THANKS FOR CHOOSING ONE OF OUR KITS!

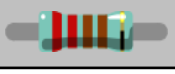
This manual has been written taking into account the common issues that we often find people experience in our workshops. The order in which the components are placed on the board is meant to make assembly as easy as possible.

Some steps are not obvious, so even if you're an experienced DIYer please read the steps thoroughly before starting. We will be soldering both boards at the same time.

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!

RESISTORS



Color code can be difficult to identify, we strongly recommend to use a multimeter.

Qty	Value	Code	Name on PCB
12	100k	Brown, black, black, orange, brown	R7, R9, R10, R12, R14, R16, R17, R20, R21, R22, R104, R112
11	1k	Brown, black, black, brown, brown	R1, R2, R6, R11, R23, R24, R100, R103, R105, R108, R109
3	200k	Red, black, black, orange, brown	R8, R13, R19
3	10k	Brown, black, black, red, brown	R3, R4, R5
3	1k8	Brown, gray, black, brown, brown.	R101, R102, R107
3	120 Ohm	Brown, red, black, black, brown.	R106, R110, R111
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	BAT48	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

IC Sockets

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

Qty	Value	Name on PCB
1	DIL16	IC2
1	DIL28	IC3
1	DIL14	IC4

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	220	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
6	2n3904	T1, T2, T3, T100, T101, T102

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

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.

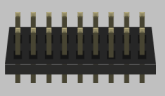
Qty	Value	Name on PCB
1	CD4051	IC2
1	ATMEGA328P	IC3
1	TL074	IC4

SOCKET CONNECTORS

Place and solder the socket connectors on the control board where the silkscreen indicates.
Double check they all are perfectly straight.

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

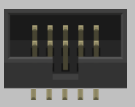
PIN HEADERS



Place and solder the Pin Headers on the Main Board where the silkscreen indicates (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

POWER CONNECTOR



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

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. There are in mechanical bag.

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

POTENTIOMETERS

Now place the potentiometers 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

Place the encoder on the PCB where the silkscreen indicates. Leave an hex nut in place, this will give encoder the right height and avoid damaging your module. **Don't solder it yet.**

Qty	Type	Name on PCB
1	Encoder	ENCODER

TOGGLE SWITCH

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

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

PUSH BUTTON

Remove the nut from the push button and the washer. 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

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:

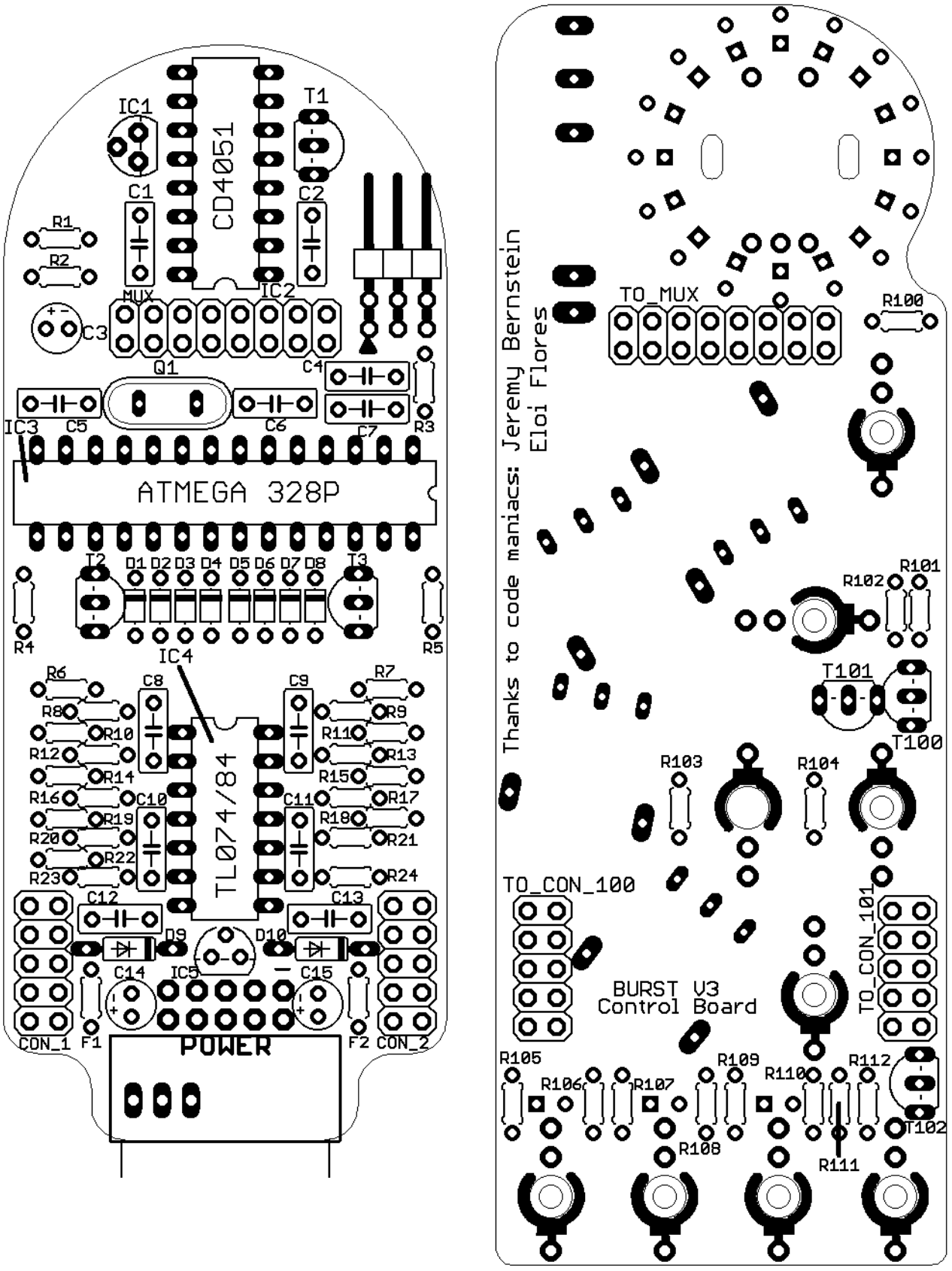
- Screw in the parts in this order: A) **Mini-jacks** B) **Pots** C) **Push button /switch.**
- Ensuring all of the above parts are flush with the panel and both PCB and panel are perfectly parallel. Then you can **finally solder** them!
- Fit the LEDs on the panel holes and solder them
- Put the **knobs** 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!


IC1
T1
CD4051
C1
C2
R1
R2
MUX
IC2
C3
Q1
C4
IC3
C5
C6
C7
R3
ATMEGA 328P
T2
D1 D2 D3 D4 D5 D6 D7 D8
T3
R4
R5
IC4
R6
C8
C9
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
C10
C11
R17
R19
R18
R20
R21
R22
R23
R24
C12
C13
TL074/84
D9
D10
C14
IC5
C15
CON_1
F1
POWER
F2
CON_2
Thanks to code maniacs: Jeremy Bernstein
Eloi Flores
TO_MUX
R100
R101
R102
T101
T100
R103
R104
TO_CON_100
TO_CON_101
BURST V3
Control Board
R105
R106
R107
R108
R109
R110
R111
R112
T102