

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.

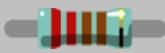
If this is your first project, please read this article before you start assembling the kit:


www.befaco.org/howto/

You will be soldering all three boards at the same time. Using our iBOM (you can find it in our website) can help you with the build, go check it out!

Check last pages of the Build for PCB pics to help you identify components.


HAVE FUN!

			
RESISTORS			
Color code can be difficult to identify, we strongly recommend to use a multimeter .			
Qty	Value	Code	Name on PCB
66	100k	Brown, black, black, orange, brown	R1, R2, R6, R7, R9, R10, R11, R13, R14, R15, R16, R21, R22, R23, R24, R25, R28, R29, R30, R31, R34, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R55, R56, R61, R64, R67, R68, R69, R70, R72, R74, R76, R78, R81, R83, R84, R85, R88, R93, R94, R95, R97, R98, R99, R100, R102, R103, R105, R106, R107, R108
8	18k	Brown, gray, black, red, brown	R12, R27, R35, R36, R37, R38, R101, R104
6	20k	Red, black, black, red, brown	R4, R17, R109, R110, R111, R112
4	150k	Brown, green, black, orange, brown	R63, R89, R91, R92
4	68k	Blue, gray, black, red, brown	R58, R60, R62, R80
4	47k	Yellow, violet, black, red, brown	R33, R57, R87, R96
3	200k	Red, black, black, orange, brown	R26, R32, R71
3	1k	Brown, black, black, brown, brown	R18, R19, R54
2	56k	Green, blue, black, red, brown	R3, R5
2	33k	Orange, orange, black, red, brown	R59, R66
2	16k	Brown, blue, black, red, brown	R75, R82
2	2k7	Red, violet, black, brown, brown	R77, R79
1	820K	Gray, red, black, orange, brown	R20
1	330k	Orange, orange, black, orange, brown	R90
1	300k	Orange, black, black, orange, brown	R73
1	220k	Red, red, black, orange, brown	R86
1	22k	Red, red, black, red, brown	R65
1	3k3	Orange, orange, black, brown, brown	R8

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
4	1N4148	D1, D2, D3, D4
2	1N5817 (black)	D5, D6

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

IC SOCKETS 


Place the sockets (taking care to orientate them properly – the notch should match the image on the silkscreen) and solder them into their correct positions.

Qty	Value	Name on PCB
10	DIL8	IC1, IC2, IC4, IC5, IC6, IC7, IC8, IC17, IC22, IC23
10	DIL14	IC3, IC9, IC10, IC12, IC13, IC14, IC15, IC16, IC18, IC19
1	DIL16	IC11

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
48	100nf	104	C2, C3, C7, C8, C9, C12, C17, C18, C19, C21, C24, C26, C28, C30, C31, C32, C38, C40, C41, C43, C50, C53, C55, C57, C58, C59, C65, C66, C69, C70, C74, C75, C76, C79, C81, C83, C85, C90, C91, C92, C93, C94, C95, C96, C97, C98, C102, C103
24	10pF	10	C1, C6, C10, C11, C13, C14, C15, C16, C20, C22, C23, C25, C27, C29, C33, C34, C52, C54, C56, C60, C77, C78, C82, C84
11	1nF	102	C4, C44, C45, C46, C47, C48, C49, C61, C62, C63, C64
8	4n7	4n7	C37, C39, C42, C51, C67, C71, C73, C80
2	2n2	2n2	C68, C72
1	33nf	33nk100	C36
1	10nf	10nk100	C35

ELECTROLYTIC CAPACITORS 

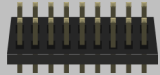
Values are written on the side of the capacitor. Mind their polarity (The long leg of the capacitor is the positive (+)).

Qty	Value	Code	Name on PCB
9	10uF	10uF	C5, C86, C87, C88, C89, C99, C100, C101, C104

VOLTAGE REGULATORS 


This 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	78L05	IC20
1	TL750L10CLP	IC21

PIN HEADERS 

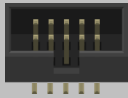
Place and solder the Pin Headers on the silkscreen side of the main board (It is the shorter pins that you are soldering). Double check they all are perfectly straight.

Qty	PINs	Name on PCB
2	2x7	JP7, JP8
1	2x6	JP5
1	2x3	JP6

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
2	2x7	JP1, JP2
1	2x6	JP3
1	2x3	JP4

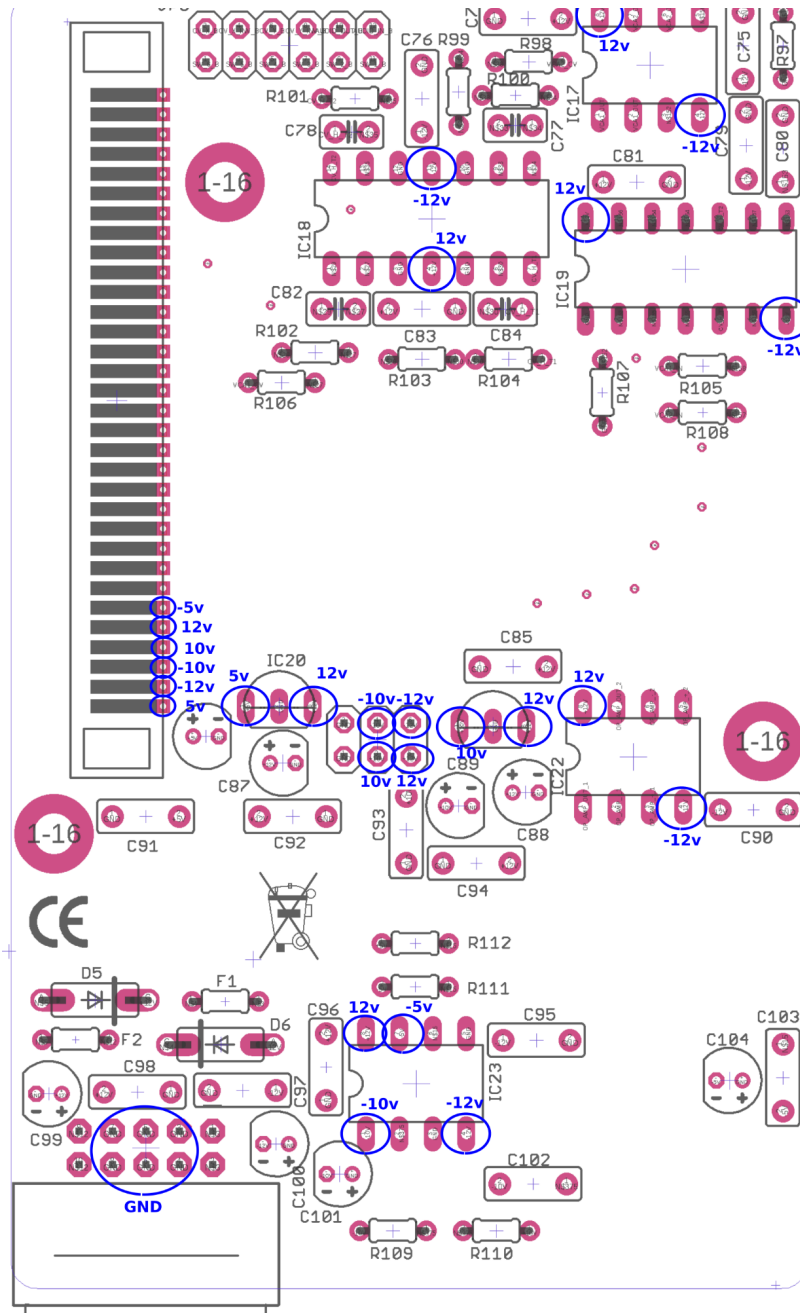
POWER CONNECTOR 


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

POWER CHECK

At this point we will be doing a quick smoke and voltage check.

In order to measure all voltages, place IC23 (TL072) minding its orientation. Then plug Power PCB to your power supply and using a multimeter make sure you get right voltages in marked slots.



ICs		
		
Place the ICs in their respective sockets taking note of their orientation – the notch or dot on the top of the IC must match that of the socket and silkscreen.		
Qty	Value	Name on PCB
9	TL072	IC1, IC2, IC4, IC5, IC6, IC7, IC8, IC17, IC22
6	TL074	IC3, IC9, IC12, IC14, IC15, IC18
4	AS3360	IC10, IC13, IC16, IC19
1	4053N	IC11
1	NE5532	IC23

SPACERS
Secure the spacers onto the CONTROL PCB (through the 3 holes with silver outline) with the main body of the spacer on the component side, and the nut on the mechanical components side.

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. 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 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
9	Single (3pin) B10k	DW, H, L, MH, ML, X, XX, Y, YY

SWITCHES		
Place the switches in their right places. Don't solder them yet!		
Qty	Type	Name on PCB
1	Mini. One circuits two position	SWPP
1	Mini. 2 circuits two position	S1

MINI-JACKS

Place the mini-jacks on the PCB ensuring they are on the side with the silkscreen. **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.

LED		
Place the LEDs into 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	LED Bicolour 3mm	Led_1

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 all!**
- Fit the **LED** on the panel hole. Then solder it.

- Connect Middle board with the control board, screw 3 spacers on the spacers of the control board , securing the pcb between the spacers.
- Place the cartridge connector on the bottom board but don't solder it, attach this board to the middle board and check the alignment of all the boards so they are parallel.
- Place a cartridge on the connector, check that cart goes down straight thru all three boards and is fully connected to the connector. Then proceed to solder it. PADS ARE QUITE CLOSE TO EACH OTHER , BE GENTLE ON THIS ONE.
- Put the knobs on the potentiometers and the red caps on the switches/Faders.
- 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.

