behringer BRAINS Multi-Engine Oscillator Module User Guide

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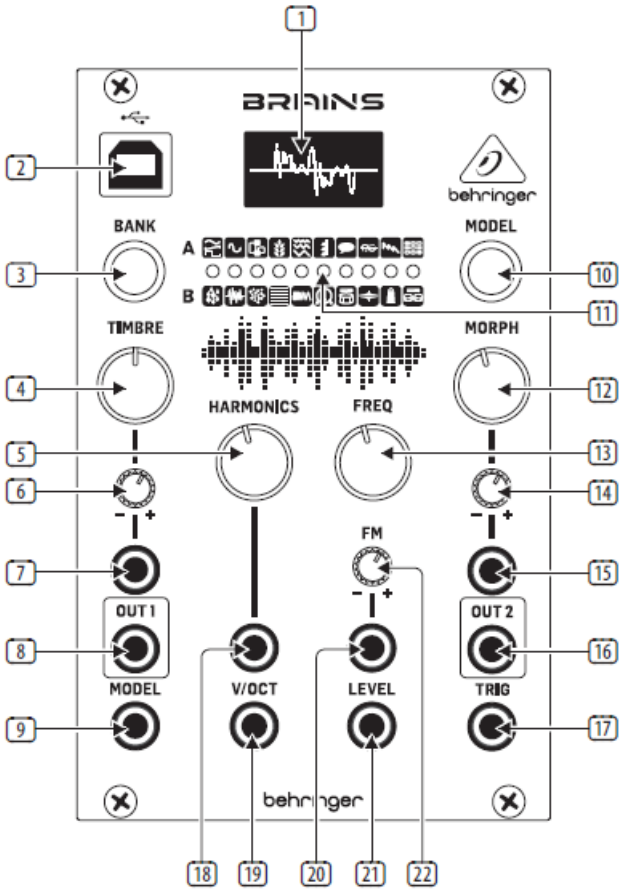
BRAINS

behringer BRAINS Multi-Engine Oscillator Module

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/pages/support#warranty.

BRAINS

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 Bank A and Bank B models.
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.
11. **MODEL LEDs** – Indicate the current model via red LED for bank A or green LED for bank B.
12. **MORPH knob** – Function varies depending on the model selected, but generally controls the panning or 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

Input

Timber CV input
Type: 3.5 mm TS jack, DC to 2 kHz
Impedance: 50 kΩ
Max input level: ±8 V

Harmonics CV input
Type: 3.5 mm TS jack, DC to 2 kHz
Impedance: 100 kΩ
Max input level: ±5 V

Morph CV input
Type: 3.5 mm TS jack, DC to 2 kHz
Impedance: 50 kΩ
Max input level: ±8 V

Model CV input:
Type: 3.5 mm TS jack, DC to 2 kHz
Impedance: 100 kΩ
Max input level: ±5 V

V/oct input
Type: 3.5 mm TS jack, DC to 2 kHz
Impedance: 100 kΩ
Max input level: -3 to +7 V

Level input
Type: 3.5 mm TS jack, DC to 2 kHz
Impedance: 50 kΩ
Max input level: 0 to +8 V

Trig input
Type: 3.5 mm TS jack, DC to 2 kHz
Impedance: 50 kΩ
Max input level: 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 band A and B
Mode: 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
	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 tambef ffom 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.
	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

Icon	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	Varies column waveform selection
	Droplet duration and overlap, culminating in a stack of 8 randomly frequency-modulated waveforms	Variant 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

FEDERAL COMMUNICATIONS COMMISSION COMPLIANCE INFORMATION
Behringer BRAINS

Responsible Party Name: Address: 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.

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

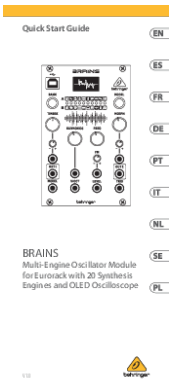
Hereby, Music Tribe declares that this product is in compliance with Directive 2014/30/EU, Directive 2011/65/EU and Amendment 2015/863/ EU, Directive 2012/19/EU, Regulation 519/2012 REACH SVHC and Directive 1907/2006/EC.

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: 6 Lloyds Avenue, Unit 4CL London EC3N 3AX, United Kingdom.

Documents / Resources

	**behringer BRAINS Multi-Engine Oscillator Module** [pdf] User Guide BRAINS, Multi-Engine Oscillator Module, Oscillator Module, BRAINS, Module
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