XAOC ®

SAMARA

ПЕРЕКРОЕМ ВОЛГУ В ОКТЯБРЕ!

UTILITY
WAVEFORM
PROCESSOR

Model of 1962

SALUT

Thank you for purchasing this Xaoc Devices product. Samara is a "Swiss Army Knife" type of module, intended to serve the most common voltage and audio signal processing purposes such as attenuation, offsetting, mixing, inverting, and even basic waveshaping. We have designed it to complement the ever-popular Batumi module but it will happily serve all these functions on its own.

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 negative 12V rail and is supposed to 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.

BASIC FEATURES

Samara features four channels—each with two inputs and an attenuator, additional switchable offset generators, four voltage level and polarity indicators, two adders with switchable scale, and a precision four-channel processor that selects minimum and maximum voltage. See the block diagram (fig. 4) on page 5.

ATTENUATION, INVERTING & OFFSET

*Looking at the front panel layout (fig.1), There are four identical channels. Each channel features a regular **IN** input ❶ as well as an inverting **INV** input ❷ . The difference between these inputs is adjusted by an active attenuator. Each unused input is normalized to 0V, hence this arrangement allows for two independent channels of normal attenuation, or inverting attenuation, or computing a difference between two voltages or signals.*
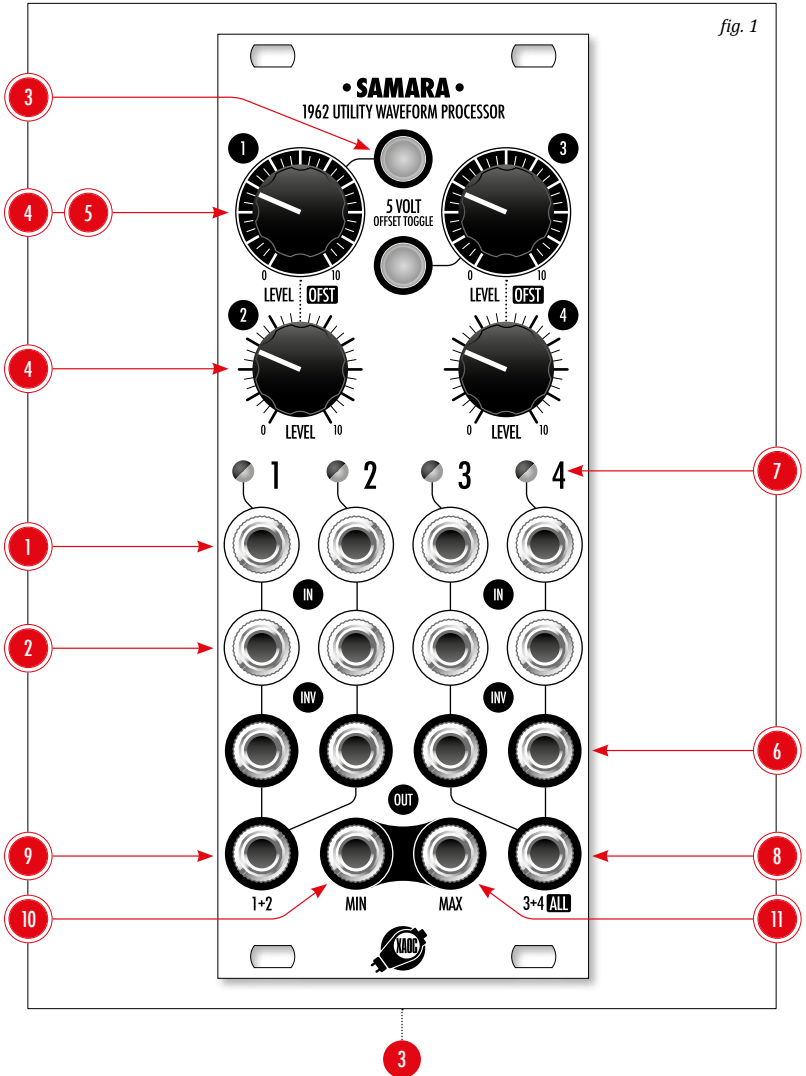
*Additionally, two sources of a stable +5V voltage are switchable in channels **1** and **3**, activated by pressing the corresponding illuminated button ❸. This offset is added to the inputs before attenuation. Thus, if nothing is patched to the inputs of channels **1** and/or **3,** they can be used as a source of constant voltage, from 0 to 5V. The resulting signal or voltage, after being manually attenuated by the **LEVEL/OFST** knob ❺, is available on the corresponding **OUT** outputs ❻.*

*To achieve independent control over scale and offset two channels must be utilized: one for offset (with the **5V OFFSET TOGGLE** engaged and nothing patched into the inputs) and another one for scaling.*

A bi-color LED ❼ indicates the value and polarity of the voltage through corresponding brightness and color. For audio signals, fast blinking of red and green yields a yellow-orange mixture with intensity corresponding to signal level.

Note that you may use the individual outputs to re-direct the processed channels to other channels. For example, an attenuated signal or

fig. 1

• **SAMARA** •
1962 UTILITY WAVEFORM PROCESSOR

5 VOLT OFFSET TOGGLE

LEVEL OFST

LEVEL OFST

LEVEL

LEVEL

1   2   3   4

IN   IN

INV   INV

OUT

1+2   MIN   MAX   3+4 ALL

XAOC

*CV from channel **2** can be patched to channel **3** with offset turned on. Changing the attenuator in channel **2** will not affect the offset. Also, an offset from channel **1** or **3** can be patched to an inverting input of channel **2** or **4**, thus a negative offset can be easily achieved.*

MIXING

A cascaded arrangement of summers allows for the mixture of all channels with the ability to break the sum into two sub-mixes. To mix four signals, feed them into inputs ❶ and adjust the **LEVEL** *knobs ❹. The resulting signal is available at the **ALL** socket ❽ (make sure that nothing is*

fig. 2

fig. 3
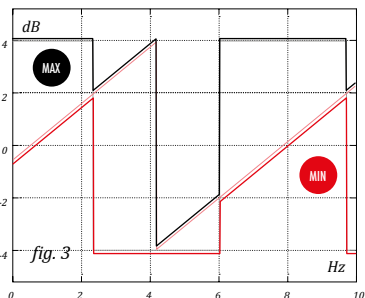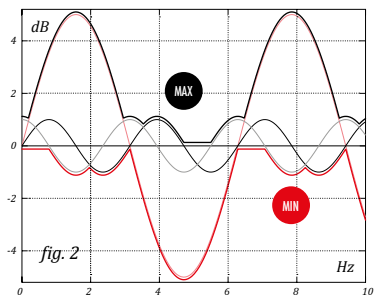
*plugged into **1+2** output socket ❾). Additionally, you can use the inverting inputs ❷ to mix up to eight signals.*

*To use Samara as two independent 2:1 mixers, use both **1+2** ❾ and **3+4** ❽ output. Patching a cable to **1+2** output breaks the internal connection, and these two channels are no longer mixed with channels **3** and **4**. Again, using the inverting inputs allows for two four-component mixes.*

*Since mixing multiple hot signals with little attenuation usually yields overdrive (especially at the **ALL** output ❽), a soft-clipping solution is offered. It can be turned off by removing the jumper at the batck of the PCB. Additionally, optional -6dB (2:1) attenuation is available independently for **1+2** and **3+4** summers by using two jumpers on the back of the module. Switching just one jumper does not affect the amplitude of the second summer. Note that the **ALL** mix will have unequal proportions in such case. Also, note that the jumpers do not affect the operation of the **MIN** and **MAX** outputs (see below).*

MINIMUM & MAXIMUM OUTS

*In addition to linear mixing, Samara features a precision min/max computing circuit that outputs the current minimum voltage of all the (attenuated) channels at the **MIN** ❿ output, as well as the maximum voltage at the **MAX** ⓫ output. output. See fig. 2 & 3 for examples.*

This circuit is intended for processing control voltages, such as LFO waveforms, envelopes, etc. However, it does provide interesting results with audio signals when used as a flexible

fig. 4
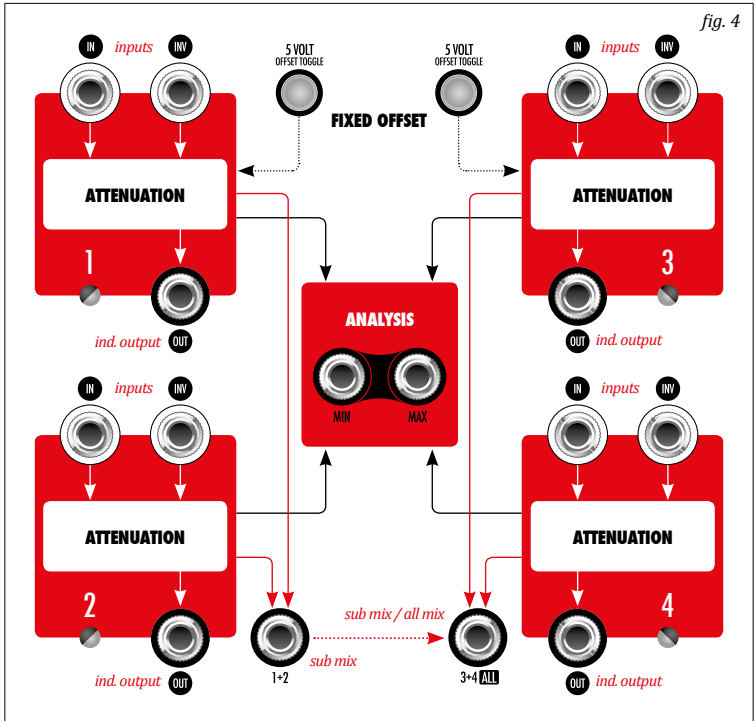
waveshaper. For example, by processing just a single waveform in one channel, it is compared to 0V from the remaining channels, hence a half-wave rectified version is available at the **MAX** output and the negative halves are available at the **MIN** output. Also, by patching the **MAX** or **MIN** output back to any of the inputs allows one to independently scale the upper or the lower half of the waveform by using the corresponding attenuators. A full-wave rectified waveform can be produced by patching back the **MIN** output to the inverting input of another channel. Furthermore, by feeding a constant CV to all remaining channels, the splicing point of the waveform can be altered. Be aware that channels without an input signal (or channels attenuated to 0) will be treated as 0V, which affects the operation of **MIN** and **MAX**. If you don't want that, simply feed unused channels with a copy of signals from active channels. •

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EASTERN BLOC TECHNOLOGIES

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MADE IN THE EUROPEAN UNION

MAIN FEATURES

Four attenuation channels

Two offset channels

Four inverters

One four-channel mixer

Two double-channel mixers

Mixing of up to eight signals when using inverted inputs

Minimum/maximum selection circuit

Basic waveshaping

TECHNICAL DETAILS

Eurorack synth compatible

10hp, skiff friendly

Current draw: +25mA/-20mA

Reverse power protection