Fusebox

user manual

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Introduction

Congratulations on buying the Fusebox synthesiser. Fusebox is part of the Analogue Solutions range of analogue music equipment. Fusebox is a precision electronic musical instrument. It combines all the often needed music electronic circuitry to make a powerful music synthesiser in one compact module.

No compromise has been made with the construction of Fusebox. Cheaper options in parts have not been used

- Full rugged steel/aluminium case - no plastic mouldings
- Good quality smooth, metal potentiometers, fully sealed against dust
- Good quality knobs with spun aluminium caps
- High grade double sided circuit board
- High Quality 16bit DAC for MIDI-CV conversion
- Stable MIDI to CV
- Stable analogue oscillators
- Designed, built, tested and assembled in the UK
- True retro analogue voice and modulation circuits to give an authentic retro sound - no DSP.

WHY DO I NEED THIS SYNTH? WHAT'S SO SPECIAL?

Fusebox is a compact true analogue mono synth in a neat, smart, small package.

When we say 'real analogue' we mean that the entire audio path and all modulation is entirely analogue, using circuits based on awesome sounding vintage 1970s designs. Their circuits are not locked down by CPUs. Controls are not quantised and read by CPUs. With the exception of the MIDI to CV circuit, which by its nature must have a digital element, and the control sections of the sequencer (which even in vintage sequencers is digital), Fusebox really is analogue and the sound benefit is immediately apparent!

We get many good comments about how good Analogue Solutions products sound. How wonderful, warm and full of character they are.

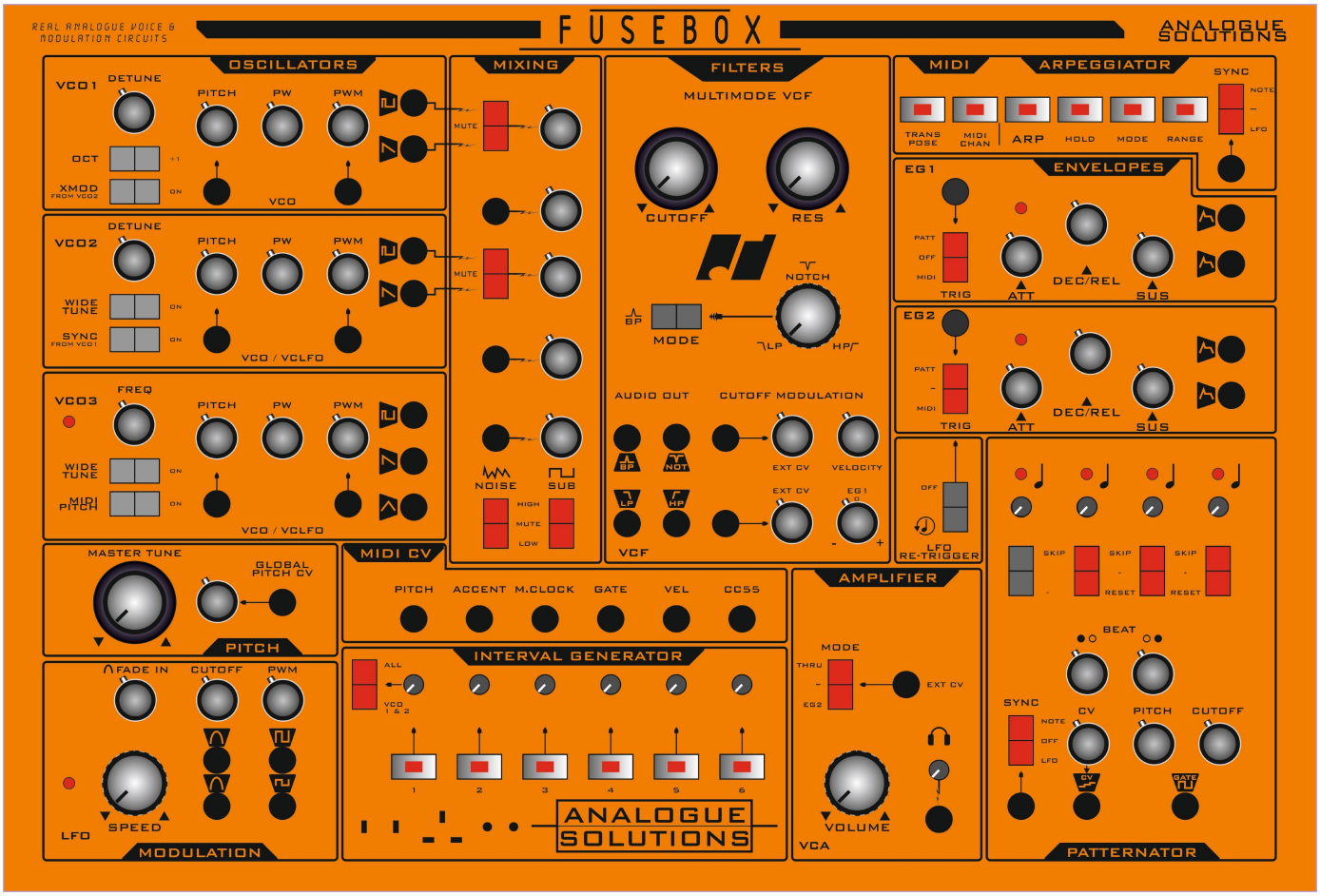
The synth has been designed by Tom Carpenter, a musician and a big fan of electronic music. He knows how to program a synth and what should be expected. It was not designed by an engineer or steered by committee or men in suits. So, the modulation choices and range of sounds they produced have all been carefully thought out and quickly give you those sounds you want: huge bass, synth leads, percussion, effects, modular style sounds.

FUSEBOX CAN BE AS COMPLEX OR AS SIMPLE AS YOU WANT IT TO BE

We have given this synth a large and diverse number of controls, that along side the patch sockets, will give even the best and experienced synthesist endless possibilities.

But hopefully we have presented the controls in a user friendly and familiar monosynth layout that, together with this manual and other resources, enable even the new guy to get great sounds.

Fusebox Layout



Fusebox:

SYNTH – PERCUSSION – AUDIO PROCESSOR

Fusebox is a compact analogue synthesizer. Analogue - as in really analogue. Aside from the MIDI chip (which has to be digital), everything else is totally analogue using real transistors and op-amps. There are no CPU stabilised and quantised circuits, no DCOs, no digital LFOs and no digital EGs, as found on other so called analogue synths. The circuitry is based on designs dating back to the mid-1970s. So Fusebox has a genuine old sound.

Audio Applications

MONO SYNTHESISER

Fusebox is for use any time you need analogue sound effects, fat basses, screaming leads, beeps, tones, zaps, and all the other crazy sounds associated with analogue synthesis. Use in place of your boring digital synths and DSP soft synths.

EFFECTS PROCESSOR

Fusebox has an audio input socket, so you can feed external sounds through the on-board analogue filters for analogue processing.

DRUM SYNTHESISER

Fusebox is able to produce electronic percussion – kick, snare, hi-hats, cymbal, etc.

MODULAR SYNTHESISER

Fusebox is partially pre-patched but, nearly all of these patches can be cancelled using the switches and controls. It has such a wide range of modulation routing possibilities that it is almost as versatile as a full modular and can produce the same types of sounds, without the mess and confusion of cables. Even so, it has a large selection of patch sockets that enable you to re-patch itself, or, to connect it to an external modular.

MIDI (DAW Use) or CV & Gate?

This unit can be used with a MIDI keyboard (or DAW, or sequencer) or you can use it with an analogue sequencer, such as Oberkorn.

You can even use it just on its own using the Patternator and Interval Generator.

It can also be used by MIDI and CV at the same time! So you could have an analogue step sequencer such as Oberkorn playing a little melody, then using a MIDI keyboard (or MIDI sequencer) transpose the Oberkorn sequence.

Circuits Included

Analogue Oscillators

There are three analogue VCOs – each providing a wealth of features and modulation choices. VCO 2 and 3 can easily be utilised as 2nd / 3rd LFOs.

Analogue Low Frequency Oscillator

The LFO has Sine and Square wave modulation signals and also a delay feature.

4 Analogue Filter Types

Fusebox uses a two pole 12bB per octave multimode filter. The filter is actually four types in one. Low pass, Band pass, High pass and Notch filters. And, it sounds amazing.

Analogue Mixer

Audio choices are the Saw and Square wave of each VCO (VCO3 also has Triangle), Noise or, for added fatness, Sub-Oscillator. There are sockets for external audio.

Analogue Amplifier

The VCA can be set to THRU so it is always 'open'. This allows Fusebox to be used as an effects processor.

2 Analogue Envelopes

There are two EGs – each having control over ATTACK, SUSTAIN, and combined DECAY/ RELEASE. It's not really true to say it is an ASR envelope, it really is an ADSR - Decay and Release are both controlled by the same control. Saving space with little compromise in flexibility.

Modulation

Great thought has been placed into modulation route choices, allowing a wide range of sounds to be produced, including percussion and 'modular' style sounds.

MIDI

MIDI is intentionally kept simple – so you can concentrate on making new sounds and making music – not getting tied up with SYSEX programming.

You get the all important control over filter cut-off using MIDI Velocity (or a MIDI controller). There are other CV and control voltages outputs also.

'Patchable' External CV Control Sockets

Fusebox has many input and output audio and CV sockets - to allow the synth to be effectively re-wired to make new sounds.

The sockets also enable it to be easily used with Eurorack and other modular systems. They can be patched together.

Arpeggiator

Fusebox has a vintage style Arpeggiator. Similar to that found on the Roland SH101.

The Arpeggiator remembers the order notes are entered - so can also be used as a 16 step sequencer, again, similar to the one in the SH101.

Patternator

Fusebox has a very interesting and unique sequencer that is the love child of an analogue step sequencer and an arpeggiator.

Use it to create short melodic note sequences, and / or use it to create rhythm patterns.

A great tool for inspiration!

Interval Generator

The whole pitch of the synth can be transposed at the push of a button.

There are six transpose settings you can program in using six analogue pots.

Set the transpose level you want for each - and then using the push buttons you can transpose your melodic piece (that you can program in on the Patternator or Arpeggiator) - to create live performance!

The IG pots are not quantised - they are also analogue!

Mounting Options

Fusebox can be orientated and configured in several ways;

VERTICAL (TALL)

As standard, it comes as a vertical desktop unit just like Telemark.

HORIZONTAL (FLAT)

It is possible to reconfigure it so that it is a flat table top unit, like its cousin Leipzig-S is. This requires some minor screwdriver work. Essentially remove the 5 front panel black screws, rotate the front panel 180 degrees, then re-screw.

RACKED

Remove the wood sides and fit optional rack ear brackets, and rack mount the whole assembly. 7U height.

Safety Instructions

PLEASE READ CAREFULLY BEFORE USING:

- Only use the correct power adaptor - 230V for UK/EU (115V for N.America).
- Never handle the adaptor with wet hands.
- Never excessively bend the adaptor cable or get it trapped or place heavy objects on it. If the adaptor cable becomes damaged, replace the adaptor.
- Ensure the unit is disconnected from the mains before moving or cleaning.
- Always disconnect the unit from the mains if there is lightning in your area.
- Ensure the unit is on a stable surface, and never place heavy objects on top of it.
- Never allow young children, hippies or animals to operate the unit or adaptor.
- Do not use excessive force when using the controls or inserting cables to the connectors.
- The unit should not be operated in the rain, near water, or at a foam party, and should not be exposed to moisture.
- If the unit is brought from a cold environment to a warm one, the unit should be left to reach the ambient temperature.
- Keep away from heat sources, such as radiators, ovens, heaters etc.
- Never allow it to get wet. Do not operate it near water, like pools, sinks, bathrooms etc. Oh, we covered that already.
- Do not place beverages on or near it.
- Never open the case or attempt to make repairs. Refer any servicing to qualified service personnel.

PREVENTING DAMAGE TO OTHER CONNECTED DEVICES

Fusebox has a very high dynamic range. It is capable of produce loud signals of very high and sub-sonic frequencies that could blow inadequate speakers if played too loud. It is recommended that input levels to external equipment (mixers, amp's etc.) are kept low when first connected, and then slowly increased to a useable level.

MAINTENANCE INSTRUCTIONS

Any cleaning of the Fusebox case should be done with a clean lint-free cloth.
DO NOT USE SOLVENTS OR CLEANERS, as this will deteriorate the exterior appearance of the equipment. Do not use a car wash or jet wash to clean this synth.

PLACE

Place Fusebox soundly on a stable surface so it cannot fall off or over, causing it or yourself injury.

POWER

The unit needs a 12 to 15V AC supply, minimum 500mA. DC Power supplies will not work.

Getting Started

POWER

Fusebox comes with a power supply. It uses a power supply with an AC output.

Plug the power lead into the rear of Fusebox.

MIDI

Fusebox has;

MIDI In for sequencing from DAW or playing via MIDI keys.

MIDI Thru outputs a copy of what comes into the MIDI In socket.

MIDI Out outputs a copy of what comes into the MIDI In socket. If the Arpeggiator is on, then these notes will be played out this socket.

Example set up;

Connect MIDI Out from your computer DAW MIDI interface or MIDI keyboard to MIDI In of Fusebox.

Optionally connect MIDI Thru from Fusebox to the MIDI In of another device.

Initial Tuning

Once the MIDI and audio connections have been made it may be necessary to tune in the VCOs to the rest of your music set-up. Allow a five minute warm up time as these are true analogue VCOs – that's why they sound so great!

There are many controls on this synth that can affect one or all of the VCOs!

First set up the controls of Fusebox to make a simple sound.

Set Master Tune to the centre.
Ensure the Patternator pitch control is set to zero.
Ensure the Interval Generator is disabled.
Ensure the Arpeggiator is off.
Note, that patch leads plugged into the VCOs might also affect pitch.
Set VCO1 Octave to off.
Set Sync to off.
Set Xmod to off.
Set Low to off.
Set Free to off.

Turn VCO2 and VCO3 to zero volume so you can only hear VCO1.

Play, say, middle C on the keyboard. Using a digital keyboard as a reference, adjust the tuning of VCO1 until it plays in tune with your reference.

Turn up VCO2 so both VCOs can be heard. Using the tune control of VCO2, tune it to VCO1.

Finally, turn up VCO3 so all VCOs can be heard. You may prefer to turn down VCO2 at this point so you just hear VCOs 1 and 3. Using the tune control of VCO3, tune it to VCO1.

This synth is truly analogue - and uses an old VCO circuit design to give it its great sound. DON'T expect DCO or DSP style precision pitch.

The pitch will be in tune but have subtle shifts across the octaves due to their vintage design. This is in part what adds to the character and warmth of the sound. That's the whole point!

Circuits in Detail

Here follows details on the sockets and controls, with brief simplified explanations of what the circuits do. We have not gone into technical details on how or exactly what each circuit does but tried to explain each control's function and effect.

This synth has been designed to be simple and intuitive to use, just like the original analogue synth's of the 70s and 80s. There are no multi-layered menus to work through.

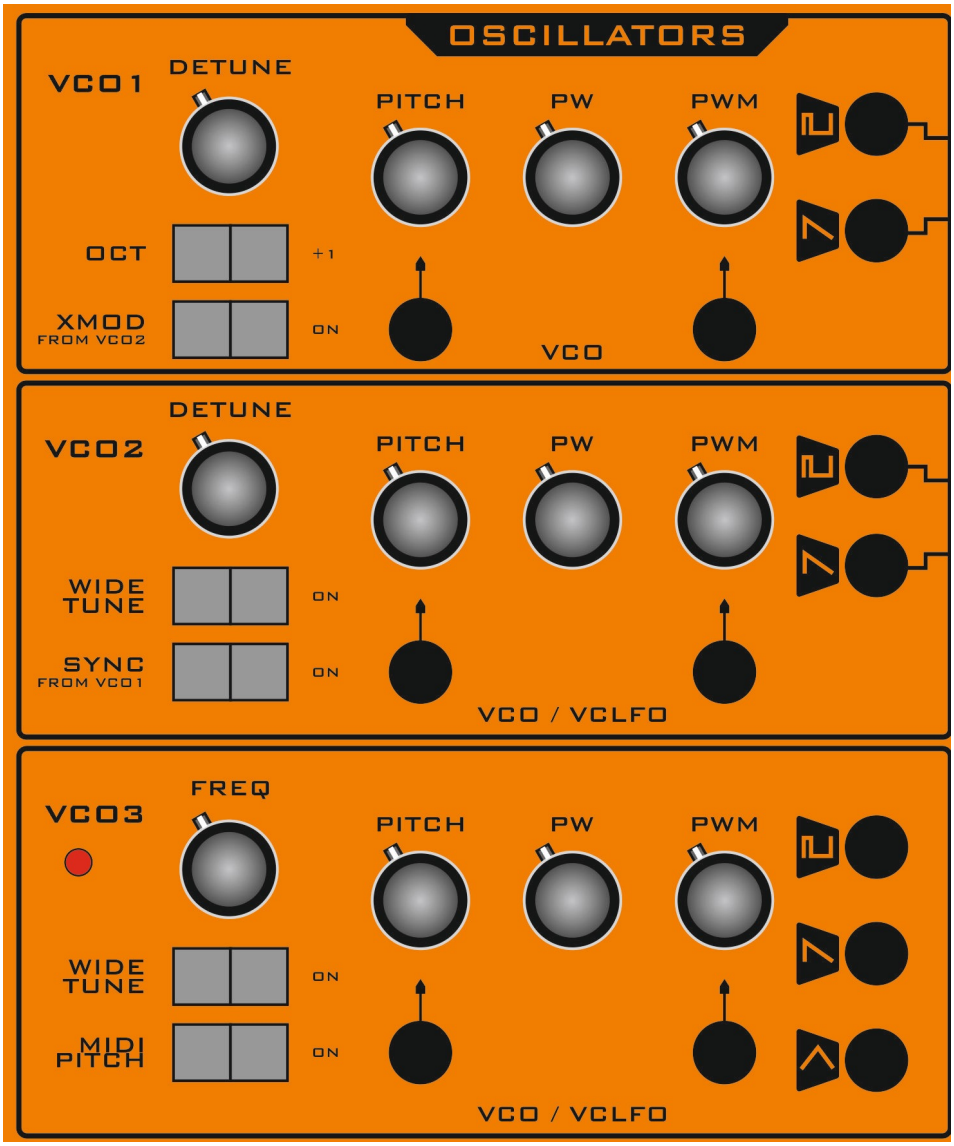
Anyone who has used synthesisers before should be familiar with the terms used and therefore be able to predict their behaviour and how they affect the sound. The best way to learn how to use Fusebox is to go straight ahead and play with it. Reading of this manual may only be necessary for finer operational detail.

There are many many web resources and books available if you need actual tuition or explanation of how functions like LFO, ADSR, etc work or can be used.

VCO - Voltage Controlled Oscillators

Fusebox has three analogue VCOs. These produce the raw audio sound source for later processing.

VCO3 can be detached from MIDI note and be used independently as a voltage controlled LFO - for modulation duties.



VCO1

DETUNE

Use this control to alter the pitch in small amounts to detune relative to the other oscillators.

PITCH

This control is used to attenuate any modulation signal that you patch into the socket below.

Examples of modulation signals are outputs from the LFO or EG, or from an external modular system (eg Eurorack). An audio signal can also be used, such as the audio outputs from the other oscillators.

PW - Pulse Width

This control allows you to manually change the pulse width of the Square waveform.

PWM - Pulse Width Modulation

Use this control to alter the amount external modulation that you patch into the socket below.

Examples of modulation signals are outputs from the LFO or EG, or from an external modular system (eg Eurorack).

Square / Sawtooth

There are separate jack socket audio outputs from the two VCO waveforms.

These can be patched to other circuits, for example, used to modulate the pitch of another oscillator.

OCT - Octave

Click right to transpose the pitch up one octave.

XMOD - Cross Modulation

Click right to turn XMOD on. This routes Square wave audio out from VCO2 to VCO1 pitch. Used for amazing effects!

VCO2

DETUNE

Use this control to alter the pitch in small amounts to detune relative to the other oscillators.

PITCH

This control is used to attenuate any modulation signal that you patch into the socket below.

Examples of modulation signals are outputs from the LFO or EG, or from an external modular system (eg Eurorack). An audio signal can also be used, such as the audio outputs from the other oscillators.

PW - Pulse Width

This control allows you to manually change the pulse width of the Square waveform.

PWM - Pulse Width Modulation

Use this control to alter the amount external modulation that you patch into the socket below.

Examples of modulation signals are outputs from the LFO or EG, or from an external modular system (eg Eurorack).

Square / Sawtooth

There are separate jack socket audio outputs from the two VCO waveforms.

These can be patched to other circuits, for example, used to modulate the pitch of another oscillator.

WIDE TUNE

Click right to dramatically increase the range of the DETUNE control. You can take the frequency right down to LFO speeds, and right up to much higher pitches.

Ideal for using VCO2 as an LFO, or for extreme modulations effects.

SYNC

Click right to turn SYNC on. This causes VCO1 and VCO2 to become synchronised (in pitch). Use for Sync effects.

VCO3 (VCLFO)

DETUNE

Use this control to alter the pitch in small amounts to detune relative to the other oscillators.

PITCH

This control is used to attenuate any modulation signal that you patch into the socket below.

Examples of modulation signals are outputs from the LFO or EG, or from an external modular system (eg Eurorack). Audio signal can also be used, such as the audio outputs from the other oscillators.

PW - Pulse Width

This control allows you to manually change the pulse width of the Square waveform.

PWM - Pulse Width Modulation

Use this control to alter the amount external modulation that you patch into the socket below.

Examples of modulation signals are outputs from the LFO or EG, or from an external modular system (eg Eurorack).

Square / Sawtooth / Triangle

There are separate jack socket audio outputs from the two VCO waveforms.

These can be patched to other circuits, for example, used to modulate the pitch of another oscillator.

WIDE TUNE

Click right to dramatically increase the range of the DETUNE control. You can take the frequency right down to LFO speeds, and right up to much higher pitches.

Ideal for using VCO3 as an LFO, or for extreme modulations effects.

MIDI PITCH

Click left to turn off / disconnect VCO3 pitch control from MIDI.

A typical use for this is for VCO3 to be free running and independent from MIDI pitch, enabling it to be used as a modulator (LFO or otherwise).

GENERAL VCO CONTROLS (APPLY TO ALL 3)

MASTER TUNE

Used to alter the pitch of all three VCOs.

GLOBAL PITCH

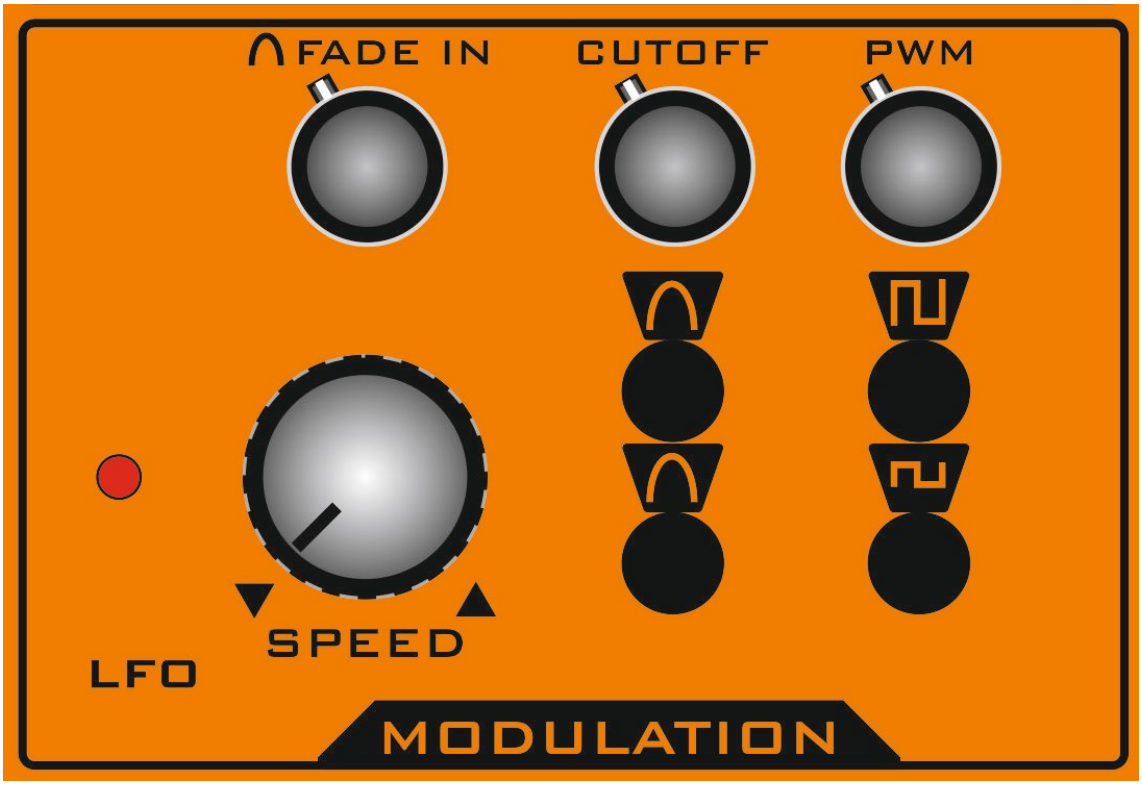
This control alters the level of any modulation signal patched into the adjacent socket. The modulation signal will affect all three VCOs.

For example, to get equal vibrato playing on all three VCOs, patch the sine wave from the LFO into here.

LFO - Low Frequency Oscillator

In addition to being able to use VCO2 or VCO3 as modulators, there is a dedicated analogue LFO.

It has two 2 Sine wave jack socket outputs and two Square wave jack socket outputs.



SPEED

This control alters the LFO speed / frequency.

CUT-OFF

This sets the amount of Sine wave LFO signal that will modulate the Filter Frequency Cut-Off (sounds a little like wah-wah!).

PWM

This sets the amount of Sine wave LFO signal that will modulate all three VCOs' Square wave pulse width.

FADE IN

This control sets a delay time for modulation. The time between hitting a MIDI key and the LFO signal to reach maximum.

It only affects the Sine wave. The delay is initiated from MIDI Note.

Here's how it happens.

The Sine wave is always running at full level. As soon as you hit a MIDI Note the Sine level goes to zero then slowly climbs to full level at a rate set by the FADE IN control.

Use for delayed vibrato affects (when patching Sine out to Global Pitch in).

The LFO Jacks

The Sine wave and Square waves each have two jack socket outputs.

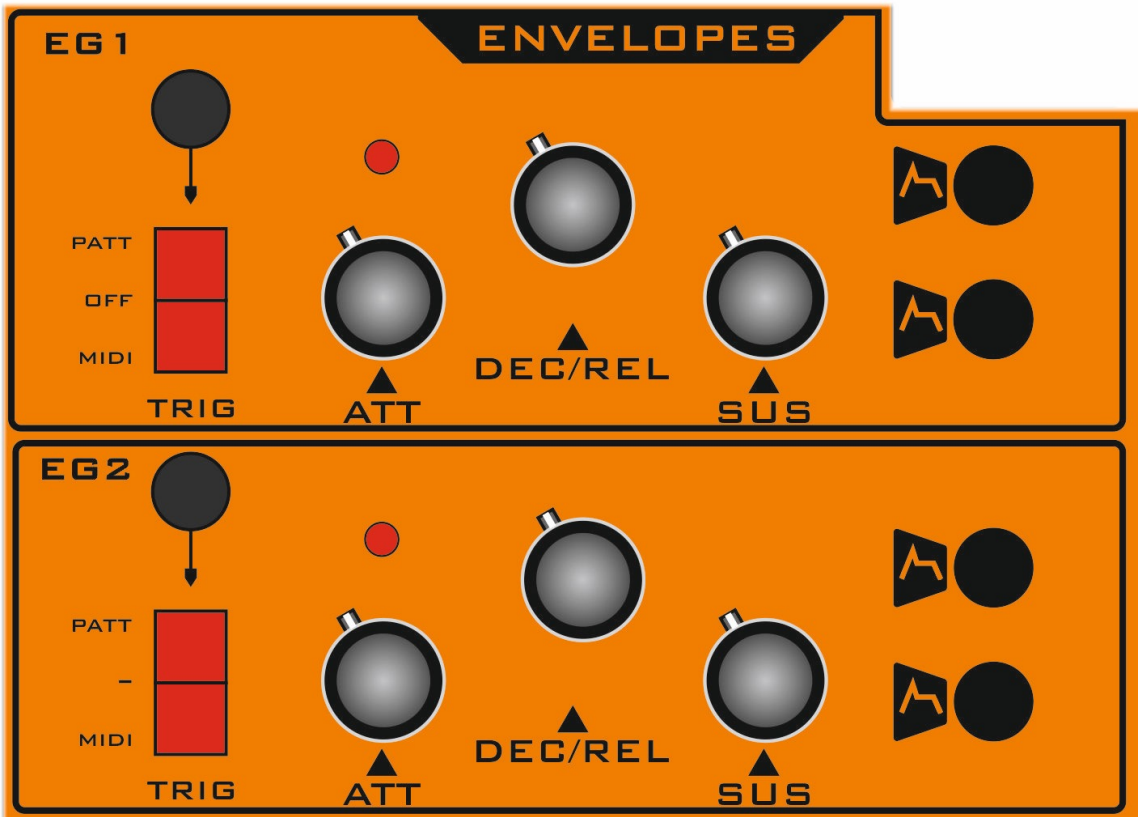
The lower Square wave socket is at a slightly lower level than the one above.

Patch these outputs to other areas of the synth, for example to modulate a VCO's pitch or Pulse Width.

The square wave can be used as a clock source for Patternator or the Arpeggiator.

Envelope Generators

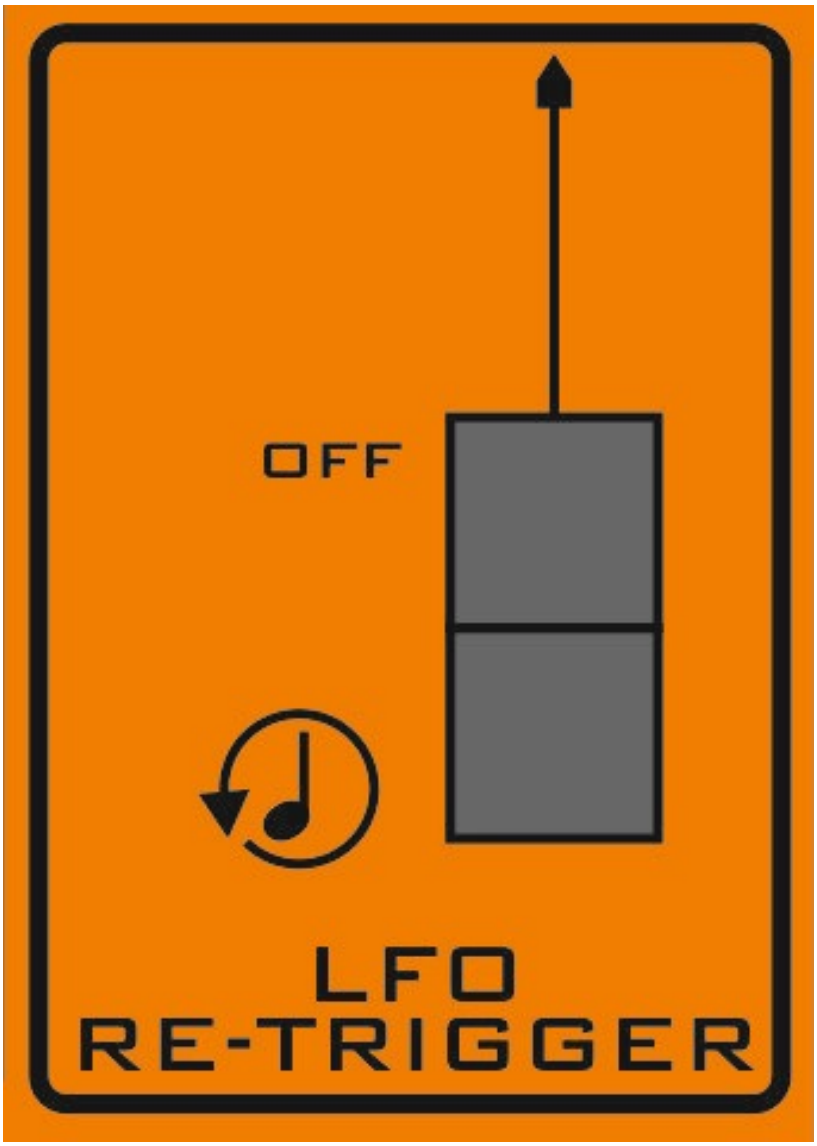
Fusebox features two separate analogue envelopes.



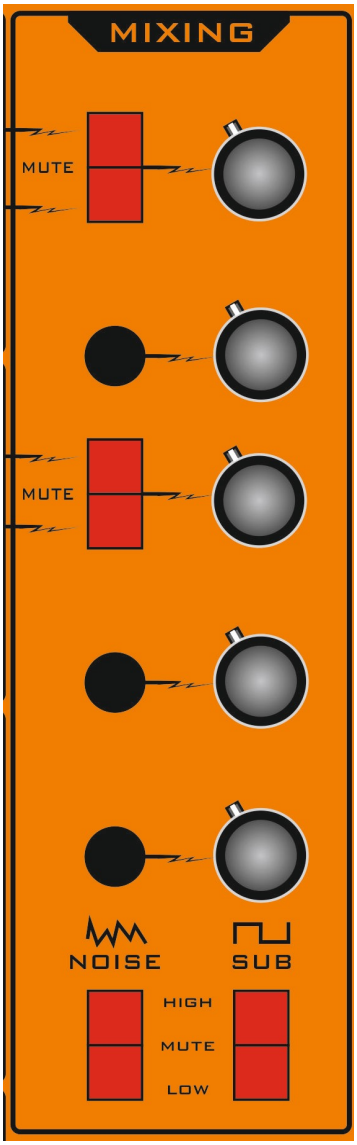
EG RE-TRIGGERING

When this switch is On (switch is down) the EGs will re-trigger (play again and again) for as long as a MIDI key is held down.

The rate of re-trigger is taken from the LFO speed.



MIXER



The audio outputs from VCO1 and VCO2 are hardwired to the Mixer via rocker switches and an attenuator.

The switches for VCO1 and VCO2 has three positions.

Up
Selects Square

Middle
Off / Mute

Down
Sawtooth

The selection made by the switch goes to the level control. This sets the audio level that goes into the Mixer (and subsequently to the Filter).

Filtering External Sounds

There are also two external audio input jack sockets with their own level controls.
Use these to feed external audio into the synth's filter. Take audio, for example, from the AUX buss of your mixing desk, or, from the output of a DAW audio interface. Try feeding in drums, vocals, or other non-synth sounds!

NOISE / SUB

NOISE

There is an analogue white noise generator.

Use this for effects, wind, noise, breathe sounds.

The Noise switch has three positions.

Up

High level

Middle
Off / Mute

Down
Low level

SUB

There is a Sub-Oscillator.

This is a Square wave signal that is driven from VCO3 (it follows the same pitch as VCO3) and is one octave lower.

Typically used to thicken up the bottom end. Good for devastating bass sounds!

The Sub switch has three positions.

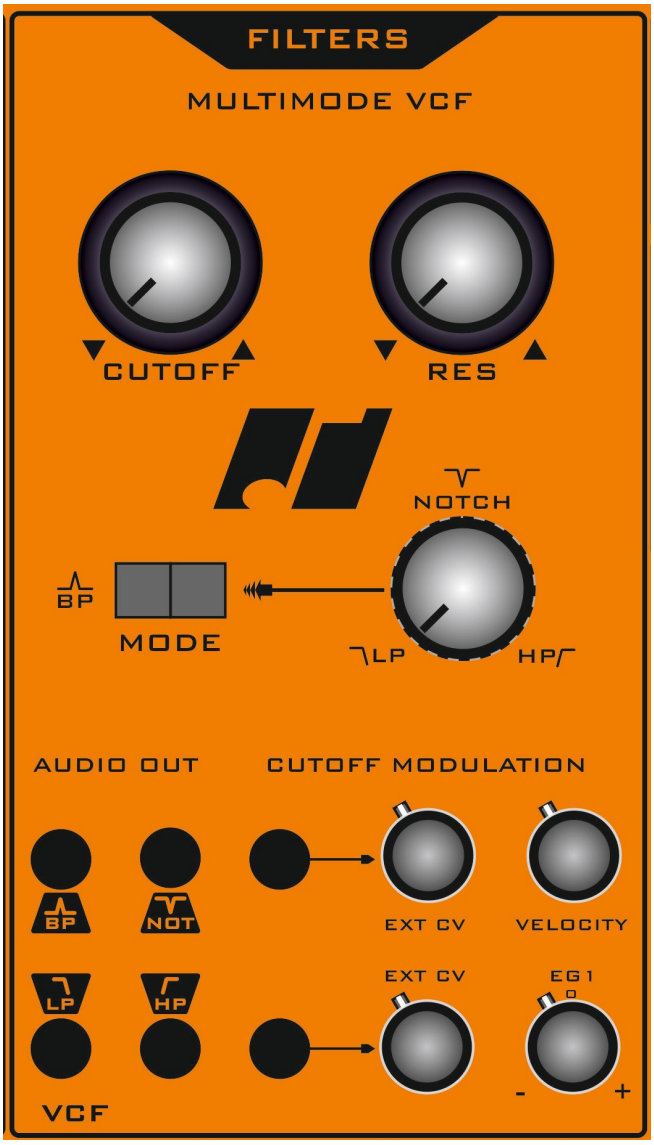
Up
High Level

Middle
Off / Mute

Down
Low Level

The output of this switch goes into the mixer.

Filter



Fusebox has a 12db / Octave analogue multimode filter. There are four filter types. Low pass, High pass, Notch and Band pass.

FREQ

Used to set the frequency cut-off.

RES - Resonance

Used to set the resonance / feedback level.

MODE

This switch changes the output signal of the filter from Band Pass to LP/HP/ Notch.

When left, Band Pass is selected.

When right, the filter type set by the adjacent control is selected.

When the control is fully left, the filter is Low Pass.
When the control is fully right, the filter is High Pass.
Centre is Notch.
But of course the control can be set to anything in-between!

The audio output of the filter is then sent to the VCA.

There are also four audio output jacks from the filter.

Each filter type has its own output: LP, HP, Band, Notch.

The filter has two jack sockets inputs for external modulation. The adjacent EXT controls set the amount of modulation.

VEL - Velocity

Use this control to set how much MIDI Velocity will modulate the filter cut-off.

EG1

Use this control to set how much Envelope 1 will modulate the filter cut-off.

Centre is no modulation / off.

Left is inverted EG1 signal.

Right is positive EG1 signal.

Filtering External Sound Sources

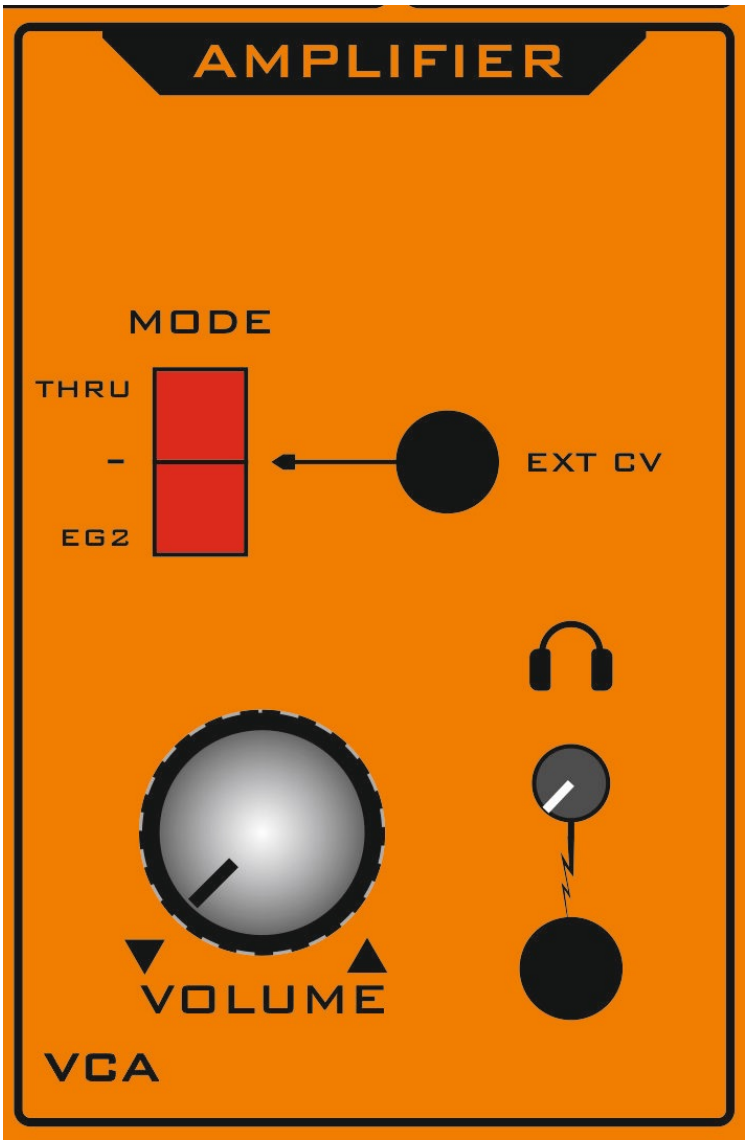
External sound sources, such as vocals, guitars, mixer sends, samplers, etc. can be sent through the filter for extra treatment. Note, mic's and guitars may need pre•amping if the signal is too quiet.

Simply plug the sound source into one of the two front panel mixer input sockets.

Typically set the VCA mode switch to THRU. This will leave the VCA open so a constant signal.

Finally, play around with the filter and modulation settings as necessary. The VCO signals can also be introduced, and use the various VCA modes and envelopes if you wish to contour the sound level and add additional effects.

VCA



The VCA - this is an analogue circuit allows you to alter the audio level of the synthesizer. Typically the last circuit in the audio chain.

VOLUME

Controls the output level of the synth.

Headphone Volume

To the right of Volume is the Headphone level control, with its corresponding headphone output socket. (A stereo socket, though this is a mono synth).

MODE

This switch sets how the VCA level will be modulated.

UP

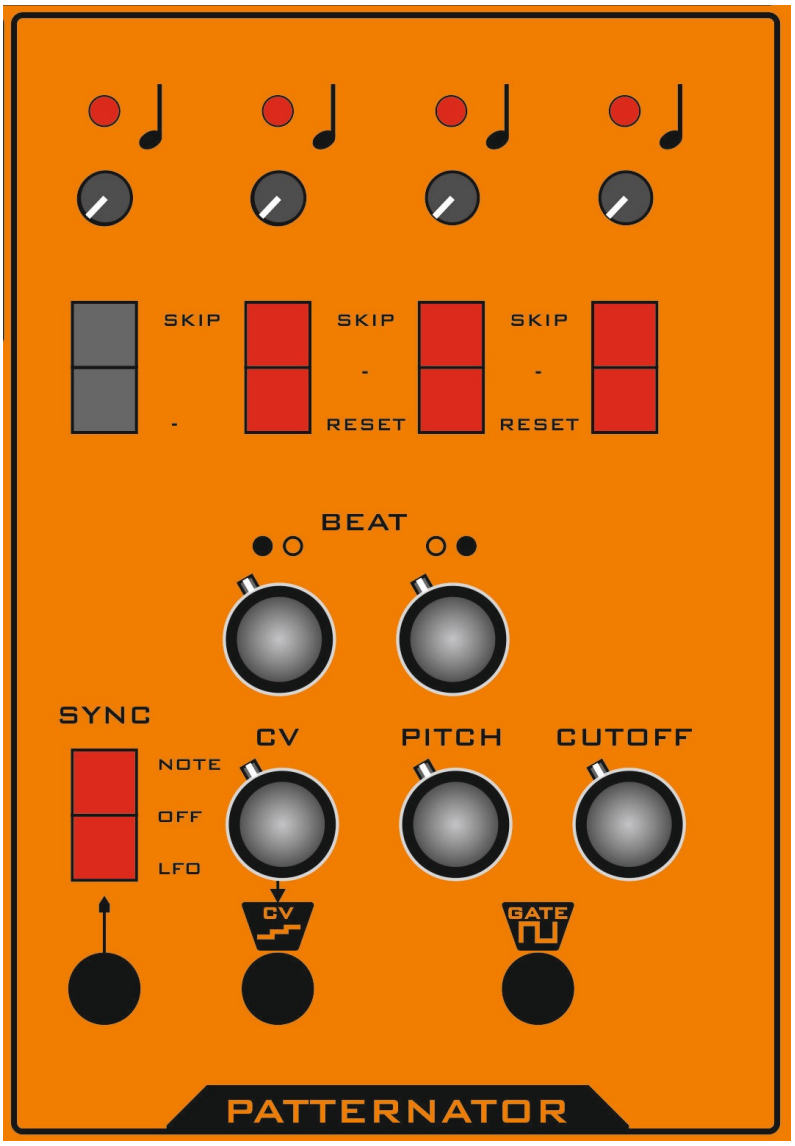
The VCA is Bypassed (held open).

Centre
No CV signal is patched to VCA level except any patched to the EXT CV socket.

Down
EG2 - Envelope 2 signal will modulate the VCA level.

To the right of the switch is an external CV input. Normally you would set the switch to off (centre) when using this socket, though this socket is always ‘live’.

Use the external CV input socket to modulate the VCA from an alternative CV source, such as EG1 or an external modular system.



Patternator

The Patternator is an original type of sequencer to allow you to easily create short melodic rhythms.

It is a blend between a step sequencer and arpeggiator.

Patternator is two devices in one. It has a CV sequencer section and a step sequencer section.
They share a clock in but after that they are essentially independent.

CV SEQUENCER

This is a four step melodic sequencer.

There are 4 analogue CV controls and each step also has an activity LED.

The LED shows which step is active.
Each step also has a rocker switch.

Step 1

Switch Up is SKIP
This step is completely missed out when the switch is up.

When down then it will play as normal.

Steps 2-4

Switch Up is SKIP.
Centre means the step will play as normal.

Switch Down is RESET.

In this position the sequencer will jump back to step one, missing out steps to the right.

GATE SEQUENCER

The gate sequencer is 8 step. It is used to create 8 step rhythm patterns that are used to primarily trigger the Envelope Generators.

There are 8 steps and any or all of them can be turned on and off. When a step is on a gate signal is sent out the GATE jack, or to the envelopes (if selected on the EG TRIG rocker switches).

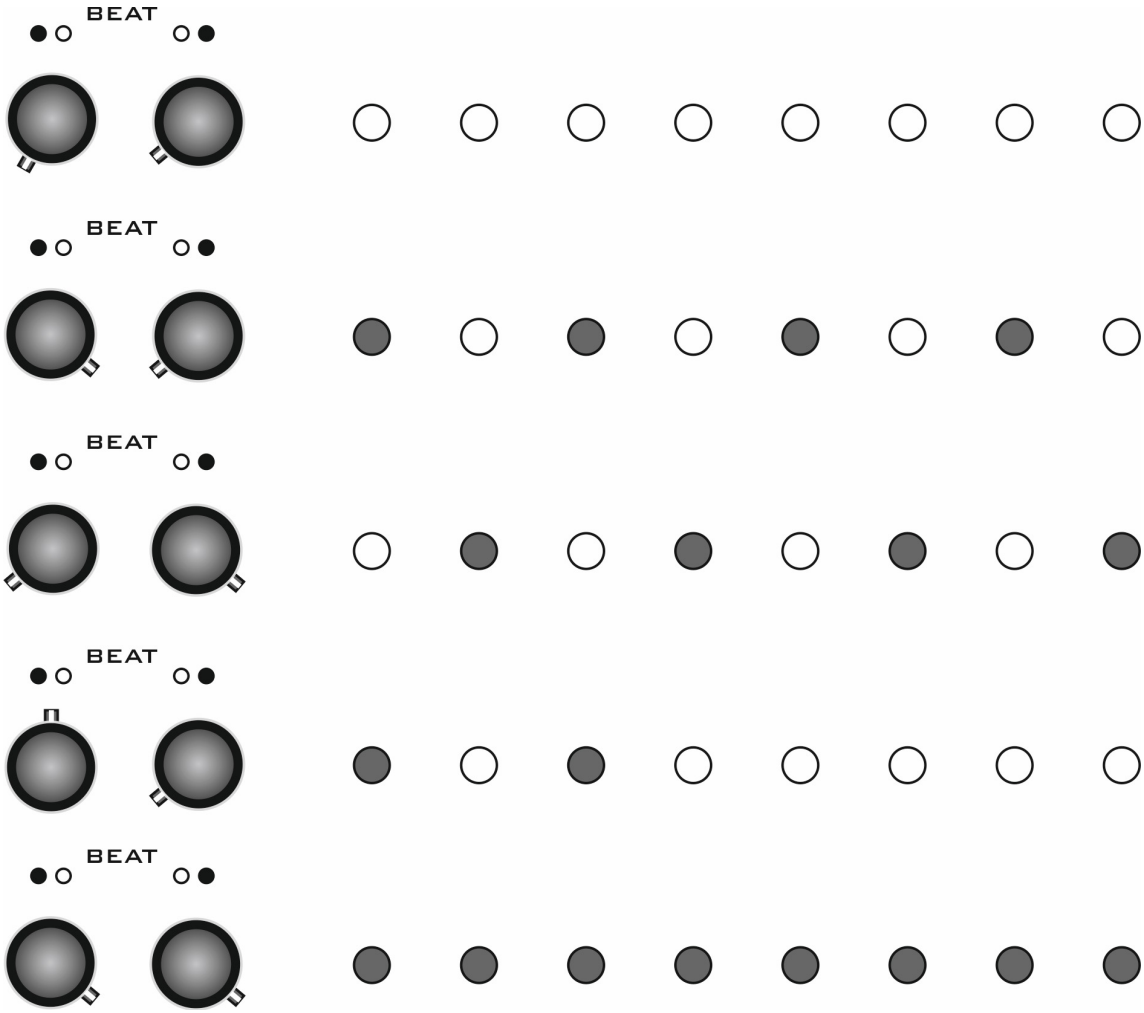
To change the gate pattern use the two BEAT controls.

The left BEAT control affects the even ‘down’ beats. And the right control affects the odd ‘off’ beats.

They each essentially turn on/off 4 steps (beats) each.

When the controls are both fully left you get no gate triggers at all. When fully right you get all 8 playing.

Some example BEAT control settings to give you an idea of how these affect the gate pattern. Don't worry about it - just use them and they will make intuitive sense!



OUTPUTS FROM THE PATTERNATOR

CV out Jack and Attenuator

This is a CV output from the CV sequencer that can be patched elsewhere, such as VCO pitch or PW.

PITCH Attenuator

This control sets the amount of sequencer CV that is used to control the pitch of all there VCOs.

CUTOFF Attenuator

This control sets the amount of sequencer CV that is used to control the cut-off frequency of the filters.

GATE Jack

This is the gate output from the step sequencer. Patch this to clock or trigger other devices. Including the on-board Arpeggiator.

It can also be patched to CV inputs.

SYNC Switch

This rocker switch selects the sync source for the Patternator.

Switch Up -

MIDI Note 000 is used as a clock source. Each time MIDI note 0 is played, the sequencer will advance one step.

Write a Note pattern in your DAW to create your own custom clock rhythms! Far more versatile than MIDI Sync.

Centre - no clock is patched to the sequencer.

Switch Down -

LFO is used as the clock source.

The jack socket below is an external clock input. M.CLOCK (MIDI clock) can be patched into here, or a clock from an external modular system.

Note: The Patternator will note play if:

1/ It is Off.

2/ No MIDI note 0 is received when the switch is in this position.

3/ There is no clock patched into the Sync socket, or, the Sync rocker switch is in the centre position.

4/ If it is not patched in to anything, or, the PITCH and CUTOFF controls are at zero you won't hear an affect, even if the Patternator is running.

GENERAL PATTERNATOR USE

By varying the number of CV steps that are playing, in conjunction with varying the step sequencer pattern, interesting poly rhythms can be created. Add use of the Interval Generator and you can get a complete performance going with JUST the Fusebox!

Arpeggiator / Digital Sequencer

ARP

Press the ARP button to activate the Arpeggiator.

The arpeggiator will memorise up to 16 MIDI notes. It will play them back in the order you played them in, continuously looping.

The pattern will only play as long as you are holding down the keys. The pattern stops as soon as you release all keys. If you release single keys whilst holding down others, the released notes will stop playing.

HOLD

If you press and activate HOLD - this holds the keys down for you - holding the notes. This way you can release the keys and those notes will continue to play. You can add more notes. If you use up all 16 then you will start to over-write the oldest notes.

Toggling Hold will clear the notes.

MODE

There are 3 playback modes.

LED Off
The notes will playback in the order they were programmed in.

LED flashing
The notes will playback in reverse order.

LED Solid (continuously on)
The notes will first play back in order, then in reverse order (over again).

RANGE

There are 3 playback ranges.

LED Off
The notes will playback as programmed.

LED flashing
The notes will playback as programmed, then a second time an octave higher.

LED solid
The notes will playback as programmed, then again an octave higher, then one more time an octave lower.

SYNC Switch

This rocker switch selects the sync source for the Arpeggiator.

Switch Up -
MIDI Note 000 is used as a clock source. Each time MIDI note 0 is played, the Arpeggiator will advance one step.
Write a Note pattern in your DAW to create your own custom clock rhythms! Far more versatile than MIDI Sync.

Centre - no clock is patched to the Arpeggiator.

Switch Down -
LFO is used as the clock source.

The jack socket below is an external clock input. M.CLOCK (MIDI clock) can be patched into here, or a clock from an external modular system.
Or, use the Gate output of the Patternator as a clock source!

Note: The Arpeggiator will do nothing if
1/ It is Off.
2/ No MIDI note 0 is received,
3/ There is no clock patched into the Sync socket, or, the Sync rocker switch is in the centre position.

USING MIDI NOTE 000 AS A CLOCK

for the Patternator and / or Arpeggiator

Both these sections can be clocked from ‘NOTE’. When selected, the Patternator and Arpeggiator will advance one step each time Fusebox receives MIDI Note 000 (on the correct channel!)

This is a very cool and versatile way to sync Fusebox to a MIDI sequencer.

The problem with standard MIDI Clock is it is always on or always off. You can’t manipulate it in any way mid-sequence.

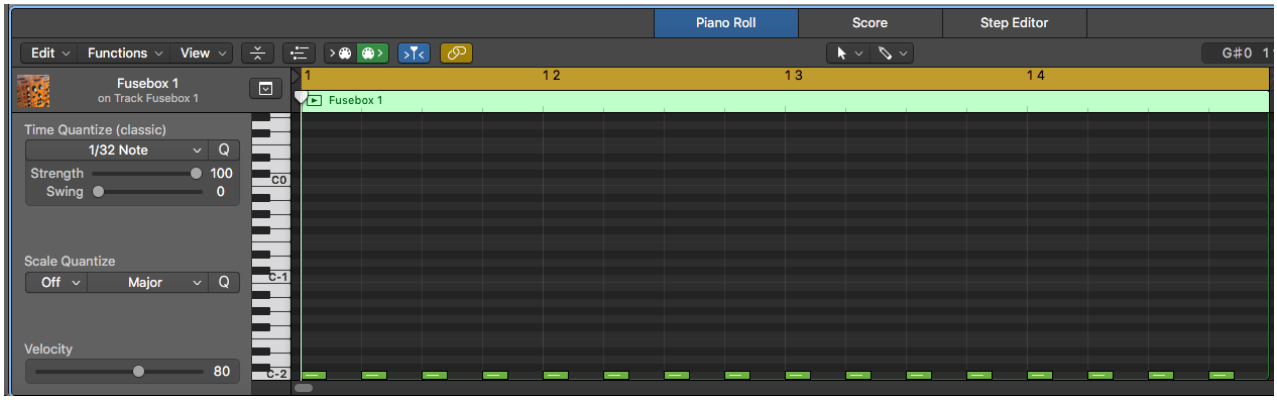
Using MIDI Note 000 you simple write a bar (or more) of MIDI notes and loop it.

You have the versatility of muting this clock track at will, you can change the tempo relative to the main sequencer (go half tempo, for example), or, you can make some kind of syncopated rhythm.

The picture below shows the most straight forward clock pattern you might use.
32nd notes spaced at 16th note intervals. So, Fusebox will advance one step every 16th note.

The note length is determined by the note value. A 32nd note in this case.

MIDI Note 000 is the first and lower note used by MIDI. Nicely out of the way. Note value is C-2.



Sync Arpeggiator Using Note 0 - special case

When using the Note 0 sync option with Arpeggiator, you may have to do an unusual additional patch. This is because of the way the internal signals work, and just one of those odd things with modular synths.

Set Arpeggiator Sync to NOTE0
Patch the Arpeggiator Sync In jack to the EG Trigger In jacks.
To patch to both EGs use a splitter lead from the Arp Sync In jack to both EG Trig In jacks.
Set both EG red rocker switches to the centre position.

Then as you play MIDI note 0 the Arpeggiator will step / advance.

You will only have to do this is special circumstances. It's really hard to put into words and cover all bases of when you might want to do it this way (that is the nature of trying to explain modular synths).

Setting MIDI Receive Channel

MIDI CHAN PUSH BUTTON

This button is used to set the MIDI channel.

Works best if you plug a MIDI keyboard direct to program rather than via a DAW.

To change the MIDI channel;
Press and hold the MIDI CHAN button.
Press a MIDI key.
Then release the MIDI CHAN button.
The synth will set its MIDI receive channel to the same channel of the MIDI message that was received.

MIDI Retriever

When overlapping notes (legato) using MIDI, you can set whether or not the EGs will retriever.
When Not in Arpeggiator Mode, the Hold button is used to turn on and off MIDI Note re-trigger.

Transpose

It is possible to transpose Fusebox in realtime using MIDI keys.

The transpose feature isn't designed to generally change the key of the machine. If is for continuous realtime changing.

It is designed to be used in conjunction with the Arpeggiator and/or the Patternator.

So first get a pattern playing.

Then Press TRANS to activate. (There is no indication to show it is on and un-transposed).

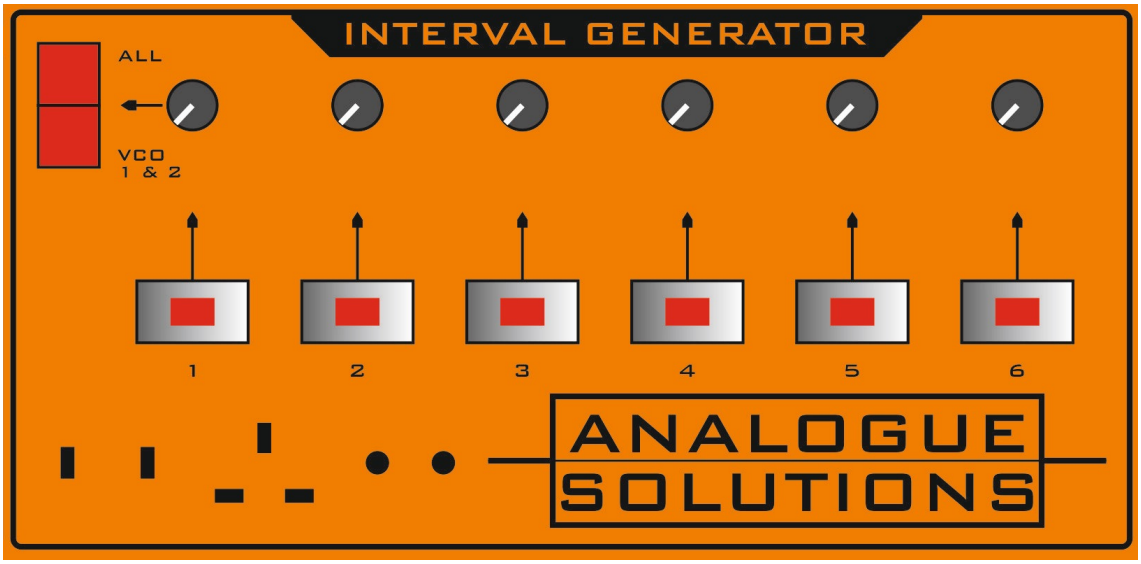
Then press any 11 notes (C# to B) to transpose the sequence upwards by unto 11 semitones.
The LED will flash to indicate the synth has been transposed.

Pressing C effectively cancels any transposition, and the LED will go off to reflect that.

Press TRANS at anytime to exit transpose mode.

So, whilst your pattern is playing, use the transpose feature to create ‘song’ by transposing in realtime.

Interval Generator



The IG is a creative and simple way to transpose your Arpeggiations and Patterns in real time using push buttons.

It’s like a 6 key keyboard, where you can set the pitch of each to any note you want.

There are 6 push buttons - each with a interval amount control.

To activate the IG use the rocker switch.

When UP
All three VCOs are transposed.

When Centre
IG is off

When Down
Only VCOS 1 and 2 are transposed. Leaving VCO 3 unaffected.

To use:

Switch the IG on, by pushing the rocker to the up position.

Then in turn, turn on each IG push button. Set the interval amount you require using the analogue control (they are not quantised).

Then move onto the next push button and set that and the remainder to the interval levels you need for your performance.

Live Performances

The IG works best in conjunction with a live sequencer being played by either, or both of the Arpeggiator and Patternator.

Using just these features, without MIDI, you can make a whole performance.

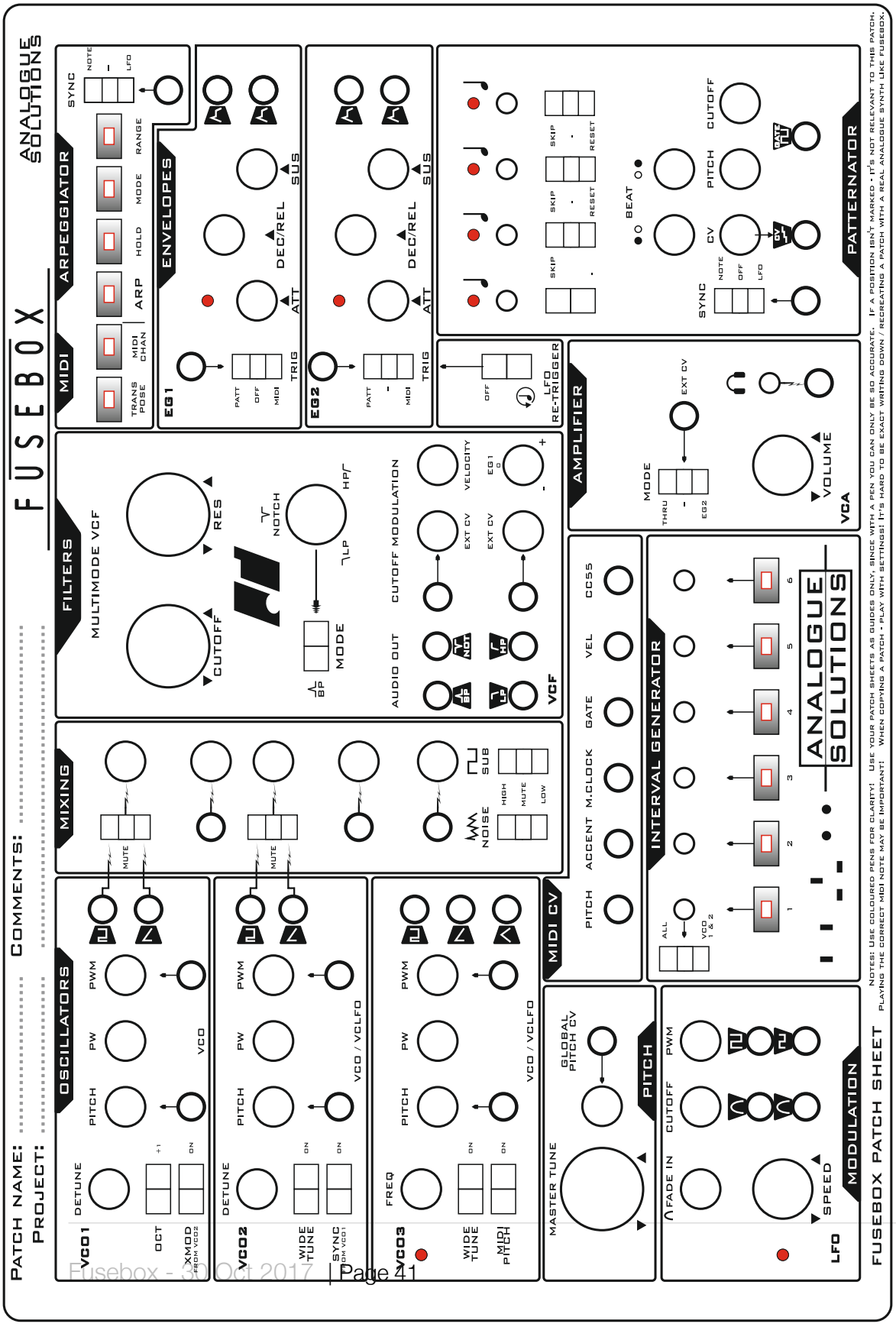
A drum machine can be used in conjunction. Use the MIDI out from the drum machine (transmitting MIDI clock) as a master. Connect the MIDI Out to the MIDI In of Fusebox.

Then patch M.CLOCK of Fusebox to the clock / sync in of the Arpeggiator or Patternator.

Then you have the drum machine and Fusebox running together!

Now use the Patternator and Interval Generator to make your performance !

Patch Sheet -


PATCH NAME:
PROJECT:
COMMENTS:
FUSEBOX
ANALOGUE SOLUTIONS
OSCILLATORS
VCO1
VCO2
VCO3
MIXING
FILTERS
MULTIMODE VCF
CUTOFF
RES
MODE
AUDIO OUT
CUTOFF MODULATION
VCF
MIDI
ARPEGGIATOR
ENVELOPES
EG1
EG2
DEC/REL
SUS
ATT
TRIG
LFO RE-TRIGGER
AMPLIFIER
VOLUME
VCA
PATTERNATOR
MIDI CV
PITCH
ACCENT
M.CLOCK
GATE
VEL
CC55
INTERVAL GENERATOR
ANALOGUE SOLUTIONS
MODULATION
LFO
SPEED
FADE IN
CUTOFF
PWM
PITCH
MASTER TUNE
GLOBAL PITCH CV
FUSEBOX PATCH SHEET
NOTES: USE COLOURED PENS FOR CLARITY! USE YOUR PATCH SHEETS AS GUIDES ONLY, SINCE WITH A PEN YOU CAN ONLY BE SO ACCURATE. IF A POSITION ISN'T MARKED - IT'S NOT RELEVANT TO THIS PATCH.
PLAYING THE CORRECT MIDI NOTE MAY BE IMPORTANT! WHEN COPYING A PATCH - PLAY WITH SETTINGS! IT'S HARD TO BE EXACT WRITING DOWN / RECREATING A PATCH WITH A REAL ANALOGUE SYNTH LIKE FUSEBOX.

Patch Examples

On the Analogue Solutions web site there is a separate document which has various Patch examples. Sound, or just ideas on how to do basic clocking patches.

You will find this on the Fusebox page, or the Patch Sheets page (under Support).

Changing Mechanical Configuration

FITTING RACK EARS

Rack ears are optional.

First remove the Wood sides.

Then screw the optional rack ears to the side using the same six M4 screws.

CHANGING FROM VERTICAL TO HORIZONTAL ORIENTATION

As standard, Fusebox is a vertical machine much like the Telemark.

It is possible to rotate the front panel to have it flat, like a desk top device.
This involves some basic mechanics.

First, unplug all the cables including power.

The front panel must be removed and rotated 180 degrees.

Remove the 7 front panel black screws.

Rotate, then replace 6 of the screws. The centre screw doesn't have a mounting hole in the flat position. So either leave it out, or fit it (along with a M3 nut) to blank the hole.

In the flat position you may want to fit the rubber self adhesive feet. Fit these right in the corners where the metal work touches your work surface.

Rotating the front panel is an easy task and basic engineering common sense is all that is needed. Doing this won’t invalidate your warranty. But doing something stupid like snapping parts or snagging the cable, slipping and mashing the PCB, etc will! And these will be very evident to us if it gets returned and there would be a repair charge.

No Signal?

There are many settings that can kill the sound!

General things-

Do you have audio going into the synth's mixer?
Is your MIDI connected correctly?
Are you triggering the EGs correctly?
Main volume up?
Leads all OK (double check! Assume nothing)?

Check the following…

- Your mixing desk / monitoring equipment is on and working correctly.
- Check the synth is switched on and that the power adaptor is functioning correctly. Check you are using the correct mains adaptor.
- Check it is connected to your monitoring equipment correctly and that the cable is not faulty.
- Ensure the output volume is high enough.
- Ensure the Fusebox mixer level controls are turned to some sound source like the VCOs or Noise.
- Certain extreme filter settings may filter out all of the signal or produce low level signals. Try adjusting the filter cut-off.
- Certain extreme PW/PWM settings may cause the pulse outputs to cut-out. Try adjusting PW/PWM as necessary.
- Ensure EGs are being triggered.

Don't instantly assume the synth is at fault - we have had dozens of instances where problems turn out to be faulty and intermittent leads, incorrect settings in DAW and audio cards, mixer busses set wrong etc. We have heard all manor of crazy and silly mistakes.

You can always plug the VCO outputs directly into your external audio mixer (watch levels aren't too high!) and this will give you confidence power is OK.

You can also take audio direct out from the VCF to check the filter works!

Specification

Weight:

9.5Kg

Size:

45 x 14 x 30cm

Rack Size:

7U
(rack ears are optional)

Power:

15V AC output (NOT DC!!!)
2.1mm plug
800mA

Warranty

Fusebox comes with a 1 year (from purchase date) back to base warranty, (i.e. customer must arrange and pay for carriage to and from Analogue Solutions or the dealer from which purchased).

This warranty shall not apply where the product has been subject to alteration, misuse accident, neglect (such as extremes of temperature and/or moisture) or to wear resulting from normal use.

At the sole discretion of Analogue Solutions, the warranty is deemed to be void should the unit be or considered to have been opened or any other modifications or tampering be carried out by unauthorised parties.

CE COMPLIANCE

This unit complies with EU Directives 73/23/EEC and 89/336/EEC.
Standards: EN55103-1, EN55103-2, EN60065

CE