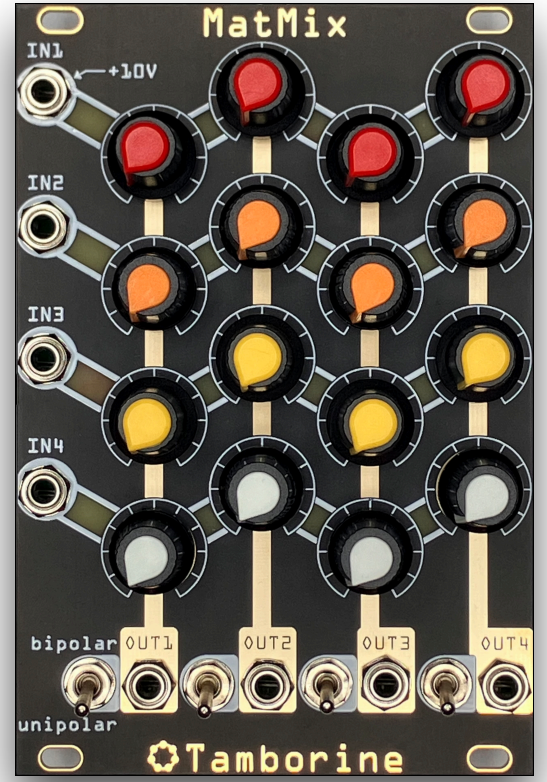


image 1: front panel

The Eurorack module MatMix is a 4 x 4 matrix mixer.

In a matrix mixer, the signal from each input can be send to each output whilst then also being amplitude adjusted. Alternatively, a matrix mixer can also be seen as each output having a separate mix of all the inputs.

MatMix features:

- 4 inputs
- 4 outputs
- Mixes both audio signals and control voltages (DC coupled)
- Buffered in- and outputs
- 16 linear potentiometers
- Knobs can both attenuate and amplify up to 2x
- Switchable unipolar and bipolar (or polarised) modes
- Normalised +10 Volt offset
- In- and outputs also as pin headers on back of module
- Pin headers on back of module also allow for additional ‘shield’ to add onto back of module.

MatMix specs:
- Doepfer A-100 Eurorack compatible module
- width: 17 HP, 86 mm
- height: 3 U, 128,5 mm
- depth: 25 mm, from rear side of front panel, including power cable
- current draw: 30mA (+12V) / 30mA (-12V)

Included in package:
- the module
- power ribbon cable, 20 cm, 2x8 to 2x5 IDC connectors
- 4 bolts, 4 washers, Allen key

## Linear potentiometers

All the 16 knobs have linear potentiometers. These are suitable for both audio- and control voltage signals.

## Unipolar/bipolar

Each column of 4 knobs, related to one output, has an unipolar/bipolar toggle switch.

In **unipolar mode** all 4 knobs in that column have an amplification range that goes from zero, in the fully left position, to an amplification factor of about 2 in the fully right position. This is commonly used for mixing audio signals and works very much like the usual volume knob.

In **bipolar mode**, also called polarising mode, all 4 knobs in that column have an amplification range that goes from about -2, in the fully left position, to zero in the halfway position, to about 2 in the fully right position. This is more commonly used for control voltages.

## +10V offset

On input 1 there is a normalised voltage offset signal which can be added to each output via the top row of red knobs. With the red knob in unipolar mode, this DC offset ranges from 0 to about +10 Volt. In unipolar mode, this offset ranges from about -10 to +10 Volt.

This offset can be removed by plugging a minijack into input 1.

The offset can be disabled more permanently by removing the default red jumper on the back of the module. The red jumper can simply be removed by hand, no soldering required, and can be placed back at any time. See *image 3*.

Note: On the back of the module, the offset is marked as +5V, which is the actual voltage available on that pin. Since the knobs on the MatMix can amplify input signals to about a factor of 2, the usable offset available on the outputs goes up to about +10 Volt; hence the +10V marking on the front panel.

## In- and output pin headers

All the in- and outputs of the module are also available as pin headers on the back of the module. This allows for making internal connections between modules without the need for minijack cables on the front of the Eurorack synth. Obviously, these internal connections can

always be overruled by making minijack cable connections between the modules, on the front

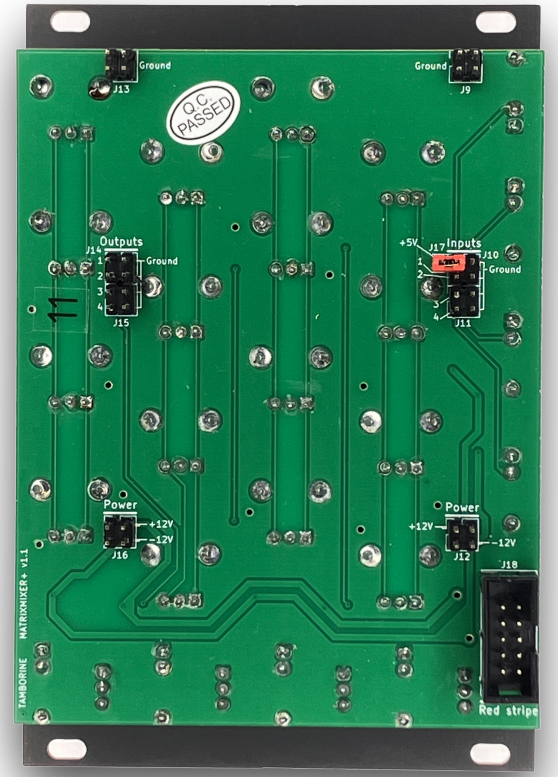


image 3: back of the module

panels.

The input pin headers are normalised, i.e. the input signals on the input headers are ignored as soon as a minijack plug is inserted into the corresponding input on the front panel.
The output pin headers are NOT normalised, i.e. when a minijack plug is inserted into an output on the front panel, the output signal will also remain available on the corresponding pin header on the back of the module.

*Image 3* shows where these pin headers are located on the back of the module.

A normal Eurorack power supply ribbon cable might be used to connect output pin headers with input pin headers on another module. Note that a power supply ribbon cable is 2 x 5 pins whereas the in-/output pin headers on the MatMix are arranged 2 x 4, so the power supple ribbon cable should be aligned correctly for all four signal pins to be connected properly. Also be mindful of which pins are for signals and which are for ground connections. Different manufacturers might use different configurations.

Note: by default, a voltage offset is connected with the red jumper to the pin header of input 1 (visible on *image 3*).

## Additional shield

With the pin headers on the back of the module it is also possible to attach an additional shield (i.e. a circuitboard) to the module. Besides the aforementioned in- and output pin headers, there are also pin headers which supply the +12 and -12 Volt power sources to such a shield.

Note: these +12/-12V pin headers are NOT hardwired to the +12/-12 volt power supplies on the ribbon cable. Instead they are connected AFTER pairs of reverse-polarity-protection diodes and EMI-filter ferrite beads and are also stabilised by the module's main decoupling capacitors. So, in most cases these additional protective components don't need to also be on the shield.

All pin headers on the back of the MatMix module are placed so that a common stripboard/ veroboard with 2,54mm hole spacing can be used to make a custom shield.

Tamborine has future plans to design and manufacture such a shield which will provide multiple parallel feedback-circuitries from the module's outputs back to its inputs, which will expand the MatMix functionality from only being a matrix mixer to also being a stand-alone noise box.