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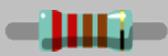
Some steps are not obvious, so even if you're an experienced DIYer please read the steps thoroughly before starting.

If this is your first project, please read this article before you start assembling the kit: www.befaco.org/howto/

GOOD LUCK!

MAIN PCB (The small one)

OPEN MAIN BOARD BAG A

RESISTORS

Qty	Value	Code	Name on PCB
6	100k	Brown, black, black, orange, brown	R4, R8, R9, R12, R13, R18
4	4K7	Yellow, violet, black, brown, brown	R1, R2, R11, R17
4	10k	Brown, black, black, red, brown	R10, R16, R19, R22
1	1k	Brown, black, black, brown, brown	R21
3	2k2	Red, red, black, brown, brown	R3, R7, R20
1	330k	Orange, orange, black, orange, brown	R5
1	56k	Green, blue, black, red, brown	R15
1	3k3	Orange, orange, black, brown, brown	R14
1	1M	Brown, black, black, yellow, brown	R6

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 (orange color)	D1, D2, D3, D4
2	1N5817 (black color)	D5, D6

FERRITES

Solder the two ferrite beads by using 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	FER_1, FER_2

b3FACO

OPEN MAIN BOARD BAG B

CAPACITORS

Identifying capacitors can be quite tricky. Codes stated are orientative, please take a look to this guide to help identify capacitors: http://www.wikihow.com/Read-a-Capacitor

Qty	Value	Code	Name on PCB
10	100n	104	C1, C2, C4, C8, C9, C10, C11, C13, C14, C16, C17
2	1n	102	C7, C12
1	100p	101	C5
1	10n	103	C3
1	470n	.47 (or 473)	C15
1	2n2	2200 (red color)	C6

REGULATOR

Make sure the voltage regulator is positioned correctly with reference to the silkscreen outline on the PCB

Qty	Code	Name on PCB
1	78L05	IC2

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
2	10uf	10uf	C18, C19

TRANSISTORS

Be sure they are orientated correctly (same as the silkscreen on the PCB).

Qty	Code	Name on PCB
4	2N3904	T2, T3, T5, T6
2	2N3906	T1, T4

MALE PIN HEADERS

Place and solder the two male pin headers (CON_1 and CON_2) on the silkscreen (it is the shorter pins that you are soldering).

POWER CONNECTOR

Solder the power connector at POWER1, ensuring it is facing out from the edge of the PCB.

OPEN THE ICS BAG

ICs

First **place the sockets** (taking care to orientate them properly – the notch or dot on one end of the IC should match the image on the silkscreen) and solder them into their correct positions.

Next place the ICs in their respective sockets (again taking note of their orientation – the notch or dot on the top of the IC must match that of the socket and silkscreen).

CONTROL PCB		
Qty	Value	Name on PCB
1	TL074	TL074/84
1	CD4013	CD4013
1	CD4052	CD4052
1	CD4073	CD4073
1	TL072	TL072/82
MAIN PCB		
1	TL074	TL074/84

CONTROL PCB

OPEN CONTROL BOARD BAG A

RESISTORS

Qty	Value	Code	Name on PCB
13	100k	Brown, black, black, orange, brown	R102 R113, R114, R115, R116, R118, R119, R121, R122, R125, R126, R128, R129
7	1k	Brown, black, black, brown, brown	R100, R101, R117, R120, R123, R124, R127
3	3M	Orange, black, black, yellow, brown	R109, R110, R111
3	47k	Yellow, violet, black, red, brown	R106, R108, R112
1	4k7	Yellow, violet, black, brown, brown	R105
1	2k2	Red, red, black, brown, brown	R107
1	10k	Brown, black, black, red, brown	R104
1	56k	Green, blue, black, red, brown	R103

DIODES

Solder the diode **observing its polarity**. The black line on the diode (which indicates the cathode – the negative side) must match the white line on the diode symbol on the PCB silkscreen.

Qty	Value	Name on PCB
1	1N4148	D100

CAPACITOR

Qty	Value	Code	Name on PCB
2	100n	104	C100, C101

TRANSISTORS

Be sure they are orientated correctly. The curved and flat sides of the silkscreen outline of the transistor on the PCB must match that of the transistor's body.

Qty	Code	Name on PCB
1	2N3906	T100

FEMALE PIN HEADERS

Place the female pin headers at positions (TO_100 & T0_101) and solder.

OPEN CONTROL BOARD BAG B

SPACER

Secure the 3 spacers onto Control PCB (through the three holes with silver outlines) with the main body of the spacer on the component side, and the nut on the opposite.

FADERS

Solder the faders on the PCB where it is indicated by the silkscreen.

Qty	Name on PCB
4	A_POT, D_POT, R_POT, S_POT

FRONT PANEL COMPONENTS MOUNTING TIPS:

Now we will proceed to mount the jacks, potentiometers, switches and LEDs. 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. In the case of the LEDs, they are almost impossible to set to the correct height without reference to the front panel.

LEDs
Place the LEDs onto the PCB minding their polarity, but **don't solder them** until the front panel is in place. This is the only way to solder them in the right position.   The long leg is the positive and the short the negative. On the PCB the square pad indicates the negative side and there is a + symbol to indicate the positive.

Qty	Name on PCB
5	L_0, L_A, L_D, L_R, L_S

POTENTIOMETER

Cut the locating lug on the pot with snips as pictured. Now place the potentiometer on the PCB but... **don't solder it yet!**

Qty	Type	Name on PCB
1	Dual (6pin) B100K	SHAPE

TOGGLE SWITCH

Place the toggle switch but **don't solder it yet**. You may need to remove the top hex nut for securing to the front panel later.

Qty	Type	Name on PCB
1	SPDT ON-ON Toggle	MODE

PUSH BUTTON

Remove the nut from the push button but leave the washer in place. Now fit the push button onto the PCB but again...**don't solder it yet**.

Qty	Type	Name on PCB
1	Red Cap OFF/ON Push-Button	M_TRIG

OPEN MINI-JACKS BAG

MINI-JACKS

Place all the mini-jacks onto the PCB ensuring they are on the silkscreen side, but **don't solder yet**.

Note: The two rows of 4x mini-jacks at the bottom of the control PCB will be orientated such that they face each other with each opposite pair of mini-jacks sharing a solder point for their 3rd (outer) legs.

Caution: the switch nut and the jack nuts look the same, but they are not equally sized and will not fit in each others' thread, so make sure to keep them separate!

FRONT PANEL

Attach the **front panel** adjusting the parts one by one if necessary until they fit. At this point a pair of sharp tweezers can be helpful.

To finish:
        - Secure the parts to the panel in this order: A) **Mini-jacks** B) **Switch** C) **Pot** D) **Push button.**

        - Ensuring all of the above parts are flush with the panel then you can finally **solder** them!

        - Next, adjust the **LEDs** so that they are flush with the panel and solder them.

        - Connect the **main PCB** to the **control PCB** by threading the 3x M3 screws through the main PCB and securing them to the 3 spacers. The main PCB should be orientated so that the component side is facing towards the front panel.

        - Put the **knob** on the potentiometer and the red end-**caps** on any 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.

ENJOY YOUR NEW BEFACO MODULE!