

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/

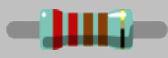
Or Take a look to our youtube channel:


<https://www.youtube.com/user/Befacosynth/videos>


HAVE FUN!

MAIN PCB (The Small One)

OPEN MAIN BOARD BAG A

RESISTORS 			
Qty	Value	Code	Name on PCB
10	100k	Brown, black, black, orange, brown	R7, R9, R10, R12, R14, R16, R17, R20, R21, R22
6	1k	Brown, black, black, brown, brown	R1, R2, R6, R11, R23, R24
3	200k	Red, black, black, orange, brown	R8, R13, R19
3	10k	Brown, black, black, red, brown	R3, R4, R5
1	300k	Orange, black, black, orange, brown	R15
1	150k	Brown, green, black, orange, brown	R18

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
8	BAT85	D1, D2, D3, D4, D5, D6, D7, D8
2	1N5817 (bigger one)	D9, D10

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

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
6	100nF	104	C1, C2, C4, C7, C12, C13
2	22pF	22	C5, C6
4	10nF	10nK	C8, C9, C10, C11

CRYSTAL OSCILLATOR

This component does not have polarity.

Qty	Value	Name on PCB
1	16MHz	Q1

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
3	10uf	10uf	C3, C14, C15

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
3	2n3904	T1, T2, T3




Voltage Regulators...“Transistor Looking” ICs

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	79L05	IC5
1	78L05	IC1

OPEN ICs FOAM (Keep the main board bag B remaining Components for later)




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.

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
1	CD4051	IC2
1	ATMEGA328P	IC3
1	TL074	IC4



MALE PIN HEADERS

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

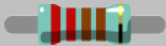
Qty	PINs	Name on PCB
2	2x5	CON_1, CON_2
1	2x8	MUX
1	2x3 Angled	ICSP



POWER CONNECTOR


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

CONTROL PCB
OPEN CONTROL BOARD BAG A



RESISTORS


Qty	Value	Code	Name on PCB
5	1k	Brown, black, black, brown, brown	R100, R103, R105, R108, R109
3	1k8	Brown, gray, black, brown, brown.	R101, R102, R107
3	120 Ohm	Brown, red, black, black.	R106, R110, R111
2	100K	Brown, black, black, orange, brown	R104, R112



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
3	2n3904	T100, T101, T102



FEMALE PIN HEADERS

Place the female pin headers over the silkscreen markings at positions and solder. Double check they all are perfectly straight.

Qty	PINs	Name on PCB
2	2x5	TO_CON_100, TO_CON_101
1	2x8	TO_MUX

SPACER

Secure the spacer onto the CONTROL PCB (through the two hole with silver outline) with the main body of the spacer on the component side, and the nut on the opposite.

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 in 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 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.

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
19	EOC_L, L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15, L16, OUT_L, TEMPO_L

OPEN MAIN BOARD BAG B

POTENTIOMETERS

Now place the potentiometer on the PCB but... **don't solder it yet!**

Qty	Type	Name on PCB
4	Single (3pin) B100k	DIST_POT, MULT_POT, PROB_POT, QTY_POT

ROTARY ENCODER

Screw a nut into the encoder, and put a washer as pictured.
 This will keep the encoder at the correct height when you screw it to the panel
 Then place it on the PCB according to the drawing, but again ...

don't solder it yet!

Qty	Type	Name on PCB
1	Encoder	ENCODER

TOGGLE SWITCH

Qty	Type	Name on PCB
1	Single two position, (ON)-OFF-ON	CYCLE_A

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

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** C) **Push button /switch.**
- 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 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

BURST NEED TO BE CALIBRATED BEFORE USE

- Set Distribution, Time Div/Mult and Probability pots, at middle position.
 - Power the module while holding down quantity encoder button and manual trigger button .
- LED display will turn tree times... DONE ;)

ENJOY YOUR NEW BEFACO MODULE!