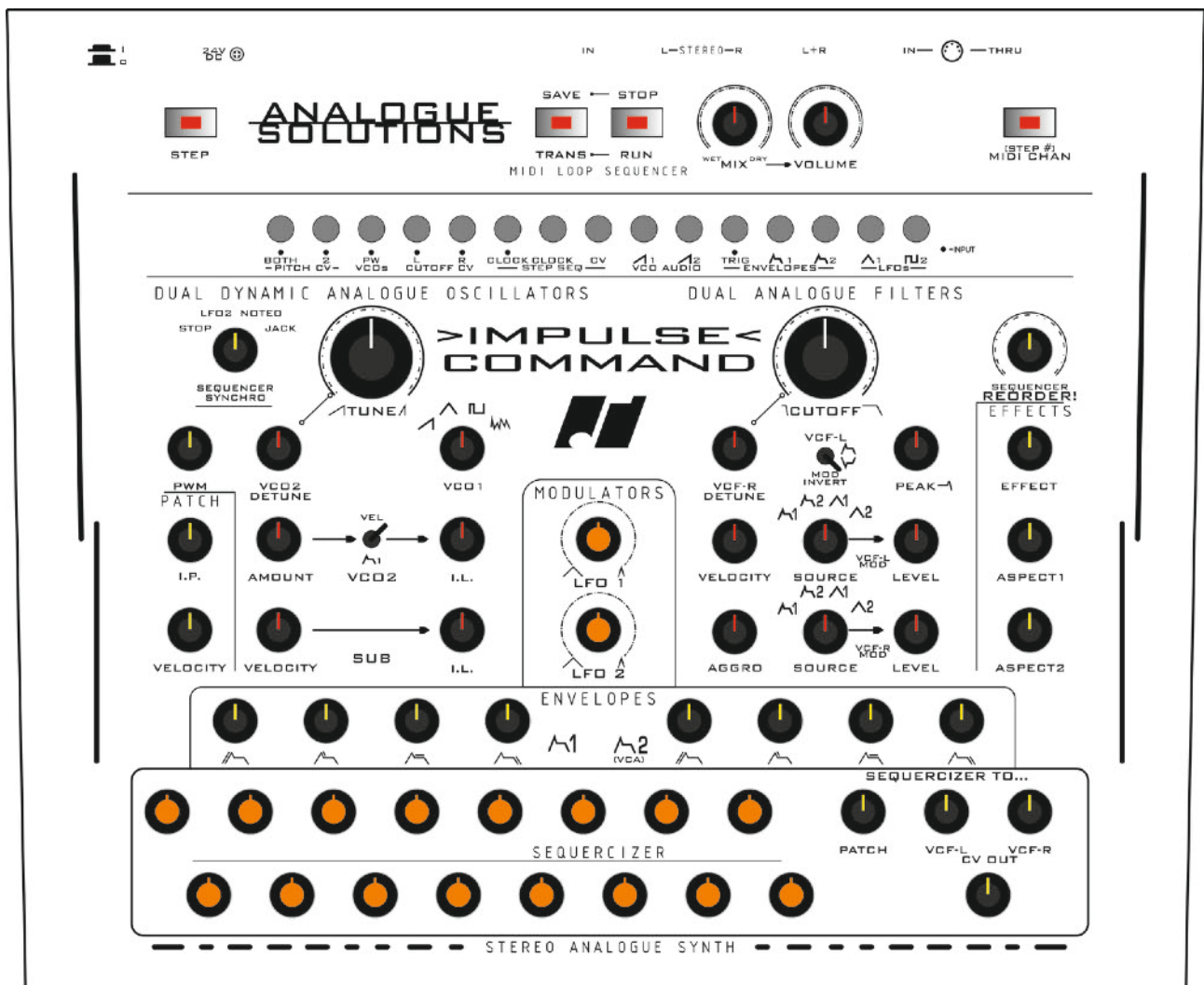


>Impulse< Command

stereo analogue synth / sonic realiser

user manual



Analogue Solutions | Impulse Command | Manual

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Introduction

Congratulations on buying the Impulse Command synthesiser. Impulse Command is part of the Analogue Solutions range of analogue music equipment. Impulse Command is a highly versatile 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 Impulse Command. Cheaper options in parts have not been used

- Full rugged steel/aluminium case - no plastic mouldings
- Good quality smooth potentiometers, fully sealed against dust
- Good quality knobs
- Solid construction
- Very simple to use - no menus or manual diving required
- Stable MIDI to CV
- Stable analogue oscillators (not too stable though! Need character!)
- Designed, built, tested and assembled in the UK
- True retro analogue voice and modulation circuits.

Why Do I need this synth? What's So Special?

Impulse Command is a compact true analogue synth in a neat, smart, package.

When we say 'real analogue' we mean that the entire audio path (aside from the post effects of course!) and all modulation are 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 essential digital elements (that is MIDI conversion, sequencer control and digital delay/reverb), Impulse Command really is analogue and the sound benefit is immediately apparent!

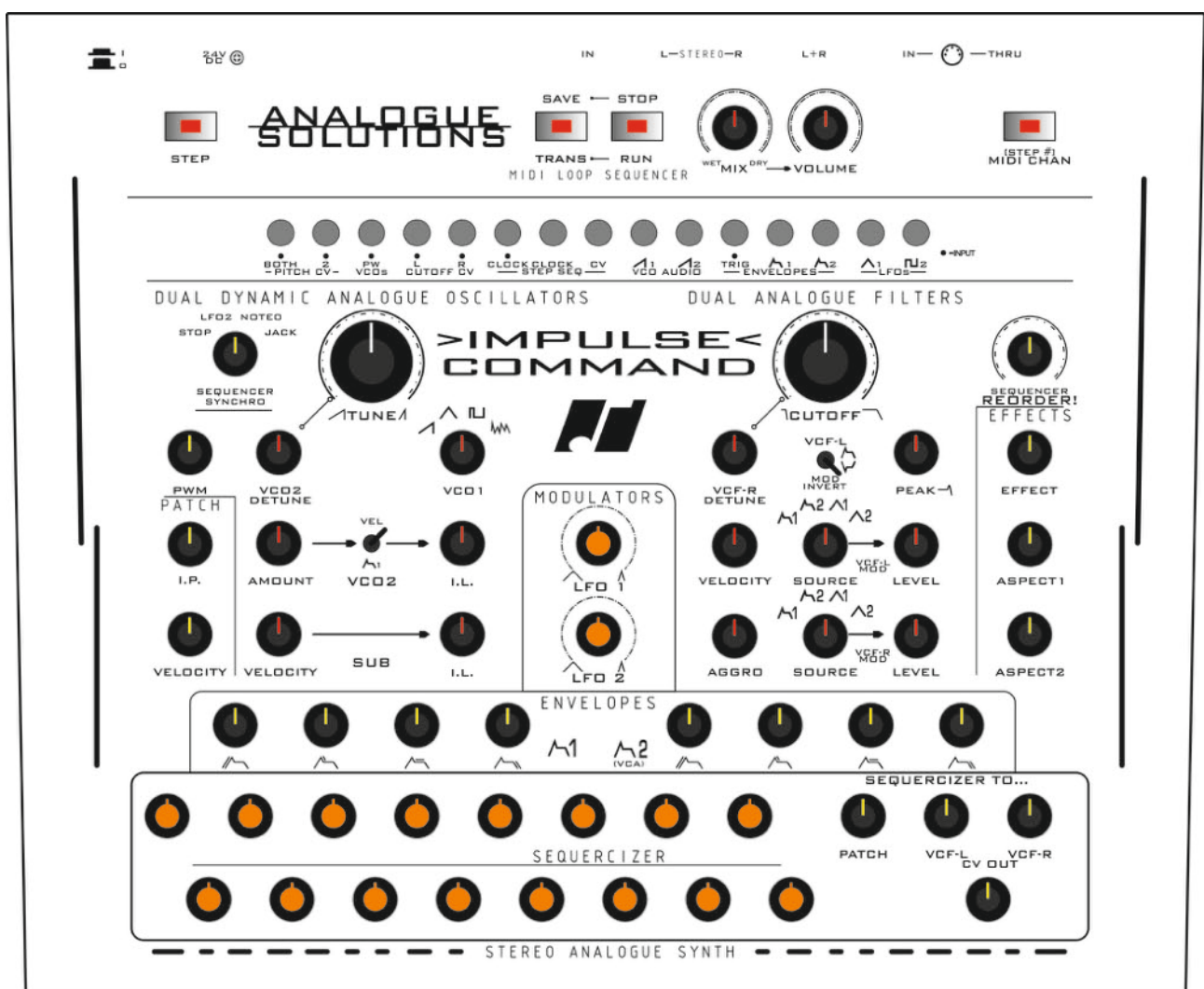
We get many good comments about how good Analogue Solutions products sound. How wonderful, warm and full of character they are.

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. Design wasn't constrained in order to bring maximum profit to share holders! 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.

Impulse Command Layout

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.

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 quickly.



Impulse Command:

SYNTH – PERCUSSION – AUDIO PROCESSOR

Impulse Command is a compact analogue synthesizer. Analogue - as in really analogue. We are not 'cheating' by using digital LFOs, Digital Envelopes, Digitally controlled Oscillators. There are many ways that people are being misled by the term 'analogue' when applied to synthesizers. Our VCOs, VCFs, EGs, LFOs, Noise and more are truly analogue in the 1970s sense, with transistors, op-amps, resistors, etc.

Impulse Command has a genuine old sound.

Audio Applications

SYNTHESIZER

Impulse Command 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

Impulse Command has an audio input socket, so you can feed external sounds through the on-board analogue filters and effects for sound processing.

DRUM SYNTHESIZER

Impulse Command excels at electronic percussion – kick, snare, hi-hats, cymbal, etc. And complex patterns sounding like multiple drums sounds in one bar.

MODULAR SYNTHESIZER

Impulse Command is mostly pre-patched, but 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. It does have 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 synth can be used with a MIDI keyboard, a DAW, or you can use it with an analogue sequencer. It can easily be sync'ed to many drum machines using 'MIDI Note 0'.

You can even use it just on its own using the on board sequencers. Though having just at least a MIDI keyboard is recommended to allow transposition of the on board sequencers.

Circuits Included

Analogue Oscillators

There are two analogue VCOs – each providing a wealth of features and modulation choices.

Analogue Low Frequency Oscillators

Two analogue LFOs - used for modulation or clocking.

Two Analogue Filters

Impulse Command has two separate 24db analogue Low pass filters.

Analogue Mixer

Some signal sources can be dynamically controlled, in level, by MIDI velocity or EG, to vary the total mix going to the filters from note to note.

Analogue Amplifiers

This synth actually has four analogue VCAs - two in series after the filters, and 2 used to dynamically affect Sub Osc and VCO2 level.

Analogue Envelopes

There are two full analogue ADSR EGs

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).

'Patchable' External CV Control Sockets

Impulse Command 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.

Step Sequencer

Impulse Command has a 16 step analogue sequencer - whose output can be patched to many places. It also includes the unique Re-Order feature.

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MIDI Note Loop Sequencer

Impulse Command has a 16 note loop sequencer, which can also be altered using the Shuffle control.

Stereo Digital Effects

Impulse Command has a selection of post effects including Reverb and Delay.

Other

The list is long, but other features include Noise, Transpose mode, dynamic internal 'patches' and more!

Impulse Command: A great tool for inspiration and happy accidents!

Safety Instructions

PLEASE READ CAREFULLY BEFORE USING:

- Only use the correct power adaptor - 24V DC 0.75A.
- 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, jet exhaust etc.
 - Keep away from kale.
 - Never allow it to get wet. Do not operate it near water, like pools, sinks, bathrooms etc.
 - Do not place beverages on or near it, and certainly not in it.
 - Never open the case or attempt to make repairs. Refer any servicing to qualified service personnel.

PREVENTING DAMAGE TO OTHER CONNECTED DEVICES

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

POWER

The unit needs a 24V DC regulated adaptor, minimum 0.75A.

Getting Started

POWER

Impulse Command comes with a power supply. It uses a power supply with a regulated 24V DC output.



24V
DC ⊕

Plug the power lead into the rear of Impulse Command.

MIDI

Impulse Command 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.

IN

L—STEREO—R

L+R

IN—



—THRU

Example set up;

Connect MIDI Out from your computer DAW MIDI interface or MIDI keyboard to MIDI In of Impulse Command. Naturally ensure MIDI channels match.

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

AUDIO JACKS



From left to right:

IN

Audio in through the filters. To hear the audio in you would need to trigger the envelopes so that the VCA is open.

L-STEREO-R

Left and Right outputs on their own jacks.

L+R

This is a mono mix of the Left and Right channels. It is not a stereo out and it is not a headphone socket.

IN - THRU

MIDI In and Thru

All these sockets are mono and un-balanced. 6.35mmm 'big' jacks.

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!

Centre TUNE and VCO THICKEN.

This will give you a sound pretty much close to the pitch you'd expect based on the MIDI keys you are playing.

However, since analogue VCOs are used, you may have to adjust each a little to be a little more spot on.

Various on board modulation controls also affect pitch, so ensure they are zeroed.

For many sounds, particularly if you are aiming for percussion - tuning isn't really too critical.

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. It's this tiny amount of drift that is essential to the character and warmth of the sound. That's the whole point! That's why you bought Impulse Command, right?!

The Manual

We will intentionally leave some aspects a slight mystery - we want to encourage you to explore and experiments. Don't get hung up on what the waveform shape is, the voltage level of some signal, the exact frequency of your modulation signal. None of that matters. What matters is does it sound good and does it make you happy.

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 Impulse Command 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.

EXPERIMENT!

Impulse Command also holds some magical and original features that you won't find on other synths. These might at first take a little more time to understand.

Please don't just jump right in with emails on day one to Analogue Solutions on what to turn or to flick. This synth is a journey of discovery. You will take the occasional wrong turn, but you will take many exhilarating turns also, and each destination will be nirvana. Life is all about the journey. So experience and play.



VCO - Voltage Controlled Oscillators

Impulse Command has two analogue VCOs. These produce the raw audio sound source for later processing.

TUNE

This is master tune and affects both VCOs.

PWM

This applies pulse width modulation to both VCOs (square wave only of course). LFO2 is the source. PWM gives a thickening of sound, similar to chorusing or VCOs detuned.

VCO1 Waveforms

Choices are Saw, Triangle, Square (/pulse), Noise

VCO2 Detune

This control detunes VCO2 to thicken up the sound of the synth.

Dynamic VCO Level

VCO2 and Sub-Osc levels can be dynamically controlled.

VCO2:

Amount

This control applies the amount of MIDI Velocity or EG2 signal that will be applied to modulate VCO2 volume.

The source, Velocity or EG2 is selected using the toggle switch.

I.L.

Initial Level - this is to manually set the initial level of VCO2 volume. Think of it as a volume control. Put this control to zero if you just want to dynamically control the level.

Sub:

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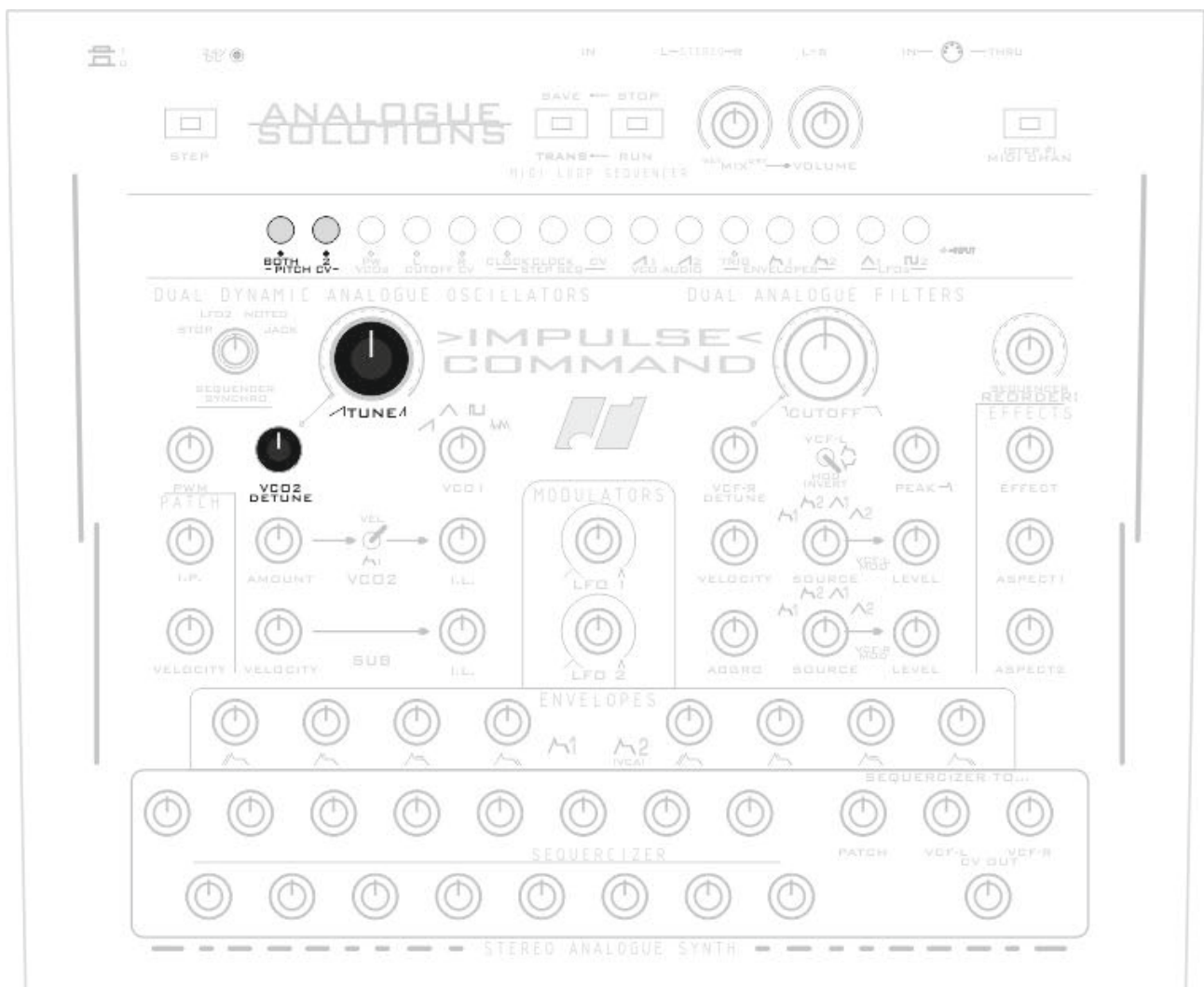
VELOCITY

This control applies the amount of MIDI Velocity that will be applied to modulate Sub-Osc volume.

I.L.

Initial Level - this is to manually set the initial level of Sub-Osc volume. Think of it as a volume control. Put this control to zero if you just want to dynamically control the level.

The controls and jacks highlighted in the diagram below are those that affect pitch (excluding MIDI and the patch controls):



To obtain pitch modulation such as vibrato (LFO), or a pitch sweep (EG) you can get these by patching with cables using the jack sockets along the top.

MIXER

The mixer has been designed to be seamless and invisible.

VCO1 AND 2

VCO1 is fixed level, whilst VCO2 and Sub-Osc can be manually or dynamically controlled.

NOISE

There is an analogue white noise generator.

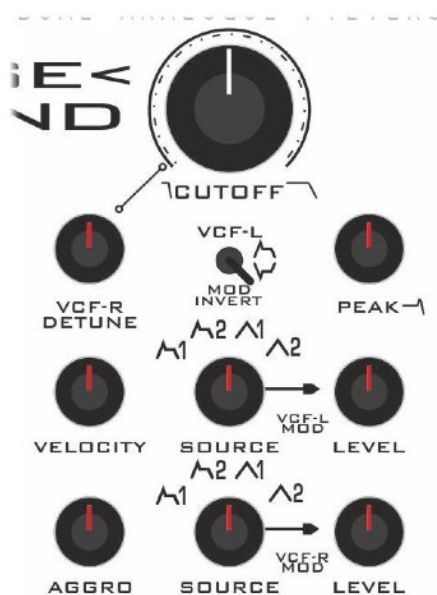
Noise can be selected instead of VCO1 using the Waveform switch, or you can select it using Patches.

SUB

There is a Sub-Oscillator.

This is a Square wave signal that is driven from VCO1 (it follows the same pitch as VCO1) and is one octave lower.

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



Filter

Impulse Command has two 24dB / Octave analogue filters. Many of the controls are duplicated for each filter, so will only describe one set.

The upper VCF is called VCF-L (left) and the signal (following its own dedicated VCA) is routed to the left output jack.

The lower VCF is called VCF-R (right) and the signal (following its own dedicated VCA) is routed to the right output jack.

The filters are CEM style, and the same type used in many classic synths like Elka Synthex, POB-8, Fairlight, Prophet 5, to name a few. Of course Impulse Command won't sounds like these synths! But it shares the initial core circuit. Impulse Command has its own character.

CUTOFF

Used to set the master frequency cut-off bot both filters.

PEAK - Resonance

Used to set the resonance / feedback level of both filters.

VCF-R DETUNE

Used to offset the frequency cut-off of the second filter VCF-R

VELOCITY

Used to set the amount MIDI Velocity will modulate the cutoff of both filters.

AGGRO

Used to add cross modulation from VCO2 to the filter cutoff giving a more edgy sound. Increase Peak to higher levels to emphasise this effect.

Modulation Source and Level

SOURCE

There are four modulation sources: EG1, EG2, LFO1, LFO2

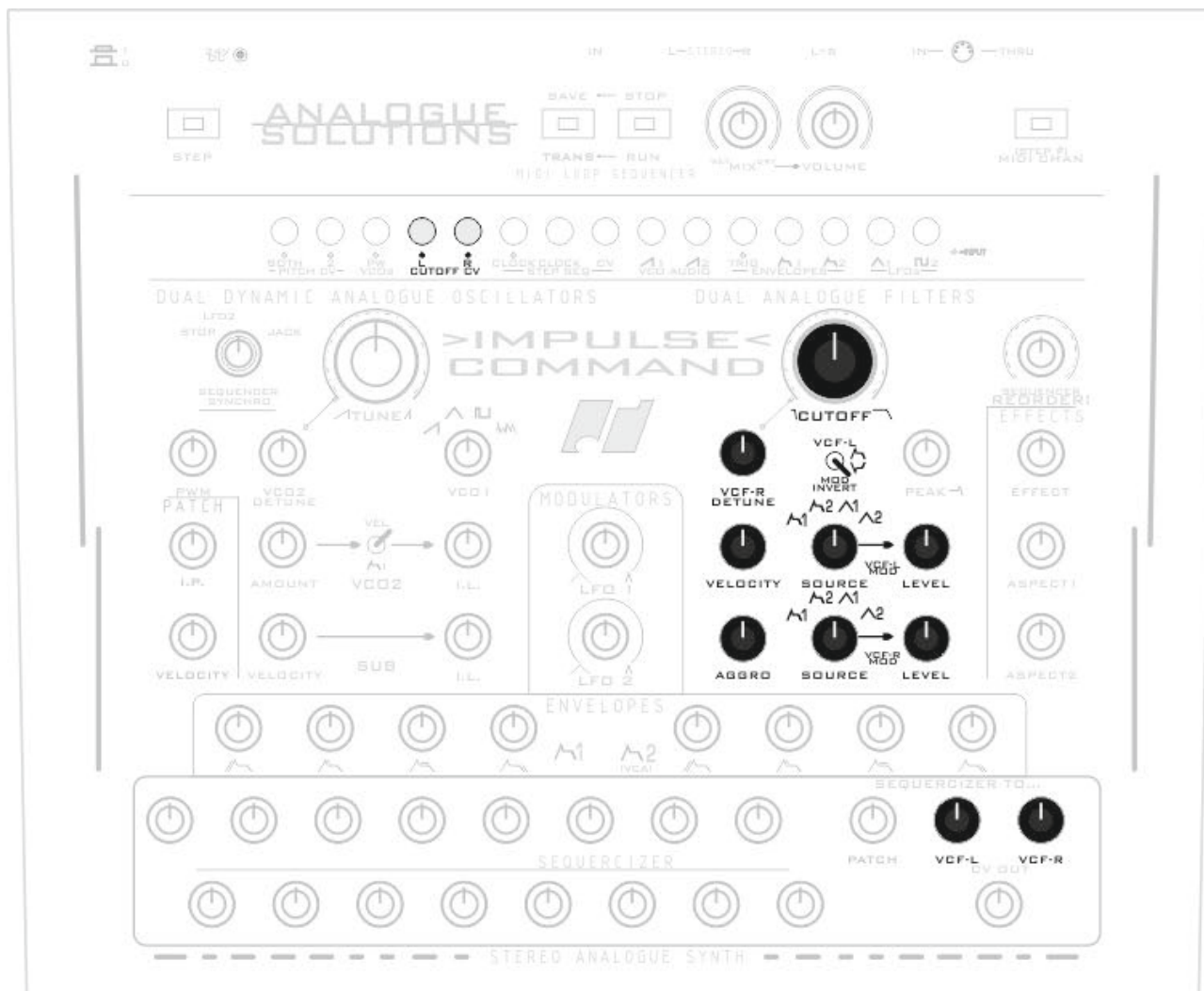
LEVEL

This sets the level of modulation applied to filter cutoff.

MOD INVERT

The modulation for VCF-L can be inverted! This, for instance, can be used for pseudo auto-pan effects. Use the same LFO (or EG) to modulate both filters, then invert the modulation for VCF-L so that it is being modulated inversely to VCF-R.

The controls and jack sockets in the following diagram affect Filter Cut-Off. Modulation you can zero if not being used. The Cut-Off and the VCF-R detune (offset) cut-off controls are the main two controls for general / overall cut-off. Balance these well!



FILTERING EXTERNAL SOUND SOURCES

External sound sources, such as vocals, guitars, mixer sends, samplers, etc. can be sent through the filters for extra treatment. Note, mic's and guitars may need pre-amping if the signal is too quiet. A good place to take your signal is from the Effects send of your mixer.

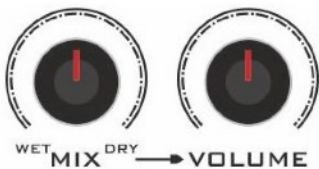
Simply plug the sound source into the rear IN socket.

Once you have done that to hear your sound you will need to trigger the envelopes as usual (to open up the VCAs.)

VCA

The VCAs are hardwired after the filters as you'd expect. EG2 will modulate each of them.

Master Output Levels



Along the top are master output levels. These control Left and Right.

There is a Volume / Master signal level control, and effects Mix - wet / dry mix balance.

EFFECTS



EFFECT



ASPECT 1



ASPECT 2

Stereo Digital Effects

Impulse Command features a stereo effects processor. This unit is primarily a powerful analogue synth. Not a 'DSP effects unit'. Some essential effects have been included to give the resulting sound some ambience. The last three effects can be modulated to some degree by the step sequencer. So for those patches, the effects can be dynamically controlled.

Effect

There are eight preset effects - turn this to take a listen! Various Reverb spaces and Delay.

ASPECT 1 and 2

ASPECT1 and ASPECT2 are used to make some adjustments to the sound space preset selected.

Ensure the MIX level is somewhat Wet to hear the effects! For the Flanger effect, 5, you must ensure the Mix level is around the central level to hear maximum effect.

Step Sequencer Dynamic Levels!

Aspect 3

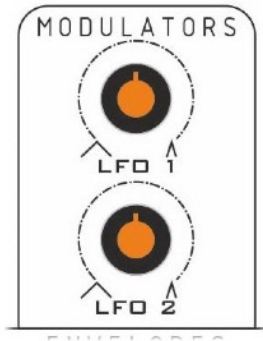
This parameter is only active on Effects patches 6, 7, 8 and is controlled from the CV sequencer to give dynamic changes to the effects in question.

On 7 and 8, the input level is controlled from the analogue step sequencer. As you increase the sequencer CV the input level to the effects increases. This means you can dynamically change the level from step to step so sounds only go through the effects on certain beats! On Effect 6 the sequencer CV increased the Right channel Bit Crush amount.

FX Patch Details

Number	Effect	Aspect1	Aspect2	Sequencer	Note	Stereo / Mono
1	Delay	Time	Feedback	-	Right O/P at half time	S
2	Delay	Time	Feedback	-	Long delay 800mS	M
3	Delay	Time	Feedback	-		S
4	Reverb	Decay	Pre Delay	-		M
5	Flanger	Rate	Depth	-	Ensure Mix centred.	M
6	Bit Crush	Bit Rate L	Bit Rate R	Bit Rate R		S
7	Delay	Time	Feedback	Input Level		M
8	Reverb	Decay	Pre Delay	Input Level		M

LFOs - Low Frequency Oscillators



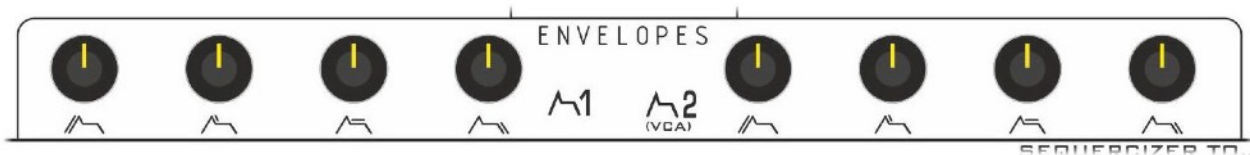
The LFO controls will change the frequency of each LFO.

LFO2 can be used to directly control PWM and/or Sequencer tempo.

Both LFOs can be routed directly to the filter.

Each LFO have a signal output jack for re-patching.

Envelope Generators



Impulse Command features two separate analogue ADSRs envelopes.

The right EG2 is hard wired to control the VCAs that follow the VCFs.

Both EGs are available for modulation of various circuits and have trigger and signal output jacks for further patching.

MIDI

Impulse Command intentionally has simple MIDI. We want you to get back into enjoying programming synths from scratch and using the real front panel controls. Not get distracted with presets or using a mouse to draw your patches on a screen.

Every sound you create was made by YOU and you alone.

Impulse Command will respond to MIDI Notes.

Channel can be changed and stored.

Velocity can be used to control filter Cut-off, Patch, VCO2 level and Sub-OSC level.

MIDI Note 000 can be used to clock the sequencers.

MIDI Note 001 can be used to reset the sequencers.

It will sync to MIDI Clock when the Sequencer Syncro switch is set to NOTE0/MIDI

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;

First stop the step sequencer.

Then manually step the sequencer to the Step number to match the MIDI channel you want. Ie if you want to use MIDI channel 8, ensure the sequencer is on step 8.

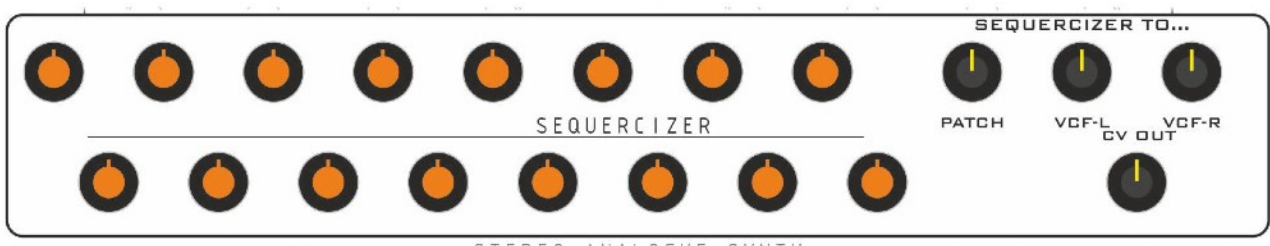
Press and release the MIDI CHAN button.

That's it done! The channel will change and also be stored.

Sequencers

There are two sequencers: the analogue step sequencer (produces analogue voltages) and the MIDI Note Loop sequencer (produces MIDI note loops). These both get clocked from the same signal source, selected using the SEQ SYNCHRO switch. However, the Note sequencer can independently be stopped and started.

ANALOGUE STEP SEQUENCER



This is an analogue 16 step sequencer. Primarily it is used for modulation. There are controls that route the sequence of voltages to VCF-L, VCF-R and Patch. There is also a Jack output that can be patched back into the synth to control, for example, Pitch.

OUTPUT

The output can be applied to VCF L/R cutoffs independently, to PATCH selection, or to the Jack output using CV OUT control.

The step sequencer is primarily used for modulation, since the MIDI Loop sequencer would ordinarily be used for note control. However, you can patch (with a cable!) the sequencer output to the Pitch control input jack if you want the step sequencer to also control pitch.

SEQ SYNCHRO - SYNC

There are three sync options for the step (run) sequencer:



STOP - go on, take a guess.

LFO2 - steps with the LFO2.

NOTE0/(MIDI SYNC) - steps each time MIDI note zero is received. More details follow. Also selects MIDI Clock as a sync source.

JACK - steps when an external clock is patched to the Clock Input socket.

MIDI NOTE LOOP SEQUENCER

The Note sequencer is used to record melodic loops. It will always run in time with the analogue step sequencer.

The notes are programmed in in step mode only when Run/Stop is set to RUN. When set to RUN the sequencer will always record any new notes you play in via MIDI, whether it is being clocked or not (from the SEQ SYNCRO selection). This way you can change the sequence of notes live as it is running.

If the Note Sequencer is Stopped, then it will no longer record new notes.

To program in your notes;

Turn Syncro to STOP.

Press the **RUN/STOP** push button to turn on the loop sequencer. (LED lights up).

When it is on, the synth will record every note you play via MIDI into the sequencer memory. It can store 16 notes, regardless of whether the Note sequencer is clocking or not. If you exceed that it wraps round and overwrites the previous values.

Play what you want into it - remember to count 16 notes into it as you play them.

When On (as depicted by the LED) the MIDI Loop sequencer will match and clock the step sequencer. ie it shares the same SEQ SYNCRO setting (unless of course this switch is set to STOP).

Note: When it is running it will continuously overwrite any MIDI note you play over the note stored for the current step.

First sequencer serving suggestion:

Ensure you have your MIDI keyboard connected and on the right channel.

Turn Re-Order fully counter clockwise.

Ensure step sequence SEQ SYNCHRO is on STOP.

The MIDI Loop Sequencer RUN/STOP on.

Play in 16 notes. Highly recommended (and the most fun!) is to play a rising scale of 16 notes.

Switch on the step sequencer by setting SEQ SYNCHRO to LFO2.

Both sequencers should now be playing!!

Play around with Re-Order and listen to how different melodies pop out of the MIDI LOOP SEQUENCER.

Use the MIDI Transpose feature to create 'chord progression'/song.

Playing any additional MIDI notes will overwrite what you have programmed.

If Run/Stop is off, your pattern is safe from being overwritten.

Memory

The note pattern you record must be saved if you want it recalled on reboot!

To save the note pattern data first ensure the Run/Stop LED is off, ie that the sequencer is Stopped.

The Transpose button just to the left becomes the store button (it is only a Transpose button when the sequencer is running). Press this and the note data will be stored.

Some Sync Tips

IMPULSE COMMAND AS A SLAVE

It's pretty easy to sync IC's sequencer to various new and vintage drum machines or step sequencers.

Vintage and Analogue:-

TR909

Patch TR909 Rimshot/Trigger jack to Impulse's Step Seq Clock input jack.

Select JACK on the Sequencer Syncro rotary switch.

You'll have to program each trigger into your TR909 by programming in a RimShot patter.

You will need a 1/4" jack to 3.5mm jack mono lead.

TR08 and TR09

These 2 drum machines also have trigger out jacks. Connect and use in a similar way to the TR909 above. The TR08 has its own trigger instrument track, and the Trigger out jack is on the top panel.

The TR09 has a trigger out jack in the RimShot section.

You will need a 3.5mm to 3.5mm mono jack lead.

Other

As long as the 'master' sequencer/drum machine has an analogue trigger output it can be used as a clock source. So for instance using the Clock out from Analogue Solutions' Generator sequencer, or even the Gate outputs sockets from this sequencer.

Modern Drum Machines and Sequencers:-

If the device has a programmable trigger output like the drum machines above, then use the same method.

USING MIDI NOTE 000 AS A CLOCK

to sync the Step and MIDI Note sequencers to a DAW or Drum Machine

Both these sequencers can be clocked from 'NOTE0'. When selected, the sequencers will advance one step each time Impulse Command receives MIDI Note 000 (on the correct channel!).

Ensure MIDI Sync is not being transmitted to Impulse Command, since MIDI Sync is also selected as a clock source using the NOTE0 selection.

This is a very cool and versatile way to sync Impulse Command to a DAW or 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 simply write a bar (or more) of MIDI notes and loop it.

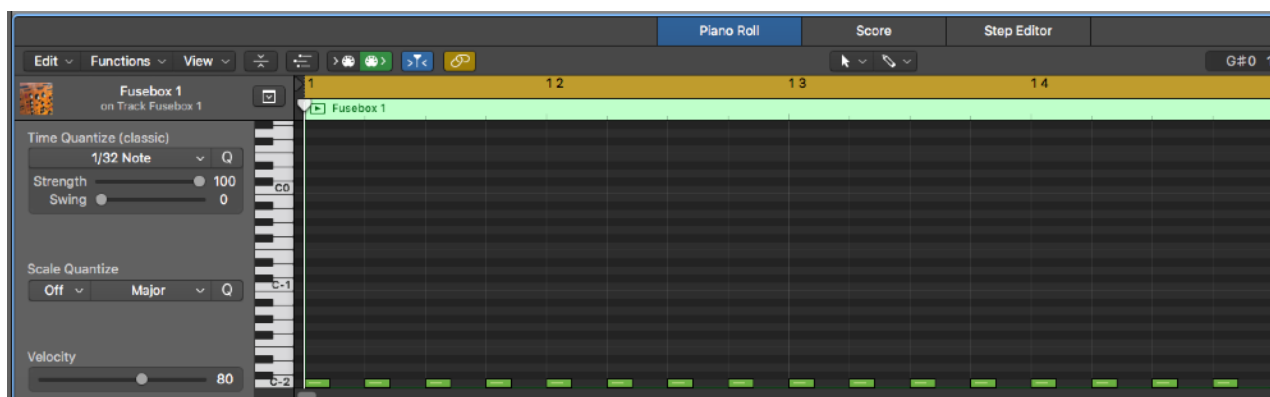
You have the versatility of muting this clock track at will, you can change the tempo relative to the main sequencer (go half tempo, for example), or, you can make some kind of syncopated rhythm. You could even program in swing or triplets.

The picture below shows the most straight forward clock pattern you might use.

32nd notes spaced at 16th note intervals. So, Impulse Command will advance one step every 16th note. **Just ensure the notes do not overlap.** Otherwise Impulse will just see one long single clock note.

The note length of Impulse Command sequencer is determined by the note value. A 32nd note in this case.

MIDI Note 000 is the first and lowest note used by MIDI. Nicely out of the way. Note value is C-3 (for most DAWs at least).



A simple pattern of notes like this is all you need. But of course you can make a rhythm of clock notes!

Using MIDI Note 001 To Reset

to reset the Step and MIDI Note sequencers

Sending MIDI Note 1 (C#-3) to Impulse Command will reset both sequencers. Program these into your 'clock note 0 pattern' for additional interesting sequence stepping.

IMPULSE COMMAND AS THE MASTER

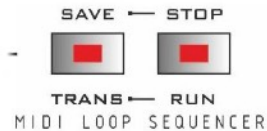
Impulse Command does not transmit MIDI clock, so in a MIDI only set up it works best as a slave.

But if you have a more analogue setup, Impulse does transmit analogue clock pulses: once per 16th note (one per sequencer step). This is good enough to sync most analogue sequencers.

Example patch

To sync the Analogue Solutions Generator step sequencer to Impulse command, patch IC's Step Seq Clock out jack to Generator's Sync In jack (using a standard patch cable). Set Generators Sync Source switch to External.

Transpose



It is possible to transpose Impulse Command in realtime using MIDI keys. Transpose will only work when the MIDI Loop sequencer is running (Run/Stop LED on) since that is when we want to transpose.

The transpose feature isn't designed to generally change the key of the machine. It is for continuous realtime transposing of MIDI Loop sequences to create 'songs'.

So first get a pattern playing.

Then Press TRANS to activate. The LED will light.

Then press any MIDI note and the value will be added or taken away (depending if the note is either side of the central 'C') from whatever note the MIDI Loop sequencer is playing. Press TRANS again to cancel transpose.

Pressing Run/Stop and stopping the MIDI Loop sequencer will cancel / exit transpose mode.

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

BOTH SEQUENCERS



Reorder!

Turn this and listen / see how it affects both sequencer stepping order! Forwards, backwards and all sorts of great and strange variations.

A tip: play a music scale of 16 notes into the MIDI Loop sequencer, then play with Reorder!

You will find melodies seemingly popping out of no where.

The resulting pattern you end up with also depends on which step the sequencer was on when you turn the Reorder! control.

The new patterns are not random. They are calculated new patterns that repeat - they will sound musical - often more musical than what you program in!



STEP

Press this button to advance the sequencer one step at a time manually.

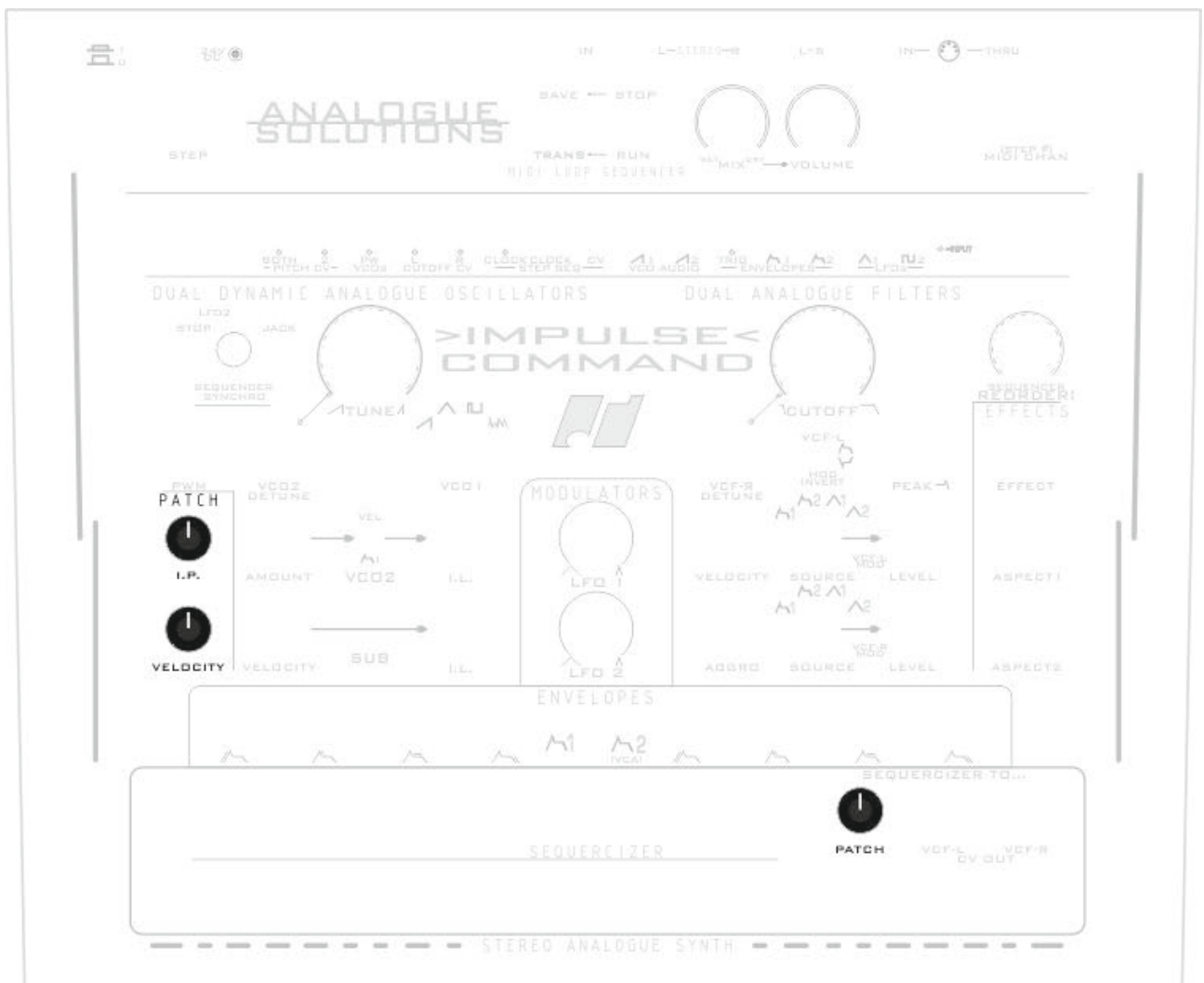
Internal Patch System



Don't confuse this with 'Patch' when used to mean storing of every switch/control position. Patch here is used to mean routing of a single signal, the same as a patch on a modular system where you take a single lead and 'patch' a signal from A to B.

There are 4 internal signal routings that are configured as eight Patches. These are internal routings you can change manually, from MIDI velocity or by using the Step Sequencer.

With the right programming you can have radically different sounds playing on different steps of the sequencer. This gives the impression of multiple percussion and synth sounds playing throughout the 16 step pattern!



The diagram above shows which controls will select 'patch'. Put these to zero to remove the internal patch.

I.P.

Initial Patch is used to manually select one of the eight patches.

Velocity

MIDI velocity can be used to select a patch.

Seq CV

The Step Sequencer can be used to select a patch.

Note: all three of the above signals are added together and the result is what is used to select a patch.

Of course if one is set high, selecting the upper most Patch, adding signal from another modulation source will make no difference as top Patch is already reached.

So these three controls must be balanced.

Normally it is best to leave any unused controls fully left (zeroed) when not in use.

Note:

The effectiveness of each patch will partially depend upon other settings made using the top panel knobs.

Most of the patches are applied to VCO2 and the filters.

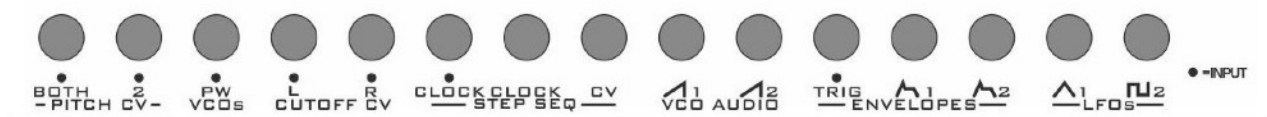
I'd prefer not to give full technical details of exactly what each patch is, since that removes the mystery. I want you to discover new sounds and not get bogged down with the details!

Play around and experiment.

Top Panel Jack Sockets

The front panel features 15 jack sockets for re-patching, or to patch with external synths.

The sockets are 3.5mm mono 'mini jacks'. The sockets marked with a **dot** are inputs. If you are patching it makes sense to patch outputs to inputs. Outputs can be split, but you can't use a splitter lead or multiple module (if you are using them) to 'mix' signals to inputs (just as you can't when using Eurorack).



PITCH CV

BOTH

CV control of pitch for both VCOs. Like a master pitch control input.

2

CV control of pitch for VCO 2 only. Use to offset VCO2 pitch.

VCOs PW

CV control of pulse width for both VCOs' square waves.

CUTOFF CV L & R

CV control of each VCFs' cutoff frequencies. One independent input for each VCF.

STEP SEQ

CK IN clock in

Clock input to run the sequencer when SEQ SYNCHRO is set to JACK.

CK OUT clock out

When the sequencer is running, a clock signal is sent out here. This is to allow you to sync other devices, like Analogue Solutions' Generator sequencer to Impulse Command.

CV

This is a CV output from the step sequencer. The level is controlled from the CV OUT control.

VCO 1 & 2 AUDIO out

Each VCO has its own Sawtooth wave audio jack output.

ENVELOPES

TRIG trigger input to externally trigger the envelopes.

A Gate or trigger in here will trigger both EGs.

EG Out 1 & 2

Each EG has its own independent CV jack output.

LFOs 1 & 2

LFO1 has a triangle CV jack output.

LFO2 has a square CV jack output.

Rear Panel Audio Sockets

The rear panel sockets are 6.5mm mono 'big jacks'.



IN

This is an audio input to feed audio into both filters. Low level signals like guitars and microphones will need to be pre-amped first. The best place to get your signal from is using the effects send of a mixer.

L VCF-L output & R VCF-R output

The Left and Right jacks are the left and right outputs from the two VCF / VCAs.

Impulse Command is a stereo synth. Though of course both Left and Right outputs can be panned closer together to make a fatter mono sound. On your mixer, you could choose to pan these hard left and hard right. But also consider panning them about half left and half right. There are no rules here.

L+R

This is a mono mix of the L and R sockets above.

Some Tips To Get Started

So far the manual has covered all the controls and briefly what they do; their function. Enough information was covered to get a mildly experienced synthesists.

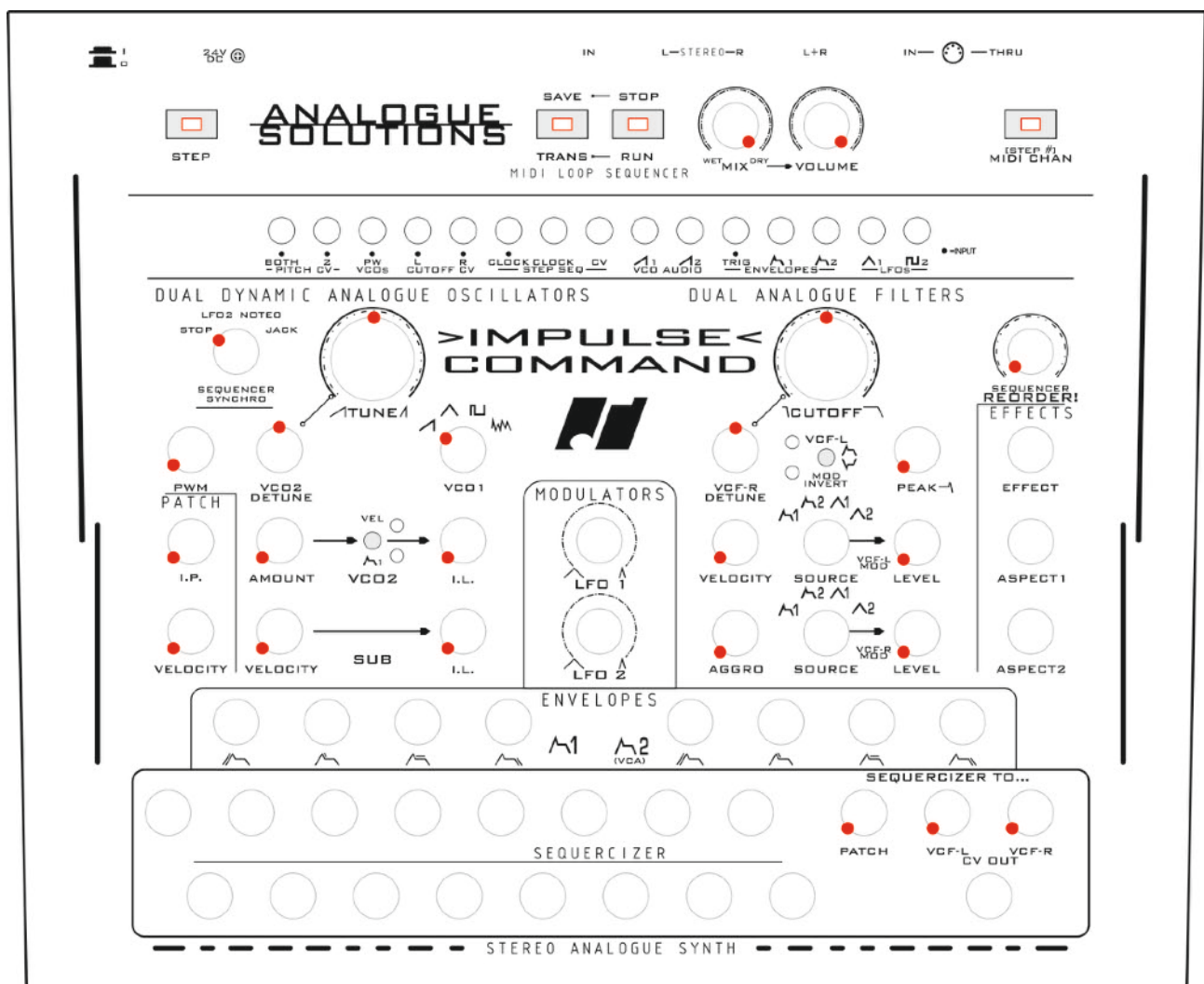
Next we will give you some noob tips to get started and some ideas of things to try.

First get the synth connected to power, audio to the mixer, MIDI connected with channel set (covered earlier in the manual) - basic physical hook up.

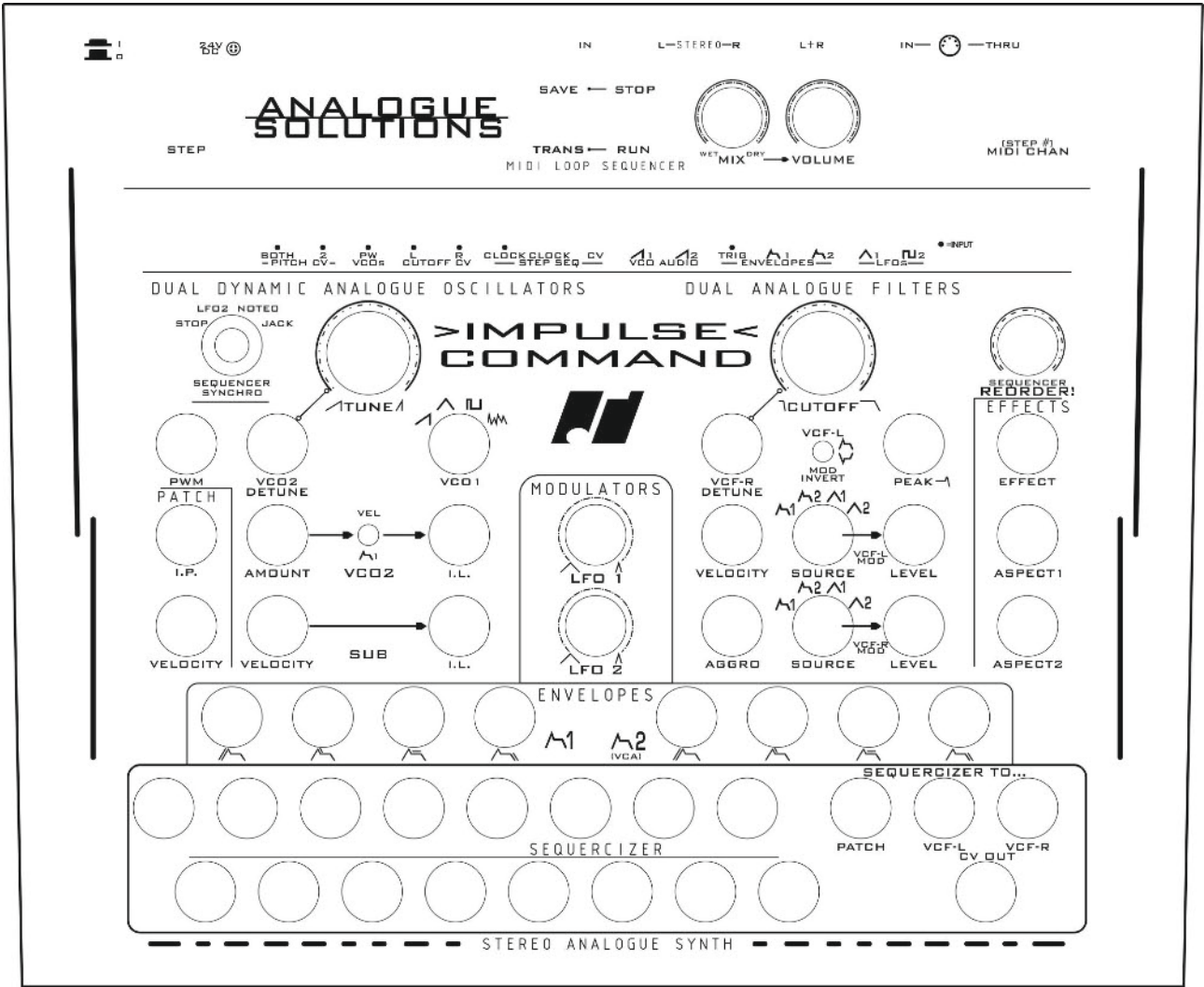
The diagram below is a basic default patch. With all modulation off, and a basic one VCO sound.

Controls that don't affect the sound in this default patch are not marked up.

It's a guide to get you going - a starting point.



Impulse Command Patch Sheet



Notes:

No Signal?

There are many settings that can kill the sound! Impulse Command is immensely flexible making an insanely wide range of sounds, many of which can give you no output due to extreme filtering.

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 all the basic stuff first - this usually covers most problems.

Don't assume Impulse Command is the fault - it could be your external gear/set-up - or simply incorrect front panel settings.

Impulse Command is extremely versatile and has a very wide range of possible sounds.

Some settings will result in no sound!

For example, if either or both filter cut-offs are at zero, you may be filtering out ALL of the sound.

Envelope controls at zero may mean no sound.

VCA EG Attack turned too high might mean no sound.

Ensure the Volume control is up!

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.
 - Certain extreme filter settings may filter out all of the signal or produce low level signals. Try adjusting the filter cut-off.
- 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. Many 'Doh!' moments.

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.

>intentionally left blank<

Specification

Weight:

2.3Kg

(excluding sound, which is heavy.)

Size:

32x27x9cm unboxed

52x35x15cm boxed

Power:

24V DC regulated

750mA

2.1mm plug

Warranty

Impulse Command 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

