THANKS FOR CHOOSING ONE OF OUR KITS!

This assembly guide has been designed 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 take the time to read the steps thoroughly before starting.

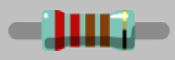
If this is your first project, please read this article before you start assembling the kit:
www.befaco.org/howto/

GOOD LUCK!

MAIN PCB (The small one)

OPEN MAIN BOARD BAG A

RESISTORS



Qty	Value	Code	Name on PCB
4	1k	Brown, black, black, brown, brown	R5, R11, R13, R14
4	47k	Yellow, violet, black, red, brown	R2, R4, R6, R16
4	68k	Blue, gray, black, red, brown	R1, R3, R12, R15
3	4K7	Yellow, violet, black, brown, brown	R9, R10, R19
2	10k	Brown, black, black, red, brown	R8, R17
1	5k6	Green, blue, black, brown, brown	R7
1	270	Red, purple, black black, 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
1	1N4148	D9 (orange)
2	1N5817	D10, D11 (black)

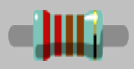
FERRITES

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.

The space for the ferrites is a bit tight. You can either leave some slack in the leads or leave them until after you have fitted the power connector.

Qty	Name on PCB
2	F1, F2

INDUCTOR



Looks like a large, bulbous resistor. No polarity.

Qty	Value	Name on PCB
1	22uH	L1

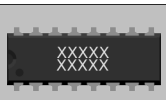
CRYSTAL OSCILLATOR

Oval component with a metallic finish. This component does not have polarity.

Qty	Value	Name on PCB
1	16MHz	Q1

OPEN INTEGRATED CIRCUITS 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
1	6N138	OK1
1	ATmega	IC3
2	LF412	IC1, IC2
1	4504	IC4

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
8	100n	104	C1, C5, C6, C8, C9, C12, C14, C15
6	22p	22p	C2, C3, C4, C7, C10, C11

REGULATOR

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

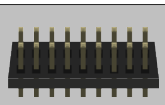
Qty	Code	Name on PCB
1	78L05	REG

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	C13, C16, C17

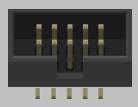
MALE PIN HEADERS



Place and solder the three Male Pin Headers over the silkscreen at “JP1”, “JP2” and “ICSP”. **Caution:** the 2x3 pin header (“ICSP”) is soldered on the reverse side of the PCB to the components you have already soldered. It is the shorter pins of each pin header that you are soldering.

JP102 is an expansion port that is not currently use. There is no need to solder pins here.

POWER CONNECTOR

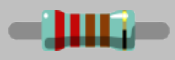


Solder the power connector at “EPOWER”, ensuring the position is correct: it must be placed over the silkscreen marking with the pins facing the edge of the PCB.

CONTROL PCB

OPEN CONTROL BOARD BAG B

RESISTORS



Qty	Value	Code	Name on PCB
6	1k	Brown, black, black, brown, brown	R102, R104, R106, R107, R109, R111
6	10k	Brown, black, black, red, brown	R101, R103, R105, R108, R110, R112
2	300	Orange, black, black, black, brown	R114, R113
1	220	Red, red, black, black, brown	R100

FEMALE PIN HEADERS

Place the two female pin headers “JP100”& “JP101” and solder them where the silkscreen indicates.

SPACER

Secure the spacer onto the Control PCB (through the hole with silver outline) 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, MIDI connector, switch 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
8	D1, D2, D3, D4, D5, D6, D7, D8

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!

PUSH BUTTON

Place the push button on the PCB where the silkscreen indicates but **don’t solder it yet.**

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) **Push button.**

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

WARNING: *Do not forget to cut the legs of the push button switch and MIDI connector legs after soldering as they might touch components on the main board and damage the module.*

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

- Place the **MIDI connector** through the front of the panel and solder in place.

- Connect the **main PCB** to the **control PCB** using the pin headers and ensuring the 3mm hole match the spacer. Screw both boards using the screw.

- 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!