



KATOWICE

STEREO
VARIABLE BAND
ISOLATOR

Model of 1978

OPERATOR'S MANUAL rev. 1978/1.0



SALUT

Thank you for purchasing this Xaoc Devices product. Katowice 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

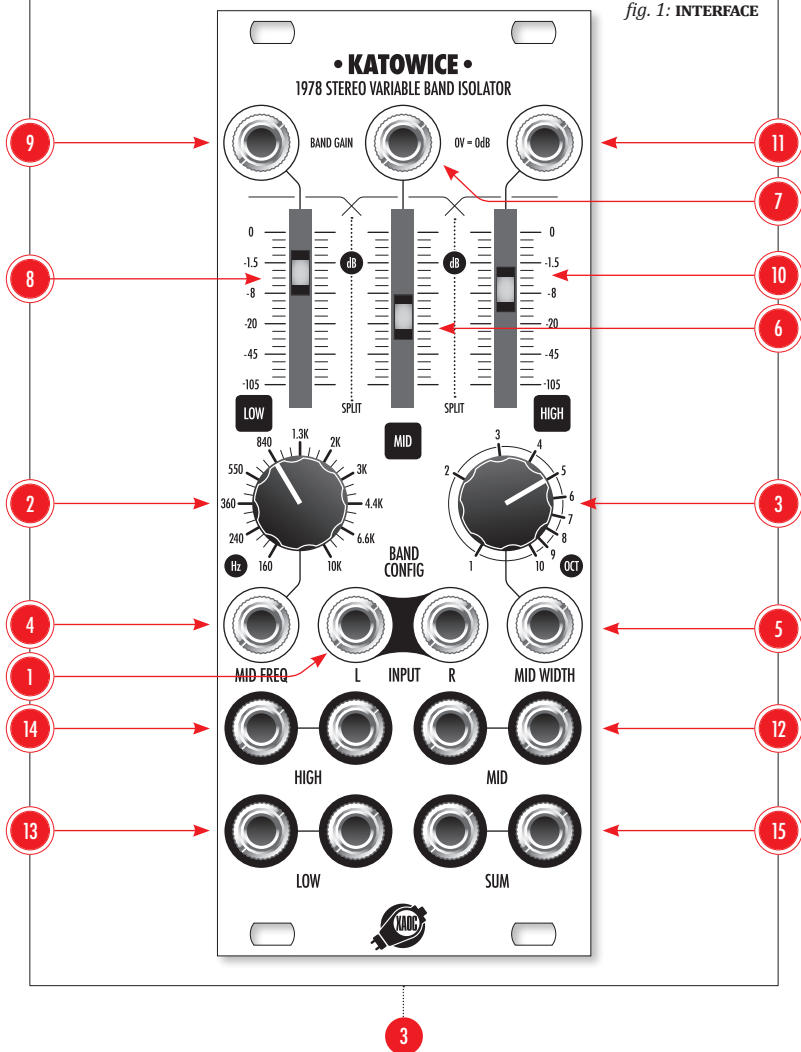
direction on both the bus board and the unit. The module itself is secured against reversed power connection, however, reversing the 16-pin header **MAY CAUSE SERIOUS DAMAGE** to other components of your system because it will short-circuit the +12V and +5V power rails.

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 1** 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 2** sets the geometric center of the middle band (in Hz), and **MID WIDTH 3** sets the width of this band (in octaves). The corresponding two jacks **4** and **5** allow for voltage control and accept voltages in $\pm 5V$ range. The amplitude of the middle band is controlled by the central **MID slider 6** and the corresponding CV input above **7** that accepts voltages in the range of $\pm 8V$. The left **LOW slider 8** and CV input **9** control the amplitude of low fre-

fig. 1: INTERFACE



quencies, and the right **HIGH** slider 10 and CV input 11 control the high frequencies. The middle band signal is available at the stereo pair of **MID** outputs 12. Similarly, the low band and high band are available at their stereo pairs of **LOW** and **HIGH** outputs 13 and 14. A stereo mixdown of the three bands (post-VCA) is available at the **SUM** pair of outputs 15.

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).

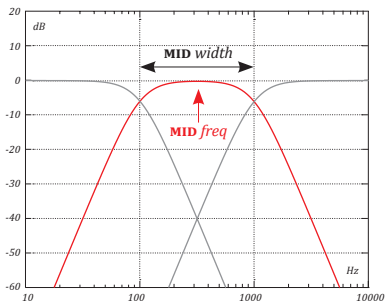
Keep in mind that the **MID FREQ** controls (knob and CV input) define the geometric center of the mid band (the middle point in the exponential frequency scale). For example, when **MID FREQ** is set to 2kHz and the **MID WIDTH** is 2 octaves, the mid band spans from 1kHz to 4kHz (measured at -6dB split 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.

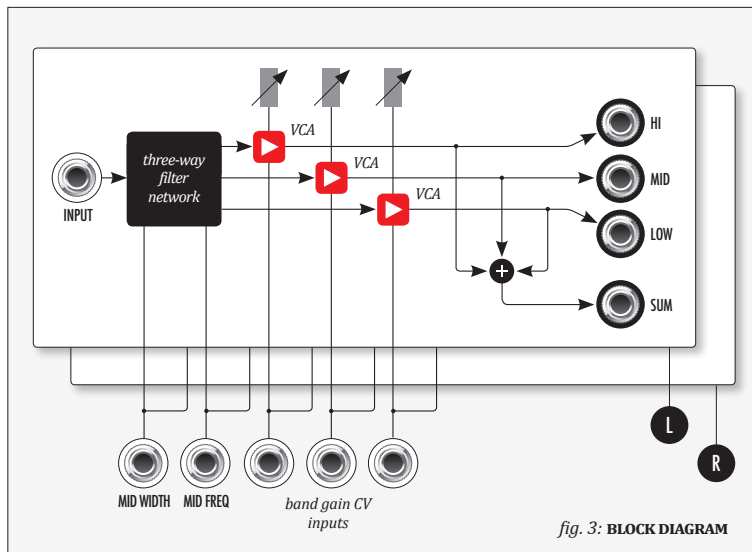
AMPLITUDE CONTROL

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 ± 20 dB.

fig. 2: EXAMPLE FREQUENCY RESPONSE





Keep in mind that adjusting this will make panel dB scale relative to what you set.

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 intro-

duced 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. •

WARRANTY TERMS

XAOC DEVICES WARRANTS THIS PRODUCT TO BE FREE OF DEFECTS IN MATERIALS OR WORKMANSHIP, AND TO CONFORM WITH THE SPECIFICATIONS AT THE TIME OF SHIPMENT FOR A PERIOD OF ONE YEAR FROM THE DATE OF PURCHASE. DURING THAT PERIOD ANY MALFUNCTIONING OR DAMAGED UNITS WILL BE REPAIRED, SERVICED, AND CALIBRATED ON A RETURN-TO-FACTORY BASIS. THIS WARRANTY DOES NOT COVER ANY PROBLEMS RESULTING FROM DAMAGES DURING SHIPPING, INCORRECT INSTALLATION OR POWER SUPPLY, IMPROPER WORKING ENVIRONMENT, ABUSIVE TREATMENT OR ANY OTHER OBVIOUS USER-INFLICTED FAULT.

LEGACY SUPPORT

IF SOMETHING WENT WRONG WITH A XAOC PRODUCT AFTER THE WARRANTY PERIOD IS OVER, NO NEED TO WORRY, AS WE'RE STILL HAPPY TO HELP! THIS APPLIES TO ANY DEVICE, WHEREVER AND WHENEVER ORIGINALLY ACQUIRED. HOWEVER, IN SPECIFIC CASES, WE RESERVE THE RIGHT TO CHARGE FOR LABOR, PARTS AND TRANSIT EXPENSES WHERE APPLICABLE.

RETURN POLICY

THE DEVICE INTENDED FOR REPAIR OR REPLACEMENT UNDER WARRANTY NEEDS TO BE SHIPPED IN THE ORIGINAL PACKAGING ONLY, SO PLEASE KEEP IT JUST IN CASE. ALSO, A FILLED RMA FORM MUST BE INCLUDED. XAOC DEVICES CAN NOT TAKE ANY RESPONSIBILITY FOR DAMAGES CAUSED DURING TRANSPORT. PRIOR TO SENDING US ANYTHING, PLEASE CONTACT US AT **SUPPORT@XAOCDEVICES.COM**. NOTE THAT ANY UNSOLICITED PARCEL WILL BE REJECTED AND RETURNED!

GENERAL INQUIRIES

FOR USER FEEDBACK SUGGESTIONS AND DISTRIBUTION TERMS, FEEL FREE TO CONTACT XAOC DEVICES AT **INFO@XAOCDEVICES.COM**. PLEASE VISIT THE **XAOCDEVICES.COM** FOR INFORMATION ABOUT THE CURRENT PRODUCT LINE, USER MANUALS, FIRMWARE UPDATES, TUTORIALS, AND MERCHANDISE.

WORKING CLASS ELECTRONICS®

EASTERN BLOC TECHNOLOGIES



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*

WRITTEN BY M. BARTKOWIAK, EDITED BY Ł. KACPERCZYK, PROOFREADING AND EDITING BY B. NOLL.
DESIGNED BY M. ŁOJEK. ALL RIGHTS RESERVED. CONTENT COPYRIGHT © 2020 XAOC DEVICES. COPYING,
DISTRIBUTION OR ANY COMMERCIAL USE IN ANY WAY IS STRICTLY PROHIBITED AND REQUIRES THE WRIT-
TEN PERMISSION BY XAOC DEVICES. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.