Oberkorn User Manual

Analogue Sequencer

Analogue Solutions

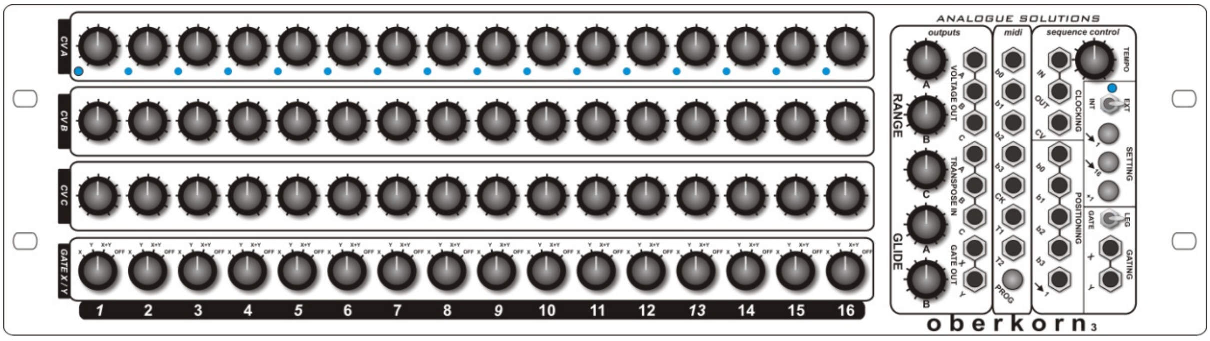
CONTENTS

NOTES ABOUT THIS MANUAL

EURORACK OBERKORN

Eurorack Oberkorn is identical to Oberkorn except that the Eurorack version does not include the MIDI to Trigger/Clock feature, since the MIDI sockets for this feature go on the rear panel. Since Eurorack module version does not have a rear panel, there is nowhere to fit the MIDI sockets (there is no spare space on the Eurorack Oberkorn front panel).

If you need MIDI-Trigger converters then our module MT9 provides 9 trigger outs.



WHAT IS AN ANALOGUE SEQUENCER?

My definition of an analogue sequencer (since others may slightly disagree) is a device that will sequentially output a series of varying voltages (CVs) and gate conditions over time.

Sequencers (and when I use this word I will always be referring to analogue ones unless I state otherwise) will typically be 8-16 steps.

The Oberkorn has 16 steps.

To be a true analogue sequencer the output voltage must be unquantised, otherwise it's digital! Digital means discrete steps. Oberkorn's CV outputs can be swept smoothly from zero to full output level.

At each step you can change the voltage at the output socket and set whether a trigger / gate pulse is sent out.

Each step therefore has a potentiometer to change the voltage and a switch to change gate status.

As the clock runs the sequencer sequentially through each step (usually from one to 16), the state of the pot's and switches is output at the sockets.

THAT'S ALL VERY WELL (AND TECHNICAL) BUT WHAT WOULD I USE IT FOR?

Traditionally (back in the 70's when they where first developed) you would be writing all your electronic music with them. Melodies, bass lines etc.

But these days you have MIDI sequencers and software that can deal with all that.

But sequencers still provide a different experience when creating music. Don't think about 'writing melodies' with a sequencer. It's more organic than that. I think the best way to use a sequencer in your set-up is to hook it up to a synth that has CV/Gate sockets (like our Telemark, which is perfect for the job). Ideally sync up some sort of drum machine too (we can supply drum modules and other devices here). Start the sequencer.

Then your tune will evolve. Tweak the sequencer controls and switches, and those of your synth. Change the drum pattern. After some time, you will just suddenly hit on a perfect ‘groove’. You will have achieved this in a way that you could never do with a software sequencer. If you have never tried it, search for our YouTube videos for proof.

I have met people who have never used an analogue sequencer. Though they have heard of them, they have never realized what they could do for them. But then after a short demonstration, they realize what they have been missing all these years and are instantly hooked!

ABOUT THIS MANUAL AND ABOUT ANALOGUE GEAR

This manual is not a tutorial on CVs, Synth’s, Sequencers, Modulars etc. I will try and explain a little about the terms used and the technology in general. If you want to know EVERYTHING, then there are plenty of good forums out there and tutorial web sites. So if there is anything in here you don’t understand either look it up, or just don’t worry. Like any new subject you will learn other time and pick up information along the way.

SPECIFICATION

CV channels

Channels A and B have a portamento function (labeled Glide).

All three channels have transpose inputs and output level attenuators.

CV range is approx. 0-5v.

Gate channels

2

Gate voltage approx. 10v.

Buttons

Reset to step one

Reset to step 16

Step

Switches

Run/Stop

Gate/Leg

CVS AND GATES – WHAT ARE THEY?

This is not a complete beginner’s guide to analogue synthesizers, but here is a very brief explanation.

A CV (control voltage) is a varying voltage that can be used to control a parameter of an analogue synth. Which parameter really depends on the synth. Most synth’s have at least a pitch CV input (usually just called CV), and a filter cut-off CV input. These I think are the two most important. But a good modular will provide CV inputs to control most parameters.

Gate (sometimes called trigger) is typically used to trigger an envelope generator (which controls the synth’s volume, filter cut-off, and other parameters). Gate can be used to turn digital switches on and off, or to clock other analogue sequencers.

The beauty of analogue synth’s and modulars is that there are no rules. So you can use the CV and Gates how you want. If your synth has a voltage control input socket, then you can use it. That’s not to say any patch will sound good. Some won’t sound good or even work at all. So in those cases you’ll need to try something else. That’s the nature of modular synths.

Note:

Though you will hear terms like CV, Gate, V/Oct, Hz/V, Trigger, S-Trig, and they will have their own general characteristics, there is no true *analogue* standard.

V/Oct and Hz/V is about the nearest and they usually work as designed, but there are always occasional incompatibilities or exceptions.

Gates and triggers can be of different voltages and pulse widths. There is no account of input and output impedances, frequency ranges etc. Some gate outputs might be say 5v or 10v. Some synth may require a gate voltage higher than the controlling device is giving.

So though with modulars and analogues synths you should be able to cross patch with no problems sometimes things you might try may just not work. This sort of situation may happen too when you connect a sequencer to a particular synth, or try clocking two devices together. Sometimes it won’t work. Generally this is rare and whatever you hook up will usually work. There is usually a work around if there are problems, or you simply just have to try something else.

Oberkorn seems to work fine with most gear, and I have not heard back many problems.

OUTPUT TYPE

CVS

There are two main ‘standards’ (and I use this term loosely) for pitch CV.

V/Oct means Volts Per Octave. This means that a VCO’s pitch will go up one octave for each volt added to the CV input. 0V (say) would be C, so 1V would be C one octave higher.

This is typically used by;

(old synth’s) Roland, Moog, ARP, SCI

(new synth’s) just about everyone – Analogue Solutions, Analogue Systems, Doepfer, etc.

Hz/V means Hertz Per Volt. This means that to go up one octave you must double the voltage. So (say) C is 3V, then to go up one octave the CV must be 6V.

This was typically used by the old Korg synth’s (like the MS series), though if I remember rightly, the monopoly was an exception.

Hz/V is not so flexible as V/Oct. The problems arise when trying to mix Hz/V signals to change pitch.

Oberkorn outputs a varying voltage on the CV outputs. I am often asked whether its output is V/Oct, or Hz/V. This question does not really make any sense as such. Oberkorn simple puts out the voltage that you set on the control. But for pitch control it will ‘feel’ better using V/Oct synths, which the majority of synths use.

Hz/V and V/Oct only applies to the pitch control of oscillators. For controlling parameters such as filter cut-off V/Oct or Hz/V does not apply. These ‘standards’ only apply to pitch control. Parameters such as cut-off just want a varying linear voltage. Once again there is no standard, but typical ranges are 0-5v, 0-12v, and sometimes bipolar like -12 to +12V.

The range Oberkorn puts out is usually fine for most synth’s.

GATES

The Oberkorn puts out a positive gate signal. Gate off is 0V, Gate on is 10V. Oberkorn’s gate signal is strong enough to trigger just about all analogue synth’s, envelopes, and strong enough to clock most other analogue sequencers.

There is a complication (isn’t there always?!).

Old Moog and Korg synths typically used a type of Gate called S-Trig. Though I won’t go into full details, let’s just say that it is a sort of inverted gate signal. Not inverted in polarity, but in state.

So normally a gate might be 0v for off, and, say, 5v for on.

With S-Trig it is swapped. So, say, 5v for off and 0v for on. (Though in practice S-trig is implemented in a few different ways by different synth's).

I have not tested Oberkorn with many S-Trig synth's (since it was designed for the 'standard', more common positive gate synth's and because S-trig synth's are typically rarer to find). But I have had reports back that it works fine with Korg MS synth's, but inverted (as you would expect). So to trigger the synth you must set a gate switch to off rather than on!

BASIC HOOK UP

To control a typical analogue synth, the most basic and common way to set up is as follows;

	Oberkorn Output	**Synth Input**
Pitch:	VOLTAGE OUT A	CV (pitch) / Key CV
Gate:	GATE OUT X	Gate / Trig / V-Trig
Cutoff:	VOLTAGE OUT B	VCF

Note: different synth's will label their inputs differently.

That's a basic set-up. If you are new to analogue synth's you may just want to stick with that for starters, just to get used to using the set-up. But more advanced users really should do a little more than the above! I'll give more advanced examples later.

EXPLANATION OF EACH CONTROL

The outputs from the CV and Gate channels are found in the box labeled ‘outputs’ on the front panel.

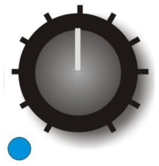
CV CHANNELS

Oberkorn has three CV channels A, B and C. They are just about identical, except that C does not have glide.

Each channel is completely independent form the others, though they will be clocked together and be of the same sequence length.

So I will just explain one channel (A) and from there you will know what the others are doing.

CV Controls

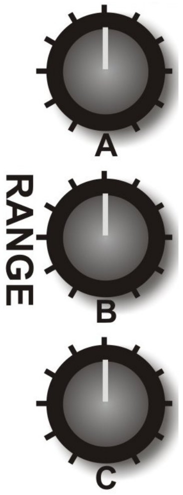


Each channel has 16 CV controls. When a step is active, the voltage set by the control is output at its socket.

LED

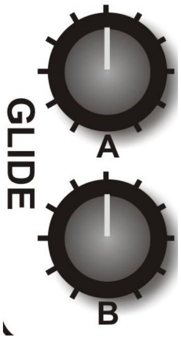
When a step is active, its LED will be on.

A-LEVEL Control



This is used to set the overall level of the CV signal output at the socket. It’s an attenuator.

A-GLIDE Control

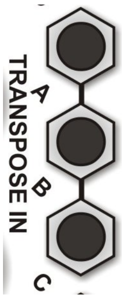


This is a portamento control (glide/slew). It will smooth out the changes in voltage as each step is played. Just try it and see! If you appear to get no CV change at the output, you may have too much glide set.

VOLTAGE OUT A

The CV for channel A comes out of this socket.

TRANSPOSE IN A Socket



The transpose input socket allows you to take a CV from an external device (say an LFO module, CV keyboard, EG), and mix it with the internal CV generated with the CV controls.

For example;

Put an LFO wave in there and you will add vibrato to the pitch (or wah-wah to filter, tremolo to VCA).

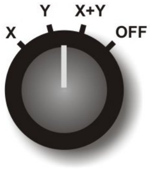
Use a CV keyboard to transpose the pitch of the sequencer (note transpose inputs are not calibrate beyond 1% so scaling may be an issue).

GATE CHANNELS

There are two Gate channels, X and Y.

Each channel is completely independent form the others, though they will be clocked together and be of the same sequence length.

Gate Switch (rotary switch)



The 16 gate switches each have four positions.

Position 1: X

In this position there will be a gate signal from the X GATE OUT socket when this step is played.

Position 2: Y

In this position there will be a gate signal from the Y GATE OUT socket when this step is played.

Position 3: X+Y

In this position there will be gate signals from both GATE OUT sockets when this step is played.

Position 4: OFF

In this position there will be no gate signalS from either of the GATE OUT sockets when this step is played.

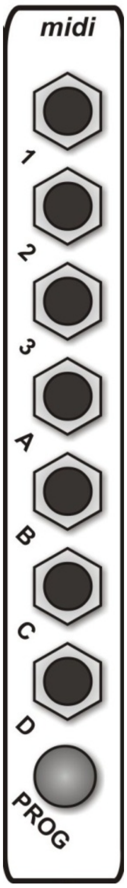
GATE OUT X Socket

The gate signal for channel X is output at this socket

GATE OUT Y Socket

The gate signal for channel Y is output at this socket

MIDI TO TRIGGER CONVERTER (NONE-EURORACK VERSION)



Oberkorn has a completely independent MIDI to Trigger converter (MIDI-Trig). It is NOT a MIDI to CV converter.

It is used to enable you to sync Oberkorn to MIDI.

It has three sections. Binary control, Triggers, Clock, which will be explained later.

The MIDI-Trig section is in the box labeled ‘midi’ on the front panel.

On the rear panel are a MIDI In and MIDI Thru sockets.

MIDI In

Connect your MIDI keyboard or MIDI sequencer here, to control the MIDI-Trig.

MIDI Thru

This is just a copy of the MIDI coming into the In socket. Use it to daisy chain up other MIDI gear.

CK (clock)

If Oberkorn is receiving MIDI Sync signals, then the CK socket will output clock pulses. This is one way to sync up the Oberkorn to MIDI sequencers, but it is the least flexible. Use the trigger sockets.

Note: Using MIDI synth the gate signals produced will be very short. So you may have to turn up the Decay/Release on your analogue synth.

T1 / T2 / T3 / T4 / T5

Note: T3-5 are on the rear panel.

Oberkorn offers five MIDI to Trigger converters. These convert certain MIDI note on/offs into analogue gate pulses. These can then be used to clock Oberkorn, or trigger other analogue devices (such as our drum modules, sequencers, EGs).

Trigger	*MIDI Note*
T1	E (64)
T2	F(65)
T3	F#(66)
T4	G(67)
T5	G#(68)

As I write this, I forget the exact MIDI note number. It’s just above Middle C!

Normally you would use these five triggers to trigger other analogue modules you may own, like envelopes.

You can also use them to clock analogue sequencers, including Oberkorn.

MIDI Sync

The CK socket can be used for MIDI sync. If your MIDI sequencer is transmitting MIDI Sync, then the CK socket will output 16ppqn pulses. These can be used to clock the Oberkorn. To do this you must patch the CK socket to IN clock input. Put the run stop switch to EXT. Reset Oberkorn to step 16. Connect your MIDI source (sequencer etc) OUT to Oberkorn's MIDI In.

When you hit play on your MIDI sequencer Oberkorn should run.

Due to the limitations of the MIDI specification of SYNC messages, it is the least effective method and least flexible method of sync. The best way to sync Oberkorn to a MIDI sequencer is to use one of the Trig sockets.

e.g. patch socket T1 to Oberkorn clock input IN to use T1 as a clock source. The run/stop switch must then be set to EXT (external clock).

Now, what you do to clock Oberkorn is to program a string of MIDI notes (E because you are using the trigger T1).

Each time E is played Oberkorn will advance one step. Normally you would program a string of 16th notes when your MIDI sequencer is playing in 4/4 time.

But, here's the beauty of this system and Oberkorn. You do not have to stick to convention and only string 16ths. By programming any pattern of Es you can do the following;

Swing/Shuffle/Groove

By retarding the timing of even numbered 16th notes. In fact any groove pattern can be written.

Muting Oberkorn

By muting the control track on your MIDI sequencer, no more 'E triggers' are sent by the Oberkorn's MIDI-Trig unit. This way you can stop and start Oberkorn mid-MIDI sequencer. This is something you can't do when synching via MIDI Sync alone (using the CK socket).

BINARY OUTPUTS.

Sockets b0/1/2/3 provide a binary output from 16 MIDI notes.

As each of 16 MIDI keys are pressed, numbered from 1 to 16 (well, 0 to 15 actually), this is converted to four bit binary and sent out of the binary sockets.

The 16 keys start from C(48) then the next 16 keys.

The binary sockets are a little confusing but I'll do my best to explain.

The best way is to start with an example.

Stop the sequencer. Press Reset to 1, so the sequencer is on step 1. The sequencer MUST be on step one, otherwise odd stepping will result! (Good for creativity though). This is because the binary pattern you feed into the sockets is mixed/added to the internal binary control signal. Resetting to step one clears the internal binary signal to 0000.

Connect a MIDI keyboard to Oberkorn, and the MIDI channels up correctly.

Next, using four patch leads, connect the four binary outputs b0/1/2/3 in the ‘midi’ box on the front panel to the four binary input sockets b0/1/2/3 in the ‘sequencer control box.

Now starting with note C, press this MIDI key then the next 15. You should see the step number of the sequencer change as you go up.

You can see from this that you can control, via MIDI notes, which step Oberkorn is on.

MAKE OBERKORN STEP IN ANY ORDER!

You could therefore use a MIDI sequencer to write *any* combination of these 16 notes to make Oberkorn step in *any* order you wish and in *any* direction. Forward, backwards, pendulum, even steps only, first eight steps only, etc. Any way you wish!

Note: using this method will note create ‘normal’ gate outputs. I’ll explain more later. But you can create ‘normal’ gates using the MIDI-Trig unit (sockets T1-5).

CHANGING THE MIDI RECEIVE CHANNEL

To change the MIDI channel, first connect a MIDI keyboard to Oberkorn.

Set the transmit channel on the keyboard to the channel you want to use.

Press and hold the MIDI Program button PROG. Whilst holding this down press a key on your MIDI keyboard. Release the PROG button.

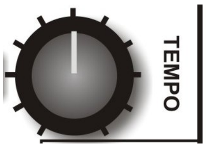
Oberkorn will set to receive on the same channel as the keyboard. The channel number is stored in non-volatile memory.

Default is (usually) channel one.

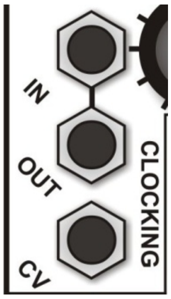
SEQUENCE CONTROL

In the front panel box labeled ‘sequence control’ you will find the controls and sockets that control the sequencer’s stepping/running.

TEMPO control



This control sets the speed of the internal clock.



IN Socket

If you want to sync Oberkorn from an external clock source, use this socket. You can use one of Oberkorn's MIDI-Trig outputs here to allow you to clock from a MIDI note.

You might want to use the clock output from another analogue sequencer here, or even the square wave output from an LFO.

Oberkorn as a VCO

Note: you can clock Oberkorn using the square wave from a VCO! This was Oberkorn will step at audio frequencies. Take a CV output into your audio mixer (watch the signal levels) then use the 16 CV controls to adjust the shape of the waveform!

OUT Socket

Which ever clock source is selected using the Run/Stop switch, is thru'ed to the out socket.

If the Run/Stop switch is left, then the internal clock signal is sent out.

If the Run/Stop switch is right, then the external clock signal is sent out.

If the switch is in the centre (off) then no signal is sent out.

Daisy Chain Synchronization

Use this socket to daisy chain and sync other analogue sequencer's to Oberkorn.

CV Socket

The internal clock speed can be changed via an external CV.

Rub/Stop will have to be set left (INT) so the internal clock is used as a sync source.

Make sure the TEMPO control is set below maximum.

Plug an external CV into the CV socket, for example, output from an envelope or LFO.

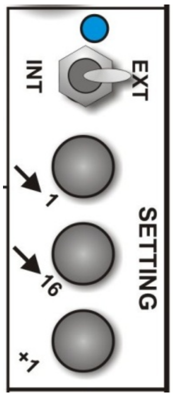
The clock speed will change according to the input voltage.

Weird?

Why not try using one of Oberkorn's own CV outputs to change its own clock speed! I have not tried this. Could be interesting!

SETTING

The function of the controls in the setting box on the front panel are explained here.



LED

The LED will light up to show the activity of the clock source selected with the Run/Stop Switch

Run/Stop Toggle Switch

The three way toggle switch selects clock source.

Left / INT	Internal clock is selected. Speed controlled with the TEMPO control.
Centre	In the position the sequencer will not run (stop).
Right / EXT	Selects the clock signal present at the IN socket as clock source.

->1 Reset to Step One

Pressing this will reset the sequencer to step one. Normally you would stop the sequencer first.

->16 Reset to Step 16

Pressing this will reset the sequencer to the last, 16.

Why would you want to do this? Well, actually, reset to step one as found on just about all other sequencers is just about useless, and I'll explain why.

If the sequencer is stopped, then started, then the *first* step to play is not in fact the current, initial step, that the sequencer was on when it was stopped, but the *next* step.

This is normal behavior of all true analogue sequencers (do to the way these type of sequencers are designed using logic chips).

With all other sequencers of this type I have encountered, it means that if you first reset the sequencer to step one then the first step that always plays initially when you press start is always step two!

So to overcome this you would have to press STEP up to 15 time to manually put the sequencer to step 16, so that when you press start, it starts on step one.

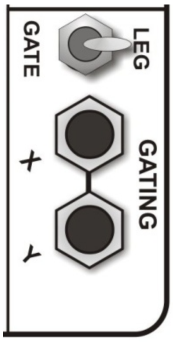
Oberkorn overcomes this by having a reset to 16 button. This way Oberkorn correctly starts on step one.

Note: When manually stopping and starting the sequencer using the toggle switch, switch note may cause the sequencer to skip a couple of steps. This will not happen when you use a MIDI note to sync Oberkorn (when patching a T MIDI to Trigger socket to the clock Input socket).

+1 Step

Usually used when the sequencer is stopped. Pressing this will advance the sequencer by one position. You would normally use this to audition each step individually, for example to trim each CV setting.

GATING



The Last control box is a little hard to explain!

GATE / LEG (legato)

When this switch is set to gate, then each gate signal is discrete individual 16ths.

When set to LEG the gates are added together. When two or more gate switches in a row (ones next to each other)

GATING X / Y

This one’s hard to explain in writing. I will give a very basic explanation here, but more detail later.

If you don’t understand this then don’t worry! Try reading the more detailed explanation. If that fails, watch the YouTube demo’s or must play around.

Basically to get gate outputs Oberkorn needs two signals. The clock signal and the condition of the gate switch.

If the gate switch is ON and the clock signal is HIGH (on) then you will get a gate signal out.

If either the gate switch is OFF or the clock signal is LOW (off) then there will be no gate signal out.

Both must be high (on).

If you know what AND is in Boolean algebra, then it’s the same thing.

By feeding a clock or gate signal into the GATING inputs (use an LFO square wave, clock, Gate from a MIDI to CV converter, or a trig from the Oberkorn MIDI-Trig converter) you can provide your own signal in place of the clock signal to decide how gates are made.

Confusing, so just play around.

HOW OBERKORN WORKS IN MORE DETAIL

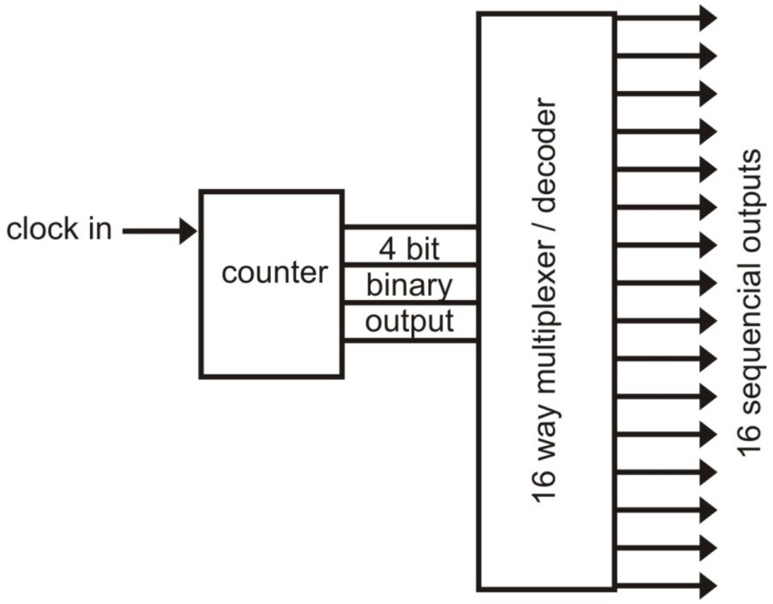
INTRODUCTION

The analogue sequencer is quick and easy to use. Plug it in and off you go! That is the attraction for many people. But what I have done with the Oberkorn is the ‘hack’ the signals inside to allow for greater control and creativity. The downside is that using the hacked features is less intuitive unless you have some basic knowledge of logic circuits! If you can understand these extra features you will get so much more out of it.

I will try my best to explain in a little detail how an analogue sequencer works inside, and with that knowledge you might better understand how some of the extra Oberkorn features work.

Do not worry if the results are not exactly what you expect. This is old style modular synth technology, and half the beauty is the quirky surprising results that you can obtain, often by accident!

Very Basic Block Diagram Of An Analogue Sequencer;



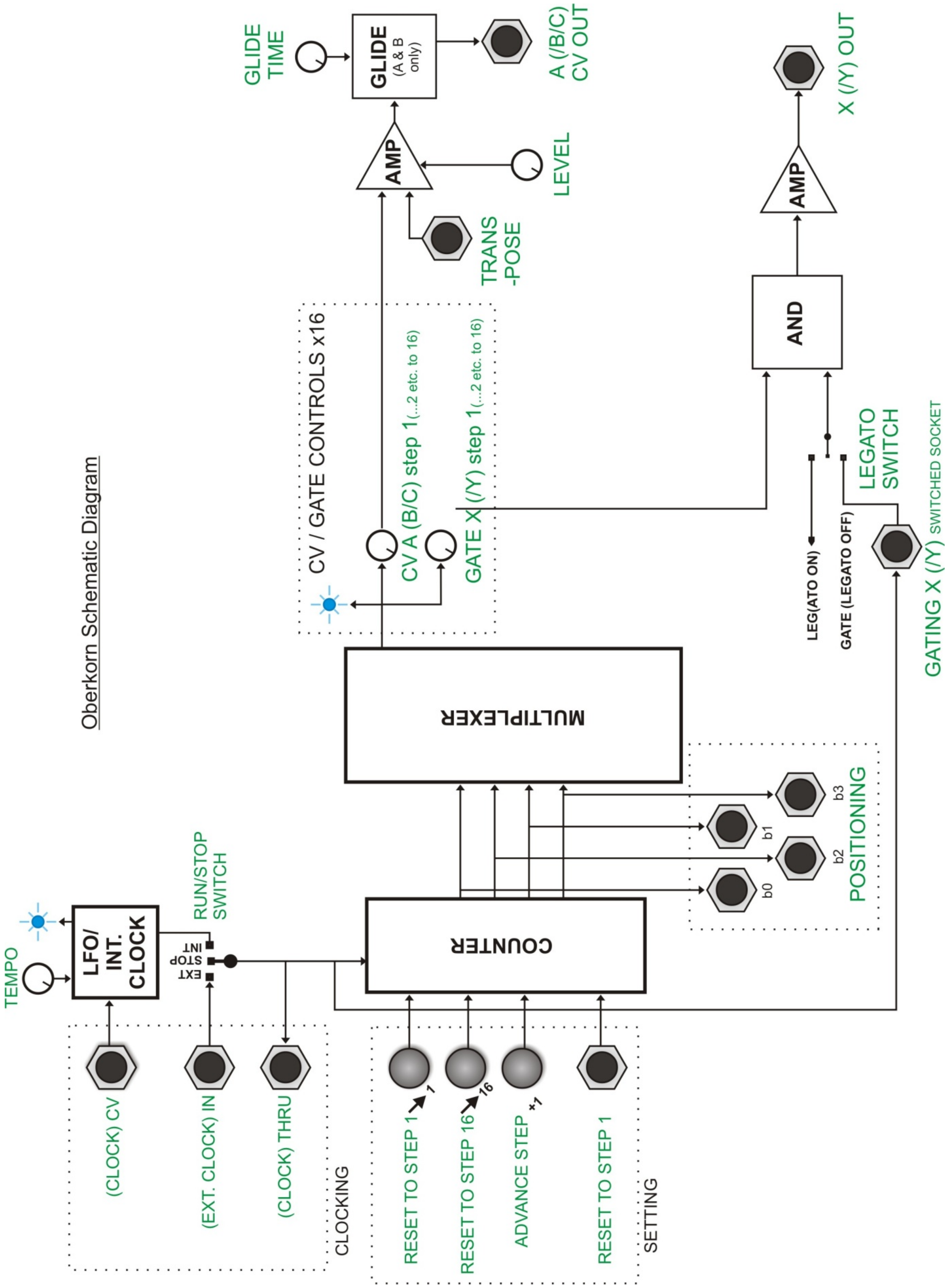
HOW AN ANALOGUE SEQUENCER WORKS

The counter counts clock inputs (coming in from the clock in jack or from the internal clock). The counter counts from 0-15 (and repeats) and puts this out as a 4 bit binary code (google binary code and any other terms you are not sure about!). This code is basically a way of representing numbers from 0 to 15 using 4 wires.

This code is fed into the multiplexer/decoder (which I will refer to as the Mux to save on typing). The mux takes the 4 bit code, and depending on its value, will turn on one of the 16 outputs. So as the code goes up from 0-15 (and repeats), each mux output will turn on (then off) one after the other creating a “sequential output” which you can visually see as the LEDs run from 1-16 (each mux output turning on sequentially).

This output can then be trimmed using the CV controls on the front panel, goes through an amplifier, mixed with another CV (from the transpose input), and then goes through a slew circuit (portamento/glide).

The sequential output also goes through special circuits to create gate outputs which I will explain separately.



Oberkorn Schematic Diagram

SOME PATCH EXAMPLES

No hard and fast rules. Just do what works and what is fun.

OTHER MAD THINGS TO TRY;

Patch a pitch CV output (A, B or C) into clock CV input.

Patch a gate output into either b0, b1, b2, or b3 setting inputs.

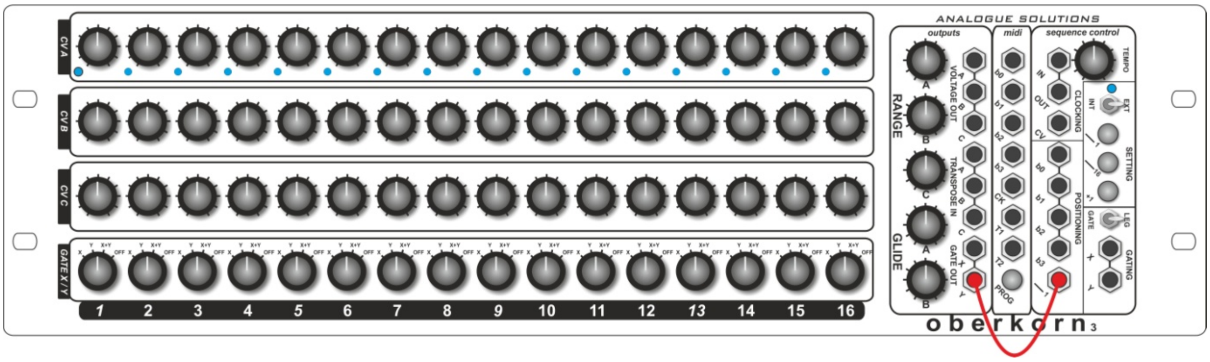
SYNC'ING TWO OBERKORNS

Take clock Out of first Oberkorn to clock In of second Oberkorn. Second Oberkorn run/stop switch should be set to EXT.

SYNC'ING TWO OBERKORNS WITH DIFFERENT RELATIVE SPEEDS

Or you could use one of the b0-b3 setting input/output sockets as a sync signal for the second Oberkorn. This way the second Oberkorn will run at half speed (or quarter speed, etc.).

CHANGING PATTERN LENGTH



Normally the sequencer runs from 1-16 – creating a 16 step sequence (4 bars).

It's possible to create shorter sequencer – and even change the sequence length in real time by patching Gate X or Y into Reset In.

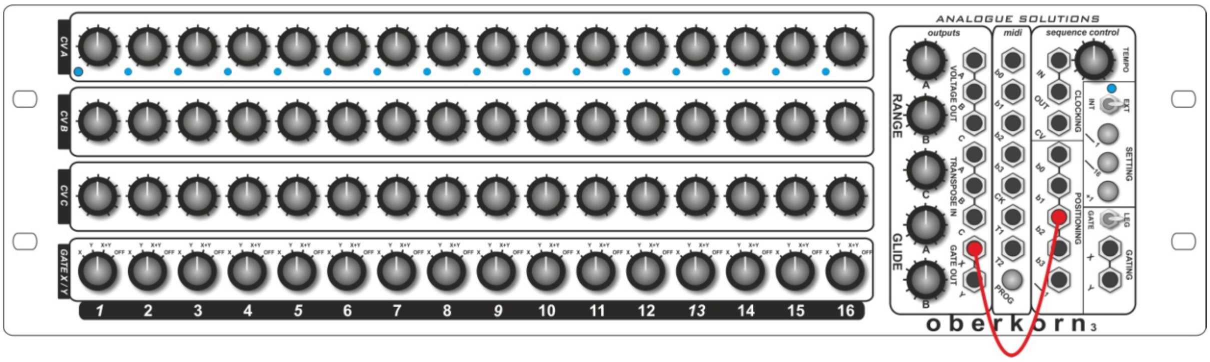
Then the sequencer will reset back to step one early as soon as it receives a gate signal.

So, for example, to create an eight step sequencer set all gate switches off but have gate switch 9 on. So to set the length, add one to the length and that's the switch to set. The position of subsequent switches doesn't matter since they won't be used.

The pattern length can then be changed in real time by changing switch positions.

Pattern length can of course be also changed/sequencer reset using an external voltage too.

FUNNY STEPPING



Hard to explain how this works, so best just to do it and not worry about the technical details.

It’s possible to get Oberkorn to step in an unusual way. Not random – the same pattern gets repeated. So it retains it’s musicality.

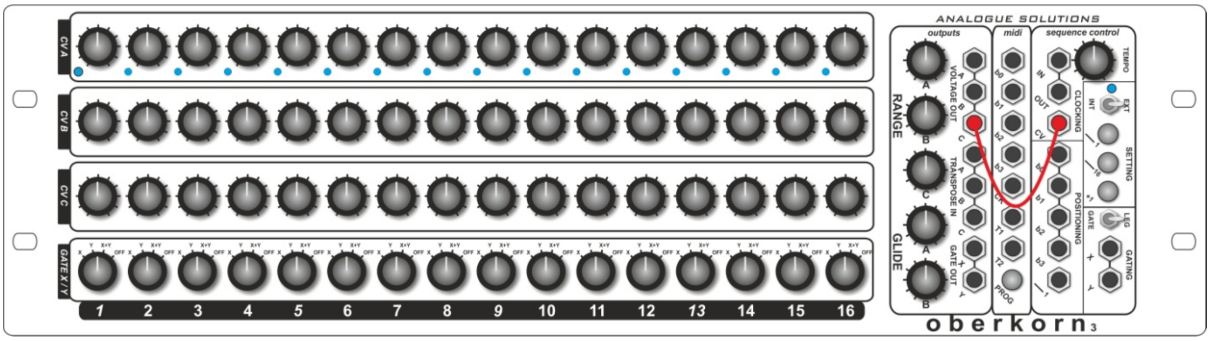
Take either Gate X or Y out and patch to B0, B1, B2, or B3 Positioning binary inputs. Then play around with the Gate settings.

You will find Oberkorn stepping in strange, yet, repeating ways. It might miss 2 steps here or there, play two in a row, etc.

Best is try it for yourself and have some fun!

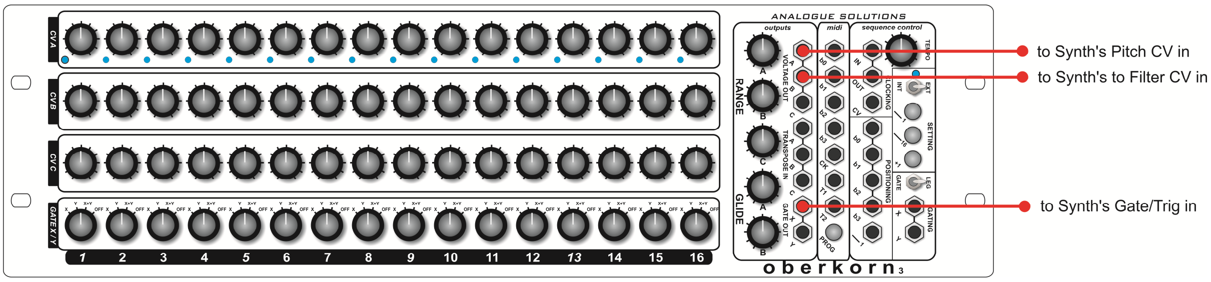
For truly random stepping – try using an LFO triangle wave as the clock source.

ODD NOTE LENGTHS

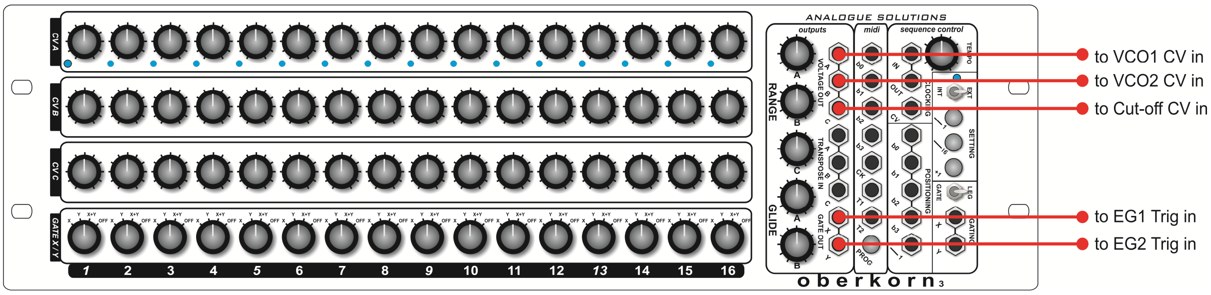


Like the previous patch, it's hard to explain in words the affect – so just do it! But, if you patch one of the CV outs back into Clock CV (remember, Clock CV changes the internal clock speed) then you can get interesting things happen to the step length. Just play with this idea and you'll see the effect.

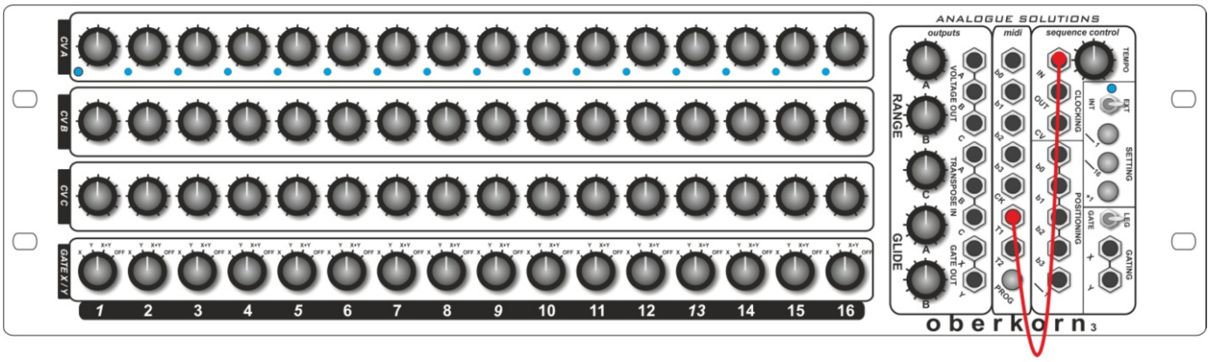
TYPICAL PATCHING WITH MONOSYNTH



TYPICAL PATCHING WITH MODULAR



MIDI SYNC USING MIDI NOTE MESSAGES



Some people seem to have difficulty in synchronising Oberkorn to MIDI. It's not that there is a fault, or that it's hard to do (from our point of view!) But I think some people who are new to analogue gear may not understand the concepts.

Note: this manual really applies to Oberkorn, but using a suitable MIDI to Trigger module, like our own MT9 – the same principles can be applied to **Eurokorn** – to synth to a MIDI sequencer using MIDI notes as a clock source.

MIDI SYNC – LEAST PREFERRED METHOD

The traditional way to get gear to clock in time is to use MIDI Sync. This is what you would typically use to get a MIDI sequencer and a MIDI drum machine to play in time.

The problem with MIDI Sync is it is continuous. So the slaved gear will continued to play as long as the Master sequencer is playing. The slave can't be stopped, paused, or have its timing changed.

Oberkorn can be set up to run from MIDI Sync – but in our opinion it is not the best method for the reasons outlined above. But in case you do want to do it that way this is how.

Note: Using MIDI synth the gate signals produced will be very short. So you may have to turn up the Decay/Release on your analogue synth.

MIDI CONNECTION AND SET-UP

Take MIDI Out from your master MIDI sequencer (DAW, for example). Plug that to MIDI In on the back of the Oberkorn.

Ensure your cable is a MIDI cable and not a DIN cable – as they are wired differently.

Ensure the cable is not faulty!

Ensure you DAW or sequencer is set to transmit MIDI Sync – and the correct MIDI Output Port is enabled.

PATCHING

Use a CV cable to Patch the CK socket (clock output) to the IN socket (clock input).

Put the Run/Stop switch to EXT (external clock).

That's it!! If that doesn't work then almost certainly one of the above steps has not been followed. Most issues go back to incorrect set-up of the DAW.

SYNC VIA MIDI NOTE

The best and most versatile way to sync Oberkorn to a MIDI sequencer is to create a clock signal by programming a stream of MIDI notes in a DAW.

Oberkorn has 5 MIDI note to analogue trigger converters. Only one is needed though to sync.

MIDI CONNECTION AND SET-UP

Take MIDI Out from your master MIDI sequencer (DAW, for example). Plug that to MIDI In on the back of the Oberkorn.

Ensure your cable is a MIDI cable and not a DIN cable – as they are wired differently.

Ensure the cable is not faulty!

Ensure the transmit channel of the MIDI sequencer matches the receive channel of Oberkorn.

TO SET MIDI CHANNEL OF OBERKORN

Push and HOLD the PROG (program) push button. Do not release yet! Please some MIDI notes. Then release the push button. Oberkorn will set itself to the same channel as that of the notes received. Try 2 or 3 times if for some reason it doesn't work first time.

You may find it easier to plug a MIDI keyboard directly into Oberkorn to do this.

Oberkorn is usually shipped defaulted to channel 1.

PATCHING

Use a CV cable to Patch the T1 socket (MIDI Trigger 1 output) to the IN socket (clock input).

Put the Run/Stop switch to EXT (external clock).

Each time Oberkorn receives MIDI Note 64 (E) it will advance one step.

DAW Programming

So now you have it all connected up and hopefully working you need to create a DAW track that will be your 'clock signal'

The simplest pattern would be to write a one bar sequence of 16x 16th notes – using note 64 (E).

Each time this track is played Oberkorn will step.

OTHER PATTERNS TO TRY

16ths is the logical pattern to start with. But here is the power over traditional MIDI Sync.

You can now mute the track and Oberkorn will stop. Un-mute and it will play again.

You can write patterns with different 'clock rates'. So have a pattern using 8th notes for half tempo, or 32nd notes for double tempo!

You can change the rhythm too. Note just a straigh train of 16ths. Try some kind of syncopated pattern.

The beauty of all this is you can mix and match these patterns within one song!

RESET

For even more flexibility you can also reset the sequencer to step 1 using another MIDI note.

Patch T2 to the RESET socket.

Everytime you play MIDI note 65 (F) – Oberkorn will reset to step one!

You can program a DAW track to add resets to your song.

BINARY CONTROL

Sockets b0/1/2/3 provide a binary output from 16 MIDI notes.

As each of 16 MIDI keys are pressed, numbered from 1 to 16 (well, 0 to 15 actually), this is converted to four bit binary and sent out of the binary sockets.

The 16 keys start from C(48) then the next 16 keys.

The binary sockets are a little confusing but I'll do my best to explain.

The best way is to start with an example.

Stop the sequencer. Press Reset to 1, so the sequencer is on step 1. The sequencer MUST be on step one, otherwise odd stepping will result! (Good for creativity though). This is because the binary pattern you feed into the sockets is mixed/added to the internal binary control signal. Resetting to step one clears the internal binary signal to 0000.

Connect a MIDI keyboard to Oberkorn, and the MIDI channels up correctly as outline earlier in this appendix.

Next, using four patch leads, connect the four binary outputs b0/1/2/3 in the 'midi' box on the front panel to the four binary input sockets b0/1/2/3 in the 'sequencer control box.

Now starting with note C, press this MIDI key then the next 15. You should see the step number of the sequencer change as you go up.

You can see from this that you can control, via MIDI notes, which step Oberkorn is on.

MAKE OBERKORN STEP IN ANY ORDER!

You could therefore use a MIDI sequencer to write *any* combination of these 16 notes to make Oberkorn step in *any* order you wish and in *any* direction. Forward, backwards, pendulum, even steps only, first eight steps only, etc. Any way you wish!

But note, using this method will note create 'normal' gate outputs. You can create 'normal' gates using the MIDI-Trig unit (sockets T1-5).

Patch T1 and T2 into the GATING X and Y sockets.

Then program your gate pattern using your DAW.

This system is very powerful – but little understood. Many poeple just don't 'get it'! Stick with MIDI Sync via MIDI Notes if you don't have success or don't understand. MIDI Sync via MIDI Notes is more than good enough for most people's needs.

GATING X / Y

These arae hard to explain in writing. I will give a very basic explanation here, but more detail later.

If you don’t understand this then don’t worry! Try reading the more detailed explanation. If that fails, watch the YouTube demo’s or must play around.

Basically to get gate outputs Oberkorn needs two signals. The clock signal and the condition of the gate switch.

If the gate switch is ON and the clock signal is HIGH (on) then you will get a gate signal out.

If either the gate switch is OFF or the clock signal is LOW (off) then there will be no gate signal out.

Both must be high (on).

If you know what AND is in Boolean algebra, then it’s the same thing.

By feeding a clock or gate signal into the GATING inputs (use an LFO square wave, clock, Gate from a MIDI to CV converter, or a trig from the Oberkorn MIDI-Trig converter) you can provide your own signal in place of the clock signal to decide how gates are made.

Confusing, so just play around.