

THANKS FOR CHOOSING ONE OF OUR KITS!

This manual has been written taking into account the common issues that we often find people experience in our workshops. The order in which the components are placed on the board is meant to make assembly as easy as possible.

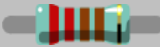
Some steps are not obvious, so even if you're an experienced DIYer please read the steps thoroughly before starting.


If this is your first project, please read this article before you start assembling the kit:

www.befaco.org/howto/

You will be soldering both boards at the same time. Keeping them in the panel together might help you through the build. Check the last pages of the Build for PCB pics to help you identify components.

HAVE FUN!

RESISTORS 			
Color code can be difficult to identify, so we strongly recommend using a multimeter .			
Qty	Value	Code	Name on PCB
25	100k	Brown, black, black, orange, brown	R1, R2, R5, R6, R7, R8, R9, R10, R11, R12, R17, R24, R28, R29, R31, R32, R40, R41, R42, R43, R44, R45, R105, R109, R110
7	10k	Brown, black, black, red, brown	R18, R22, R23, R34, R36, R38, R39
4	1k	Brown, black, black, brown, brown	R13, R104, R106, R111
3	18k	Brown, gray, black, red, brown	R3, R4, R103
2	820k	Gray, red, black, orange, brown	R19, R107
2	20k	Red, black, black, red, brown	R101, R108
2	6k2	Blue, red, black, brown, brown	R15, R16
2	1k5	Brown, green, black, brown, brown	R35, R37
2	220 R	Red, red, black, black, brown	R25, R26
1	191k	Brown, white, brown, orange, brown	R33 (place this resistor standing in order to fit in the PCB silkscreen)
1	160k	Brown, blue, black, orange, brown	R27
1	56k	Green, blue, black, red, brown	R102
1	43k	Yellow, orange, black, red, brown	R14
1	13k	Brown, orange, black, red, brown	R30
1	3k3	Orange, orange, black, brown, brown	R100
1	100 R	Brown, black, black, black, brown	R21

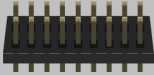
DIODES 		
Solder the diodes observing their polarity . The black or white line on the diode must match with the white line on the diode symbol on the PCB silkscreen.		
Qty	Value	Name on PCB
5	1N4148	D3, D4, D5, D6, D100
2	1N5817 (black)	D1, D2

FERRITE	
To solder the two ferrite beads use a recycled resistor leg passed through each ferrite and proceed as if it were a resistor. Ferrite beads don't have polarity.	
Qty	Name on PCB
2	F1, F2

CAPACITORS			
Identifying capacitors can be quite tricky. Codes stated are indicative, please take a look at this guide for help identifying capacitors: http://www.wikihow.com/Read-a-Capacitor			
Qty	Value	Code	Name on PCB
21	100n	104	C1, C2, C8, C9, C10, C11, C14, C15, C16, C19, C25, C26, C27, C31, C34, C35, C39, C40, C101, C104, C105
12	10pF	10	C5, C6, C7, C12, C17, C21, C28, C33, C36, C37, C38, C106
3	6n8 NPO	6n8k	C22, C29, C30
1	4n7	4n7	C13
1	3n3 NPO	3n3k	C24
1	1nF	1nK	C103
1	560pF NPO	560p	C23 (This capacitor is wider, so will push a little the components on his sides)

ELECTROLYTIC CAPACITORS			
Values are written on the side of the capacitor. Mind their polarity (The long leg of the capacitor is the positive (+)).			
Qty	Value	Code	Name on PCB
7	10uF	10uF	C3, C4, C18, C20, C32, C100, C102


Voltage Regulators...“Transistor Looking” ICs		
These Regulator ICs look like transistors (but they are not) This shape is better known as TO-92 Package. Used mostly for transistors but also many other devices. Watch Polarity!		
Qty	Value	Name on PCB
1	TL750L10	IC101
1	LM4040 -10	REG-1



PIN HEADERS

Place and solder the Pin Headers on the silkscreen side of the main board (It is the shorter pins that you are soldering). Double check they all are perfectly straight.

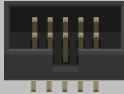
Qty	PINs	Name on PCB
3	1x3	JP4, JP5, JP6
2	1x4	JP2, JP3
1	1x5	JP1



SOCKET CONNECTORS


Place the socket connectors on the control board over the silkscreen markings at positions and solder. Double check they all are perfectly straight.

Qty	PINs	Name on PCB
3	1x3	JP102, JP104, JP105
2	1x4	JP101, JP103
1	1x5	JP100



POWER CONNECTOR

Solder the power connector at "POWER" ensuring it is facing out from the edge of the PCB.



TRIMMERS

Solder the trimmers onto the PCB where the silkscreen indicates.
Double Check trimmer values before soldering!!

Qty	Value	Code	Name on PCB
2	100k	X 104	RESO, INIT
1	50k	X 503	WIDTH

Now it's a good moment to split the boards apart.

SPACERS	
Secure the spacers onto the CONTROL PCB (through the two hole with silver outline) using the m2 screws.	

FADERS	
Place the faders on the PCB where it is indicated by the silkscreen (on the reverse side to the smaller components). You can solder two of the small pins first to make sure faders are straight. Then solder the rest.	
Qty	Name on PCB
3	FAD1, FAD2, FAD3

You're nearly at the end, but the next part is critical and takes a good bit of concentration. If you're feeling a bit strained, a break would definitely help. Reply to those unread messages or prove someone wrong on the Internet, for example. Mechanical parts are really delicate and will need your full attention.

FRONT PANEL COMPONENTS MOUNTING TIPS:

Now we will proceed to mount mechanical parts to the panel. This part of the assembly is CRITICAL. Please take your time and read the following instructions carefully.

These components must **NOT** be soldered until they are placed on the PCB and fully attached to the front panel!!!

There are two reasons for this:

The height of the panel components are not all the same. Because of this, if not attached properly before soldering, they will not stay properly seated against the panel. This might cause mechanical stress reducing their life expectancy and in the worst case cause them to break.


The second reason is that it is very difficult to align the components to the holes if the panel is not positioned prior to soldering.

POTENTIOMETERS		
Now place the potentiometer on the PCB but... don't solder them yet!		
Qty	Type	Name on PCB
3	Single (3pin) B10k	P1, P2, P3

SWITCHES		
Place the switches in their right places. don't solder them yet!		
Qty	Type	Name on PCB
1	Mini. One circuits two position	SOURCE1

MINI-JACKS

Place the mini-jacks on the PCB ensuring they are on the side with the silkscreen. Some of the minijacks' ground legs will share the same solder holes (the 12 at the bottom). **don't solder them until the front panel is in place with all nuts screwed to it.** This way it's easier to solder them in the right position. Keep in mind that the front panel holes are quite narrow and it is almost impossible to place it with all the components already soldered.

LEDs 		
Place the LEDs onto main PCB minding its polarity, but don't solder them until the front panel is in place. This is the only way to solder them the right position.		
Qty	Type	Name on PCB
1	Red LED 3mm	LED1
1	Green LED 3mm	LED2

FRONT PANEL

Attach the **front panel** adjusting the parts one by one if necessary until it fits. At this point a pair of fine tweezers can be helpful.

To Finish:

- Screw in the parts in this order: A) **Mini-jacks** B) **Pots.**
- Ensuring all of the above parts are flush with the panel and both PCB and panel are perfectly parallel. Then you can **finally solder** them!
- Fit the LEDs on the panel holes and solder them
- Put the **knobs** on the potentiometers and the red caps on the switches/Faders.
- Connect both boards together.
- Connect the **power ribbon cable:** The red wire (-12V) on the power ribbon cable corresponds to pin number one on the male power connector. The number one pin is indicated with a small triangle on the male power connector and a white line on the main PCB. A white or black line (or “-12v”) marked on your power bus normally indicates the corresponding pin.

CALIBRATION PROCEDURE

First of all we will calibrate the resonance, for this we need the following setting on the module.

RESONANCE: Maximum (fully clockwise)

3 faders: Minimum

OUT of the module to an oscilloscope.

FREQUENCY: Adjust it to 1khz

Proceed to adjust the **RESO** trimmer to **+/-5v** of amplitude

The tuning procedure is an iteration of successive approximations. We will try in each iteration to get closer to a perfect tune. Just follow the next steps and your Pony VCFI will be ready to go in a few minutes.

1 - Turn the knobs to the following position:

FREQUENCY an CV1 attenuator: Minimum (counterclockwise)

RESONANCE: Maximum (fully clockwise)

3 faders: Minimum

2 - Plug a **V/Oct signal from a well calibrated CV source** like a sequencer or a keyboard into the **CV2** input and connect the **OUT of the module to a tuner**. Note: if you don't have a hardware tuner you can connect the module to your audio interface and use a software tuner as well.

3 - Send a voltage of **4V from your CV source** and check the tuner, adjust the **INIT** knob till your tuner shows **C4** note. Be patient on this step, on the low frequency range it is a bit harder to be precise.

4 - Send a voltage of **1V from your CV source** and check the tuner, adjust the **WIDTH** trimmer located on the upper part of the module (the little blue one) with a small flat screwdriver till your tuner shows you a **C1** note.

5 - Now send again a **4V** voltage and check the tuner. **You will notice that it is not showing you the C4 note that we adjusted before but we are closer than the first time. Let's repeat steps 4 and 5 till we get C1 and C4 in both.**

Once this is done, send other notes from the CV source and check the tuner, to make sure the whole range is tracking. If not, repeat steps 3 and 4 again till you get it.

