Thanks for purchasing RO'VED from Plum Audio!

RO'VED is a **1U MACRO OSCILLATOR** based on the legendary "Plaits" by Mutable Instruments.

We are very proud to present an improved interface which provides the best of the 1U format, fueled by custom firmware which makes using the interface natural and convenient.

This document is a module specific addendum that reviews the interface and the custom firmware features of **RO'VED**. If you wish to read more about the synthesis engines, please refer to the manual of Plaits on the official Mutable Instruments website.

Installation Instructions:

- **RO'VED** is made according to the **Intellijel 1U standard** and should only be installed in cases that support the **Intellijel 1U standard**.
- Before connecting **RO'VED**, make sure to **turn off your case's power supply**.
- Connect one side of the supplied ribbon cable to the power header of **RO'VED** and the other side to your case's power bus board.
  The red stripe of the ribbon cable (-12V side) must be oriented to the same side as the "Red Stripe" marking on the header.
- Use the 4 supplied screws to mount **RO'VED** to a free 28HP space in the 1U row of your Eurorack case.

Power Supply Requirements:

- **RO'VED** requires a **-12V/+12V** power supply (2x5 pin connector).
- **RO'VED** draws **55mA** from the **+12V** rail and **8mA** from the **-12V** rail.

RO'VED INTERFACE - BASIC USAGE:
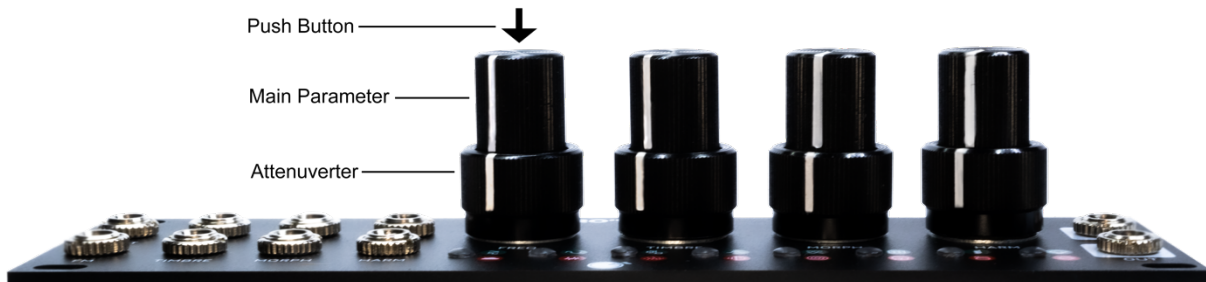
RO'VED is our first module to introduce "**CLICKKNOBS**"—Plum Audio's custom dual concentric knobs with push buttons that are used as **RO'VED**'s main interface component.

- Turn each of the upper knobs to change the main parameters.
- The lower knobs are used as attenuverters for the corresponding CV input.
- Press each knob to switch between **RO'VED**'s different synthesis models.
- Push and turn each knob to access alternative parameters.
- Press two knobs simultaneously to lock/unlock the frequency, access the firmware settings menu or to enter calibration mode.

IN DEPTH:

To navigate between RO'VED's *synthesis models***, Press these knobs:**
- Press **FREQ** to move to the previous model.
- Press **TIMBRE** to move to the next model.
- Press **MORPH** to move to the previous bank (Green / Red / Orange).
- Press **HARM** to move to the next bank (Green / Red / Orange).

See all models list in the appendix.

To change *alternative parameters,* **Push & Turn these knobs:**
- Push & Turn **TIMBRE** to change between **LPG/VCA mode**.
- Push & Turn **MORPH** to change the internal envelope's **Decay**.
- Push & Turn **HARM** to change the **Frequency range**.

Frequency Lock:
Frequency Lock is used to prevent accidental frequency changes. When Frequency Lock is active, the frequency knob can used to either shift octaves, shift fifths or to change the Aux crossfade balance. You can configure this behavior in the firmware settings menu (explained later in this document).

- To toggle frequency lock, press **TIMBRE & MORPH simultaneously**.

  - **Tip**: Hold down **TIMBRE** & **MORPH**–If all the LEDs are blinking in green, the frequency is **unlocked**; if all the LEDs are blinking in red, the frequency is **locked**.
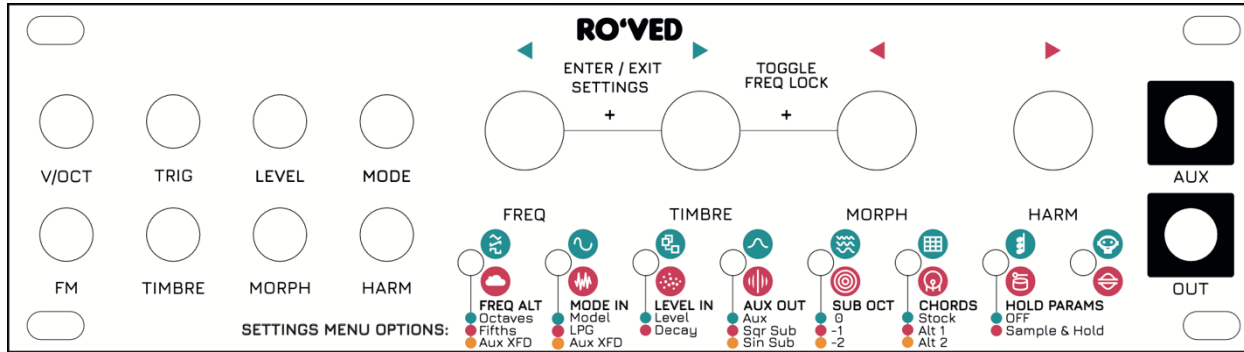
FIRMWARE SETTINGS MENU:

The settings menu allows you to configure the behavior of Frequency Lock, assign LEVEL and MODE CV inputs and to assign different chords to the chord engine.

To enter or exit the menu, press **FREQ & TIMBRE** simultaneously.

Inside the menu–Press **FREQ or TIMBRE** to navigate between menu options; Press **MORPH or HARM** to change the value of each option.

The colors of the first 6 LEDs (from left to right) will show the set option of each menu item according to the next list:

Menu Parameters (from left-most LED to right-most LED):

1. **FREQUENCY LOCK ALTERNATIVE** - What the frequency knob will do when it's **locked**:
   - **Green** = Octaves shifting
   - **Red** = Fifths shifting
   - **Yellow** = Aux Crossfade (mixes the main output signal through the Aux output)

2. **MODE IN** - Assignment for MODE CV input:
   - **Green** = Model (*Synthesis engine*)
   - **Red** = LPG/VCA
   - **Yellow** = Aux Crossfade

3. **LEVEL IN** - Assignment for LEVEL CV input:
   - **Green** = Level
   - **Red** = Decay (note that the internal envelope will only work if the TRIG input receives trigger signals)

4. **AUX OUT** – Assignment for AUX output signal:
   - **Green** = Aux (stock Plaits behavior)
   - **Red** = Square sub oscillator
   - **Yellow** = Sinus sub oscillator

5. **SUB OCT** – Assignment for sub oscillator octave (only if the sub oscillator is active):
   - **Green** = 0
   - **Red** = -1
   - **Yellow** = -2

6. **CHORDS** – Assignment for chord engine's set of chords (see chords list in appendix):
   - **Green** = Default Chords (stock Plaits behavior)
   - **Red** = Alternative Chords 1
   - **Yellow** = Alternative Chords 2

7. **HOLD PARAMS** – Assignment to turn on the internal sample and hold for CV inputs:
   - **Green** = Off (as in the stock firmware)
   - **Red** = Internally sample and hold the CV inputs for Timbre, Morph, Harmonics, Level and V/Oct whenever a trigger is received.

APPENDIX:

CHORDS LISTS:		
Default chords	**Alternative chords 1**	**Alternative chords 2**
• Octave • Fifth • Sus4 • Minor • Minor 7th • Minor 9th • Minor 11th • 69 • Major 9th • Major 7th • Major	• Octave • Fifth • Minor • Minor 7th • Minor 9th • Minor 11th • Major • Major 7th • Major 9th • Sus4 • 69 • 6th • 10th (Spread maj7) • Dominant 7th • Dominant 7th (b9) • Half Diminished • Fully Diminished	• iv 6/9 • iio 7sus4 • VII 6 • v m11 • III add4 • i addb13 • VI add#11 • iv m6 • iio • viio • V 7 • iii add b9 • I maj7 • vi m9 • IV maj9 • ii m7 • I maj7sus4/vii • V 7sus4

MODELS LIST:		
Led	**Green models**	**Red models**	**Orange models**
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1	Pair of classic waveforms	Granular Cloud	Classic waveshapes with
2	Wave shaping Oscillator	Filtered Noise	Phase distortion & modulation
3	Two-Operator FM	Harmonic Noise	2-voice, 6-operator FM synth with 32 presets (Bank 1)
4	Granular Formant Oscillator	Inharmonic String Modeling	2-voice, 6-operator FM synth with 32 presets (Bank 2)
5	Harmonic Oscillator	Modal Resonator	2-voice, 6-operator FM synth with 32 presets (Bank 3)
6	Wavetable Oscillator	Analog Bass Drum Model	Wave terrain synthesis (continuous interpolation b/t 8 2D terrains)
7	Chords	Analog Snare Drum Model	String machine emulation w/stereo filter + chorus
8	Vowel & Speech Synthesis	Analog Hi-hat Model	Four variable square voices for chords/ arps

A detailed explanation of each model can be found here

WEB EDITOR:

The module can receive audio data on its TIMBRE input to load custom data into a synthesis model (only one synthesis model can be altered at a time).

This feature is available for the following models:

- **6-operator FM:** transfer of 32 custom patches in DX7 SysEx format. They will replace one of the built-in 3 banks (models 2,3,4 in orange models).
- **Wave terrain synthesis:** transfer of a custom wave terrain, accessible with HARMONICS turned fully CW (model 5 in orange models).
- **Wavetable synthesis:** transfer of 15 custom waveforms and customization of bank D's wave map (in replacement of that bank's randomized selection of waveforms).

Editor address: https://pichenettes.github.io/plaits-editor/

FIRMWARE UPDATES:

RO'VED uses custom firmware that enables **RO'VED**'s extended interface capabilities. Do NOT install firmware designed for stock Plaits as this firmware will not work properly on RO'VED. Instead, check the official Plum Audio website for firmware updates.

To access Firmware Update Mode, power your modular system on whilst holding the **TIMBRE** knob pressed and play the firmware WAV file into the MODE input.

For more details about the firmware update procedure, please follow the instructions on Plum Audio website: https://www.plum-audio.com/roved-firmware

CALIBRATION PROCEDURE:

To access Calibration Mode, hold the **FREQ & HARM** knobs simultaneously for about 4 seconds.

For more details about the calibration procedure, please follow the instruction in the Plaits manual.