Manuals+ — User Manuals Simplified.

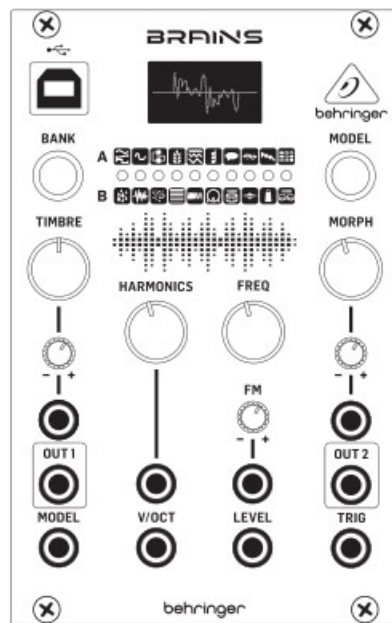# behringer V 5.0 High Resolution Multi Engine Oscillator Module User Guide

behringer V 5.0 High Resolution Multi Engine

Oscillator Module User Guide

Quick Start Guide

BRAINS

High-Resolution Multi-Engine
Oscillator Module for Eurorack
with 24 Synthesis Engines,
96 kHz Sound Quality and
OLED Oscilloscope

V 5.0

Contents

Safety Instruction

1. Please read and follow all instructions.

2. Keep the apparatus away from water, except for outdoor products.

3. Clean only with a dry cloth.

4. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

5. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.

6. Use only attachments/accessories specified by the manufacturer.

7. Use only specified carts, stands, tripods, brackets, or tables. Use caution to prevent tip-over when moving the cart/ apparatus combination.

8. Avoid installing in confined spaces like bookcases.

9. Do not place near naked flame sources, such as lighted candles.

10. Operating temperature range 5° to 45°C (41° to 113°F).

LEGAL DISCLAIMER

Music Tribe accepts no liability for any loss which may be suffered by any person who relies either wholly or in part upon any description, photograph, or statement contained herein. Technical specifications, appearances and other information are subject to change without notice. All trademarks are the property of their respective owners. Midas, Klark Teknik, Lab Gruppen, Lake, Tannoy, Turbosound, TC Electronic, TC Helicon, Behringer, Bugera, Aston Microphones and Coolaudio are trademarks or registered trademarks of Music Tribe Global Brands Ltd. © Music Tribe Global Brands Ltd. 2024 All rights reserved.

LIMITED WARRANTY

For the applicable warranty terms and conditions and additional information regarding Music Tribe's Limited Warranty, please see complete details online at community. **musictribe.com/support**.

Controls

1. DISPLAY Produces a waveform of the audio content for quick visual feedback.

2. USB Connect a standard USB cable for firmware updates.

3. BANK button Toggles between red, green and yellow banks.

4. TIMBRE knob Function varies depending on the model selected, but generally sweeps from darker to brighter content.

5. HARMONICS knob Function varies depending on the model selected, but generally adjusts frequency spread or tonal balance.

6. TIMBRE CV LEVEL Attenuates the voltage received at the Timbre CV input. If the CV input is not patched, and a signal is received at the Trig input, this knob will instead control the amount of modulation from the internal envelope generator.

7. TIMBRE CV Control the Timbre parameter via external control voltage.

8. OUT 1 Sends the main processed signal via 3.5 mm TS cable.

9. MODEL jack Allows model selection to be made remotely via external control voltage.

10. MODEL button Scrolls through the available models in the currently-active bank. The current model is

displayed on the OLED display (1).

11. MODEL/BANK LEDs indicate the current model and bank, in either red, green or yellow.

12. MORPH knob Function varies depending on the model selected, but generally controls the character.

13. FREQ knob Covers a range of 8 octaves, but can be narrowed down to 14 semitones.

14. MORPH CV LEVEL Attenuates the voltage received at the Morph CV input. If the CV input is not patched, and a signal is received at the Trig input, this knob will instead control the amount of modulation from the internal envelope generator.

15. MORPH CV Control the Morph parameter via external control voltage.

16. OUT 2 Sends an alternate or variant of the Out 1 signal via 3.5 mm TS cable.

17. TRIG Performs several functions: · Triggers the internal envelope generator. · Excites the physical and percussive models. · Strikes the internal low-pass gate. · Samples and holds the value of the Model CV input.

18. HARMONICS CV Control the Harmonics parameter via external control voltage.

19. V/OCT Controls the fundamental frequency relative to the root selected by the Freq knob.

20. FM CV Control the FM parameter via external control voltage.

21. LEVEL Opens the internal low-pass gate on the output signal, controlling both output level and brightness. Also triggers an accent when the physical or percussive models are active.

22. FM CV LEVEL Attenuates the voltage received at the FM CV input.

Specifications

Timbre CV input

Type	3.5 mm TS jack, DC to 2 kHz
Impedance	50 kΩ
Effective Levels	±8 V

Harmonics CV input

Type	3.5 mm TS jack, DC to 2 kHz
Impedance	100 kΩ
Effective Levels	±5 V

Freq CV input

Type	3.5 mm TS jack, DC to 2 kHz
Impedance	50 kΩ
Effective Levels	±8 V

Morph CV input

Type	3.5 mm TS jack, DC to 2 kHz
Impedance	50 kΩ
Effective Levels	±8 V

Model CV input

Type	3.5 mm TS jack, DC to 2 kHz
Impedance	100 kΩ
Effective Levels	±5 V

V/oct input

Type	3.5 mm TS jack, DC to 2 kHz
Impedance	100 kΩ
Effective Levels	-3 to +7 V

Level input

Type	3.5 mm TS jack, DC to 2 kHz
Impedance	50 kΩ
Effective Levels	0 to +8 V

Trig input

Type	3.5 mm TS jack, DC to 2 kHz
Impedance	50 kΩ
Effective Levels	0 to +8 V

Outputs

Out 1

Type	3.5 mm TS jack, DC coupled
Impedance	1 kΩ
Max output level	6.2 V

Out 2

Type	3.5 mm TS jack, DC coupled
Impedance	1 kΩ
Max output level	6.2 V

Controls	
Timbre	Darker or brighter content
Harmonics	Frequency spread or tonal balance
Freq	Frequency adjustment
Morph	Panning or character
Bank	Toggles between red, green and yellow banks
Model	Scrolls through models in active bank

Digital Processing	
A/D converter	
Resolution	16 bit
D/A converter	
Resolution	16 bit
Sampling rate	96 kHz
Internal processing	32-bit floating point

USB	
Type	USB 2.0, type B

Power	
Power supply	Eurorack
Current draw	130 mA (+12 V), 10 mA (-12 V)

Physical	
Dimensions	129 x 81 x 42 mm (5.0 x 3.2 x 1.7")
Rack units	16 HP
Weight	0.16 kg (0.35 lbs)

Waveform Parameters

Icon	Name	Timbre	Harmonics
Red Bank			
	Virtual analog	Square wave: narrow pulse, full square, hardsync formant	Detuning between waves
	Waveshaping	Wavefolder amount	Waveshaper waveform
	FM 2 operators	Modulation mix	Frequency ratio
	Grains	Formant frequency	Frequency between formant 1 and 2
	Additive	Most prominent harmonic	Number of bumps in spectrum
	Chords	Chord inversion/ transposition	Chord type
	Speech	Vocal tamber from deep to high	Scrolls through formant types, SAM, and LPC vowles/words
	Karplus strong	Brightness and dust noise sensitivity	String stiffness
	Super saw	Sets number of waveforms	Adjusts harmonic content
	Wavetable oscillator	Rotates through different waves	Selects between 4 interpolated banks followed by the same 4 banks, in reverse order, without interpolation.

Morph	Out 2
Saw: triangle to wide notch saw	Sum of two hardsync'd waveforms
Waveform symmetry	Variant with another waveform curve
>12:00 – operator 2 modulates own phase<12:00 – operator 2 modulates operator 1 phase	Sub-oscillator
Formant width and shape	Simulation of filtered waveforms – Harmonics selects filter type (peaking, LP, BP, HP)
Bump shape – flat and wide to peaked and narrow	Variant that includes harmonics from Hammond organ drawbars
Waveform	Chord root note
Word segment selection	Unfiltered vocal signal
Decay time	Copy of Out 1
Sub-oscillator level	Copy of Out 1
Column index	Bit reduced version of Out 1

Icon	Name	Timbre	Harmonics
Green Bank			
	Rain	Rain grain density	Amount of pitch randomization
	Noise	Clock frequency	Scrolls through filter response, from LP to BP to HP
	Dust	Particle density	Frequency randomization
	Modal strings	Excitation brightness and dust density	Amount of harmonic coloration
	FM drum	LP filter cutoff	Blend between harmonic content
	Bass drum	Attack brightness and overdrive amount	Frequency
	Snare drum	Balance between different modes of the drum	Blend between harmonic and noisy components
	Hi-hat	HP filter cutoff	Blend between metallic and filtered noise
	Cowbell	Brightness	Texture
	Toms	Tone	Resonance

Morph	Out 2
Droplet duration and overlap, culminating in a stack of 8 randomly frequency-modulated waveforms	Varient with sine wave oscillators
Filter resonance	Result of 2 BP filters controlled by Harmonics knob
Scrolls through reverberating all-pass filters followed by increasingly resonant BP filters	Raw dust noise
Decay time	Raw exciter signal
Decay time	Alternate FM drum model
Decay time	Alternate bass drum model
Decay time	Alternate snare drum model
Decay time	Alternate hi-hat model
Decay time	Alternate cowbell model
Decay time	Alternate tom models

Icon	Name	Timbre	Harmonics
Yellow Bank			
1	**BX7**	Vibrato	Preset selection
2	**BASSLINE**	Cutoff	Resonance + distortion
3	**WAVE GENERATOR**	Waveform	Bit Crush
4	**VOX**	Formant shift	Reso
5	**AUDIO SCOPE**		
6	**For expansion**		
7	**For expansion**		
8	**For expansion**		
9	**For expansion**		
10	**For expansion**		

Morph	Level
Tremolo	Velocity
Env mod + Decay	Accent
Sample Rate	Level
Blend Vowels	Level

Note 1: for BX7 mode, it is possible to send a DX7 Sysex file using USB, the Sysex will overwrite the presets present in BRAINS memory.

Note 2: Model input only controls the red/green engines.

Note 3: Audio Scope input is via V/Oct socket.

Low Pass Gate and Envelope

To adjust the Low Pass Gate press and hold the Bank button (3) and use the Timbre control to adjust its response

from being a VCA when fully clockwise to being a true low pass gate when fully counter-clockwise or the Morph control (12) to adjust its ring time and increase the decay of the internal envelope. The settings are shown by the number of yellow LEDs lit, from 1 4.

Low Pass Gates reduce level and cutoff simultaneously, resulting in the signal losing high frequency content as it gets quieter.

Frequency Range

Press and hold the Model button (10) and use the Harmonics control (5) to set the range of the Frequency control (13). The number of lit LEDs corresponds to the range. 1 LED represents C0 +/- 7 semitones, 2 LEDs C1 +/- 7 semitones until 8 LEDs represents C7 +/- 7 semitones. When all LEDs are lit then the Frequency control has an eight octave range covering C0 to C8.

CALIBRATION

The BRAINS is factory calibrated with high precision instruments and should not need any further calibration. If it does become necessary to calibrate it, please follow this procedure:

- Disconnect all CV inputs except v/oct, which should be connected to a well calibrated CV keyboard or MIDI/CV converter.
- Press the BANK and MODEL buttons simultaneously, the first LED will flash green.
- Send 1 V to the v/oct input from the keyboard.
- Press any button, the first LED will now flash in orange.
- Send 3 V to the v/oct input from the keyboard.
- Press any button, the BRAINS will now leave calibration mode.

To check that the BRAINS is correctly calibrated follow this procedure:

- Send 0 V to the v/oct input from the keyboard.
- Use the FREQ control (13) to tune the output to 110 Hz (MIDI A2)
- Send 1 V to the v/oct input from the keyboard. The tuner should now show 220 Hz (A3).
- Send 2 V to the v/oct input from the keyboard. The tuner should now show 440 Hz (A4).
- Send 3 V to the v/oct input from the keyboard. The tuner should now show 880 Hz (A5).

FEDERAL COMMUNICATIONS COMMISSION COMPLIANCE INFORMATION

Behringer
BRAINS

Responsible Party Name: **Music Tribe Commercial NV Inc.**

Address: **122 E. 42nd St.1, 8th Floor NY, NY 10168, United States**

Email Address: **legal@musictribe.com**

BRAINS
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a

residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

Quick Start Guide 69 Important information: Changes or modifications to the equipment not expressly approved by Music Tribe can void the user's authority to use the equipment.

CE

Hereby, Music Tribe declares that this product is in compliance with General Product Safety Regulation (EU) 2023/988, Directive 2014/30/EU, Directive 2011/65/EU and Amendment 2015/863/EU, Directive 2012/19/EU, Regulation 519/2012 REACH SVHC and Directive 1907/2006/EC.

Full text of EU DoC is available at **https://community.musictribe.com/**

EU Representative: Music Tribe Brands DK A/S
Address: Gammel Strand 44, DK-1202
København K, Denmark

UK Representative: Music Tribe Brands UK Ltd.
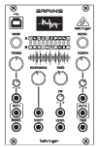Address: 8th Floor, 20 Farringdon Street London EC4A 4AB,
United Kingdom

Correct disposal of this product: This symbol indicates that this product must not be disposed of with household waste, according to the WEEE Directive (2012/19/EU) and your national law. This product should be taken to a collection center licensed for the recycling of waste electrical and electronic equipment (EEE). The mishandling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the efficient use of natural resources. For more information about where you can take your waste equipment for recycling, please contact your local city office, or your household waste collection service.

We Hear You

behringer

Documents / Resources

[**behringer V 5.0 High Resolution Multi Engine Oscillator Module**](#) [pdf] User Guide
V 5.0 High Resolution Multi Engine Oscillator Module, V 5.0, High Resolution Multi Engine Oscillator Module, Multi Engine Oscillator Module, Engine Oscillator Module, Oscillator Module, Module

References

- ⓜ [**Music Tribe**](#)
- ⓜ [**Music Tribe**](#)
- ⓜ [**Music Tribe**](#)
- [**User Manual**](#)