+100	Sets the width of stereo image of effect sound. ☞ P.65
j	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. ☞ P.25, 32
	Src	None...AUTOFADE	Modulation source of effect balance. AutoFade is available
	Amt	-100...+100	Modulation amount of effect balance

g: FB Mode

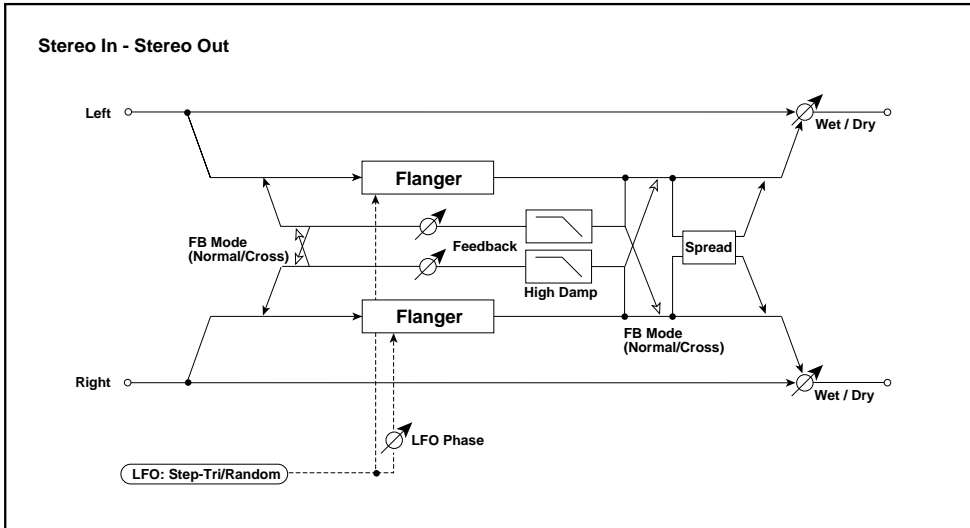
This parameter sets the feedback routing. "Cross" will select a crossover flanger in which each channel applies feedback to the other channel.

size2

D-mod
AutoFadeD-mod
AutoFade

18: St. Random Flanger (Stereo Random Flanger)

This is a stereo flanger. The effect uses a step-shape waveform and random LFO for modulation, creating a unique flanging effect.

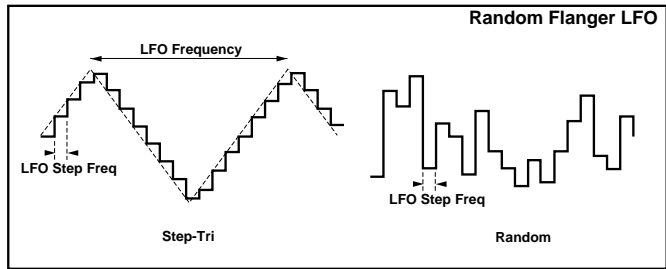


a	Delay Time [msec]	0.0...50.0msec	Delay from the original sound	
b	LFO Waveform	Step-Tri, Random	Selects the LFO Waveform. P.70	
c	LFO Phase [degree]	-180...+180	LFO phase difference between the left and right P.65	
d	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed P.70	D-mod
	Src	None...Tempo	Modulation source used for both LFO speed and step speed	
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	
e	LFO Step Freq (Frequency) [Hz]	0.05...50.00Hz	LFO step speed (speed that changes in steps) P.70	D-mod
	Amt	-50.00...+50.00Hz	Modulation amount of LFO step speed	
f	Depth	0...100	Depth of LFO modulation	
g	Feedback	-100...+100	Feedback amount P.32	
	FB Mode	Normal, Cross	Sets the feedback routing. P.69	
h	High Damp [%]	0...100%	Feedback damping amount in the high range P.32	
i	Spread	-100...+100	Sets the width of stereo image of effect sound. P.65	
j	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. P.25, 32	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

b: LFO Waveform
d: LFO Frequency [Hz]
e: LFO Step Freq (Frequency) [Hz]

When Step-Tri is selected for LFO Waveform, the LFO uses a step-shape triangle waveform. Set the LFO Frequency to the speed of the original triangle waveform. At this time, changing the LFO Step Freq value will modify the width of the step.

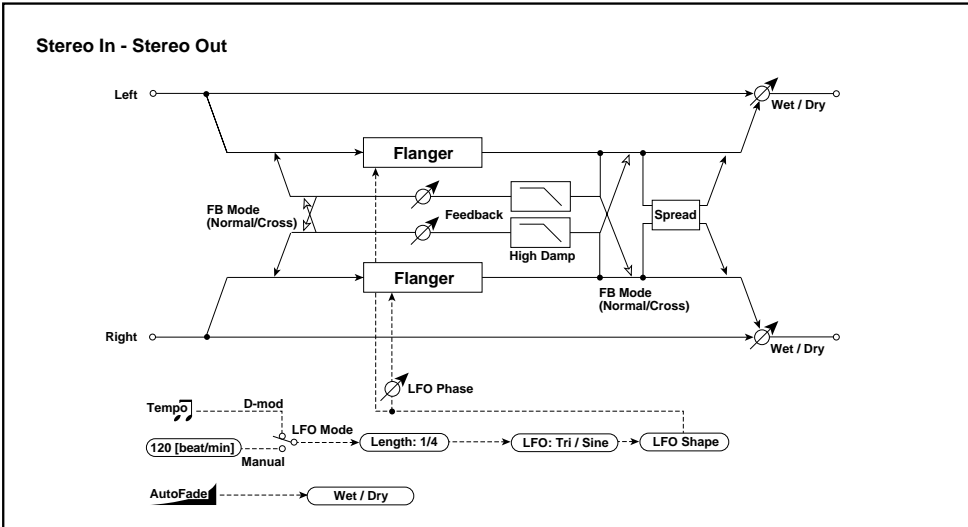
When Random is selected for LFO Waveform, the LFO Step Freq setting will be used as a cycle of the random LFO.



size2

19: St. Tempo Flanger (Stereo Tempo Flanger)

This is a stereo tempo flanger. The flanging effect can fade-in by means of the AutoFade function.

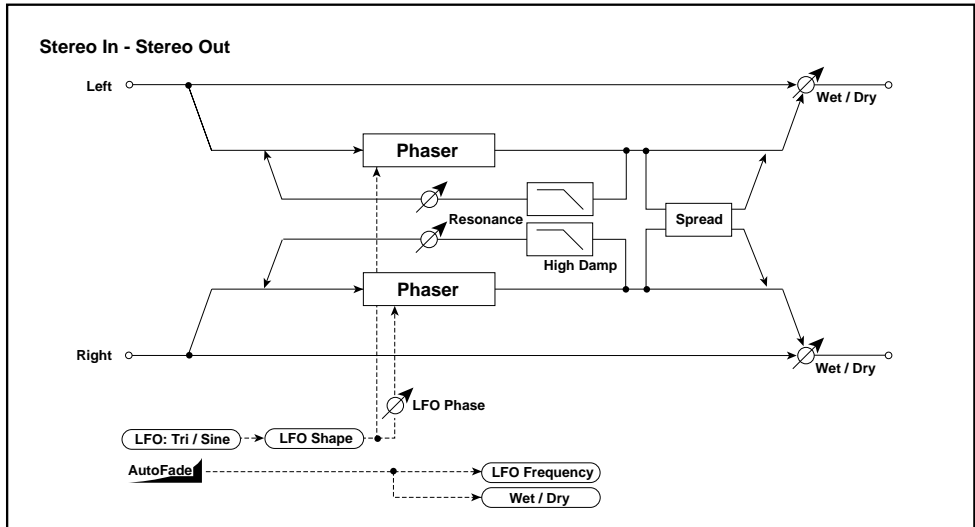


a	AUTOFADE Src	None...Tempo	Selects the modulation source that triggers AutoFade. ☞ P.59
	Fade-In Rate	1...100	Sets the rate of fade-in.
b	Delay Time [msec]	0.0...50.0msec	Delay from the original sound
c	LFO Waveform	Triangle, Sine	Selects LFO Waveform.
	LFO Shape	-100...+100	Determines how much the LFO waveform is changed. ☞ P.32
d	LFO Phase [degree]	-180...+180	LFO phase difference between the left and right ☞ P.65
e	LFO Mode	Manual, D-mod	Switches between the specified tempo and clock sync. ☞ P.33
	Src (fixed)	Tempo	Source when LFO Mode = D-mod (fixed to Tempo)
f	Tempo [beat/min]	30...250 beat/min	Tempo when LFO Mode = Manual ☞ P.33
	Length	1...16 / 1...16	Sets the LFO cycle. LFO Cycle = Length x Whole Note. ☞ P.33
g	Depth	0...100	Depth of LFO modulation
h	Feedback	-100...+100	Feedback amount ☞ P.32
	FB Mode	Normal, Cross	Sets the feedback routing. ☞ P.69
i	High Damp [%]	0...100%	Feedback damping amount in the high range ☞ P.32
	Spread	-100...+100	Sets the width of stereo image of effect sound. ☞ P.65
j	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. ☞ P.25, 32
	Src	None...AUTOFADE	Modulation source of effect balance. AutoFade is available
	Amt	-100...+100	Modulation amount of effect balance



20: Stereo Phaser

This is a stereo phaser. You can add spread to the sound by offsetting the phase of the left and right LFOs from each other. The phaser effect can fade-in by means of the AutoFade function.



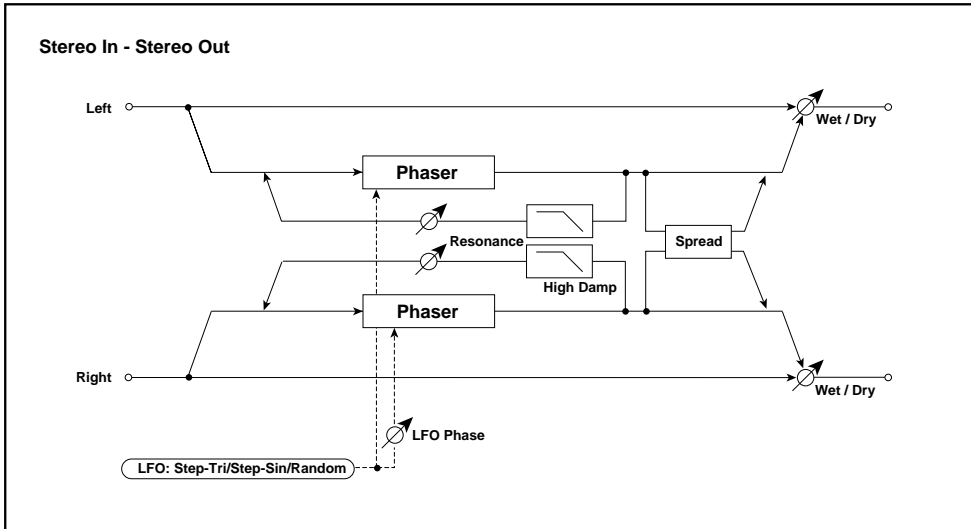
a	AUTOFADE Src	None...Tempo	Selects the modulation source that triggers AutoFade. ☞ P.59
	Fade-In Rate	1...100	Sets the rate of fade-in.
b	LFO Waveform	Triangle, Sine	Selects LFO Waveform.
	LFO Shape	-100...+100	Determines how much the LFO waveform is changed. ☞ P.32
c	LFO Phase [degree]	-180...+180	LFO phase difference between the left and right ☞ P.65
d	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed
	Src	None...AUTOFADE	Modulation source of LFO speed. AutoFade is available
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed
e	Manual	0...100	Sets the frequency to which the effect is applied.
f	Depth	0...100	Depth of LFO modulation
g	Resonance	-100...+100	Sets the resonance amount. ☞ P.35
h	High Damp [%]	0...100%	Resonance damping amount in the high range ☞ P.35
i	Spread	-100...+100	Sets the width of stereo image of effect sound. ☞ P.65
j	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. ☞ P.25, 35
	Src	None...AUTOFADE	Modulation source of effect balance. AutoFade is available
	Amt	-100...+100	Modulation amount of effect balance

size2

D-mod
AutoFadeD-mod
AutoFade

21: St. Random Phaser (Stereo Random Phaser)

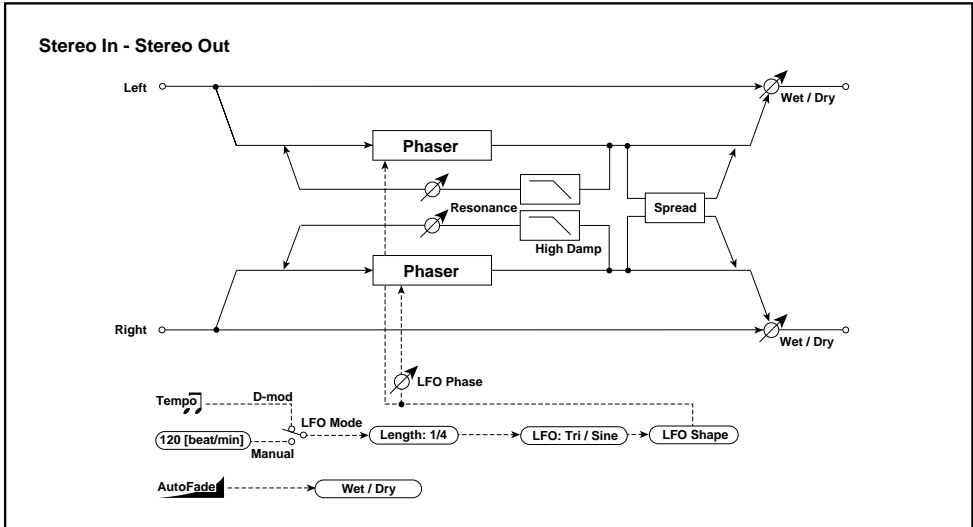
This is a stereo phaser. The effect uses a step-shape waveform and random LFO for modulation, creating a unique phasing effect.



a	LFO Waveform	Step-Tri, Step-Sin, Random	Selects the LFO Waveform. P.70	
b	LFO Phase [degree]	-180...+180	LFO phase difference between the left and right P.65	
c	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed P.70	D-mod
	Src	None...Tempo	Modulation source commonly used for LFO speed and step speed	
d	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	D-mod
	LFO Step Freq (Frequency) [Hz]	0.05...50.00Hz	LFO step speed P.70	
	Amt	-50.00...+50.00Hz	Modulation amount of LFO step speed	
e	Manual	0...100	Sets the frequency to which the effect is applied.	
f	Depth	0...100	Depth of LFO modulation	
g	Resonance	-100...+100	Sets the resonance amount. P.35	
h	High Damp [%]	0...100%	Resonance damping amount in the high range P.35	
i	Spread	-100...+100	Sets the width of stereo image of effect sound. P.65	
j	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. P.25, 35	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

22: St. Tempo Phaser (Stereo Tempo Phaser)

This is a stereo tempo phaser. The phasing effect can fade-in by means of the AutoFade function.



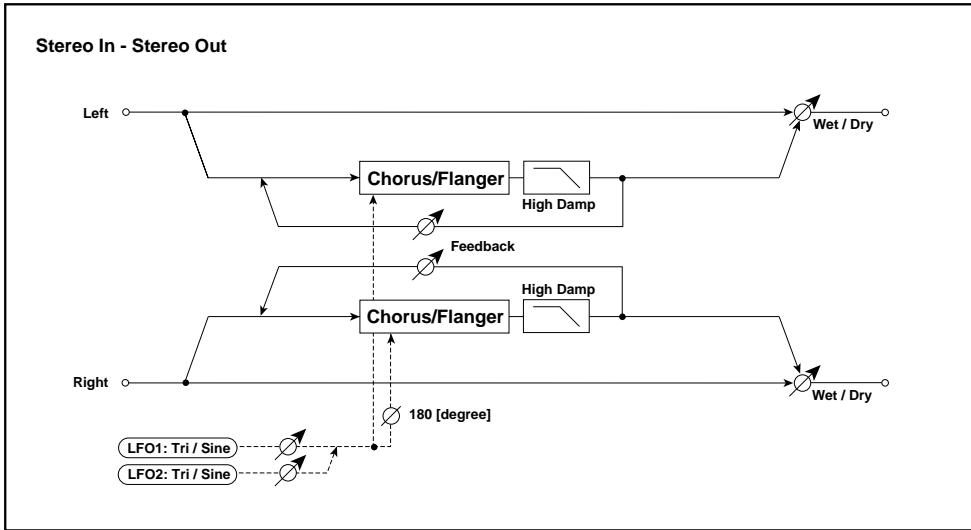
size2

a	AUTOFADE Src	None...Tempo	Selects the modulation source that triggers AutoFade. P.59
	Fade-In Rate	1...100	Sets the rate of fade-in.
b	LFO Waveform	Triangle, Sine	Selects LFO Waveform.
	LFO Shape	-100...+100	Determines how much the LFO waveform is changed. P.32
c	LFO Phase [degree]	-180...+180	LFO phase difference between the left and right P.65
d	LFO Mode	Manual, D-mod	Switches between the specified tempo and clock sync. P.33
	Src (fixed)	Tempo	Source when LFO Mode = D-mod (fixed to Tempo)
e	Tempo [beat/min]	30...250 beat/min	Tempo when LFO Mode = Manual P.33
	Length	1...16 / 1...16	Sets the LFO cycle. LFO Cycle = Length x Whole Note. P.33
f	Manual	0...100	Sets the frequency to which the effect is applied.
	Depth	0...100	Depth of LFO modulation
g	Resonance	-100...+100	Sets the resonance amount. P.35
h	High Damp [%]	0...100%	Resonance damping amount in the high range P.35
i	Spread	-100...+100	Sets the width of stereo image of effect sound. P.65
j	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. P.25, 35
	Src	None...AUTOFADE	Modulation source of effect balance. AutoFade is available
	Amt	-100...+100	Modulation amount of effect balance

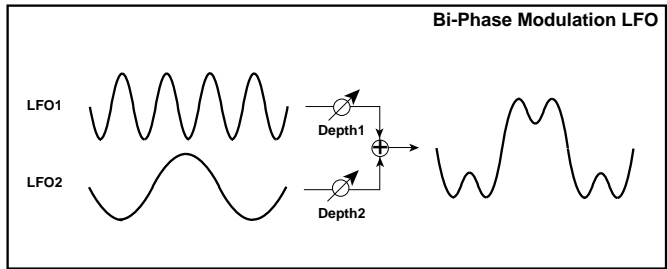
D-mod
AutoFade

23: St. Bi-phase Mod. (Stereo Bi-phase Modulation)

This stereo chorus effect adds two different LFOs together. You can set the Frequency and Depth parameters for each LFO individually. Depending on the setting of these LFOs, very complex waveforms will create an analog-type, unstable modulated sound.



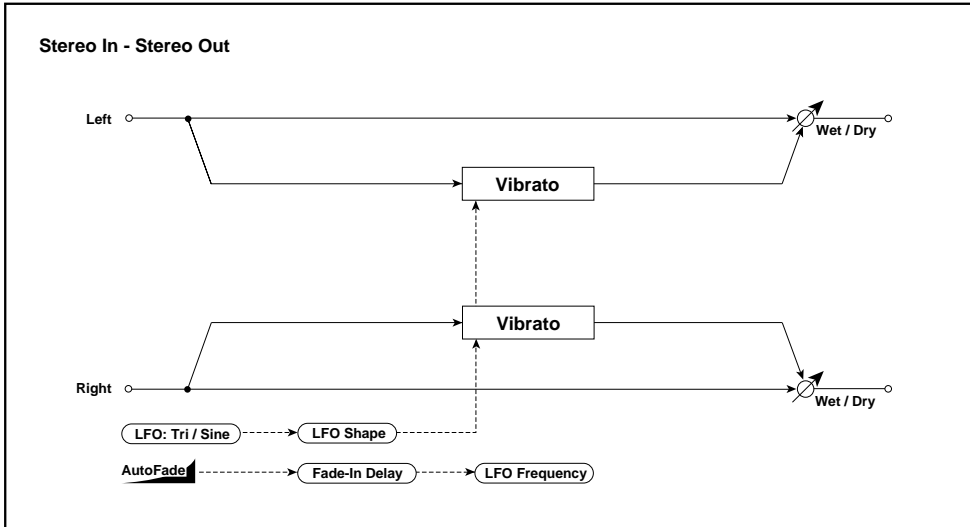
a	LFO1 Waveform	Triangle, Sine	Selects LFO1 waveform.	
	LFO2 Waveform	Triangle, Sine	Selects LFO2 waveform.	
b	LFO Phase Sw	0 degree, 180 degree	Switches the LFO phase difference between left and right.	
c	LFO1 Frequency [Hz]	0.02...30.00Hz	LFO1 speed	D-mod
	Src	None...Tempo	Modulation source of LFO1&2 speed	
	Amt	-30.00...+30.00	Modulation amount of LFO1 speed	
d	LFO2 Frequency [Hz]	0.02...30.00Hz	LFO2 speed	D-mod
	Amt	-30.00...+30.00	Modulation amount of LFO2 speed	
	Depth1	0...100	Depth of LFO1 modulation	D-mod
e	Src	None...Tempo	Modulation source of LFO1&2 modulation depth	
	Amt	-100...+100	Modulation amount of LFO1 modulation depth	
	Depth2	0...100	Depth of LFO2 modulation	D-mod
f	Amt	-100...+100	Modulation amount of LFO2 modulation depth	D-mod
	L Pre Delay [msec]	0.0...50.0msec	Left channel delay time ☞ P.65	
g	R Pre Delay [msec]	0.0...50.0msec	Right channel delay time ☞ P.65	
h	Feedback	-100...+100	Feedback amount ☞ P.30	
	High Damp [%]	0...100%	High range damping amount	
i	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. ☞ P.25	D-mod
	Src	None...Tempo	Modulation source of effect balance.	
	Amt	-100...+100	Modulation amount of effect balance	



size2

24: Stereo Vibrato

This is a stereo vibrato. You can set a delay for the time that is taken before the auto-fade starts.



a	AUTOFADE Src	None...Tempo	Sets the modulation source that starts AutoFade. ☞ P.78	D-mod AutoFade
	Fade-In Rate	1...100	Sets the rate of fade-in.	
b	Fade-In Delay [msec]	00...2000msec	Sets delay time for fade-in. ☞ P.78	
c	LFO Waveform	Triangle, Sine	Selects the LFO Waveform.	
d	LFO Shape	-100...+100	Determines how much the LFO waveform shape is changed. ☞ P.32	
	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed	
	Src	None...AUTOFADE	Modulation source of LFO speed. AutoFade is available.	
e	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	
	Depth	0...100	Depth of LFO modulation	D-mod
	Src	None...Tempo	Modulation source of the LFO modulation depth	
f	Amt	-100...+100	Modulation depth of the LFO modulation depth	
	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
g	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

- a: AUTOFADE Src
- a: Fade-In Rate
- b: Fade-In Delay [msec]

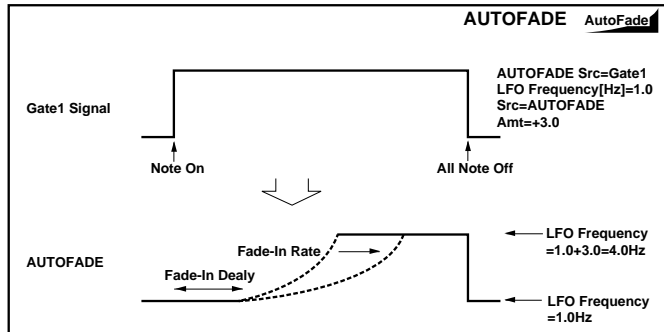
If AutoFade is selected for the LFO speed, you can use the AutoFade function to apply modulation.

The AUTOFADE Src parameter selects the modulation source that triggers AutoFade. The Fade-in Rate parameter specifies the rate of fade-in. The Fade-in Delay parameter determines the time from AutoFade modulation source ON until the fade-in starts.

The following is an example of fade-in where the LFO speed is increased from "1.0Hz" to "4.0Hz" when a note-on message is received.

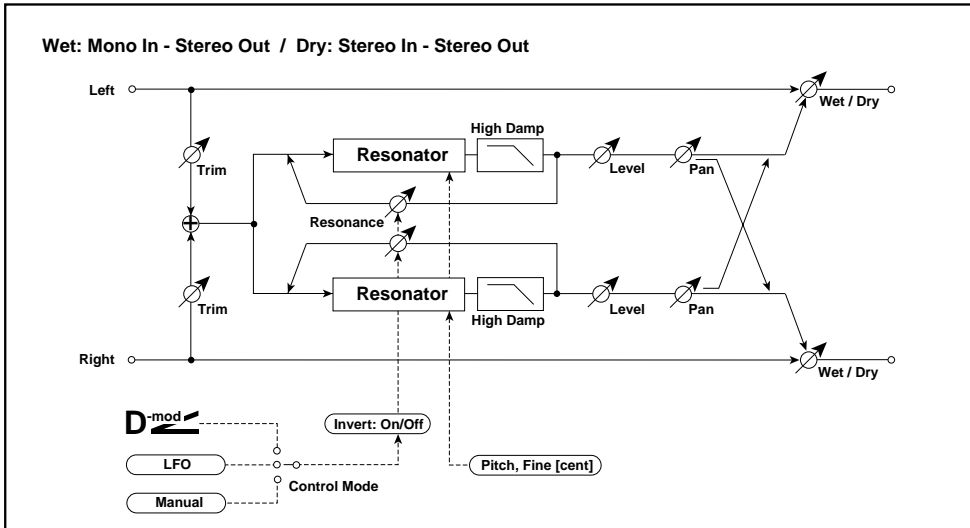
a: AUTOFADE Src = Gate1
 e: LFO Frequency [Hz] = 1.0
 e: Src = AUTOFADE
 e: Amt = 3.0

MIDI The effect is off when a value for the dynamic modulation source specified for the AUTOFADE Src parameter is smaller than 64, and the effect is on when the value is 64 or higher. The AutoFade function is triggered when the value changes from 63 or smaller to 64 or higher.



25: 2-Voice Resonator

This resonator has two resonance points. You can set the output level and stereo image (pan) for each resonator.



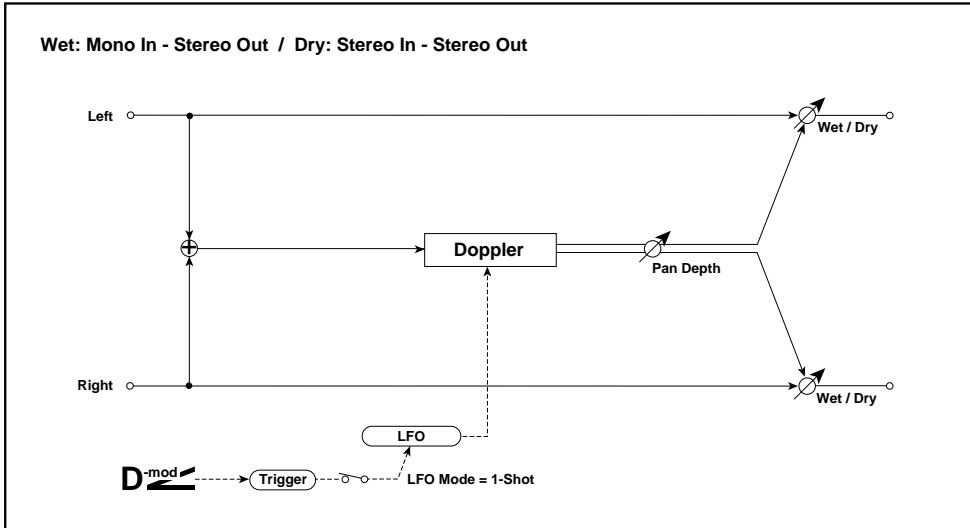
a	Control Mode	Manual, LFO, D-mod	Switches the controls of resonance intensity. P.81
	LFO/D-mod Invert	Off, On	Reverses the Voice 1 and 2 control when LFO/D-mod is selected. P.81
b	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed
	D-mod Src	None...Tempo	Modulation source that controls resonance intensity
c	Mod. Depth	-100...+100	Amount of resonance intensity control via LFO/D-mod
	Trim	0...100	Input level at the Resonator
d	Voice1: Pitch	C0...B8	Voice1 Pitch for resonance
	Fine [cent]	-50...+50	Fine adjustment of Voice1 pitch for resonance
e	Voice1: Resonance	-100...+100	Sets the intensity of resonance when Control Mode = Manual. P.81
	High Damp [%]	0...100%	Damping amount of resonant sound in the high range P.39
f	Voice1: Level	0...100	Voice1 output level
	Pan	L6...R6	Voice1 stereo image
g	Voice2: Pitch	C0...B8	Voice2 Pitch for resonance
	Fine [cent]	-50...+50	Fine adjustment of Voice2 pitch for resonance
h	Voice2: Resonance	-100...+100	Sets the intensity of resonance when Control Mode = Manual. P.81
	High Damp [%]	0...100%	Damping amount of resonant sound in the high range P.39
i	Voice2: Level	0...100	Voice2 output level
	Pan	L6...R6	Voice2 stereo image
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance



- a: Control Mode** This parameter determines whether the resonance intensity is controlled by the LFO or not.
- e: Voice1: Resonance**
- h: Voice2: Resonance**
- When Control Mode = Manual, the Resonance parameter sets the intensity of resonance. If the Resonance parameter has a negative value, harmonics will be changed, and resonance will occur at a pitch one octave lower.
- When Control Mode = LFO, the intensity of resonance varies according to the LFO. The LFO sways between positive and negative values, causing resonance to occur between specified pitches an octave apart in turn.
- When Control Mode = D-mod, the resonance is controlled by the dynamic modulation source. If JS (X) or Ribbon (X) is assigned as the modulation source, the pitch an octave higher and lower can be controlled, similar to when LFO is selected for Control Mode.
- a: LFO/D-mod Invert** When Control Mode = LFO or D-mod, the controlled phase of either Voice 1 or 2 will be reversed. When the resonance pitch is set for Voice 1 (Resonance has a positive value), Voice 2 will resonate at a pitch an octave below (Resonance has a negative value).

26: Doppler

This effect simulates a “Doppler effect” (sound moving while changing its pitch) that sounds, for example, like an ambulance siren passing by. Mixing the effect sound with the dry sound will create a special chorus effect.



a	LFO Mode	Loop, 1-Shot	Switches LFO operation mode. <small>P.82</small>	D-mod
	Src	None...Tempo	When LFO Mode is set to 1-Shot, this modulation source triggers the LFO.	
b	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed	D-mod
	Src	None...Tempo	Modulation source of LFO speed	D-mod
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	
c	Pitch Depth	0...100	Pitch variation of the moving sound <small>P.83</small>	D-mod
	Src	None...Tempo	Modulation source of pitch variation	D-mod
	Amt	-100...+100	Modulation amount of pitch variation	
	Pan Depth	-100...+100	Panning of the moving sound <small>P.83</small>	D-mod
d	Src	None...Tempo	Modulation source of panning	D-mod
	Amt	-100...+100	Modulation amount of panning	
	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	
e	Src	None...Tempo	Modulation source of effect balance	D-mod
	Amt	-100...+100	Modulation amount of effect balance	

a: LFO Mode
a: Src

The LFO Mode parameter switches LFO operation mode. When Loop is selected, the Doppler effect will be created repeatedly.

When LFO Mode is set to 1-Shot, the Doppler effect is created only once when the modulation source specified in the Src field is turned on. At this time if you do not set the Src parameter, the Doppler effect will not be created, and no effect sound will be output.



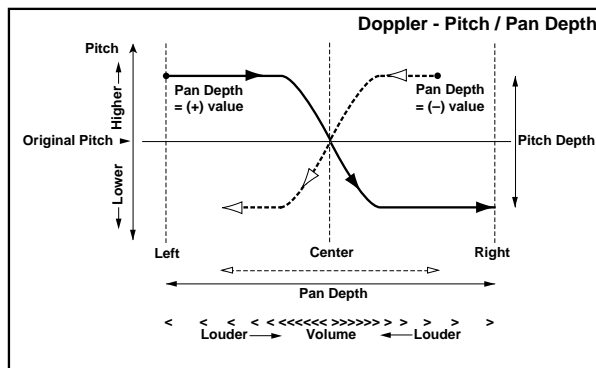
The effect is off when a value for the modulation source specified for the Src parameter is smaller than 64, and the effect is on when the value is 64 or higher. The Doppler effect is triggered when the value changes from 63 or smaller to 64 or higher.

c: Pitch Depth

With the Doppler effect, the pitch is raised when the sound approaches, and the pitch is lowered when the sound goes away. This parameter sets this pitch variation.

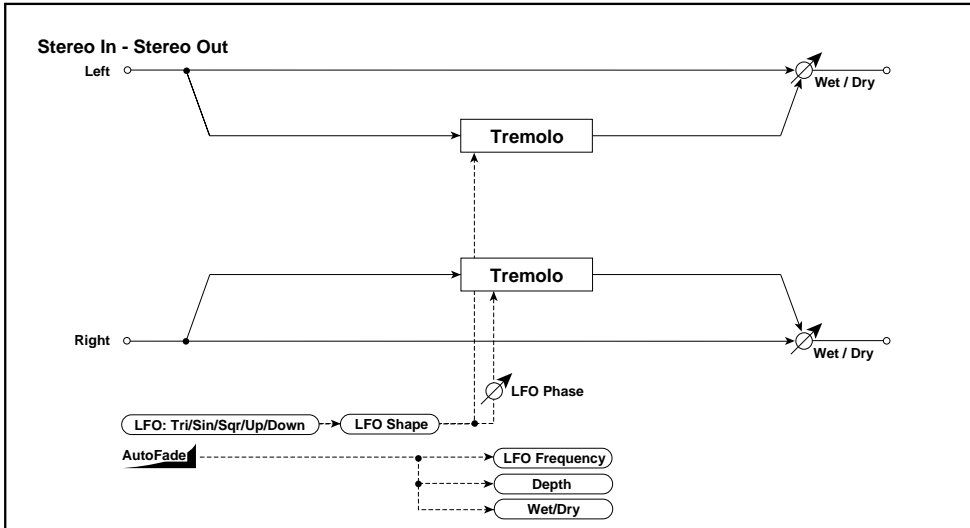
d: Pan Depth

This parameter sets the width of the stereo image of the effect sound. With larger values, the sound seems to come and go from much further away. With positive values, the sound moves from left to right; with negative values, the sound moves from right to left.



27: Stereo Tremolo

This is a stereo tremolo. You can create sound panning to left and right by offsetting the phase of the left and right LFOs from each other. The tremolo effect can fade-in by means of the AutoFade function.

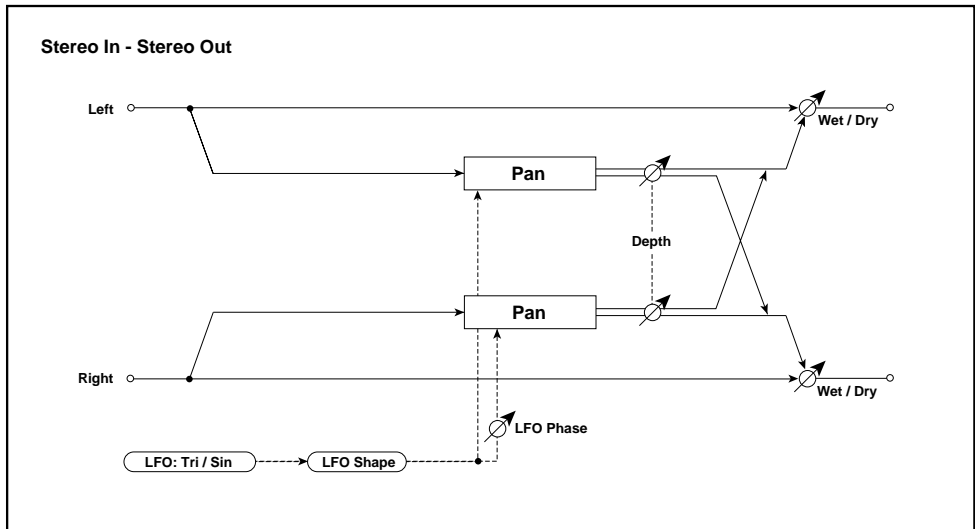


a	AUTOFADE Src	None...Tempo	Selects the modulation source that triggers AutoFade. ☞ P.59	
	Fade-In Rate	1...100	Sets the rate of fade-in.	
b	LFO Waveform	Triangle, Sine, Square, Up, Down	Selects LFO Waveform. ☞ P.42	
	LFO Shape	-100...+100	Determines how much the LFO waveform is changed. ☞ P.32	
c	LFO Phase [degree]	-180...+180	LFO phase difference between the left and right ☞ P.84	
d	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed	D-mod
	Src	None...AUTOFADE	Modulation source of LFO speed. AutoFade is available.	AutoFade
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	
e	Depth	0...100	Depth of LFO modulation	D-mod
	Src	None...AUTOFADE	Modulation source of the depth of modulation. AutoFade is available.	AutoFade
	Amt	-100...+100	Modulation amount of the depth of modulation	
f	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...AUTOFADE	Modulation source of effect balance. AutoFade is available.	AutoFade
	Amt	-100...+100	Modulation amount of effect balance	

c: LFO Phase [degree] This parameter determines the difference between the left and right LFO phases. A higher value will simulate the auto-pan effect in which the sound is panned between left and right.

28: Stereo Auto Pan

This Auto Pan effect pans sound between left and right. It is stereo, and shifting the left and right LFO phases from each other will simulate the sound of the left and right channels crossing over each other by turns, or chasing each other.



a	LFO Waveform	Triangle, Sine	Selects LFO Waveform.
b	LFO Shape	-100...+100	Determines how much the LFO waveform is changed. ☞ P.32
c	LFO Phase [degree]	-180...+180	LFO phase difference between the left and right ☞ P.85
d	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed
	Src	None...Tempo	Modulation source of LFO speed
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed
e	Depth	0...100	Depth of LFO modulation
	Src	None...Tempo	Modulation source of the depth of modulation
	Amt	-100...+100	Modulation amount of the depth of modulation
f	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

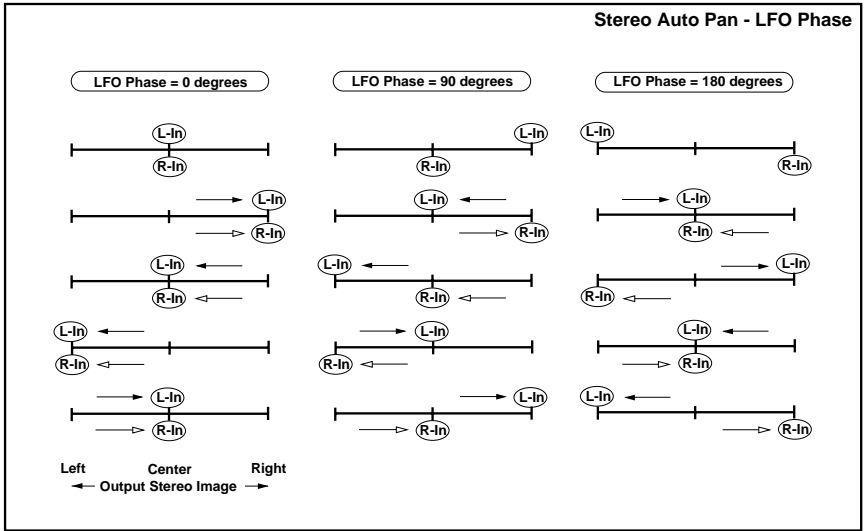
b: LFO Shape

You can change the panning curve by modifying the LFO waveform.

c: LFO Phase

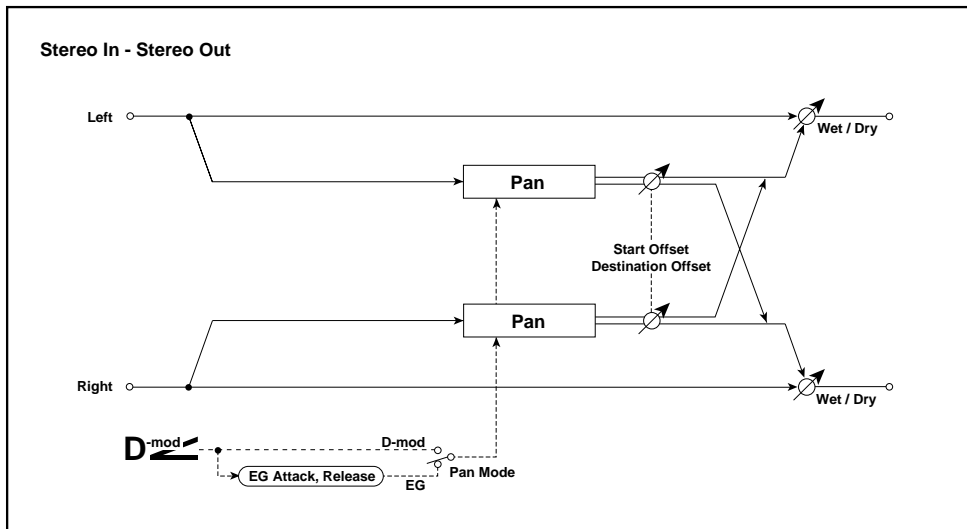
This parameter determines the difference in the left and right LFO phases. When you change the value gradually from "0", the sound from the left and right channels will chase each other around. If you set the parameter to +180 or -180, the sound from each channel will cross over each other.

You need to input different sounds to each channel in order for this parameter to be effective.



29: St. Envelope Pan (Stereo Envelope Pan)

This stereo Pan uses the envelope generator to pan sound to the left and right. You can also control the panning directly using a modulation source.



	Parameter	Range	Description
a	Pan Mode	EG, D-mod	Switches panning mode. P.87
	Src	None...Tempo	When Pan Mode = EG, this selects the modulation source that triggers the EG. When Pan Mode = D-mod, it selects the modulation source that controls the pan. P.87
b	EG Attack	1...100	Attack rate of Envelope Generator P.88
c	EG Release	1...100	Release rate of Envelope Generator. P.88
d	Lch Start Offset	L, 1...99, R	Initial panning value for the left channel P.88
	Destination Offset	L, 1...99, R	Target panning value for the left channel
e	Rch Start Offset	L, 1...99, R	Initial panning value for the right channel P.88
	Destination Offset	L, 1...99, R	Target panning value for the right channel
f	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

a: Pan Mode

This parameter selects whether the panning effect is controlled by the Envelope Generator, or directly by the modulation source.

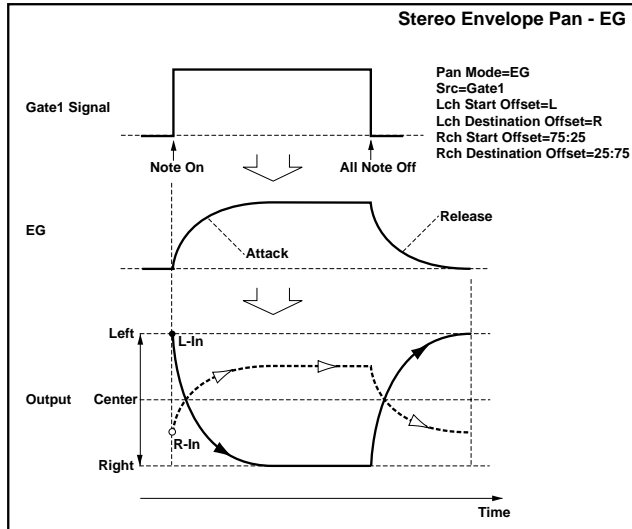
a: Src

With Pan Mode = EG, this parameter specifies the modulation source that starts the envelope. This envelope generator is included in the Stereo Envelope Pan, and is not related to the Oscillator EG, Filter EG, or Amp EG. If you select, for example, Gate, the envelope generator will start when a note-on message is received.

MIDI The effect is off when a value for the modulation source specified for the Src parameter is smaller than 64, and the effect is on when the value is 64 or higher. The Envelope Generator is triggered when the value changes from 63 or smaller to 64 or higher.

With Pan Mode = D-mod, you can control panning directly using the modulation source specified in the Src field.

- b: EG Attack
- c: EG Release



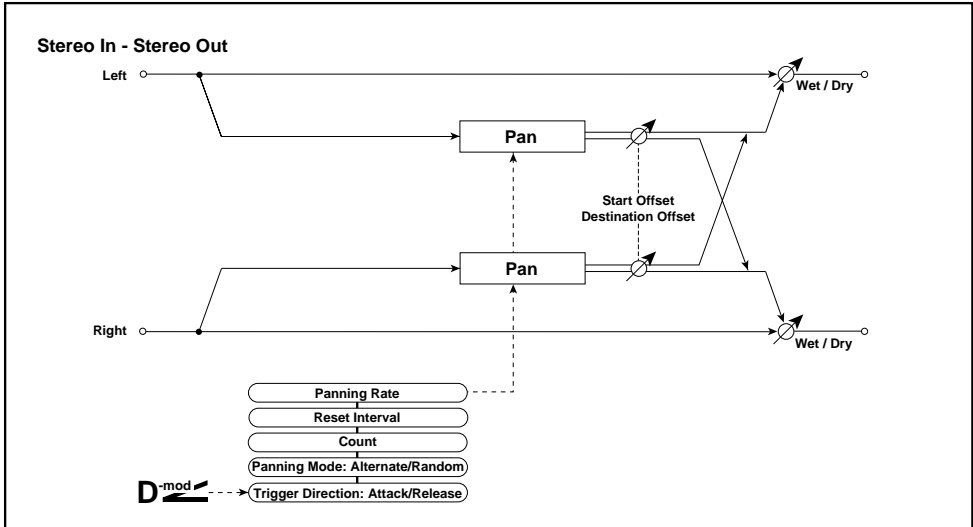
- d: Lch Start Offset
- d: Destination Offset
- e: Rch Start Offset
- e: Destination Offset

When Pan Mode = EG, the Start Offset parameter sets the panning at the start of the Envelope Generator. Destination Offset sets the panning for the sustain period.

When Pan Mode = D-mod, Start Offset specifies the pan setting when the modulation source value is 0. Destination Offset sets the pan setting when the modulation source value is maximum.

30: Stereo Dyna Pan

This effect counts the number of times the modulation source is turned on/off, and switches the panning mode. You can create a panning effect that changes according to phrases you play on the keyboard. It is very effective for solos. You can also route this effect after a delay effect so that the delay sound will be panned gradually.



a	Trigger Source	None...Tempo	Selects the modulation source for counting on/off times. ☞ P.89
b	Trigger Direction	Attack, Release	Determines whether the on or off time is counted. ☞ P.89
c	Panning Mode	Alternate, Random	Switches between Alternate and Random panning mode. ☞ P.90
d	Count	1...16	Determines the number of times the on/off operation is counted until panning mode is changed. ☞ P.89
e	Reset Interval	0...100	Time taken to reset panning and on/off counting. ☞ P.90
f	Panning Rate	1...100	Sets the panning rate. ☞ P.90
	Src	None...Tempo	Modulation source of panning rate
	Amt	-100...+100	Modulation amount of panning rate
g	Lch Start Offset	L, 1...99, R	Initial panning value for the left channel. ☞ P.90
	Destination Offset	L, 1...99, R	Target panning value for the left channel
h	Rch Start Offset	L, 1...99, R	Initial panning value for the right channel. ☞ P.90
	Destination Offset	L, 1...99, R	Target panning value for the right channel
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

a: Trigger Source
b: Trigger Direction
d: Count

When Trigger Direction = Attack, the effect counts how many times the modulation source (specified in the Trigger Source field) is turned on. When Trigger Direction = Release, the effect counts how many times the source is turned off.

If the number of count exceeds the "Count" value, panning will be switched. If Gate is selected as the modulation source, you can set panning according to phrases you play on the keyboard.

size2

D-mod

D-mod

D-mod

MIDI The effect is off when the value for the modulation source specified for the Trigger Source parameter is smaller than 64, and the effect is on when the value is 64 or higher. When Trigger Direction is set to Attack, the number of times this value changes from 63 or smaller to 64 or higher (Off→On) will be counted. When Trigger is set to Release, the number of times this value changes from 64 or higher to 63 or smaller (On→Off) will be counted.

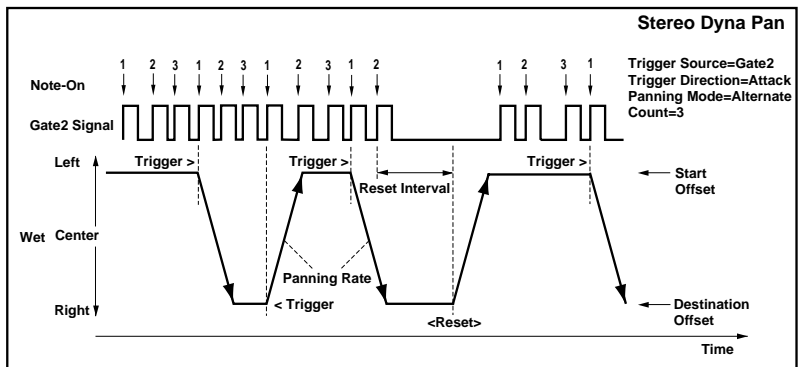
c: Panning Mode
g: Lch Start Offset
g: Destination Offset
h: Rch Start Offset
h: Destination Offset

When Panning Mode = Alternate, the panning setting will change from the Start Offset value to the Destination Offset value, then to the Start Offset value again.

When Panning Mode = Random, the panning setting will change randomly between the Start Offset value and Destination Offset value.

An example of setting to pan every third Note On message:

a: Trigger Source = Gate2
b: Trigger Direction = Attack
c: Panning Mode = Alternate
d: Count = 3



e: Reset Interval

If the modulation source (specified in the Trigger Source field) remains off for a while, the number of counts will be reset and the panning setting will go back to the Start Offset value. (However, when Panning Mode = Random, it will not go back to the Start Offset value.) The Reset Interval parameter sets this interval. With a larger value, the interval will become longer. If this value is too small, very slow panning will be reset before it is switched. In this case, set this parameter to a larger value.

If you set this interval to the same period of time as between the phrases, panning and counting will start from the beginning at the start of the phrase.

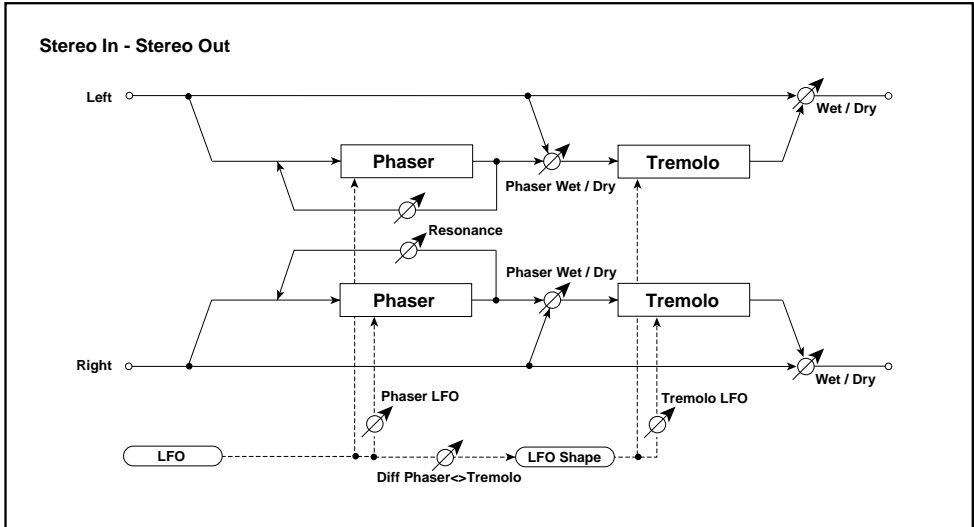
f: Panning Rate

This parameter determines how fast panning is switched. A smaller value will cause panning to move more slowly.

If you wish to combine a delay effect to pan the delay sound, you should adjust this parameter so that it will match the delay time and feedback.

31: Phaser+Tremolo

This effect links a stereo phaser LFO and a tremolo LFO. Swelling created by the phaser and shimmering created by the tremolo are synchronized, making a pleasant modulation. It works well with electric piano sounds.



a	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed
	Src	None...Tempo	Modulation source of LFO speed
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed
b	Phaser LFO [degree]	-180...+180	The difference between the left and right phases of the phaser. P.92
c	Phaser Manual	0...100	Sets the frequency to which the effect is applied.
d	Phaser Depth	0...100	Depth of Phaser LFO modulation
	Src	None...Tempo	Modulation source of the phaser modulation depth
	Amt	-100...+100	Modulation amount of the phaser modulation depth
e	Phaser Resonance	-100...+100	Sets the resonance amount.
f	Phaser Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the phaser effect and dry sounds. P.25, 92
g	Tremolo LFO [degree]	-180...+180	The difference between the left and right phases of the tremolo. P.92
	Diff Tremolo<->Phaser	-180...+180	The difference between Tremolo LFO phase and Phaser LFO phase.
h	Tremolo LFO Shape	-100...+100	Sets how much the Tremolo LFO shape is modulated. P.32
i	Tremolo Depth	0...100	Depth of Tremolo LFO modulation
	Src	None...Tempo	Modulation source of the tremolo modulation depth
	Amt	-100...+100	Modulation amount of the tremolo modulation depth
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds. P.92
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

size2

D-mod

D-mod

D-mod

D-mod

b: Phaser LFO [degree] The Phaser LFO and Tremolo LFO determine the right and left phase difference
g: Tremolo LFO [degree] respectively.

g: Diff Tremolo<>Phaser Phaser LFO is used to control the spread of the phaser effect, and Tremolo LFO is used to control the tremolo effect that is shimmering between left and right.

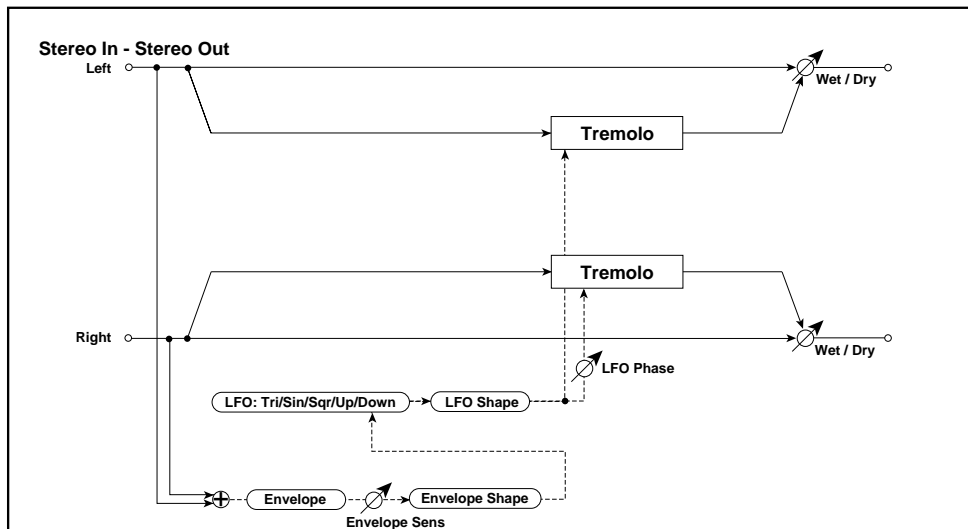
The Diff Tremolo<>Phaser sets the phase difference of the Phaser and Tremolo. Controlling the relationship between the Phaser and Tremolo will allow you to adjust the feel of sound movement and rotation.

f: Phaser Wet/Dry Phaser Wet/Dry sets the balance between the phaser output and the dry sound.
j: Wet/Dry

On the other hand, Wet/Dry sets the balance between the final output of Phaser plus Tremolo, and the dry sound.

32: Shimmer

This effect controls a stereo tremolo based on the input signal level. You can create an effect in which the shimmering becomes larger and fades away as the volume level becomes lower.



a	Envelope Sens	0...100	Sets the sensitivity of the input signal envelope.
b	Envelope Shape	-100...+100	Sets the envelope curve of the input signal.
c	LFO Waveform	Triangle, Sine, Square, Up, Down	Selects LFO waveform.
d	LFO Shape	-100...+100	Determines how much the LFO waveform shape is modified. P.32
e	LFO Phase [degree]	-180...+180	The difference between the left and right LFO phase. P.84
f	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed P.93
	Envelope Amount [Hz]	-20.00...+20.00Hz	Changes LFO speed according to the input signal level
g	Depth	0...100	Depth of LFO modulation P.93
	Envelope Amount	-100...+100	Changes the modulation depth according to the input signal level
h	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

f: LFO Frequency [Hz] These parameters are used to set the modulation applied based on the envelope
f: Envelope Amount [Hz] (input signal level).

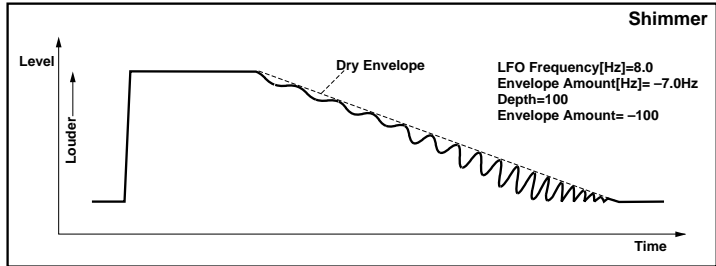
g: Depth

g: Envelope Amount

LFO speed is the LFO Frequency added by the Envelope Amount multiplied by the input signal level. The Depth value is also obtained by adding the Depth value to the Envelope Amount multiplied by the input signal level.

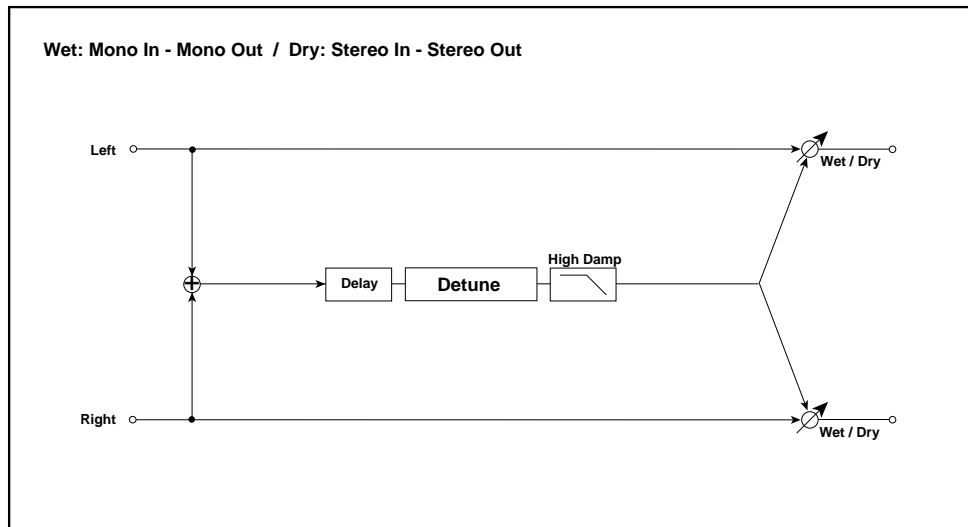
Setting example: The maximum input level will produce 1.0Hz, Depth = 0. An input level of "0" will produce 8.0Hz, Depth = 100:

- f: LFO Frequency [Hz] = 8.0
- f: Envelope Amount [Hz] = -7.0
- g: Depth = 100
- g: Envelope Amount = -100



33: Detune

Using this effect, you can obtain a detune effect that offsets the pitch of the effect sound slightly from the pitch of the input signal. Compared to the chorus effect, a more natural sound thickness will be created.



a	Pitch Shift [cent]	-100...+100cent	The difference between the input signal pitch and effect sound pitch.
	Src	None...Tempo	Modulation source of the pitch shift
	Amt	-100...+100cent	Modulation amount of the pitch shift
b	Delay Time [msec]	0...1000msec	Sets the time delay from the input signal.
c	High Damp [%]	0...100%	Damping amount in the high range
d	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

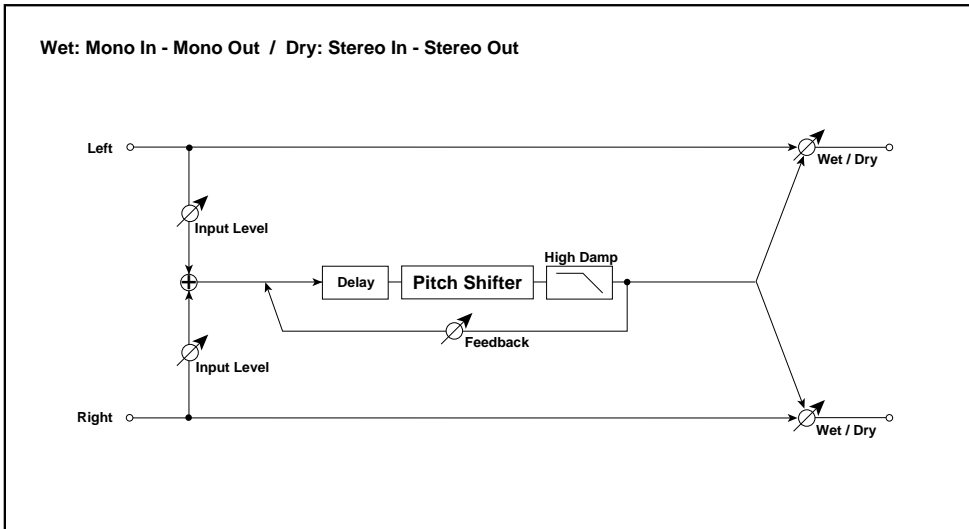
size2

D-mod

D-mod

34: Pitch Shifter

This effect changes the pitch of the input signal. You can select from three types: Fast (quick response), Medium, and Slow (preserves tonal quality). You can also create an effect in which the pitch is gradually raised (or dropped) using the delay with feedback.



a	Input Level	0...100	Sets the input level to the effect.	D-mod
	Src	None...Tempo	Selects the modulation source of input level.	
	Amt	-100...+100	Modulation amount of input level	
b	Mode	Slow, Medium, Fast	Switches Pitch Shifter mode. P.96	
c	Pitch Shift [1/2tone]	-24...+24	Sets the pitch shift amount by steps of a semitone. P.97	D-mod
	Src	None...Tempo	Modulation source of pitch shift amount	
	Amt	-24...+24	Modulation amount of pitch shift amount	
d	Fine [cent]	-100...+100cent	Sets the pitch shift amount by steps of a cent. P.97	D-mod
	Amt	-100...+100vent	Modulation amount of pitch shift amount	
e	Delay Time [msec]	0...1000msec	Sets the delay time from the input signal. P.97	
f	Feedback	-100...+100	Sets the feedback amount. P.97	
g	High Damp [%]	0...100%	Damping amount in the high range	
h	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

b: Mode

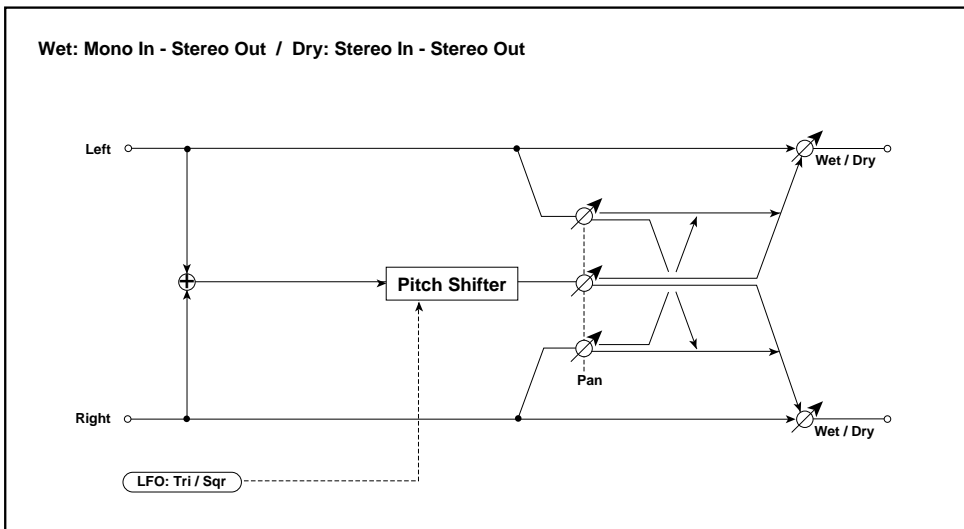
This parameter switches the pitch shifter operating mode. With Slow, tonal quality will not be changed too much. With Fast, the effect becomes a Pitch Shifter that has a quick response, but may change the tone. Medium is in between these two.

If you do not need to set too much pitch shift amount, set this parameter to "Fast." If you wish to change the pitch significantly, use "Slow."

c: Pitch Shift [1/2tone]	The amount of pitch shift will use the value of the Pitch Shift plus the Fine value.
c: Src	The amount of modulation will use the c: Amt value plus d: Amt.
c: Amt	
d: Fine [cent]	Modulation Source is used both for Pitch Shift and Fine.
d: Amt	
e: Delay Time [msec]	Sets the delay time and feedback amount. The sound with feedback will be input
f: Feedback	to the Pitch Shifter again, causing the pitch to be raised (or lowered) gradually.

35: Pitch Shift Mod. (Pitch Shift Modulation)

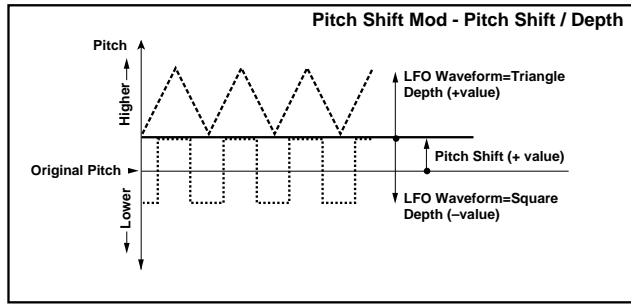
This effect modulates the detuned pitch shift amount using an LFO, adding a clear spread and width to the sound by panning the effect sound and dry sound to the left and right. This is especially effective when the effect sound and dry sound output from stereo speakers are mixed.



a	Pitch Shift [cent]	-100...+100cent	Pitch difference from the input signal <small>☞</small> P.98	
b	LFO Waveform	Triangle, Square	Selects LFO waveform.	
c	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed	D-mod
	Src	None...Tempo	Modulation source of LFO speed	
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	
d	Depth	-100...+100	LFO modulation depth for pitch shift amount <small>☞</small> P.98	D-mod
	Src	None...Tempo	Modulation source of the depth of modulation	
	Amt	-100...+100	Modulation amount of the depth of modulation	
e	Pan	L, 1:99...99:1, R	Pans the effect sound and dry sound separately. <small>☞</small> P.99	
f	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds. <small>☞</small> P.99	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

a: Pitch Shift [cent]
d: Depth

These parameters set the amount of pitch shift and amount of modulation by means of the LFO.



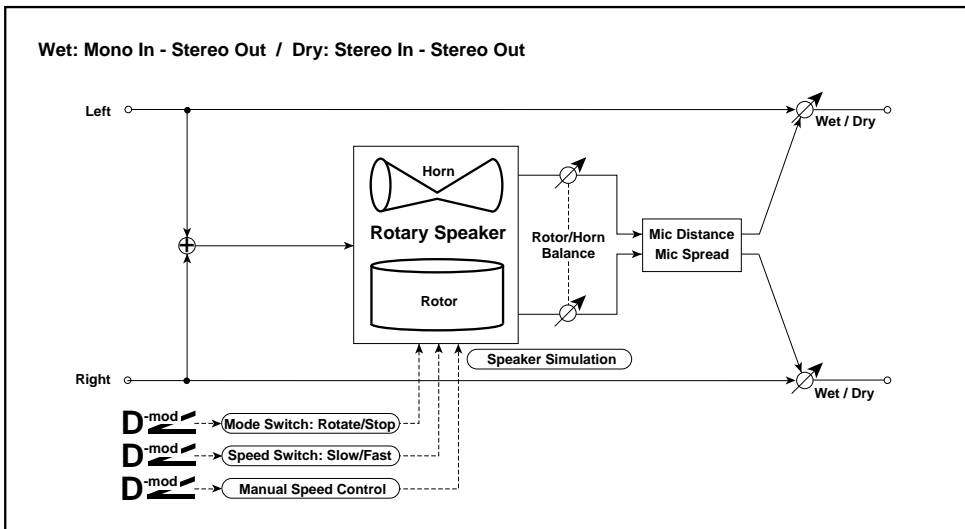
e: Pan

f: Wet/Dry

The Pan parameter pans the effect sound and dry sound to the left and right. With "L," the effect sound is panned left, and the dry sound is panned right. With a Wet/Dry = Wet setting, the effect and dry sound will be output in a proportion of 1:1.

36: Rotary Speaker

This effect simulates a rotary speaker, and obtains a more realistic sound by simulating the rotor in the low range and the horn in the high range separately. The effect also simulates the microphone settings.



a	Mode Switch	Rotate, Stop	Switches between speaker rotation and stop.	D-mod
	Src	None...Tempo	Modulation source that toggles between rotation and stop	
	Sw	Momentary, Toggle	Selects switching mode of the modulation source that toggles between rotation and stop. ☞ P.101	
b	Speed Switch	Slow, Fast	Switches the speaker rotation speed between slow and fast.	D-mod
	Src	None...Tempo	Modulation source that toggles between slow and fast	
	Sw	Momentary, Toggle	Selects switching mode of the modulation source that toggles between slow and fast. ☞ P.43	
c	Manual Speed Control	None...Tempo	Sets the modulation source in case the rotation speed is changed directly. ☞ P.101	D-mod
d	Rotor Acceleration	0...100	How quickly the rotor rotation speed in the low range is switched. ☞ P.43	D-mod
	Rotor Ratio	Stop, 0.50...2.00	Adjusts the (low-range side) rotor rotation speed. Standard value is 1.0. Selecting "Stop" will stop the rotation.	
e	Horn Acceleration	0...100	How quickly the horn rotation speed in the high range is switched. ☞ P.43	D-mod
	Horn Ratio	Stop, 0.50...2.00	Adjusts the (high-range side) horn rotation speed. Standard value is 1.0. Selecting "Stop" will stop the rotation.	
f	Mic Distance	0...50	Distance between the microphone and rotary speaker ☞ P.101	D-mod
g	Mic Spread	0...50	Angle of left and right microphones☞P.101	
h	Rotor/Horn Balance	Rotor, 1...99, Horn	Sets the volume level balance between the low-range rotor and high-range horn.	D-mod
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

a: Sw

This parameter sets how the modulation source switches between rotation and stop.

When Sw = Momentary, the speaker is rotating. It stops only when you hold the pedal or keep the joystick in position.

MIDI When the value for the modulation source is 63 or smaller, the speaker will rotate. When the value is 64 or higher, the speaker will stop.

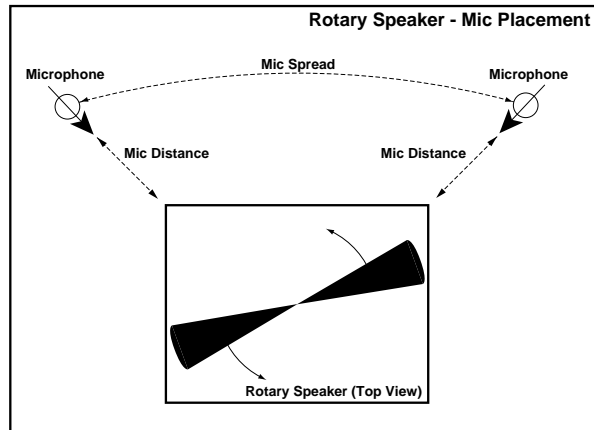
When Sw = Toggle, the speaker rotates or stops alternately each time you press the pedal or operate the joystick.

MIDI Each time when the value for the modulation source exceeds 64, the speaker rotates or stops alternately.

c: **Manual Speed Control** If you wish to control the speaker rotation speed manually, not switching between Slow and Fast, select the modulation source in the Manual Speed Control field. If manual control is not necessary, set this field to "None."

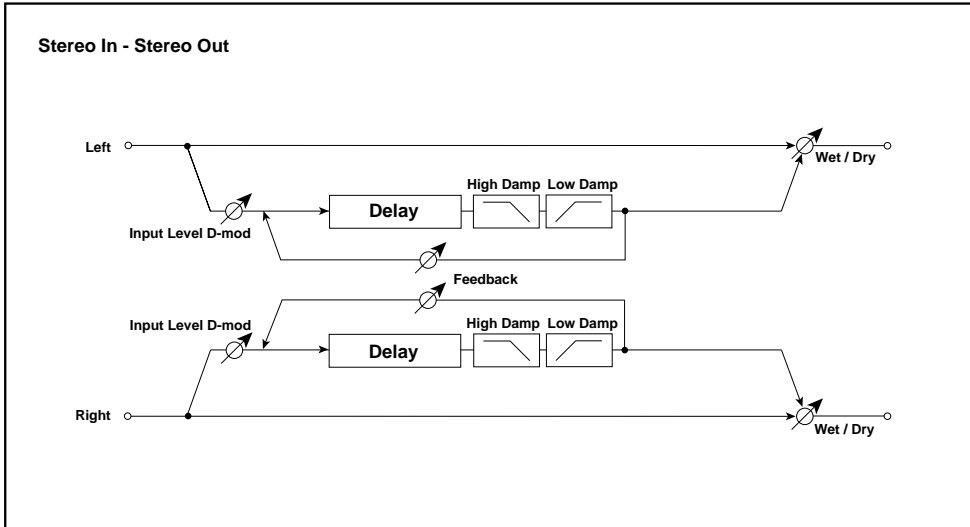
f: Mic Distance
g: Mic Spread

This is a simulation of stereo microphone settings.



37: Dual Delay

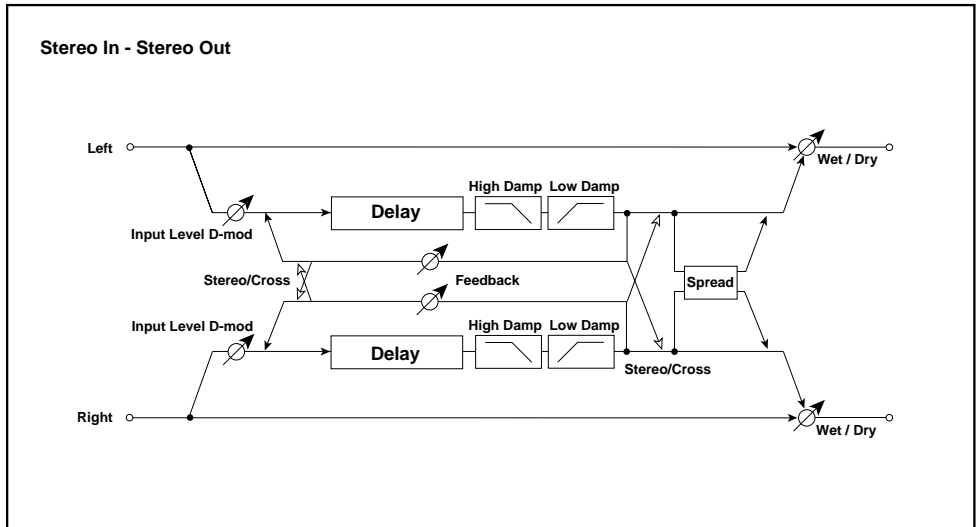
This 2-channel delay allows you to set the delay time for the left and right channels independently.



a	L Delay Time [msec]	0.0...680.0msec	Sets the delay time for the left channel.	
b	L Feedback	-100...+100	Sets the feedback amount for the left channel.	
c	L High Damp [%]	0...100%	Damping amount in the high range for the left channel ☞ P.44	
	L Low Damp [%]	0...100%	Damping amount in the low range for the left channel	
d	R Delay Time [msec]	0.0...680.0msec	Sets the delay time for the right channel.	
e	R Feedback	-100...+100	Sets the feedback amount for the right channel.	
f	R High Damp [%]	0...100%	Damping amount in the high range for the right channel ☞ P.44	
	R Low Damp [%]	0...100%	Damping amount in the low range for the right channel	
g	Input Level D-mod: Src	None...Tempo	Modulation source of the left and right input level ☞ P.44	D-mod
	Amt L	-100...+100	Modulation amount of the input level for the left channel	
h	Amt R	-100...+100	Modulation amount of the input level for the right channel ☞ P.44	
i	L Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds for the left channel.	D-mod
	Src	None...Tempo	Modulation source of left/right effect balance	
	Amt	-100...+100	Modulation amount of effect balance for the left channel	
j	R Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds for the right channel.	D-mod
	Amt	-100...+100	Modulation amount of effect balance for the right channel	

38: Stereo Delay

This is a stereo delay, and can be used as a cross-feedback delay effect in which the delay sounds cross over between the left and right by changing the feedback routing.



a	Stereo/Cross	Stereo, Cross	Switches between stereo delay and cross-feedback delay.
b	L Delay Time [msec]	0.0...680.0msec	Sets the delay time for the left channel.
c	R Delay Time [msec]	0.0...680.0msec	Sets the delay time for the right channel.
d	Feedback	-100...+100	Sets the feedback amount.
	Src	None...Tempo	Modulation source of feedback amount
	Amt	-100...+100	Modulation amount of feedback amount
e	High Damp [%]	0...100%	Damping amount in the high range P.44
f	Low Damp [%]	0...100%	Damping amount in the low range P.44
g	Input Level D-mod: Src	None...Tempo	Modulation source of the input level P.44
	Amt	-100...+100	Modulation amount of the input level
h	Spread	-100...+100	Sets the width of the stereo image of the effect sound. P.65
	Src	None...Tempo	Modulation source of the effect sound's stereo image width
	Amt	-100...+100	Modulation amount of the effect sound's stereo image width
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

size2

D-mod

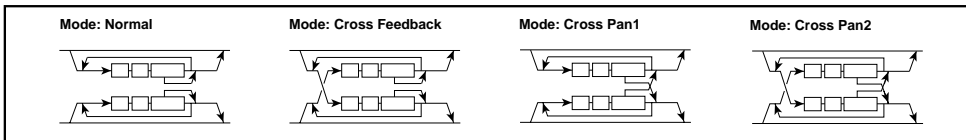
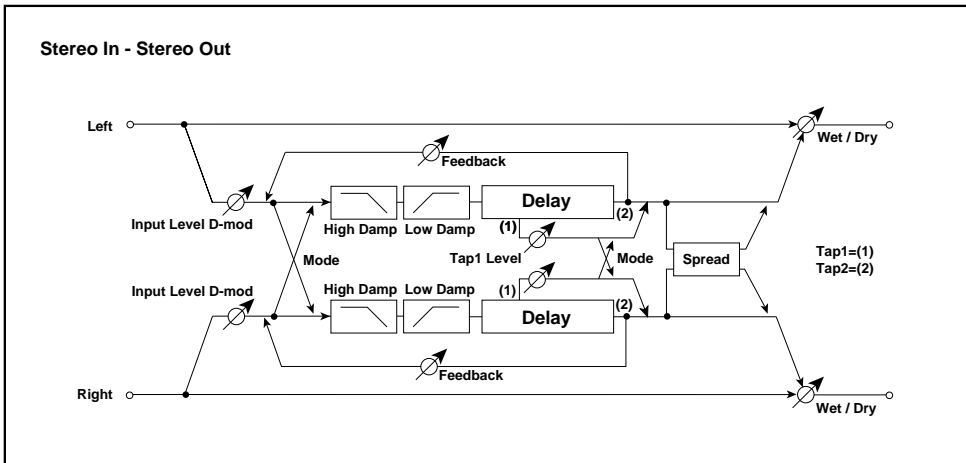
D-mod

D-mod

D-mod

39: St. Multitap Delay (Stereo Multitap Delay)

The left and right Multitap Delays have two taps respectively. Changing the routing of feedback and tap output allows you to create various patterns of complex effect sounds.



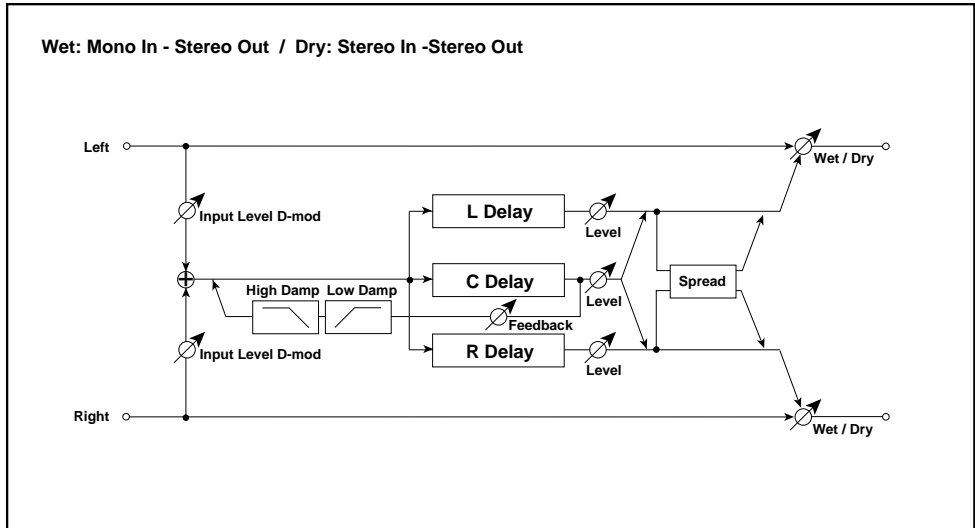
a	Mode	Normal, Cross Feedback, Cross Pan1, Cross Pan2	Switches the left and right delay routing. P.104
b	Tap1 Time [msec]	0.0...680.0msec	Sets the Tap1 delay time.
c	Tap2 Time [msec]	0.0...680.0msec	Sets the Tap2 delay time.
d	Tap1 Level	0...100	Tap1 output level P.45
e	Feedback	-100...+100	Sets the Tap2 feedback amount.
	Src	None...Tempo	Modulation source of the Tap2 feedback amount
	Amt	-100...+100	Modulation amount of the Tap2 feedback amount
f	High Damp [%]	0...100%	Damping amount in the high range P.44
g	Low Damp [%]	0...100%	Damping amount in the low range P.44
h	Input Level D-mod: Src	None...Tempo	Modulation source of the input level P.44
	Amt	-100...+100	Modulation amount of the input level
i	Spread	-100...+100	Sets the width of the stereo image of the effect sound. P.65
	Src	None...Tempo	Modulation source of the effect sound's stereo image width
	Amt	-100...+100	Modulation amount of the effect sound's stereo image width
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

a: Mode

You can change how the left and right delay signals are panned by modifying the routing of the left and right delay as shown in the figure above. You need to input different sounds to each channel in order for this parameter to be effective.

40: L/C/R Delay

This multitap delay outputs three Tap signals to the left, right, and center respectively. You can also adjust the left and right spread of the delay sound.



a	L Delay Time [msec]	0...1360msec	Sets the TapL delay time.	
	Level	0...50	TapL output level	
b	C Delay Time [msec]	0...1360msec	Sets the TapC delay time.	
	Level	0...50	TapC output level	
c	R Delay Time [msec]	0...1360msec	Sets the TapR delay time.	
	Level	0...50	TapR output level	
d	Feedback	-100...+100	Sets the TapC feedback amount.	D-mod
	Src	None...Tempo	Modulation source of the TapC feedback amount	
	Amt	-100...+100	Modulation amount of the TapC feedback amount	
e	High Damp [%]	0...100%	Damping amount in the high range P.44	
f	Low Damp [%]	0...100%	Damping amount in the low range P.44	
g	Input Level D-mod: Src	None...Tempo	Modulation source of the input level P.44	D-mod
	Amt	-100...+100	Modulation amount of the input level	
h	Spread	0...50	Sets the width of the stereo image of the effect sound. P.65	D-mod
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

size2

D-mod

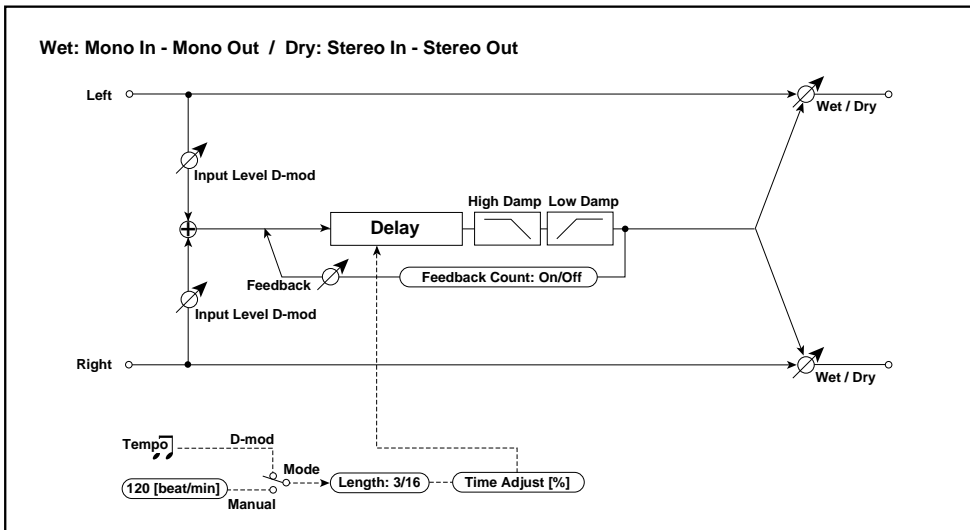
D-mod

D-mod

41: Tempo Delay

This delay allows you to match the delay time with a song's tempo. For example, you can apply the delay effect synchronized to the sequencer, or you can input the tempo prior to a real-time performance so that the delay effect will match the song tempo. You can set the delay time in terms of a musical duration, rather than as a value of time.

You can also specify any number of times for feedback.

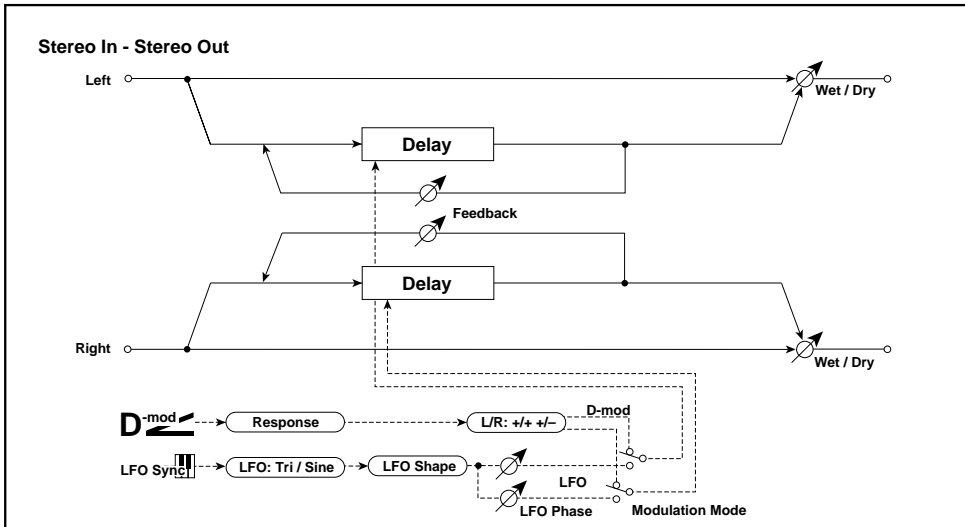


a	Mode	Manual, D-mod	Switches between the specified tempo and clock sync. P.107	
	Src (fixed)	Tempo	Source when Mode = D-mod (fixed to Tempo)	
b	Tempo [beat/min]	30...250 beat/min	Tempo when Mode = Manual P.107	
	Length	1...96 / 1...96	Sets the delay time. Delay time = Length x Whole Note. P.107	
c	Time Adjust [%]	-10.00...+10.00%	Fine adjustment of delay time	
	Delay 1362ms	OVER!!	Delay time upper limit/error indication P.107	
d	Feedback Count	Off, On	Selects whether the number of feedback times is counted or not. P.107	
	Src (fixed)	Gate1	Source that triggers the counting of the feedback time (fixed to Gate1).	
e	Count [times]	0...96	Number of feedback times P.107	
f	Feedback	-100...+100	Sets the feedback amount.	D-mod
	Src	None...Tempo	Modulation source of feedback amount	
	Amt	-100...+100	Modulation amount of feedback amount	
g	High Damp [%]	0...100%	Damping amount in the high range P.44	
h	Low Damp [%]	0...100%	Damping amount in the low range P.44	
i	Input Level D-mod: Src	None...Tempo	Modulation source of the input level P.44	D-mod
	Amt	-100...+100	Modulation amount of the input level	
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

- a: Mode**
a: Src (fixed)
- This parameter selects the delay operating mode. When Manual is selected, the value set in e: Tempo will be used. When D-mod is selected, the delay will synchronize to the internal MIDI clock. This is useful for performances using a sequencer.
- When D-mod is selected, the source is fixed to Tempo and cannot be changed.
- b: Tempo [beat/min]**
- This parameter sets the tempo when Manual is selected for Mode.
- b: Length**
c: Delay 1362ms
- This parameter sets the delay time. The delay time is obtained by multiplying the length of a whole note by the value of Length.
- For example, when Length is set to 1/4, the length of the delay will be one quarter note.
- The maximum delay time is 1,362msec. If you attempt to set a higher value, the display will show "OVER!!" Try to set the value of Tempo and Length so that this error message will not appear.
- d: Feedback Count**
d: Src (fixed)
e: Count [times]
- The Feedback Count parameter determines whether or not the number of feedback times will be counted or not.
- With Feedback Count = On, the delay will feed back the signal for the times specified in the Count parameter, and disappear.
- The source that triggers the start of feedback counting is fixed to Gate1. You cannot select another source.

42: St. Modulation Delay

This stereo delay uses an LFO to sweep the delay time. The pitch also varies. You will obtain a delay sound with swell and shimmering. You can also control the delay time using a modulation source.



a	Modulation Mode	LFO, D-mod	Switches between LFO modulation control and modulation source control.	
b	D-mod Modulation	L/R: +/+ , L/R: +/-	Reversed L/R control by modulation source P.109	D-mod
	Src	None...Tempo	Modulation source that controls delay time	
	Response	0...30	Rate of response to the modulation source	
c	LFO Waveform	Triangle, Sine	Selects LFO waveform.	
	LFO Shape	-100...+100	Determines how much the LFO waveform is modified. P.32	
d	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed	
e	LFO Sync	Off, On	LFO reset off/on P.109	D-mod
	Src	None...Tempo	Modulation source that resets the LFO	
f	L LFO Phase [degree]	-180...+180	Phase obtained when the left LFO is reset P.109	
	R LFO Phase [degree]	-180...+180	Phase obtained when the right LFO is reset	
g	L Depth	0...200	Depth of the left LFO modulation	
	R Depth	0...200	Depth of the right LFO modulation	
h	L Delay Time [msec]	0.0...500.0	Left delay time	
	R Delay Time [msec]	0.0...500.0	Right delay time	
i	L Feedback	-100...+100	Feedback amount of left delay	
	R Feedback	-100...+100	Feedback amount of right delay	
j	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. P.25	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

b: D-mod Modulation When the modulation source is used for control, this parameter reverses the left and right modulation direction.

e: LFO Sync

The LFO can be reset via a modulation source.

e: Src

f: L LFO Phase [degree]

The Src parameter sets the modulation source that resets the LFO. For example, you can assign Gate as a modulation source so that the sweep always starts from the specified point.

f: R LFO Phase [degree]

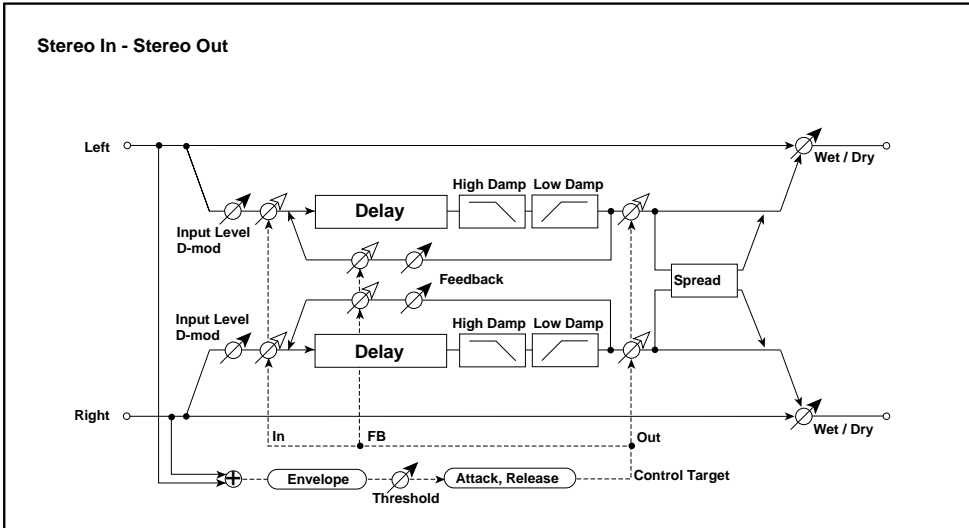
L LFO Phase and R LFO Phase set the phase obtained when the left and right LFOs are reset. In this way, you can create changes in sweep pitch for the left and right channels individually.



The effect is off when a value of the modulation source specified in the Src parameter is 63 or smaller, and the effect is on when the value is 64 or higher. The LFO is triggered and reset to the L LFO Phase and R LFO Phase settings when the value changes from 63 or smaller to 64 or higher.

43: St. Dynamic Delay (Stereo Dynamic Delay)

This stereo delay controls the level of delay according to the input signal level. You can use this as a ducking delay that applies delay to the sound only when you play keys at a high velocity or only when the volume level is low.



a	Control Target	None, In, Out, FB	Selects from no control, input, output, and feedback. ☞P.110
	Polarity	+, -	Reverses level control ☞P.110
b	Threshold	0...100	Sets the level to which the effect is applied.☞P.110
c	Attack	1...100	Attack time of level control☞P.110
d	Release	1...100	Release time of level control ☞P.110
e	L Delay Time [msec]	0.0...680.0msec	Sets the delay time for the left channel.
f	R Delay Time [msec]	0.0...680.0msec	Sets the delay time for the right channel.
g	Feedback	-100...+100	Sets the feedback amount.
h	High Damp [%]	0...100%	Damping amount in the high range ☞P.44
	Low Damp [%]	0...100%	Damping amount in the low range
i	Spread	-100...+100	Sets the width of the stereo image of the effect sound. ☞P.65
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance



a: Control Target

In this field, you can select from no level control, control of delay input level, output (effect balance), and feedback amount.

a: Polarity

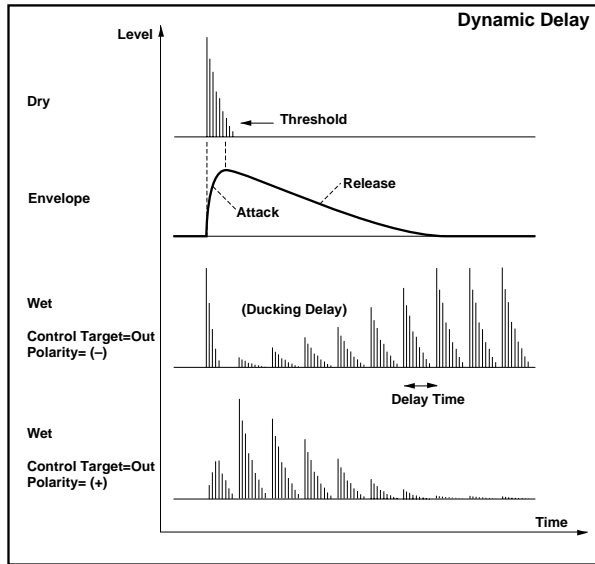
When Polarity is positive, delay is applied when the input signal level exceeds the Threshold value. When Polarity is negative, delay is applied when the input signal level is lower than the Threshold value.

b: Threshold

c: Attack

d: Release

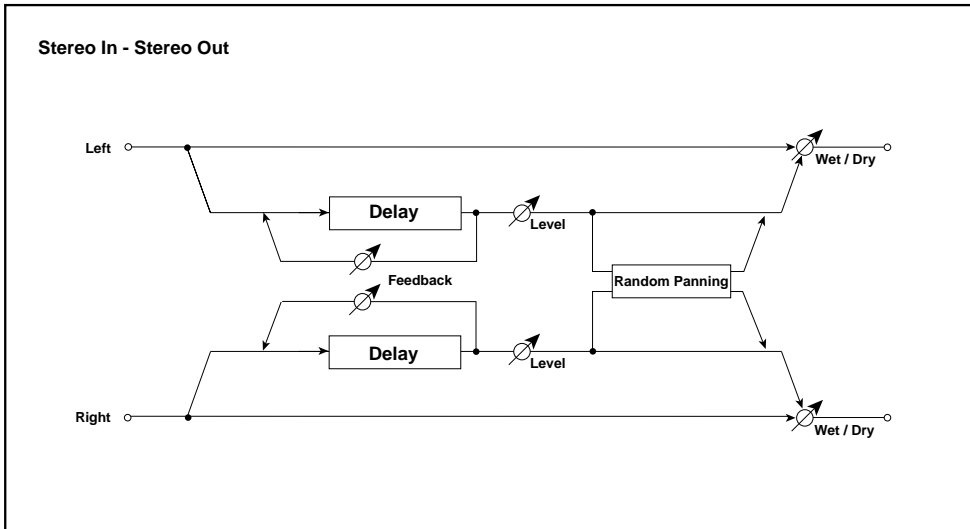
The Attack and Release parameters specify attack time and release time of delay level control.



size2

44: Random Panning Dly (Random Panning Delay)

When this stereo delay is applied, the delay sound will jump around randomly, creating a unique, mysterious delay effect.



a	L Delay Time [msec]	0.0...680.0msec	Sets the delay time for the left channel.
b	R Delay Time [msec]	0.0...680.0msec	Sets the delay time for the right channel.
c	L Feedback	-100...+100	Sets the feedback amount for the left channel.
d	R Feedback	-100...+100	Sets the feedback amount for the right channel.
e	L Panning Speed [Hz]	0.02...20.00Hz	Speed at which the stereo image of the left channel changes P.112
f	R Panning Speed [Hz]	0.02...20.00Hz	Speed at which the stereo image of the right channel changes P.112
g	Panning Spread	0...100	Sets the width of the stereo image of the delay sound. P.112
h	L Delay Level	0...100	Output level of the left channel delay sound
i	R Delay Level	0...100	Output level of the right channel delay sound
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

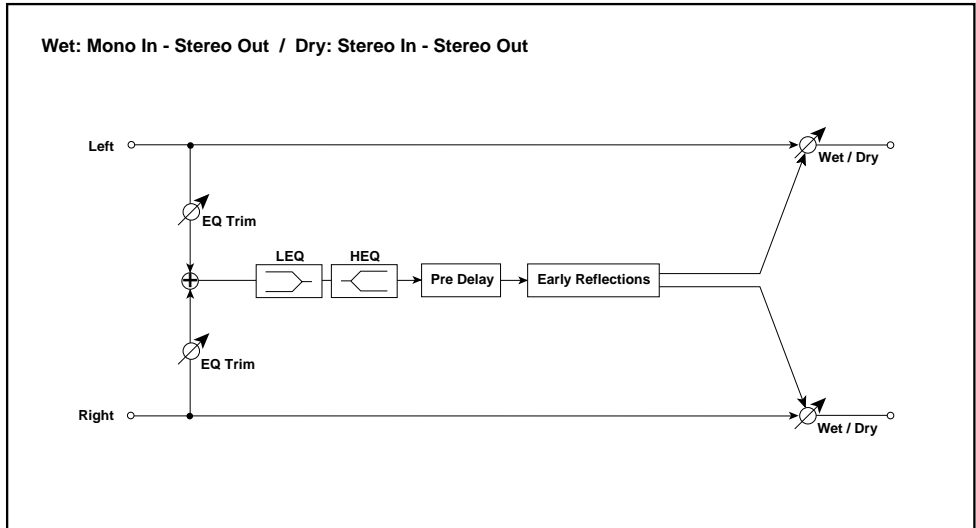


e: L Panning Speed [Hz] These parameters set the speed at which the stereo image of the delay sound changes randomly. It is effective to set these values according to the delay time.

g: Panning Spread This parameter sets the panning width of the delay sound.

45: Early Reflections

This is a stereo early reflection effect. Compared to the Early Reflections of size 1, this effect has twice the number of reflections, thus creating a smooth and dense sound.



a	Type	Sharp, Loose, Modulated, Reverse	Selects the decay curve for the early reflection. ⓘP.46
b	ER Time [msec]	10...800msec	Time length of early reflection
c	Pre Delay [msec]	0...200msec	Time taken from the original sound to the first early reflection
d	EQ Trim	0...100	Input level of EQ applied to the effect sound
e	Pre LEQ Gain [dB]	-15.0...+15.0dB	Low range EQ gain
f	Pre HEQ Gain [dB]	-15.0...+15.0dB	High range EQ gain
g	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

size2

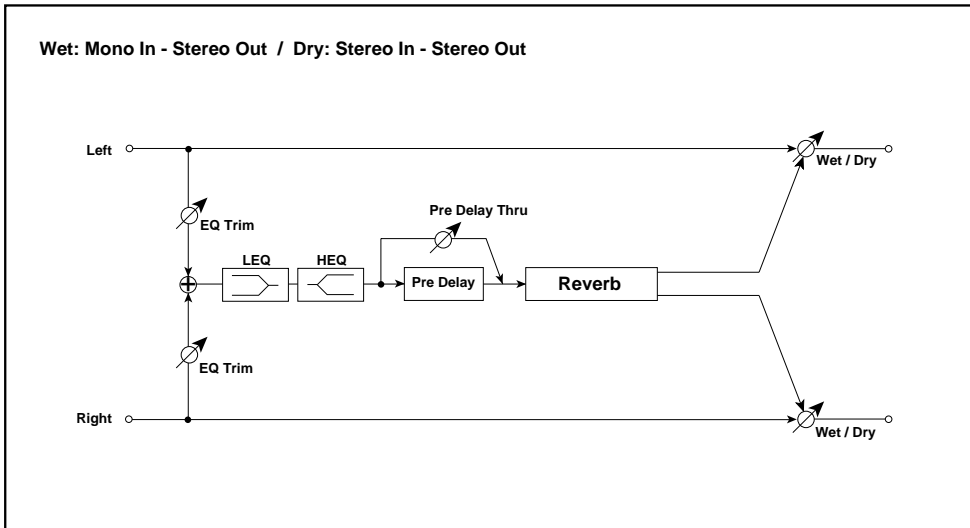
D-mod

46: Reverb-Hall

This effect simulates the reverberation and ambience of medium-size concert halls and ensemble halls.

47: Reverb-SmoothHall

This hall-type reverb creates a reverberation with a smooth release curve. Setting a longer reverb time can simulate reverberations from that of a larger hall to that of a stadium.



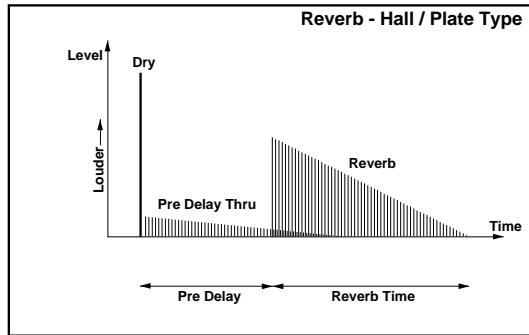
a	Reverb Time [sec]	0.1...10.0sec	Sets the reverberation time.
b	High Damp [%]	0...100%	Damping amount in the high range
c	Pre Delay [msec]	0...200msec	Delay time from the dry sound <small>☞</small> P.114
d	Pre Delay Thru [%]	0...100%	Mix ratio of non-delay sound <small>☞</small> P.114
e	EQ Trim	0...100	EQ input level
f	Pre LEQ Gain [dB]	-15...+15dB	Low-EQ gain
g	Pre HEQ Gain [dB]	-15...+15dB	High-EQ gain
h	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance



c: Pre Delay [msec]
d: Pre Delay Thru [%]

The Pre Delay sets the delay time to the reverb input, allowing you to control spaciousness.

Using the Pre Delay Thru parameter, you can mix the dry sound without delay, emphasizing the attack of the sound.



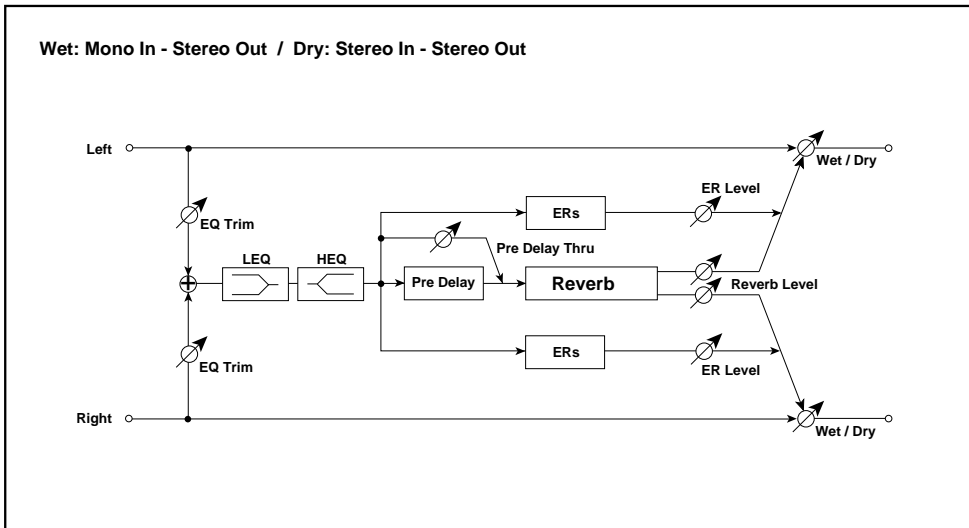
size2

48: Reverb-Room

This reverberation effect emphasizes the early reflections, simulating a tight, room sound. Changing the balance between the early reflections and reverb sound allows you to simulate nuances, such as the type of walls of a room.

49: Reverb-BrightRoom

This reverberation creates a bright, room-type sound.



a	Reverb Time [sec]	0.1...3.0sec	Sets the reverberation time.
b	High Damp [%]	0...100%	Damping amount in the high range
c	Pre Delay [msec]	0...200msec	Delay time from the dry sound <small>Ⓒ P.116</small>
d	Pre Delay Thru [%]	0...100%	Mix ratio of non-delay sound <small>Ⓒ P.116</small>
e	ER Level	0...100	Sets the level of early reflections. <small>Ⓒ P.116</small>
f	Reverb Level	0...100	Sets the reverberation level. <small>Ⓒ P.116</small>
g	EQ Trim	0...100	EQ input level
h	Pre LEQ Gain [dB]	-15...+15dB	Low-EQ gain
i	Pre HEQ Gain [dB]	-15...+15dB	High-EQ gain
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

c: Pre Delay [msec]
d: Pre Delay Thru [%]

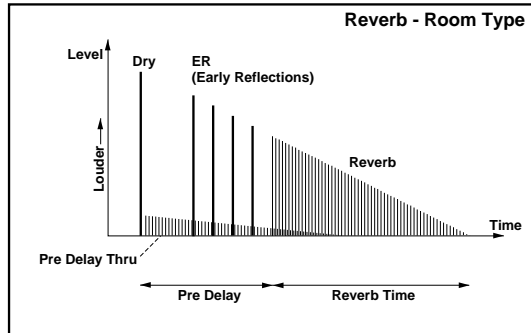
The Pre Delay sets delay time of reverb input, allowing you to control spaciousness.

Using the Pre Delay Thru parameter, you can mix the dry sound without delay, emphasizing the attack of the sound.

e: ER Level
f: Reverb Level

These parameters set the early reflection level and reverb level.

Changing these parameter values allows you to simulate the type of walls in the room. That is, a larger ER Level simulates a hard wall, and a larger Reverb Level simulates a soft wall.

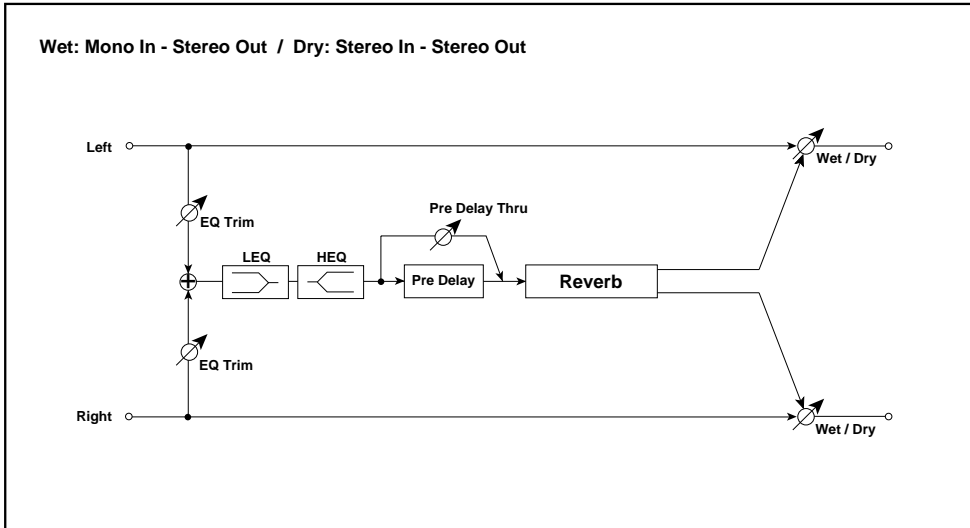


50: Reverb-Wet Plate

This effect simulates a dense plate reverberation. You can create a warm reverb sound.

51: Reverb-Dry Plate

This effect simulates a lighter plate reverberation. You can create a dry reverb sound.

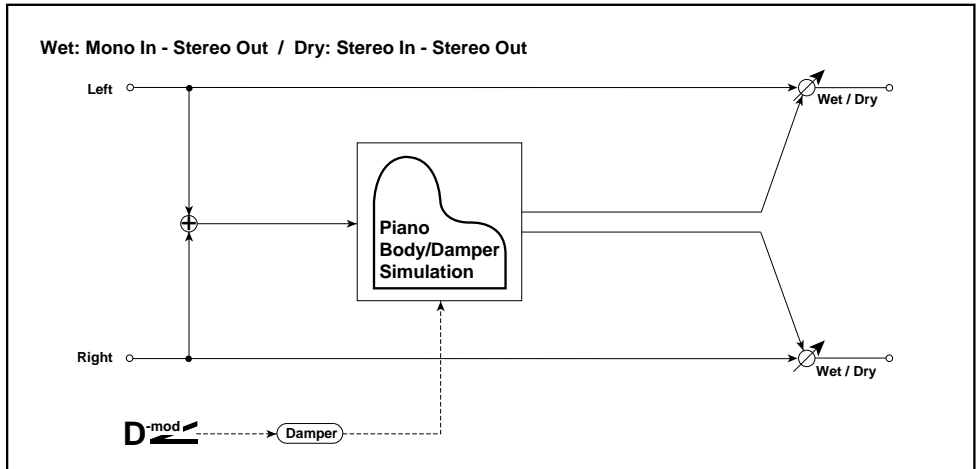


a	Reverb Time [sec]	0.1...10.0sec	Sets the reverberation time.
b	High Damp [%]	0...100%	Damping amount in the high range
c	Pre Delay [msec]	0...200msec	Delay time from the dry sound P.114
d	Pre Delay Thru [%]	0...100%	Mix ratio of non-delay sound P.114
e	EQ Trim	0...100	EQ input level
f	Pre LEQ Gain [dB]	-15...+15dB	Low-EQ gain
g	Pre HEQ Gain [dB]	-15...+15dB	High-EQ gain
h	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance



00: Piano Body/Damper (Piano Body/Damper Simulation)

This effect simulates the resonance of the piano sound board caused by the string vibration, and also simulates the resonance of other strings that are not being played when you press the damper pedal. It will create a very realistic sound when applied to acoustic piano sounds.



a	Sound Board Depth	0...100	Sets the intensity of resonance of the sound board. P.119
b	Damper Depth	0...100	Sets the intensity of the string resonance created when the damper pedal is pressed. P.119
	Src	None...Tempo	Modulation source of damper effect
c	Tone	1...100	Adjusts tonal quality of effect sound. P.119
d	Mid Shape	0...36	Adjusts the mid range of tonal quality. P.119
e	Tune	-50...+50	Fine tuning P.119
f	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

a: Sound Board Depth This parameter sets the intensity of resonance of the piano sound board.

b: Damper Depth This parameter sets the resonance intensity of the other strings created when the damper pedal is pressed. The Src parameter selects the modulation source from which the damper effect is applied. Usually, select Sustain Pdl (Sustain pedal).

b: Src

MIDI The effect is off when a value for the modulation source specified for the Src parameter is 63 or smaller, and the effect is on when the value is 64 or higher.

c: Tone

These parameters control the tonal quality of the effect sound.

d: Mid Shape

e: Tune

Since this effect simulates the resonance of the strings, the sound varies depending on the pitch. If you have changed tuning using the Master Tune, adjust this parameter value.

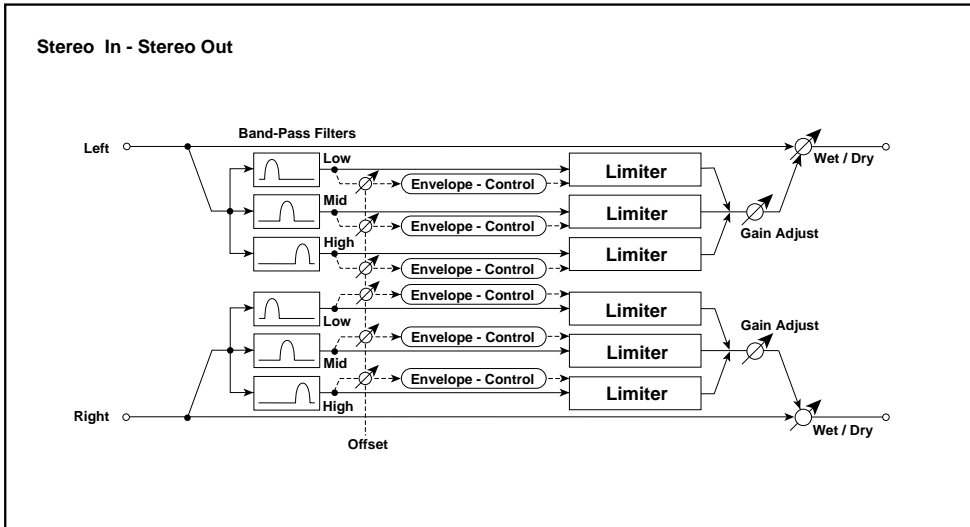
size4

D-mod

D-mod

01: St. Mlt.band Limiter (Stereo Multiband Limiter)

This is a stereo multiband limiter.

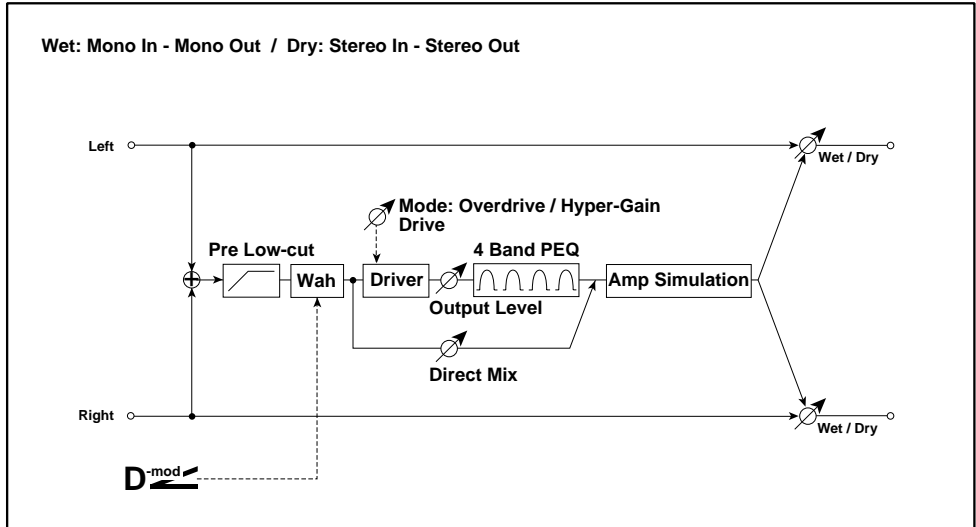


a	Ratio	1.0:1...50.0:1, Inf:1	Sets the signal compression ratio. P.15
b	Threshold [dB]	-40...0dB	Sets the signal level above which compression is applied. P.15
c	Attack	1...100	Sets the attack time. P.16
d	Release	1...100	Sets the release time. P.16
e	Low Offset [dB]	-40...0dB	Low range gain of trigger signal P.50
f	Mid Offset [dB]	-40...0dB	Mid range gain of trigger signal P.50
g	High Offset [dB]	-40...0dB	High range gain of trigger signal P.50
h	Gain Adjust [dB]	-16...+24dB	Sets the output gain. P.15
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance



02: OD/Hyper-Gain Wah (Overdrive/Hyper-Gain Wah)

This distortion effect has two modes: overdrive and hyper-gain that produces a strong distortion. The effect also has wah, 4-band EQ, and amp simulator. Compared to the same effect of size 1 and 2, you can set a higher gain for this effect.



a	Wah	Off, On	Switches Wah on/off. P.54
	Src	None...Tempo	Modulation source that controls wah
b	Wah Sweep Range	-10...+10	Sets the sweep range of wah. P.54
c	Drive Mode	Overdrive, Hyper-Gain	Switches between overdrive and hyper-gain distortion.
	Pre Low-cut	0...10	Low range cut amount at the distortion input P.19
d	Drive	1...120	Sets the degree of distortion. P.19
	Output Level	0...50	Sets the output level.
e	Band1 Cutoff [Hz]	20...1.0kHz	EQ - Band1 center frequency
	Q	0.5...10.0	Band1 bandwidth P.19
	Gain [dB]	-18...+18dB	Band1 gain
f	Band2 Cutoff [Hz]	50...5.00kHz	Band2 center frequency
	Q	0.5...10.0	Band2 bandwidth P.19
	Gain [dB]	-18...+18dB	Band2 gain
g	Band3 Cutoff [Hz]	300...10.00kHz	Band3 center frequency
	Q	0.5...10.0	Band3 bandwidth P.19
	Gain [dB]	-18...+18dB	Band3 gain
h	Band4 Cutoff [Hz]	500...20.00kHz	Band4 center frequency
	Q	0.5...10.0	Band4 bandwidth P.19
	Gain [dB]	-18...+18dB	Band4 gain
i	Direct Mix	0...50	Mixing amount of dry sound to the distortion
	Speaker Simulation	Off, On	Speaker simulation on/off
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

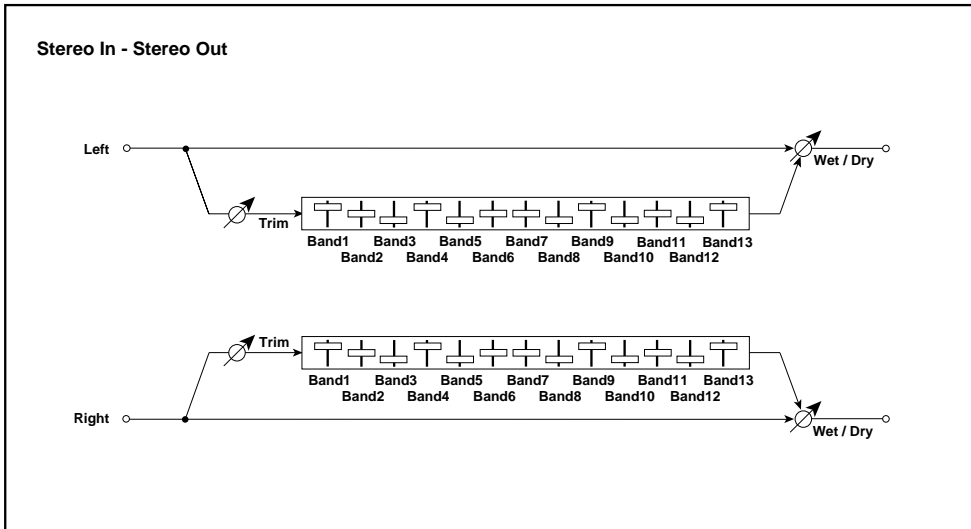
size4

D-mod

D-mod

03: St. Graphic 13EQ (Stereo Graphic 13-Band EQ)

This is a stereo 13-band graphic equalizer that allows for finer equalization. You can select one of two settings for the center frequency for each band.

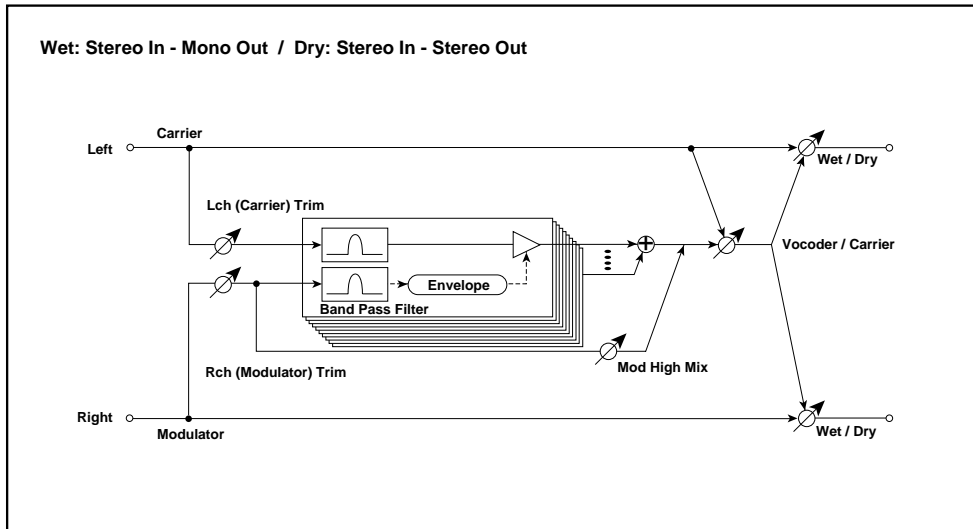


a	Type	A, B	Selects a combination of center frequencies for each band. <small>☞ P.57</small>
b	Trim	0...100	Sets the input level.
c	Band1 [dB]	-18.0...+18.0dB	Sets the Band1 gain.
d	Band2 [dB]	-18.0...+18.0dB	Sets the Band2 gain.
e	Band3 [dB]	-18.0...+18.0dB	Sets the Band3 gain.
f	Band4 [dB]	-18.0...+18.0dB	Sets the Band4 gain.
g	Band5 [dB]	-18.0...+18.0dB	Sets the Band5 gain.
h	Band6 [dB]	-18.0...+18.0dB	Sets the Band6 gain.
i	Band7 [dB]	-18.0...+18.0dB	Sets the Band7 gain.
j	Band8 [dB]	-18.0...+18.0dB	Sets the Band8 gain.
k	Band9 [dB]	-18.0...+18.0dB	Sets the Band9 gain.
l	Band10 [dB]	-18.0...+18.0dB	Sets the Band10 gain.
m	Band11 [dB]	-18.0...+18.0dB	Sets the Band11 gain.
n	Band12 [dB]	-18.0...+18.0dB	Sets the Band12 gain.
o	Band13 [dB]	-18.0...+18.0dB	Sets the Band13 gain.
p	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance



04: Vocoder

This effect adds characteristics of other signals (Modulator) to the input signal (Carrier). The Carrier is input to the left channel, and the Modulator is input to the right channel. A sound with a lot of harmonics is suitable for a carrier, while a unique effect sound is suitable for a modulator.



a	Lch (Carrier) Trim	0...100	Input level of left channel (Carrier)
b	Rch (Modulator) Trim	0...100	Input level of right channel (Modulator)
c	Mod High Mix	0...100	Output level of high-range component of right channel (Modulator) <small>☞ P.123</small>
d	Vocoder/Carrier	0...100	Balance between vocoder output and left channel (Carrier) <small>☞ P.123</small>
	Src	None...Tempo	Modulation source of the balance between vocoder output and left channel (Carrier)
	Amt	-100...+100	Modulation amount of the balance between vocoder output and left channel (Carrier)
e	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds. <small>☞ P.123</small>
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

c: Mod High Mix

This parameter sets the high-range output level of the right channel sound (Modulator). Raise this value to enhance the characteristics of the modulator.

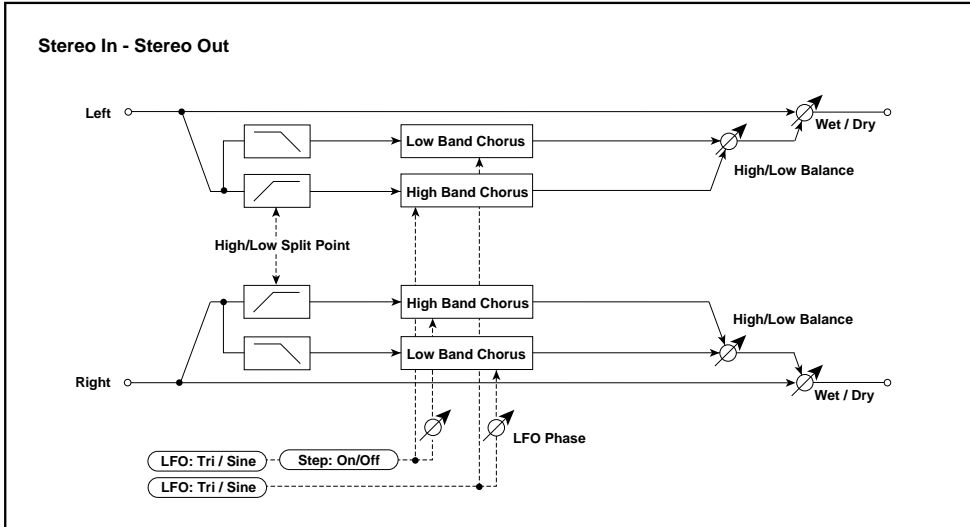
d: Vocoder/Carrier e: Wet/Dry

The Vocoder/Carrier parameter sets the balance between the vocoder sound and the left channel sound (Carrier). The Wet/Dry parameter sets the balance between the effect and dry sound.

If you wish to change the intensity of the vocoder effect, select "Wet" for Wet/Dry, and adjust the balance using the Vocoder/Carrier parameter.

05: St. Harmonic Chorus (Stereo Harmonic Chorus)

This is a stereo harmonic chorus effect that applies chorus separately to the high and low ranges of the input signal. You can set the parameters for the low and high range chorus individually. You can also use the high-range chorus as a step chorus employing a step-shape LFO waveform. Thick, fine chorus effects can be created when it is applied to strings or ensemble sounds.



a	LFO Waveform	Triangle, Sine	Selects LFO waveform.	
b	LFO Phase [degree]: Low	-180...+180	The difference between low-range left and right LFO phase. P.65	
	High	-180...+180	The difference between high-range left and right LFO phase.	
c	LFO Frequency [Hz]: Low	0.02...20.00Hz	Low-range LFO speed	
	High	0.02...20.00Hz	High-range LFO speed	
d	LFO Step Freq [Hz] (LFO Step Frequency)	Off, On	Determines whether or not the high-range LFO is step-shaped. P.125	
	High	0.05...50.00Hz	Speed at which the LFO waveform becomes step-shaped	
e	Pre Delay [msec]: Low	0.0...50.0msec	Low range delay time	
	High	0.0...50.0msec	High range delay time	
f	Depth: Low	0...100	Depth of low range LFO modulation	
	High	0...100	Depth of high range LFO modulation	
g	LFO Freq D-mod (LFO Frequency D-mod)	Low, High, Both	Selects only low-range, high-range, or both ranges for LFO speed modulation. P.125	D-mod
	Src	None...Tempo	Modulation source of LFO speed	
	Amt	-20.00 (-80.00) ... +20.00Hz (+80.00)	Modulation amount of LFO speed	
h	Depth D-mod	Low, High, Both	Selects only low-range, high-range, or both ranges for LFO modulation depth. P.125	D-mod
	Src	None...Tempo	Modulation source of LFO modulation depth	
	Amt	-100...+100	Modulation amount of LFO modulation depth	
i	High/Low Split Point	1...100	Splits frequencies into low and high ranges P.125	
	High/Low Balance	Low, 1...99, High	Sets output balance between low and high ranges.	

j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

D-mod

d: LFO Step Freq [Hz] This parameter determines whether or not the waveform of the high-range LFO should be step-shaped. Changing the d: High value will allow you to adjust the width of the steps.

g: LFO Freq D-mod This parameter determines whether the LFO speed dynamic modulation is applied to the low range, high range, or both ranges. When d: LFO Step Freq is On, the waveform of the high-range LFO will be step-shaped, and dynamic modulation will be applied to the speed of this step-shaped LFO (width of steps).

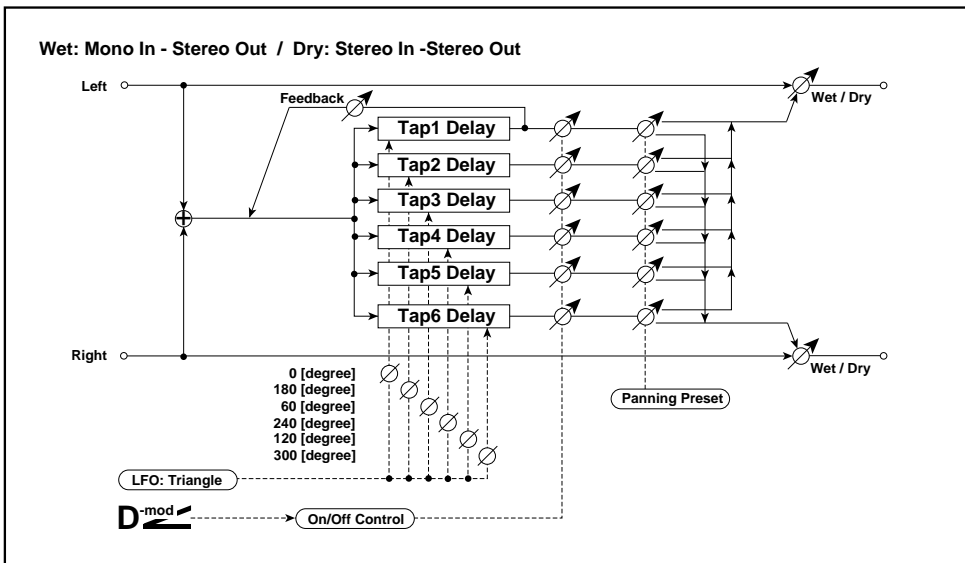
h: Depth D-mod This parameter determines whether the dynamic modulation of LFO modulation depth is applied to the low range, high range, or both ranges.

i: High/Low Split Point This parameter sets the split point (frequency) between high and low ranges. Split signals are input to the respective chorus block.

size4

06: Multitap Chorus/Dly (Multitap Chorus/Delay)

This effect has six chorus blocks with different LFO phases. You can produce a complex stereo image by setting a different delay time and depth for each block. You can control the delay output level via a modulation source.



a	LFO Frequency [Hz]	0.02...13.00Hz	LFO speed	
b	Tap1(000) [msec]	0...570msec	Tap1 (LFO phase = 0) delay time	
	Depth	0...30	Depth of Tap1 chorus	
	Status	Always On, Always Off, On→Off(dm), Off→On(dm)	Selects on, off, or modulation source for the control of Tap1 output. P.127	D-mod
c	Tap2(180) [msec]	0...570msec	Tap2 (LFO phase = 180) delay time	
	Depth	0...30	Depth of Tap2 chorus	
	Status	Always On, Always Off, On→Off(dm), Off→On(dm)	Selects on, off, or modulation source for the control of Tap2 output. P.127	D-mod
d	Tap3(060) [msec]	0...570msec	Tap3 (LFO phase = 60) delay time	
	Depth	0...30	Depth of Tap3 chorus	
	Status	Always On, Always Off, On→Off(dm), Off→On(dm)	Selects on, off, or modulation source for the control of Tap3 output. P.127	D-mod
e	Tap4(240) [msec]	0...570msec	Tap4 (LFO phase = 240) delay time	
	Depth	0...30	Depth of Tap4 chorus	
	Status	Always On, Always Off, On→Off(dm), Off→On(dm)	Selects on, off, or modulation source for the control of Tap4 output. P.127	D-mod
f	Tap5(120) [msec]	0...570msec	Tap5 (LFO phase = 120) delay time	
	Depth	0...30	Depth of Tap5 chorus	
	Status	Always On, Always Off, On→Off(dm), Off→On(dm)	Selects on, off, or modulation source for the control of Tap5 output. P.127	D-mod
g	Tap6(300) [msec]	0...570msec	Tap6 (LFO phase = 300) delay time	
	Depth	0...30	Depth of Tap6 chorus	
	Status	Always On, Always Off, On→Off(dm), Off→On(dm)	Selects on, off, or modulation source for the control of Tap6 output. P.127	D-mod
h	Panning Preset	1, 2, 3, 4	Specifies the stereo image of each Tap. P.127	

i	Tap1 Feedback	-100...+100	Tap1 feedback amount
	Src	None...Tempo	Modulation source for the Tap output level, feedback amount, and effect balance <small>☞ P.127</small>
	Amt	-100...+100	Modulation amount of Tap1 feedback amount <small>☞ P.127</small>
j	Wet/Dry	Dry, 1:99...99:1, Wet	Balance between effect sound and dry sound
	Amt	-100...+100	Modulation amount of effect balance <small>☞ P.127</small>

b: Status
c: Status
d: Status
e: Status
f: Status
g: Status

These parameters set the output status of each Tap.

Always On: Output is always on. (No modulation)

Always Off: Output is always off. (No modulation)

On→Off (dm): Output level is switched from on to off depending on the modulation source.

Off→On (dm): Output level is switched from off to on depending on the modulation source.

Combining these parameters, you can change from 4-phase chorus to two-tap delay by crossfading them gradually via the modulation source during a performance.

h: Panning Preset

This parameter selects combinations of stereo images of the tap outputs.

i: Src
i: Amt
j: Amt

Tap output level, feedback amount and effect balance are controlled simultaneously via a modulation source.

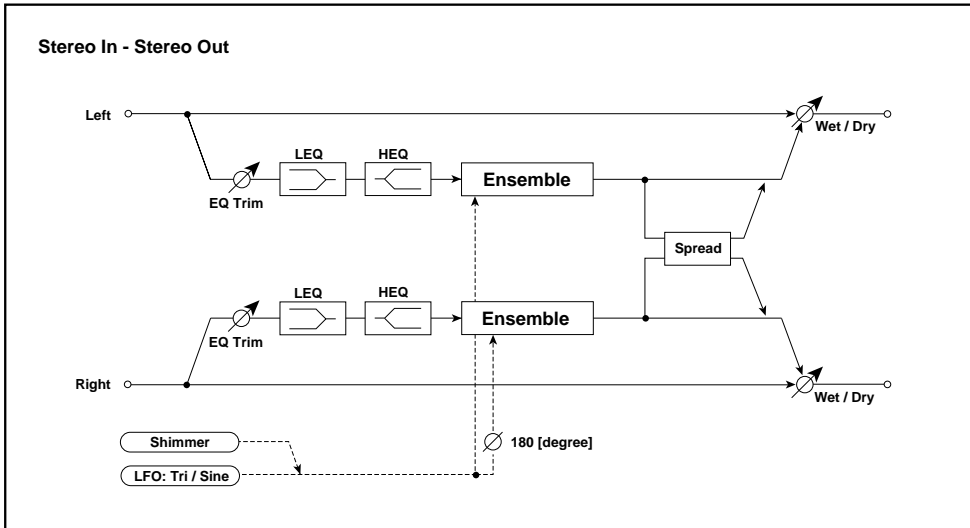
D^{mod}

D^{mod}

size4

07: Stereo Ensemble

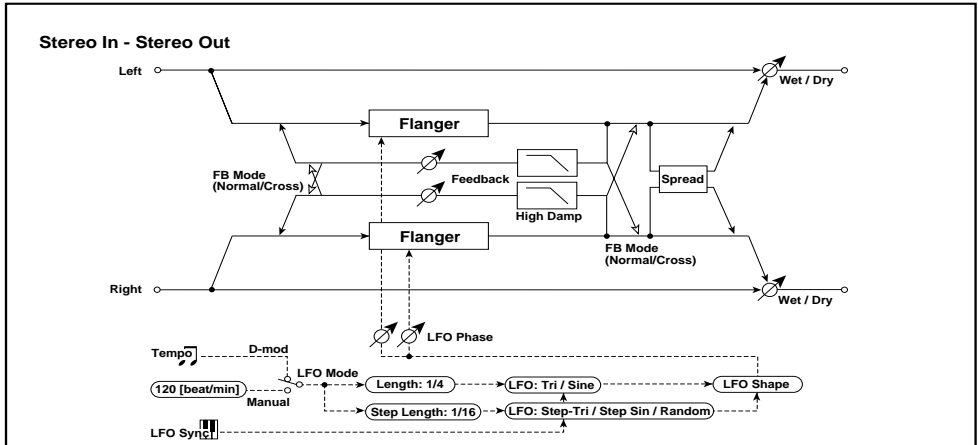
This is a stereo ensemble effect that has three chorus blocks each for the left and right channels.



a	LFO Waveform	Triangle, Sine	Selects LFO waveform.	
b	Speed	1...100	LFO speed	D-mod
	Src	None...Tempo	Modulation source of LFO speed	
	Amt	-100...+100	Modulation amount of LFO speed	
c	Shimmer	0...100	Amount of shimmering of LFO waveform <small>☞ P:31</small>	
d	Depth	0...100	Depth of LFO modulation	D-mod
	Src	None...Tempo	Modulation source of LFO modulation depth	
	Amt	-100...+100	Modulation amount of LFO modulation depth	
e	EQ Trim	0...100	EQ input level	
f	Pre LEQ Gain [dB]	-15.0...+15.0dB	Low EQ gain	
g	Pre HEQ Gain [dB]	-15.0...+15.0dB	High EQ gain	
h	Spread	-100...+100	Sets the width of the stereo image of the effect sound. <small>☞ P:65</small>	
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

08: St. Tempo Flanger (Stereo Tempo Flanger)

This is a stereo tempo flanger. You can select random or step waveforms for the LFO, and synchronize the speed of the random/step waveform with tempo. Also, synchronizing the LFO to note-on messages will produce a flanging effect with a fixed timing.



a	LFO Sync	Off, On	LFO reset on/off ☞ P.109
	Src	None...Tempo	Modulation source that resets LFO
b	Delay Time [msec]	0.0...50.0msec	Delay time from the original sound
c	LFO Waveform	Triangle, Sine, Step-Tri, Step-Sin, Random	Selects LFO waveform.☞ P.70
	LFO Shape	-100...+100	Determines how much the LFO waveform is changed.☞ P.32
d	LFO Lch Phase [deg]	-180...+180	Left LFO phase after reset ☞ P.109
	Rch Phase [deg]	-180...+180	Right LFO phase after reset
e	LFO Mode	Manual, D-mod	Switches between the specified tempo and clock sync.☞ P.33
	Src(fixed)	Tempo	Source when LFO Mode = D-mod (fixed to Tempo)
f	Tempo [beat/min]	30...250 beat/min	Tempo when LFO Mode = Manual ☞ P.33
	Length	1...16 / 1...16	Sets the LFO cycle. LFO Cycle = Length x Whole Note.☞ P.33
	Step	1...16 / 1...32	Sets the LFO step cycle. LFO step Cycle = Length x Whole Note.
g	Depth	0...100	Depth of LFO modulation
	Src	None...Tempo	Modulation source of LFO modulation depth
	Amt	-100...+100	Modulation amount of LFO modulation depth
h	Feedback	-100...+100	Feedback amount ☞ P.32
	FB Mode	Normal, Cross	Sets feedback routing.☞ P.69
i	High Damp [%]	0...100%	Feedback damping amount in the high range ☞ P.32
	Spread	-100...+100	Sets the width of the stereo image of effect sound.☞ P.65
j	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds.☞ P.25, 32
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

size4

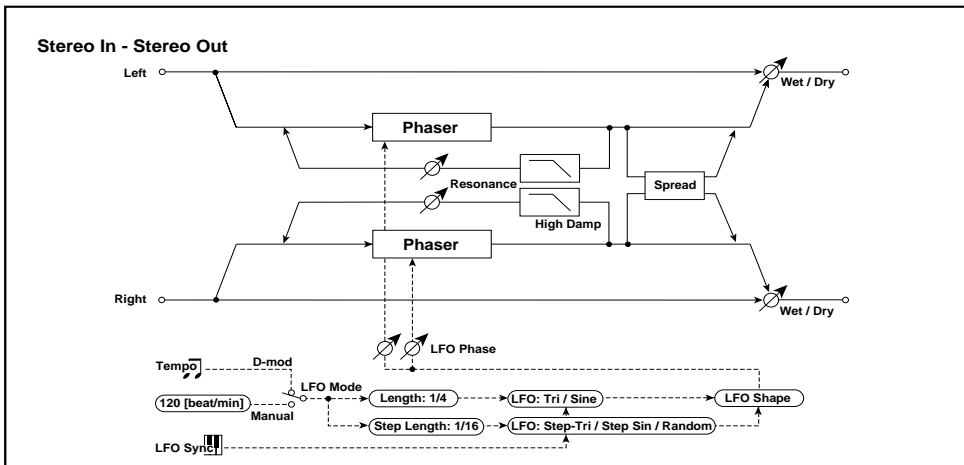
D-mod

D-mod

D-mod

09: St. Tempo Phaser (Stereo Tempo Phaser)

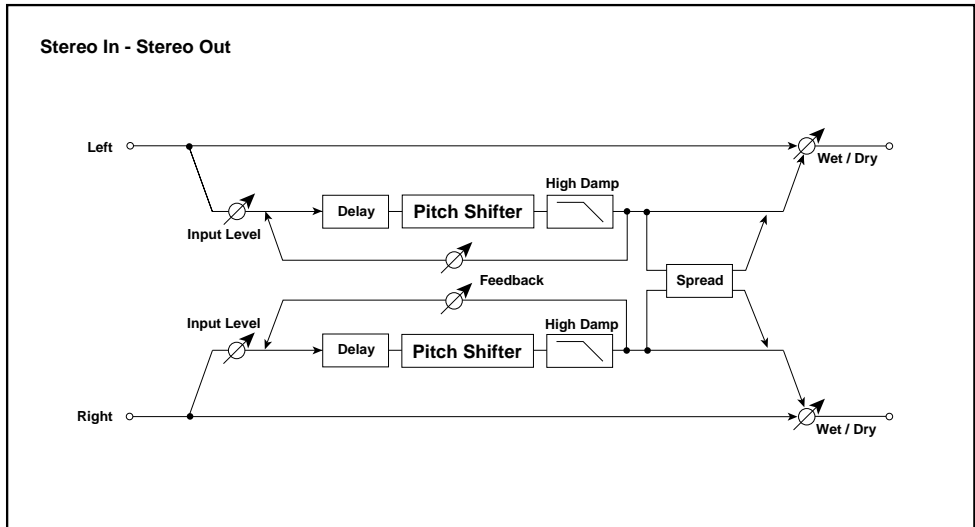
This is a stereo tempo phaser. You can select random or step waveforms for the LFO, and synchronize the speed of the random/step waveform with tempo. Also, synchronizing the LFO to note-on messages will produce a phasing effect with a fixed timing.



a	LFO Sync	Off, On	LFO reset on/off ☞ P.109	D-mod
	Src	None...Tempo	Modulation source that resets LFO	
b	LFO Waveform	Triangle, Sine, Step-Tri, Step-Sin, Random	Selects LFO waveform. ☞ P.70	D-mod
	LFO Shape	-100...+100	Determines how much the LFO waveform is changed. ☞ P.32	
c	LFO Lch Phase [deg]	-180...+180	Left LFO phase after reset ☞ P.109	D-mod
	Rch Phase [deg]	-180...+180	Right LFO phase after reset	
d	LFO Mode	Manual, D-mod	Switches between the specified tempo and clock sync. ☞ P.33	D-mod
e	Src(fixed)	Tempo	Source when LFO Mode = D-mod (fixed to Tempo)	
	Tempo [beat/min]	30...250 beat/min	Tempo when LFO Mode = Manual ☞ P.33	
	Length	1...16 / 1...16	Sets the LFO cycle. LFO Cycle = Length x Whole Note. ☞ P.33	
	Step	1...16 / 1...32	Sets the LFO step cycle. LFO step Cycle = Length x Whole Note.	
f	Manual	0...100	Sets the center frequency to which the effect is applied.	D-mod
g	Depth	0...100	Depth of LFO modulation	
	Src	None...Tempo	Modulation source of LFO modulation depth	
	Amt	-100...+100	Modulation amount of LFO modulation depth	
h	Resonance	-100...+100	Sets resonance amount. ☞ P.35	D-mod
i	High Damp [%]	0...100%	Resonance damping amount in the high range ☞ P.35	
	Spread	-100...+100	Sets the width of the stereo image of the effect sound. ☞ P.65	
j	Wet/Dry	-Wet...-1:99, Dry, 1:99...Wet	Sets the balance between the effect and dry sounds. ☞ P.35	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

10: St. Pitch Shifter (Stereo Pitch Shifter)

This is a stereo pitch shifter. The pitch shift amount for the left and right channels can be reversed from each other.



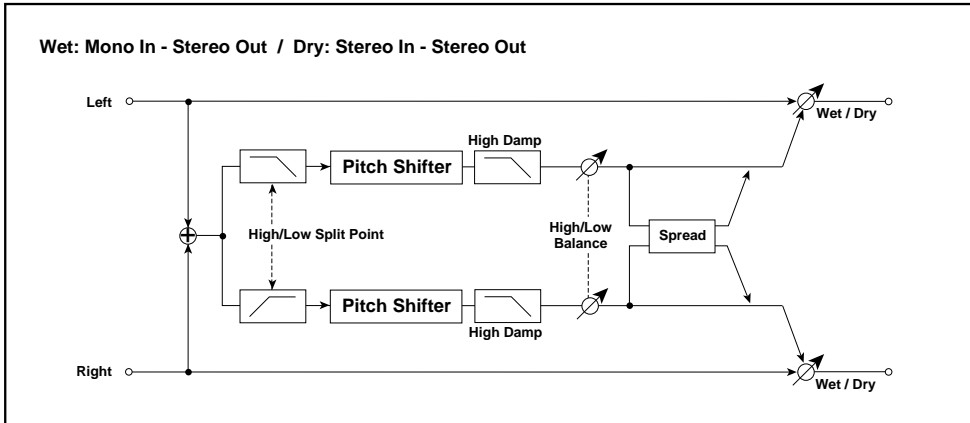
a	Input Level	0...100	Sets input level to the effect.	D-mod
	Src	None...Tempo	Selects the modulation source of input level.	
	Amt	-100...+100	Modulation amount of input level	
b	Mode	Slow, Medium, Fast	Switches Pitch Shifter mode. P.96	
c	L/R Pitch	Normal, Up/Down	Determines whether or not the L/R pitch shift amount is inverted.	
d	Pitch Shift [1/2tone]	-24...+24	Sets the pitch shift amount in steps of a semitone. P.97	D-mod
	Src	None...Tempo	Modulation source of pitch shift amount	
	Amt	-24...+24	Modulation amount of pitch shift amount	
e	Fine [cent]	-100...+100cent	Sets the pitch shift amount in steps of one cent. P.97	D-mod
	Amt	-100...+100cent	Modulation amount of pitch shift amount	
f	Lch Delay [msec]	0...1000msec	Sets the delay time for the left channel. P.97	
	Rch Delay [msec]	0...1000msec	Sets the delay time for the right channel.	
g	Feedback	-100...+100	Sets the feedback amount. P.97	
h	High Damp [%]	0...100%	Damping amount in the high range	
i	Spread	-100...+100	Sets the width of the stereo image of the effect sound. P.65	
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

c: L/R Pitch

When you select Up/Down for this parameter, the pitch shift amount for the left channel will be reversed. If the pitch shift amount is positive, the pitch of the left channel is raised, and the pitch of the right channel is lowered.

11: 2Band Pitch Shifter

This pitch shifter sets an individual shift amount for the high and low input signal ranges. If you apply a detune effect to the high range of a string sound, and add the lower octave to the low range, a large ensemble sound is produced.



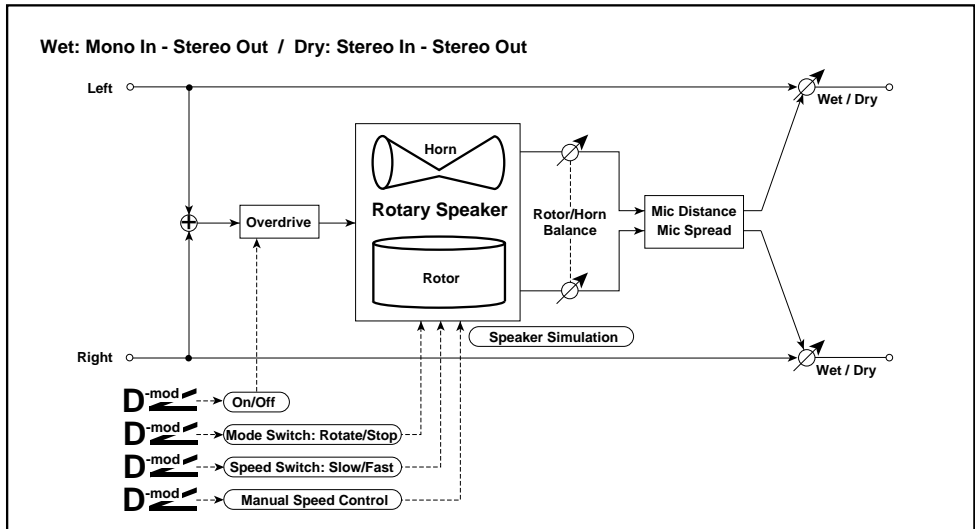
a	Mode	Slow, Medium, Fast	Switches pitch shifter mode. P.96	
b	Low Pitch [1/2tone]	-24...+24	Sets pitch shift amount for the low range in steps of a semitone. P.97	D-mod
	Src	None...Tempo	Modulation source of pitch shift amount	
	Amt	-24...+24	Modulation amount of pitch shift amount for the low range	
c	Low Fine [cent]	-100...+100cent	Sets pitch shift amount for the low range in steps of one cent. P.97	D-mod
	Amt	-100...+100cent	Modulation amount of pitch shift amount for the low range	
d	Low High Damp [%]	0...100%	High component damping amount in the low range	
e	High Pitch [1/2tone]	-24...+24	Sets pitch shift amount for the high range in steps of a semitone. P.97	D-mod
	Amt	-24...+24	Modulation amount of pitch shift amount for the high range	
f	High Fine [cent]	-100...+100cent	Sets pitch shift amount for the low range in steps of one cent. P.97	D-mod
	Amt	-100...+100cent	Modulation amount of pitch shift amount for the high range	
g	High High Damp [%]	0...100%	High component damping amount in the high range	
h	High/Low Split Point	1...100	Splits frequencies between low and high ranges	
	High/Low Balance	Low, 1:99...99:1, High	Output balance between low and high ranges	
i	Spread	-100...+100	Sets the width of the stereo image of the effect sound. P.132	
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

i: Spread

This parameter specifies the width of the stereo image of the effect sound. With a value of +100, the low range signal is output from the left channel and the high range signal from the right channel. With a value of 0, both channels will output a mix signal of low and high-range signals. With a negative value, the output channel of the low and high-range signals will be reversed.

12: Rotary Speaker OD (Rotary Speaker Overdrive)

This is a stereo rotary speaker effect. It has an internal speaker simulator that simulates overdrive (recreating the amp distortion) and characteristics of the rotary speaker, producing a very realistic rotary speaker sound.



a	Overdrive	Off, On	Switches overdrive on/off.	D-mod
	Src	None...Tempo	Modulation source that switches overdrive on/off.	
	Sw	Momentary, Toggle	Selects the switching mode of the modulation source that switches overdrive on/off. ☞ P.134	
b	Overdrive Gain	0...50	Determines the degree of distortion.	D-mod
	Overdrive Level	0...50	Overdrive output level	
c	Overdrive Tone	0...15	Tonal quality of overdrive	D-mod
	Speaker Simulator	Off, On	Switches speaker simulation on/off.	
d	Mode Switch	Rotate, Stop	Switches between speaker rotation and stop.	D-mod
	Src	None...Tempo	Modulation source that toggles between rotation and stop	
	Sw	Momentary, Toggle	Selects the switching mode of the modulation source that toggles between rotation and stop. ☞ P.101	
e	Speed Switch	Slow, Fast	Switches the speaker rotation speed between slow and fast.	D-mod
	Src	None...Tempo	Modulation source that toggles between slow and fast.	
	Sw	Momentary, Toggle	Selects the switching mode of the modulation source that toggles between slow and fast. ☞ P.43	
f	Rotor/Horn Balance	Rotor, 1...99, Horn	Sets the volume level balance between the low-range rotor and high-range horn.	D-mod
	ManualSpeedControl	None...Tempo	Sets the modulation source in case the rotation speed is changed directly. ☞ P.101	
g	Rotor Acceleration	0...100	How quickly the rotor rotation speed in the low range is switched. ☞ P.43	D-mod
	Rotor Ratio	Stop, 0.50...2.00	Adjusts the (low-range side) rotor rotation speed. Standard value is 1.0. Selecting "Stop" will stop the rotation.	

size4

h	Horn Acceleration	0...100	How quickly the horn rotation speed in the high range is switched. P.43
	Horn Ratio	Stop, 0.50...2.00	Adjusts the (high-range side) horn rotation speed. Standard value is 1.0. Selecting "Stop" will stop the rotation.
i	Mic Distance	0...50	Distance between the microphone and rotary speaker. P.101
	Mic Spread	0...50	Angle of left and right microphones
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance



a: Sw

This parameter determines how to switch on/off the overdrive via a modulation source.

When Sw = Momentary, overdrive is applied only when a pedal or joystick is held in position.

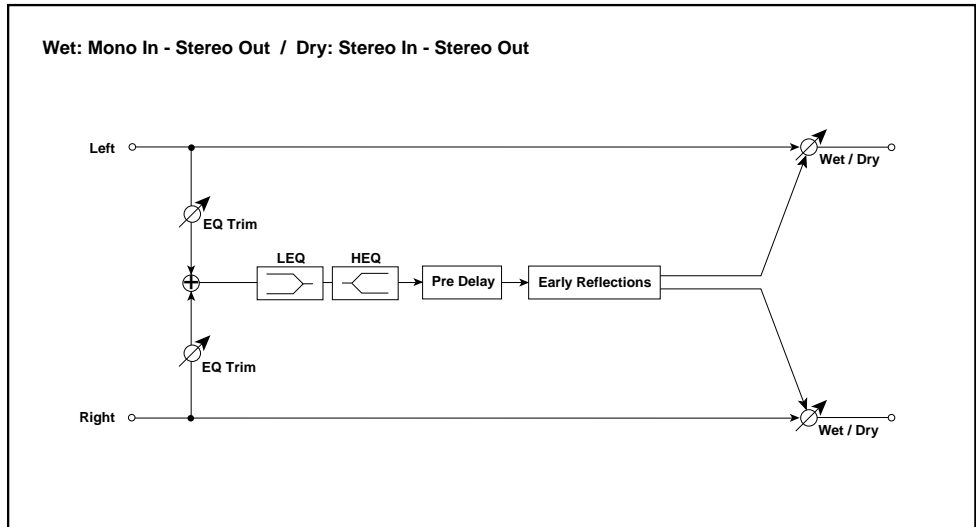
[MIDI] Only when the value for the modulation source is 64 or higher, the overdrive effect is applied.

When Sw = Toggle, overdrive is turned on/off each time the pedal or joystick is operated.

[MIDI] Each time when the value for the modulation source exceeds 64, the overdrive effect is switched on/off.

13: Early Reflections

This is a stereo early reflection effect. Compared to the Early Reflections of size 2, this effect has twice the number of reflections, thus creating a smooth, dense sound.



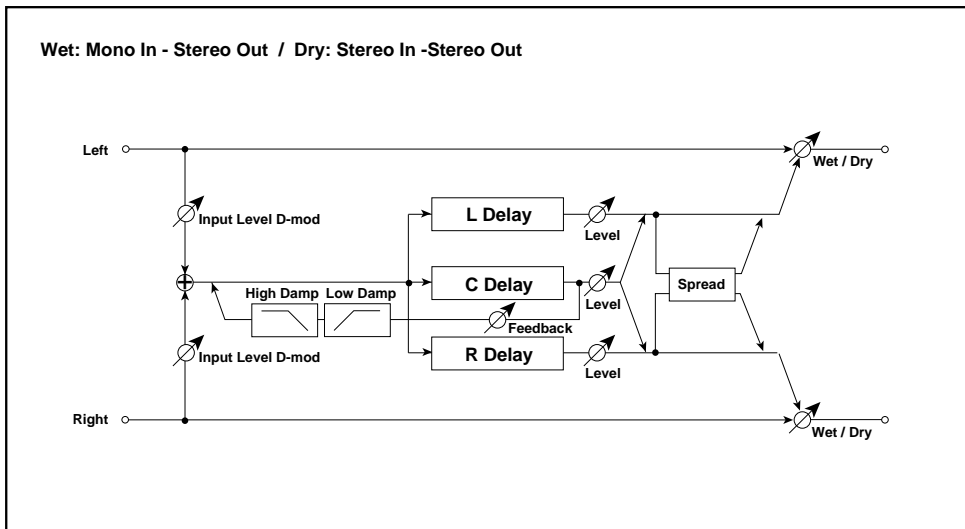
a	Type	Sharp, Loose, Modulated, Reverse	Selects the decay curve for the early reflection. P.46
b	ER Time [msec]	10...1600msec	Time length of early reflection
c	Pre Delay [msec]	0...200msec	Time taken from the original sound to the first early reflection
d	EQ Trim	0...100	Input level of EQ applied to the effect sound
e	Pre LEQ Gain [dB]	-15.0...+15.0dB	Low range EQ gain
f	Pre HEQ Gain [dB]	-15.0...+15.0dB	High range EQ gain
g	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

size4

D-mod

14: L/C/R Long Delay

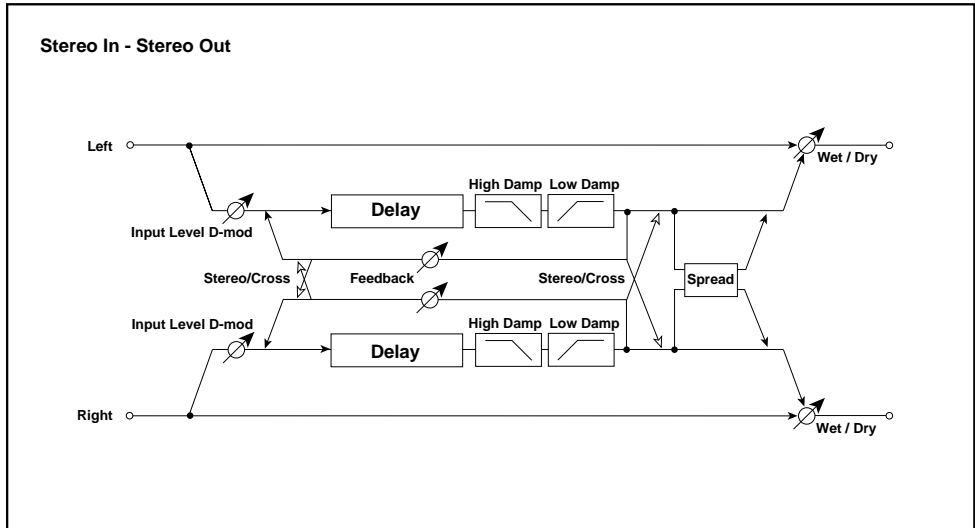
This multitap delay outputs three signals to left, right and center respectively. You can set a maximum of 2,730msec for the delay time.



a	L Delay Time [msec]	0...2730msec	Sets the TapL delay time.	
	Level	0...50	TapL output level	
b	C Delay Time [msec]	0...2730msec	Sets the TapC delay time.	
	Level	0...50	TapC output level	
c	R Delay Time [msec]	0...2730msec	Sets the TapR delay time.	
	Level	0...50	TapR output level	
d	Feedback	-100...+100	Sets the Tap2 feedback amount.	D-mod
	Src	None...Tempo	Modulation source of the Tap2 feedback amount	
	Amt	-100...+100	Modulation amount of the Tap2 feedback amount	
e	High Damp [%]	0...100%	Damping amount in the high range ☞P.44	
f	Low Damp [%]	0...100%	Damping amount in the low range ☞P.44	
g	Input Level D-mod: Src	None...Tempo	Modulation source of the input level ☞P.44	D-mod
	Amt	-100...+100	Modulation amount of the input level	
h	Spread	0...50	Sets the width of the stereo image of the effect sound. ☞P.65	
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

15: Stereo Long Delay

This is a stereo delay, and can be used as a cross-feedback delay effect in which the delay sounds cross over between left and right by changing the feedback routing. You can set a maximum of 1,360msec for the delay time.



a	Stereo/Cross	Stereo, Cross	Switches between stereo delay and cross-feedback delay.	
b	L Delay Time [msec]	0.0...1360.0msec	Sets the delay time for the left channel.	
c	R Delay Time [msec]	0.0...1360.0msec	Sets the delay time for the right channel.	
d	Feedback	-100...+100	Sets feedback amount.	D-mod
	Src	None...Tempo	Modulation source of feedback amount	
	Amt	-100...+100	Modulation amount of feedback amount	
e	High Damp [%]	0...100%	Damping amount in the high range ☞ P.44	
f	Low Damp [%]	0...100%	Damping amount in the low range ☞ P.44	
g	Input Level D-mod: Src	None...Tempo	Modulation source of the input level ☞ P.44	D-mod
	Amt	-100...+100	Modulation amount of the input level	
h	Spread	-100...+100	Sets the width of the stereo image of the effect sound. ☞ P.65	D-mod
	Src	None...Tempo	Modulation source of stereo image width of the effect sound	
	Amt	-100...+100	Modulation amount of stereo image width of the effect sound	
i	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	D-mod
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

size4

D-mod

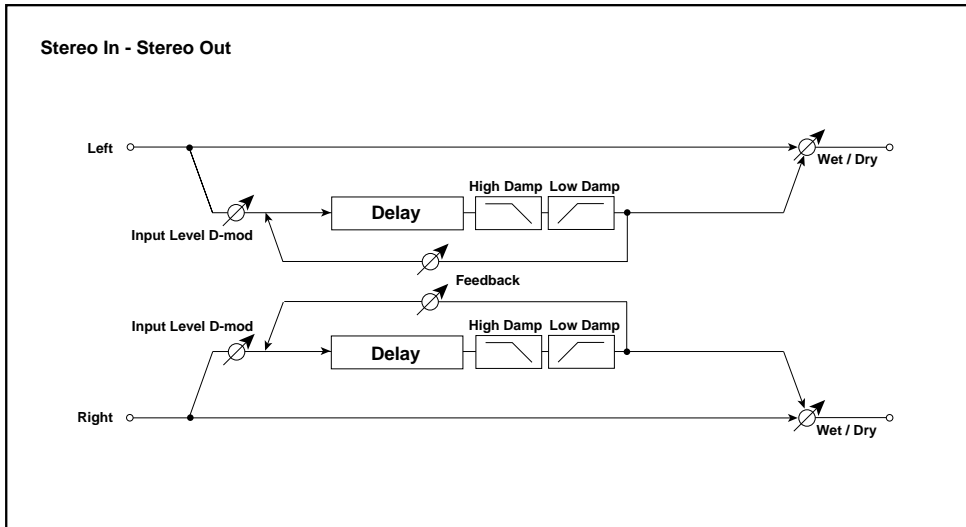
D-mod

D-mod

D-mod

16: Dual Long Delay

This 2-channel delay allows you to set the delay time for left and right channels independently. You can set a maximum of 1,360msec for the delay time.



a	L Delay Time [msec]	0.0...1360.0msec	Sets the delay time for the left channel.
b	L Feedback	-100...+100	Sets the feedback amount for the left channel.
c	L High Damp [%]	0...100%	Damping amount in the high range for the left channel ☞ P.44
	L Low Damp [%]	0...100%	Damping amount in the low range for the left channel
d	R Delay Time [msec]	0.0...1360.0msec	Sets the delay time for the right channel.
e	R Feedback	-100...+100	Sets the feedback amount for the right channel.
f	R High Damp [%]	0...100%	Damping amount in the high range for the right channel ☞ P.44
	R Low Damp [%]	0...100%	Damping amount in the low range for the right channel
g	Input Level D-mod: Src	None...Tempo	Modulation source of the left and right input level ☞ P.44
	Amt L	-100...+100	Modulation amount of the input level for the left channel
h	Amt R	-100...+100	Modulation amount of the input level for the right channel ☞ P.44
i	L Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds for the left channel.
	Src	None...Tempo	Modulation source of left/right effect balance
	Amt	-100...+100	Modulation amount of effect balance for the left channel
j	R Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds for the right channel.
	Amt	-100...+100	Modulation amount of effect balance for the right channel

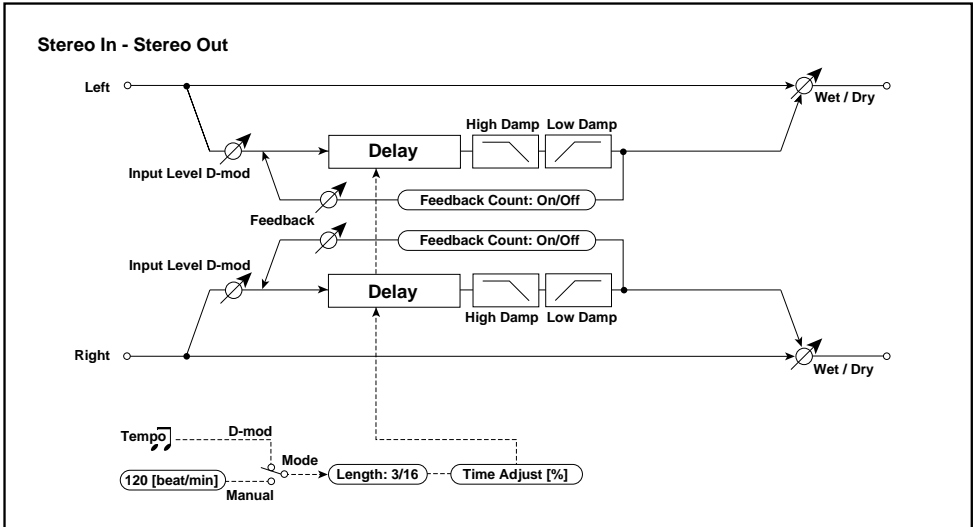
D-mod

D-mod

D-mod

17: St. Tempo Delay (Stereo Tempo Delay)

This is a stereo tempo delay.



size4

a	Mode	Manual, D-mod	Switches between the specified tempo and clock sync. P.107
	Src (fixed)	Tempo	Source when LFO Mode = D-mod (fixed to Tempo)
b	Tempo [beat/min]	30...250 beat/min	Tempo when LFO Mode = Manual P.107
	Length	1...96 / 1...96	Sets the delay time. Delay time = Length x Whole Note. P.107
c	Time Adjust [%]	-10.00...+10.00%	Fine adjustment of delay time
	Delay 1362ms	OVER!!	Delay time upper limit/error indication P.107
d	Feedback Count	Off, On	Selects whether the number of feedback times is counted or not. P.107
	Src (fixed)	Gate1	Source that triggers the counting of the feedback time (fixed to Gate1)
e	Count [times]	0...96	Number of feedback times P.107
f	Feedback	-100...+100	Sets the feedback amount.
	Src	None...Tempo	Modulation source of feedback amount
	Amt	-100...+100	Modulation amount of feedback amount
g	High Damp [%]	0...100%	Damping amount in the high range P.44
h	Low Damp [%]	0...100%	Damping amount in the low range P.44
i	Input Level D-mod: Src	None...Tempo	Modulation source of the input level P.44
	Amt	-100...+100	Modulation amount of the input level
j	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.
	Src	None...Tempo	Modulation source of effect balance
	Amt	-100...+100	Modulation amount of effect balance

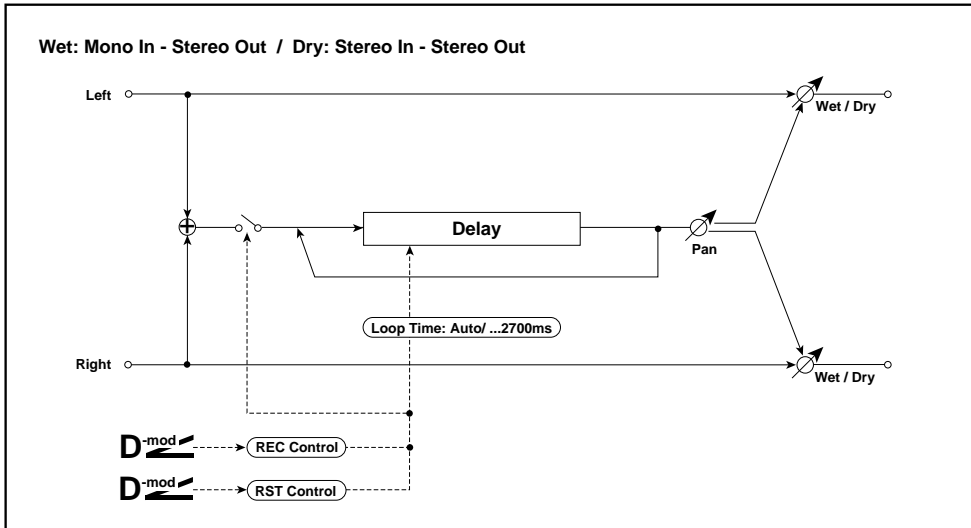
D-mod

D-mod

D-mod

18: Hold Delay

This effect records the input signal and plays it back repeatedly. You can control the start of recording and reset via a modulation source. Easy to use for real-time performances.



a	Loop Time [msec]	Auto, 1...2700msec	Sets Automatic loop time setup mode or specifies loop time. P.140	
b	REC Control Src	None...Tempo	Selects control source for recording. P.140	
c	RST Control Src	None...Tempo	Selects control source for reset. P.141	
d	Manual REC Control	REC Off, REC On	Recording switch P.140	
e	Manual RST Control	Off, RESET	Reset switch P.141	
f	Pan	L100...L1, C, R1...R100	Sets the stereo image of the effect.	
	Src	None...Tempo	Modulation source of stereo image of the effect	
	Amt	-100...+100	Modulation amount of stereo image of the effect	
g	Wet/Dry	Dry, 1:99...99:1, Wet	Sets the balance between the effect and dry sounds.	
	Src	None...Tempo	Modulation source of effect balance	
	Amt	-100...+100	Modulation amount of effect balance	

a: Loop Time [msec] With Auto, the loop time is automatically set. Otherwise, you can specify the loop time.

When Auto is selected, the Loop Time is automatically set to the time it takes for a performance recorded while the Modulation Source or Manual Rec Control is on. However, if the time length exceeds 2,700msec, the loop time will be automatically set to 2,700msec.

b: REC Control Src REC Control Src selects the modulation source that controls recording. If this modulation is on, or if Manual REC Control is set to REC On, you can record the input signal. If a recording has already been carried out, additional signals will be overdubbed.

The effect is off when a value for the modulation source specified for the REC Control Src parameter is 63 or smaller, and the effect is on when the value is 64 or higher.

c: RST Control Src
e: Manual RST Control

The RST Control Src parameter specifies the modulation source that controls the reset operation. When you set this modulation source to On, or Manual RST Control to RST On, you can erase what you recorded. If the Loop Time parameter has been set to Auto, the loop time is also reset.

MIDI The effect is off when a value for the modulation source specified for the RST Control Src parameter is 63 or smaller, and the effect is on when the value is 64 or higher.

“Hold” procedure (when Loop Time = Auto)

Select the following options for each parameter:

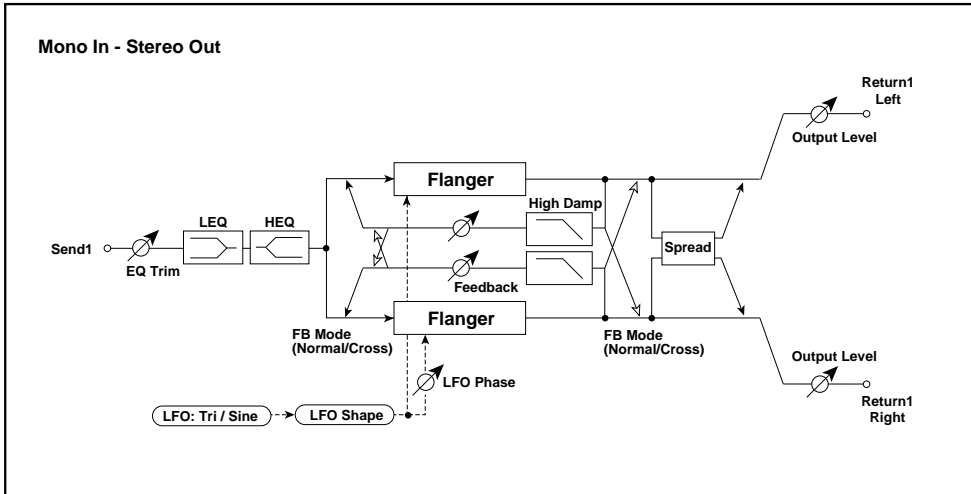
- 1 a: Loop Time [msec] = Auto
b: REC Control Src = JS(+Y)
c: RST Control Src = JS(-Y)
d: Manual REC Control = REC Off
e: Manual RST Control = RST On

It should be noted that all recordings will be deleted while Reset is On.

- 2 e: Manual RST Control = RST Off
Reset is cancelled and the unit enters Rec ready mode.
- 3 Push the joystick in the +Y direction (forward) and play a phrase you wish to hold. When you pull the joystick to its original position, the recording will be finished and the phrase you just played will be held.
Loop Time is automatically set only for the first recording after resetting. If the time length exceeds 2,700msec, Loop Time will be automatically set to 2,700msec. (If you have set a: Loop Time to 1-2,700msec, the specified loop time will be used regardless of the time taken from pushing the joystick forward until it is pulled back. However, the recording method remains the same. The phrase being played while the joystick is pushed forward will be held.)
- 4 If you made a mistake during recording, pull the joystick in the -Y direction (back) to reset. In this way, the recording will be erased. Repeat step 3 again.
- 5 The recorded phrase will be repeated again and again. You can use this to create an accompaniment.
- 6 By pushing the joystick in the +Y direction (forward), you can also overdub performances over the phrase that is being held.

00: Flanger

This effect is a monaural-in/stereo-out flanger, with a two-band equalizer, that allows you to control the tonal quality of the effect sound.



a	Delay Time [msec]	0.0...50.0msec	Delay from the original sound
b	LFO Waveform	Triangle, Sine	Selects LFO Waveform.
	LFO Shape	-100...+100	Determines how much the LFO waveform is changed. ☞ P.32
c	LFO Phase [degree]	-180...+180	LFO phase difference between the left and right ☞ P.65
d	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed
	Src	None...Tempo	Modulation source of LFO speed.
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed
e	Depth	0...100	Depth of LFO modulation
f	Feedback	-100...+100	Feedback amount☞ P.32
	FB Mode	Normal, Cross	Sets the feedback routing. ☞ P.69
g	High Damp [%]	0...100%	Feedback damping amount in the high range ☞ P.32
h	EQ Trim	0...100	2-band EQ input level
	LEQ [dB]	-15...+15dB	Low-EQ gain
	HEQ [dB]	-15...+15dB	High-EQ gain
i	Spread	0...100	Sets the width of the effect sound's stereo image. ☞ P.65
j	Output Level	-100...+100	Sets the balance between the effect and dry sounds. ☞ P.32, 142
	Src	None...Tempo	Modulation source of effect balance.
	Amt	-100...+100	Modulation amount of effect balance

D-mod

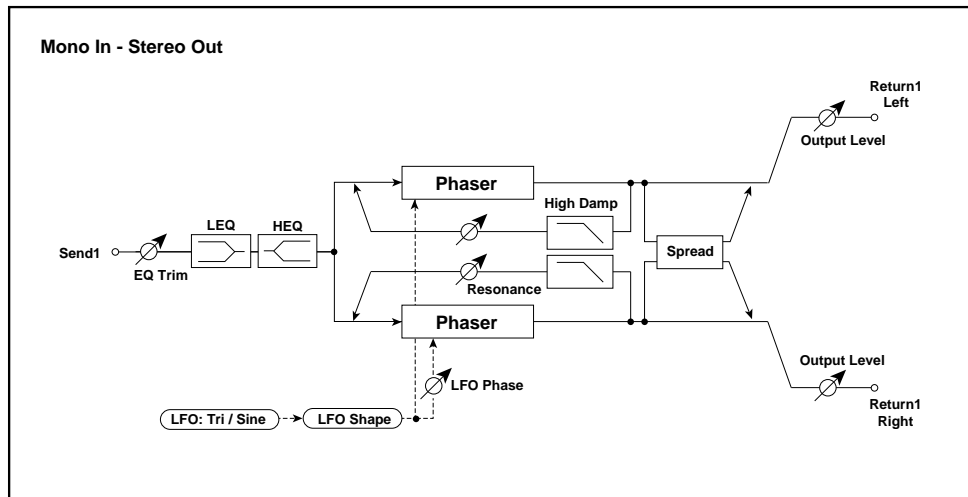
D-mod

j: Output Level

When this parameter is set in the range of values from -100 to -1, the effect sound will be output with its phase reversed.

01: Phaser

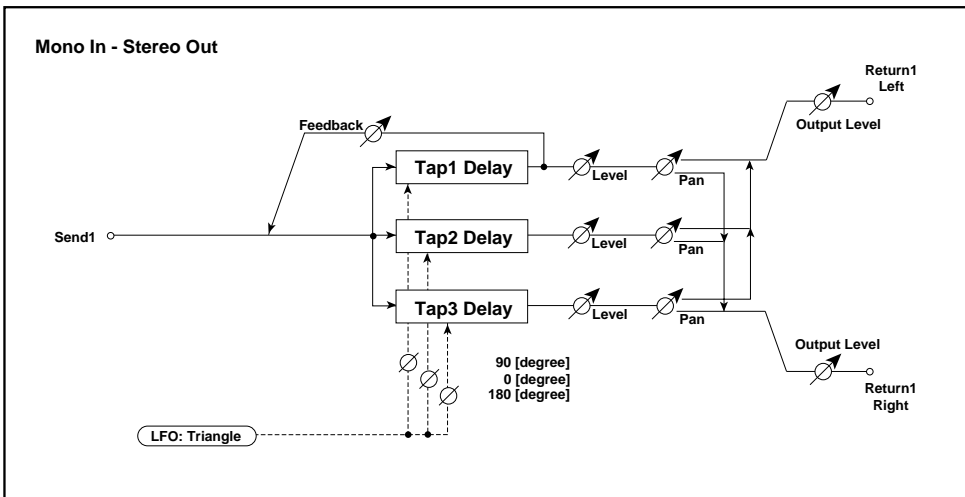
This effect is a monaural-in/stereo-out phaser, with a two-band equalizer, that allows you to control the tonal quality of the effect sound.



a	LFO Waveform	Triangle, Sine	Selects LFO Waveform.
	LFO Shape	-100...+100	Determines how much the LFO waveform is changed. P.32
b	LFO Phase [degree]	-180...+180	LFO phase difference between the left and right P.65
c	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed
	Src	None...Tempo	Modulation source of LFO speed. AutoFade is available.
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed
d	Manual	0...100	Sets the frequency to which the effect is applied.
e	Depth	0...100	Depth of LFO modulation
f	Resonance	-100...+100	Sets the resonance amount. P.35
g	High Damp [%]	0...100%	Resonance damping amount in the high range P.35
h	EQ Trim	0...100	2-band EQ input level
	LEQ [dB]	-15...+15dB	Low-EQ gain
	HEQ [dB]	-15...+15dB	High-EQ gain
i	Spread	0...100	Sets the width of the effect sound's stereo image. P.65
j	Output Level	-100...+100	Sets the balance between the effect and dry sounds. P.35, 142
	Src	None...Tempo	Modulation source of effect balance.
	Amt	-100...+100	Modulation amount of effect balance

02: Multitap Chorus/Dly (Multitap Chorus/Delay)

This effect has three chorus blocks with different LFO phases. You can create a complex stereo image by setting each block's delay time, depth, output level, and pan individually. You can also set some of the chorus blocks to combine the chorus and delay effects.

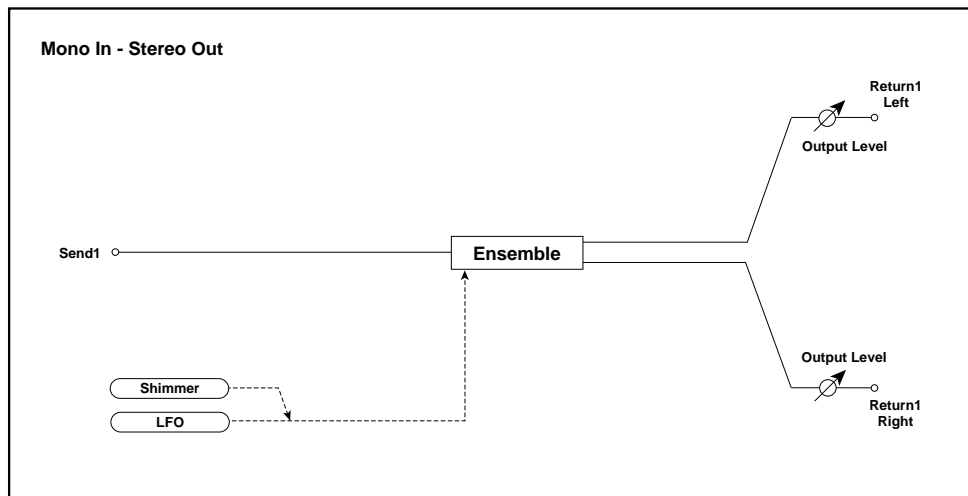


a	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed
b	Tap1(090) [msec]	0...570msec	Tap1 (LFO phase=90 degrees) delay time
	Depth	0...100	Tap1 chorus depth
	Level	0...100	Tap1 output level
	Pan	L6...L1, C, R1...R6	Tap1 stereo image
c	Tap2(000) [msec]	0...570msec	Tap2 (LFO phase=0 degrees) delay time
	Depth	0...100	Tap2 chorus depth
	Level	0...100	Tap2 output level
	Pan	L6...L1, C, R1...R6	Tap2 stereo image
d	Tap3(180) [msec]	0...570msec	Tap3 (LFO phase=180 degrees) delay time
	Depth	0...100	Tap3 chorus depth
	Level	0...100	Tap3 output level
	Pan	L6...L1, C, R1...R6	Tap3 stereo image
e	Tap1 Feedback	-100...+100	Tap1 feedback amount
	Src	None...Tempo	Modulation source of Tap1 feedback amount
	Amt	-100...+100	Modulation amount of Tap1 feedback amount
f	Output Level	0...100	Output level of effect sound
	Src	None...Tempo	Modulation source of output level
	Amt	-100...+100	Modulation amount of output level



03: Ensemble

This Ensemble effect has three chorus blocks, and adds a three dimensional depth and spread to the sound, since the signal is output from the left, right, and center.

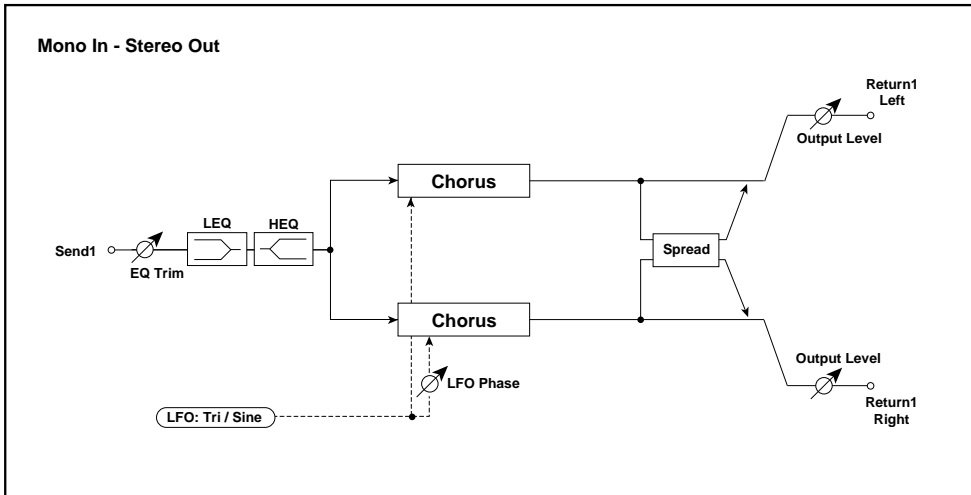


a	Speed	1...100	LFO speed	D-mod
	Src	None...Tempo	Modulation source of LFO speed	
	Amt	-100...+100	Modulation amount of LFO speed	
b	Shimmer	0...100	Amount of shimmer of the LFO waveform P:31	
c	Depth	0...100	Depth of LFO modulation	D-mod
	Src	None...Tempo	Modulation source of the LFO modulation depth	
	Amt	-100...+100	Modulation amount of the LFO modulation depth	
d	Output Level	0...100	Output level of effect sound	D-mod
	Src	None...Tempo	Modulation source of output level	
	Amt	-100...+100	Modulation amount of output level	

Master Effect

04: Chorus

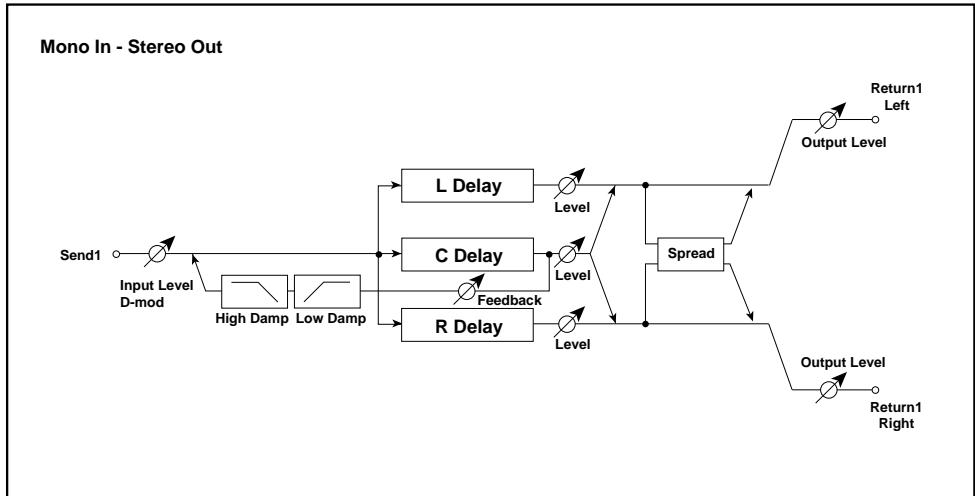
This is a monaural-in/stereo-out chorus. You can add spread to the sound by offsetting the phase of the left and right LFOs from each other.



a	LFO Waveform	Triangle, Sine	Selects LFO Waveform.	
	LFO Phase [degree]	-180...+180	LFO phase difference between the left and right ☞P.65	
b	LFO Frequency [Hz]	0.02...20.00Hz	LFO speed	D-mod
	Src	None...Tempo	Modulation source of LFO speed.	
	Amt	-20.00...+20.00Hz	Modulation amount of LFO speed	
c	L Pre Delay [msec]	0.0...50.0msec	Delay time for the left channel ☞P.65	
d	R Pre Delay [msec]	0.0...50.0msec	Delay time for the right channel ☞P.65	
e	Depth	0...100	Depth of LFO modulation	D-mod
	Src	None...Tempo	Modulation source of the LFO modulation depth.	
	Amt	-100...+100	Modulation amount of the LFO modulation depth	
f	EQ Trim	0...100	EQ input level	
g	Pre LEQ Gain [dB]	-15.0...+15.0dB	Low-EQ gain	
	Pre HEQ Gain [dB]	-15.0...+15.0dB	High-EQ gain	
h	Spread	-100...+100	Sets the spread of the stereo image of the effect sound. ☞P.65	
i	Output Level	-100...+100	Output level of the effect sound ☞P.142	D-mod
	Src	None...Tempo	Modulation source of output level	
	Amt	-100...+100	Modulation amount of output level	

05: L/C/R Delay

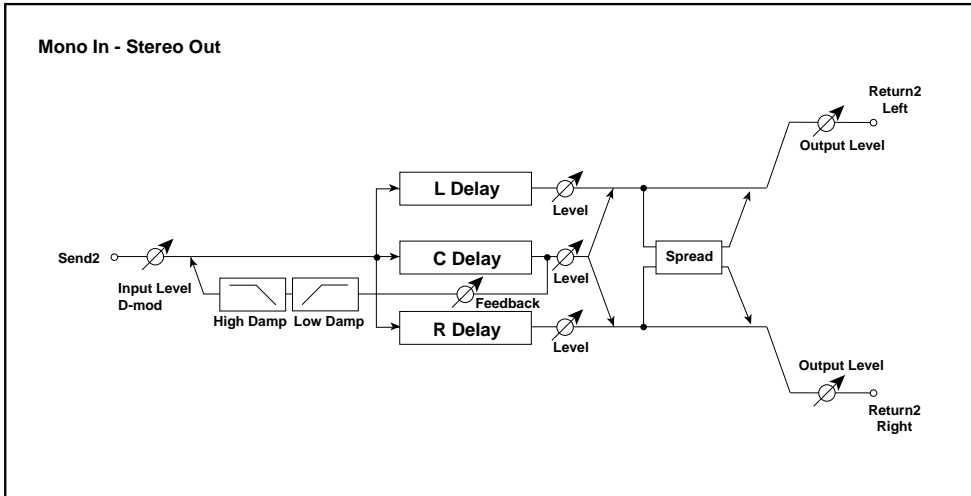
This multitap delay outputs three Tap signals to the left, right and center respectively.



a	L Delay Time [msec]	0...680msec	Sets the TapL delay time.	
	Level	0...50	TapL output level	
b	C Delay Time [msec]	0...680msec	Sets the TapC delay time.	
	Level	0...50	TapC output level	
c	R Delay Time [msec]	0...680msec	Sets the TapR delay time.	
	Level	0...50	TapR output level	
d	Feedback	-100...+100	Sets the TapC feedback amount.	D-mod
	Src	None...Tempo	Modulation source of the TapC feedback amount	
	Amt	-100...+100	Modulation amount of the TapC feedback amount	
e	High Damp [%]	0...100%	Damping amount in the high range P.44	
f	Low Damp [%]	0...100%	Damping amount in the low range P.44	
g	Input Level D-mod: Src	None...Tempo	Modulation source of the input level P.44	D-mod
	Amt	-100...+100	Modulation amount of the input level	
h	Spread	0...50	Sets the width of the stereo image of the effect sound. P.65	
i	Output Level	0...100	Output level of the effect sound	
	Src	None...Tempo	Modulation source of output level	
	Amt	-100...+100	Modulation amount of output level	

00: L/C/R Long Delay

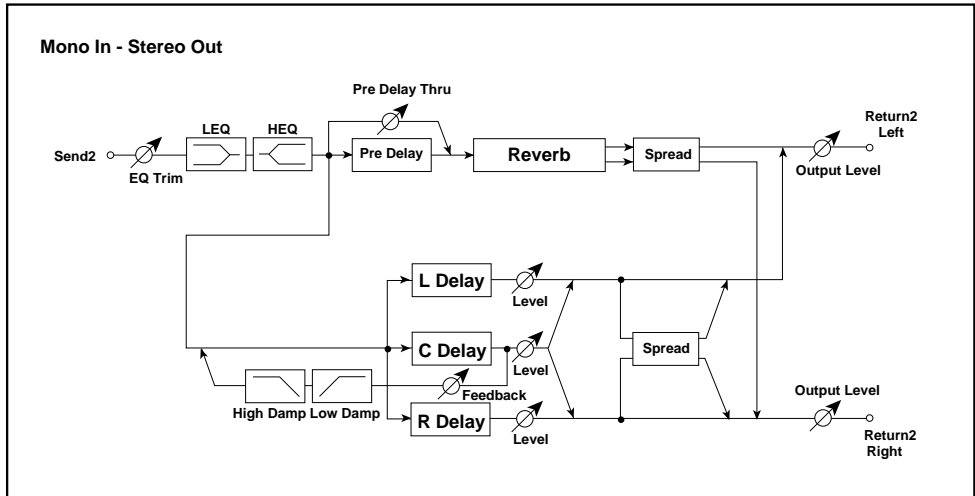
This multitap delay outputs three signals to the left, right and center respectively. Maximum delay time is 2,000msec.



a	L Delay Time [msec]	0...2000msec	Sets the TapL delay time.	
	Level	0...50	TapL output level	
b	C Delay Time [msec]	0...2000msec	Sets the TapC delay time.	
	Level	0...50	TapC output level	
c	R Delay Time [msec]	0...2000msec	Sets the TapR delay time.	
	Level	0...50	TapR output level	
d	Feedback	-100...+100	Sets the TapC feedback amount.	D-mod
	Src	None...Tempo	Modulation source of the TapC feedback amount	
	Amt	-100...+100	Modulation amount of the TapC feedback amount	
e	High Damp [%]	0...100%	Damping amount in the high range ☞P.44	
f	Low Damp [%]	0...100%	Damping amount in the low range ☞P.44	
g	Input Level D-mod: Src	None...Tempo	Modulation source of the input level ☞P.44	D-mod
	Amt	-100...+100	Modulation amount of the input level	
h	Spread	0...50	Sets the width of the stereo image of the effect sound. ☞P.65	
i	Output Level	0...100	Output level of effect sound	
	Src	None...Tempo	Modulation source of output level	
	Amt	-100...+100	Modulation amount of output level	

01: Delay/Reverb

This effect is a combination of a multitap delay and a hall-type reverb.



a	L Delay Time [msec]	0...680msec	Sets the TapL delay time.
	Level	0...30	TapL output level
b	C Delay Time [msec]	0...680msec	Sets the TapC delay time.
	Level	0...30	TapC output level
c	R Delay Time [msec]	0...680msec	Sets the TapR delay time.
	Level	0...30	TapR output level
d	Feedback	-100...+100	Sets the TapC feedback amount.
e	High Damp [%]	0...100%	Damping amount in the high range <small>☞P.44</small>
	Low Damp [%]	0...100%	Damping amount in the low range
f	Reverb Time [sec]	0.1...10.0	Sets the period of reverberation time.
	High Damp [%]	0...100%	Reverberation damping amount in the high range
g	Pre Delay [msec]	0...200msec	Reverb delay time <small>☞P.116</small>
	Pre Delay Thru	0...30	Mix ratio of non-delayed reverb sound
h	EQ Trim	0...30	Reverb input level to EQ
	LEQ [dB]	-15...+15	Reverb gain for the low-EQ
	HEQ [dB]	-15...+15	Reverb gain for the high-EQ
i	Spread	0...30	Sets the width of the stereo image of the effect sound. <small>☞P.150</small>
	Spread Control	Delay, Reverb, Both	Determines whether delay output, reverb output, or both outputs are controlled for the width of the stereo image.
j	Output Level	0...100	Output level of the effect sound
	Src	None...Tempo	Modulation source of output level
	Amt	-100...+100	Modulation amount of output level

i: Spread

i: Spread Control

These parameters set the width of the stereo image of the effect sound. The widest image can be obtained with a value of 30. With a value of 0, the effect sound will be output from the center.

When the Spread control = Delay, you can control the width of the stereo image of the delay output only. In this case, the width of the reverb stereo image is set to maximum.

When the Spread control = Reverb, you can control the width of the stereo image of the reverb output only. In this case, the width of the delay stereo image is set to maximum.

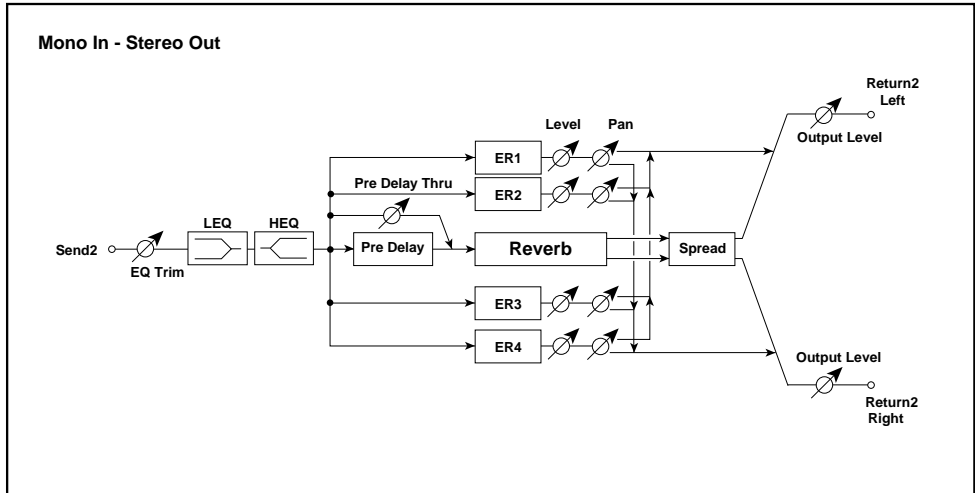
When the Spread control = Both, you can control the width of the stereo image of both the delay and reverb outputs.

02: Reverb-Room

This is a room-type reverberation. Setting the four types of early reflections individually allows you to simulate the sound reflections on the front, rear, left, and right walls of a room, creating a more realistic reverb sound. You can also adjust the width of the stereo image of the reverb sound.

03: Reverb-Bright Room

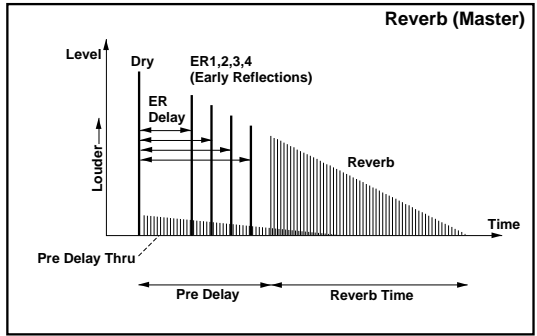
This is a bright, room-type reverb. Setting the four types of early reflections individually allows you to simulate the sound reflections on the front, rear, left, and right walls of a room, creating a more realistic reverb sound. You can also adjust the width of the stereo image of the reverb sound.



a	Reverb Time [sec]	0.1...3.0sec	Sets the reverberation time.
b	High Damp [%]	0...100%	Damping amount in the high range.
c	Pre Delay [msec]	0...200msec	Delay time from the dry sound ☞P.152
	Pre Delay Thru	0...30	Mix ratio of non-delay sound
d	EQ Trim	0...30	EQ input level
	LEQ [dB]	-15...+15dB	Low-EQ gain
	HEQ [dB]	-15...+15dB	High-EQ gain
e	ER1 Delay [msec]	0...200msec	Delay time of early reflection 1 ☞P.152
	Level	0...30	Early reflection 1 output level
	Pan	L, 1, 2, CNT, 4, 5, R	Stereo image of early reflection 1
f	ER2 Delay [msec]	0...200msec	Delay time of early reflection 2 ☞P.152
	Level	0...30	Early reflection 2 output level
	Pan	L, 1, 2, CNT, 4, 5, R	Stereo image of early reflection 2
g	ER3 Delay [msec]	0...200msec	Delay time of early reflection 3 ☞P.152
	Level	0...30	Early reflection 3 output level
	Pan	L, 1, 2, CNT, 4, 5, R	Stereo image of early reflection 3
h	ER4 Delay [msec]	0...200msec	Delay time of early reflection 4 ☞P.152
	Level	0...30	Early reflection 4 output level
	Pan	L, 1, 2, CNT, 4, 5, R	Stereo image of early reflection 4
i	Spread	0...30	Sets the width of the stereo image of the reverb sound (excluding the early reflections) ☞P.65

j	Output Level	0...100	Output level of the effect sound
	Src	None...Tempo	Modulation source of output level
	Amt	-100...+100	Modulation amount of output level

- c: Pre Delay [msec]
- e: ER1 Delay [msec]
- f: ER2 Delay [msec]
- g: ER3 Delay [msec]
- h: ER4 Delay [msec]



04: Reverb-Hall

This is a hall-type reverberation. Setting the four types of early reflections individually allows you to simulate the sound reflections on the front, rear, left, and right walls of a room, creating a more realistic reverb sound. You can also adjust the width of the stereo image of the reverb sound.

05: Reverb-Smooth Hall

This is a hall-type reverberation with a smooth release. Setting the four types of early reflections individually allows you to add effective ambience to the sound. You can also adjust the width of the stereo image of the reverb sound.

06: Reverb-Wet Plate

This effect simulates a dense plate reverberation. Setting the four types of early reflections individually allows you to add effective ambience to the sound. You can also adjust the width of the stereo image of the reverb sound.

07: Reverb-Dry Plate

This is a light, plate reverberation. Setting the four types of early reflections individually allows you to add effective ambience to the sound. You can also adjust the width of the stereo image of the reverb sound.

a	Reverb Time [sec]	0.1...10.0sec	Sets the reverberation time.
b	High Damp [%]	0...100%	Damping amount in the high range.
c	Pre Delay [msec]	0...200msec	Delay time from the dry sound ☞P.152
	Pre Delay Thru	0...30	Mix ratio of non-delay sound
d	EQ Trim	0...30	EQ input level
	LEQ [dB]	-15...+15dB	Low-EQ gain
	HEQ [dB]	-15...+15dB	High-EQ gain
e	ER1 Delay [msec]	0...200msec	Delay time of early reflection 1 ☞P.152
	Level	0...30	Early reflection 1 output level
	Pan	L, 1, 2, CNT, 4, 5, R	Stereo image of early reflection 1
f	ER2 Delay [msec]	0...200msec	Delay time of early reflection 2 ☞P.152
	Level	0...30	Early reflection 2 output level
	Pan	L, 1, 2, CNT, 4, 5, R	Stereo image of early reflection 2
g	ER3 Delay [msec]	0...200msec	Delay time of early reflection 3 ☞P.152
	Level	0...30	Early reflection 3 output level
	Pan	L, 1, 2, CNT, 4, 5, R	Stereo image of early reflection 3
h	ER4 Delay [msec]	0...200msec	Delay time of early reflection 4 ☞P.152
	Level	0...30	Early reflection 4 output level
	Pan	L, 1, 2, CNT, 4, 5, R	Stereo image of early reflection 4
i	Spread	0...30	Sets the width of the stereo image of the reverb sound (excluding early reflections) ☞P.65
j	Output Level	0...100	Output level of effect sound
	Src	None...Tempo	Modulation source of output level
	Amt	-100...+100	Modulation amount of output level

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