

B A B Y L O N

Synthesizer Plugin Manual

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Contents

Contents	3
1. Introduction	5
Features	6
2. Installation	7
System Requirements	7
Demo Limitations.....	8
Authorization	8
3. Reference	9
Top Bar	9
Oscillator 1 and 2	11
Oscillator 3	12
Noise	13
Amp Envelope	13
Filter	14
Effects	14
Distortion	15
LoFi	15
Filter.....	15
Chorus	15
EQ	15
Delay	16
Reverb	16
Glide Time	16
Keyboard	16
Pitch and mod wheels	16

Velocity curve and note pad	17
Matrix	17
Modulation	18
LFOs	18
ADSR Envelopes	18
Vibrato	19
Tuner	19
Credits	20

1. Introduction



Babylon is a virtual synthesizer plugin with all the features you'd expect from a modern synthesizer. Powerful multi voice oscillators with stereo unison and detuning, hundreds of waveforms to choose from, high quality filters and effects to shape the sound and an internal modulation matrix to create movements. The plugin comes with a vast number of presets right out of the box. Suitable for any genre of music including different types of leads, basses, pads, organs, keys, FX and more.

But the most interesting thing about the plugin is its unique **microtonal tuning** section. This makes it possible to tune individual notes and play quartertone and microtonal scales which cannot be played in standard tuning.

In addition there is a **Scale Helper** with a list of 23 standard and 34 traditional scales and modes from Middle East. You can choose a scale, a key and see the notes of the scale highlighted on a virtual keyboard and tuned if required. Gathering all these valuable knowledge and presenting it in a practical, easy to use form has never been done before. Thanks to the research and hard work that has went into this now you can experience the beauty of these scales and modes using a modern synthesizer right inside your favorite DAW.

Features:

- **Playing microtonal scales.** Use the tuner to tune the individual notes and play the scales that require micro tuning.
- **Scale helper.** Choose a scale and a key and see the notes of that scale highlighted on a virtual keyboard. If a scale needs a special tuning it will be applied automatically.
- **Scale Bank.** In addition to the 23 standard scales like Major, Dorian and Spanish, there is also 34 exotic scales and modes gathered from Middle East. Including traditional Persian, Arabian and Turkish scales which most use quartertones and are less familiar to western ears.
- **Lots of Presets.** Carefully designed and categorized to be as useful as possible for any genres and as fast as possible to find.
- **257 high resolution waveforms** from basic to complex shapes which will be band limited when loaded. They can also be **reversed** and **inverted** to create more possibilities.
- **2 main oscillators** each with up to 9 unison voices per note in stereo.
- **FM, RM, and AM** modulation for the two main oscillators.
- **1 extra oscillator** that can also be used as a modulator.
- **Oscillators can run in free, random and sync modes.**
- **Hard Sync.** Oscillator 2 can be synced to Oscillator 1.
- **Noise generator** with pan and stereo width controls.
- **4 Sliding modes.** Legato, Legato with no retrigger, portamento and poly portamento.
- **16 note polyphony** that can add up to 320 oscillator voices.
- **Filter** with 5 types and 5 poly effects to choose from including drive, distortion, saturation, crush and LoFi.
- **7 Effects.** Distortion, Bit rate and Sample rate reduction, Filter, Chorus, EQ, Delay and reverb.
- **Modulation Matrix** with 8 slots, 9 modulators and 26 parameters to modulate.
- **Modulators: 2 LFOs** that can use any of the 257 waveforms available.
- **Modulators: 4 ADSR envelopes.** With 12 different curve types for each stage (ADR). 2 pre assigned envelopes for main amp and filter and 2 extra assignable envelopes for modulating other parameters.
- **Modulators: Vibrato.** A special Sine LFO with delay, attack and speed controls to simulate a natural vibrato.
- **Modulators:** Velocity, Key Track, Mod Wheel and after touch can also be used to modulate parameters.

- **Lock** parts of the plugin like effects, amp envelop, tuning and filter to stop them from changing when loading a new preset.
- **User friendly** interface with 4 high resolution skins and 2 sizes to choose from.

2. Installation

System Requirements

- Windows 7 or later.
- MacOS 10.7 or later
- CPU: Multicore 2GHz or higher.
- RAM: 2GB or higher.
- Display Resolution: 1920x1080 or higher (UI size: 1000x617 or 2000x1234).

The plugin can be used with VST, AU and AAX host applications and it comes with both 32 and 64 bit versions. Please refer to your host's manual to see how to load a 3rd party instrument plugin.

Notice: Running on older systems might be possible but is not guaranteed.

Notice: Please try the demo version before buying the plugin to make sure it's compatible with your system and host.

Installation

Run the installer and follow the instructions to install the plugin. You can also manually copy the plugin files to the plugin folder that your host scans.

WIN example:

VST 32bit: 'C:\Program Files (x86)\vstplugins'
 VST 64bit: 'C:\Program Files\vstplugins'
 VST3 32bit: 'C:\Program Files (x86)\Common Files\VST3'
 VST3 64bit: 'C:\Program Files\Common Files\VST3'
 AAX 32bit: 'C:\Program Files (x86)\Common Files\Avid\Audio\Plug-Ins'
 AAX 64bit: 'C:\Program Files\Common Files\Avid\Audio\Plug-Ins'

OSX example:

VST2: 'Library/Audio/Plugins/VST'
 VST3: 'Library/Audio/Plug-ins/VST3'
 AU: 'Library/Audio/Plugins/Components'
 AAX: 'Library/Application Support/Avid/Audio/Plug-Ins'

Installing presets

WIN: The presets will be installed with the main installer. You can also use the "Open Preset Folder" from the menu to reveal the preset folder in the windows explorer and manage them manually.

MAC: Copy the preset folder provided in the installer folder and paste it in the plugin's preset folder. Use the 'Open Preset Folder' option from the plugin's menu to reveal the right folder.

Demo Version Limitations

The demo version is fully functional but the DAW will be unable to load the plugin settings with the project. Also after 15 min of usage the plugin will produce a constant noise.

Authorization

If you have purchased the plugin and finished the payment process, you'll receive the information you need to get the full version. Please contact info@waproduction.com if you had any problems.

3. Reference

Interface Overview



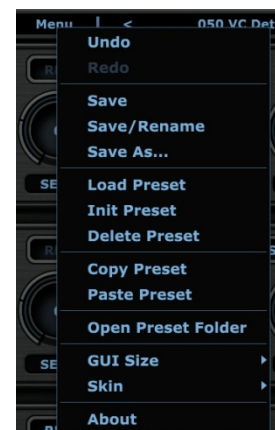
Notice: Double click on the knobs to reset them to their default values. For more accuracy you can hold down the **control key** when tweaking the knobs.

A. Top Bar.



A.1. Main Menu. The options are:

- **Undo and Redo.**
- **Save:** Save the changes to the current preset file. If the file with that name doesn't exist, it creates one. **Notice** that any changes you make won't be saved unless you save it.
- **Rename And Save:** Rename current preset file and save the changes.
- **Save As:** Save current preset as a new file instead of overwriting the current one.



- **Load Preset:** Browse and load a preset file from the drive.
- **Init Preset:** Resets all parameters and controls to their default values.
- **Delete Preset:** Remove the preset file with current name from the drive (if exists).
- **Copy Preset / Paste Preset:** Copy the settings from one preset and paste it to another one.
- **Open Preset Folder:** Reveals the preset folder located in the user's app folder. You can manage and organize your presets here.
- **GUI Size:** For high resolution monitors the plugin might appear too small in this case you can use the bigger size.
- **Skin:** Here you can choose one of the available skins and have a new look.
- **About:** Opens the about page with some information about the plugin.

A.2. Preset Menu. Browse and load presets stored in the presets folder on the drive. The plugin searches for one layer of sub folders, so by creating folders, you can organize your presets better. Notice that folders inside folders will be ignored.

A.3. Max Poly. The maximum number of simultaneous notes processed at the same time. If the number of input notes exceed this number the oldest note will be replaced by the new one. Lower numbers will reduce CPU usage.

A.4 Playing Mode.

- **Poly:** Play normally with no pitch sliding.
- **Legato:** Slide from current note to the next overlapping note.
- **Legato No Retrigger:** Similar to legato but the envelopes will not reset when sliding to the new note.
- **Portamento:** Similar to Legato but two notes don't have to be overlapped.
- **Poly Portamento:** Similar to Portamento, but you can play multiple notes simultaneously.
- **Lock Porta and Glide:** Stops portamento mode and glide time from changing when loading a new preset.

A.5 Transpose. Transpose the main pitch up or down.

A.6 Kill Switch. Stops all the sounds.

B & C. Oscillator 1 and 2



Oscillators 1 and 2 are similar except the extra "Sync 1->2" button on oscillator 2 (#5 on the picture above).

C.1. Oscillator switch. Turns the oscillator on and off.

C.2. Waveform Selector. Click on the graph and use the popup menu to choose one of the 257 waveforms available. You can also use the arrows to load the next or previous waveform.

C.3. Invert and Reverse Switches. **INV** flips the waveform vertically and **REV** flips it horizontally. This creates more possibilities to get different sounds from the same waveform when layering it with other waveforms.

C.4. Free Run Switch. Enables the free run mode so the phase doesn't reset when starting a new voice. This will create more organic results when using unison or layering with other oscillators. Notice that even if free run is off unison voices will have random phase values. If you need all the unison voices to be synced you need to turn on the "Sync All" switch (#11 on the picture above).

C.5. Hard Sync Switch (Sync 1->2). When enabled every time phase of the oscillator 1 reaches the end of the cycle, oscillator 2 resets too. This might be useful to create some interesting results especially with a bit of pitch offset.

C.6. Pitch Controls. Tune the oscillator using octave, semitone and fine controls. There is also a wide snap-free pitch control that might be useful sometimes.

C.7. Phase Control. Offsets the starting point of the waveform. This is only effective when free run is disabled.

C.8. Oscillator Pan and Volume controls.

C.9. Voices. Two main oscillators can run up to 9 voices in unison. You can set the number of voices using this knob.

C.10. Detune. Detunes the pitch of the unison voices around the center pitch.

C.11. Sync All. Syncs all the unison voices so they will have the same starting phase. When turned off they will have their own random phase offsets to create a smoother and fatter super saw style sound.

C.12. Spread. Controls the stereo separation of the unison voices. If set to 0 all voices will be in the center. By increasing the value they will spread out to left and right and create a wider sound.

C.13. Mix. Controls the volume of all the voices except the first one. Voice #1 is always in the middle and won't be effected by detuning. So the mix control makes it possible to blend it with the detuned and panned voices.

C.14. FM, AM and RM. Frequency and amplitude of the two main oscillators can be modulated using the 3rd oscillator as the modulator. You can turn modulations on or off and control the level of modulator signal going through using the knobs.

- **Frequency Modulation:** The frequency of the oscillator will be modulated using the output of the modulator (Oscillator 3).
- **Ring Modulation:** The amplitude of the oscillator will be modulated using the output of the modulator.
- **Amplitude Modulation:** Similar to ring modulation but the modulator signal will be converted to unipolar values (0-1) before being used.

D. Oscillator 3



Similar to other two oscillators but with no unison, FM, AM or RM sections.

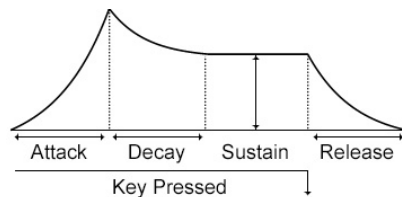
- **Notice:** When you turn on any of the FM, AM, or RM controls on the other two, oscillator 3 becomes active and turns green (if it's turned off).
- **Notice:** Oscillator 3 doesn't have to be turned on when being used by other oscillators. However you can turn it on and use its output too.
- **Notice:** The volume and pan controls on oscillator 3 will not affect the modulation signal.

E. Noise



Stereo white noise generator with width, pan and volume controls.

F. AMP Envelope



Here you can find the main amp envelope and volume controls. For each stage (A, D and R) you can choose a different curve types from the menu. You can also lock the envelope and curve types to stop them from changing when loading a new presets.

Curve types: Here is the list of the 12 available curve types that you can find on all the 4 ADSR envelopes:

- Linear. 
- Exponential 1. 
- Exponential 2. 
- Exponential 3. 
- Exponential 4. 
- Logarithmic 1. 
- Logarithmic 2. 
- Pluck 1. 
- Pluck 2. 
- Pluck 3. 
- Double curve 1. 
- Double curve 1. 

G. Filter



G.1. Filter Switch. Enable or disable the filter.

G.2. Filter Type. Here you can choose one of the low pass, band pass, high pass, notch and Peak filter types from the menu.

G.3 & 4. Cutoff Frequency and Resonance.

G.5. Key Track. You can use key tracking to link the Cutoff frequency to the pitch of the notes. By increasing the value Cutoff value will be higher for notes with higher pitch.

G.6. Effect. Here you can load a poly effect and shape the sound. There are 5 effects you can choose from: Saturation, Overdrive, Distortion, Bit Rate Reduction and Sample Rate Reduction.

G.7. Envelope Amount. Controls how much the ADSR envelope affects the cutoff frequency. Set to 0 (center position) and it will have no effects on the cutoff. By increasing the envelope amount (ENV) it will affect the cutoff more.

You can also set negative values and that will re-map the envelope from (0, 1) to (1, 0). That means when no key is pressed the envelope will output 1 and when a key is pressed it will go from 1 to 0 on attack stage.

G.8. Envelope. Attack, Decay, Sustain and release controls for the filter envelope.

G.9. Curve Types. You can choose a curve type for each of the 3 stage (A, D and R).

H. Effects



H.1. FX Tab Switch. Here you can switch between different effects and change their order by dragging and dropping them. '-' sign before the name shows that the effect is off, and '+' sign shows it's on.

H.2. Lock Switch. Locks all the effects so they won't change when loading a new preset.

H.3. Power Switch. Turns the effect on and off.

H.4. Effect Controls.

H.5. Limit. When turned on it will limit the output of the plugin to 0 dB using a soft clipping effect. It's recommended to leave this off since it will create unwanted artifacts when the input gets too loud. Or leave it on and lower the volume to avoid clipping.

Included effects

- **Distortion.** The gain knob pushes the signal similar to a tube amp. You can add a bit of warmth or increase the gain and have a fully distorted sound.



- **LoFi.** Bit and sample rate reduction effects with a mix control to blend the dry and wet signals. Set to 10 there will be no reduction and by decreasing the values the bit and sample rates will be reduced.



- **Filter.** With Low Pass, Band Pass and High Pass filters.



- **Chorus.** Duplicates the signal but delays the copy to create the effect. The delay amount is modulated using an internal LFO. 'Ratio' controls the speed of the LFO, 'Depth' controls the amount of delay, 'P-Delay' or pre delay controls the minimum amount of the delay and 'Mix' blends the output of the chorus with the original signal.



- **EQ.** Splits the input signal into 3 bands; Low, Mid and High. You can control the level of each band using the controls.



- **Delay.** Stereo delay effect with tempo sync option, ping pong mode and LP, BP and HP filter options. You can choose the filter type and the frequency from the menu.



- **Reverb.** 'Room' controls the size of the room and length of the reverb. 'Width' controls the stereo width of the reflections, 'Damp' controls the amount of high frequency damping and 'Mix' controls the dry/wet blend. Similar to the delay effect, you can enable the filter using the filter menu.



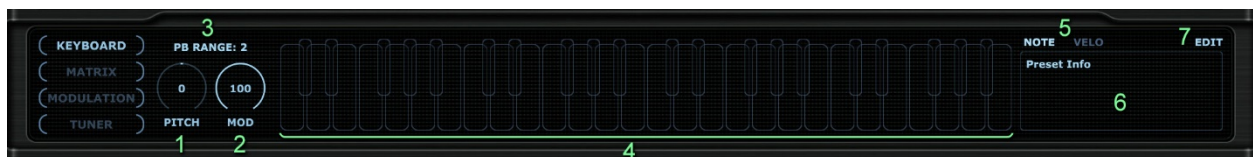
I. Glide Time



Controls the pitch slide time when using legato or portamento modes. With higher values it takes longer to reach the new note's pitch from the previous one.

J. Keyboard, Matrix, Modulation and tuner

Here you can switch between these 4 tabs.



J.1 Keyboard. On this tab you can find:

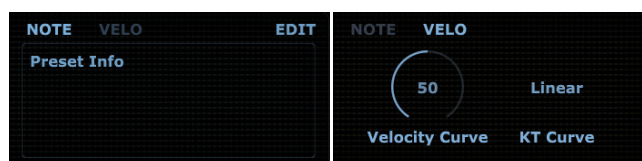
1. **Pitch Wheel.** Pitch bend wheel is used to temporarily shift the pitch up or down and when it's released it automatically goes back to middle position. You can also use the pitch wheel on your controller to do the same.

2. Mod wheel. You can connect any of the parameters available for modulation to mod wheel and control them using the knob or the mod wheel on your MIDI controller.

3. Pitch Bend Range. Determines the bending range for pitch bend wheel. The default value is 2 which means pitch wheel can shift the pitch up to 2 semitones in either direction.

4. Virtual Keyboard. Play the notes using the mouse or monitor what's being played.

5. Mini Tab Switch. Here you can switch between the text editor and velocity and key track curve controls.



On the second tab you can find the velocity and key track curve editors. Velocity curve can be used to adjust the sensitivity of the keys.



Key track has the same curve types that you can find on ADSR envelopes. Notice that filter key track will not be effected by this value.

6. Text editor box. A small text editor that you can write some notes on and it will be stored them with the current preset.

7. Edit Switch. To avoid losing keyboard focus you can turn off the edit switch when not editing the text.

J.2 Matrix



Here you can set and manage the modulation connections. There are 8 slots with 9 modulators and 26 parameters that can be modulated.

1. **Source.** This will be the modulator and can be any of the following sources: LFO1, LFO2, Envelope 1, Envelope 2, Vibrato, Mod Wheel, Velocity, Key Track and After touch.
2. **Amount.** Controls the amplitude of the modulator signal. This will determine how deeply it will affect the target parameter. You can also set negative values and it will re-map the modulator signal from (0, 1) to (1, 0) before applying it. For example if you set an amount of -100 for velocity-volume connection the harder you hit a note the quieter it will sound.
3. **Target.** This will be the parameter you want to control.

J.3 Modulation



J3.1. LFOs. Here you can find the two LFOs.

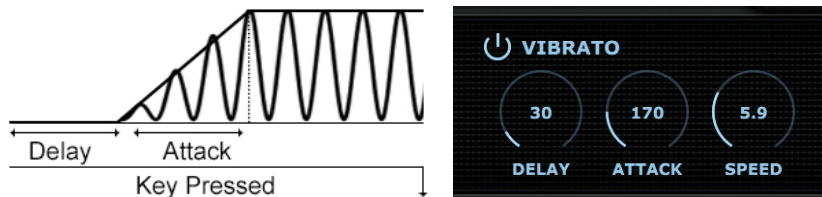


1. **Tab Switch.** Switch between the two LFOs.
2. **Power Switch.** Enable or disable the LFO.
3. **Waveform Selector.** Choose any of the 257 waveforms available.
4. **Speed.** Determines the time it takes to finish a cycle.
5. **Phase.** Determines the starting point of a cycle on the waveform.
6. **Invert and Reverse.** Like the oscillators you can flip the waveform horizontally and vertically.
7. **Sync.** Sync to host tempo.
8. **Free Run.** When tuned on the LFO will not reset when a new note gets played, so it continues from the last position.
9. **Mono.** When turned off every new poly note will have its own LFO timing depending on when they start. But when 'Mono' is switched on the plugin tries to sync all the next LFO voices with the first note.

J3.2. ADSR Envelopes. These two envelopes are similar to the amp and filter envelopes. You can use them to control any of the available parameters like pitch and FM.



J3.2. Vibrato. This is a special sine LFO with attack and delay controls to simulate a more natural vibrato effect.



Delay is the time it takes the LFO to start after a key is pressed.
Attack is the length of the ramp that controls the depth of the LFO.

J.3 Tuner



1. The Keys and the Tuners. You can find the tuners for each note here. Keys are colored based on the scale and the root key selected in the helper section. The colors won't affect anything and are just there as a visual guide.

2. Root Key. In the helper section you can choose a key and a scale and the notes of that scale will get highlighted on the keyboard. The root key is colored in green to be distinguished from the rest.

3. Scale. This is where you can choose a scale from the list. If that scale needs some micro tuning it will be applied when you select it.

4. File. You can use this menu to save your own tuning settings to the drive. Notice that this will only save the settings for the 12 tuning knobs and not anything else.

5. Lock. You can lock the tuning controls to avoid them from being changed when loading another preset.

6. Apply Tuning. Reloads the scale you've selected and discards all the changes you might have made.

Credits

Code and graphics by Rahman Fotouhi (rfmusic.net).

Please visit waproduction.com for latest updates and news.

Support: info@waproduction.com

We have did our best to make sure the plugin performs well and without a problem. However if you find any issues or bugs please let us know.

Hopefully you find the plugin useful and thank you very much for your support.