KATOWICE

STEREO
VARIABLE BAND
ISOLATOR

Model of 1978

OPERATER'S MANUAL *rev. 1978/1.1*

SALUT

Thank you for purchasing this Xaoc Devices product. Katowice [ˌkatɔˈvitsɛ] is a stereo variable–band isolator that allows the user to manipulate a selected range of frequencies. It is the first module in a series of upcoming Xaoc Devices products designed specifically for processing stereo signals.

Katowice splits the stereo input signal into three bands: low, middle, and high. While the knobs and CV inputs define the center frequency and bandwidth of the mid band, the low and high bands are automatically adjusted so that the sum of all three is a complete signal. All three bands are passed through high quality VCAs and their stereo outputs are available separately for further processing. A stereo mixdown signal is also available.

Katowice may be used as a crossover network, a parametric EQ, DJ-style kill filter, or other band-selective applications, including multiband compression and stereo enhancement.

INSTALLATION

The module requires 10hp 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 –12V rail and should point in the same direction on both the bus board and the unit. The module itself is secured against reversed power connection, however, reversing the 16-pin header **MAY CAUSE SERIOUS DAMAGE** *to other components of your system because it will short-circuit the +12V and +5V power rails.*

The module should be fastened by mounting the supplied screws before powering up. To better understand the device, we strongly advise the user to read through the entire manual before using the module.

MODULE OVERVIEW

The front panel of Katowice is shown in fig. 1. The stereo pair of signal **INPUTS** ❶ *is AC-coupled and accepts all Eurorack signal levels (up to 20Vpp), however, a conservative 10Vpp level is recommended, because filtering certain signals may occasionally result in increased amplitude and cause distortion. The configuration of bands is controlled by the position of the two knobs:* **MID FREQ** ❷ *sets the geometric center of the middle band (in Hz), and* **MID WIDTH** ❸ *sets the width of this band (in octaves). The corresponding two jacks* ❹ *and* ❺ *allow for voltage control and accept voltages in ±5V range. The amplitude of the middle band is controlled by the central* **MID** *slider* ❻ *and the corresponding CV input above* ❼ *that accepts voltages in the range of ±8V. The left* **LOW** *slider* ❽ *and CV input* ❾ *control the amplitude of low frequencies, and the right* **HIGH** *slider* ❿ *and CV input* ⓫ *control the high frequencies. The middle band signal is available at the stereo*

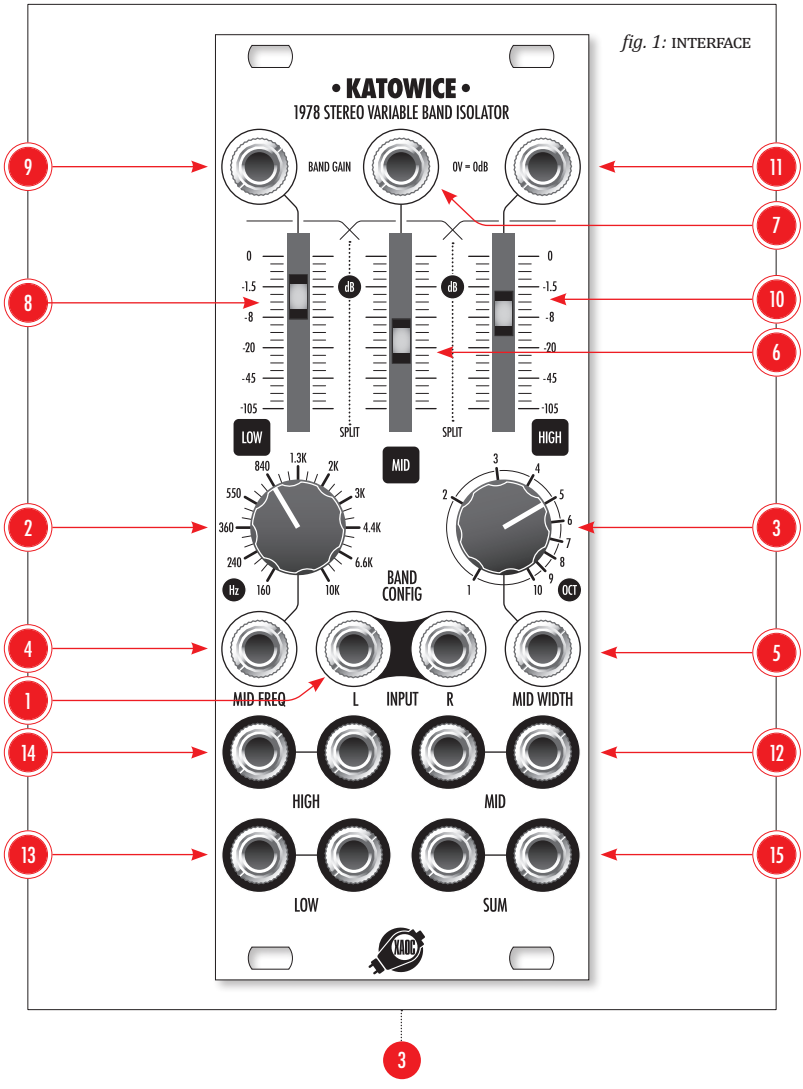


fig. 1: INTERFACE

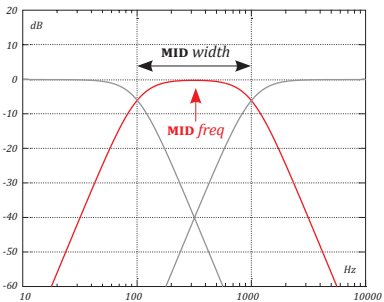
pair of **MID** *outputs* ⓬. *Similarly, the low band and high band are available at their stereo pairs of* **LOW** *and* **HIGH** *outputs* ⓭ *and* ⓮. *A stereo mixdown of the three bands (post-VCA) is available at the* **SUM** *pair of outputs* ⓯.

FILTERING

Splitting the signal into separate frequency bands is implemented with a set of special voltage–controlled crossover filters. They are designed so that with no attenuation, the sum of all three bands reconstructs the original signal without any gaps in the spectrum. The frequency responses of all three bands are non-resonant and flat in the passband. They all offer a 24dB/octave slope beyond their cutoff frequencies (see fig. 2).

Keep in mind that the **MID FREQ** *controls (knob and CV input) define the geometric center of the mid band (the middle point in the exponential frequency scale). For example, when* **MID FREQ** *is set to 2kHz and the* **MID WIDTH** *is 2 octaves, the mid band spans from 1kHz to 4kHz (measured at –6dB split point). When CV inputs are used, manual controls act as offsets. There is a global limit of the split frequencies meaning that they cannot extend below 30Hz and above 20kHz. Also, the minimum width of the mid band is 1 octave.*

fig. 2: EXAMPLE FREQUENCY RESPONSE



AMPLITUDE CONTROL

Katowice offers independent amplitude control for each of its three bands. A slider in each band allows for attenuation of the signal down to about –100dB. The response of this potentiometer is carefully bent to provide the natural feel of a fader. This attenuation may also be achieved by patching a negative CV to the corresponding jack. Conversely, when the slider is set near the bottom, a positive CV will bring the signal back. The response of the VCA is exponential and a voltage of 8V opens it entirely to unity gain. In order to prevent hard clipping, each VCA channel features a soft-saturation circuit that rounds the peaks of signals approaching 18Vpp.

Katowice ships factory calibrated so that the maximum gain is hard limited at 0dB. The trimmer at the back allows for shifting the gain range (including the limit) up to ±20dB. Keep in mind that adjusting this will make panel dB scale relative to what you set.

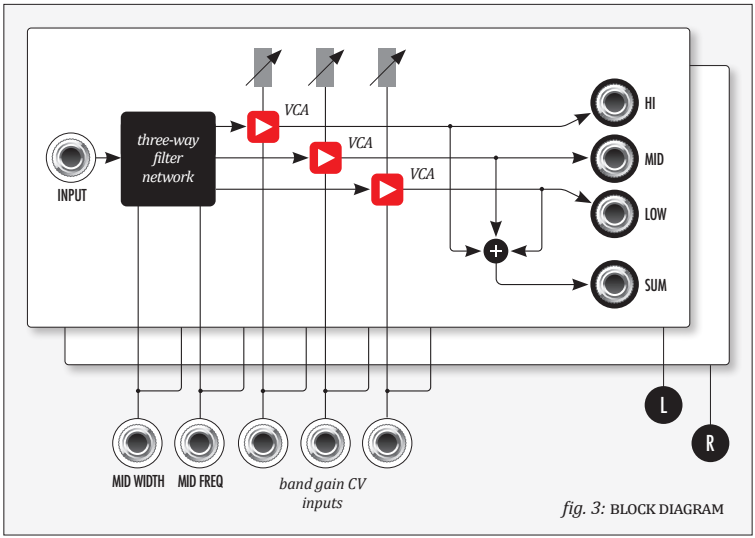


fig. 3: BLOCK DIAGRAM

PHASE RESPONSE

Just like any other analog or digital filter, Katowice introduces some phase shift to the signal. In general, the higher the filter order (i.e. the steeper the amplitude response), the more phase shift is added resulting in a slight delay. In Katowice, this delay varies from 0 to 3.5-4ms and depends on the frequency. There is also some additional fixed phase shift introduced by the AC-coupling capacitors, which mostly affects very low frequencies.

The phase shift (delay) is generally inaudible unless you mix your processed signal with the original signal. However, modulating the corner frequencies of filters (through modulation of either the **MID FREQ** *or* **MID WIDTH** *parameters) will affect this delay as well. The side effect is a phenomenon similar to the Doppler effect wherein you hear a slight change of the signal's pitch. Similarly to modulated all-pass filtering networks, this effect may be exploited creatively for additional animation of your sound.*

ACCESSORY

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

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MADE IN THE EUROPEAN UNION

MAIN FEATURES

Stereophonic, 3-band, 24dB/oct crossover module

Voltage controlled band configuration

Three stereo VCA blocks

Voltage controlled attenuation in each band

TECHNICAL DETAILS

Eurorack synth compatible

10hp, skiff friendly

Current draw: +100mA / –100mA

Reverse power protection