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OSTRAVA

FULL STEREO
VOLTAGE
CONTROLLED
MIXING CONSOLE

Model of 1966

OPERATOR'S MANUAL rev. 1966/1.0

SALUT

Thank you for purchasing this Xaoc Devices product. Ostrawa [*os'trava*] is a fully stereo four-channel voltage-controlled mixer featuring a stereo mixing bus, one stereo auxiliary send per channel (switchable between pre and post-VCA) with stereo returns, clickless muting, individual level meters, and a super-clean and DC-coupled signal path designed with high-quality VCA and opamp chips. We have carefully crafted Ostrawa's voltage control response to achieve what we believe to be the optimal user experience found in a Eurorack mixer. The design features an elaborate control circuit that combines the internal voltages generated by the panel potentiometers with external CV over volume and stereo balance. The result is a natural attenuator response that constrains VCA gain to a usable range while minimizing distortion. Ostrawa, a sister module to Xaoc Devices Praga, features similar response characteristics and layout of controls with some functional differences due to its stereo inputs and limited panel space. Multiple Ostrawa and Praga units may be chained for a custom configurable mixing system.

To better understand the device and avoid common pitfalls, we strongly advise the user to read through the entire manual before using the module.

INSTALLATION

The module requires 20hp worth of free space in the Eurorack cabinet. The ribbon type power cable must be plugged into the bus board,

paying close attention to polarity orientation. The red stripe indicates the negative 12V rail and should align with the dot, **-12V**, or **RED STRIPE** marks on both the unit and the bus board. The module itself is protected against reversed power connection; however, reversing the 16-pin header **MAY CAUSE SERIOUS DAMAGE** to other components of your system by short-circuiting the +12V and +5V power rails.

Unless you are using Ostrawa with the Bohumin expander, make sure the factory-installed jumpers are present on the **BOHUMIN EXPANDER 2** header as indicated on the PCB.

The module should be fastened by mounting the supplied screws before powering up.

MODULE OVERVIEW

Ostrawa's front-panel topology (see fig. 1) resembles a typical mixer with four identical channels. The **VOL** knobs ❶ allow for manual control of each channel's respective level. The **BAL** knob ❷ adjusts the channel's position in the stereo panorama. The **AUX SEND A** knob ❸ adjusts the amount of stereo signal (pre or post-VCA) sent to the auxiliary outputs. The illuminated **ACTIVE|AUX PRE** button ❹ allows the user to mute the channel and switch between two of effect send modes. The five-bar LED level indicator ❺ displays each channel's post-fader level of combined left+right signals. The lower section contains pairs of jacks for signal **INPUTS** ❻, and CV inputs for **BAL** ❼ and **VOL** control ❽.

The bottom row of sockets is common to all four channels and offers pairs of **SUM OUTPUTS** ❾, stereo **AUX SEND A** outputs ❿,

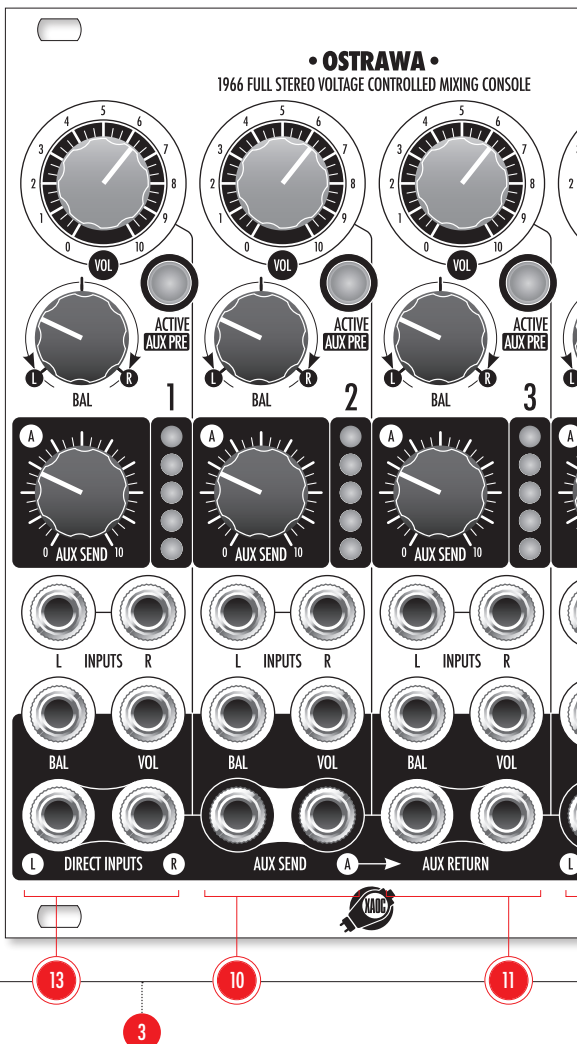


fig. 1
THE INTERFACE



stereo **AUX RETURN A** inputs **11**, and **DIRECT INPUTS** jacks **13**, that allow you to stack other sub-mix modules with Ostrawa.

STEREO VS MONO SOURCES

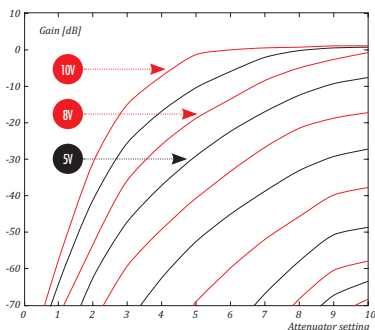
Ostrawa features four stereo pairs of inputs, which enable mixing up to four stereo sources. However, monophonic sources may also be mixed in, as each stereo pair of inputs is internally normalised so that connecting a mono signal into the **L INPUT** correctly places it in the center of the stereo scene.

VOLUME CONTROL

The signal amplitude in Ostrawa is controlled using high-quality VCA chips with an exponential response we carefully bent to achieve the natural fader curve found in professional studio consoles. The control circuit combines incoming CV with attenuator settings (fig. 2).

The **VOL** knob generates appropriate offsets to the incoming CV while retaining the dynamic response to CV regardless of the at-

fig. 2: GAIN RESPONSE TO KNOB POSITION



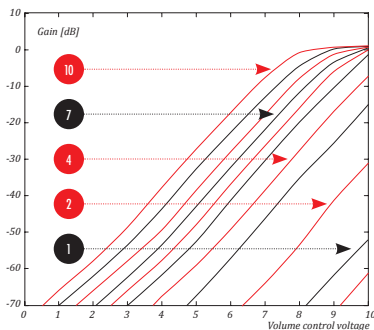
tenuator position. For example, with attenuators at max, a CV of 8V opens the channels to +1dB, while closing the attenuators silences the channels to -85dB. Control voltages above 8V are well-tolerated, although the gain response is strongly compressed above 0dB, offering only up to +3dB to minimize distortion. This behavior affects the sound similar to dynamic compression; however, lowering the attenuators' setting diminishes the effect, bringing it down to a non-compressed operation (fig. 3).

Each **VOL** input jack is internally normalled to a fixed 8V allowing the attenuators to operate at full range without any CV patched in.

CHANNEL MUTING

A short press on the **ACTIVE|AUX PRE** button silences the corresponding channel. This state is confirmed by turning off the button backlight. The clickless muting action is achieved by introducing a few-millisecond fade-out to near -90dB. Pressing the button again reac-

fig. 3: GAIN RESPONSE TO CV



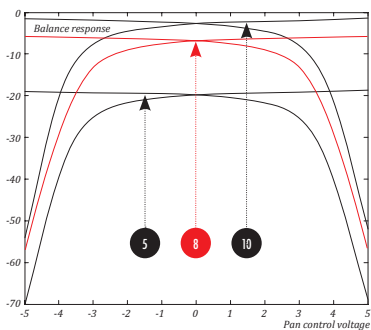
tivates the backlight and brings the channel back through a similar clickless fade-in. The operation of mutes can be controlled remotely via the Bohumin expansion module that offers four gate inputs.

PANORAMA CONTROL

Ostrawa offers both manual and CV control over the position of each source in the output stereo panorama. Please keep in mind that Ostrawa operates similarly to normal studio mixers, i.e., it only controls the attenuation of the left vs. right signal and will not magically rotate the auditory image of your stereo sound source around your head.

The **BAL** knobs act as offsets to the **BAL** input control voltages, which are expected in the range of -5V to +5V. Negative and positive CV values shift the auditory image to the left and right, respectively. The response of the combined manual and CV controls provides equal loudness in a near-field monitoring setup (3dB pan law); however, as channel

fig. 4: BALANCE CONTROL RESPONSE



gain approaches 0dB, the response is slightly compressed to prevent an increase in loudness (fig. 4).

AUXILIARY OUTPUTS

The stereo pair of **AUX SEND A** outputs and the pair of stereo **AUX RETURN A** inputs facilitate adding external effects in parallel to the main mixing bus. A dedicated **AUX A** knob in each channel sets the amount of signal added to the **AUX** bus.

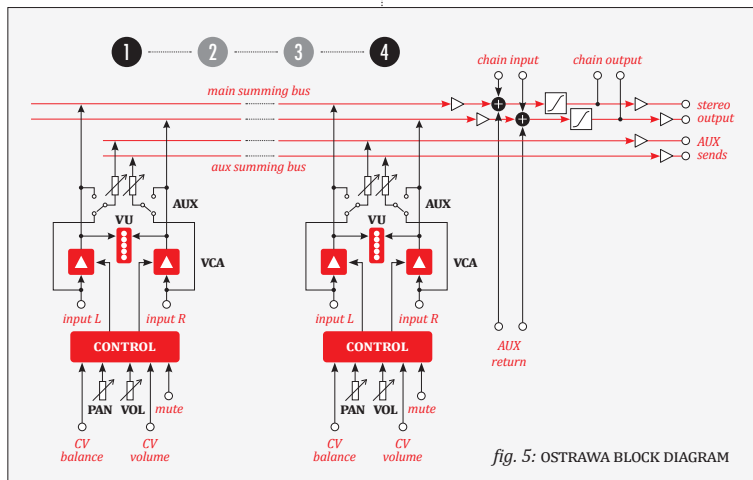
There are two modes of the **SEND** function: pre-VCA and post-VCA, similar to pre-fader and post-fader sends in studio consoles. Pressing the **ACTIVE|AUX PRE** button for one second toggles between them, which is confirmed by changing the backlight color from green to yellow. **NOTE:** pre-VCA mode (yellow backlight)

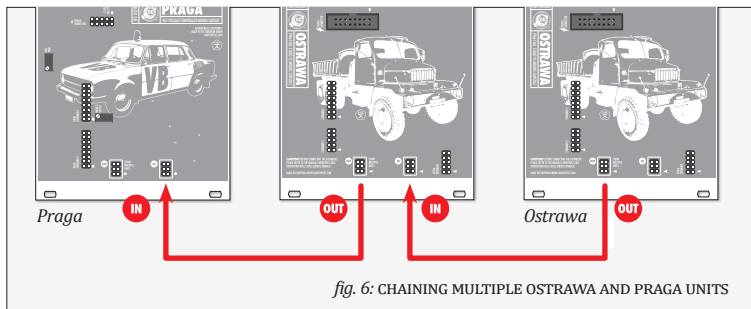
uses the original signal before attenuation and panorama balance are applied. The pre-VCA mode is the only way to obtain a fully wet processed signal (with the channel's **VOL** attenuator turned all the way down).

Ostrawa does not offer control of the return level. Therefore, you must take care of proper external attenuation of your effect signal. However, such a control is available in the Bohumin expander, which also features a second effects loop (**AUX B**).

LEVEL INDICATORS AND MIXING BUS LEVELS

Each of Ostrawa's channels is equipped with an individual post-fader level indicator. The five LEDs show the state of a standard volume detector with thresholds at -40dB, -23dB,





-15dB, -10dB, and 0dB referenced to a 10Vpp signal. Bear in mind that Eurorack electronic circuits cannot handle voltages greater than 10V (20Vpp), therefore it is impossible to mix four signals of 10Vpp without serious distortion. It is recommended to keep your attenuators between 50% and 80% of the full range (unless your sources are very quiet).

The mixing bus in Ostrawa features a soft clipping circuit that offers a gentle overdrive for signals exceeding 16Vpp. This solution prevents the harsh-sounding distortion resulting from hard clipping should the sum of your signals exceed the dynamic range of the output stage.

EXPANDABILITY

Multiple Ostrawa and Praga units may be chained to provide a cascaded sub-mix setup such that the content of the mix bus of all upstream units is injected 1:1 into the mix bus of every subsequent unit appearing at its **SUM OUTPUTS** (i.e., the output of each chained module is added to the output of the following

module in the chain). The chaining headers at the back of the module (fully compatible between Ostrawa and Praga) should be connected with the supplied ribbon cable so that the **OUT** header of the preceding unit goes into the **IN** header of the following unit (fig. 6). The **IN** header of the first unit and the **OUT** header of the last unit should remain unconnected.

Ostrawa features a special set of expander ports allowing connection to a dedicated Bohumin expander. Please refer to the Bohumin manual for its functions and installation instructions. **NOTE:** Praga's Hrad expander is not compatible with Ostrawa!

An additional pin header at the back of Ostrawa connects to a simple passive breakout panel called Ustka (available separately) offering individual VCA outputs that may be used for multitrack recording.

ACCESSORY

Our Coal Mine black panels are available for all Xaoc Devices modules. Sold separately. Ask your favorite retailer. •

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FEATURES

Full stereo architecture

Natural volume response

Channel level indicators

Stereo auxiliary send and stereo returns

Clickless channel muting

Expandable by chaining more units and optional expander modules

SPECIFICATION

Eurorack synthesizer format compatible

20hp wide, 46 mm deep (including the ribbon cable and bracket)

Current draw: +180mA/-150mA

Reverse power protection