

# ELTA<sup>MUSIC</sup>



MADE IN MOSCOW

## ELTA music PLL-4046 analog harmonic synth.

The PLL-4046 is a monophonic analog harmonic synthesizer effect. That turns your input signal into a square wave and then has a multiplier and divider that add intervals to your note. Two harmony notes are controlled by the loop function, which controls how it tracks your original note.

- Makes one note into a chord
- Make any triad out of one note
- Makes it sound like there's someone else playing along with you
- set the loop control to decide how it follows your playing

The three notes are a three-channel mixer that gets into a master volume. PLL is capable of the kind of ragged polyphony and noisy collapse you'd hear in an '80s arcade game like Missile Command, with descending laser-beam pitch glides and vocal roars as notes decay. The heart of this pedal is a CMOS Phase Locked Loop (PLL) IC – CD4046. In a nutshell, the PLL takes your input signal and compares its phase and frequency against an oscillator, generates an output proportional to their difference then feeds it back to the oscillator. This then causes the oscillator to lock onto the input signal and generate a synthesized frequency.

### FUZZ voice

First of all the input signal is filtered and goes to detector circuit. Detector circuit extract the fundamental frequency of the signal and outputs it as a square wave FUZZ-VCO. This section has two parameters, "**gain**" and "**offset**". By manipulating these control you will find the effect similar to PWM (pulse width modulation of square VCO) This is the first voice of the PLL-4046, which is called FUZZ.

## Multiplier/divider voices

From fuzz the signal goes to multiplication and then to divider circuit, and each of these circuits has its own output to device's internal mixer. Multiplier is a main harmonic voice, Divider is a subharmonic. There are 3 pots (**lag time, reaction, loop track**) and a **loop speed** selector to adjust the behavior of Multiplier and Divider circuits. Then there are a separate divider and multiplier value selectors which can be used for setting the musical intervals for each voice.

## MIXER section

Mixer section allows you to achieve desired balance between available 3 voices (**divider, multiplier, fuzz**) and adjust the overall output from device using the **master** pot. Then you can use 3 voice footswitches to take voices in and out of your sound.

Using various settings you can make PLL-4046 track your input almost perfectly and make it out of control

## Connections

**IN** - guitar, bass, synthesiser and other electronic music signal.

**OUT** - output.

**CV In** - connect LFO, Sequencer, and other 0-5v CV modulators.

**DRONE** - connection for optional DRONE pedal or expression pedal.

*Drone and CV inputs is for controlling the internal VCO.*

## Power supply

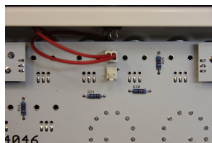
PLL-4046 uses standard boss style **9v center negative** power adapter.

**Power consumption** 30ma.

You can change power supply by changing the placement of internal connector under the bottom cover of the pedal.



Standard boss style 9VDC  
Center negative



9-12AC or 12-18VDC any polarity

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