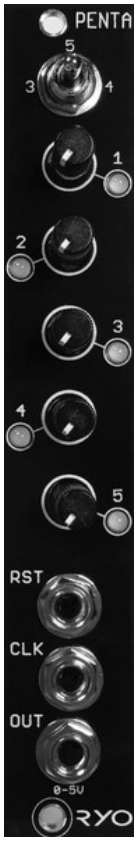


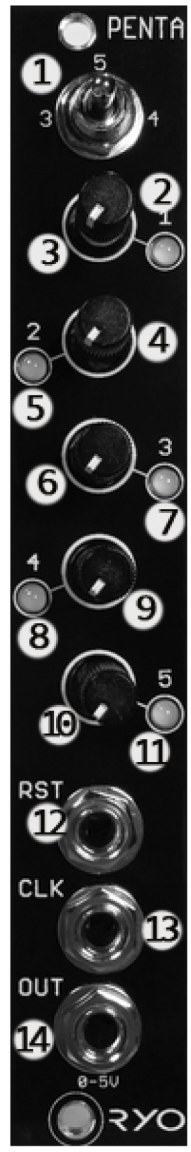
LjunggrenAudio RYO Penta
a compact 4hp 5 step sequencer

Quickstart - what is the Penta and how do I get going?

The RYO Penta is a compact 4hp 5 step sequencer for Eurorack that's easy to build and low cost, without compromising on our usual quality standards such as buffered output, Schmitt triggers on inputs and reverse polarity protection.

It is great for simpler sequencer tasks such as basslines and arpeggios, transposing sequences, filter cutoff or anything where a repeating stepped modulation is wanted for adding movement to the sounds you're making.

RYO Penta



1. Pattern length switch (3, 4 or 5 steps; can also be set by external gate/trig into RST input.)
2. Active step indicator LED.
3. minishaft knob for step cv level.
4. minishaft knob for step cv level.
5. Active step indicator LED.
6. minishaft knob for step cv level.
7. Active step indicator LED.
8. Active step indicator LED.
9. minishaft knob for step cv level.
10. minishaft knob for step cv level.
11. Active step indicator LED.
12. Reset CV input.
13. Clock input.
14. 0 to +5V buffered output.

Width: 4hp

Installation

To begin installation, please make sure that:

- you have a standard pinout eurorack bus board
- you have +12V and -12V power rails on that bus board [no +5V supply is required]
- the power rails are not overloaded

!!!Before installing this module disconnect the power from your system!!!

- Double check the polarity of the ribbon cable - The red stripe should be aligned with the -12V rail, on both the module and on the bus board

[we use shrouded headers but it's still possible a cable has been assembled with the stripe on the wrong side of the shroud so always double check!].

Also make sure when using busboards without shrouded headers that the pins aren't transposed a row vertically or horizontally – all pins should insert into holes on the cable.

*Although we use both PTC fuses and schottky diodes to provide reverse polarity and excess current protection, we do not take any responsibility for damages caused by wrong power supply connection**!***
After you have connected everything, double checked it and ensured your case is closed such that no power lines can be touched by your hand or any stray cables drop into holes, turn on your system and test the module

Sending a clock pulse to the CLK input will progress the sequence, the Penta has 5 minishaft potentiometers for adjusting each of the 5 steps voltages, ranging from 0 to +5V. A pattern length switch is available for selecting 3, 4 or 5 steps pattern length, this can of course also be set by using an external gate or trig into the RST (Reset) input.

We've also added a bonus for the more seasoned builders in the form of +5V GATE output solder pads for each of the sequencers 5 steps, as well as an input pad for HOLD which will lock the sequence to the active step as long as a gate is present. Info on how to perform a homebrew expansion can be found on the last page in the assembly manual.

(Modifications to Penta are detailed in documentation downloadble from the website where this document will also be available)

Dimensions	
Height:	**3U** (128.5mm)
Width:	**4HP** (20mm)
Depth:	**39mm** (with power cable attached)
Weight:	40g (approx w/cable)

Current consumption	
+12V rail	**6mA**
-12V rail	**1mA**
+5V rail	**no +5V** supply required

Basic specifications	
total frequency controllable range	dc to 50kHz
max input/output audio signal	n/a
CV input range (calibrate to preference)	0V to +10V
Max gain	n/a

Nominal impedances	
Audio signal input:	100kohm
Audio Signal **output**:	in loop compensated
CV input:	n/a

Patch ideas:

Although uses of sequencers in patch examples and ideas are found readily online and in some books, there are other less obvious ways to use Penta in patches in your modular rig:

below i've include some inspiring words to show patches that might not be evident; and, as ever, experiment – RYO modules are designed with all necessary protection and fail-safes so you can just start plugging in patch cables and see what happens!

Clock it at audio rates:
Use a VCO too clock it and out will come a variety of weird waveforms.

Square up a waveform:
try something different - Square up a waveform to use as a clock or other trig/gate sources using 4 step mode with settings to 0V and +5V.

S**tepped oscillator:**
by clocking Penta at audio rates, you can create stepped waveforms

Variation:
the odd step numbers of Penta allow you to create ever-evolving variation in sync with your sequences. use it to modulate a waveshaper or filter!

Ratcheting:
Use Penta to control an LFOs rate in time with your sequence to create variable ratcheting per step!

Clock division:
by setting the knobs to only max or minimum, you can create a divider, cutting the clock down to slower speeds based on odd divisions - great for polyrhythms!