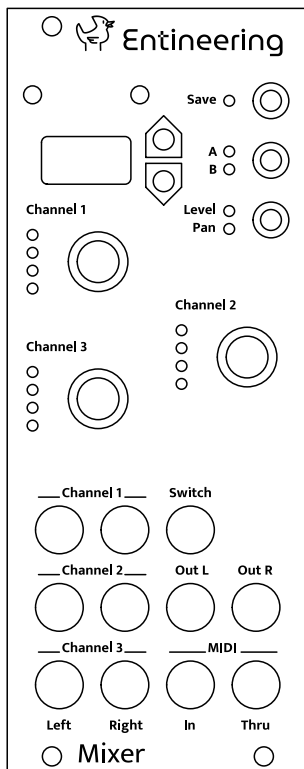# Entineering Mixer

User Manual

v1.0

Introduction

Entineering Mixer is a module for Eurorack synthesizers. It is a digitally controlled analog mixer with three stereo channels.

Features

- Three stereo input channels, also usable as mono channels
- Stereo output
- Level and pan controls
- Levels adjustable from -68 dB to +11 dB in 1 dB increments
- 99 slots for user presets
- Quick toggle between two sets of level/pan values via button or gate input
- MIDI Program Change and Controller Change support

Connecting the Module

Connecting Power

Your Eurorack synthesizer module comes equipped with a 16-pin keyed connector for power supply.

To connect the module:

1. Power Off Your System: Before connecting the module, ensure that your Eurorack case and power supply are turned off.
2. Locate the Power Connection on Your Case: Identify the power headers on your Eurorack case. These headers will also have a 16-pin connector.
3. Use the supplied ribbon cable to connect the module to your Eurorack power supply. The red mark on the ribbon cable identifies the -12V supply line. On the module, the red mark points towards the bottom on the module.
4. Secure the Module: Once connected, mount your module into the case using the appropriate screws, ensuring it is securely in place.

> ⚠️ Only use proper Eurorack power supplies with voltages of -12V, +12V and +5V.
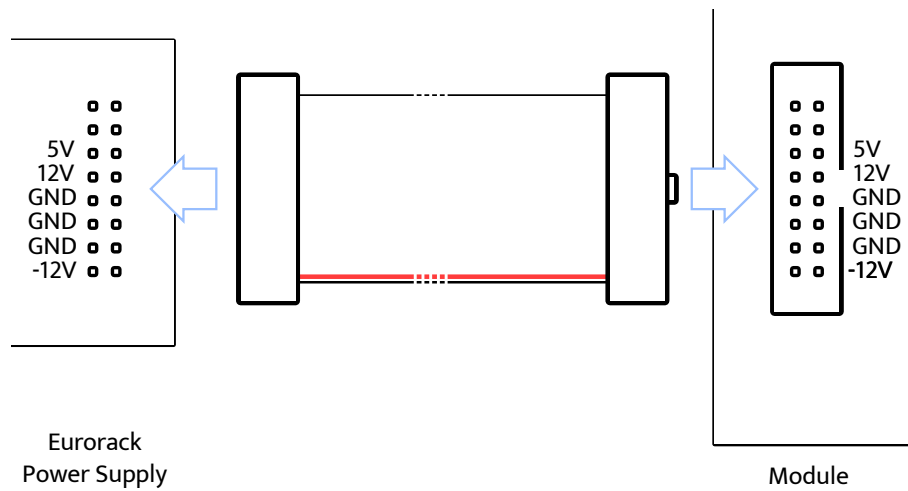
Figure 1: Connecting Power

Connecting Audio

The Entineering Mixer has three stereo inputs and one stereo output. Left and right channels are broken out as separate jacks. For mono input signals, use the Left jack.
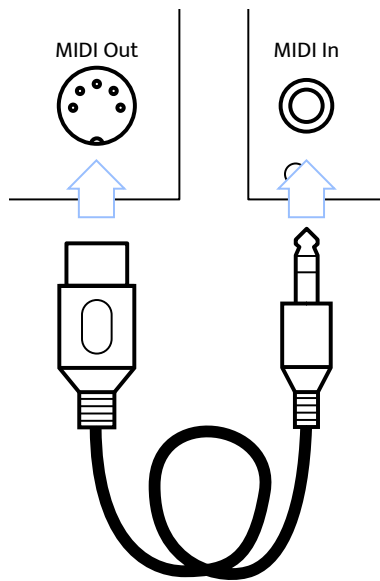
Connecting MIDI

To connect a device with a 5-pin DIN connector to the module, you need a MIDI DIN-to-TRS adapter. The TRS jacks on the module use the A pinout that is now included in the official MIDI standard.

To be able to send MIDI data to the module, connect the MIDI Out or MIDI Thru port of your MIDI keyboard, audio interface or similar, to the MIDI In jack of the module.

Using the Module

Adjusting Levels and Pan

There are three encoder knobs for the three stereo channels. Turning a knob clockwise increases the volume, while counting counter-clockwise decreases it. While turning, the currently set volume in dB is displayed on the display.

Figure 2: Connecting MIDI

Pressing the button next to the Level/Pan LEDs switches between level and pan mode. In pan mode, turning a knob clockwise pans the channel to the right, while turning counter-clockwise pans to the left.

Saving and Loading Programs

The level and pan values for all three channels can be saved in a so-called program. There are 99 slots in which programs can be saved. Programs can later be loaded to restore all level and pan values in that program.

To be able to save a program, it must be different from the currently loaded program. This is indicated by the LED next to the Save button. To save a modified program, push the Save button momentarily. The display begins flashing the current program number. Press the Up and Down buttons to optionally select a different slot to save the program in. Then push the Save button again. A short animation on the display will indicate that the program is being saved. To cancel saving a program, push any button except Save.

When saving a program into a slot, the program previously in this slot is overwritten and cannot be recovered.
Factory programs can be recovered using the Factory Reset function in the menu.

To later restore level and pan values from a saved program, use the Up and Down buttons to select a program.

Loading a program discards any changes made to the channel settings.

See the next sections for alternate ways to load programs.

Quickly Toggling Between Two Setups

The A/B button and the Switch input allow you to quickly toggle between two sets of channel settings. Pushing the A/B button or feeding a voltage into the switch input switches to a second set of level/pan values, the B set. While in B mode, the knobs as well as the Up and Down buttons only influence the B set, while the A set stays the same. Toggling back to A applies the A set to the channels again.

Actually the A/B button changes the input polarity of the Switch input. This means with no cable connected to the Switch input, you can use the button to toggle between A and B. With a cable connected, you can use the A/B button to change the meaning of high and low voltages on the input, i.e. from Low->A and High->B to High->A and Low->B.

Using MIDI to Control the Mixer

The Entineering Mixer responds to MIDI Program Change (PC) messages. For example, MIDI floorboards used with guitar effect units usually send these messages. Some sequencers and most DAWs can also be configured to send PC messages at certain points in time.

When receiveing a PC message, the Entineering Mixer loads the program number referred to in the message. Only the A set is influenced by this. Same as with the

Up/Down buttons, any changes made to the channels that are not saved to a program are discarded.

By default, the module listens on all MIDI channels. See the next section on how to change the channel to listen on.

Configuration

The module has a number of global settings like the MIDI channel which can be configured through a menu.

To access the menu, the Save indicator must be off. If it is lit, load a program first to discard any configuration changes. Now press and hold the Save button for several seconds, until the display contents begin flashing. You can now cycle through menu items with the Up and Down buttons, and activate them with the Save button.

The menu items are as follows:

1. Ch: MIDI channel
2. C1: MIDI controller for input 1
3. C2: MIDI controller for input 2
4. C3: MIDI controller for input 3
5. FI: Firmware information
6. Fr: Factory reset

Ch: MIDI Channel

The MIDI channel the module should listen all. Can be one of channels 1 through 16, or AL for listening on all channels at once. The latter is the default setting.

C1, *C2* and *C3*: MIDI Controllers

Configures the MIDI CC (Controller Change) messages to listen to. Can either be oF to disable the functionality (the default), or a number from 1 to 31. The configured MIDI controller can then be used to control the channel volume.

Table 1: Meanings of MIDI controller numbers.

Number	Description
1	Modulation, e.g. keyboard mod wheel
2	Breath controller
3	Undefined, freely usable
4	Foot controller
5	Portamento time
6	Data byte for NPN/NRPN
7	Main volume
8	Balance
9	Undefined, freely usable
10	Panorama
11	Expression
12	Effect Control 1
13	Effect Control 2
14..15	Undefined, freely usable
16..19	General purpose 1..4
20..31	Undefined, freely usable

Fr: Factory Reset

After toggling from no to YE, pressing the Save button will reset all settings and programs of the module to the default state.

FI: Firmware Information

Displays the version of the firmware (Fi) or bootloader (bL). A typical output would be something like 1.1. Digits 10 through 15 are displayed as letters A through F, so version 1.13 would be displayed as 1.C. A dot after the second digit indicates a prerelease version.

Updating the Firmware

The firmware of the module can be updated by sending MIDI SysEx messages.

Entering Update Mode

1. Disable power to the module
2. Press and hold the Up and Down buttons simultaneously
3. Enable power to the module
4. The letter F on the display indicates that the module is in firmware update mode

Transfer New Firmware

Connect a MIDI cable from a PC-MIDI interface to the module. Now send the firmware file in .syx format from your PC to the module. You can disable any delays between messages for faster transfer.

Table 2: Recommendations for Software that can be used for sending SysEx files.

Operating System	Software	Where to Get
macOS	SysEx Librarian	https://www.snoize.com/sysexlibrarian/
Linux Command Line	`amidi`	`alsa-utils` package
Windows	?	?