

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.

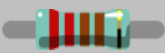
Some steps are not obvious, so even if you're an experienced DIYer please read the steps thoroughly before starting.


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 through the build. Check the last pages of the Build for PCB pics to help you identify components.


HAVE FUN!


RESISTORS 			
Color code can be difficult to identify, so we strongly recommend using a multimeter .			
Qty	Value	Code	Name on PCB
39	100k	Brown, black, black, orange, brown	R1, R2, R3, R4, R26, R28, R29, R31, R33, R34, R35, R51, R53, R56, R57, R58, R63, R69, R70, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R86, R87, R89, R90, R103, R105, R107, R119, R126
19	100 R	Brown, black, black, black, brown	R40, R41, R42, R43, R44, R45, R48, R49, R64, R65, R92, R95, R97, R98, R99, R100, R108, R120, R127
15	1k	Brown, black, black, brown, brown	R15, R21, R36, R37, R38, R39, R46, R47, R54, R55, R91, R93, R94, R96, R112
8	22k	Red, red, black, red, brown	R25, R27, R30, R32, R50, R52, R59, R62
8	4k7	Yellow, violet, black, brown, brown	R11, R12, R14, R17, R18, R19, R22, R23
6	20k	Red, black, black, red, brown	R13, R16, R20, R24, R109, R110
6	470R	Yellow, violet, black, black, brown	R101, R102, R104, R106, R113, R123
5	10k	Brown, black, black, red, brown	R6, R8, R10, R117, R118
4	33k	Orange, orange, black, red, brown	R83, R84, R85, R88
4	12k	Brown, red, black, red, brown	R60, R61, R68, R71
3	1M	Brown, black, black, yellow, brown	R5, R7, R9
2	820k	Gray, red, black, orange, brown	R115, R116
2	390k	Orange, white, black, orange, brown	R124, R125
2	191k	Brown, white, brown, orange, brown	R66, R67
2	15k	Brown, green, black, red, brown	R121, R122
2	22R	Red, red, black, gold, brown	R111, R114


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
28	1N4148	D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15, D16, D17, D18, D19, D20, D21, D22, D23, D24, D27, D28, D29, D30
2	1N5817 (black)	D25, D26


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
5	F1, F2, F3, L1, L2

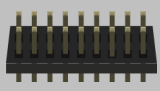
IC SOCKETS 		
First we will place the sockets (taking care to orientate them properly – the notch on one end of the socket should match the silkscreen) and solder them into their correct positions. Get them from ICs bag.		
Qty	Value	Name on PCB
11	DIP-8	IC1, IC2, IC3, IC4, IC5, IC6, IC7, IC8, IC9, IC10, IC11
3	DIP-16	MUX1, MUX_1, MUX_2

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
34	100nF	104	C1, C6, C7, C12, C13, C14, C15, C16, C17, C20, C21, C22, C23, C24, C29, C30, C31, C32, C33, C34, C35, C36, C37, C39, C41, C42, C43, C44, C46, C47, C50, C51, C54, C55
6	2n2	2n2	C4, C5, C8, C9, C18, C19
6	100pF	101	C2, C11, C25, C26, C27, C28
2	220pF	221	C3, C10
2	10pF	10	C48, C49

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
5	10uF	10uF	C38, C40, C45, C52, C53
1	47uF	47uF	C59

VOLTAGE REFERENCE AND TRANSISTORS 		
Make sure it is positioned correctly with reference to the silkscreen outline on the PCB		
Qty	Code	Name on PCB
1	LM4040-10	REG-1
3	2n3904	T1, T2, T3

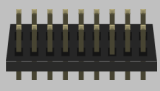
SOCKET CONNECTORS 		
Place the socket connectors on the control board over the silkscreen markings at positions and solder. Double check they all are perfectly straight.		
Qty	PINs	Name on PCB
3	2x3	JP9, JP13, JP16
2	2x4	JP10, JP15
1	2x5	JP12
1	2x6	JP11
1	2x8	JP14
1	1x3	JP_D
1	1x12	JP_C
1	2x10	JP_B
1	2x20	JP_A



PIN HEADERS (Main Board)

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. To assure the alignment you can attach both boards before soldering.

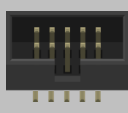
Qty	PINs	Name on PCB
3	2x3	JP1, JP4, JP8,
2	2x4	JP2, JP7
1	2x5	JP5
1	2x6	JP6
1	2x8	JP3



PIN HEADERS (Owl Board)

Place the Pin Headers on the silkscreen side (component side) of the owl board (It is the shorter pins that you are soldering). Double check they all are perfectly straight, then solder the pins. To assure the correct alignment you can attach the Owl to control board before soldering.

Qty	PINs
1	1x3
1	1x4
1	1x20
1	1x12 (cut from 1x30)
1	1x16 (cut from 1x30)
1	2x7



POWER CONNECTOR

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

JST CONNECTOR

Place the connectors on the place marked on the silkscreen. Connector must be facing out the board.

Qty	Size	Place on PCB
1	1X3	SERIAL
1	1X4	X1

USB CONNECTOR

Place USB connector on the PCB marked as **J1B**. Assure it is **flush** to the PCB and solder **just one** of the middle points of them, check it again, if the connector is straight, proceed to solder all the pins.

REGULATOR

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

Qty	Code	Name on PCB
1	AMSR 78L05	U1

FADERS

Place the faders on the PCB where it is indicated by the silkscreen (on the reverse side to the smaller components). You can solder two of the small pins first to make sure faders are straight. Then solder the rest.

Qty	Name on PCB
8	DELAY_VOL, FILTER_VOL, IN_VOL, LOOPER_VOL, RESO_VOL, REVERB_VOL, SINE_VOL, SS/WT_VOL

SPACERS

Secure the spacers onto the CONTROL PCB (through the two hole with silver outline) using the m2 screws.

Qty	Type	Place on PCB
2	M2x10mm F/F	Top face on PCB, between the faders.
2	M2x11mm M/F	Bottom face of PCB, Securing the M2x10mm spacers.
2	M2x11mm F/F	Bottom face of PCB, on the upper , secure those with 2x6mm screws.

ICs



Place ICs in their sockets. Take care of polarity, notch or dot mark orientation.

Qty	Value	Name on PCB
6	TL072	IC2, IC3, IC4, IC5, IC7, IC8
5	NE5532	IC1, IC6, IC9, IC10, IC11
3	DG408	MUX1, MUX_1, MUX_2

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 on the 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 the 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.

SWITCHES		
The correct placement of those switches is critical so please follow the next steps carefully.		
- Place the switches flush to the PCB and solder just one of the middle points of them.		
- We will solder the rest when the front panel is assembled.		
Qty	Type	Name on PCB
2	Mini. One circuits two position	OSC_MODE, PRE/POST
2	Slide Switch Mini ON-ON-ON DP3T	GAIN, RANDOM_AMO
1	Slide Switch Mini DP4T	RANDOM_MODE

POTENTIOMETERS		
Now place the potentiometer on the PCB but... don't solder them yet!		
Qty	Type	Name on PCB
15	Single (3pin) B10k	CUTOFF, DECCAY, DELAYF, DELAYT, DETUNE, LENGTH, MODAMOUNT, MODFREQ, PITCH, RESOD, RESODECAY, RESOHARMONY, SPEED, START, TONESIZE

MINI-JACKS
Place the mini-jacks on the PCB ensuring they are on the side with the silkscreen. 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.

BUTTONS		
MIND ORIENTATION!! The flat side of the button must align with the flat side of the PCB.		
All 4 buttons look alike, the Bicolor is the marked in black.		
Qty	Type	Name on PCB
3	RGB LED Push-Button Red Monocolor	FUNC,RANDOM_BUTON, RECORDBUTON
1	RGB LED Push-Button Red-Green Bicolor MARKED in BLACK BELOW	FUNC1

LEDs 		
Place the LEDs onto main 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	MOD_LED1, MOD_LED2, SYNC_LED, SYNC_LED1
1	LED Bicolour 3mm 3xTerminal	LED_REG

FRONT PANEL
<p>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.</p> <p>To Finish:</p> <ul style="list-style-type: none"> - Screw in the parts in this order: A) Mini-jacks B) Pots. - Secure 2x5mm allen screws on the Spacers through the panel. - 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. - Connect both boards together. and secure it with the M2x6mm screws. - 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.

