air

OPx-4

User Guide

English

Manual Version 1.1

Introduction

Thank you for purchasing the AIR OPx-4 plugin instrument. The AIR OPx-4 plugin is a four-operator frequency modulation powerhouse, delivering the ultimate in FM sound shaping.

- Advance FM synthesis. At the source, each operator is capable of producing complex waveform results via feedback, formant shaping, FM Filtering and FM shaping parameters.
- Dual multimode filter path with 23 different filter types
- 6 envelopes with tempo-synced looping
- 2 LFOs
- 2 ramps
- 3 insert effects slots and 2 global effects slots with dynamic effects. Choose from a huge library of 27 AIR effects plugins including reverbs, delays, modulation, and distortion.
- Modulation matrix with 32 slots
- Sample layer for adding percussive attacks

This user guide explains the features and functions of the plugin instrument. For more information on using this plugin with other software, please refer to your software's documentation for adding and using plugin instruments.

System Requirements & Product Support

For complete system requirements and compatibility information, visit **airmusictech.com**.

For technical support, visit **support.airmusictech.com**.

Installation

1. Double-click the **.exe** (Windows) or **.pkg** (macOS) file you downloaded. Follow the on-screen instructions to install the software.

2. Open the plugin application.

3. Click **Sign In** to sign into your inMusic Brands Profile using your Internet browser. If you do not have an inMusic Brands Profile yet, you will be prompted to create one.

4. Once you have signed in, click **Activate** in the plugin window to enter your serial key to unlock the plugin. You can unlock each plugin on up to three devices at a time.

5. If you do not have a serial key, you can click **Try Unlicensed** to explore the plugin with intermittent audio alerts. You can also click **10-Day Trial** to initiate a free, fully featured trial of the plugin for 10 days.

   If you would like to purchase a serial key, click the link to purchase a license at **profile.inmusicbrands.com**.

Operation

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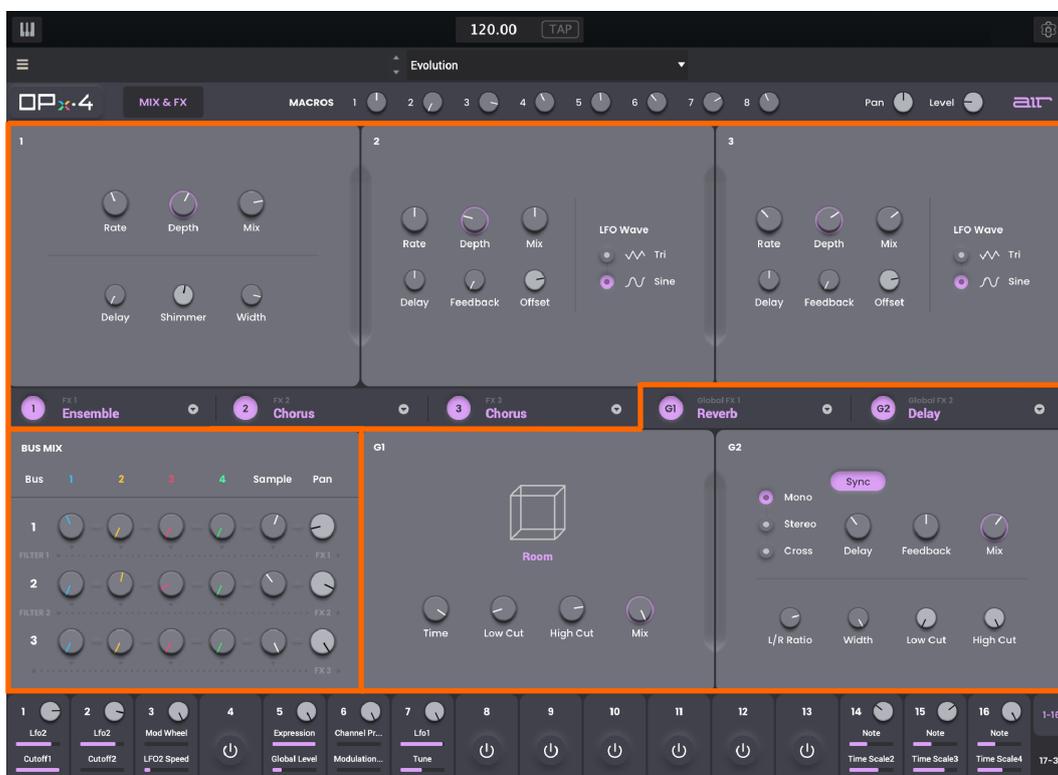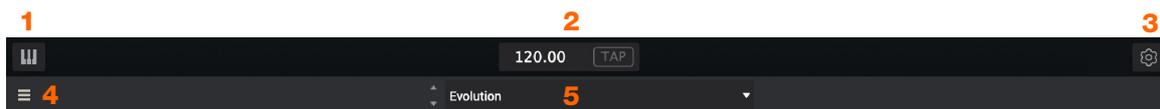
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Setup Section

1. **Keyboard:** Click this icon to enable or disable the virtual keyboard. When enabled, you can click these keys to input notes, or view notes being played on an external MIDI device.

2. **Tempo:** Displays the current plugin tempo. To change the tempo:

   - Click the number and use your keyboard to input a new value.

   - Click and drag the tempo value up or down using your cursor.

   - Click the **Tap** button at regular intervals.

3. **Settings:** Click this icon to open the Settings window, where you can set the following parameters:

   - **Output:** Click this drop-down menu to select an audio hardware driver in your computer system. Click the **Test** button to play a test tone for checking your audio output settings. (Careful! You should lower the volume on your audio system beforehand.)

   - **Sample Rate:** Click this drop-down menu to select the desired sample rate for your project. This depends on the available sample rates of the type of MPC hardware you are using or of your audio interface (i.e., select **96000 Hz** only if your interface allows a 96 kHz sample rate).

   - **Audio Buffer Size:** Click this drop-down menu to set your audio system's latency. Lower values result in a more immediate playing response but also more CPU consumption. If you are working with larger projects, this may cause audible clicks and pops. Higher values are more CPU-friendly but can produce more delay between pressing a pad and hearing the corresponding sound. The ideal audio buffer size also depends on your computer's CPU performance. Experiment with this to find the best setting for your system.

   - **Active MIDI Inputs:** Displays available MIDI input devices. To enable a device, check the box next to its name.

   - **Bluetooth MIDI:** Click this icon to open your system's Bluetooth settings menu, where you can select a Bluetooth-enabled MIDI device to control the plugin.

4. **Menu:** Click this icon to open the menu, where you can find the following options:

   - **Scale:** Click here to select a value to scale the plugin window to a new size.

   - **Load Preset:** Click here to load a saved preset.

   - **Save Preset:** Click here to save the current preset.

   - **Open User Guide:** Click here to open this User Guide.

   - **About:** Click here to view plugin version information.

5. **Preset:** Click this drop-down menu to view the list of included plugin presets. You can also click the up and down arrows next to this field to move to the previous or next preset.

Global Controls and Macros

Parameter	Description	Value Range
Mix & FX	Toggles the main view between the Operators and the Mix & FX parameters.	Off, On
Macros	These eight macro controls are unique to each preset.	Varies
Pan	Stereo panning of the instrument.	L64 – C – R64
Level	Overall volume level of the plugin.	-inf – 0.0 – +6.0 dB

Operators and FM Matrix

Parameter		Description	Value Range
Operators	1–4	Enables or disables the selected voice.	Off, On
	Ratio	As the ratio doubles, the sound goes up one octave. For instance, if your starting note is C3 (Ratio 1.0000), a Ratio of 0.5000 results in C2, a Ratio of 2.0000 results in C4, and so on.	0.0000 – 64.0000
	Offset	Amount of frequency offset in Hz of the operator from the original pitch.	-9999.00 – 0 – 9999.00
	Level	Volume of the selected Operator in the mix.	0–100%
	PW	Depth of pulse width modulation.	0–100%
	Formant	Increases resonant frequencies to adjust the timbre of the sound.	0.00 – 10.00
FM Matrix		Controls the modulation levels for the four Operator voices. Use the colored Operator numbers to enable or disable each voice. Use the value matrix to decrease or increase the modulation of the selected voices in the matrix.	-100 – 0 – +100%
	FM Shaping	Adjusts the frequency modulation between the original operator value (at 0) and the squared value (at 100).	0–100%
	FM Filtering	Amount of high-end filtering applied to the sound to reduce harshness.	0–100%
	FM Scaling	Adjust how much overall modulation from the FM Matrix is applied to the sound.	0–100%

Global / Sample

Click **Global** to view and edit the global settings for the plugin. Click **Sample** to view and edit the settings for the sample layer. You can use this to add a sampled audio clip as part of the synthesized sound.

Parameter		Description	Value Range
Global	Transpose	Transposition of the instrument, in semitones.	-48 – 0 – +48 Semitones
	Tune	Fine tuning of the plugin, in cents.	-50 – 0 – +50 Cents
	Polyphony	Number of available voices.	Legato, Retrigger, 2–7, Poly
	Glide	Enable or disable pitch gliding.	Off, On
	Legato	Enables or disables pitch gliding for legato notes.	Off, On
	Time	Amount of time to slide from the pitch of one note to the next note played.	0.0 – 2000.0 ms
Sample	Layer	Select the sample layer sound.	Varies
	Looped	Enables or disables looping of the sample layer.	Off, On
	Transpose	Amount of transposition applied to the sample layer.	-48 – 0 – +48 semitones
	Tune	Amount of tuning offset applied to the sample layer.	-50 – 0 – +50 cents
	Level	Volume of the sample layer.	0–100%
	Key Track	Ties the pitch of the sample to the pitch being played.	0–100%
	Dec / Rel	Length of decay and release of the sample.	10.00 – 5000.00 ms
	Velocity	The amount of effect velocity has on the level of the sample. When set to 0, velocity has no effect.	0–100%

Filter 1/2

Parameter	Description	Value Range
Type	Enables and sets the type of filter applied. • LP: Low Pass • BP: Band Pass • HP: High Pass • BR: Band Reject • AP: All Pass	Off, LP4, LP3, LP2, LP1, BP2, BP4, HP2+LP1, HP3+LP1, HP4, HP3, HP2, HP1, BR2, BR4, BR2+LP1, BR2+LP2, HP1+BR2, BP2+BR2, HP1+LP2, HP1+LP3, AP3, AP3+LP1, HP1+AP3
Cutoff	Center cutoff frequency of the filter.	55.0 Hz – 20.0 kHz
Res	Amount of resonance applied to the filter.	0.7–20.0
Drive	Amount of overdrive applied to the filter signal.	0–100%

LFO 1/2

Click the **LFO1** and **LFO2** icons to view each LFO's controls.

Parameter	Description	Value Range
Global	Enables or disables the selected LFO.	Off, On
Sync	Sync the LFO **Speed** to the **Global Tempo** or turn **Off** to adjust **Speed** by Hz.	Off, On
Type	Type of modulation waveform.	Ramp Up, Ramp Down, Triangle, Sine, Square, Rnd1, Rnd2
Speed	Speed of modulation.	
	When **Sync** is **Off**:	0.10 – 50.00 Hz
	When **Sync** is **On**:	16, 8T, 16D, 8, 4T, 8D, 4, 2T, 4D, 2, 1T, 3/4, 4/4, 5/4, 6/4, 7/4, 8/4
Level	Amount of LFO applied.	0–100%
Delay	Amount of delay between note start and LFO start.	0.00 – 15000.00 ms
Phase	Position of the waveshape when the sound is triggered.	0–100%
Fade In	Amount of fade-in time applied to the LFO signal.	0.00 – 15000.00 ms

Utilities

Click the **Utilities** icon to show these settings in the same area of LFO1/2.

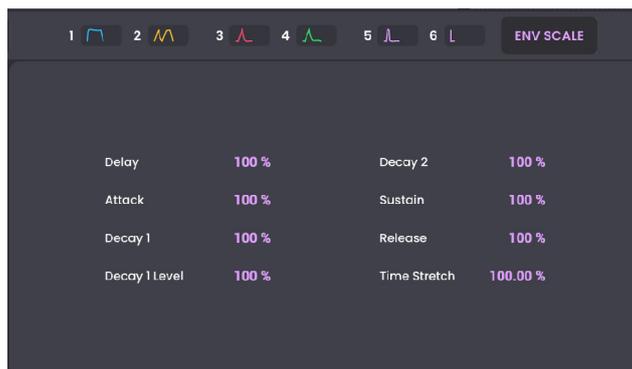| Parameter		Description	Value Range
Note Counter 1/2	Notes	Number of available voices.	2–16
	Mode	Determines how voices are triggered within the range set in **Notes**: • **Wrap:** Voices trigger in order and wrap back around to the minimum once the maximum is reached. • **Random:** A random number is generated within the value range each time a voice is played. • **Ping Pong:** Alternates between high and low values within the range.	Wrap, Random, Ping Pong
Velocity Curve		Determines how playing notes translates into velocity values. At negative values, it takes more force to hit higher velocity values; at positive values, it takes less force.	-100 – 0 – +100%
Ramp 1/2	Global	Enables or disables applying the ramp globally.	Off, On
	Time	Length of time for the selected ramp.	10.00 – 10000.00 ms
	Curve	Adjust the shape of the ramp.	-100 – 0 – +100%

Envelopes 1–6

Use these tabs to adjust the six amplitude modulation envelopes. Tap the tab to cycle between each, or tap the envelope icons at the top of the window.

In addition to the controls at the bottom of the window, you can also directly tap and drag each envelope point in the graph.

Parameter	Description	Value Range
Time Scale	Duration of the envelope.	10.00 – 100.00%
Tempo Sync	Length of the envelope relative to the **Global Tempo**. Set to **Off** set the envelope length according to the stage settings in milliseconds.	16, 8T, 16D, 8, 4T, 8D, 4, 2T, 4D, 2, 1T, 3/4, 4/4, 5/4, 6/4, 7/4, 8/4, Off
Mode	Type of envelope applied.	DADSR, Loop, One-Shot
Delay	Amount of time between note start and envelope start.	0.00 – 15000.00 ms
Attack	Length of time for the note to reach full level.	0.50 – 10000.00 ms
Attack Curve	Adjust the shape of the envelope's Attack phase.	0–100%
Decay	Length of time for the initial attack decay phase.	1.00 – 10000.00 ms
Decay Level	Level of the initial decay phase compared to the attack phase.	0–100%
Decay Curve	Adjust the shape of the envelope's Decay phase.	0–100%
Decay 2	Length of time for the secondary decay phase for note to reach sustain level.	1.00 – 10000.00 ms
Decay 2 Curve	Adjust the shape of the envelope's Decay 2 phase.	0–100%
Sustain	Level of the sound while the note is held.	0–100%
Release	Length of time for the note to dissipate when released.	10.00 – 5000.00 ms
Release Curve	Adjust the shape of the envelope's Release phase.	0–100%

Envelopes 1–6 (continued)

Click the **Env Scale** button to view the Envelope Scaling options, which allow you to further adjust how much of the envelope is applied.

Parameter	Description	Value Range
Delay	Adjust the overall Delay envelope amount.	0–100%
Attack	Adjust the overall Attack envelope amount.	0–100%
Decay 1	Adjust the overall Decay 1 envelope amount.	0–100%
Decay 1 Level	Adjust the overall Decay 1 Level.	0–100%
Decay 2	Adjust the overall Decay 2 envelope amount.	0–100%
Sustain	Adjust the overall Sustain level.	0–100%
Release	Adjust the overall Release envelope amount.	0–100%
Time Stretch	Adjust the overall length of the envelope.	100.00–400.00%

Modulation

The 32 modulation points can be configured to add a wide variety of sound shaping tools.

To enable a modulation point, click the **power button** to activate it.

To expand the modulation settings, click each modulation number. Click the **X** icon to return to the list of Modulations.

To toggle between viewing modulation groups, click the **1–16** or **17–32** icons.

Parameter		Description	Value Range
Mod 1–32	Power Button	Enables or disables each modulation point.	Off, On
	Mod	Amount of modulation applied.	0–100%
	Type	Type of modulation applied.	Bipolar, Unipolar, Bipolar (scaled), Unipolar (reverse)
	Min	Minimum modulation level of the selected parameter.	0–100%
	Max	Maximum modulation level of the selected parameter.	0–100%
	Shaper	Determines how the modulation relationship between the source and target is shaped.	Off, Square, Cubic, InvSquare, InvCubic, SquareRoot, CubeRoot, Sine, DoubleSine, Quantize0025, Quantize0050, Quantize0075, Quantize2550, Quantize5075, Quantize75100,
	Amount	Amount of the Shaper applied.	0–100%
	Source	Select the input source of the modulation.	Varies
	Target	Select the output target for the modulation.	Varies

Bus Mix

Use this section to adjust the settings for the three bus mixes:

The columns represent **Operators 1–4**, the **Sample** layer, and the submix **Panning**.

The rows represent the signal path to **FX 1–3**. Rows 1 and 2 are also routed through **Filter 1** and **2**, respectively. Row 3 does not pass through either filter.

All submix outputs will be routed through the **Global FX 1–2**, if active.

Parameter	Description	Value Range
Operator 1–4	Volume level of the operator in each submix.	0–100%
Sample	Level of sample layer audio in each submix.	0–100%
Pan	Stereo panning of each submix.	L64 – C – R64

FX1–3

Use these sections to adjust the settings for the three available effects slots:

Off	Multitap Delay	Flanger (vintage)
Chorus	Highpass	Tube Drive
Ensemble	EQ (3 bands)	Compressor
Tremolo	Phaser	Expander
Delay	Phase (vintage)	

Click the **arrow** icon in each **FX1–3** slot to select an effect.

Click the **1–3** icon to bypass the effect.

Parameter		Description	Value Range
Chorus	Rate	Modulation speed of the chorus effect.	0.01 – 10.0 Hz
	Depth	Modulation depth of the chorus effect.	0.00 – 24.00 ms
	Mix	Wet/dry amount of the chorus effect.	0–100%
	Delay	Amount of delay between the original signal and modulated signal.	0.00 – 24.00 ms
	Feedback	Amount of signal feed back into the delay line.	0–100%
	Offset	Degree of offset that at the start of the LFO wave.	-180 – 0 – +180 degrees
	LFO Wave	Type of modulation wave.	Tri, Sine
Ensemble	Rate	Modulation speed of the ensemble effect.	0.01 – 10.0 Hz
	Depth	Modulation depth of the ensemble effect.	0.00 – 24.00 ms
	Mix	Wet/dry amount of the ensemble effect.	0–100%
	Delay	Amount of delay between the original signal and modulated signal.	0.00 – 24.00 ms
	Shimmer	Randomizes the Delay time, adding texture to the effect.	0–100%
	Width	Stereo width of the ensemble effect.	0–100%

FX1–3 *(continued)*

Parameter		Description	Value Range
Tremolo	Sync	Sync the modulation Rate to the Global Tempo or turn Off to adjust Rate by Hz.	Off, On
	Rate	Speed of the modulation.	
		When **Sync** is **Off**:	0.25 – 13.00 Hz
		When **Sync** is **On**:	8/4, 6/4, 5/4, 4/4, 3/4, 1T, 2, 4D, 2T, 4, 8D, 4T, 8, 16D, 8T, 16
	Depth	Modulation depth of the tremolo effect.	0–100%
	Sync Phase	Adjusts the starting position of the modulation waveform.	-180 – 0 – +180
	Shape	Type of modulation wave.	Sine, Sqr
	Mode	Type of effect applied.	Trem, Pan
Delay	Sync	Sync the **Delay** to the **Global Tempo** or turn **Off** to adjust **Delay** by milliseconds or seconds.	Off, On
	Type	Type of delay applied.	Mono, Stereo, Cross
	Delay	Amount of time between the dry signal and the delayed signal.	
		When **Sync** is **Off**:	1 ms – 4.00 s
		When **Sync** is **On**:	16, 8T, 16D, 8, 4T, 8D, 4, 2T, 4D, 2, 1T, 3/4, 4/4, 5/4, 6/4, 7/4, 8/4
	Feedback	Amount of signal fed back into the delay line.	0–100%
	Mix	Wet/dry amount of the delay effect.	0–100%
	L / R Ratio	Reduces the delay **Time** in either the **Left** or **Right** stereo field. This is useful for creating offset, panned delays.	L 50:100 – R 100:50
	Width	Stereo width of the delay effect.	0–100%
	Low Cut	Center frequency for delay signal low-cut filter.	20.0 Hz – 1.0 kHz
	High Cut	Center frequency for delay signal high-cut filter.	1.00 kHz – 20.0 kHz

FX1–3 *(continued)*

Parameter		Description	Value Range
Multitap Delay	From	Select the signal where the feedback is taken from.	Tap 1–5
	To	Select the signal where the feedback is sent to.	Input, Tap 1–5
	Sync	Sync the **Delay** to the **Global Tempo** or turn **Off** to adjust **Delay** by milliseconds or seconds.	Off, On
	Low Cut	Center frequency for delay signal low-cut filter.	20.0 Hz – 1.0 kHz
	High Cut	Center frequency for delay signal high-cut filter.	1.00 kHz – 20.0 kHz
	Delay	Amount of time between the dry signal and the delayed signal.	
		When **Sync** is **Off**: 1 ms – 4.00 s	
		When **Sync** is **On**: 16, 8T, 16D, 8, 4T, 8D, 4, 2T, 4D, 2, 1T, 3/4, 4/4, 5/4, 6/4, 7/4, 8/4	
	Feedback	Amount of signal fed back into the delay line.	0–100%
	Mix	Wet/dry amount of the delay effect.	0–100%
	Tap 1–5	Enable or disable each tap delay, which create multiple delay points.	Off, On
	Tap Delay 1–5	Percent from the original **Delay** value that each tap delay is set to. At 100%, the tap delay uses the full Delay amount.	0–100%
	Tap Level 1–5	Volume of the tap delay.	-inf – 0.0 dB
	Tap Pan 1–5	Stereo panning of the tap delay.	L100 – C – R100
Highpass	Cutoff	Cutoff frequency of the high-pass filter.	0–1000 Hz
	Resonance	Amount of resonance of the filter.	0–100%
EQ (3 bands)	Low Gain	Level of the low EQ band.	-15.0 – 0 – +15.0 dB
	Low Freq	Center frequency of the low EQ band.	20.0 Hz – 1.00 kHz
	Mid Gain	Level of the mid EQ band.	-15.0 – 0 – +15.0 dB
	Mid Q	Width of the mid EQ band.	0.50–10.00
	Mid Freq	Center frequency of the mid EQ band.	40.0 Hz – 16.0 kHz
	High Gain	Level of the high EQ band.	-15.0 – 0 – +15.0 dB
	High Freq	Center frequency of the high EQ band.	2.00 – 20.0 kHz
	Output	Output level of the post-EQ audio.	-20.0 – 0 – +20.0 dB

FX1–3 *(continued)*

Parameter		Description	Value Range
Phaser	Sync	Sync the Phaser **Rate** to the **Global Tempo** or turn **Off** to adjust **Rate** by Hz.	Off, On
	Rate	Speed of modulation.	
		When **Sync** is set to **Off**:	0.01 – 10.0 Hz
		When **Sync** is set to **On**:	8/4, 6/4, 5/4, 4/4, 3/4, 1T, 2, 4D, 2T, 4, 8D, 4T, 8, 16D, 8T, 16
	Depth	Amount of modulation applied.	0–100%
	Feedback	Amount of signal fed back into the audio line.	0–100%
	Mix	Wet/dry mix of the phaser effect.	0–100%
	Low Cut	Center frequency for the phaser low-cut filter.	20.0 Hz – 1.00 kHz
	Center	Center frequency of the phaser poles.	100 Hz – 10.0 kHz
	Poles	Number of phase stages, where a higher number creates a more intense phasing effect.	2, 4, 6, 8
	LFO Wave	Adjusts the modulation wave between a triangle wave and sine wave.	0–100%
	Offset	Degree of offset that at the start of the LFO wave.	-180 – 0 – +180 deg
Phase (vintage)	Rate	Speed of modulation.	0.10 – 10.00 Hz
	Depth	Amount of modulation applied.	0–100%
	Feedback	Amount of signal fed back into the audio line.	0–100%
	Mix	Wet/dry mix of the phaser effect.	0–100%
	Offset	Degree of offset applied to start of the LFO wave or the modulation speed.	
		When **Phase/Rate** is set to **Phase:**	-180 – 0 – +180 deg
		When **Phase/Rate** is set to **Rate:**	25–400%
	Phase/Rate	Determines what is affected by the **Offset** control.	Phase, Rate
	Model	Type of vintage phaser model.	Vibe, Stone, Ninety, Tron
Flanger (vintage)	Rate	Speed of modulation.	0.10 – 10.00 Hz
	Depth	Amount of modulation applied.	0–100%
	Mix	Wet/dry mix of the phaser effect.	0–100%
	Feedback	Amount of signal fed back into the audio line.	0–100%
	Headroom	Amount of gain reduction between the clean signal and the flanger signal.	-20.0 – 0.0 dB FS

Parameter		Description	Value Range
Tube Drive	Drive	Amount of drive applied.	0–100%
	Headroom	Point at which the incoming signal starts to distort. At lower settings, the signal will distort even at low volumes. At higher settings, the signal will remain "clean" at lower or mid-range volumes and then start distorting when it becomes very loud	-30.0 – 0.0 dB
	Saturation	Amount of saturation applied.	0–100%
	Output	Output level of the post-drive audio.	-20.0 – 0 – +20.0 dB
Compressor	Type	Type of compression applied.	Peak, RMS, Opto
	Threshold	Signal level after which the compressor will be applied.	-40.0 – 0.0 dB
	Ratio	Amount of compression applied.	1.0:1 – 100:1
	Output	Amount of additional output gain for the compressed signal.	-20.0 – 0 – +20.0 dB
	Knee	How gradually the compressor reacts as the threshold is reached. Lower values apply a "soft" knee (compression is applied more slowly as signal approaches the threshold), and higher values apply a "hard" knee (compression is immediately applied when the threshold is reached).	0–100%
	Attack	Length of time to apply the compression.	10.0 us – 100 ms
	Release	Length of time for compressed signal to return to original level.	10.0 ms – 10.00 s
	Low Sens	Sensitivity threshold of the compressor for low-end frequencies.	-12.0 – 0 – +12.0 dB
	High Sens	Sensitivity threshold of the compressor for high-end frequencies.	-12.0 – 0 – +12.0 dB
Expander	Threshold	Signal level below which the expander will reduce signal.	-40.0 – 0.0 dB
	Ratio	Amount of expansion applied.	1:1.0 – 1:100
	Range	Set the dynamic range above the threshold value.	0.0 – 40.0 dB
	Output	Output level of the expansion audio.	-20.0 – 0 – +20.0 dB
	Attack	Length of time to apply the expansion.	10.0 us – 100 ms
	Release	Length of time for expanded signal to return to original level.	10.0 ms – 10.00 s

Global FX1–2

Use these sections to adjust the settings for the two available global effects slots:

Off	Multitap Delay	Flanger (vintage)	Compressor
Chorus	Highpass	Amp Sim	Maximizer
MultiChorus	EQ (Parametric)	Talk Box	Expander
Ensemble	EQ (3 bands)	FuzzWah	Enhancer
Temolo	Phaser	Tube Drive	Reverb
Delay	Phase (vintage)	Overdrive	Spring Reverb
Tape Delay	Flanger	Decimator	Gated Reverb

Click the **arrow** icon in each **G1–2** slot to select an effect.

Click the **G1–G2** icon to bypass the effect.

Parameter		Description	Value Range
Chorus		See **FX1–3** description ***above***.	
MultiChorus	Rate	Modulation speed of the chorus effect.	0.01 – 10.0 Hz
	Depth	Modulation depth of the chorus effect.	0.00 – 24.00 ms
	Voice Count	Number of copies of the sound used to create the chorus effect.	3, 4, 6
	Mix	Wet/dry amount of the chorus effect.	0–100%
	Delay	Amount of delay between the original signal and modulated signal.	0.00 – 24.00 ms
	Width	Stereo width of the effect.	0–100%
	Low Cut	Center frequency for the effect low-cut filter.	20.0 Hz – 1.00 kHz
	LFO Wave	Type of modulation wave.	Tri, Sine
Ensemble		See **FX1–3** description ***above***.	
Tremolo		See **FX1–3** description ***above***.	
Delay		See **FX1–3** description ***above***.	

Global FX1–2 *(continued)*

Parameter		Description	Value Range
Tape Delay	Tape Head On/Off 1–4	Enables or disables each tape head, which create multiple delay points.	Off, On
	Tape Head Delay 1–4	Percent from the original **Delay** value that each tape head is set to. At 100%, the tape head uses the full Delay amount.	0–100%
	Tape Head Mix 1–4	Wet/dry amount of the tape head.	0–100%
	Tape Head Pan 1–4	Stereo panning of the tape head.	L100 – C – R100
	Tape Head Feedback 1–4	Amount of signal from the tape head fed back into the delay line.	0–100%
	Sync	Sync the **Delay** to the **Global Tempo** or turn **Off** to adjust **Delay** by milliseconds or seconds.	Off, On
	Delay	Amount of time between the dry signal and the delayed signal.	
		When **Sync** is **Off**:	1 – 4000 ms
		When **Sync** is **On**:	16, 8T, 16D, 8, 4T, 8D, 4, 2T, 4D, 2, 1T, 3/4, 4/4, 5/4, 6/4, 7/4, 8/4
	Speed	Rate that the simulated tape moves.	0.0 – 15.0 ips
	Input	Level of the incoming signal.	-inf – 0 – + 12.0 dB
	Output	Level of the outgoing signal.	-inf – 0 – + 12.0 dB
	Feedback	Amount of signal fed back into the delay line.	0–100%
	Low Cut	Center frequency for delay signal low-cut filter.	20.0 Hz – 1.0 kHz
	High Cut	Center frequency for delay signal high-cut filter.	1.00 kHz – 20.0 kHz
	Mix	Wet/dry amount of the delay effect.	0–100%
	Wow Rate	Speed of wow pitch variation.	0.10 – 20.0 Hz
	Wow Depth	Modulation depth of wow pitch variation.	0–100%
	Flutter Rate	Speed of flutter pitch variation.	10.0 Hz – 1.00 kHz
	Flutter Depth	Modulation depth of flutter pitch variation.	0–100%
Multitap Delay		See **FX1–3** description *above*.	
Highpass		See **FX1–3** description *above*.	

Global FX1–2 *(continued)*

Parameter		Description	Value Range
EQ (Parametric)	Output	Amount of additional output gain reduction or boost for the post-EQ signal.	-20.0 – 0.0 – +20.0 dB
	Band On/Off	Enables or disables the selected EQ band.	Off, On
	Low Cut	Amount of frequency drop-off at the low cut frequency.	6, 12, 18, 24 dB
	Low Cut Freq	Center frequency of the EQ band.	20.0 Hz – 8.00 kHz
	Low Gain	Level of the low EQ band.	-12.0 – 0.0 – +12.0 dB
	Low Q	Width of the low EQ band.	0.40 – 2.00
	Low Freq	Center frequency of the low EQ band.	20.0 Hz – 1.00 kHz
	Low Shelf/Bell	Type of EQ band.	Shelf, Bell
	Low Mid Gain	Level of the low mid EQ band.	-18.0 – 0.0 – +18.0 dB
	Low Mid Q	Width of the EQ band.	0.40 – 10.00
	Low Mid Freq	Center frequency of the low mid EQ band.	40.0 Hz – 8.00 kHz
	High Mid Gain	Level of the high mid EQ band.	-18.0 – 0.0 – +18.0 dB
	High Mid Q	Width of the EQ band.	0.40 – 10.00
	High Mid Freq	Center frequency of the high mid EQ band.	120 Hz – 16.0 kHz
	High Gain	Level of the high EQ band.	-18.0 – 0.0 – +18.0 dB
	High Q	Width of the EQ band.	0.40 – 2.00
	High Freq	Center frequency of the high EQ band.	1.20 – 20.0 kHz
	High Shelf/Bell	Type of EQ band.	Shelf, Bell
	High Cut	Amount of frequency drop-off at the high cut frequency.	6, 12, 18, 24 dB
	High Cut Freq	Center frequency of the high cut EQ band.	120 Hz – 20.0 kHz
EQ (3 bands)		See **FX1–3** description *above*.	
Phaser		See **FX1–3** description *above*.	
Phaser (vintage)		See **FX1–3** description *above*.	

Global FX1–2 *(continued)*

Parameter		Description	Value Range
Flanger	Sync	Sync the Flanger **Rate** to the **Global Tempo** or turn **Off** to adjust **Rate** by Hz.	Off, On
	Trigger	Enable to manually reset the LFO phase.	Off, On
	Invert	Enable to invert the polarity of the flanged signal, changing the harmonic structure of the effect.	Off, On
	Rate	Speed of modulation.	
		When **Sync** is set to **Off**: 0.01 – 10.0 Hz	
		When **Sync** is set to **On**: 8/4, 6/4, 5/4, 4/4, 3/4, 1T, 2, 4D, 2T, 4, 8D, 4T, 8, 16D, 8T, 16	
	Depth	Amount of modulation applied to the delay time.	0.00 – 12.00 ms
	Delay	Amount of time between the dry signal and the delayed signal.	0.00 – 12.00 ms
	Mix	Wet/dry mix of the flanger effect.	0–100%
	Feedback	Amount of signal regeneration of the flanger signal.	-100 – 0 – +100%
	Low Cut	Center frequency for the flanger signal low-cut filter.	20.0 Hz – 1.00 kHz
	LFO Wave	Adjusts the modulation wave between a triangle wave and sine wave.	0–100%
	Offset	Adjust phase offset of the LFO to the left and right stereo channels.	-180 – 0 – +180 deg
Flanger (vintage)		See **FX1–3** description *above*.	

Global FX1–2 *(continued)*

Parameter		Description	Value Range
Amp Sim	Cab Model	Type of amplifier simulated.	D.I., Brit, 1x8", 1x12", 2x10", 2x12", 4x10", 4x12", 1x15" Bass, 4x10" Bass, Radio
	Drive	Amount of drive applied.	0.0–11.0
	Feedback	Amount of amplifier feedback.	0–100%
	Output	Output level of the amp signal.	-12.0 – 0.0 – +12.0 dB
	Soft Clip	Amount of softening applied to the clipped signal to decrease high-frequency harmonics and add warmth.	0–100%
	Top Boost	Amount of gain boost to treble frequencies.	0–100%
	Edge	Adjust clipping from being symmetrical to being asymmetrical, which makes it sound richer, and nastier at high settings.	0–100%
	Treble	Dampens or maximizes high end frequencies.	-12.0 – 0.0 – +12.0 dB
	Mid	Dampens or maximizes mid-range frequencies.	-12.0 – 0.0 – +12.0 dB
	Mid Freq	Center frequency for the mid-range EQ.	250 Hz – 4.00 kHz
	Bass	Dampens or maximizes low end frequencies.	-12.0 – 0.0 – +12.0 dB
	Mono/Stereo	Determines whether the simulation is mono or stereo.	Mono, Stereo
TalkBox	LFO Wave	Type of waveform used for the LFO.	Sine, Tri, Saw, Square, S&H, Random
	LFO Sync	Sync the **LFO Rate** to the **Global Tempo** or turn **Off** to adjust **LFO Rate** by Hz.	Off, On
	LFO Rate	Speed of LFO modulation.	
		When **Sync** if **Off:**	0.01 – 10.0 Hz
		When **Sync** in **On:**	8/4 – 16
	LFO Depth	Amount of modulation applied.	-100 – 0 – +100%
	Vowel	Shape of the formant filter, by the vowel sound that is simulated.	0.000–1.000
			OO, OU, AU, AH, AA, AE, EA, EE, EH, ER, UH, OH, OO
	Formant	Shifts the center formant up or down by semitones.	-12.00 – 0.00 – +12.00
	Mix	Wet/dry amount of the talk box effect.	0–100%
	Env Threshold	Amplitude threshold at which the Formant setting begins to be modulated by the Envelope follower.	-60.0 – 0.0 dB
	Env Attack	Length of time for the envelope to trigger.	0.1 – 10.0 s
	Env Release	Length of time for the envelope to release.	0.1 – 10.0 s
	Env Depth	Creates a positive or negative offset in the setting of the Vowel control, effected by the Envelope follower. When the envelope follower is triggered, the Vowel parameter moves to its normal setting and then back to the offset value.	-100 – 0 – 100%

Global FX1–2 *(continued)*

Parameter		Description	Value Range
Fuzz Wah	Fuzz	Enables or disables fuzz distortion.	Off, On
	Drive	Level of fuzz gain.	0 – 40 dB
	Tone	Brightness of the fuzz distortion.	1.00 – 10.0 kHz
	Output	Output level of the fuzz signal.	-Inf – 0.0 dB
	Wah	Enables or disables the wah function.	Off, On
	Pedal	Position of the wah pedal.	0–100%
	Rate	Speed of modulation.	8/4 – 16
	Depth	Depth of modulation.	-100 – 0 – +100%
	Filter	Type of wah filter.	Lowpass, Bandpass, Highpass
	Mod	Modulation source for the wah's filter sweep.	LFO, Env
	Min Freq	Frequency of the wah filter at the minimum pedal point.	50.0 Hz – 4.00 kHz
	Max Freq	Frequency of the wah filter at the maximum pedal point.	50.0 Hz – 4.00 kHz
	Min Reso	Resonance of the wah filter at the minimum pedal point.	0–100%
	Max Reso	Resonance of the wah filter at the maximum pedal point.	0–100%
	Order	Order of the fuzz and wah effects.	Fuzz>Wah, Wah>Fuzz
	Fuzz Mix	Wet/dry amount of the fuzz effect.	0–100%
	Wah Mix	Wet/dry amount of the wah effect.	0–100%
	Mix	Wet/dry amount of the combined fuzz/wah effect.	0–100%
Tube Drive		See **FX1–3** description *above*.	

Global FX1–2 *(continued)*

Parameter		Description	Value Range
Overdrive	Drive	Amount of input volume to overdrive the audio signal.	0–60 dB
	Mode	Set the overdrive mode: • **Hard:** Provides a sharp, immediate distortion of the signal. • **Soft:** Provides a softer, more gradual distortion of the signal. • **Warp:** Wraps the waveform back on itself for a complex distortion tone that changes quickly from soft to harsh.	Hard, Soft, Wrap
	Stereo	Set the effect to stereo or mono output.	Off, On
	Output	Output level of the overdriven signal.	0–100%
	Mix	Wet/dry amount of the overdrive effect.	0–100%
	Pre-Shape	Increases or decreases a broad gain boost or attenuation of treble frequencies in the processed signal.	-100 – 0 – 100%
	Threshold	Amount of headroom for the dynamic range of the distorted signal.	-20.0 – 0.0 dB FS
	Edge	Adjust clipping from being symmetrical to being asymmetrical, which makes it sound richer, and nastier at high settings.	0–100%
	High-Cut	Center frequency for the overdrive high-pass filter.	1.00 – 20.0 kHz

Global FX1–2 *(continued)*

Parameter		Description	Value Range
Decimator	Bit Depth	Amount of bit depth reduction.	1.0 – 16.0 bit
	Sample Rate	Amount of sample rate reduction.	500 Hz – 50.0 kHz
	Mix	Wet/dry amount of the decimator effect.	0–100%
	Anti-Alias	Enables or disables anti-aliasing.	Off, On
	Pre	Adjust the anti-aliasing filter cutoff applied to the audio signal before resampling.	0.125 – 2.000 Fs
	Post	Adjust the range of anti-aliasing filter cutoff applied to the audio signal after resampling.	0.125 – 2.000 Fs
	Clip	Adds transistor-like distortion to the signal.	0.0 – 40.0 dB
	Rectify	Acts as a waveshaper, adding aggressive, harsh distortion to the signal.	0–100%
	Noise Mod	Adds a buzzy, noisy edge to the signal.	0–100%
	LFO Sync	Sync the **Rate** to the **Global Tempo** or turn **Off** to adjust **Rate** by Hz.	Off, On
	LFO Rate	Speed of LFO modulation.	
		When **LFO Sync** if **Off:**	0.01 – 10.0 Hz
		When **LFO Sync** in **On:**	8/4 – 16
	LFO Depth	Amount of modulation applied.	-100 – 0 – 100%
	Attack	Adjust the time it takes to respond to increases in the audio signal level.	0.1 – 10.0 s
	Release	Adjust the time it takes to recover after the signal level falls.	0.1 – 10.0 s
	Env Depth	Creates a positive or negative offset to the envelope follower.	-100 – 0 – +100%
Compressor		See **FX1–3** description *above*.	
Maximizer	Threshold	Signal level after which the maximizer will be applied.	-40.0 – 0.0 dB
	Ceiling	Maximum output level of the maximizer.	-20.0 – 0.0 dB FS
	Look Ahead	Length of time that the maximizer previews audio to smooth upcoming attacks.	0.0 – 20.0 ms
	Release	Length of time for maximized signal to return to original level.	10.0 ms – 10.0 s
	Knee	How gradually the maximizer reacts as the threshold is reached. A "soft" knee maximizes audio more slowly as signal approaches the threshold, and a "hard" knee maximizers audio immediately when the threshold is reached.	Hard, Soft
	LF Mono	Frequencies below this setting will be summed into a mono signal instead of stereo.	10.0 Hz – 1.00 kHz

Global FX1–2 *(continued)*

Parameter		Description	Value Range
Expander		See **FX1–3** description ***above***.	
Enhancer	Low Gain	Level of the low frequency enhancer band.	0.0 – 12.0 dB
	Low Freq	Center frequency of the low-end enhancer band.	40.0 – 640 Hz
	Harmonics	Level of harmonic overtones.	0.0 – 12.0 dB
	Phase	Change the polarity of the generated harmonics, changing their phase relationship with the dry signal.	+ (positive), - (negative)
	Output	Output level of the enhanced signal.	-Inf – 0.0 dB
	High Gain	Level of the high frequency enhancer band.	0.0 – 12.0 dB
	High Freq	Center frequency of the high-end enhancer band.	1.0 – 10.0 kHz
Reverb	Type	Type of reverb applied.	Hall, Stadium, Room, Abstract
	Time	Length of reverb tail.	0.4 s – +Inf s
	Low Cut	Center frequency for the reverb low-pass filter.	1 – 1000 Hz
	High Cut	Center frequency for the reverb high-pass filter.	1.0 – 20.0 kHz
	Mix	Wet/dry amount of the reverb effect.	0–100%
Spring Reverb	Pre-Delay	Length of time between dry signal and reverberated signal.	0 – 250 ms
	Time	Length of reverb tail.	1.00 – 10.0 s
	Mix	Wet/dry amount of the reverb effect.	0–100%
	Low Cut	Center frequency for reverb signal low-cut filter.	20.0 Hz – 1.00 kHz
	Diffusion	Rate of increasing density of reverb reflections. At lower settings, the sound of individual reflections is more present. At higher settings, reflections are more uniform.	0–100%
	Width	Stereo width of reverb signal. Higher values give wider stereo separation.	0–100%

Parameter		Description	Value Range
Gated Reverb	Dry Delay	Length of delay time added to the dry signal.	0–1500 ms
	Pre-Delay	Length of time between dry signal and reverberated signal.	0–250 ms
	Time	Length of reverb tail.	0–1000 ms
	Mix	Wet/dry amount of the gated reverb effect.	0–100%
	Diffusion	Rate of increasing density of reverb reflections. At lower settings, the sound of individual reflections is more present. At higher settings, reflections are more uniform.	0–100%
	Low Cut	Center frequency for reverb signal low-cut filter.	20.0 Hz – 1.00 kHz
	High Cut	Center frequency for reverb signal high-cut filter.	20.0 Hz – 1.00 kHz
	Width	Stereo width of the gated reverb effect.	0–100%
	Shape	Type of reverb shape.	Gated, Reverse

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