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Mutamix

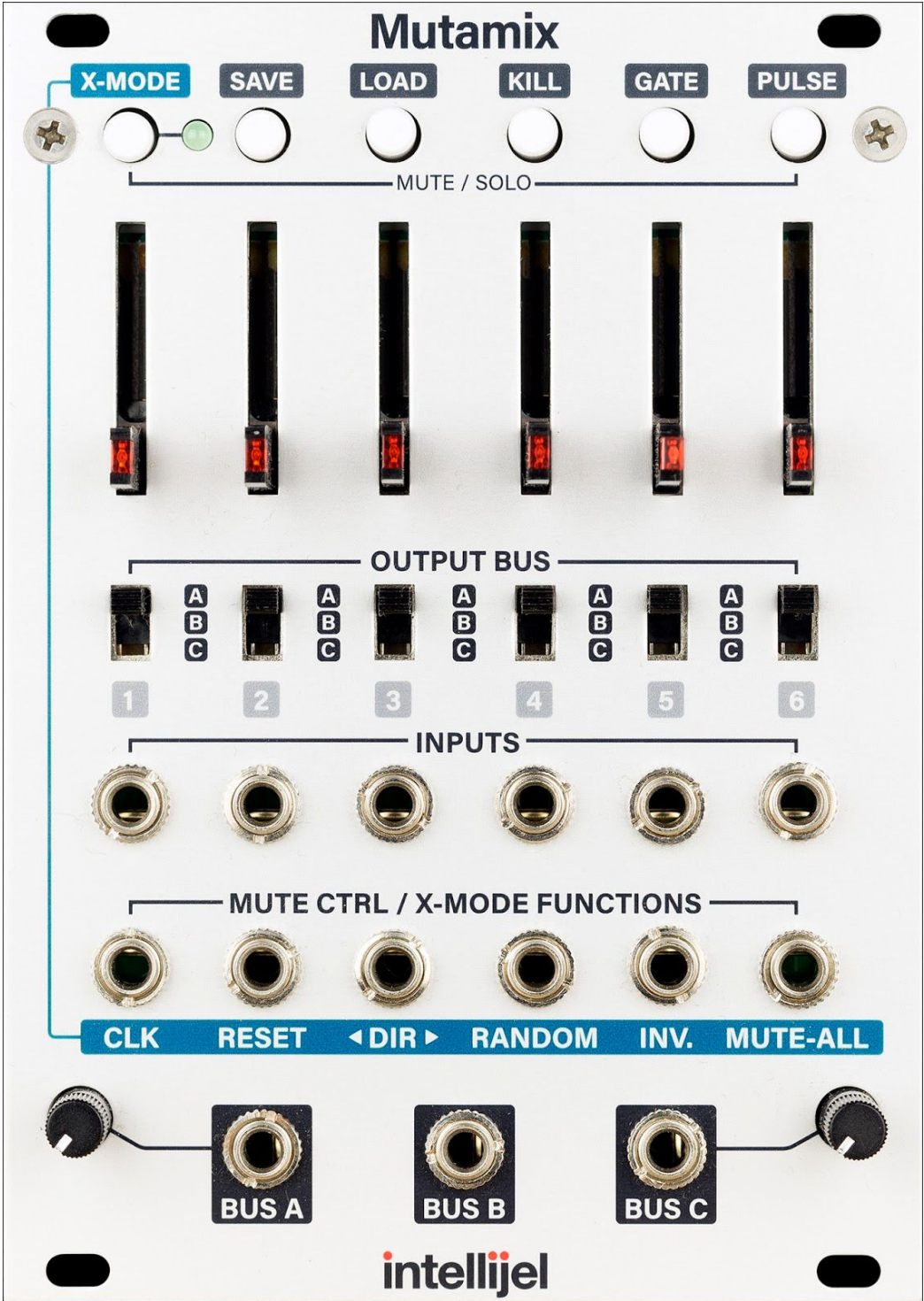6-Channel CV / Audio Mixer

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Overview

The Mutamix is a mixer that has been mutated to offer unique and powerful functionality. Up to six channels of audio or CV signals can be mixed and routed to the three selectable Bus outputs. Channels can be muted or soloed using buttons, but also muted using trigger or gate signals. Muting arrangements can be saved as presets for quick recall, and in X-Mode these presets can be step sequenced and randomized to inject life into your patches.

Jumpers on the back allow the Mutamix faders to send a five volt range while an input is not connected, creating step sequencing functionality while in X-Mode. A Linix module can also be connected using a ribbon cable to normal the two together.

This flexible configuration means that the Mutamix can function as an audio and CV mixer, sequential switcher, voice allocator, step sequencer, and complex modulation distributor.

Features

- Six channel CV/audio mixer with LED faders to set input levels, mute/solo buttons, and three selectable Bus Outputs.
- Preset saving and loading of mute arrangements.
- X-Mode allows quick recall, as well as step sequencing, inversion, and randomization of muting arrangements.
- +5V jumper allows the sliders to send a five volt range without an input connected, allowing the Mutamix to function as a step sequencer.
- Attenuation on Bus Outputs A and C.
- Jumpers to normal Linix output to the six inputs.
- Skiff friendly 38mm depth.
- Firmware updateable via Intellijel USB ISP or other AVR programmer.

Installation

Intellijel Eurorack modules are designed to be used with a Eurorack-compatible case and power supply.

Before Your Start

Before installing a new module in your case you must ensure your case's power supply has sufficient available capacity to power the module:

- Sum up the specified +12V current draw for all modules, including the new one. Do the same for the -12 V and +5V current draw. The current draw will be specified in the manufacturer's technical specifications for each module.
- Compare each of the sums to specifications for your case's power supply.
- Only proceed with installation if none of the values exceed the power supply's specifications. Otherwise you must remove modules to free up capacity or upgrade your power supply.
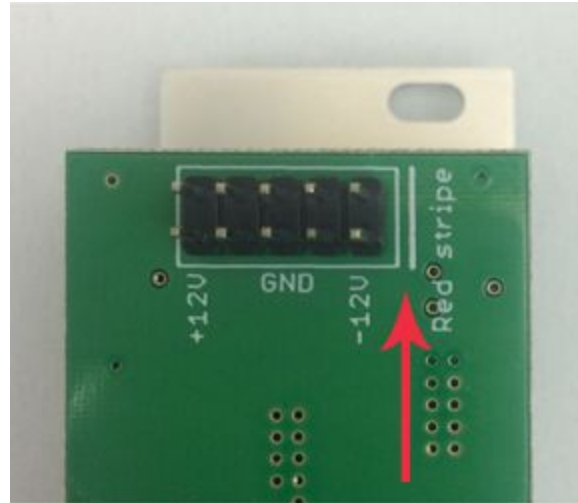
You will also need to ensure you have enough free space (hp) as well as free power headers in your case to fit the new module.

You can use a tool like [ModularGrid](#) to assist in your planning. Failure to adequately power your modules may result in damage to your modules or power supply. If you are unsure, please [contact us](#) before proceeding.
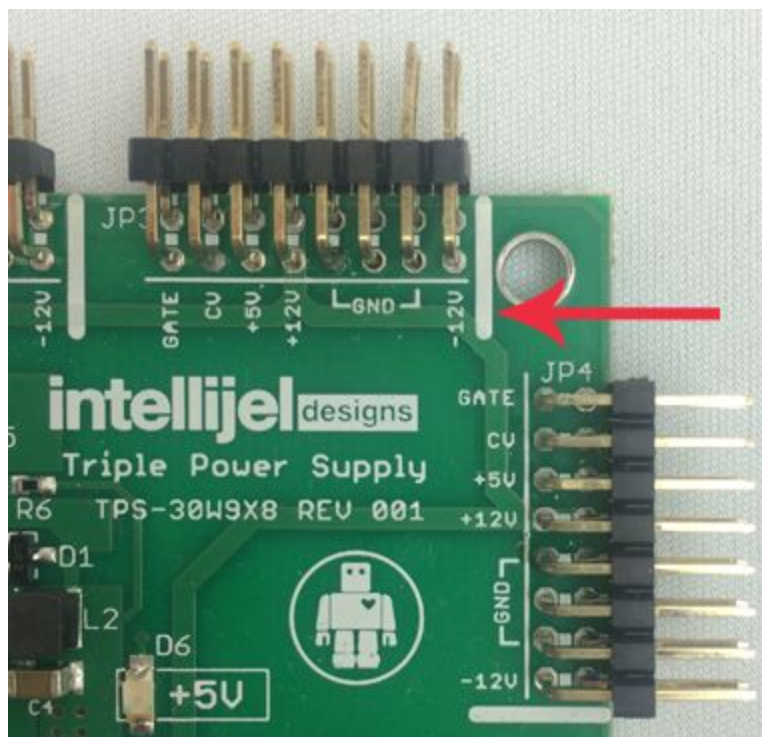
Installing Your Module

When installing or removing a module from your case always turn off the power to the case and disconnect the power cable. Failure to do so may result in serious injury or equipment damage.

Ensure the 10-pin connector on the power cable is connected correctly to the module before proceeding. The red stripe on the cable must line up with the -12V pins on the module's power connector. The pins are indicated with the label -12V, a white stripe next to the connector, the words "red stripe", or some combination of those indicators.
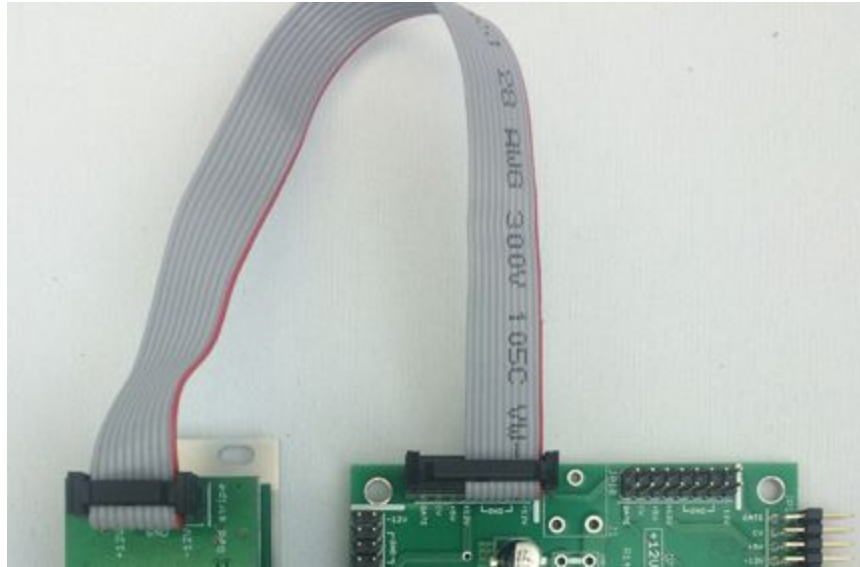
Most modules will come with the cable already connected but it is good to double check the orientation. Be aware that some modules may have headers that serve other purposes so ensure the cable is connected to the right one.

The other end of the cable, with a 16-pin connector, connects to the power bus board of your Eurorack case. Ensure the red stripe on the cable lines up with the -12V pins on the bus board. On Intellijel power supplies the pins are labelled with the label "-12V" and a thick white stripe:

If you are using another manufacturer's power supply, check their documentation for instructions.
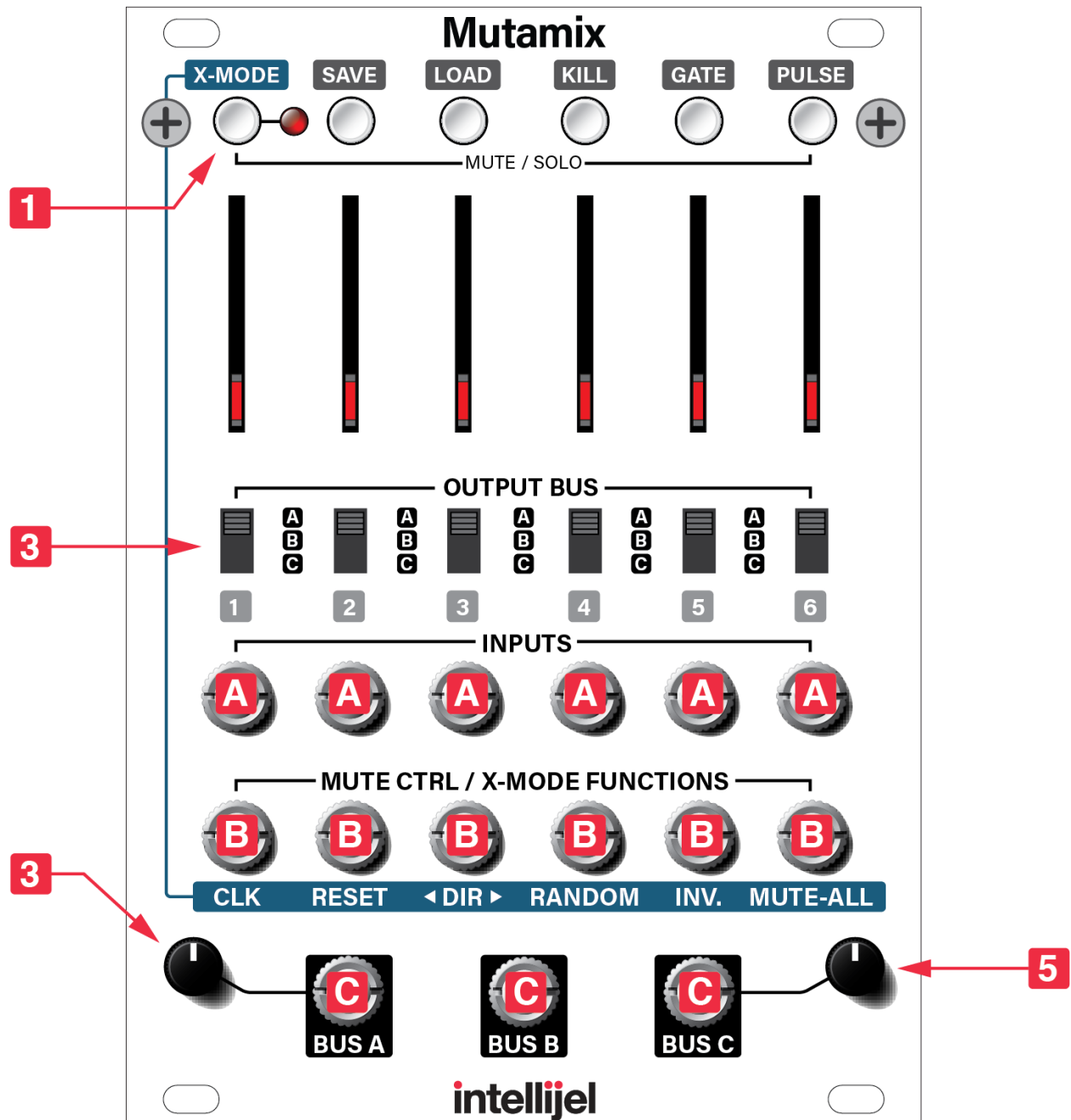
Once connected, the cabling between the module and power supply should resemble the picture below:

Before reconnecting power and turning on your modular system, double check that the ribbon cable is fully seated on both ends and that all the pins are correctly aligned. If the pins are misaligned in any direction or the ribbon is backwards you can cause damage to your module, power supply, or other modules.

After you have confirmed all the connections, you can reconnect the power cable and turn on your modular system. You should immediately check that all your modules have powered on and are functioning correctly. If you notice any anomalies, turn your system off right away and check your cabling again for mistakes.

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Front Panel

Controls

1. **Buttons** - Accesses different parameters of the Mutamix depending on whether the module is in its default Main Mode, or in X-Mode. The default behaviour causes channels to mute when a button is pressed and solo when a button is double pressed.
2. **Faders** - Adjusts the level of signal on a particular channel.
3. **OUTPUT BUS Switches** - Selects between **BUS A**, **BUS B**, and **BUS C** as the output destination for a channel.
4. **BUS A Attenuator** - Used to reduce the signal level from the **BUS A** output. When fully clockwise the signal is not attenuated.
5. **BUS C Attenuator -** Reduces the signal level of the **BUS C** output. Fully clockwise means the signal is not attenuated.

Inputs and Outputs

A. **INPUTS** - Allows input of an audio or CV signal to a channel.
B. **MUTE CTRL / X-MODE FUNCTIONS** - Sending gate or trigger signals to these inputs causes muting while in Main Mode, and triggers specific functions while in **X-Mode**.
C. **BUS OUTPUTS** - Provides three selectable outputs from the Mutamix with attenuation on **BUS A** and **BUS C**

Instructions

While in Mutamix's default Main Mode, it functions as an audio and CV mixer. It can even be used to process both types of signal simultaneously due to the flexible bus routing architecture. Simply plug your signals into the inputs, select an **OUTPUT BUS** using the switches at the bottom of each channel, and make the necessary connections, then adjust your fader levels as desired.

Channels can be muted by pressing their associated buttons at the top, or soloed by double pressing. Arrangements of mutes can be saved by holding the **SAVE** button for approximately 1 second, until the **X-MODE** LED flashes, and then pressing the button where you want to save this arrangement as a preset. These arrangements can then be loaded by holding the LOAD button for approximately one second and then pressing the button with the desired preset. These presets can be saved to EEPROM for recall after power cycling by holding the **SAVE** button for a few seconds, until it flashes rapidly.

The **MUTE CTRL/X-MODE FUNCTIONS** inputs will mute channels when they receive a gate or trigger signal. Their behaviour will depend on the **GATE/PULSE** settings. Pressing and holding the **GATE** or **PULSE** buttons will cause the channel fader LEDs to light up if they are in the selected mode. For example if you hold the **GATE** button, the channels set to **GATE** mode will light up.

Channels in **GATE** mode will mute while the signal on their respective input is high. Channels in **PULSE** mode will cause toggle between being muted and unmuted on every trigger received on their input. **GATE** mode is optimized for square wave LFOs and sustained gate notes, while **PULSE** is meant to be used with short momentary triggers or pulses.

Holding down **X-MODE** enters the other mode of the Mutamix, which changes the behaviour of the buttons and the **MUTE CTRL/X-MODE FUNCTIONS** inputs. The buttons now instantly recall saved presets when pressed. Furthermore, the **MUTE CTRL/X-MODE FUNCTIONS** inputs have now switched from providing **MUTE CTRL** to their **X-MODE FUNCTIONS.** The respective functions of each input is displayed in blue below the input jacks. These functions can also be accessed by double tapping their associated button.

Connecting a clock signal to the **CLK** input causes Mutamix to step through saved presets on each clock pulse. **RESET** will jump to the first preset, **DIR** will change the direction Mutamix steps through presets, **RANDOM** will jump to a random preset, **INV** will invert the current mute state of all channels, and **MUTE-ALL** will mute or unmute all channels. The number of presets used in this sequence can be set by holding down the **PULSE** button and then selecting the last preset to be used.

Main Mode

Mutamix initializes in its default Main Mode, indicated by the **X-MODE** LED being off. In this mode, Mutamix functions as a fairly standard audio/CV mixer with muting activated by the buttons, but also the **MUTE CTRL/X-MODE FUNCTIONS** inputs. In this mode, the buttons perform different functions depending on how they are pressed.

Button Single Press - Mutes or unmutes the respective channel.

Button Double Press - Puts a channel in solo and mutes all other channels. Pressing other buttons adds them to the solo state, and double pressing any button exits the solo mode. Double pressing a button will also exit any menu state.

Held Button Press - Holding a button for approximately 1 second activates the labelled functionality of a button.

> **X-MODE** - Enters **X-Mode**, changing the functionality of the buttons and **MUTE CTRL/X-MODE FUNCTIONS** inputs.

> **SAVE** - Saves current muting configurations and **GATE/PULSE** settings as a preset. Holding this button allows the selection of a button as a slot to save a preset. Then press the button to save a preset to the desired button. A preset can be saved to each of the six buttons. These presets can be saved to EEPROM for recall after power cycling by holding the **SAVE** button until it flashes rapidly. Channel fader LEDs of buttons with saved presets will light up.

> **LOAD** - Allows selection of a preset to be loaded. If a button has a saved preset, its channel fader LED will light up.

> **KILL** - Mutes all channels. The LEDs will all blink rapidly to indicate kill is active. Press any button to exit this mode.

> **GATE** - Causes the channel fader LEDs of any channels set to **GATE** mode to light up. Channels set to GATE mode will mute if a gate sent to the channel's **MUTE CTRL/X-MODE FUNCTIONS** input is high, and unmute while the gate is low.

PULSE - Causes the channel fader LEDs of any channels set to **PULSE** mode to light up. Channels set to **PULSE** mode will toggle between muted and unmuted if a trigger or pulse is sent to the channel's **MUTE CTRL/X-MODE FUNCTIONS** input.

X-Mode

Holding the **X-MODE** button until the corresponding LED lights up brings the Mutamix into X-Mode**,** enabling the sequencing of presets. Now the functions of the buttons have changed, and the **MUTE CTRL/X-MODE FUNCTIONS** inputs perform their **X-MODE FUNCTIONS**, displayed in the solid blue bar below their jacks. Be sure to save presets before entering **X-Mode** or there will be no presets to load or sequence.

Button Single Press - Recalls the preset of channel mute and **GATE/PULSE** settings saved to a button.

Button Double Press - Performs the channel's associated X-Mode action displayed in the blue bar below the **MUTE CTRL/X-MODE FUNCTIONS** inputs.

Held Button Press

> **X-MODE** - Exits X-Mode and returns to Main Mode
>
> **PULSE** - Allows sequence length to be selected by pressing one of the six buttons. The channel fader LED of the last step will blink. Preset button slots outside of the pattern length will be ignored when presets are randomized. For example, if the sequence length is set to four, presets five and six will not be selected during randomization.

Holding the **SAVE** button until the X-Mode LED flashes rapidly will still cause the Mutamix to save its current settings to EEPROM. This can be used to have the module initialize in X-Mode instead of its Main mode.

MUTE CTRL/X-MODE FUNCTIONS can either be triggered by double pressing buttons or by sending a gate, trigger, or clock signal to their inputs.

> **CLK** - Advances through saved presets.
>
> **RESET** - Resets to preset one upon receiving a gate or trigger signal.
>
> **DIR** - Changes direction of preset sequencing.
>
> **RANDOM** - Selects a random preset from within the sequence length.
>
> **INV.** - Inverts the current mute state of Mutamix.
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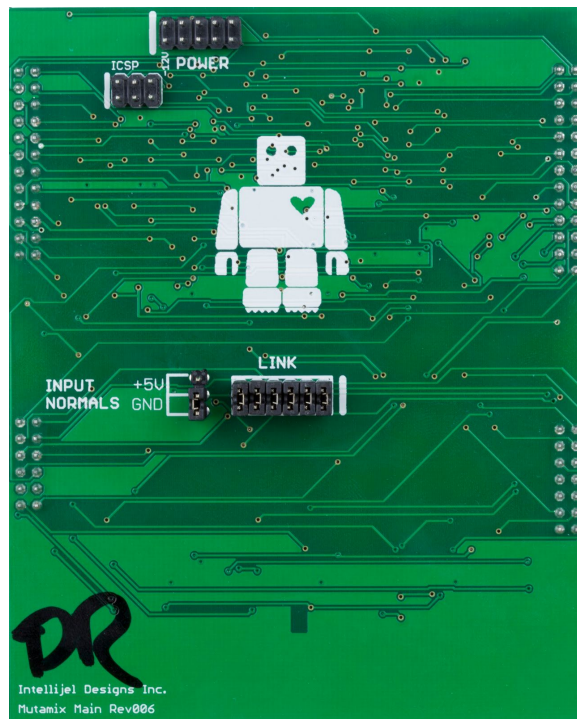> **MUTE-ALL** - Mutes or unmutes all channels.

Rear Jumpers

LINK - By removing the jumpers, this header allows the connection of a Linix VCA using a 12-pin ribbon cable. Connecting the two modules normals the outputs of the Linix to the inputs of the Mutamix. Connecting cables to the Linix outputs will not break this normalling. However, connecting signals to the Mutamix inputs will break this normalling. This can be useful for splitting a signal, for example to create a wet/dry mix. Note that because the Linix sums its inputs to channel six, Mutamix will in turn receive the sum of all Linix signals on channel six.

INPUT NORMALS +5V/GND - The position of this jumper will determine the behaviour of the Mutamix faders.

> **GND** - With no input connected, Mutamix faders send no offset signal regardless of their position. If an input is connected, the fader raises the amount of input signal sent to the selected **BUS** output. This is the default behaviour for Mutamix faders.

> **+5V** - Mutamix faders will send a zero to five volt offset signal determined by the position of the fader. This allows the Mutamix to function as a CV step sequencer while in **X-Mode** for melodies, filter modulation, or other uses. Connecting an input to a channel (or step) breaks this normalling, therefore no offset will be added to the input signal and the fader will simply control the amount sent to the selected **OUTPUT BUS** as usual.

Alternate Initialization Settings

Holding **PULSE** while powering on the module inverts the mute display of the channel fader LEDs. By default, LEDs light when a channel is muted, in this alternate mode, LEDs light when a channel is active and turn off when a channel is muted.

Holding **X-MODE** while powering on the module toggles a Performance mode where all button functionality except for muting is disabled, but button response is instantaneous.

Both alternate initialization settings persist after power cycling.

Technical Specifications

Width	18 hp
Maximum Depth	38 mm
Current Draw	58mA @+12V 44mA @-12V

Firmware Changelog

1.12 (July 10, 2017)

- Fix gates on channel one **MUTE** input occasionally influencing other channels.

1.11 (July 24, 2015)

- Fix for channel five and six not working when LEDs inverted

1.10 (May 10, 2015)

- Invert mute LEDs by holding **PULSE** while powering on the module. On = active, off = mute. The setting persists when powered down.

- Enable/disable performance mode by holding **X-MODE** while powering on the module. All button functions except for mutes are disabled, but button response is instantaneous. The settings persist when powered down.