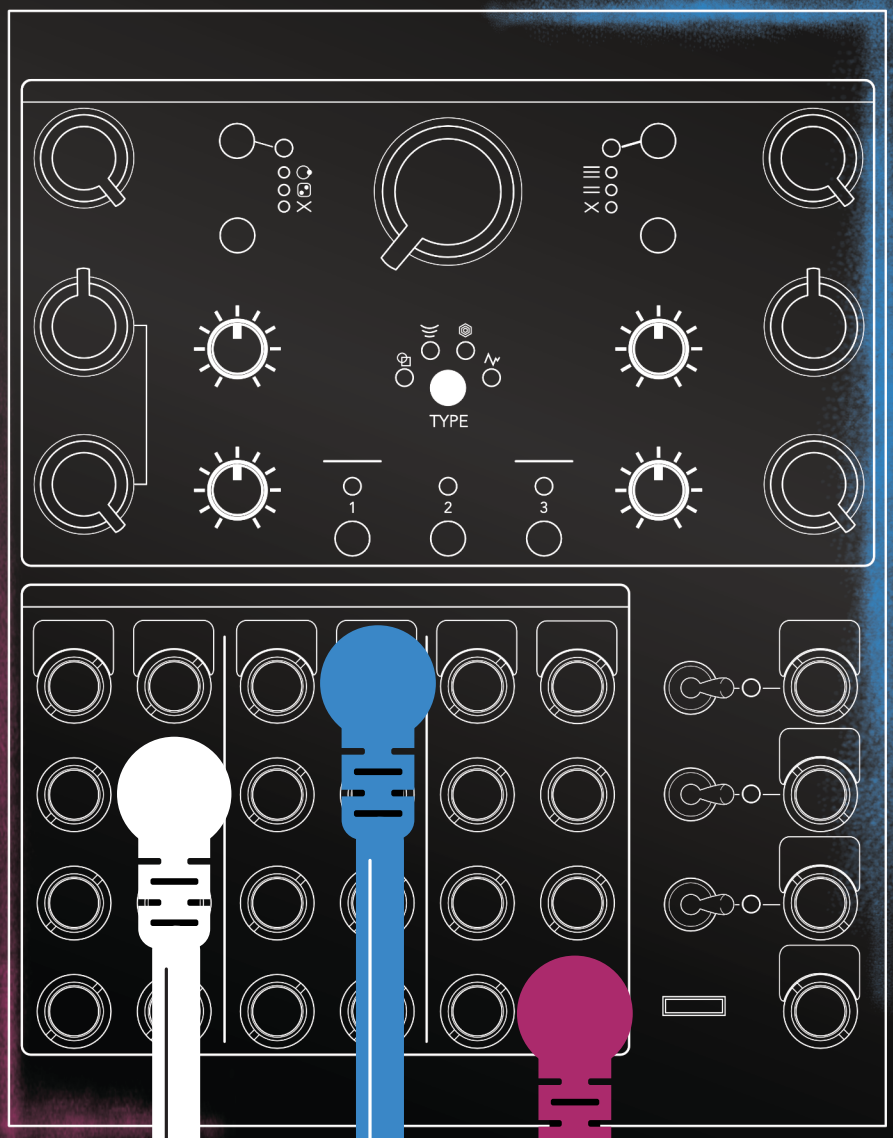
TRINITY

DIGITAL DRUM SYNTH ARRAY



mod bap.
MODULAR
BY BEATPPL

Contents

About Us

MODBAP MODULAR BY BEATPPL

Modbap Modular is a line of eurorack modular synthesizers and electronic music instruments by Beatppl. Founded by Corry Banks (Bboytech), Modbap Modular was born of the Modbap Movement with a simple mission to dev tools for beat driven hiphop leaning modular artists. It is our goal to develop eurorack modules from the beatmaker's perspective while adding value for music makers of all genres.
It's almost impossible to explain Modbap Modular without answering the questions; "So, what is ModBap?" MODBAP is the fusion of modular synthesis and boom-bap (or any form of hiphop) music production. The term was created by BBoyTech as a denotation of his experiments with modular synthesis and boombap music production. From that point forward, a movement was born where like minded creatives built a community around idea of Modbap. Modbap Modular is in effect, the result of that movement in a space where we'd previously not existed.

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DOPE ENOUGH FOR BOOMBAP!

www.modbap.com

Overview

TRINITY

Trinity is a 3 channel digital drum synth array contained in a single 20hp eurorack module. Four digital drum synth algorithms are available to each of Trinity's 3 drum channels. The algorithms are; BLOCK, HEAP, NEON and ARCADE. The array of digital drum synth algorithms are extremely versatile and are controlled manually by the 7 knobs and also from an external device using the associated CV inputs. These controls are; Pitch, Sweep, Time, Shape, Grit, Decay, and Character. There are several unique modes of operation. Cycle modes and Stack modes. The cycle modes are; Round Robin which allows for each trigger to sequentially activate different drum algorithms on each trigger while Random mode will generate new parameter settings per trigger. Stack modes allow the channels to be stacked together in layers of 2 or 3 voices to create interesting sound designs options. There are also 4 mini-pot controls which allow manual adjustment over EQ, Clipper, Hold and Volume. Each drum channel represents a drum synth voice and has its own trigger and V/Oct input in addition to extensive CV options per channel for external control of the algorithm parameters. USB MIDI control is also an option. An output routing stage allows for switching channels to the individual and / or mix outputs. Trinity allows saving of presets with the complete module configuration in order to keep your drum sounds safely stored between power cycles.

WHAT'S IN THE BOX?

The Trinity package comes with the following items included:-

- Trinity drum synth module.
- Eurorack IDC power ribbon cable
- 4 x 3m mounting screws.
- Sticker
- Quick start card deck

OPTIONAL ACCESSORIES?

The following items are not included with Trinity.

- Trinity full manual - available as a free download.
- Quick Reference Manual - available as a free download.
- A range of accessories such as patch cables, cable ties etc are available from Modbap Modular.

Downloads are available from www.modbap.com

SPECIFICATION AND CORE FEATURES

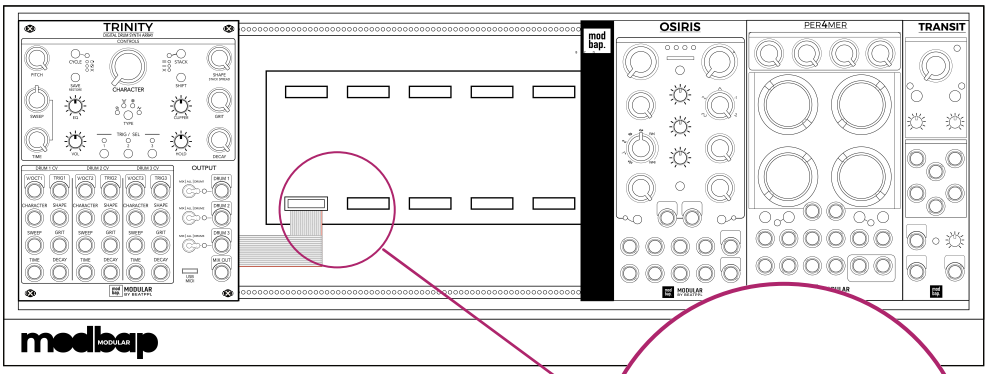
- Module size. 3U, 20 HP, Depth 26mm
- +12V current demand 50mA. (64mA Peak on Power Up)
- -12V current demand 50mA (64mA Peak on Power Up)
- +5V current demand 0mA
- 48kHz sample rate performance
- MIDI over USB Interface.
- 3 Channels / Voices
- 4 drum synth algorithms with cycle and random modes.
- 7 Knobs to control channel parameters plus CV control.
- 4 Mini Pots for additional parameters.
- 1V/Oct pitch control and trigger input per channel
- Switchable output mix routing.
- Individual channel mono outputs or mono summed mix out.
- Settings save / restore.
- Reverse polarity protection on the power input.

INSTALLATION

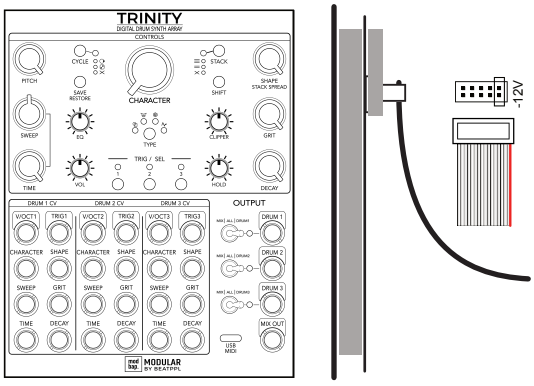
Follow the installation instructions carefully to avoid module or rack damage.

1. Ensure the power connection is disconnected before installing the device.
2. Identify an available location in the rack to install the module. Trinity needs 20HP of free space.
3. Connect the 10 pin connector from the IDC ribbon power cable to the header on the rear side of the module. Ensure that the pins are aligned correctly. The red stripe on the ribbon conductor closest to the -12V pin indicator on the header.
4. Insert the cable through the rack and connect the 16 pin side of the IDC ribbon cable to the rack power supply header. Ensure that the pins are aligned correctly with the red stripe on the ribbon conductor closest to the -12V pin on the header in the rack power supply.
5. Mount and position the module into the dedicated rack position.
6. Attach the 4 x M3 screws by screwing into the 4 locator holes and the rack mount. Do not over tighten.
7. Power up the rack and observe the module start up.
8. The device should now be ready to use.

Eurorack Installation.



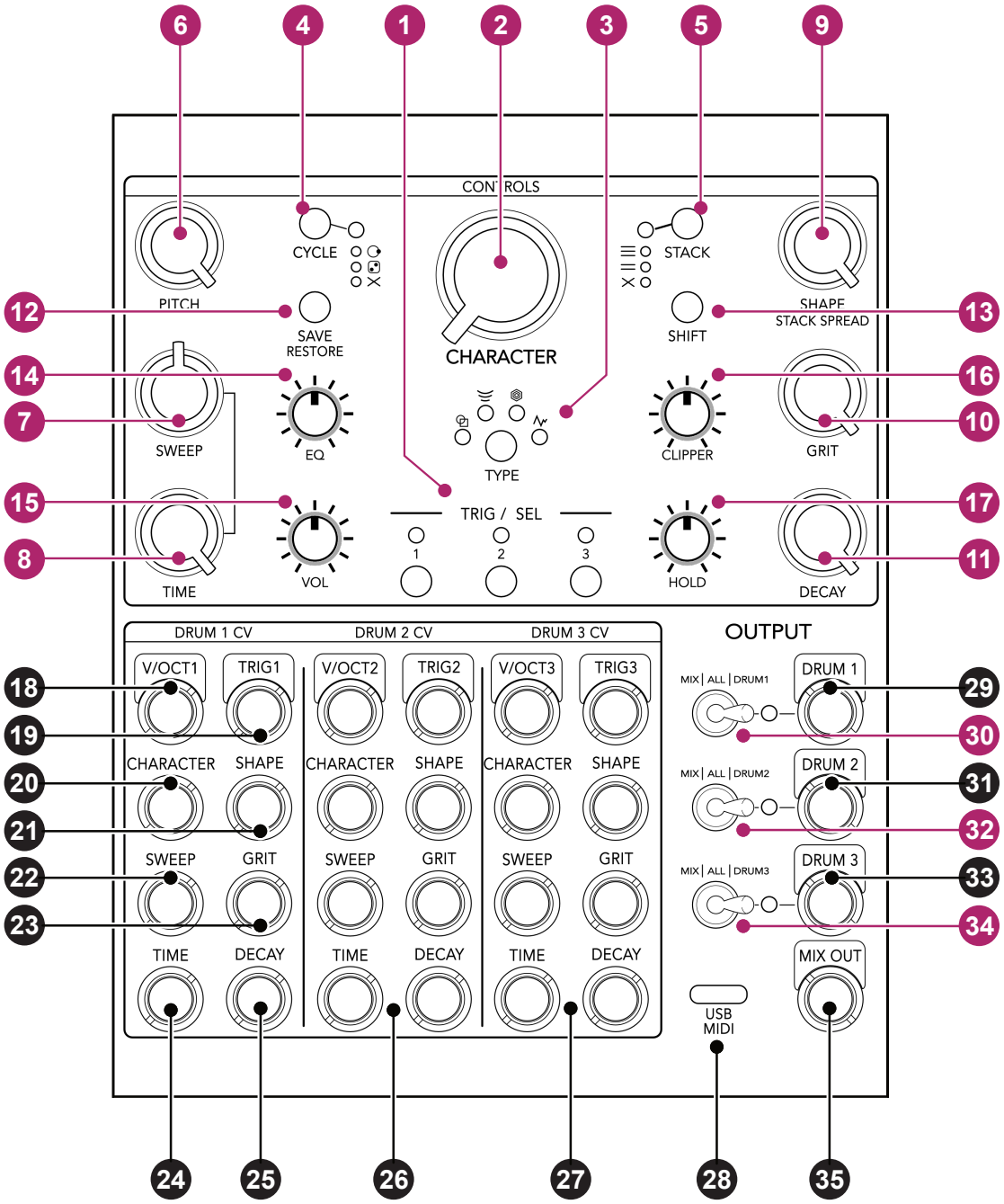
Cable connected to PSU with red conductor / edge aligned to the -12V pin. This should be labelled on the board.



Cable connected to module with correct orientation with red conductor / edge aligned to the -12V pin. This should be labelled on the module board with a white dash..

Ensure the following conditions are correct for trouble free installation.

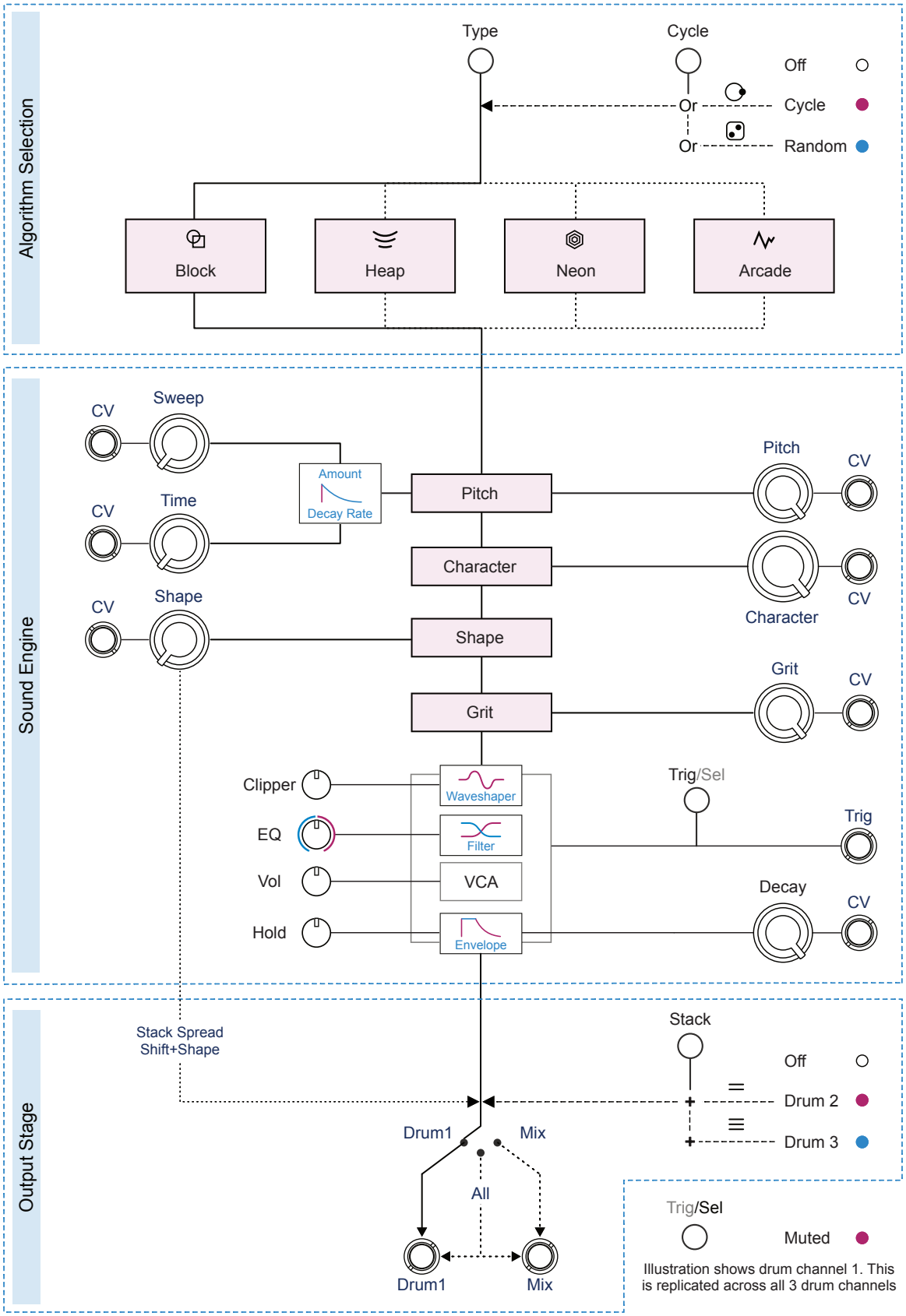
- Rack power supply can accommodate all the installed modules total current ratings and the rack earth / grounding is correct.
- Module power cable orientation is correct at both the rack and module side. Use the module or rack supplied IDC ribbon cable.



Press, Turn, Switch

Plug and Patch

1. Trig/Sel. Triggers the drum channel or use Shift + Trig/Sel to silently select channel.
2. Character adjusts the timbre / primary synth parameter of the selected channel.
3. Type. Selects one of the four algorithm types; Block, Heap, Neon, Arcade.
4. Cycle. Off, Round Robin, Random.
5. Stack. Off or layers the 2 or 3 voices, triggered simultaneously from input channel 1
6. Pitch. Adjusts the pitch of the selected drum channel.
7. Sweep. Amount of relative modulation applied to the channels pitch envelope.
8. Time. Controls the decay rate of the pitch envelope for the selected drum channel.
9. Shape. Shapes the sound of the selected drum channel.
10. Grit. Adjusts the noise and artefacts in the selected drum channel sound.
11. Decay. Adjusts the decay rate of the amp envelope .
12. Save. Saves the drum preset with the entire module configuration.
13. Shift. Used in conjunction with other functions to access its secondary option.
14. EQ Pot. DJ style state variable filter; LPF 50-0%, HPF 50-100%
15. Vol Pot. Volume level control of the selected drum channel.
16. Clipper Pot. Wave shaping to add a distortion type to the waveform.
17. Hold Pot. Adjusts the amp envelope hold time.
18. V/Oct. CV Input for Drum 1 Pitch control.
19. Trigger. Drum 1 Trigger input.
20. Character. Drum 1 CV Input to control character parameter.
21. Shape. Drum 1 CV Input to control the shape parameter.
22. Sweep. Drum 1 CV Input to control the sweep parameter.
23. Grit. Drum 1 CV Input to control the grit parameter.
24. Time. Drum 1 CV Input to control the time parameter.
25. Decay. Drum 1 CV Input to control the decay parameter.
26. Drum 2 CV Inputs. Applied same as Drum 1 - see 18-25
27. Drum 3 CV Inputs. Applied same as Drum 1 - see 18-25
28. USB Connection. Micro USB.
29. Drum 1 Individual channel mono audio output.
30. Drum 1 output routing switch. To mix only, drum1 only or all / both outputs
31. Drum 2 Individual channel mono audio output.
32. Drum 2 output routing switch. To mix only, drum2 only or all / both outputs
33. Drum 3 Individual channel mono audio output.
34. Drum 3 output routing switch. To mix only, drum3 only or all / both outputs
35. All Drums - Summed mono audio output.


Algorithm Selection
Type
Cycle
Off
Or
Cycle
Or
Random
Block
Heap
Neon
Arcade
Sound Engine
CV
Sweep
Amount
Decay Rate
Pitch
CV
Time
Character
CV
Shape
Character
CV
Shape
Grit
CV
Grit
Clipper
Waveshaper
Trig/Sel
EQ
Filter
Trig
Vol
VCA
Decay
Hold
Envelope
CV
Output Stage
Stack Spread
Shift+Shape
Stack
Off
Drum 2
Drum 3
Drum1
Mix
All
Drum1
Mix
Trig/Sel
Muted
Illustration shows drum channel 1. This is replicated across all 3 drum channels

INPUT / OUTPUT ASSIGNMENT

CV and Trig inputs can be applied to the Trinity controls. Mono audio outputs have switchable routing for individual mono or for mono summed mix outputs.

	V/Oct Pitch	Trig	Shape	Sweep
CV	0 - 5V	> 1V	+/- 5V	+/- 5V
	Grit	Time	Decay	Character
CV	+/- 5V	+/- 5V	+/- 5V	+/- 5V

	Audio	Description
Mix Out	Mono	Audio output for selectable channels, summed as mono.
Drum X	Mono	Audio output for individual mono drum channel.

Panel Controls

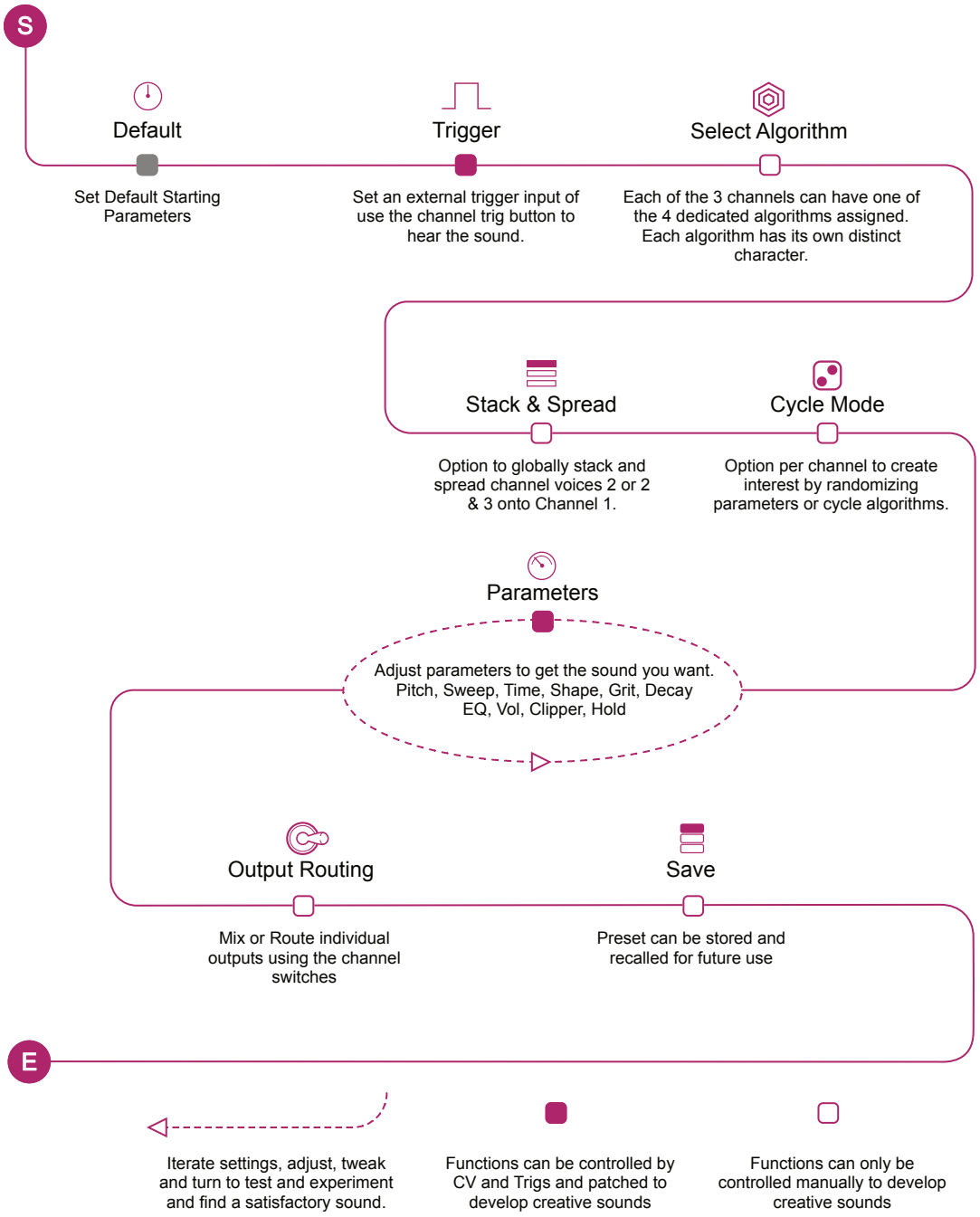
Trinity

Trinity is designed for easy operation. A series of rotary knobs allow manual control of the voice parameters of the selected channel. In addition CV inputs from other gear allow for external control. An additional four mini potentiometers allow more manual control. Each channel is easily selectable and can be muted, mixed or simply routed to its own output. The power of Trinity comes from the instantly accessible panel and controls while retaining a high level of versatility. Multiple options for stacking channel voices or cycling algorithms and parameters are available. Trinity also has a USB interface which operates as a MIDI control interface. The drum voices can be triggered and control change messages can be used to control parameters. Trinity offers a lot of sonic features with no compromise on ease of use, all packed into a small 20HP Eurorack form factor.

GETTING STARTED

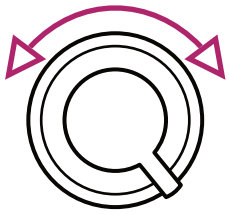
Trinity is a 3 channel / voice drum module and is designed to offer highly flexible and creative sound design options for each channel in order to generate an array of unique drum sounds. Sound shaping occurs within four algorithms. While users will find their own workflow a good starting point is shown in this example.

Basic Operation Workflow

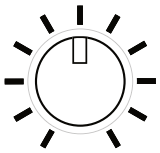


BASIC CONTROLS.

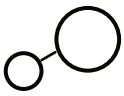
Trinity controls are simple to use. Turing rotaries affects parameters and buttons trigger or select mode states. While values are assigned it is normal practice in modular to adjust and tweak by ear. Several symbols represent features.



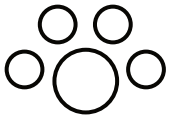
Large rotary controls adjust the selected channel parameters manually and can also be controlled by external CV inputs. Turn the control to adjust and tweak the amount, ideally while triggering the channel to adjust by sound. The affect applied will be dependant on the algorithm that is active.



Small potentiometer controls adjust the selected channel general parameters manually. These parameters cannot be modulated by external CV. Turn the control to adjust and tweak the amount, ideally while triggering the channel to adjust by sound.



The Cycle and Stack buttons select specific mode states. These are selected cyclicly by tapping the button and the associated LED color will reflect the mode selected or white when the mode is off.



The Type button selects the specific algorithm for the selected channel. These are selected cyclicly by tapping the button and the associated LED color will reflect the type selected.

TRIG / SEL

The Three Trig / Sel buttons manually trigger the respective channel. When used with Shift button they select the channel without triggering the sound.

SHIFT

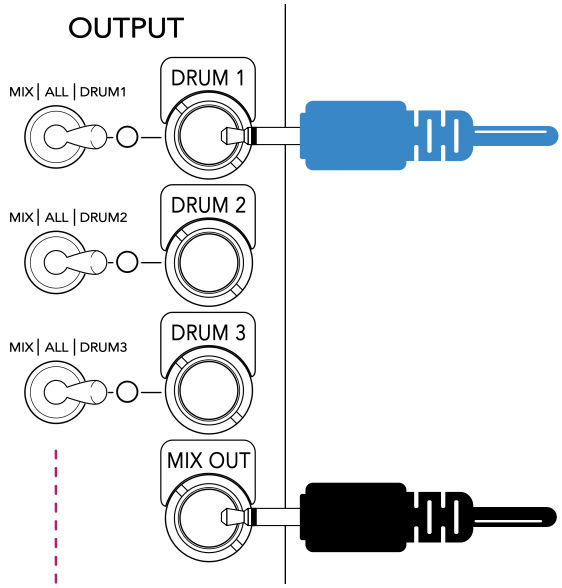
The shift button is held in conjunction with pressing another button or turning a control to access its secondary option. For example Shift + Turn Shape to spread the stacked voices.

SAVE
RESTORE

To save the parameters, MIDI settings, drums press Save. Pressing Shift + Save to restore the save state..

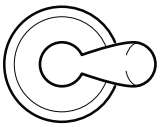
AUDIO OUTPUTS

Trinity has 3 individual channel, mono outputs, plus one summed mix, mono output. The routing of channels between the single channel and mix output is handled by the channel three position switch. Output connections take 3.5mm / 1/8th Inch TS (Tip & Sleeve) audio jack plugs.



The output contains only channel 1 audio. This is repeated for Channel 2 & 3.

The output contains summed audio from any routed channels.

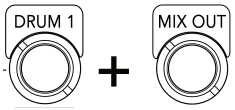


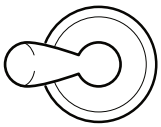
DRUM : Switch Right

The channel associated with the switch will be routed only to its drum output. This channel is not routed to mix out.

ALL : Switch Centre

The channel associated with the switch will be routed to its drum and mix output. Audio is routed to both outputs.





MIX : Switch Left

The channel associated with the switch will be routed only to the mix output. The audio will not be output on drum channel.

To mute a channel set the drum output switch set to the individual drum i.e. DRUM1 and ensure that the associated output is not patched.

GENERAL PARAMETERS

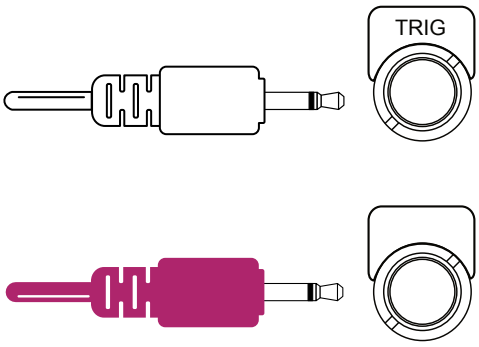
The parameters values for Trinity can be manually adjusted. The parameters represented by the large rotary knobs can also be modulated by external CV control if connected.

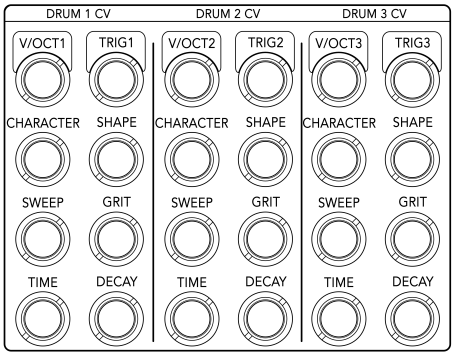
Control	CV Control	Description
Character	Character	Adjusts the timbre / primary synth parameter of the selected drum voice. Function dependant on algorithm.
Pitch	V/Oct	Adjusts the pitch of the selected drum voice. When Arcade algorithm is selected this affects the noise rate.
Sweep	Sweep	Adjusts the amount of relative pitch modulation applied from the envelope. Adjusts ratchets within Arcade algorithm.
Time	Time	Controls the speed of the pitch sweep. Controls duration of ratchet within Arcade algorithm.
Shape	Shape	Shape is algorithm specific
Grit	Grit	Grit is algorithm specific. Adjusts noise / tertiary synth parameter of the selected drum voice.
Decay	Decay	Envelope decay time.
Vol	Not Available	Volume control for selected drum channel
Clipper	Not Available	Adjusts wave shaping distortion of the selected drum voice
Hold	Not Available	Adjusts the hold time of the amp envelope
EQ	Not Available	DJ style State Variable Filter. Low Pass Filter when control is counter clockwise. High Pass filter when clock wise

CONTROL INPUTS

Trinity provides voltage control over some of the onboard controls using CV inputs. These are the controls with a large control knob. These will control the defined parameter values. Gate inputs allow triggering the internal VCA. Input connections are 3.5mm / 1/8th Inch TS (Tip & Sleeve) jack plugs.

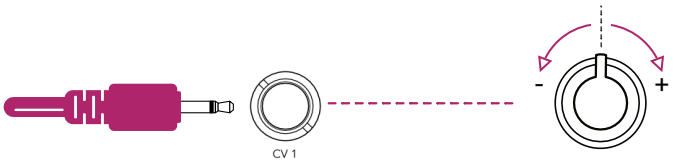
TRIG >1v activates the VCA envelope per channel and hence triggers the drum channel





8 x CV Inputs per channel including the V/Oct pitch control are available using a +/-5V control signal

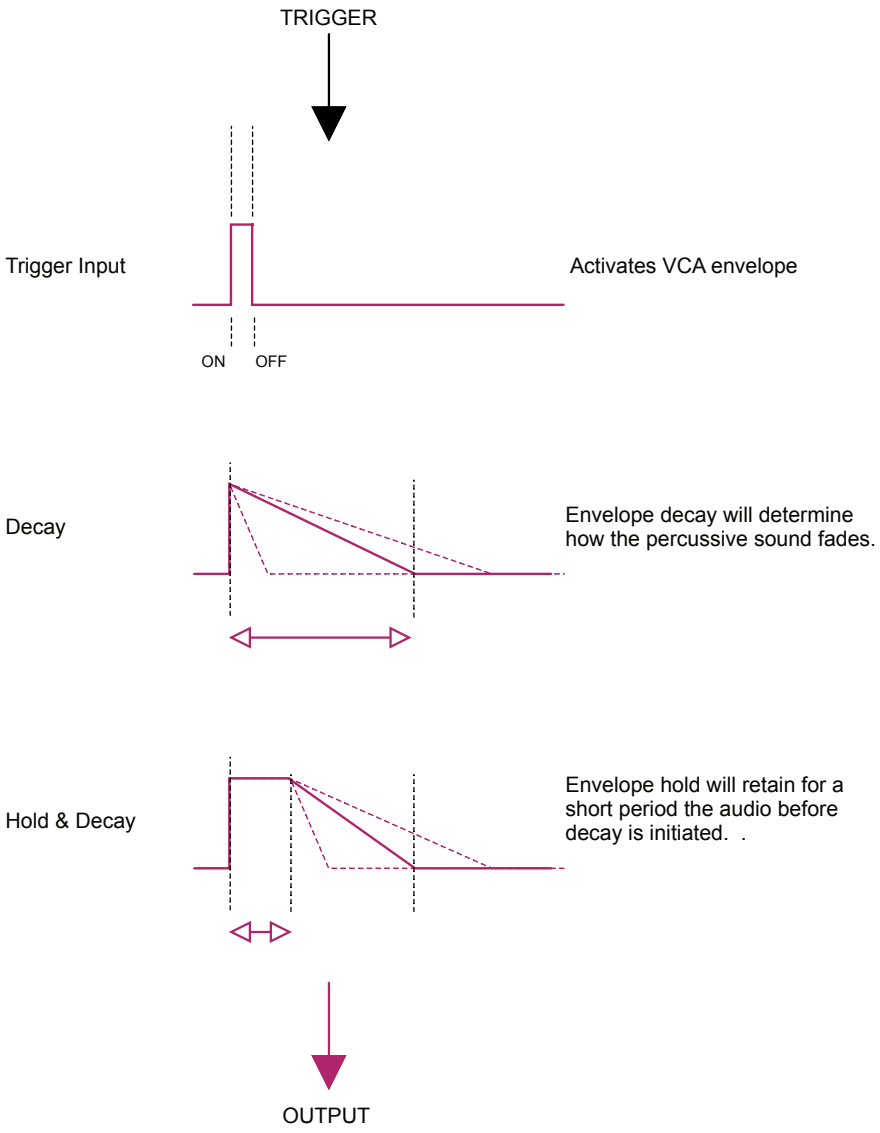
Standard mono 3.5mm / 1/8th TS jack patch cables



Control Voltage is applied to the current control knob position

TRIGGERING THE VCA ENVELOPE

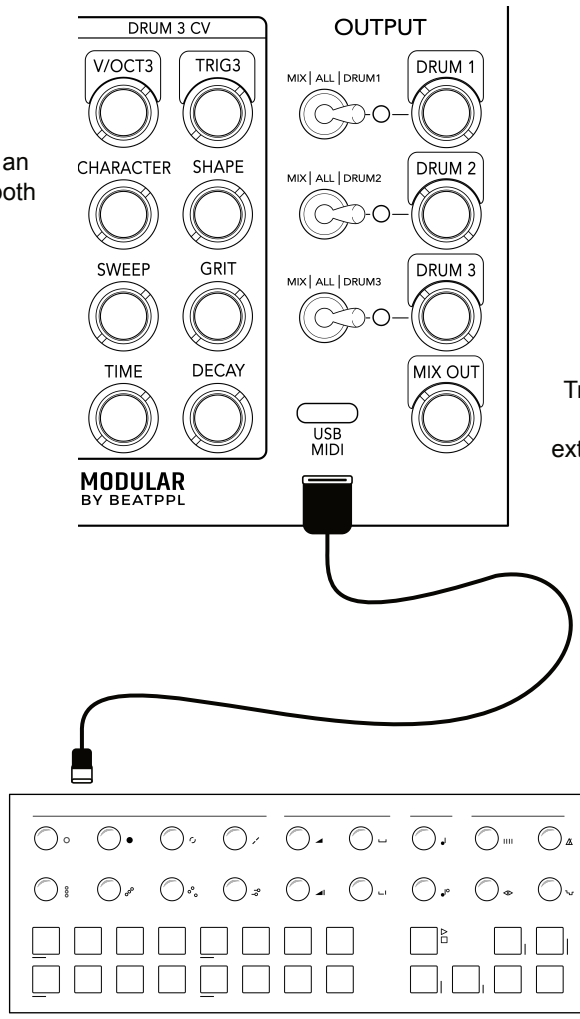
The VCA Envelope is a key feature for drum synths and helps shape the sound to get that percussive feel. Trinity has a hold and decay feature with almost instantaneous attack. Connect a gate input to trigger the associated channel voice. This can be triggered by another modulation device such as a clock or sequencer with a threshold of >1V to trigger. The VCA envelope hold and decay time can be adjusted manually or via CV inputs.



USB MIDI Interface

Trinity has a USB Micro MIDI socket on the front panel. Trinity must be connected to MIDI host device such as a DAW, MPC, MIDI Interface as a primary controller. Triggering the 3 voices and control of Trinity parameters is then possible over MIDI.

CV will be added as an offset to MIDI when both are connected



Trinity will be identified as ‘Modbap Trinity’ on an externally connected device

MIDI Controller / DAW.
Connected via USB

MIDI Channel & Control Mapping

Function	Channel	CC Control	Description
Drum 1 Trigger	1		Triggers the drum 1 voice along with pitch, both controlled by MIDI Notes.
Drum 2 Trigger	2		Triggers the drum 2 voice along with pitch, both controlled by MIDI Notes.
Drum 3 Trigger	3		Triggers the drum 3 voice along with pitch, both controlled by MIDI Notes.
Omni	16		Triggers all drum voices along with pitch, both controlled by MIDI Notes.
Sweep Knob		75	Control of Sweep parameter
Time Knob		19	Control of Time parameter
EQ Knob		74	Control of EQ parameter
Volume Knob		7	Control of Volume parameter
Character Knob		70	Control of Character parameter
Clipper Knob		77	Control of Clipper parameter
Hold Knob		16	Control of Hold parameter
Shape Knob		79	Control of Shape parameter
Grit Knob		78	Control of Grit parameter
Decay Knob		72	Control of Decay parameter
Stack Spread Knob		86	Control of Stack Spread parameter
Cycle Button		17	Selects Cycle mode. CC Value 0-42 Off, 43-84 Round Robin, 85-127 Random.
Type Button		18	Selects Algorithm Type. CC Value 0-31 Block, 32-62 Heap, 63-93 Neon, 94-127 Arcade.
Stack Button		85	Selects Stack mode. CC Value 0-42 Off, 43-84 2-Stack, 85-127, 3-Stack

To change button state the CC value range 0-127 is split across the number of states available, i.e. 3 for Cycle, 4 for type. For controls the 0-127 operates across the parameter voltage range.

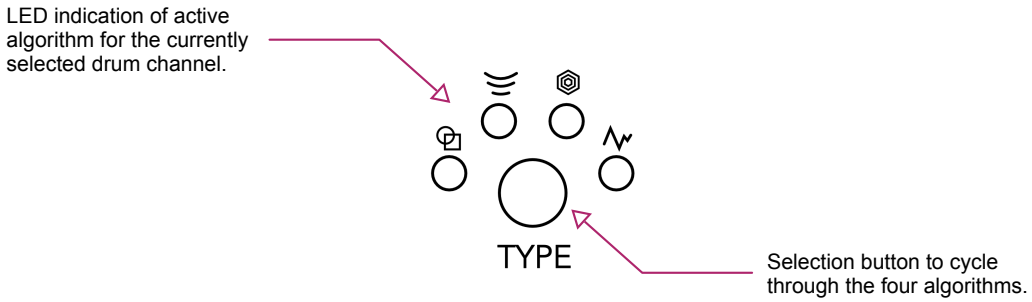
Sound Design

Trinity

Trinity is a 3 channel drum synth array where each channel can be triggered individually or stacked as layers. Each channel can have one of four drum synth algorithms assigned. A Trinity algorithm is designed with its own unique sound and characteristics and is applied to any of the drum channels. This is essentially the starting point in Trinity sound design. Trinity parameters operate in the context of the selected algorithm and can be set to dial in a more precisely defined sound. While an algorithm can be triggered on it's allocated channel, the option to cycle the algorithm selection in a round robin fashion or to random parameters for a selected algorithm on each trigger is also possible. This is selected using Cycle Modes which operates on an individual channel basis. The four algorithms available are; BLOCKS: Classic drum synth, HEAP: Additive drum synth, NEON: FM drum synth and ARCADE: Quirky and classic game machine inspired noise generator. The three channels can be triggered independently with a manual or CV Trig input. Alternatively Stack Mode enables the channels to be layered and triggered from channel 1. This is controlled by the Stack button which is a global function controlling all channels.The channel layers can even be spread using the secondary Stack Spread control.

ALGORITHMS

Trinity has four selectable algorithm types which have unique characteristics for different types of drum synthesis. Each can be assigned on one of the 3 drum channels and set up to build a kit of unique sounds. The algorithm selection is made with the ‘TYPE’ button.



Algorithm Applications

Symbol	Algo Type	Description
	BLOCK	Drum synth building blocks featuring a sine and triangle core. Great for traditional electronic drum creations and sound designs.
	HEAP	Additive drum synth with 12 partials. Great for fun natural sounds, pitched percussive sounds, bells, chimes, steel drums, and wood blocks.
	NEON	FM drum synth engine. Great for high quality FM drums, clangorous metallic percussion and more.
	ARCADE	Quirky noise generator synth, reminiscent of classic 1980's arcade game sounds - zaps, crashes, explosions etc. Great for claps, hats, vinyl noise, and all sorts of fun percussive and degraded noises.

To select an algorithm:-

1. Tap the ‘TYPE’ button.
2. Each Algorithm will be selected on a cyclic basis for each button press.
3. The currently selected algorithm will display a white, illuminated LED.

BLOCK

Classic

Analog inspired building block of a synth voice.

Character	Mixes between Triangle at 0 to Sine at 50 and introduces triangle folding above 50. The Triangle is a virtual analog type algorithm with low aliasing and a pretty perfect wave shape.
Pitch	Adjusts the pitch of the selected Drum Voice
Sweep	Sweep envelope depth. Controls how much of the envelope is applied to pitch
Decay	Envelope decay time
Time	Controls the speed of the pitch sweep
Grit	Grit is used to introduce FM noise. Above 75% it starts to mix out the main oscillator and mix in “just noise”, while keeping some of the main osc signal. A short envelope, gets even shorter (relative to the decay time) the closer to a 100% Grit. A useful function for making 808-like snappy snares and such like.
Shape	Shape overlays a second oscillator, with a slightly dampened decay time. This emulates T-bridge oscillators like the 808 or the dual oscillator in the 909. Useful for making snares and interesting phase tricks with bass drum and also makes a pretty nice bass tone.

HEAP

Additive

Additive 12 partial synth voice.

Character	Controls the detune spread of the 12 oscillators. Gets a little wonky at the middle point and beyond which adds a unique and unusual character.
Pitch	Adjusts the pitch of the selected Drum Voice
Sweep	Sweep envelope depth. Controls how much of the envelope is applied to pitch
Decay	Envelope decay time
Time	Controls the speed of the pitch sweep
Grit	Controls Frequency Modulation (FM) between the oscillators.
Shape	Controls the distance between the oscillators exponentially. Can be used for bell-like timbres or to introduce more upper harmonics into the sound.

NEON

FM

Core FM engine for high quality FM drums.

Character	Controls modulation depth which turns into feedback at higher values.
Pitch	Adjusts the pitch of the selected Drum Voice
Sweep	Sweep envelope depth. Controls how much of the envelope is applied to pitch
Time	Controls the speed of the pitch sweep
Decay	Envelope decay time
Grit	Adds feedback and in addition also introduces a noisy impact oscillator which goes into full noise at high values.
Shape	Adjustment of the FM ratio.

ARCADE

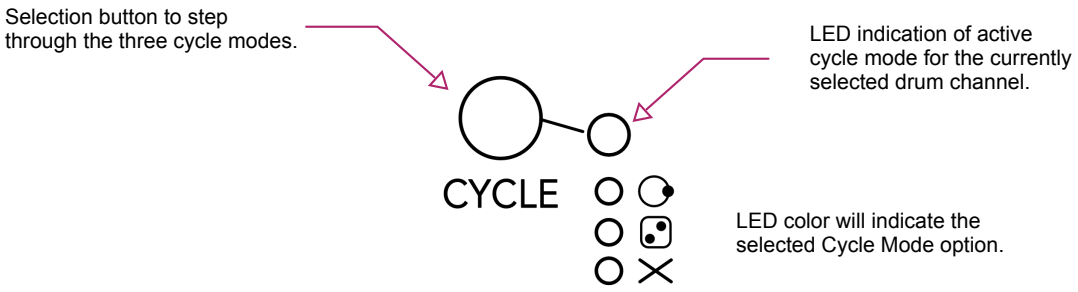
Noise

80’s arcade style noise generator.

Character	Controls a bandpass filter, very useful for making clap sounds or just getting a nice tone from the noise. Useful in multiple applications and pairs well with the EQ.
Pitch	Controls the rate of the noise, lower values will sound like sample rate reduction.
Sweep	Controls the numbers of ratchets. Can be used to make clap sounds.
Time	Controls the duration of each ratchet.
Decay	Envelope decay time
Grit	Controls the density of the noise. The higher the setting the more “grainy” the sound.
Shape	Controls the sampling interval. This means if you have it below 100% the noise will repeat less often within the sample rate, this creates metallic sounding timbres, or video game like sounds with low pitch.

CYCLE

Cycle Mode is a channel specific function that controls how the algorithm operates when triggered. Two modes are available, selected by pressing the Cycle button or selected off.



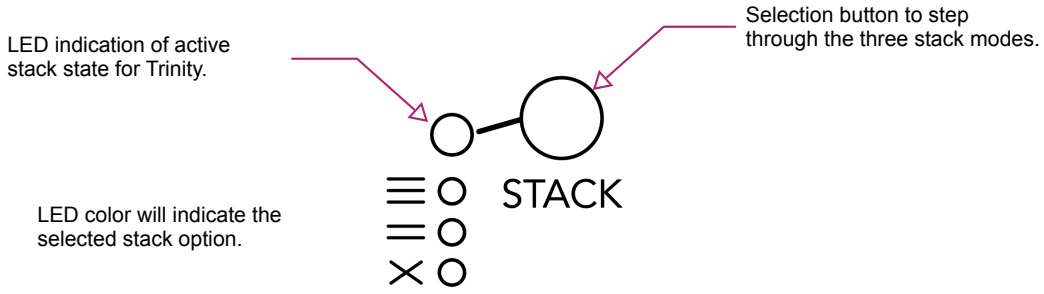
Symbol	Cycle Mode	Description
White	OFF	Only the selected algorithm and its parameters for each channel is triggered. This is default behaviour with no parameter randomization or cycling of algorithms.
Pink	ROUND ROBIN	The selected channel will trigger different algorithms on each trigger. The algorithms are selected in a round robin basis, cycled for each trigger received.
Blue	RANDOM	Only the selected algorithm for the channel is triggered. While the algorithm itself remains unchanged, the parameter settings are randomized on each input trigger received.

To select a Cycle Mode:-

1. Tap the ‘CYCLE’ button.
2. Each mode will be selected on a cyclic basis for each button press.
3. The currently selected Cycle Mode will display with an illuminated LED.
    - White indicates normal mode. Round Robin and Random are off.
    - Pink LED indicates a round-robin algorithm selection on each trigger
    - Blue LED indicates a random parameter selection on each trigger.

STACK

Stack, is a global function that controls how the channels operate when triggered. Default is for a trigger to activate each channel independently. Stack can trigger 2 or 3 stack layered voices / channels, using Trigger Channel 1. These can also be spread to fan out the channel voices.



Symbol	Cycle Mode	Description
○ ✕ White	OFF	No voices stacked. This is default behaviour with independent control from each trigger input directly to control to each individual channel.
● = Pink	2 VOICES	Channel 1, Trigger will activate channel 1 and channel 2 voices simultaneously. Two channels will trigger together, but can be spread with the stack spread secondary control.
● ≡ Blue	3 VOICES	Channel 1, Trigger will activate channel 1, 2 and 3 voices simultaneously. Three channels will trigger together, but can be spread with the stack spread secondary control option.

To stack channel voices:-

1. Tap the ‘STACK’ button.
2. Each option will be selected on a cyclic basis for each button press.
3. The currently selected Stack state will display with an illuminated LED.
    - White indicates normal mode. No layered channel voices.
    - Pink LED indicates channel 1 and 2 operate from trigger channel 1.
    - Blue LED indicates channel 1, 2 and 3 operate from trigger channel 1.
4. Hold SHIFT + Turn SHAPE to spread out the stacked layers.

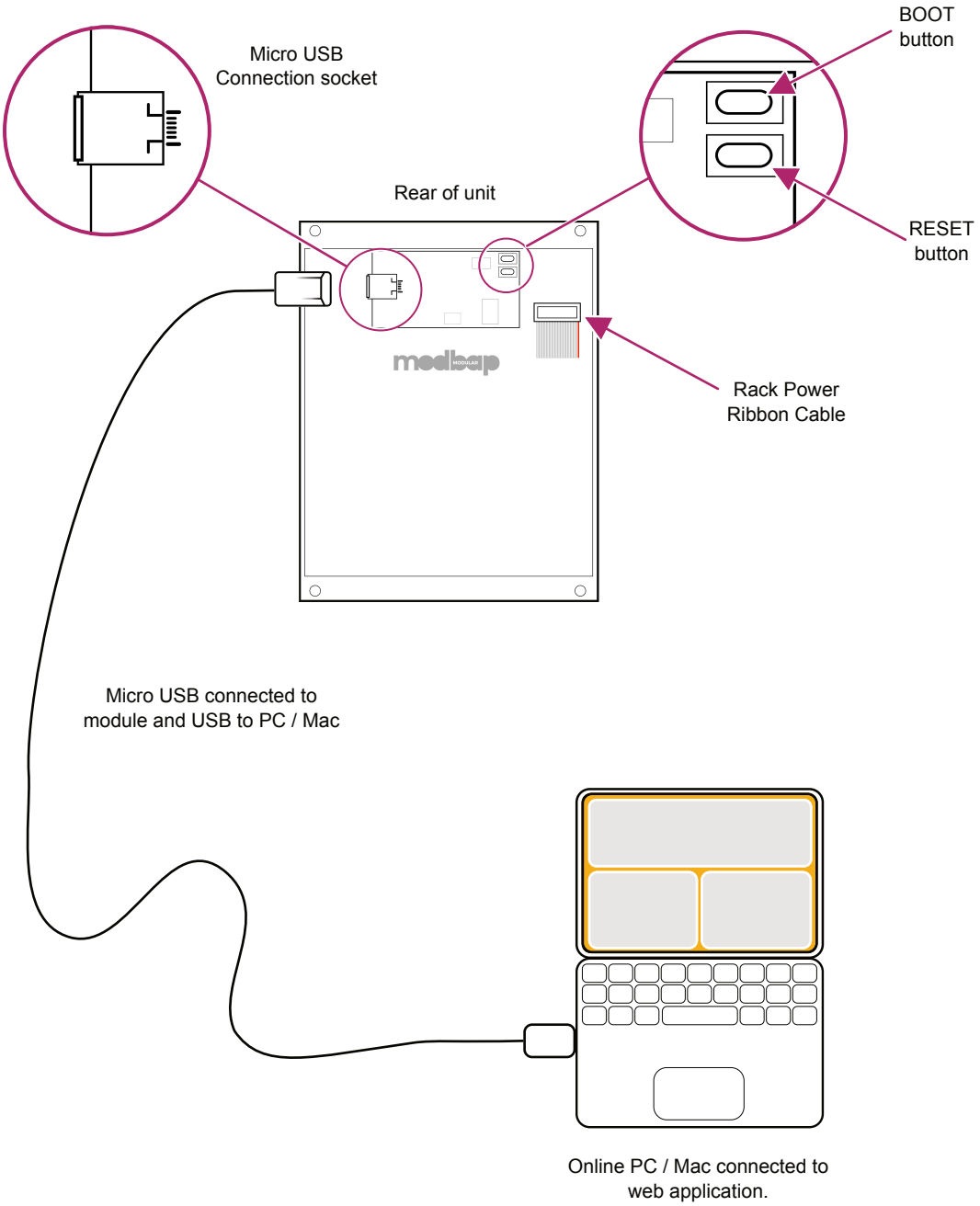
System

Trinity

Firmware updates occasionally are made available as the module feature set develops and also to introduce system improvements. The general update process is described here but it is important to read and follow the instructions issued with each firmware update. The process described here is for general information and may be subject to change when future OS versions are released. Check out modbap modular online for latest versions and updates.

FIRMWARE UPDATES

Occasionally firmware updates are available. This maybe to provide improvements to the functionality, fix bugs or add new features. Updates are applied using the micro USB connector on the rear of the unit and connecting to a PC or Mac.



UPDATING THE FIRMWARE

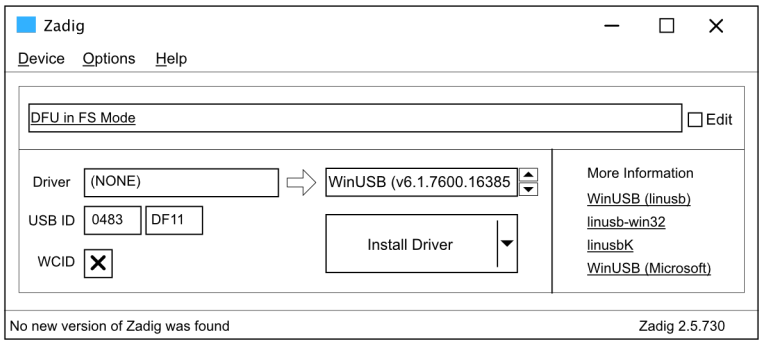
The instructions below are a guide. Always follow the instructions that are provided with each update.

1. Download the firmware update.
2. Remove the device from the rack and ensure power is disconnected.
3. Connect device using a micro usb connection to the module and USB to a mac or PC. The module LED will illuminate. Power for the programming function is provided by the USB connection to the PC / Mac.
4. Open the programming utility at electro-smith github within the PC / Mac browser. It is recommended to use Chrome browser to ensure scripting compatibility.
5. On the module, tap reset and then tap boot separately. The single LED may appear to blink then pulse.
6. On the programming page, press ‘Connect’.
7. The option pop up box will open and select ‘Daisy Bootloader’.
8. Click the bottom left option to select a file using the browser. Select the .bin firmware update file from the PC / Mac.
9. Click ‘program’ in the bottom programming section window. The status bar indicators will show erase status followed by upload status.
10. When complete disconnect the usb connection and reinstall into the rack.
11. Power on the rack and module.

UPDATING THE FIRMWARE - PC WINDOWS

The instructions below are a guide, follow the instructions provided with each update.

1. Windows PC's may need the original WinUSB drivers installed. It is recommended to install Zadig, a utility which reinstalls windows drivers, before updating. This can be downloaded from www.zadig.akeo.ie.



1. Download the firmware update.
2. Remove the device from the rack and ensure power is disconnected.
3. Connect device using a micro usb connection to the module and USB to a PC. The module LED will illuminate. Power for the programming function is provided by the USB connection to the PC.
4. Open the programming utility at electro-smith github within the PC browser. It is recommended to use Chrome browser.
5. On the module, tap reset and then tap boot separately. The single LED may appear to blink then pulse.
6. On the programming page, press 'Connect'.
7. The option pop up box will open and select 'Daisy Bootloader'.
8. Click the bottom left option to select a file using the browser. Select the .bin firmware update file from the PC.
9. Click 'program' in the bottom programming section window. The status bar indicators will show erase status followed by upload status.
10. When complete disconnect the usb connection and reinstall into the rack.
11. Power on the rack and module.

SUPPORT AND FIRMWARE TIPS

Power Specs: Trinity is tested at a normal operating current of 50mA but may peak around 64mA during power up. This is normal with most Eurorack devices and isn't generally an issue unless the rack devices is on the limits of the PSU specification.

Firmware: There are several things to consider when updating the firmware from a PC or Mac. These tips will help to avoid any problems when updating.

1. PC users may need WinUSB driver installed to use the electro-smith utility. A PC application called Zadig may help install generic windows drivers. This is available from www.zadig.akeo.ie.

2. Ensure the USB is the correct type for data use. Some devices such as mobile phones are supplied with a Micro USB cable for charging purposes. The USB cable needs to be a fully featured USB cable. Any connected device may not be recognised by the web app if the cable is incompatible.

3. Use a browser that is compatible with running scripts. Chrome is a robust browser recommended for this purposes. Safari and Explorer are less reliable for script based web applications.

4. Ensure that the PC or Mac USB supplies power. Most modern devices have USB powered connections but some older PC/Mac's may not supply power. Use a USB connection that can supply power to Trinity.

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Acknowledgements

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Limited Warranty

Modbap Modular warrants all products to be free of manufacturing defects related to materials and/or construction for a period of one (1) year following the product's purchase date by the original owner as certified by proof of purchase (i.e. receipt or invoice).
This non-transferrable warranty does not cover any damage caused by misuse of the product, or any unauthorized modification of the product's hardware or firmware.
Modbap Modular reserves the right to determine what qualifies as misuse at their discretion and may include but is not limited to damage to the product caused by 3rd party related issues, negligence, modifications, improper handling, exposure to extreme temperatures, moisture, and excessive force.

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