USER MANUAL

RACK**BRUTE** 6U
EURORACK CASE

RACK**BRUTE** 3U
EURORACK CASE

ARTURIA®
YOUR EXPERIENCE·YOUR SOUND

Special Thanks

DIRECTION

Frederic Brun	Nicolas Dubois	Adrien Courdavault	Philippe Vivancos

ENGINEERING

Valentin Lepetit	Benjamin Renard	Victor Morello
Nicolas Dubois	Luc Walrawens	

MANUAL

Gert Braakman	Florian Marin

DESIGN

Sebastien Rochard	DesignBox	Sylvain Missemer	Morgan Perrier

BETA TESTERS

Chuck Capsis	Adrien Kanter	Andrew Capon	Reek Havok
Terry Mardsen	Jean-Philippe Gross	Gert Braakman	Randy Lee
Marco Correia	Ken Flux Pierce	Tom Hall	

Product version: 1.0

Revision date: 12 April 2018

Thank you for purchasing the Arturia RackBrute!

This manual covers the features and operation of Arturia's **RackBrute 3U and RackBrute 6U**.

In this package you will find:

- RackBrute 3U or 6U unit with power supply
- 15V-3000mA Power supply + power cord
- Link fixing system: Handle + 4 screws
- Extra screws and washers + rubber pads

Be sure to register your RackBrute as soon as possible! There is a sticker on the bottom panel that contains the serial number of your unit. This is required during the online registration process. You may want to record these elsewhere or take a photo of the sticker in case it becomes damaged.

Registering your RackBrute allows you to receive special offers restricted to owners of the RackBrute series products.

Special Message Section

Specifications Subject to Change:

The information contained in this manual is believed to be correct at the time of printing. However, Arturia reserves the right to change or modify any of the specifications without notice or obligation to update the hardware that has been purchased.

IMPORTANT:

The product, when used in combination with an amplifier, headphones or speakers, may be able to produce sound levels that could cause permanent hearing loss. DO NOT operate for long periods of time at a high level or at a level that is uncomfortable.

If you encounter any hearing loss or ringing in the ears, you should consult an audiologist.

NOTICE:

Service charges incurred due to a lack of knowledge relating to how a function or feature works (when the product is operating as designed) are not covered by the manufacturer's warranty, and are therefore the owner's responsibility. Please study this manual carefully and consult your dealer before requesting service.

Precautions include, but are not limited to, the following:

1. Read and understand all the instructions.
2. Always follow the instructions on the product.
3. Before cleaning the product, always remove all the cables. When cleaning, use a soft and dry cloth. Do not use gasoline, alcohol, acetone, turpentine or any other organic solutions; do not use a liquid cleaner, spray or cloth that's too wet.
4. Do not use the product near water or moisture, such as a bathtub, sink, swimming pool or similar place.
5. Do not place the product in an unstable position where it might accidentally fall over.
6. Do not place heavy objects on the product. Do not block openings or vents of the product; these locations are used for air circulation to prevent the product from overheating. Do not place the product near a heat vent at any location with poor air circulation.
7. Do not open or insert anything into the product that may cause a fire or electrical shock.
8. Do not spill any kind of liquid onto the product.
9. Always take the product to a qualified service center. You will invalidate your warranty if you make changes to it. Improper assembly may cause electrical shock or other malfunctions.
10. Do not use the product with thunder and lightning present; otherwise it may cause long distance electrical shock.
11. Do not expose the product to hot sunlight.
12. Do not use the product when there is a gas leak nearby.
13. Arturia is not responsible for any damage or data loss caused by improper operation of the product.

Introduction

Congratulations on your purchase of the Arturia RackBrute!

The RackBrute is an adjustable Eurorack housing system that will store, protect, and power your Eurorack modules. The RackBrute Link System allows you to combine units that are Link-enabled such as the MiniBrute 2 and 2S and the RackBrute 3U or 6U.

We are excited to bring you this powerful and well designed Eurorack case. It is the culmination of many years of research, and is the perfect combination of our passion for the Eurorack world and our deep appreciation for music it helps to create.

Be sure to visit the www.arturia.com website and check out our other products, tutorials and FAQs.

Musically yours, **The Arturia team**

Table Of Contents

1. BRIDGING THE GAP

In the past decade Arturia spearheaded the revival of the analogue synthesizer with some very advanced products such as the MicroBrute, the MiniBrute and the magnificent MatrixBrute.

During that same decade many musicians embraced the Eurorack standard. Not surprising: what makes the Eurorack environment so popular is that it enables you to create a unique individual sound. Whether it's EDM or complex Ambient music, you'll find Eurorack modules to match your music style.

With each new product generation Arturia added interface options that made it easier to connect its product range to a modular rack. In recent years the BeatStep Pro has become the controller of choice for many musicians in the Modular world because it features Gate, Pitch and Velocity outputs you can use to control external oscillators. In addition it has eight Drum gate outs that you can use to trigger Eurorack drum modules.

The MiniBrute 2 and the RackBrute take that integration a full step further. The MiniBrute 2 is an advanced analogue synth with an integrated patchboard that enables you to create complex connections between all of its components and your Eurorack.

It doesn't stop there; Arturia has now created a high quality Eurorack case: the RackBrute. The RackBrute attaches to the MiniBrute 2 and MiniBrute 2S but can also be used as a standalone unit. As such you can use it with all Arturia controllers that feature Gate, Pitch, and Velocity outputs.

1.1. The Eurorack standard

In 1996 Dieter Doepfer created a case based on the 19-inch rack format which was (and still is) a common format to store effects units and other studio gear. He also set the standard for the power supply and the bus boards in which you plug your modules. It was to become the standard of what we now know as Eurorack.

After a slow start his Eurorack format quickly gained momentum: the modules were low cost and very compact. In the years to follow the number of available modules grew exponentially. This phenomenal growth is easy to understand: as a musician/sound-designer you can now create your own customised instrument.

1.2. A fascinating adventure

As soon as you start filling your case with modules, you'll be faced with an endless stream of questions: What kind of modules do I need? Why are certain modules so popular? Do I go for a standard setup with analogue oscillators, or is it better to go digital? West Coast synthesis or East Coast synthesis?

The answers to these question come slowly: by reading forums online, comparing user experiences and most importantly, by diving in. And if you're not happy with the choices you make; there's a thriving secondhand market for used Eurorack modules where you can sell your modules if they don't deliver what you expect.

Whatever you do, take the time to get to know the modules you currently own inside out. It will help you to avoid a situation where you sit in front of your system tweaking knobs randomly, without understanding what's happening, but hoping that something magical will happen. This a certain recipe for losing interest very fast. To sustain the fascination you feel, learn the functions of a module one by one and test your knowledge continuously. It's the only way to experience the reward that comes with be able to create the sounds as you imagine them.

2. RACKBRUTE OVERVIEW

The RackBrute is an adjustable Eurorack housing system that will store, protect, and power your sound modules. It consists of a rail-based rack in boat format, a solid power module and a bus board that offers you plenty of space to plug your modules in. LEDs on the power module will signal the status of the power lines that feed your Eurorack modules. The RackBrute comes in two sizes: 3U and 6U.

2.1. The RackBrute Link System

Whether you prefer to patch your modules facing up on your desk, at an angle while standing, or face-on while performing, RackBrute has you covered. You can even fold down the system for safe travelling or storage.

More importantly the RackBrute link system allows you to combine units that are link-enabled such as the MiniBrute 2 and 2S and the RackBrute 3U or 6U.

Linked to compatible systems

Linking multiple cases

Folding option

3. THE RACKBRUTE CASE

The width of a Eurorack case is measured in "HP". Officially "HP" is the abbreviation for "Horizontal Pitch", but don't be surprised if you hear it described as short for "Hole Points". "Hole Points" refers to the screw holes on the rails in the rack. It makes sense to describe it this way because it gives you an idea how much space a module will take up. The most common sizes are 48HP, 84HP and 104HP. 1 Hp equals 0.2 inches or 5.08 mm. Vertically a Eurorack case is measured in "U". 1U equals 1.75 inches (or 44.45 milimeter) In general Eurorack modules are 3U in height. The exception is the 1U utility module, but you don't see those very often.

Eurorack cases come in two models; as boat case and skiff case. A skiff case is rather shallow: hence the name. Many of the more interesting modules will not fit into a skiff case. It has a certain advantage: it is easier to transport. The boat case is more common and suitable for Eurorack modules. The RackBrute is a boat case.

The RackBrute 3U and 6U cases are 88 HP wide. 5 HP is taken up by the power module. That leaves 83 HP for modules. In the 6U RackBrute you have an additional 88 HP available in the bottom row, more than enough for a starter system. If you use the RackBrute in combination with the MiniBrute 2 or 2S your options will increase even further as this enables you to offload many functions from the RackBrute, thus creating more space for interesting Eurorack modules.

On the top part of the power module you'll find the on/off switch. On the lower part you'll see three LEDs that indicate whether the three power lines on the RackBrute are functional. More about this in the Understanding power requirements [p.8] paragraph.

3.1. Viewing angles

RackBrutes can used in a number of ways. Without the Link system attached it will lie flat on your desk. With the Link system in the low position it will tilt slightly giving you a better view off the modules. In the upright position the RackBrute will take up a minimum of desktop space. The standing position will lift the RackBrute to eye-level and make it possible to link it to other Link-enabled systems, such as the MiniBrute 2 and 2S.

Viewing angles

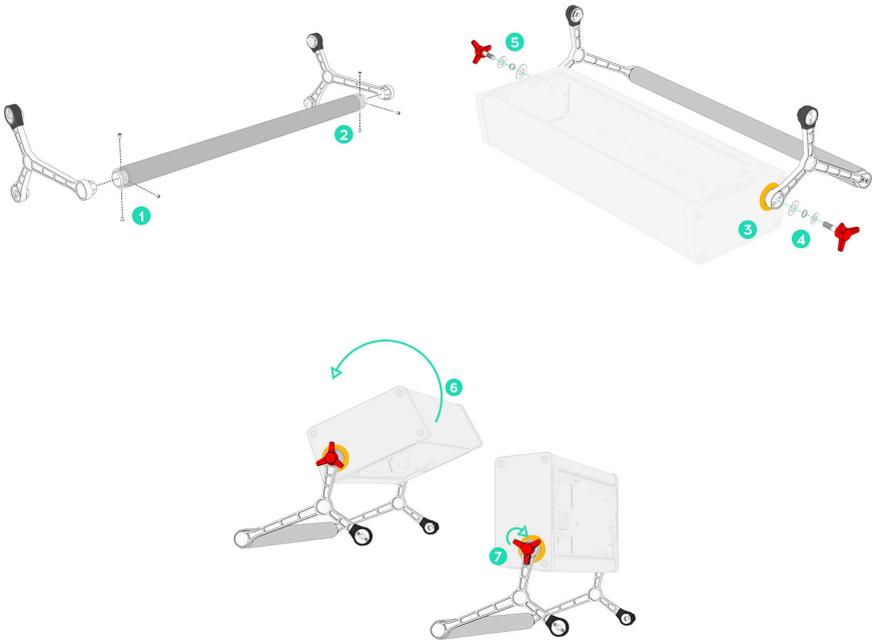The 3U RackBrute has the same options and can be linked to another 3U or 6U unit.

The RackBrute 3U

The 6U unit can be linked to another 3U or 6U unit and folded in a similar way.

RackBrute 6U link options

3.2. Assembling your system

Setting up the Rack

1. Assemble the crosses and handlebar on a clean, flat surface. Fix the left cross with 3 of the grey screws provided. Tighten moderately.
2. Fix the right cross with the 3 remaining grey screws. Firmly tighten all 6 grey screws on the handlebar.
3. Place the Rackbrute on a clean, flat surface. Insert the 3 tightening washers on the quick fastening screw.
4. Moderately fasten the quick fastening screw on the orange Link port.
5. Repeat the operation on the other side.
6. Put the RackBrute on its standing position.
7. Make sure the RackBrute angle is at its maximum and firmly tighten both quick fastening screws.

> ♪: The procedure for linking compatible Link units to each other such as the 6U, 3U, 2 and 2S is similar. Remember: do not connect/disconnect modules when the rack is powered. **Warning: Intermediary positions of the Brute system cannot be fully secured with the quick fastening screws. You should always unfasten the quick fastening screws before changing the Rackbrute position.** ! **Important note: Do not connect/disconnect modules when the rack is powered.**

3.3. Rails

The rails of the case allow you to place the modules in the rack. Once your collection of modules starts growing, you often find yourself unscrewing modules and moving them to another, more logical or more relevant position. The RackBrute uses a system of threaded nut strips, unlike older systems that often use sliding nuts.

Nut strip

The nut strip as used on the RackBrute has the advantage that you always have a clear idea of how many screw holes you have left to install modules. You'll never find yourself in a situation where you have to unscrew all your modules because your sliding nuts are on the wrong side of the case.

3.4. The bus board

Inside the case you'll find the bus board and the electronics of the power module. The bus board is where you plug-in your modules. If you look carefully you'll see 20 sockets in the top row. And, in a 6U case, 12 sockets in the bottom row. Next to the sockets you'll see labels that explain what sort of signals flow through the power lines of the bus.

The 16 pins on the bus board are arranged in pairs. The lower part is the most important part, that's where you'll find the +12V and -12V lines that power your modules. The +5V line is used mainly by digital modules. On occasion you'll encounter modules that connect with a 10 pin cable that only uses the lower half of the bus board.

From top to bottom the lines carry:

ower lines/ voltages

♪: The RackBrute standard is compatible with the Doepfer A-100 powerbus.

3.5. Understanding power requirements

Eurorack modules differ in their power requirements: some are power hungry, some will only need a minimum amount of power. Passive multiples, that allow you to make copies of control signals require no power at all.

The Power supply of the RackBrute is designed to provide a consumption up of 1600mA on +12V line and 1600 mA on the -12V line. In a 6U unit this power is distributed over four separate circuits. The +5V line can deliver up to 900 mA.

Rackbrute electrical specifications (Typical values):

- +12V : 1600mA
- -12V : 800mA
- +5V : 500mA
- Max power load : 31,3W

This gives you plenty of headroom to power at least 12 to 20 modules per bus. But even in a solid environment as the RackBrute it is important to have a good idea of the power your modules will consume; underpowering your modules can cause them to malfunction (glitches) and could even damage them.

When choosing modules it good policy not to exceed 80% of what the power supply can deliver. That leaves 20% headroom for current spikes or "misbehaving" modules.

> ♪: When buying modules online make a habit of checking the current a module draws. A typical specification looks like this: +12V: <40 mA -12V: <10 mA +5V: <10mA

For example: a typical 3U unit would draw a total of 440 mA on the +12V line, 175 mA on the -12V line and 80 mA on the 5V line. As a rule modules draw most of their power from the +12V line and somewhat less off the -12V line. Digital Eurorack modules with an LCD screen need a 5V line to function.

In the early days of Eurorack you had to add up these values manually to know whether your power supply could deliver enough "juice" to power the modules in your rack. It's still good practice to do this at least once, but nowadays there are options online that do this for you. Refer to for more information.

> Note: The 6U RackBrute has 2 rows of connectors: 20 on the first row and 12 on the second row. A wise precaution is to spread the load over the two bus boards to avoid overloading a row.

4. INSTALLING MODULES

If you plan to install several modules it is a good idea to give some thought to how you want to place them in the RackBrute; do you want to group your modules by function or distribute the functions? Group oscillators together, filters together, or spread them over the case to a place where they have a dedicated function?

A good practice is to recreate your RackBrute on Modulargrid. It will give you a good idea whether your modules will fit.

> ♪: Besides being a good source for infomation, Modulargrid has two tools that will help you to make the most of your RackBrute: the power calculation tool and the space optimization tool. The spacer tool will help you to optimize the available space in your RackBrute.

Installing your first module is an exciting moment! To avoid damaging your module please carefully follow the steps outlined below. The layout of the RackBrute will help you to make the right decisions when installing your module.

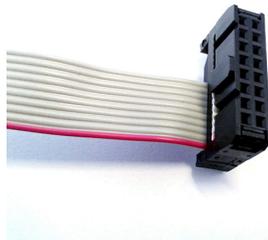The Following steps are necessary to install a module:

- If it is on, please turn off the RackBrute and disconnect it from the mains
- Check the documentation that comes with your Eurorack module. It will most probably show you how to connect the module to the power bus. In the rare situation that these instructions differ from the ones below, follow the instructions of your module and double check with the manufacturer of your module.
- Check the ribbon cable that comes with your Eurorack module. The cable should have a red stripe on the side. *This red stripe must line up with -12V on the bus board.* The sockets on the RackBrute are designed in such a way that there's only one way to insert the connector of cable, but even so:

> ! To protect your purchase and your wallet visually check the supplied flat cable for production errors and make certain that it is not misaligned. Also, ribbon cables are not always built to standard.

- Check whether the red stripe on the flat cable leads to -12V on your module.

Cable up close   *Connector and protrusion*

- Carefully insert the connector of flatcable into the socket on the bus board. The protrusion should make it impossible to insert it the wrong way around.
- Attach the module to the rail with the provided screws.

Screw and washer

- Double check all connections and reconnect the power cable of your RackBrute
- Flip the power switch of the RackBrute to its "on" position.
- Sit back and enjoy.

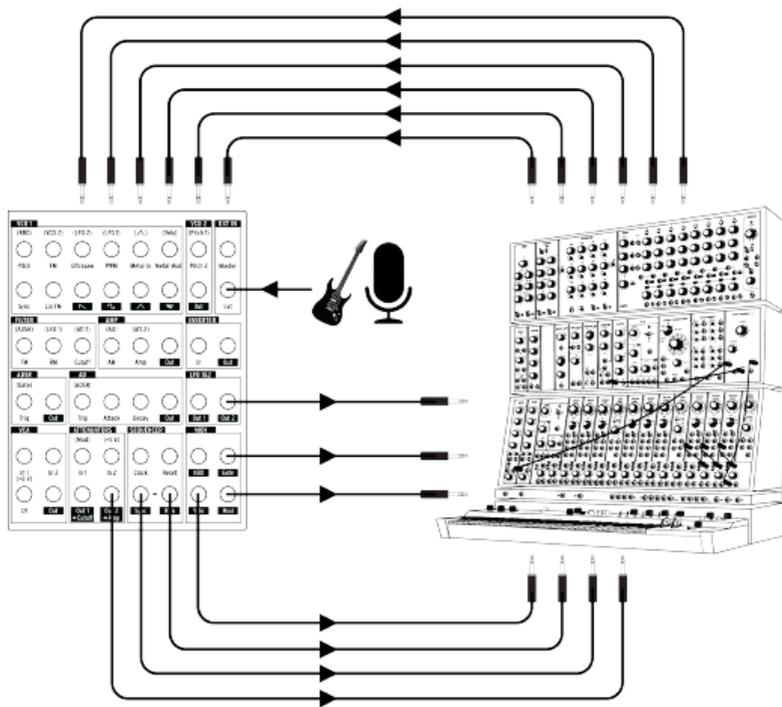**Tip:** use plastic washers to protect your module from damage.

5. THE RACKBRUTE AND OTHER ARTURIA PRODUCTS

5.1. RackBrute & MiniBrute 2 and 2S

In itself the MiniBrute 2 is an impressive analogue synthesiser but in tandem with a RackBrute it opens up an infinite universe of options. The MiniBrute 2 is specifically designed to control the EuroRack modules in your RackBrute. Its patch bay contains no less then 28 input patch points and 20 output patch points.

The MiniBrute 2 patch bay

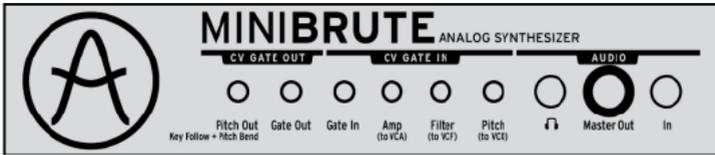*Example of a MiniBrute 2 to Modular connection*

Inputs	Outputs
VCO 1 Pitch	Saw
VCO 1 FM	Ramp
VCO 1 Ultrasaw	Triangle
VCO 1 PWM	Random
VCO 1 Metal in	VCO 2 out
VCO 1 Metal Mod	AMP out
VCO 1 Sync	ADSR out
VCO 1 Lin FM	LFO 1 out
VCO 2 Pitch 2	LFO 2 out
EXT IN Master	VCA out
EXT IN Ext	Attenuator out 1
FILTER FM	Attenuator out 2
FILTER RM	Sequencer sync
FILTER Cutoff	Sequencer run
AMP AM	Midi KBD
AMP AMP	Midi Gate
INVERTER In	Midi Velo
ADSR Trig	Midi Mod
AD Trig	
AD Attack	
AD Decay	
VCA In 1	
VCA In 2	
VCA CV	
Attenuator In 1	
Attenuator In 2	
Sequencer Clock	
Sequencer Reset	

> ℹ **Please refer to the MiniBrute 2 manual for a detailed overview of the patch bay**

5.2. RackBrute & MiniBrute

The MiniBrute features several in- and outputs that you can use to control your Eurorack modules.

MiniBrute inputs and outputs

- Pitch out
- Gate out
- Gate in
- Amp in (to control the internal VCA)
- Filter in (to control the VCF cutoff)
- Pitch in (to control the VCO)

> **Please refer to the MiniBrute manual for details**

5.3. RackBrute & MatrixBrute

The MatrixBrute is probably the most advanced Eurorack controller currently available. It was designed with Eurorack connectivity in mind. At the back of it you'll find 12 inputs and 12 outputs that accept or provide signals at Eurorack level. Fig 18 lists the standard inputs and outputs.

MatrixBrute inputs and outputs

- VCA
- LFO1 Amt
- Ladder filter cutoff
- Steiner Filter Cutoff
- VCO2 Metal
- VCO2 PW
- VCO2 Ultra
- VCO2 Pitch
- VCO1 Metal
- VCO1 PW
- VCO1 Ultra
- VCO1 Pitch

All of these are available as both inputs and outputs.

The Gate input can be used to trigger the MatrixBrute externally. The Gate output can be used to trigger external melodic sequencers or drum sequencers.

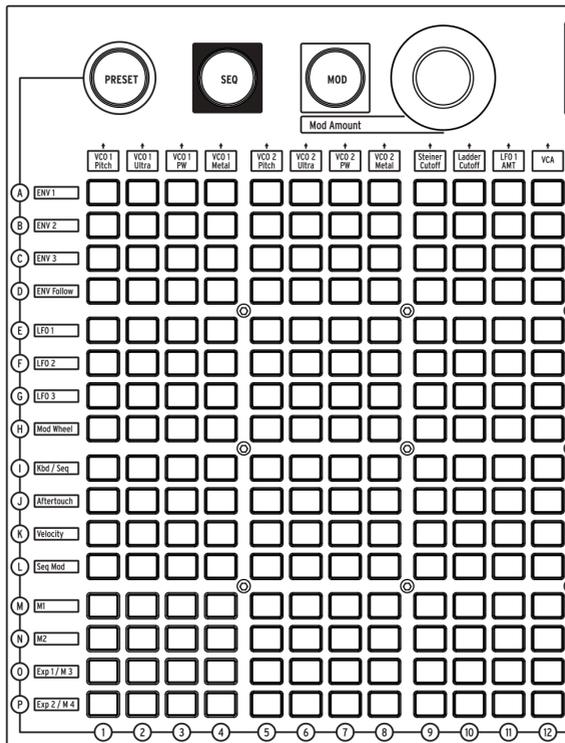### 5.3.1. The MatrixBrute as a Control Voltage Mixer

So what sort of control voltages come out of the outputs at the back? Surprise: they output the sum of all control voltages in a column! All of the modulation sources can be routed to each of the 12 outputs. The VCO 1 pitch output for example, outputs the sum of all control voltages A-P active in the column below it.

How is this done?

When the Matrix is in MOD mode the CV voltage of any of sources A-P linked to one of the 12 inputs on the Matrix becomes available at the available corresponding output. Let's see how this works:

In the example below we'll make the control voltage of LFO 1 available at the output named VCO 1-Pitch

Here's the Matrix...

The first 12 matrix positions

- First select the Modulation Matrix by pressing the MOD button.
- Now press button E1 to activate the routing from LFO 1 to the VCO pitch.
- Using a patch cord make a connection to a module on your RackBrute that accepts control voltages. A VCO would be a good choice, because it gives you immediate feedback.
- Now turn up the level of the modulation amount using the control knob next to the MOD selector. LFO 1 will now control the pitch of VCO1 on your MatrixBrute, but the control voltage also appears at the VCO1-Pitch output at the back where you can use it as a complex modulation source for you modular setup.

What this boils down to is that you have in fact a 12 channel Control Voltage Mixer and, that on each of the channels you can sum control voltages from 16 sources to create a very complex control voltage!

5.3.2. The MatrixBrute as a Scene Creator

The MatrixBrute is unique in that it enables you to store your patches in presets. Every control voltage routing you create when the Matrix is in modulation mode can be stored and recalled in a preset. When used as a Control Voltage Mixer as explained above this opens up a new world of creative options.

One the disadvantages of working anologue is that it is difficult to change patches quickly: moving from one soundscape to another is slow and often tedious. The MatrixBrute can change that.. How?

- Connect the outputs at the back to a number of your favorite destinations, destinations that match the musical purpose you have in mind. Then use the Matrix in modulation mode to create a routing.
- Save this routing by switching the Matrix to Preset mode, holding SAVE + one of the matrix buttons. Now create a new routing (leave the output connections as they are) until you have sound that is to your liking. As sequences/arpeggios are saved with each preset, you can save a different sequence/arpeggio with each preset.

You can now use the Matrix in preset mode to recall up to 256 control voltage routings with the touch of a button. Your MatrixBrute has become a scene generator that enables you to quickly change between pre-programmed patch presets!

> **! Warning : Saving a preset will erase the previous preset present on the destination. Please refer to the MatrixBrute manual for an overview of the available modulation sources.**

5.4. RackBrute & BeatStep Pro

The BeatStep Pro is an ideal controller for your RackBrute. Its compact size makes it a perfect addition to your RackBrute when travelling or performing. Pitch, Velocity, and Gate signals of both Sequencer one and Sequencer two are available for control of Eurorack modules. The eight Drum Gates can be connected to one of the many available Eurorack drum modules, or you can use the gate signals to trigger any combination of modules.

BeatStep-Pro outputs

All sixteen pads can be used to trigger connected modules in the RackBrute directly even when the sequencers are not running. In a similar way pads 1-8 will trigger modules in the RackBrute connected to the drum gates.

Another interesting use of the BeatStep Pro is to use it as the master clock of your RackBrute system. To make this possible the Beatstep Pro has a Clock Output.
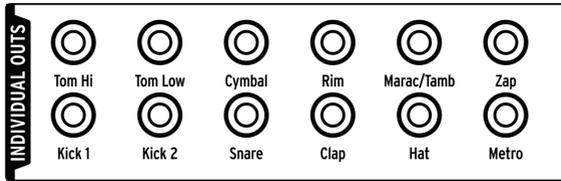

Sync options of the BeatStep Pro

The Clock input allows you to slave the BeatStep Pro to a clock module on your RackBrute. A Sync button on the front panel allows you switch between different clock modes.

> ℹ **Please refer to the BeatStep Pro manual for more details**

5.5. RackBrute & DrumBrute

The DrumBrute differs from the instruments featured above as it does not output triggers but audio signals.

DrumBrute outputs

The audio signals can be plugged into Eurorack modules that accept audio level inputs. The Mix output combines the output of the individual outputs. If one of the individual outputs is plugged, this output signal will be omitted from the Mix output. This feature allows you to exclude certain signals from the mix.

The available audio signals are:

- Tom Hi
- Tom Lo
- Cymbal
- Rim
- Marc/Tamb
- Zap
- Kick 1
- Kick 2
- snare
- Clap
- Hat

> ℹ️ **Please refer to the DrumBrute manual for general information.**

6. DECLARATION OF CONFORMITY

USA

Important notice: DO NOT MODIFY THE UNIT!

This product, when installed as indicate in the instructions contained in this manual, meets FCC requirement. Modifications not expressly approved by Arturia may avoid your authority, granted by the FCC, to use the product.

IMPORTANT: When connecting this product to accessories and/or another product, use only high quality shielded cables. Cable (s) supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FFC authorization to use this product in the USA.

NOTE: This product has been tested and found to comply with the limit for a Class B Digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide a reasonable protection against harmful interference in a residential environment. This equipment generate, use and radiate radio frequency energy and, if not installed and used according to the instructions found in the users manual, may cause interferences harmful to the operation to other electronic devices. Compliance with FCC regulations does not guarantee that interferences will not occur in all the installations. If this product is found to be the source of interferences, witch can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

- Relocate either this product or the device that is affected by the interference.

- Use power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter(s).

- In the case of radio or TV interferences, relocate/ reorient the antenna. If the antenna lead-in is 3OO ohm ribbon lead, change the lead-in to coaxial cable.

- If these corrective measures do not bring any satisfied results, please the local retailer authorized to distribute this type of product. If you cannot locate the appropriate retailer, please contact Arturia.

The above statements apply ONLY to those products distributed in the USA.

CANADA

NOTICE: This class B digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulation.

AVIS: Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

EUROPE

$C\,E$

This product complies with the requirements of European Directive 89/336/EEC

This product may not work correctly by the influence of electro-static discharge; if it happens, simply restart the product.