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 smaller one)

OPEN MAIN BOARD BAG A

RESISTORS			
Qty	Value	Code	Name on PCB
17	10k	Brown, black, black, red, brown	R6, R8, R10, R21, R22, R26, R32, R33, R34 R36, R40, R41, R44, R45, R49, R51, R52
11	100k	Brown, black, black, orange, brown	R11, R15, R19, R23, R29, R30, R31, R37, R38, R43, R50
6	4k3	Yellow, orange, black, brown, brown	R1, R3, R5, R9, R17, R18
4	20k	Red, black, black, red, brown	R20, R25, R42, R47
4	1M	Brown, black, black, yellow, brown	R2, R4, R12, R53
2	130k	Brown, orange, black, orange, brown	R28, R48
2	180k	Brown, grey, black, orange, brown	R35, R39
2	300k	Orange, black, black, orange, brown	R27, R46
1	1k	Brown, black, black, brown, brown	R16
1	5k6	Green, blue, black, brown, brown	R7
1	18k	Brown, grey, black, red, brown	R13
1	36k	Orange, blue, black, red, brown	R14
1	56k	Green, blue, black, red, brown	R24

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
6	1N4148	D1, D2, D3, D4, D5, D6

FERRITE	
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	FERRITE+, FERRITE–

OPEN 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).

Qty	Value	Name on PCB
2	TL074	IC1, IC2
1	TL072	IC3

OPEN MAIN BOARD BAG B

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
12	100n	104	C3, C6, C9, C11, C14, C15, C16, C17, C18, C21, C22, C23
2	2n2	2n2	C4, C5 (Polyester)
1	100p	101	C13
1	1n	102	C2
1	10n	10n	C10
1	150n	154	C7 (Polyester)
1	220n	.22k	C1 (Polyester)
1	1uf	1k63	C8 (Polyester)

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	C19, C20
1	100uf	100uf	C12

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	Value	Name on PCB
6	2n3906	Q2, Q4, Q5, Q6, Q8, Q9
3	2n3904	Q1, Q3, Q7

MALE PIN HEADERS
Place and solder the male pin headers at "COMPONENTES_A" & "COMPONENTES_B" where the silkscreen indicates (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. The small arrow on the connectors must be on the side with the thick white line.

CONTROL PCB

OPEN CONTROL BOARD BAG B

RESISTORS			
Qty	Value	Code	Name on PCB
5	1k	Brown, black, black, brown, brown	R100, R102, R103, R104, R106
2	39 Ohm	Orange, white, black, gold, brown	R105, R107
1	20k	Red, black, black, red, brown	R101

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
3	1N4148	D100, D101, D102

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
1	22n	22n (Polyester)	C101
1	100n	104	C100

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	100uF	100uF	C103, C104
1	4.7uF	4.7uF	C102
FEMALE PIN HEADERS			
Place the female pin headers over the silkscreen markings at positions "CONTROL_A" & "CONTROL_B" and solder.			

OPEN CONTROL BOARD BAG B

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

FRONT PANEL COMPONENTS MOUNTING TIPS

Now we will proceed to mount the jacks, potentiometers, switche 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

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**.   **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!

POTENTIOMETERS
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
2	Dual (6pin) 10K	FREQ, WIDTH
4	Single (3pin) 100k	ATTACK, DECAY, GAIN, THRESHOLD

TOGGLE SWITCH
Remove the two nuts and the tabbed washer from the toggle switch (if they are still on the switch). Discard one nut and the tabbed washer, but keep one nut for securing to the front panel later. Place the toggle switch on the PCB but **don't solder it** yet.

Qty	Type	Name on PCB
1	Single (three position)	Response

1/4" JACK
Place the 1/4" Jack connector on the MAIN PCB where the silkscreen indicates but **don't solder** yet.

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.   On the two pole LEDs the long leg is the positive and the short the negative. The square pad on the LED indicates the negative side and there is a + symbol to indicate the positive.   On the three pole LED the middle (longest) leg is common conductor with the next longest leg the positive and the shortest the negative. There are also + & - markings on the PCB.

Qty		Name on PCB
2	Two poles LED	GATE_LED, TRIGGER_LED
2	Three poles LED	LED_ENV, LED_REG

FRONT PANEL

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

To finish

- Secure the parts to the panel in this order A) **Mini-jacks** B) **Switch** C) **Pots**

- 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.

- Secure the **1/4" Jack** to the front panel and solder in place.

- Put the **knobs** on the potentiometers and the red end-**cap** on the switch.

- 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!