

CERES

HIGH-CLASS LINEAR VCA & MIXER

User Manual

LIMITED WARRANTY

Vostok Instruments warrants this product to be free of defects in material or construction for three years from the date of purchase (invoice required).

During that period, any malfunctioning unit will be repaired, serviced, and calibrated on a return-to-factory basis, with the customer paying the transit cost to Vostok Instruments.

Malfunctions resulting from wrong power supply voltages, backward or reverse power connections, abusive treatment, removing knobs, or any other obvious user-inflict faults are not covered by this warranty, and regular rates will apply.

Vostok Instruments implies and accepts no responsibility for harm to persons or apparatus caused through the operation of this product.

The device intended for repair or replacement under warranty should be shipped in the original packaging only. Vostok Instruments can not take any responsibility for damages caused during transport. So before sending us anything, contact us at vostokinstruments@gmail.com.

INSTALLATION

Ceres needs a power supply capable of providing 50mA on each of the +12V and -12V rails, and 10HP of free space in your case. We strongly recommend you to check the current consumption of your system on the ModularGrid website and your power supply capabilities before plugging in the module.

To install it, turn your case off and connect the supplied power cable to both the module and your Bus Board, minding the polarity so that the RED Stripe on the cable is oriented to the -12V line on both the module and the Bus Board. Please refer to your case manufacturers' specifications for the location of the negative supply.

Always turn your case off before plugging and unplugging any Eurorack module.

INTRODUCTION

If you have been already into the Eurorack world for a while, I'm sure you have heard the sentence: "you never have enough VCAs" more than once.

As an electronic musician, this has always been present. I can't count how many times I needed an extra VCA with all of them already being used.

I wanted to create an all-around, good-sounding, and handy VCA, small enough to fit on little systems but with a good amount of channels and functionality. And this is what Ceres is.

Its core, the 3360, has been used for years in dozens of devices with remarkable performance. Sum it to a carefully designed 4-layer PCB layout, and we get a super quiet VCA in terms of noise and CV bleeding.

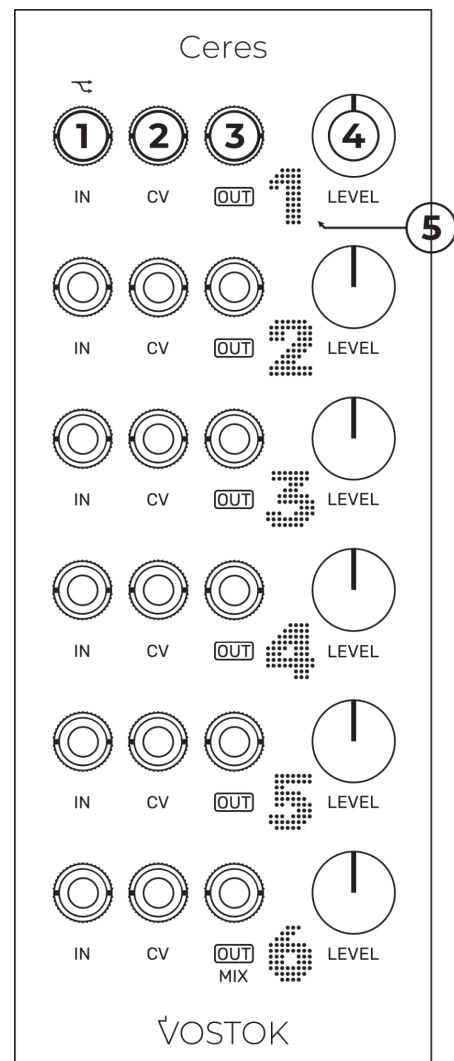
The combination of daisy-chained inputs and mixed outputs achieves a vast range of possibilities. Several CV signals can modulate a unique source with every output mixed back at the final stage to create new waveforms and open the door to experimentation.

TECHNICAL SPECIFICATIONS

- **Size:** 10HP
- **Current draw:** +/-12V: 50mA, +5V: 0mA
- **Depth:** 30mm (including power cable)
- **Unity Gain CV Level:** 5V
- **Input Impedance:** 100k Ω
- **Output Impedance:** 1k Ω

OVERVIEW

1. **Signal Input:** The signal plugged here is daisy-chained to the next channel input.
2. **CV Input:** Unipolar (positive) signals are expected here. Unity gain voltage: 5V
3. **Signal Output.**
4. **LEVEL Pot:** Control over the circuit's gain. With a signal present at CV, it works as an attenuator of that signal.
5. **LED Indicator:** shows the output signal amplitude.



GETTING STARTED

Ceres counts with six identical channels of Voltage Controlled Amplifiers (VCA).

Each channel is composed of two inputs, one output, Level control, and an LED indicator. The signal inputs are daisy-chained, so every channel receives the signal of the previous channel if no other is present at its input. On top of that, every channel is mixed at channel six if no cable is plugged into its output.

Despite its simple layout, Ceres offers a good amount of functionality to experiment with, so let's take a deeper look.

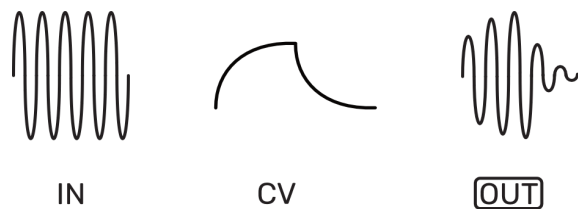
FUNCTIONAL MAP

VCA's

On each Ceres channel, the amplitude of the signals present at IN is controlled by a second signal, plugged at CV. The LEVEL pot adjusts how much of the CV signal will be injected into the VCA, and by correlation, the system's gain.

To keep signals pristine, Ceres channels don't amplify them. The maximum gain achieved by Ceres VCA circuits is equal to the original amplitude. To get that, we need a CV signal of at least 5V. Higher CV signals will be clipped at 5V and can be adjusted with the LEVEL pot to correct its shape.

If no CV signal is present at the CV Input, the LEVEL pot works as a volume control, matching the signal unity gain at its fully clockwise position.



Ceres VCAs follow a linear response, which means that the shape of the CV signals used will be intact, and the dynamic of the signal will match the exact contour of our CV.

Daisy-Chain Operation

By default, Ceres sends the signal present at each signal input (IN) to the next one. To break the chain, patch a cable on the desired input. This implementation allows one to control one source with different CV signals.

Mixing Stage

On Ceres, every output is mixed at channel six output. The circuit allows you to extract channels from the mix by patching a cable on the desired channel output. In combination with the daisy-chained inputs, the mixing stage achieves a vast range of possibilities: from simple signal amplification and clipping to the creation of new waveforms.