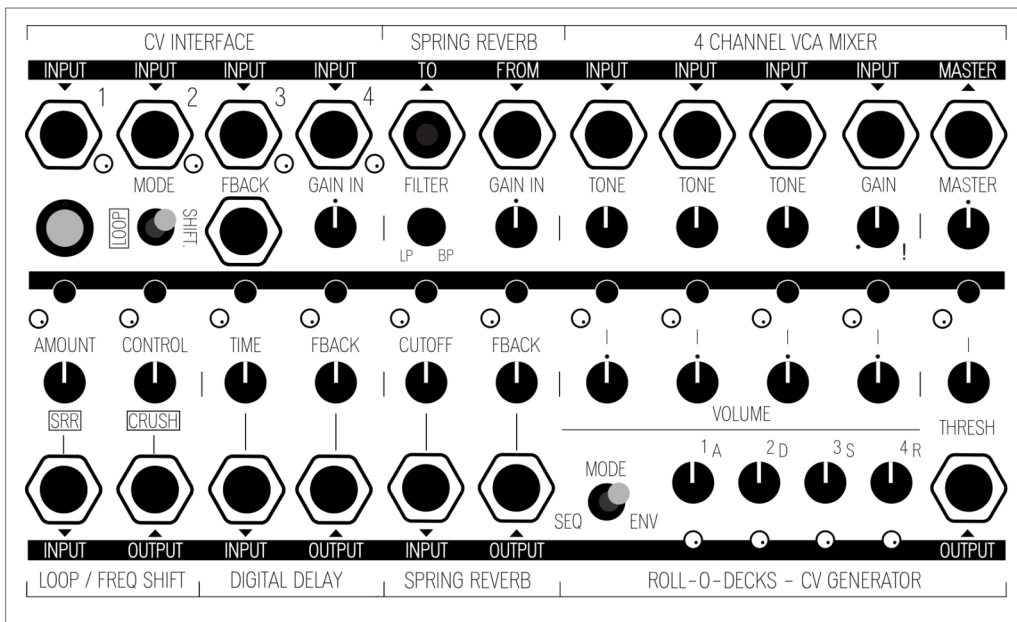


FieldKit FX Repairs Manual

PSU IC Swap

Production Run 1

August 2018



Required Materials

- 1 x FieldKit FX
- one of the following ICs:
 - +12V IC: Texas Instruments LM27313XMF/NOPB
 - 12V IC: Texas Instruments TPS54332DDAR
 - +5V IC: STMicroelectronics LD1117S50TR
 - +3.3V IC: Texas Instruments TPS62125DSGR

Required Tools:

- 1 x soldering iron
- 1 x drill / screwdriver with Phillips head
- 1 x M8 hex socket (ideally made from plastic)

to replace the -12V IC and the +5V IC, optional for all other ICs:

- 1 x hot air rework station

Procedure

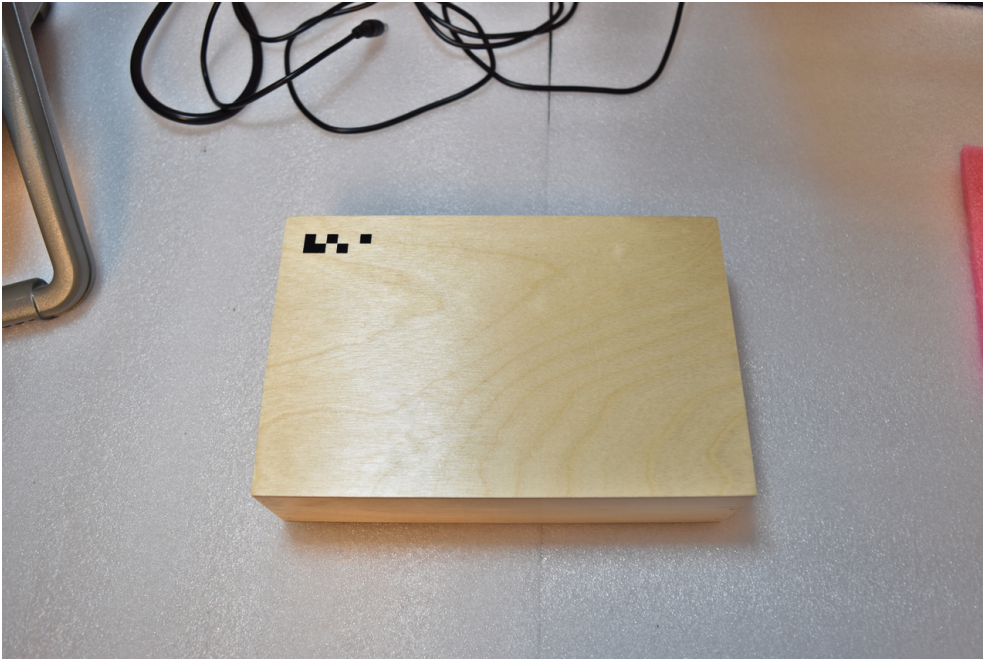
1) Introduction

This instruction booklet is compiled with the purpose of giving guidance on the procedure of swapping the ICs of the internal power supply of the Field Kit FX.

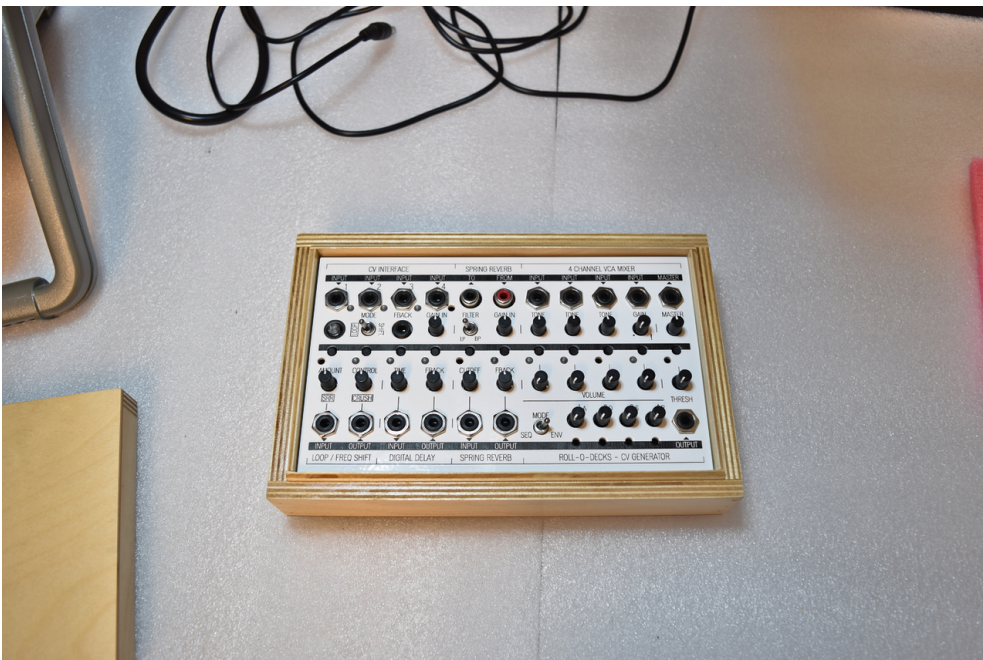
2) Steps

2.1) Mechanical

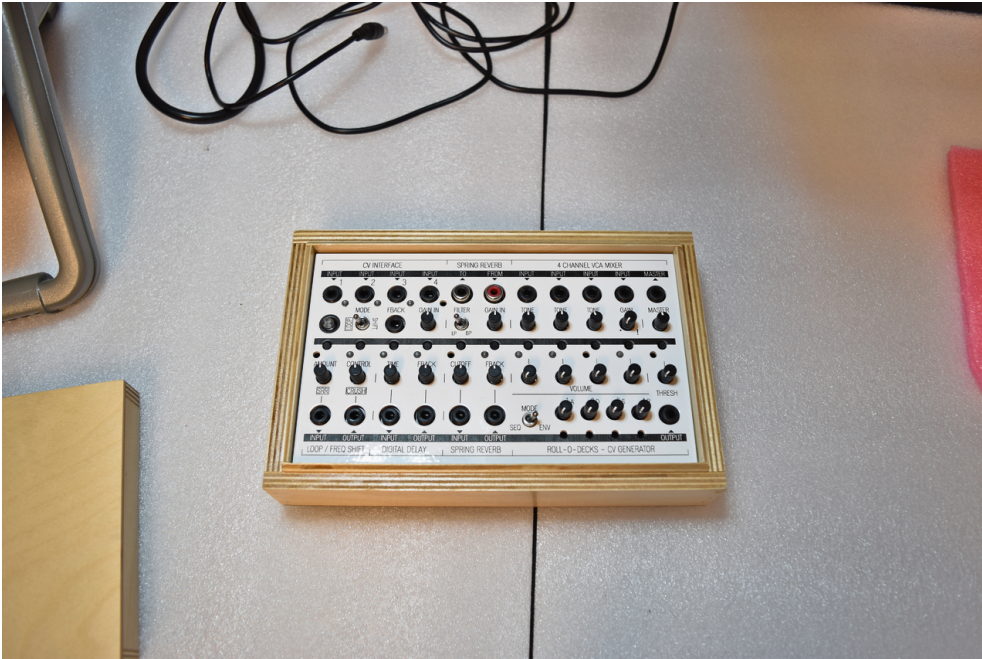
Here's the FKFX sitting in it's enclosure!



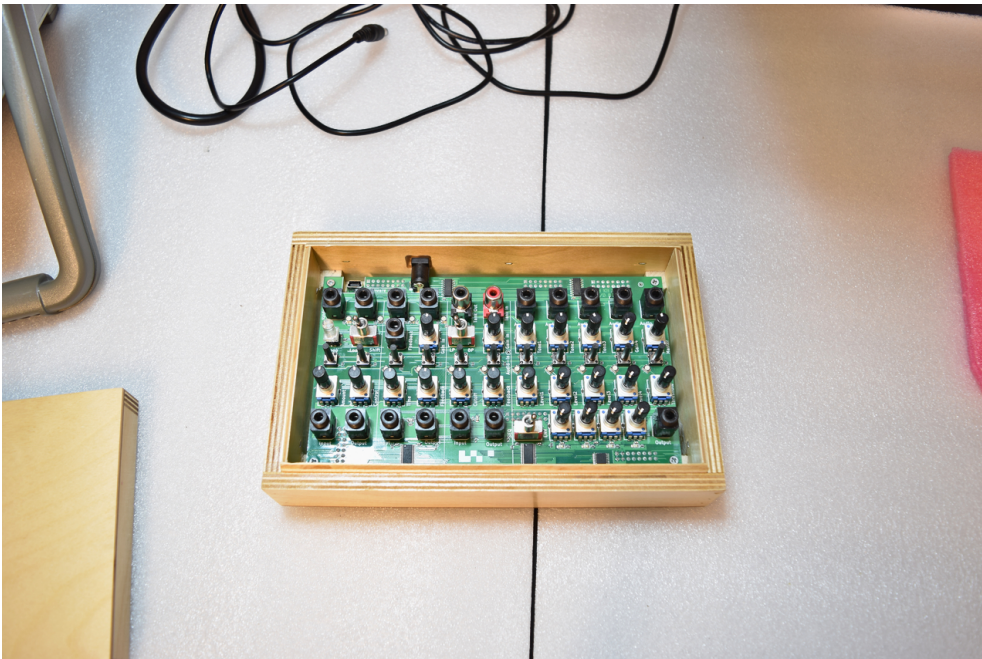
Take out the front lid.



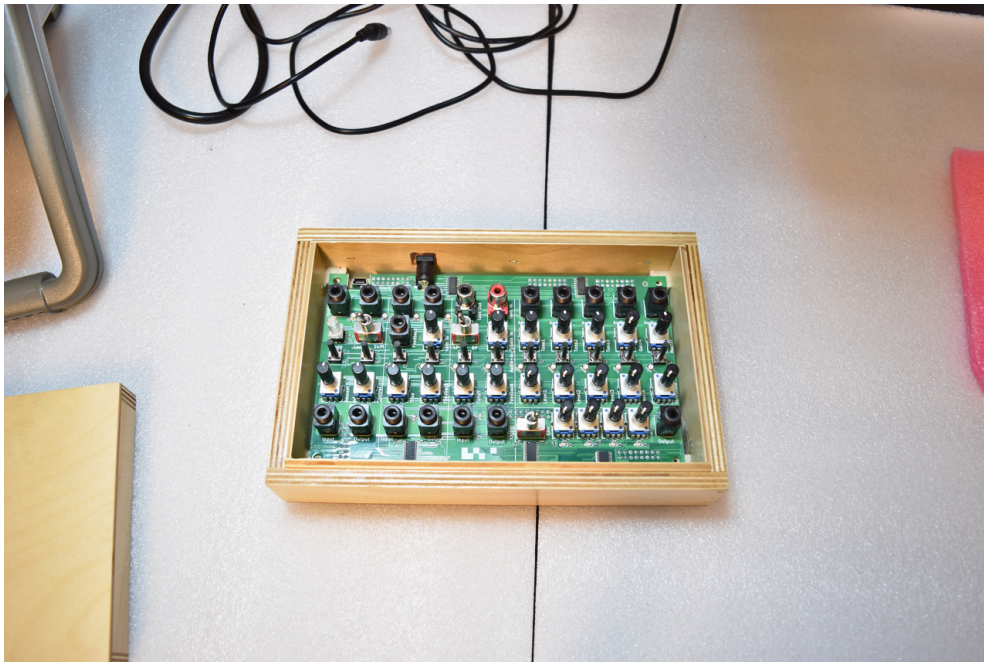
Untighten the hex nuts from the minijack connectors to release the front panel.
Be careful not to scratch the front panel while at it! Either use a plastic hex socket to untighten the nuts, cover your metallic hex socket with soft tape or/and just be careful with the process!



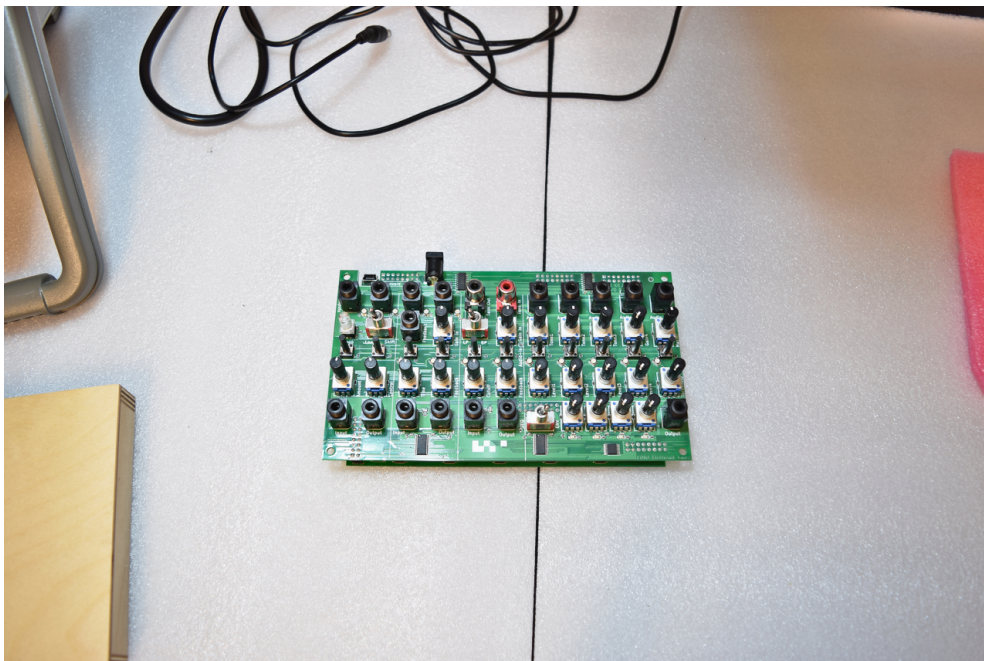
Lift out the front panel to reveal the circuit board.



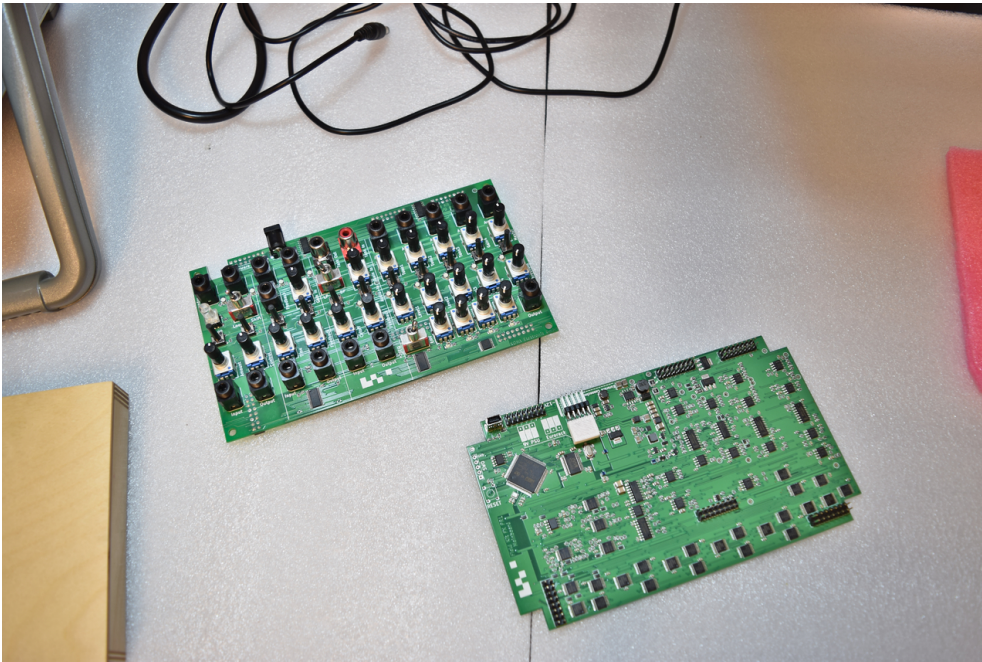
Unscrew the four mounting screws on the corners to release the stacked PCBs.



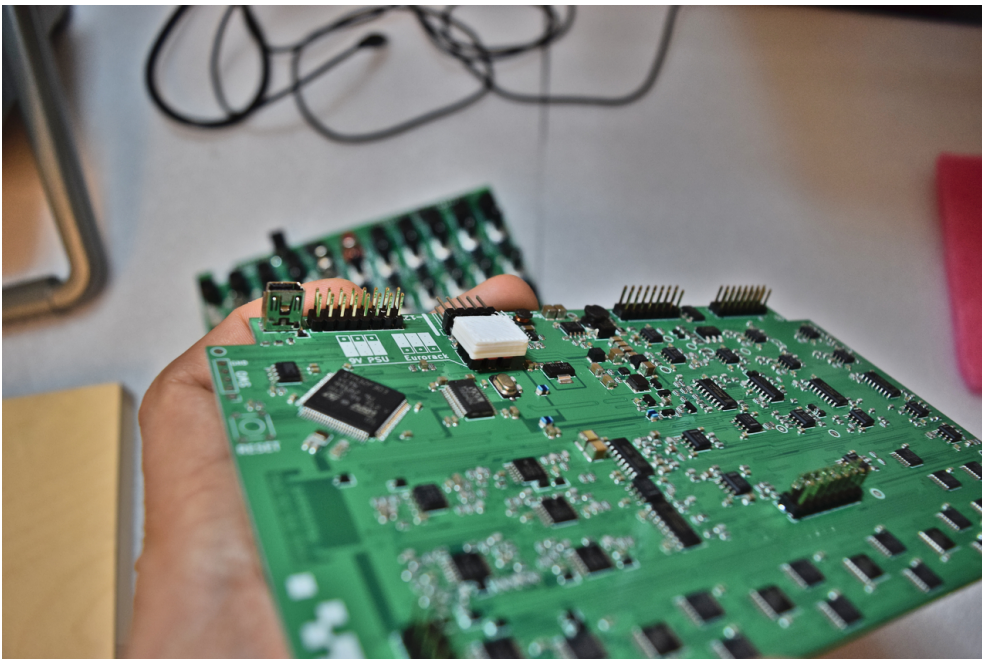
Lift out the stacked PCBs from the enclosure



Unstack the PCBs - lift out the top PCB from the lower PCB

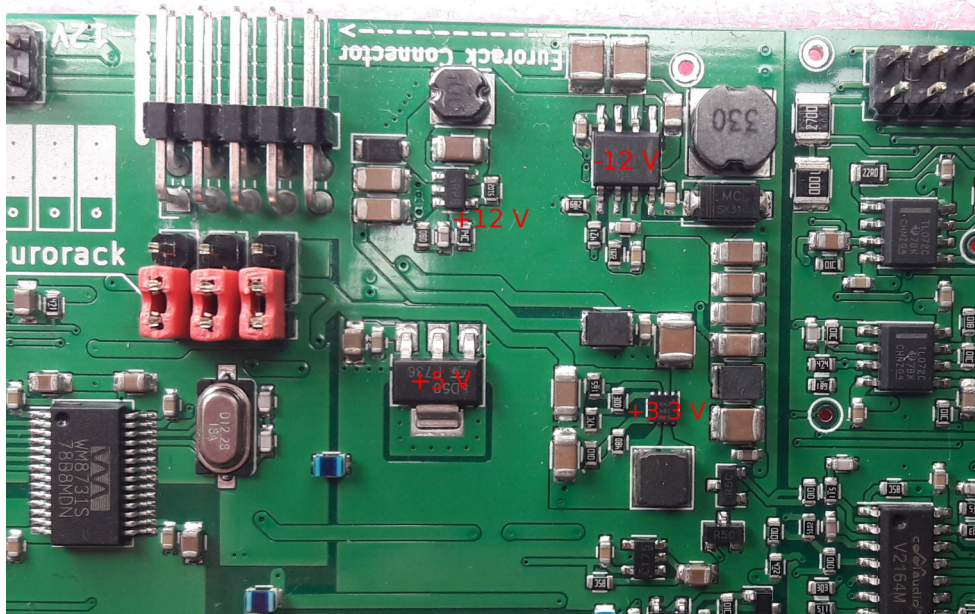


Pay attention - there's a plastic caps covering the pin-headers responsible for selecting the power source and they are prone to falling off so be careful!
If it does fall off just put it back - no magic involved!



2.2) Repair

The internal power supply is located in the middle close to the top edge of the bottom PCB. The ICs are surrounded by SMD-components relatively close to them so pay attention when removing one of the chips. If you by mistake unsolder and/or loose some of the surrounding components, don't hesitate to ask about replacement parts!



To desolder the +12V or the +5V IC you can use one or two normal soldering irons and one of the following techniques:

- use two soldering irons to heat up both sides of the IC at once
- if you are handy enough, quickly alter between the left and right side legs of the IC with one soldering iron and thus heating both sides simultaneously!

You will need a Hot Air Gun to desolder the -12V IC. Point with the Hot Air Gun at the six vias which are located directly under -12V IC. This way you will heat up the solder under the IC (connecting the exposed pad to the PCB) and the solder under the pins of the IC. Once the IC starts to "swim" on the melted solder take it of with a pair of tweezers.

The same procedure applies to the +3.3V IC. Just point the Hot Air Gun at the two vias under the IC.

Solder a new IC in place. For the +3.3V and the -12V IC use the same procedure as to desolder them. Once the thermal pad (the one under the IC) is soldered, you might have to solder the individual pins with a normal soldering iron.

The orientation of the +12V and the +5V IC is straight forward. The big white line on the -12V IC should face towards the two big black components to its right. The white dot on the +3.3V IC points toward the row of the four capacitors to its top right.

DONE!

To reassemble the Field Kit FX, reverse the steps in 2.1).

But before that, it might make sense to test the functionality of the swapped IC!

See the instructions from the next chapter!

Test

Required Equipment

- 1 x (repaired) FieldKit FX
- 1 x Voltmeter

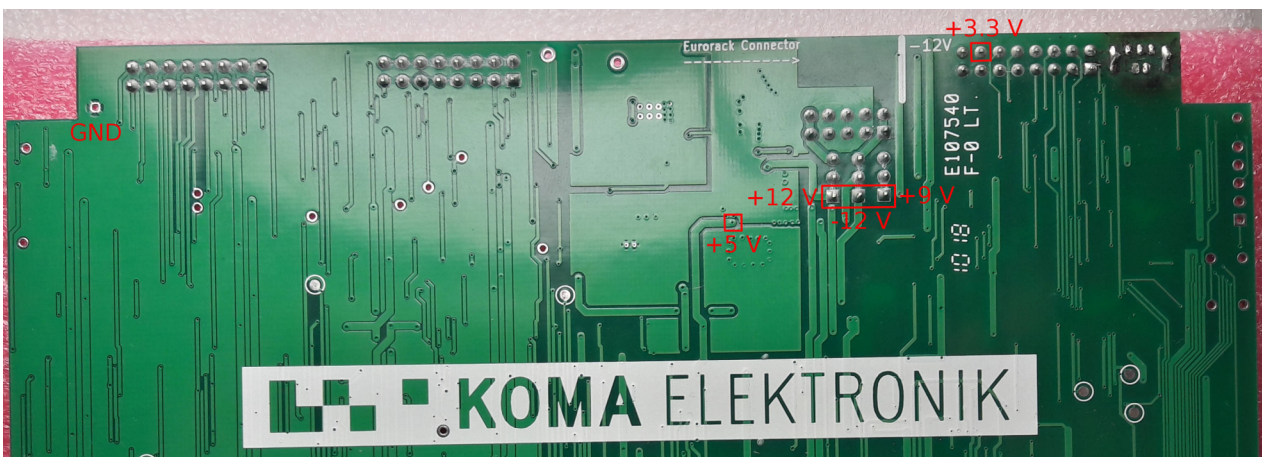
1) Introduction

The Test consists of two parts. First we want to measure whether the swapped ICs work properly and deliver the voltage they are supposed to. Secondly we want to check whether the unit boots properly and do a basic functionality test.

1.1) Power Rail Test

Assemble the two PCBs, don't forget to put the white cap in its place. Power the unit with the original power supply.

Measure the voltages at the point depicted in the picture below.



The measurements should be within the following ranges:

+12V:	+12,0 V +/- 0,4 V
-12V:	-12,0 V +/- 0,4 V
+5V:	+5,0 V +/- 0,1 V
+3.3V:	+3,3V +/- 0,1 V

1.2) Basic Functionality Test (optional)

Test some of the functionality. For example the sequencer, digital delay or the VCA mixer.

2) Finishing up

Congratulations, you have fixed the internal power supply by swapping one of the chips and everything should be good to go again!

If the unit is not already in it's enclosure, follow the steps in 2.1) backwards to reassemble the device.

Remember to check that the plastic cap is in it's place!