Synthesis models

Classic analog waveforms

Model	Description	Timbre	Color
CSAW	CS-80 imperfect saw	Notch width	Notch polarity
/\/-_-_	Variable waveshape	Waveshape	Distortion/ filter
/|/|-_-_	Classic saw-tooth/square	Pulse width	Saw to square
FOLD	Sine/triangle into wavefolder	Wavefolder amount	Sine to triangle

Digital synthesis

_|_|_	2 detuned harmonic combs	Smoothness	Detune
SYN-_ SYN/	2 VCOs with hardsync	VCO frequency ratio	VCO balance
/|/| X3 -_ X3 /\ X3 SI X3	Triple saw/ square/triangle/ sine	Osc. 2 detune	Osc. 3 detune
RING	3 ring-modulated sine waves	2/1 frequency ratio	3/1 frequency ratio
/|/|/|	Swarm of 7 sawtooth waves	Detune	High-pass filter
/|/|_|_|	Comb filtered sawtooth	Delay time	Neg./pos. feedback
TOY*	Low-fi circuit-bent sounds	Sample reduction	Bit toggling
ZLPF ZPKF ZBPF ZHPF	Direct synthesis of LP/Peaking/ BP/HP filtered waveform	Cutoff frequency	Waveshape
VOSM	Sawtooth with 2 formants	Formant 1 frequency	Formant 2 frequency
VOWL VFOF	Low-fi or hi-fi vowel synthesis	a, e, i, o, u	Gender
HARM	Additive synth, 14 harmonics	Harmonic #	Spectral peakedness
FM FBFM WTFM	Plain/feedback/ chaotic 2-operator FM	Modulation index	Frequency ratio

Physical simulations

PLUK	Plucked strings	Decay	Plucking position
BOWD	Bowed string	Friction	Bowing position
BLOW FLUT	Reed and flute simulations	Air pressure	Instrument geometry

Percussions

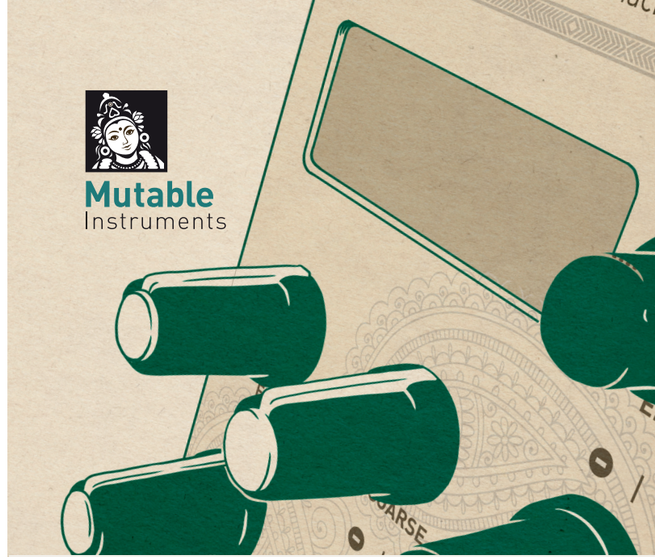
BELL DRUM	Bell and metallic drum	Decay	Harmonicity
KICK	808 bass drum	Decay	Brightness
CYMB	Cymbal noise	Cutoff	Noisiness
SNAR	808 snare drum	Tone	Noisiness/ decay

Wavetables

WTBL	21 wavetables	Smooth wavetable position	Quantized wavetable selection
WMAP	16x16 waves	X position	Y position
WLIN	Linear wavetable scanning	Wavetable position	Interpolation quality
WTX4	Polyphonic wavetable	Wavetable position	Chord type

Noise

NOIS	Tuned noise (2-pole filter)	Filter resonance	Response, LP to HP
TWNQ	Noise sent to 2 resonators	Resonance	Resonators freq. ratio
CLKN	Clocked digital noise	Cycle length	Quantization
CLOU	Sinusoidal granular synthesis	Grain density	Frequency dispersion
PRTC	Droplets granular synthesis	Grain density	Frequency dispersion
QPSK	Modem noises	Bit-rate	Modulated data



Braids

Macro oscillator

Installation

Braids requires a **-12V / +12V power supply** (2x5 pin connector). The ribbon cable connector must be aligned so that the red stripe of the ribbon cable (-12V) is on the same side of the module's power header as the "Red stripe" marking on the board.

The module draws **15mA** from the -12V rail and **100mA** from the +12V rail.

Online manual and help

The full manual can be found online at
mutable-instruments.net/modules/braids/manual

For help and discussions, head to
mutable-instruments.net/forum

Calibration

Calibrating Braids is as easy as playing a C2 and a C4 note from an accurate MIDI to CV interface, sequencer or other CV source.

More information about this optional step is provided in the online manual.

Front panel

Controls

A. Display and encoder. When the module is powered on, the encoder selects the active synthesis model.

B. C. Fine and coarse **frequency controls**.

D. FM attenuverter. Adjusts the amount and polarity of frequency modulation from the FM input.

E. F. Timbre control, and **timbre modulation attenuverter**. Primary dimension of waveform control.

G. Color. Secondary dimension of waveform control. Depending on the active oscillator model, **TIMBRE** and **COLOR** will modify the sound in different ways. Please refer to the table on the other side.

Inputs and Outputs

1. Trigger input. Resets the oscillator phase or generates an excitation signal. Physical or percussive models like *PLUK* or *KICK* need this trigger signal to start playing a note! The trigger input can also be used to trigger an internal AD envelope.

2. V/Oct. Main frequency control input, with V/Oct scale.

3. 4. 5. Frequency, timbre, and color CV inputs.

6. Audio output. The synthesis model or the position of **TIMBRE** and **COLOR** may have an impact on output level.

Settings

Click the encoder to display a list of settings. Scroll through the settings and click to modify one of them. Once the value has been modified, click to confirm and go back to the menu. Selecting the first option (*WAVE*) saves all the current settings in memory and brings you back to the module's initial state (oscillator model selection).

Here is an overview of the most important settings:

META repurposes the FM input: when *ON*, the FM CV input can be used to control the active synthesis model.

BITS and *RATE* control the bit-depth and sample rate of the audio output, for more digital grit and crunchiness!

TSRC, when set to *AUTO*, automatically generates a trigger on the **TRIG** input when a sharp note change is detected on the **V/OCT** input.

I\ATT and *I\DEC* are the attack and decay time of an internal AD envelope generator.

I\FM, *I\TIM*, *I\COL* and *I\VCA* control the amount of frequency, timbre, color, and amplitude modulation from the internal AD envelope. When one of these settings is not null, the **TRIG** input actually triggers the AD envelope instead of resetting the oscillator phase.

QNTZ quantizes the **V/Oct** input to one of 50 preset scales, the root note of which is selected by *ROOT*.

FLAT, *DRFT*, *SIGN* emulate various analog-style quirks.