

OPERATION MANUAL



RACHAEL

COMPACT EURORACK MODULE
WITH UNIQUE SIGNAL
INTERACTION

FCC COMPLIANCE STATEMENT

This device 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.

EUROPEAN UNION REGULATION COMPLIANCE STATEMENT

This product complies with the Low Voltage Directive 2006/95/EC and the Electromagnetic Compatibility Directive 2004/108/EC. The product meets the requirements of RoHS 2 Directive 2011/65/EU.

This product must be disposed of properly according to local laws and regulations.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of a polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

INTRODUCTION

Thank you for purchasing RACHAEL, a powerful, fully-analogue companion module for the DECKARD'S VOICE or any other synthesizer or sound source. It brings the classic ring modulator effect with a dedicated reference oscillator and a VCO, LFO, and ADSR envelope, which can be used separately from the ring modulator to add additional tone and control possibilities.

The most interesting function of RACHAEL is the RING MODULATOR. This function or effect creates interesting sonic outcomes by modulating an external sound source (SIGNAL) with a SINE wave. The resulting audio can range from a mild tremolo to a screaming metallic sound depending on where the SPEED and DEPTH parameters are set. These can also be controlled with an external gate signal for more complex results. Working with the SIGNAL from DECKARD'S VOICE (or anywhere else) you will greatly expand your sonic palette. This result can be even more complex if you supply your own audio signal as a reference.

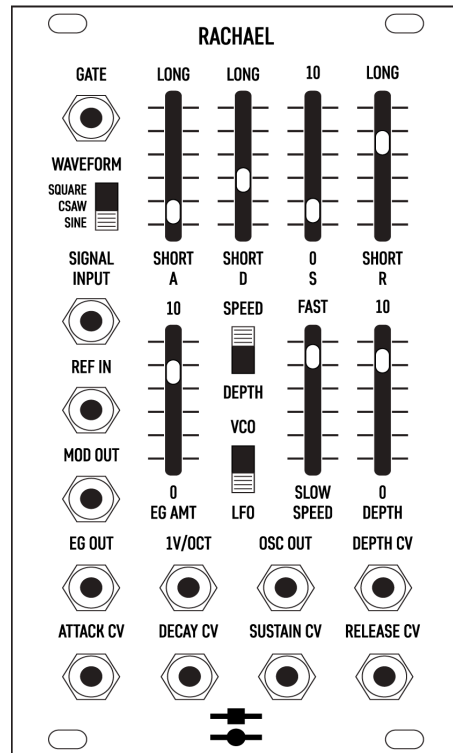
SPECS AND FEATURES

- 14HP size
- +12/-12V standard eurorack power
- 150 mA +12V
- 100 mA -12V
- 0 mA 5V (not used)
- 38 mm depth
- Analogue Ring Modulator
- VCO with SQUARE, CSAW (glitched saw), and sine outputs
- LFO with SQUARE, SAW, and sine outputs
- 1V/OCT input for LFO/VCO (-5V/+5V)
- Input for external reference audio (REF IN)
- ADSR (0-10V) with individual inputs for Attack, Decay, Sustain, Release
- Individual EG OUT
- Individual input for DEPTH for CV control over balance of MODULATOR amount

INSTALLATION

Remove the module from its packaging. Power down your modular system and disconnect the power cable. Attach the included ribbon power cable to Rachael's power connector with the red stripe aligned with the indicator stripe labeled -12V on back panel of module. Connect other end to a power distribution bus in your modular system case. Reconnect and power on you modular system. Do NOT connect your module while the power is on! RACHAEL is ow ready for operation.

PANEL LAYOUT



CONTROLS

- **SQUARE/CSAW/SINE SWITCH:** Selects wave form of the oscillator. CSAW† is only active in VCO mode of the OSCILLATOR, otherwise it is a standard sawtooth.
- **A (ATTACK):** SPEED/DEPTH/BOTH attack time.
- **D (DECAY):** SPEED/DEPTH/BOTH decay time.
- **S (SUSTAIN):** SPEED/DEPTH/BOTH sustain level.
- **R (RELEASE):** SPEED/DEPTH/BOTH release time.
- **EG AMT (ENVELOPE GENERATOR AMOUNT):** sets amount of the envelope (A, D, S, R) sent either to modulation frequency, modulation depth or both as determined by the SPEED/DEPTH switch.
- **SPEED/DEPTH SWITCH:** selects destination of the envelope. Center position effects both.
- **VCO/LFO Switch:** Selects frequency range of the oscillator.
- **SPEED:** Adjusts the FREQUENCY of the OSCILLATOR.
- **DEPTH:** Adjusts the AMOUNT of modulation.

† = **CSAW** - The unique **SAWTOOTH** wave of Deckard's Dream and Deckard's Voice is not to a glitch in the **SAWTOOTH** waveform on the Yamaha's CS synthesizer series. A glitch in the design caused the ramp to be led with a thin pulse adds a characteristic which the CS series are known for.

CSAW can only be heard from the **OSC OUT** jack when the **OSCILLATOR** speed is set to **VCO**. **OSC OUT** is a standard Sawtooth when RACHAEL is set to **LFO**. Rachael's modulation signal, however, is always a sine wave.

INPUTS/OUTPUTS

- **GATE:** Receives gate inputs. At maximum gate, the envelope progresses through its Attack and Decay stages and stays at Sustain level. When gate is released (low), the envelope resumes through its release stage. (0-5v)
- **SIGNAL INPUT:** Input for the audio signal to be modulated.
- **REF IN:** Input for external reference tone. Connecting will disengage the internal reference tone.
- **MOD OUT:** Output of the modulated signal.
- **EG OUT:** Sends Deckard's Voice's envelope out to be used externally. (0-10v)
- **1V/OCT:** Controls the FREQUENCY of the VCO, typically sent from a 1V/OCT keyboard, sequencer or LFO.
- **OSC OUT:** Output of the VCO or the LFO (-5/+5v).
- **DEPTH CV:** Voltage control over DEPTH of modulation. (0-10v)
- **ATTACH CV:** Voltage control of the ATTACK time of the envelope.
- **DECAY CV:** Voltage control of the DECAY time of the envelope.
- **SUSTAIN CV:** Voltage control of the SUSTAIN time of the envelope.
- **RELEASE CV:** Voltage control of the RELEASE time of the envelope.

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