



# Little Nerd

## CLOCK, TRIGGER AND GATE PROCESSOR

littleNerd is a trigger and clock manipulation module which tries to be able to do everything you have ever imagined and wished to do with trigger or clock signals in your modular in only 6 HP.

### instruction

It has 2 inputs (1,2) and 5 programmable outputs (A,B,C,D,E)

**1**  
Signal from input 1 is processed to outputs A,B and C.

**2**  
Signal input 2 can be processed to outputs D and E. Signal input 2 has a probability mix knob which sets whether the signal to process by output D and E is taken from input 1 or input 2 (fully counter clockwise means it always processes the signal from input 2).

**3**  
To select a channel simply turn one of the A,B,C,D,E knobs. Output mode can be set by pressing the MODE button after selecting the channel. The color of the RGB led indicates which mode is selected for the specific channel.

In most of the modes you have 2 PARAMETERS you can set. PARAMETER 2 is set only while holding down the SHIFT button. PARAMETER 1 is set while no buttons are pressed. The modes are: DELAYED DIVIDER, TRIGGER 2 GATE / FLOP DIVIDER, MULTIPLIER, TRIGGER REPEATER, EUCLIDIAN SEQUENCER, CLOCK OSCILLATOR and PROBABILITY/GROOVE.

**4**  
Every channel has assigned knob and the functionality of a knob is dependant on the output mode of individual channel.

discrete value setting assistant.

While setting the value of discrete parameters, for example division factor (1-16), the RGB LED helps you to read which number you are adjusting. When a number is changed, the RGB LED shortly blinks OFF and ON. When you set a number divisible by 4 (4,8,12,16) the RGB LED shortly flashes WHITE.

#### SAVING and PRESETS

Because there are plenty of ways in which you can use littleNerd, we have built in the possibility to save and load presets. If you want to save the preset you have just made, hold both buttons for more than 5 seconds until you see a rainbow animation on the RGB LED. When you release the buttons, the preset is saved and the animation stops. If you want to load another preset, get to the rainbow animation and turn one of the 6 knobs. This loads preset 1-6. On startup, littleNerd automatically loads the last preset you have been using the last time. Every channel has an assigned knob and the functionality of a knob is dependant on the output mode of the individual channel.

#### MODES:

**delayed divider** *Red*  
PARAMETER 2 sets division factor of the divider. When division factor is set to 1, PARAMETER 1 acts as a simple trigger delay. Otherwise, the divider counts incoming trigger signals and outputs a pulse when the counter reaches the division factor. PARAMETER 1 sets the offset of the output pulse, relative to the incoming pulse. This feature tries to calculate the offset expecting that you are sending a regular clock signal to the input. If you are not, put the PARAMETER 1 to full counter-clockwise position.

**trig2gate / flop divider** *Green*  
PARAMETER 2 sets the division factor of the divider. When the division factor is set to 0, PARAMETER 1 sets

the length of a gate, triggered by the rising edge of the pulse on the input. Otherwise, it works in a similar way as the CLOCK DIVIDER, but with one difference. When the counter of the incoming trigger signal reaches the division factor, the flop divider flips the output gate signal and turns it off again, when the counter reaches the division factor again. PARAMETER 1 sets the offset the same way as with the CLOCK DIVIDER.

#### multiplier *Blue*

the Multiplier multiplies the clock frequency of the input signal. PARAMETER 1 sets how many pulses are outputted in between the incoming pulses. It tries to distribute the pulses as regularly as possible so it works best with regular clock signal. PARAMETER 2 is not active for the multiplier. The Multiplication factor can be set to any number from 1-8.

#### trigger repeater *Cyan*

the Trigger repeater repeats an incoming trigger pulse. PARAMETER 2 sets how many pulses it creates. PARAMETER 1 sets how fast they are repeated.

#### euclidian sequencer *Magenta*

Euclidian sequencing is a powerful and very musical way of generating rhythms and polyrhythms by a simple mathematical formula called Euclidian algorithm. The algorithm has two input values. First is the number of steps in sequence - this is set by PARAMETER 2 and can be anything in range 1-16. The second parameter is how many fills there are in the sequence, meaning how many of these steps contain trigger information - this is set by PARAMETER 1. The fills try to be equally distributed across the steps in sequence. Because this is not always possible to do in 100% equal distribution (imagine 5 fills in 8 steps), the algorithm rounds the fill positions to the closest steps. So called euclidian rhythms can be found everywhere in the world in traditional music.

