Manuals+

behringer PROTON Analog Paraphonic Semi Modular Synthesizer User Manual 📄

Contents [hide]

behringer

behringer PROTON Analog Paraphonic Semi Modular Synthesizer

Product Usage Instructions

Before using the PROTON Analog Synthesizer, please read and adhere to the following safety instructions:

- Avoid exposure to dangerous voltage by not removing the top cover.
- Do not expose the appliance to rain or moisture to prevent fire or electric shock.
- Do not attempt any servicing beyond what is specified in the manual.
- Refer to the exterior of the bottom enclosure for additional safety information.
- Keep the synthesizer away from water and heat sources to prevent damage.
- Unplug during storms or prolonged periods of non-use.
- Only use attachments and accessories recommended by the manufacturer.
- Ensure the power cord is protected from damage.
- Keep the synthesizer clean by using a dry cloth for maintenance.
- Do not block ventilation openings and follow the manufacturer's installation instructions.
- Use caution when moving the apparatus to prevent tip-over.
- If the plug does not fit into your outlet, consult an electrician for replacement.

Important Safety Instructions

- Terminals marked with this symbol carry electrical current of sufficient magnitude to constitute a risk of electric shock. Use only high-quality professional speaker cables with ¼" TS or twist-locking plugs pre-installed. All other installations or modifications should be performed only by qualified personnel.

- ⚠This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure – voltage that may be sufficient to constitute a risk of shock.

- ⚠This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.

Caution

- To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside. Refer servicing to qualified personnel.
- To reduce the risk of fire or electric shock, do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus.
- These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions. Repairs have to be performed by qualified service personnel.

Warning

Please refer to the information on the exterior of bottom enclosure for electrical and safety information before installing or operating the device.

1. Please read and follow all instructions and warnings.
2. Keep the apparatus away from water (except for outdoor products).
3. Clean only with a dry cloth.
4. Do not block ventilation openings. Do not install in a confined space. Install only according to the manufacturer's instructions.
5. Protect the power cord from damage, particularly at plugs and appliance socket.
6. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
7. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other (only for the USA and Canada). A grounding-type plug has two blades and a third grounding prong. The wide blade or

the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

8. Use only attachments and accessories recommended by the manufacturer.

9. Use only specified carts, stands, tripods, brackets, or tables. Use caution to prevent tip-over when moving the cart/apparatus combination.

10. Unplug during storms or if not in use for a long period.

11. Only use qualified personnel for servicing, especially after damage.

12. The apparatus with a protective earthing terminal shall be connected to a MAINS socket outlet with a protective earthing connection.

13. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

14. Avoid installing in confined spaces like bookcases.

15. Do not place naked flame sources, such as lighted candles, on the apparatus.

16. Operating temperature range 5° to 45°C (41° to 113°F).

LEGAL DISCLAIMER

LIMITED WARRANTY

For the applicable warranty terms and conditions and additional information regarding Music Tribe's Limited Warranty, please see the complete details online at community.musictribe.com/support.

About the PROTON

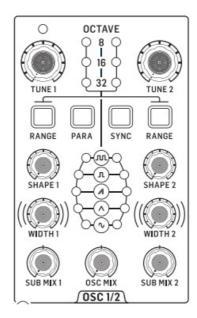- Analog synthesizer with dual VCO design for insanely fat music creation

- Paraphonic mode allows both oscillators to be independently controlled for multi-timbral sounds
- Semi-modular design requires no patching for immediate performance
- Pure analog signal path based on authentic VCO, VCF, and VCA designs
- Dual oscillators with 5 waveforms, oscillator sync, pulse width modulation,n and individual sub-oscillators
- Oscillator waveform control blends seamlessly between 5 shapes (tone mod, pulse, sawtooth, triangle, and sine)
- 2 self-oscillating, multi-mode VCFs can be configured in parallel or series with linkable CVs
- 2 ASR envelopes with reverse/inverse/loop/bounce options to control VCAs and wave folder
- 2 analog ADSR generators for modulating the VCFs for unique sound performance
- Multi-mode wave folder adds rich harmonic content and massive flexibility to the LFOs
- 2 flexible LFOs with 5 waveforms, MIDI clock sync, key sync, phase and depth controls
- Noise generator dramatically expands waveform generation
- External audio can be summed into one or both VCFs to massively enhance sound generation
- Utility functions include attenuverters, multiples, signal/CV mixer, and summer for creative patching
- External audio input with level control and soft clipping circuit for processing external sound sources
- 64 patch points for advanced modular connection and integration with external equipment
- 68 controls give you direct and real-time access to all important parameters
- Complete Eurorack solution –the main module can be transferred to a standard Eurorack case
- Comprehensive MIDI implementation with MIDI channel and Voice Priority selection

Getting Started

- Your PROTON was carefully packaged in the factory to guarantee safe transport.
- Nevertheless please check the packaging for any sign of physical damage before

opening; and, after opening, please also check the contents before use.

- If the packaging or the PROTON are damaged in any way please return to the dealer for replacement. This does not affect your warranty rights.

- Please ensure that your PROTON is used in a suitable environment that is within its recommended operating temperature range (5°C to 40°C, 41°F to 104°F), is not over humid and is out of direct sunlight.

- Please only use the supplied power adaptor to connect your PROTON to the mains.

- This manual is designed to be used alongside the Quick Start Guide included in your package and goes into your PROTON's features in much greater depth.

- Please ensure that your PROTON is powered up before powering up mixers, amplifiers etc. to ensure that your loudspeakers are not damaged. Switch off your amplifier first at the end of the session.

- Your PROTON can be controlled from a suitable keyboard or DAW over 5-pin DIN or USB MIDI, and by CV and gate via its comprehensive patchbay. It is advised to only use one control source to avoid unexpected results.

- Your PROTON is a class compliant USB device and requires no drivers to work with either Mac OS™or Microsoft Windows™.

- It is recommended that you use the SynthTribe app, which is available as a free download from Behringer.com to check for firmware updates, as well as for easy access to your PROTON's additional features.

- The MIDI channel of the PROTON can be set using the 4 dip switches on the rear panel, or, if these are not available (eg when using a Eurorack case) via the Synthtribe app.

- Your PROTON can be used as a standalone desktop synth, removed from its case and mounted in a Eurorack case (see Quick Start Guide for the correct procedure for achieving this) or mounted in a standard 19″ rack, using Behringer

- Model D rack ears (supplied separately).

- Throughout your PROTON, a red LED indicates that the first of any dual item is being controlled where controls are shared, with a white LED indicating that the second is under control.

- In some instances, there are separate LEDs where both can be controlled together or individually.

- Throughout this manual, the use of the abbreviation CW indicates clockwise motion; CCW indicates counter-clockwise.

Oscillators

- Your PROTON has two analog VCOs, whose pitch can be controlled by MIDI (5-pin DIN or USB) or from a suitable CV source in the range -5 V to +5 V.
- The VCOs are capable of producing frequencies between 0.7 Hz to 50 kHz.
- Each VCO has its own controls for tuning, range, shape, pulse width and sub mix.
- In addition there is an Oscillator mix control and buttons to select Oscillator sync and paraphonic mode.

Tuning
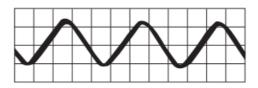
- The two VCOs can be individually tuned by 13 semitones up or down.
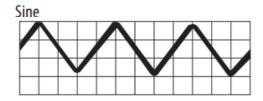
Range

- The two VCOs can have their range set to either 32′, 16′ or 8′, which is indicated by the LEDs on the front panel.
- The ranges can be stepped through using the range buttons, from 8′ down to 32′.
- When all three LEDs are left o,n either VCO, it is in ten octave mode and will respond to the full note range. Shape
- The PROTON VCOs have five waveshapes, which can either be switched or blended using the SynthTribe app or according to the second panel settings.
- Press Range (Osc 1 or 2) for two seconds and, once it is flashing, use the para button to toggle between switched and blended for the selected oscillator.

- Press Range again for two seconds to exit the second panel.

The basic shapes are:

Sine
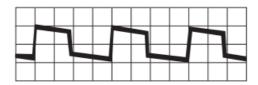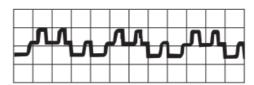
Triangle

Sawtooth
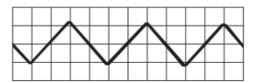
Square/Pulse

Tone Mod
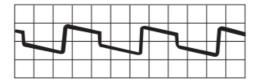
When the blending option is selected then adjacent waves blend into one another, with the more dominate wave's LED showing brighter. These waveforms are:
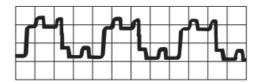
Sine/Triangle

Triangle/Sawtooth
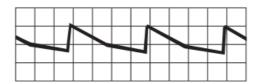
Sawtooth/Square

Square/Tone Mod

Sub-Oscillators

- Each oscillator has its own sub-oscillator, whose waveform is independent of the main one selected, and whose pitch is one octave below that of the oscillator.
- To change the sub-oscillator waveform, press and hold the relevant VCO's
- range button for more than two seconds, until it starts flashing. Then use the LFO encoder to select the required wave.
- Press the range button again to return to the main panel functions. Alternatively, the waveform can be selected using the SynthTribe app.
- The choice of waveforms is: square, sawtooth, triangle or sine. Please note that although the LFOs have a ramp wave as an option, this is not available as a sub-oscillator choice.
- The main and sub-oscillators can be mixed using the sub-mix control. At the central position, they are at equal levels, turning the control clockwise (CW) emphasizes the main VCO; counter-clockwise (CCW) emphasizes the sub.

Width

- On each oscillator the square and tone mod waveforms can have their pulse width altered by means of the width controls. The range is 10% duty to 90% duty.
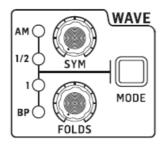
Sync

- The waveform cycle of Osc 2 can be synchronized to Osc 1 by pressing the sync button.
- The further that Osc 2 is tuned away from Osc 1, the more dramatic the effect. Modulation of Osc 2 from an envelope generator produces a classic effect.
- This can be achieved by mixing an incoming CV from a keyboard, such as the Behringer Swing, with the output of an ASR envelope generator using the CV mixer in the utilities section.

Paraphonic Mode

- Pressing the para button puts the PROTON into paraphonic mode, where playing two notes will assign one to each oscillator.
- The note priority can be set differently for normal mode and paraphonic mode. To select the note priority for normal mode, press and hold the sync button for more than two seconds until it flashes, then use the VCF 1 mode button to select: LPF = lowest note priority; HPF = highest note priority; and BPF = latest note priority. For paraphonic selection, use VCF 2 mode to select: LPF = Osc 1 will play the lowest note, Osc 2 the highest; HPF = Osc 1 will play the highest note, Osc 2 the lowest; BPF = Osc 1 will play the first note, Osc 2 the second. Pressing the para button again saves your selection. This can also be done using the SynthTribe app.

Wavefolder
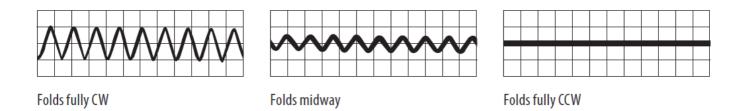
The wavefolder works by 'folding' a waveform back onto itself to create complex harmonics. The PROTON wavefolder has two controls and four modes.

Folds

- The folds control sets the level of folding that the wavefolder performs, turning it CW increases the number of folds. Turning it fully CCW has the effect of cancelling the input altogether.
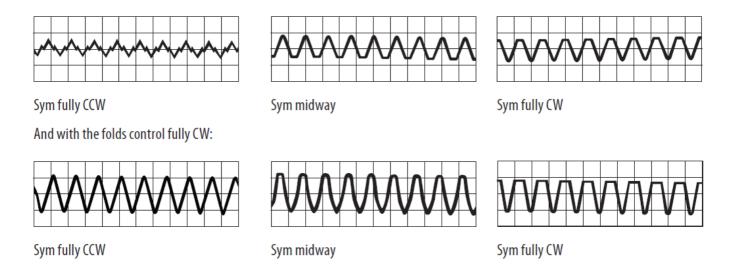
Symmetry

- The Sym(metry) control causes the top of the waveform to be folded in a different way from the bottom, thus altering the timbre further. Amplitude Modulation
- When the wavefolder is set to AM (amplitude modulation) mode, the sym control has no effect, and the folds control alters the amplitude of the waveform.
- When it is turned fully CCW, the waveform is cancelled altogether; turning it CW brings the wave back in until, at full CW, the waveform is unaltered.

Folds fully CW   Folds midway   Folds fully CCW
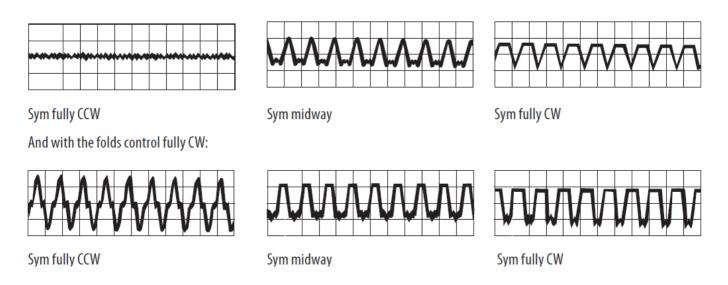
1/2

½ mode allows both controls to work on the waveform, but at half intensity. As with the AM mode, turning the fold control fully CCW cancels out the incoming waveform, regardless of where the sym control is set.Therefore, with the folds control at the midway point ,altering the sym control gives the following results:

Sym fully CCW

Sym midway

Sym fully CW

And with the folds control fully CW:

Sym fully CCW

Sym midway

Sym fully CW

With the mode set to 1, the wavefolder controls work to their full intensity. As it the other modes turning folds fully CCW cancel the input. Therefore, with the folds control at the midway point altering the sym control gives the following results:

Sym fully CCW

Sym midway

Sym fully CW

And with the folds control fully CW:

Sym fully CCW

Sym midway

Sym fully CW
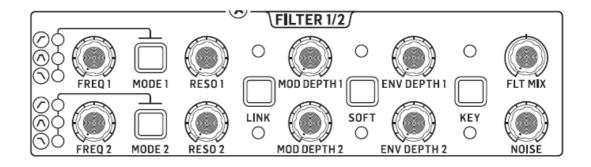
Bypass

- When the wavefolder is in BP (bypass) mode, neither of the controls has any effect, and the incoming waveform is passed to the VCFs unaltered.
- Please note that when the wavefolder is used to process an external signal, which can be done using its in and out sockets on the patchbay, setting the mode to BP will allow the internal oscillator mix to feed into the VCFs.

Modulation

- Both folds and sym can be modulated by any modulation source, unipolar or bipolar in the range -5 V to +5 V via the dedicated sockets on the In patchbay. The modulation

source(s) are summed with the internal controls and can be used to produce even more pronounced effects.

Filters

The PROTON has two, independent, 12 dB/octave VCFs, which can also have some of their functions linked together.

Mode

- Each of the filters can be switched into either low pass, band pass or high pass mode. The current mode is indicated by an LED next to the appropriate panel graphic.

Frequency

- The filters' cutoff frequencies can be set using the freq 1 and 2 controls and can also be externally controlled by a voltage in the range -5 V to +5 V via the In patchbay.
- Both have a range of 10 Hz to 15 kHz. The frequency of each filter can also be modulated by a voltage in the range -5 V to +5 V via the In patchbay, which will replace LFO 1 as the modulation source.

Resonance

- The resonance of the filters can be adjusted using the reso 1 and 2 controls, and can also be externally controlled by a voltage in the range -5 V to +5 V via the In patchbay.
- Increasing the resonance emphasizes a band of frequencies around the filter cutoff frequency, until at the highest settings, the filter will self-oscillate.

Link

- The link button has different effects, according to whether the red or the white LED is lit. When neither is lit it has no effect.
- Red: VCF 2 will be modulated by the VCF 1 modulation source rather than that of VCF 2.
- White: VCF 2 will be modulated by an inversion of the VCF 1 modulation source.

Modulation Depth

These controls determine the level of modulation depth to each of the filters. When a link is not in use, then VCF 1 is modulated by LFO 1 or a source patched via the patchbay; and VCF 2 by LFO 2 or a source patched via the patchbay. When they are linked, then the modulation is as described above, but the controls are still effective for their respective filters.There is a second modulation available, which can be set up using the SynthTribe app or by using the second panel functions. To access this, press and hold the mode button for the required filter for two seconds. When it starts to flash use the LFO encoder to select one of the following modulation sources:

- Sine: no source (default)
- Triangle: MIDI velocity
- Sawtooth: MIDI mod wheel CC #1)
- Square: MIDI aftertouch
- Pressing the shift button then allows the LFO encoder to set the modulation depth for the selected source.

Soft

- The soft button softens the resonance of the selected filter.
- If neither LED is lit then then resonance is not softened, red means that only VCF 1 is softened, white VCF 2 and both LEDs mean that both are affected.
- **Envelope Depth**
- The envelope depth controls set the amount of ADSR envelope modulation to each filter from ADSR 1.

Key

- The key button selects whether either, both or neither filter tracks the keyboard input. If neither LED is let then neither filter is tracking, red means the VCF 1 tracks, white VCF 2 and both means that both track.

Filter Mix

- The setting of this control determines how much of the output of each filter is fed to 1VCAs. At the center point both filters are fed equally, turning the control CCW biases towards VCF 1; CW to VCF 2.

Noise
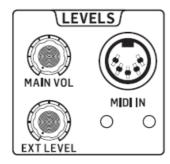
- The noise control sets the level of white noise that is fed into the filters alongside the VCOs. When it is fully CCW then no noise is present, fully CW, then the noise is of equal volume to the oscillator mix.

Voltage Controlled Amplifiers

The PROTON has two parallel VCA. Each has an independent bias control that will allow a level of signal through regardless of what the control source is doing. When the bias controls are fully CCW then the VCAs are entirely under the control of their respective sources, when they are fully CW then the sources are overridden. Under normal operation, VCA 1 receives the output of the filter mix, and VCA 2 receives the output of VCF 2. Both are controlled by ADSR 2. However, either or both can send a different input, and/or be controlled from a different source using the relevant sockets on the In patchbay. VCA 1 feeds into the PROTON's main and headphone outputs, but also has its own outputs on the Out patchbay, which do not break the connection to the main and headphone.

Levels

Main Volume

- The levels section contains the volume control for the main line level output (the volume control for the headphone output is on the rear panel).
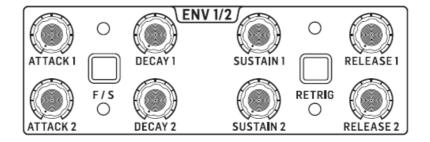
External Level

- The level control for external signals to be processed by the PROTON's VCFs, whose input socket is also on the rear panel.

MIDI In

- The PROTON's 5-pin DIN MIDI in is also situated on the front panel. The MIDI input channel can be selected either by the four dip switches on the rear panel or by using the SynthTribe app.
- The MIDI in socket is accompanied by two LEDs that light when a MIDI note is received on the selected channel.

ADSR Envelope Generators

The PROTON has two entirely independent ADSR envelope generators, which are individually triggered via the In patchbay. ADSR 1 is normally used to modulate the

filters, while ADSR 2 is connected to the VCAs, although this connection can be broken using the In patchbay, and the ADSR curves are also available to patch into other destinations on the Out patchbay.

Attack

- Each ADSR envelope has an attack time from around 300 μs when the control is fully CCW to 7 s when the control is fully CW, in fast mode. In slow mode the maximum time increases to 42 s.

Decay

- Each ADSR envelope has a decay time from 2.4 ms when the control is fully CCW to 20 s when the control is fully CW, in fast mode. In slow mode, the maximum time increases to 1 m 56 s.

Sustain

- The sustain level can be adjusted to give no sustain at all when the control is fully CCW to full sustain at whatever level decay falls to when the control is fully CW, until the key is released.

Release

- Each ADSR envelope has a release time from 1.5 ms when the control is fully CCW to 24 s when the control is fully CW, in fast mode.
- In slow mode the maximum time increases to 2 m. Please note that is sustain is fully CCW then release will not function.
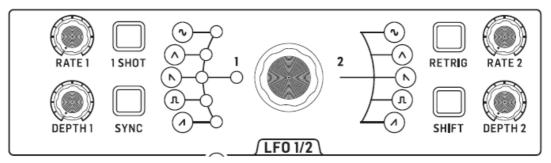
Fast/Slow

- The F/S button allows the ADSR envelope generators to be switched from their normal (fast) mode to slow mode, where times are extended significantly.
- The associated LEDs light to indicate whether either, neither or both ADSRs are in slow mode.

Retrigger

- When retrig is off, which is its default state, any new notes played while a note is held will not cause the envelope generator(s) to break their cycle. Switching retrig on will cause any new note played to start a new envelope cycle, regardless of whether another note is being held. Please note that retrigger only works when the PROTON is under MIDI control.

Low Frequency Oscillators
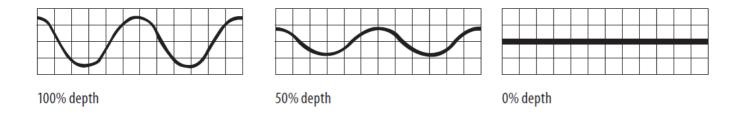
The PROTON has two independent LFOs. Owing to space considerations, some controls are shared between the two, which is achieved by use of the shift button.

Rate

- Each LFO has its own rate control, with a range from 0.01 Hz at full CCW to 200 Hz at full CW.

Depth

- Each LFO has its own depth control, which allows full amplitude when turned CW, with the amplitude reducing to zero as it is turned CCW.

100% depth   50% depth   0% depth
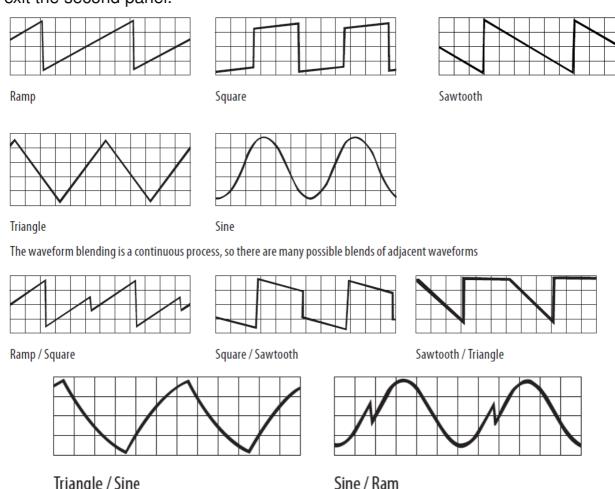
Shift

- The shift button is used to select which LFO is affected by shared controls. When it is lit in red then LFO 1 is affected, white for LFO 2. The shift control is also used to select which ASR envelope is affected by their shared buttons.

Waveform

- Each LFO can have its own waveform selected from ramp, square, sawtooth, triangle, and sine.
- These waveforms can also be set to blend rather than being switched, either by using the SynthTribe app or by the second panel function.
- Press 1-shot for two seconds and, once it is flashing, use the para button to toggle between switched and blend for LFO 1. Press 1-shot again for two seconds to exit sthe econd panel.
- For LFO 2, press the LFO retrig button for two seconds, then para. Press return again to exit the second panel.

Ramp

Square

Sawtooth

Triangle

Sine

The waveform blending is a continuous process, so there are many possible blends of adjacent waveforms

Ramp / Square

Square / Sawtooth

Sawtooth / Triangle

Triangle / Sine

Sine / Ram

1-Shot

- When 1-shot is selected a trigger or gate received at the relevant LFO's trigger in on

the In patchbay will cause that LFO's waveform to reset to the start of its cycle.

Sync

- Sync synchronizes the selected LFO to the incoming MIDI clock. In order for sync to work, the relevant LFO must have had sync selected using the SynthTribe app or using the second panel functions.
- For LFO 1, press the 1-shot button for two seconds until it flashes, then press sync, then press 1-shot again to exit. For LFO 2, use the retrig button.
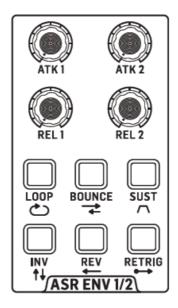
Retrigger

- LFO retrigger resets the LFO's cycle to the start when a key is pressed, regardless of whether another key is already being held (dependent on note priority). Please note that retrigger will only work correctly when LFO sync is selected and with a MIDI source. CV/gate control will work in the same way as 1-shot.

Key Tracking

- Either LFO can have a variable depth key tracking enabled. This can either be done using the SynthTribe app or by using the second panel functions. For LFO 1, press and hold the 1-shot button for two seconds until it starts flashing, then use the LFO encoder to adjust the depth. Then press 1-shot again to exit the second panel. For LFO 2 use the retrig button.

ASR Envelope Generators

The PROTON has two ASR envelope generators, which can be individually triggered from the In patchbay. Because the buttons are shared between the two the shift button in the LFO section should be used to toggle between the two. Buttons light up in red when they are selected for ASR 1, white for ASR 2.

Attack

- Each ASR envelope generator has an attack time, which is adjustable between 0 ms when the control is fully CCW and 8 s when it is fully CW.

Release

- Each ASR envelope generator has a release time that is adjustable between 0 ms when the control is fully CCW and 31 s when it is fully CW.

Loop

- When the loop is selected, the relevant ASR envelope generator will repeat its attack/release cycle for as long as a gate is present at its input.
- If sustain is selected then the loop function will not work, as the envelope will sustain for as long as the gate is present before releasing.

Bounce

- When bounce is selected, the relevant ASR envelope generator will go through its

attack/release cycle, then reverse it so that release becomes attack and attack release for as long as a gate is present at its input.

Sustain

- Selecting sustain adds a sustain element to the envelope curve.

Invert

- Selecting invert causes the envelope curve to change from a positive-going 0 V to + 10 V to 0 V to − 10 V.

Reverse

- Selecting reverse turns the release into attack and attack into release on the selected ASR.

Retrigger

- When retrigger is selected the relevant ASR envelope generator will start a new cycle every time it receives a new gate.
- All of the buttons can be used in any combination. Please note that some button combinations do not necessarily give the desired effect, so it is worth checking which combinations are best for your work.

Utilities

The PROTON has four patchable utilities

CV Mix

- The CV mix allows two voltage sources to be mixed together. If no plugs are inserted into the In patchbay, then the two sources are LFO 1 and LFO 2.
- When the control is at midway, both sources are equally represented, turning it CCW emphasizes source 1; CW source 2.
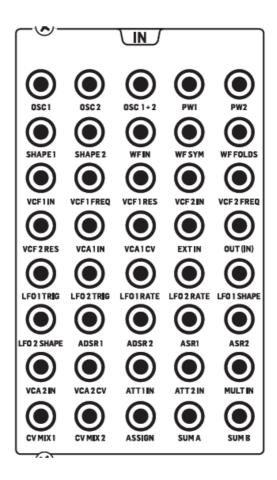
Portamento

- The portamento control introduces a glide effect between notes, with the glide time increasing as the control is turned CW.
- This only works when the PROTON is under MIDI control. Hold the first note while playing the second to activate the portamento effect.

Attentuverters

- The PROTON has two independent attenuators, which accept a CV from the In patchbay and output to the Out patchbay.
- In each case, when the control is at mid-way, no voltage is passed, turning the control fully CW passes the voltage unaltered; turning it CCW passes an inverted voltage.

In Patchbay

IN

OSC1	OSC2	OSC 1+2	PW1	PW2
SHAPE1	SHAPE2	WF IN	WF SYM	WF FOLDS
VCF1 IN	VCF1 FREQ	VCF1 RES	VCF2 IN	VCF2 FREQ
VCF2 RES	VCA1 IN	VCA1 CV	EXT IN	OUT (IN)
LFO1 TRIG	LFO2 TRIG	LFO1 RATE	LFO2 RATE	LFO1 SHAPE
LFO2 SHAPE	ADSR1	ADSR2	ASR1	ASR2
VCA2 IN	VCA2 CV	ATT1 IN	ATT2 IN	MULT IN
CV MIX1	CV MIX2	ASSIGN	SUM A	SUM B

The PROTON features a forty-input patchbay that allows CV and audio sources to be routed as signals or controls to the various sections, whether these are sourced internally from the Out patchbay or externally. CVs are in the range -5 V to +5 V, unless otherwise stated.

Oscillators

- Osc 1 CV; osc 2 CV; osc 1 and 2 combined CV; osc 1 pulse width; osc 2 pulse width; osc 1 shape; osc 2 shape.

Wavefolder

- Wavefolder audio in, which overrides the internal feed from osc mix, folds CV, and symmetry CV.

Filters

- VCF 1 audio in, which overrides the internal feed from the wavefolder; VCF 1 frequency CV; VCF 1 resonance CV; VCF 2 audio in, which overrides the internal feed from the wavefolder; VCF 2 frequency CV; VCF 2 resonance CV.

Voltage Controlled Amplifiers

- VCA 1 audio in, which overrides the internal feed from filter mix; VCA 1 CV; VCA 2 audio in, which overrides the internal feed from VCF 2; VCA 2 CV.

External Audio

- Ext in sends and external audio signal, whose level is controlled by the Ext Level control, into the PROTON VCFs (this is a duplicate of the socket on the rear panel); Out (in) overrides the internal signal flow and sends an external audio
- signal whose level is not affected by the Ext Level control directed to the PROTON's main output on the rear panel.

Low-Frequency Oscillators

- LFO 1 trigger and LFO 2 trigger, which cause the LFOs' 1-shot and retrigger to occur if selected when a suitable voltage trigger is received (any voltage over 0 V will usually work); LFO 1 rate CV; LFO 2 rate CV; LFO 1 shape CV; LFO 2
- shape CV.

Envelope Generators

- ADSR 1 gate/trigger; ADSR 2 gate/trigger; ASR 1 gate/trigger; ASR 2 gate/trigger.

Attenuverters

- Attenuverter 1 in; attenuverter 2 in.

Multiple In

- Allows a signal or voltage to be split and fed to two outputs on the Out patchbay.

CV Mix

- Input 1; input 2.
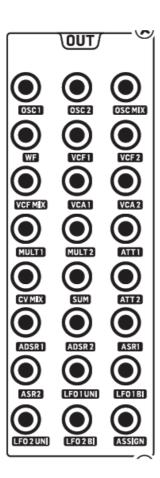
Assign In

- Assignable CV input which can be set to feed either nothing (default), osc 1, osc 2, osc 1 & 2, VCF 1, VCF 2, or VCF 1 & 2. This can be set up using the SynthTribe app or through the second panel by pressing and holding the wavefolder mode button for two seconds until it flashes, then using the LFO encoder to scroll through the options. Pressing the LFO shift button allows the encoder to be used to set the depth from 0% to 100%. Pressing the mode button again exits the second panel.

Sum

- Sum A; sum B, where two CVs are summed together a fed to the sum out socket on the Out patchbay.

Out Patchbay

The PROTON features a twenty-four output patchbay, which allows signals and control voltages to be routed to external processors, or re-routed internally. Taking a feed from the Out patchbay will not affect internal routing, unless specifically noted.

Oscillators

- Osc 1; Osc 2; Osc mix – audio feeds from the oscillators.

Wavefolder

- Audio feed from the wavefolder output.

Filters

- VCF 1; VCF 2; VCF mix – audio feeds from the VCFs.

Voltage Controller Amplifiers

- VCA 1; VCA 2 – audio feeds from the VCA.

Multiples

- Multiple 1; multiple 2 – split of a signal or CV fed into the multiple in on the In patchbay. If there is no cable plugged into Multiple In, then Multiples 1 and 2 can be assigned using SynthTribe.

Attenuverters

- Attenuverter 1; attenuverter 2 – outputs from the attenuverters fed from the In patchbay. If there is no input on attenuverter 1 then the output will be ADSR 1. If there is no input on attenuverter 2 then the output will be LFO 1 (bipolar).

CV Mix

- Output of the CV mix fed from the In patchbay and mixed with the CV mix utility. If there are no inputs to the CV mix, then the mix will be of LFO 1 and 2 (bipolar).

Sum

- The output of the two CVs fed into the sum inputs on the In patchbay. If there are no

input,s then the output will be a mix of sub-oscillators 1 and 2.

Envelope Generators

- ADSR 1; ADSR 2; ASR 1; ASR 2 – CV outputs of the envelope generators' curves.

Low-Frequency Oscillators

- LFO 1 uni; LFO 1 bi; LFO 2 uni; LFO 2 bi – CV outputs from the LFOs, where the uni outputs give a unipolar response from 0 V to +5 V and the bi outputs give a bipolar response from -5 V to + 5 V.

Assign

- Assignable output whose source can be selected from osc 1 CV, osc 2 CV, velocity (MIDI only), mod wheel (MIDI only), aftertouch (MIDI only). This can be selected using the SynthTribe app or from the second panel by pressing the osc sync button for two seconds until it flashes, then using the LFO encoder to scroll through the options. Pressing OSC sync again exits the second panel.

Rear Panel

- Please note that if the PROTON is removed from its supplied case and mounted in a Eurorack case (see Quick Start Guide for details on how to do this) then the rear panel will no longer be available.

Input

- The input socket is a TS 6.35 mm jack which duplicates the 3.5 mm jack on the In patchbay and feeds an external audio signal into the PROTON's filters.

Output
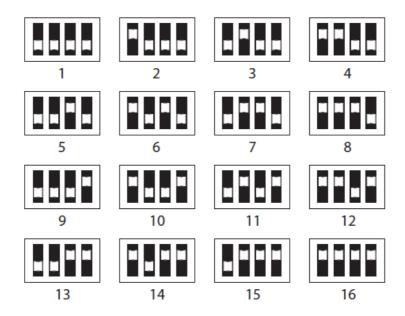
- The output socket is a TS 6.35 mm jack which sends the VCA output as adjusted by the output level control to external mixers, amplifiers, etc.

Phones

- The phone's output is a TRS 6.35 mm jack socket suitable for use with any standard headphones. It is independent of the output level control, and has its own dedicated level control adjacent.

MIDI Channel Select

- Use these four dip switches to set the MIDI in channel of the PROTON as illustrated:

Please note that this setting can be overridden using the SynthTribe app.

MIDI Thru

- This 5-pin DIN socket can be used to mirror incoming MIDI messages received on the front panel MIDI In socket.

USB

- This USB 2.0 Type B socket can be used to control the PROTON over MIDI, for example, direct from a DAW, and to alter settings and update the firmware via the SynthTribe app.

Power

- The PROTON comes supplied with a 12 V 1000 mA PSU. This is the only PSU that should be used, unless the PROTON is Eurorack mounted. The adjacent switch can be used to switch the Proiton on and off as required.

Extra Panel Functions

- Below is a summary of the control combinations required to access and adjust the extra panel functions. The extra panel functions can be switched on or off using SynthTribe, which makes these functions only adjustable using the app.

First	Second	Third	Action
Osc 1 Range	LFO Encoder		Selects the waveform for Osc 1 sub oscillator, from the LFO options.
	Para		Selects whether the Osc 1 waveform is switched (default) or blended.
	Osc Sync		Selects whether the Osc 1 tuning control is enabled (default) or disabled.
	Wave Mode		Switches Osc 1 frequency input from exponential to linear
	F/S		Switches Osc 1 frequency input to exponential
	Env Retrig		Disables MIDI control of Osc 1.
	MIDI Note	VCF 1 Mode	Sets the key split point, for paraphonic behavior in Last Note Priority mode: when a split point is set then Osc 1 will sound the note below the split point, and Osc 2 the one above. Otherwise the last note will be played by both Oscs.
	MIDI Note	LFO 1 Shot	Sets the base note for LFO 1 key tracking
Osc 2 Range	LFO Encoder		Selects the waveform for Osc 2 sub oscillator, from the LFO options.
	Para		Selects whether the Osc 2 waveform is switched (default) or blended.
	Osc Sync		Selects whether the Osc 2 tuning control is enabled (default) or disabled.
	Wave Mode		Switches Osc 2 frequency input from exponential to linear
	F/S		Switches Osc 2 frequency input to exponential
	Env Retrig		Disables MIDI control of Osc 2.
	MIDI Note	VCF 2 Mode	Sets the key split point, for paraphonic behavior in Last Note Priority mode: when a split point is set then Osc 1 will sound the note below the split point, and Osc 2 the one above. Otherwise the last note will be played by both Oscs.
	MIDI Note	LFO 1 Shot	Sets the base note for LFO 2 key tracking.
VCF 1 Mode	LFO Encoder		Selects the modulation source for VCF 1 from: none, MIDI velocity, Mod Wheel (MIDI CC #1), Aftertouch.
	LFO Shift	LFO Encoder	Sets the VCF 1 modulation depth.
VCF 2 Mode	LFO Encoder		Selects the modulation source for VCF 2 from: none, MIDI velocity, Mod Wheel (MIDI CC #1), Aftertouch.

First	Second	Third	Action
	LFO Shift	LFO Encoder	Sets the VCF 2 modulation depth.
Osc Sync	VCF 1 Mode		Sets the note priority for both oscillators when in mono mode: HPF – highest, BPF – last, LPF – lowest.
	VCF 2 Mode		Set the note priority for paraphonic mode. Osc 1 will play the first priority note, Osc 2 the second. Reaction to a third note will be governed by the setting: HPF – highest, BPF – last, LPF – lowest.
	LFO Encoder		Selects the source for Assign Out on the patchbay, from: Osc 1 CV, Osc 2 CV, velocity, Mod Wheel, Aftertouch.
	Para		Switches Polychaining on or off: 0 = off, 1 = on.
	LFO Sync		Switches MIDI clock forwarding on or off 0 = off, 1 = on
	Env Retrig		Selects the mode for ASR retriggering, from: Neutron (default) – new notes will retrigger the ASRs or PROTON – notes will not retrigger the ASRs while at least one note is held.
Wave Mode	LFO Encoder		Selects the destination for Assign In, from: None (default), Osc 1, Osc 2, Osc 1&2, VCF 1, VCF 2, VCF 1&2.
	LFO Shift	LFO Encoder	Adjusts the depth of the Assign In, from 0% to 100%.
Osc Para	ASR Retrig		Pressing Osc Para and ASR Retrig for more than two seconds will recalibrate the PROTON.

Factory Restore

- If it becomes necessary to restore the PROTON to its factory settings press and hold the Osc Para and Osc Sync buttons while powering up.

Polychaining
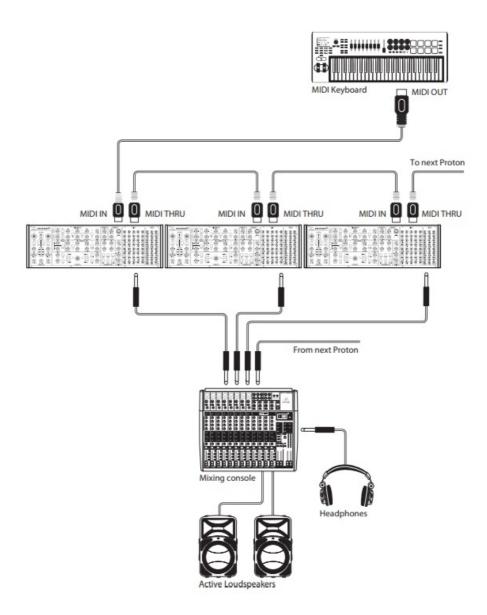
- If you have multiple PROTON units, you can connect them in a 'Poly Chain' to produce polyphonic sounds.
- The PROTON works by sending unhandled notes to the next in the chain. When the chain runs out, subsequent notes are not played.
- The first PROTON plays the first played note, the second plays the second, the third plays the third etc.
- Note that a PROTON in Paraphonic mode will handle 2 notes. Each PROTON must have the same MIDI channel number set using the rear panel switches or SynthTribe app.
- The Poly Chain connections are shown in the diagram. Set the Poly Chain ON for all PROTONs.

- The last PROTON in the chain can either be set to Poly Chain on or off depending on how you would like the MIDI information to be handled.
- If Poly Chain is on, the last PROTON will act as if it is sending the next played note over the maximum number of notes played to the next device in the chain, and the note will not be heard or dropped.
- If Poly chain is off for the last PROTON, the next played note over the maximum number of notes will steal the last played note from the last PROTON. To toggle Poly Chain mode, press and hold the OSC SYNC button for 2 seconds.
- The LED will repeatedly flash (once when in mono mode – twice when in duo mode). A short press on the PARA button will still toggle the PARA/MONO mode.
- Hold PARA to exit. If you are only using one PROTON, make sure the Poly Chain is OFF.

Calibration

- The PROTON has no manual calibration function – automatic calibration is carried out every time it is powered up; and is indicated by the six Octave LEDs flashing in rotation.
- When they stop flashing and show the octave for the two VCOs then calibration is complete.

Poly Chain Function

MIDI CCs

- The PROTON responds to two MIDI CCs:
- Modulation Wheel (MIDI CC #1 (MSB) and CC #33 (LSB)) which can also be assigned to the Assign Out using the Synthtribe App; Sustain Pedal (MIDI CC #64).

SysEx

- The PROTON can be controlled using the System Exclusive protocol. The format of PROTON SysEx messages is as follows:

Lead	Manufacturer ID			Model ID			Dev	PKT	SPKT	SSPKT	Value	End
F0	00	20	32	00	01	25	00	0x74	0x10			F7

The following table shows the SSPKT numbers and their associated values

SSPKT	Function	Value Range	Default Value	Description
0x0F	Polychain enable/disable	0-1	0	0 = disabled; 1 = enabled
0x10	Dipswitch enable/disable	0-1	0	0 = dipswitch MIDI channel; 1 = software MIDI channel
0x11	Software MIDI Channel	0-15	0	
0x13	Mono key priority	0-2	2	0 = low; 1 = high; 2 = last
0x14	Paraphonic key priority	0-2	2	0 = low; 1 = high; 2 = last
0X17	Assign out 1	0-4	0	0 = Osc 1 CV; 1 = Osc 2 CV; 2 = velocity; 3 = mod wheel; 4 = aftertouch
0x18	Assign out 2	0-4	0	0 = Osc 1 CV; 1 = Osc 2 CV; 2 = velocity; 3 = mod wheel; 4 = aftertouch
0x19	Minimum MIDI note	0C – 60	0C	0C = MIDI C0
0x1A	Maximum MIDI note	0C – 60	60	60 = MIDI C7
0x1B	Mute out of range notes	0-1	0	0 = disabled; 1 = mute out of range notes
0x1D	Forward clock	0-1	1	0 = disabled; 1 = enabled
0x1E	Assign in destination	0-6	0	0 = none; 1 = Osc 1; 2 = Osc 2; 3 = Osc 1&2; 4 = VCF 1; 5 = VCF 2; 6 = VCF 1&2
0x1F	Assign in depth	0-65	65	
0x21	Local control on/off	0-1	1	0 = second panel enabled; 1 = second panel disabled
0x23	VCF link	0-2	0	0 = no link; 1 = mod link; 2 = inverse mod link
0x24	VCF soft	0-3	0	0 = disabled; 1 = VCF1 enabled; 2 = VCF2 enabled; 3 = both enabled
0x25	VCF Key tracking	0-3	0	0 = disabled; 1 = VCF1 enabled; 2 = VCF2 enabled; 3 = both enabled

SSPKT	Function	Value Range	Default Value	Description
0x26	VCF1 mode	0-2	2	0 = high pass; 1 = band pass; 2 = low pass
0x27	VCF1 modulation source	0-3	0	0 = none; 1 = velocity; 2 = mod wheel; 3 = aftertouch
0x28	VCF1 modulation depth	0-FC	0	
0x2A	VCF2 mode	0-2	2	0 = high pass; 1 = band pass; 2 = low pass
0x2B	VCF2 modulation source	0-3	0	0 = none; 1 = velocity; 2 = mod wheel; 3 = aftertouch
0x2C	VCF2 modulation depth	0-FC	0	
0x2E	LFO1 key track base note	0C-60	0C	0C = MIDI C0
0x2F	LFO1 shape mix	0-FF	0	
0x30	LFO1 shape	0-4	0	0 = sine; 1 = triangle; 2 = sawtooth; 3 = square; 4 = ramp
0x31	LFO1 blend	0-1	1	0 = blended; 1 = switched
0x32	LFO1 one shot	0-1	0	0 = disabled; 1 = one shot on
0x33	LFO1 retrigger	0-1	0	0 = disabled; 1 = retrigger on
0x34	LFO1 key sync	0-1	0	0 = disabled; 1 = key sync on
0x35	LFO1 key track depth	0-65	0	
0x36	LFO1 MIDI clock sync	0-1	0	0 = disabled; 1 = clock sync on
0x39	LFO2 shape mix	0-FF	0	
0x3A	LFO2 shape	0-4	0	0 = sine; 1 = triangle; 2 = sawtooth; 3 = square; 4 = ramp
0x3B	LFO2 blend	0-1	1	0 = blended; 1 = switched
0x3C	LFO2 one shot	0-1	0	0 = disabled; 1 = one shot on
0x3D	LFO2 retrigger	0-1	0	0 = disabled; 1 = retrigger on
0x3E	LFO2 key sync	0-1	0	0 = disabled; 1 = key sync on
0x3F	LFO2 key track depth	0-65	0	
0x40	LFO2 MIDI clock sync	0-1	0	0 = disabled; 1 = clock sync on
0x43	LFO2 key track base note	0C-60	0C	0C = MIDI C0

SSPKT	Function	Value Range	Default Value	Description
0x44	Wavefolder mode	0-3	3	0 = AM; 1 = half; 2 = 1; 3 = bypass
0x46	Osc sync	0-1	0	0 = not synced; 1 = Osc 2 synced to Osc 1
0x47	Osc paraphony	0-1	0	0 = mono; 1 = paraphonic
0x48	Osc key split	0 or 0C-60	0	0 = no split; 0C-60 = split at this note
0x49	Sub Osc shape	0-3	0	0 = pulse; 1 = sawtooth; 2 = triangle; 3 = sine
0x4A	Osc 1 range	0-3	2	0 = 8'; 1 = 16'; 2 = 32'; 3 = free
0x4B	Osc 1 mute	0-1	0	0 = unmuted; 1 = muted
0x4C	Sub Osc 1 mute	0-1	0	0 = unmuted; 1 = muted
0x50	Osc 1 linear FM	0-1	0	0 = disabled; 1 = enabled
0x51	Osc 1 waveform blend	0-1	1	0 = blended; 1 = switched
0x52	Osc 1 tuning control	0-1	0	0 = enabled; 1 = disabled
0x53	Osc 1 CV modulation	0-1	0	0 = enabled; 1 = disabled
0x54	Osc 1 MIDI	0-1	0	0 = enabled; 1 = disabled
0x55	Osc 1 portamento	0-18	0C	0 = 12 semitone glide; 18 = greater than 12 semitone glide; 0C = no glide
0x56	Osc 2 range	0-3	2	0 = 8'; 1 = 16'; 2 = 32'; 3 = free
0x57	Osc 2 mute	0-1	0	0 = unmuted; 1 = muted
0x58	Sub Osc 2 mute	0-1	0	0 = unmuted; 1 = muted
0x5C	Osc 2 linear FM	0-1	0	0 = disabled; 1 = enabled
0x5D	Osc 2 waveform blend	0-1	1	0 = blended; 1 = switched
0x5E	Osc 2 tuning control	0-1	0	0 = enabled; 1 = disabled
0x5F	Osc 2 CV modulation	0-1	0	0 = enabled; 1 = disabled
0x60	Osc 2 MIDI	0-1	0	0 = enabled; 1 = disabled

SSPKT	Function	Value Range	Default Value	Description
0x61	Osc 2 portamento	0-18	0C	0 = 12 semitone glide; 18 = greater than 12 semitone glide; 0C = no glide
0x63	Envelope fast/slow	0-1	0	0 = fast; 1 = slow
0x64	Envelope retrigger	0-1	0	0 = disabled; 1 = enabled
0x65	Envelope retrigger mode	0-1	0	0 = Neutron mode; 1 = PROTON mode
0x67	ASR Envelope 1 loop	0-1	0	0 = disabled; 1 = enabled
0x68	ASR Envelope 1 bounce	0-1	0	0 = disabled; 1 = enabled
0x69	ASR Envelope 1 sustain	0-1	0	0 = disabled; 1 = enabled
0x6A	ASR Envelope 1 inverse	0-1	0	0 = disabled; 1 = enabled
0x6B	ASR Envelope 1 reverse	0-1	0	0 = disabled; 1 = enabled
0x6C	ASR Envelope 1 retrigger	0-1	0	0 = disabled; 1 = enabled
0x6D	ASR Envelope 1 Decay	0-1	0	0 = disabled; 1 = enabled
0x6E	ASR Envelope 2 loop	0-1	0	0 = disabled; 1 = enabled
0x6F	ASR Envelope 2 bounce	0-1	0	0 = disabled; 1 = enabled
0x70	ASR Envelope 2 sustain	0-1	0	0 = disabled; 1 = enabled
0x71	ASR Envelope 2 inverse	0-1	0	0 = disabled; 1 = enabled
0x72	ASR Envelope 2 reverse	0-1	0	0 = disabled; 1 = enabled
0x73	ASR Envelope 2 retrigger	0-1	0	0 = disabled; 1 = enabled
0x74	ASR Envelope 2 Decay	0-1	0	0 = disabled; 1 = enabled

There is a further special SysEx command, which resets all parameters to factory default and restarts the PROTON: F0 00 20 32 00 01 25 00 7D F7.

Glossary

- ADSR – Envelope generator with four stages: Attack, Decay, Sustain and Release.
- A(S)R – Envelope generator with two or three stages: Attack, (Sustain) and Release.
- Amplitude – The volume of a sound.
- Arpeggiator – a part of the synthesizer which causes the notes of a chord to be played individually as an arpeggio according to settings. Attack Time – The first stage of the envelope. Specified as the time taken for the envelope to reach maximum level when keys are played.
- Attenuate – To reduce the level of a signal or modulation source.
- Cent – Unit of measurement for tuning. One semitone is divided into 100 cents.
- Cutoff Frequency – The point at which the filter starts to cut frequencies.
- Decay Time – The second stage of the envelope. Specified as the time taken for the sound level to drop from maximum to the sustain level while the played keys are being held.
- Digital Audio Workstation (DAW) – A computer based software package that allows the recording, editing and playing back of audio and/or MIDI data.

- Envelope Generator – Envelope generators can be used to contour the sound. Most commonly used to affect the amplitude (volume) of the sound they can also be used on filters and to affect pitch.
- Filter – Filters attenuate the frequencies above or below their cutoff point, thus affecting the timbre of the sound.
- Frequency – The number of cycles per second (Hz) that an oscillator runs at.
- Hertz (Hz) – Unit of measurement for frequencies. 1 Hz is one cycle per second.
- Invert – change to the opposite, so a positive becomes negative for example.
- Keyboard Tracking – Use of the notes played on the keyboard to adjust another parameter, for example.
- KiloHertz (kHz) – Common abbreviation for one thousand Hz.
- Low Frequency Oscillator (LFO) – An oscillator that runs at a low speed and is used to modulate other parts of the synthesiser. Musical Instrument Digital Interface (MIDI) – a protocol that allows musical instruments, other peripherals and DAWs to pass data according to a defined standard.
- MIDI Clock – a timing signal that is sent as part of the MIDI data.
- MIDI Message – data transmitted from one MIDI device to another that constitutes an instruction.
- Mix – The balance between two or more signals.
- Modulation – The use of sources to control a parameter of a destination.
- Monophonic – Only allowing one note to be played at a time.
- Noise – A random sound comprising of all frequencies.
- Note Priority – Determines which note is played when the maximum number is exceeded. Typically lowest, highest or last.
- Octave – A measure of pitch.
- Oscillator (Osc or VCO) – The basic sound source of the synthesizer.
- Oscillator Sync – The process by which the cycle of one oscillator is synchronized to the cycle of another.
- Output – Can refer both to the signal sent out from one part of the synthesizer to another, or to the physical sockets used to connect to external equipment.
- Parameter – A setting whose value can be changed.
- Paraphony – When two or more oscillators are playing different notes, but feeding into the same filter(s), VCAs (etc) this is known as paraphony.
- Phase – The measurement in degrees of the time difference between two waveforms

or a waveform and a fixed reference point. Pitch Bend – Changing the pitch of a note up or down while it is being played.

- Polychain – The linking of two or more monophonic synthesizers via MIDI to share note input polyphonically.
- Portamento – The effect of 'gliding' the pitch between notes rather than changing instantly.
- Pulse Wave – A wave similar to a square wave, but whose symmetry can be changed.
- Pulse Width Modulation – The modulation of the symmetry of a pulse wave.
- Rate – The speed at which an action takes place.
- Release Time – The final stage of the envelope. Specified as the time taken for the envelope to reach zero once keys have been released.
- Resonance – The emphasis of frequencies centered on the cutoff frequency.
- Sample & Hold (S&H) – the sampling of a waveform, typically that of an LFO or noise source, to provide a series of voltages at a set rate.
- Sawtooth – A waveform resembling the teeth of a saw, with an instantaneous leading edge followed by a gradual decline to zero point.
- Self Oscillation – The point at which a filter starts to produce a sine wave output owing to excessive use of resonance.
- Semitone – A measure of pitch. Each octave contains 12 semitones.
- Sequencer – A part of the synthesizer which can be programmed with a series of notes and/or chords which are then repeated back at a selected tempo.
- Signal Flow – The path of a signal from one part of the synthesizer to another.
- Sine Wave – A smooth waveform that contains only the fundamental frequency with no harmonics.
- Square Wave – a symmetrical waveform which changes instantaneously from zero state to full.
- Sustain Level – The third stage of the envelope. This is the level that the envelope holds at after decay until keys are released. Synchronization (Sync) – Co-ordinating the timing of devices where one is the master and the other(s) are
- synchronized to it. Trigger – The activation of a function, for example pressing a key to start the Envelope cycle.
- Tune – The adjustment of the pitch of an instrument to be the same as that of another instrument; or the adjustment of one oscillator to be in tune with the other.
- Unison – Two or more voices played together on the same key(s).

- Universal Serial Bus (USB) – An interface that can be used to connect your synthesizer to a DAW, or to receive firmware updates.
- Velocity – The strength at which the keyboard is played, which can be used as a modulation source.
- Voltage Controlled Amplifier (VCA) – An amplifier whose level can be adjusted by control voltages, for example from an
- envelope generator.
- Wavefolder – A circuit that allows a wave to be folded back onto itself, producing different harmonic content.

FCC STATEMENT

FEDERAL COMMUNICATIONS COMMISSION COMPLIANCE INFORMATION

- Behringer
- PROTON

PROTON

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

Important information:

Changes or modifications to the equipment not expressly approved by Music Tribe can void the user's authority to use the equipment.

CE Hereby, Music Tribe declares that this product is in compliance with Directive 2014/35/EU, Directive 2014/30/EU, Directive 2011/65/EU and Amendment 2015/863/EU, Directive 2012/19/EU, Regulation 519/2012 REACH SVHC and Directive 1907/2006/EC.

Correct disposal of this product: This symbol indicates that this product must not be disposed of with household waste, according to the WEEE Directive (2012/19/EU) and your national law. This product should be taken to a collection center licensed for the recycling of waste electrical and electronic equipment (EEE). The mishandling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the efficient use of natural resources. For more information about where you can take your waste equipment for recycling, please contact your local city office, or your household waste collection service.

CONTACT

- Full text of EU DoC is available at https://community.musictribe.com/
- EU Representative: Empower Tribe Innovations DE GmbH

- Address: Otto-Brenner-Strasse 4a, 47877 Willich, Germany
- UK Representative: Empower Tribe Innovations UK Ltd.
- Address: 5 Brindley Road Old Trafford, Manchester, United Kingdom, M16 9UN

FAQ

- **Q:** Can I use the PROTON Analog Synthesizer outdoors?
- **A:** It is recommended that the synthesizer be kept away from water and moisture, so outdoor use is not advised unless specified for outdoor products.
- **Q**: What should I do if the provided plug does not fit my outlet?
- **A:** Consult an electrician for the replacement of the obsolete outlet to ensure proper fit and safety.

Documents / Resources

	[behringer PROTON Analog Paraphonic Semi Modular Synthesizer](#) [[pdf](#)] User Manual PROTON Analog Paraphonic Semi Modular Synthesizer, PROTON, Analog Paraphonic Semi Modular Synthesizer, Paraphonic Semi Modular Synthesizer, Semi Modular Synthesizer, Modular Synthesizer

References

- 🔵 [Behringer | Home](#)
- 🔴 [Music Tribe](#)
- 🔴 [Music Tribe](#)
- 🔴 [Music Tribe](#)
- [User Manual](#)

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