SEQUENCER PANEL USERS MANUAL

NONLINEARCIRCUITS

The two sequencers are happy to operate independently of each other but for greater entertainment and general synchronised lunacy it is good to couple them. In which case usually bindubba1 is the “top” and bindubba3 is the “bottom”.

The only real rule with nonlinearcircuits panels is

BLUE jacks = INPUT

RED jacks = OUTPUT

Do not connect two reds together, it is not an instant disaster but it is not conducive for the long term survival of your op amps. You can connect a red jack to more than one blue jack, two or three will be fine.

Apart from this anything goes, CV, audio, gates and triggers are all just signals and can be used however you like. All clock inputs will trigger on a 1.1V rising edge so you can use virtually any signal to trigger any circuit.

bindubba1

This is a 4 stage sequencer with 16 control voltage outputs (CV) and 8 gate outputs that are divisions of the input clock signal from/1 to /128. The /1 gate output is an S-trigger giving a falling edge in response to the rising edge of the input clock, just what you need for a Korg, Moog or Yamaha. The /2 to /128 outputs follow the incoming clock.

The 16 outputs are 1st divided into two groups. The left column are ‘normal’ CV operating from 0V to 11.5V depending upon the knob setting for each stage. The right column is the inverted version, operating from 0V to -11.5V.

Now the interesting part, just considering the normal CVs, if the knobs are labelled A, B, C, D:

output # 1 (the top one) will give a pattern of ABCD
output # 2 will give a pattern of BCDA
output # 3 will give a pattern of CDAB
output # 4 will give a pattern of DACB
output # 5 will give a pattern of DCBA (ie. backwards count)
output # 6 will give a pattern of CBAD
output # 7 will give a pattern of BADC
output # 8 will give a pattern of ADCB

If a diagram helps:

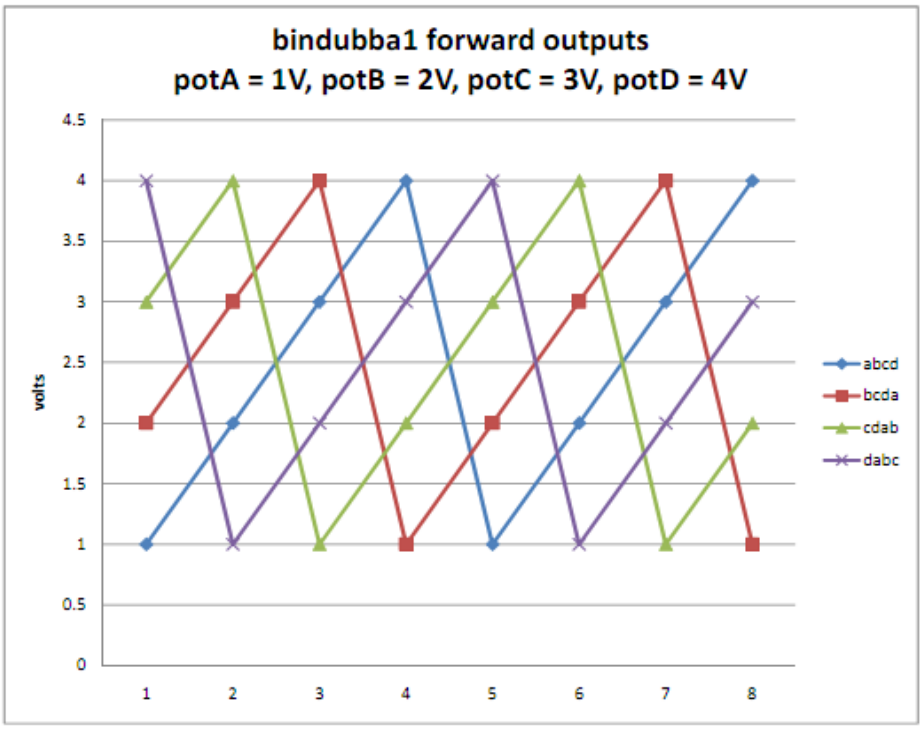


Figure 1: forward counting output voltages for 8 clock pulses

The plot examines the voltage output levels of the 4 forward counting outputs over a set of 8 clock triggers.

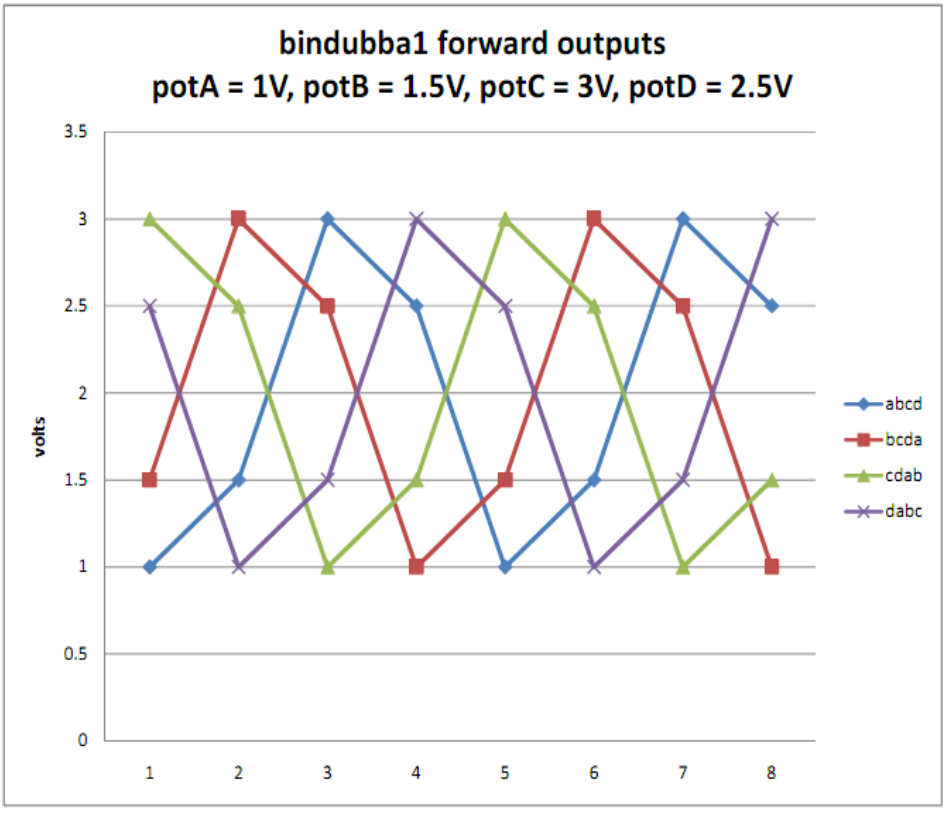


Figure 2: forward counting output voltages for 8 clock pulses

The plot examines the voltage output levels of the 4 forward counting outputs over a set of 8 clock triggers.

So what about those four switches? These are from a suggestion by the legendary DGTom which he called “song mode”. When the switches are centred they are off and have no effect. When switched up or down, the switches turn off certain outputs for shorter or longer periods, depending upon which way you have set the switch. One switch controls the outputs that start with a “1”, so 1234 and 1432. Another controls outputs beginning with a 2, etc. Which switch controls what is up to the user to find out ☺

This function allows you to program longer sequences or entire songs.

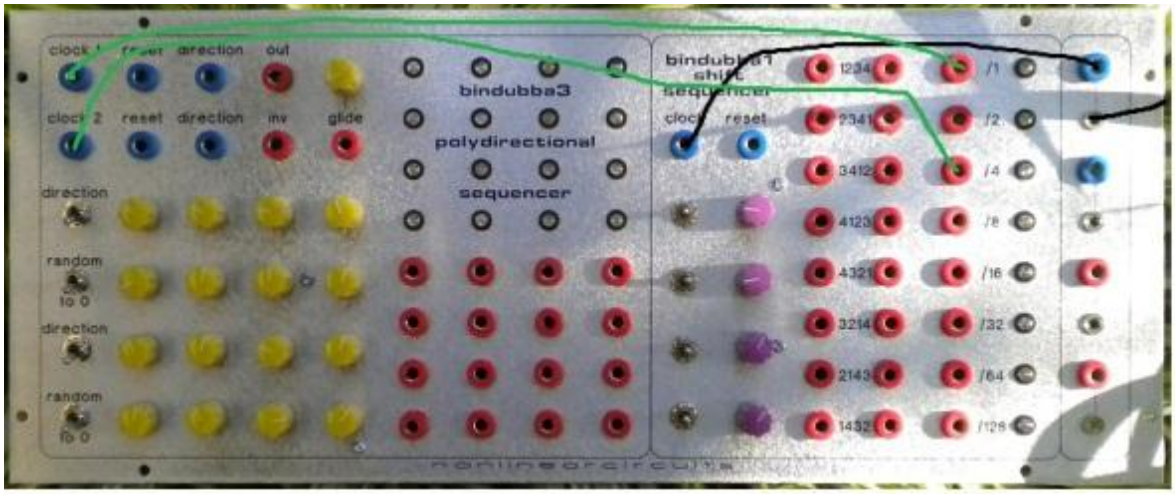
bindubba3

Has 16 stages, requires two clock signals, has gate outputs for each stage, 0V-11.5V CV output, inverted CV output and glide CV output.

One clock controls horizontal travel, the other controls vertical travel. These are not indicated on the panel, but you can work it out as soon as you apply a clock signal.

The switches control direction and the reset function. You can and should also control these with gate signals. Ideal sources of gate signals are the binary count outputs from bindubba1.

You can also feedback the stage outputs into the rest inputs to get this sequencer to lock into different patterns, flipping the switches will change these patterns in various ways. Flipping the switches back to their original positions will return you to the previous pattern.



basic patch

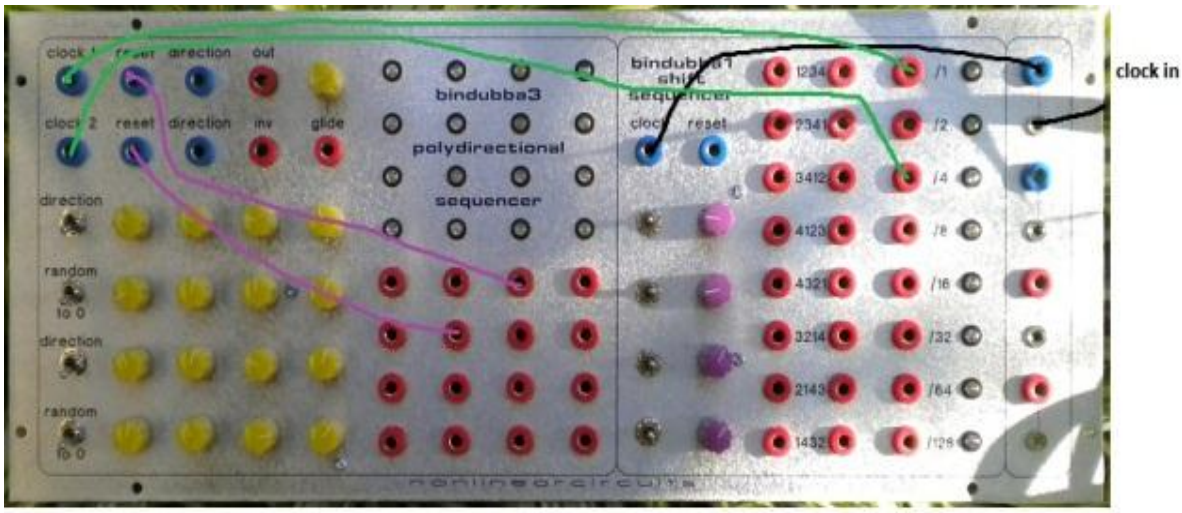
1. clock in from external source.

The minijack will also provide a ground connection between the sequencer panel and other synths.

2. patch/1 and /4 to clock inputs of bindubba3. This will enable a normal count 1-16, you should see the LEDs move 4 stages horizontally then 1 stage vertically..

3. Adjust the direction switches so the count moves forwards or backwards, up or down as you like.

4. Move the patch from /4 to /2, /8, /16 to see how the count changes on bindubba3.



controlling the reset function to get patterns

1. Connect stage outputs into the reset jacks. This will cause the count to follow a variety of different patterns.

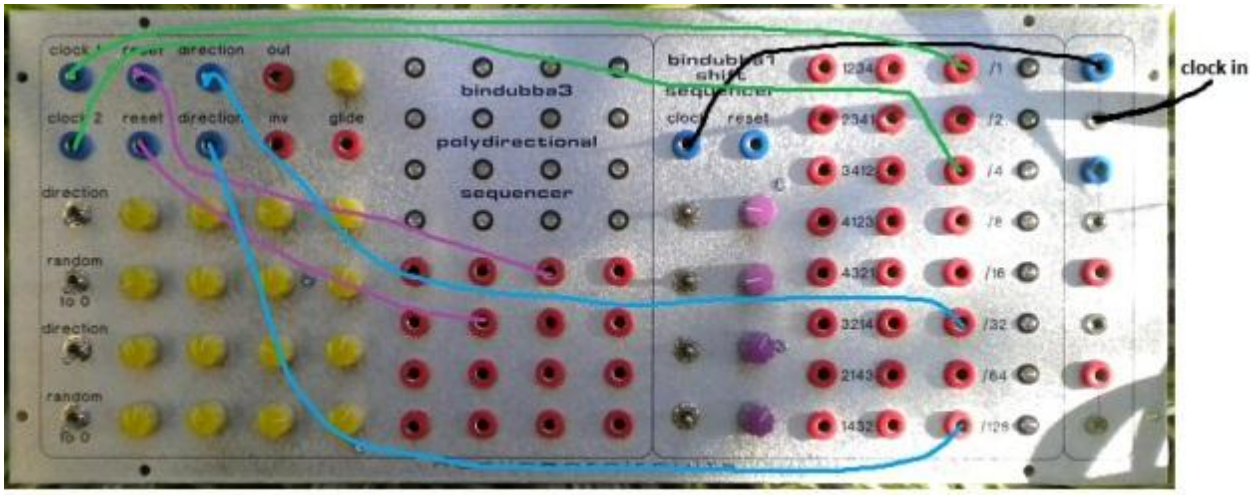
2. Try patching different outputs to see the variety of patterns you can get.

3. Change the switches between “random” and “to zero” to get even more patterns.

The reset switch will work in two ways, when set “to zero” the count will go back to the top row or left column. If set to “random”, things get a bit nuts. A high signal on the reset jack will change the count to the binary inverse of the other clock.

If the horizontal clock is on 12 (binary - 1100) and the vertical control is set to random and gets a signal on the reset jack, the vertical count will jump to binary 0011 = 3

Simple!?! Really it is not random but it allows a huge variety of patterns and is hard to predict. If you apply gates to both reset inputs in random mode, your clock counts become the inverse binaries of the other clocks…..yes, dreams do come true!



Using gates to control the direction

1. Connect some of the longer gates from bindubba1 to the direction inputs of bindubba3. one at a time or both at once.

2. You may need to change the direction switches. For one direction the switches ignore the input on the direction jack, if you cannot see any direction change when the /32 or /128 LEDs light up, try changing the direction switches.

3. Try any combinations of the patches shown in the above pictures, almost everything will provide some entertainment, although you may find one or two combinations cause the sequencer to halt. No big deal, just try something else.

Finally

The outputs of both sequencers can be used to control VCOs, filters, anything that likes CV or gates. The gate outputs are approx. 5.5V. The CV can be adjusted up to 11.5V, which can translate to 11 octave range on your VCO. I usually use one of the DC mixers on the VCO panel to attenuate and mix the sequencer outputs, making it easier to set them up.