

THANKS FOR CHOOSING ONE OF OUR KITS!

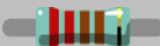
This manual has been written taking into account the common issues that we often find people experience in our workshops. The order in which the components are placed on the board is meant to make assembly as easy as possible. Some steps are not obvious, so even if you're an experienced DIYer please 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/


You will be soldering both boards at the same time. Keeping them in the panel together might help you thru the build. We will suggest when to break them apart.


HAVE FUN!

RESISTORS 			
It's strongly recommended to measure the resistors with a multimeter.			
Qty	Value	Code	Name on PCB
13	1k	Brown, black, black, brown, brown	R11, R12, R32, R100, R104, R105, R106, R130, R131, R133, R134, R137, R138
12	10k	Brown, black, black, red, brown	R17, R19, R29, R102, R109, R111, R122, R123, R124, R126, R128, R132
10	100k	Brown, black, black, orange, brown	R18, R103, R107, R110, R114, R116, R118, R127, R129, R136
5	20k	Red, black, black, red, brown	R8, R27, R28, R30, R135
4	1k5	Brown, green, black, brown, brown	R20, R21, R23, R24
3	1M	Brown, black, black, yellow, brown	R108, R119, R121
2	3k3	Orange, orange, black, brown, brown	R4, R15
2	4.7k	Yellow, violet, black, brown, brown	R2, R3
2	6k8	Blue, gray, black, brown, brown	R5, R6
2	8k2	Gray, red, black, brown, brown	R22, R26
1	75 Ohm	Violet, green, black, gold, brown	R25
1	680 Ohm	Blue, gray, black, black, brown	R1
1	820 Ohm	Gray, red, black, black, brown	R16
1	2k	Red, black, black, brown, brown	R125
1	2k7	Red, violet, black, brown, brown	R120
1	3k	Orange, black, black, brown, brown	R13
1	5k6	Green, blue, black, brown, brown	R14
1	6k2	Blue, red, black, brown, brown	R10
1	18k	Brown, gray, black, red, brown	R9
1	68k	Blue, gray, black, red, brown	R101
1	75k	Violet, green, black, red, brown	R7
1	200k	Red, black, black, orange, brown	R112
1	300k	Orange, black, black, orange, brown	R31
1	560k	Green, blue, black, orange, brown	R117
1	820k	Gray, red, black, orange, brown	R115
1	4M7	Yellow, violet, black, yellow, brown	R113


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
9	1N4148	D1, D100, D101, D102, D103, D104, D105, D106, D107
2	1N5817 (black)	D2, D3
9	1N5400 (black)	D4, D5, D6, D7, D8, D9, D10, D11, D12
4	1N457 (black)	Z1, Z2, Z3, Z4


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	Ferrite

ICs 		
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. Keep ics for later.		
Qty	Value	Name on PCB
4	DIP8	IC100, IC101, IC102, IC103
1	DIP8	IC3
1	DIP8	IC1
1	DIP14	IC2
1	DIP8	IC4

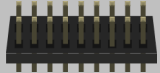
CAPACITORS 			
Identifying capacitors can be quite tricky. Codes stated are indicative, please take a look at this guide for help identifying capacitors: http://www.wikihow.com/Read-a-Capacitor			
Qty	Value	Code	Name on PCB
18	100n	104	C1, C2, C3, C7, C11, C12, C17, C19, C121, C122, C127, C129, C130, C131, C134, C135, C136, C138
6	10pF	10	C10, C118, C124, C128, C132, C137
4	22pF	220	C8, C9, C13, C14
3	1nF Polyester	1nk100	C16, C119, C123 (Beside 122)
2	1n8 Polyester	1n8j	C4, C5
2	10nF Polyester	10nk100	C6, C18
1	15nF Polyester	15nK100	C15
1	560pF	561	C133

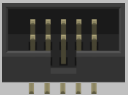
This is a good moment to break both boards apart. Do it gently and then remove the little ledges.


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	C117, C120, C126
1	1uF	1uF	C125

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
1	2n3906	T1
4	2n3904	T100, T101, T102, T103
2	BC546B	T4, T5 *Caution! See the note below before solder this transistors.
2	PN4250A	T2, T3
1	LM317	IC5


***T4 and T5 transistors should be placed flipped as it's marked on the silkscreen.**

PIN HEADERS			
Place and solder the Pin Headers on the silkscreen side of the main board (It is the shorter pins that you are soldering). Double check they all are perfectly straight.			
Qty	PINs	Name on PCB	
2	2x3	JP1, JP2	

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

SOCKET CONNECTORS			
Place the socket connectors on the control board over the silkscreen markings at positions and solder. Double check they all are perfectly straight.			
Qty	PINs	Name on PCB	
2	2x3	JP100, JP101	

Keep the other components from this bag for later.

ELECTROLYTIC CAPACITORS				
Values are written on the side of the capacitor. Mind their polarity (The long leg of the capacitor is the positive (+)). These capacitors will be mounted on the back of the PCB.				
Qty	Value	Code	Name on PCB	
10	10uF	10uF/63V	C107, C108, C109, C110, C111, C112, C113, C114, C115, C116 These need to be bent a little to fit together and not to go over the PCB	
4	10uF	10uF	C102, C104, C105, C106	
2	47uF	47uF/63V	C100, C101	
1	3300uF	3300	C103	


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.

FADERS	
Solder the faders on the PCB where it is indicated by the silkscreen (on the reverse side to the smaller components).	
Qty	Name on PCB
2	ATTACK, DECAY

COMBO CONNECTOR
Solder the Combo Connector at J1.



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
4	TL072	IC100, IC101, IC102, IC103
1	NE5532	IC3
1	LM393	IC1
1	LM339	IC2
1	NE555	IC4



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.


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.

POTENTIOMETERS		
Now place the potentiometers on the PCB but... don't solder them yet!		
Qty	Type	Name on PCB
3	100 K	

SWITCHES		
Place the switches in their right places. But do not solder them yet!		
1	Two circuits Three position	S1 (Remove all nuts and washers. Keep one nut for securing the switch to the front panel later)
1	Mini. One circuits two position	48V

LEDS 		
Place the LEDs onto Control PCB minding its polarity, but don't solder them until the front panel is in place. This is the only way to solder them the right position.		
Qty	Type	Name on PCB
4	Red LED 2mm	ENV_LED, GATE_LED, LED_B, TRIG_LED

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) Switches - 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.

LEDS 		
Place these LEDs onto Main PCB minding its polarity, but don't solder them until both boards are connected together. This is the only way to solder them the right position.		
Qty	Type	Name on PCB
3	Green LED 3mm	LED4, LED5, LED6
2	Yellow LED 3mm	LED2, LED3
1	Red LED 3mm	LED1

BOARDS ASSEMBLY AND FINISH

Attach both boards together, minding neutrik connector to fit in nicely.

To Finish:

- Screw both boards together with the spacers.
- Screw neutrik connector to the front panel.
- 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.

