

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.

If this is one of your first projects, you might consider starting with a different one. Power is a serious matter as all your ultra-expensive modules will be connected to it. Think about it twice!

If you feel brave enough and want to take the risk please read this article before you start assembling the kit

www.befaco.org/howto/

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

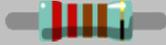
Keep in mind that this module will become the foundation of your modular system. **TRIPLE** check all your steps and make sure everything is in it's right place and all voltages are correct.

Before connecting your module take a look to our basic troubleshooting guide

<https://www.befaco.org/en/trubleshooting-questions/>

GOOD LUCK!

OPEN PASSIVE COMPONENTS BOARD

RESISTORS 			
Qty	Value	Code	Name on PCB
2	680	Blue, Grey, Black, Black, Brown	R1, R6
2	1k	Brown, Black, Black, Brown, Brown	R4, R5
1	1k82	Brown, Grey, Red, Red, Brown	R2
1	120	Brown, Red, Black, Black, Brown	R7
1	470	Yellow, Violet, Black, Black, Brown	R3

CAPACITORS 			
Qty	Value	Code	Name on PCB
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			
1	2.2u	225	C7
2	4.7u	475	C3, C4

DIODE 		
Qty	Value	Name on PCB
Solder the diode observing its polarity . The black line on the diode must match with the white line on the diode symbol on the PCB silkscreen. Bend the legs 90° as close as possible to diode body - like shown in picture - as it might be tricky to keep the diode flat against the board otherwise.		
1	BY28 (rounded)	D1

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	100uF	100uF	C2, C8, C9
3	22uF	22uF	C1, C5, C6

OPEN REGULATORS BAG

DC/DC Boards

These are the mini PCBs. Make sure these are correctly placed as they are quite hard to desolder.

Qty	Value	Name on PCB
1	PTN78000AAH	U1
1	PTN78000WAH	U2

FRONT PANEL COMPONENTS MOUNTING TIPS

Now we will proceed to mount the DC jacks, switch and LEDs. This part of the assembly is **CRITICAL**. Please take your time and read the following instructions carefully.

Keep in mind that USB connector **will not be soldered** until the module is finished and tested!

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
4	D2, D3, D4, D5

OPEN MECHANICAL COMPONENTS BAG

SWITCH

Place the toggle switch over the silkscreen marking but **don't solder it.** Leave the knurled washer and the minijack nut (there is an extra nut a bit bigger than switch one loose in the bag) under the front panel to get proper height. Once it is thighten to the front panel you'll see that the switch barely crosses the pcb.

Qty	Type	Name on PCB
1	Single two position	SW (just above C7)

DC connectors

Put the DC connectors in place but **do not solder them.**

Qty	Type	Name on PCB
3	DC connector	IN, PEDAL, THRU

FRONT PANEL

- Bend both USB location legs straight so the connector will go thru easily (Right pic shows one bent). Also, bend the locating clips out (Left pic), so they will not get stuck with the front panel.



- Place the USB connector on the front panel. Make sure it goes all the way down until it's flat against it. As it will be the tallest component that will determine the height of the rest.

- 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.

- Secure the parts to the panel in this order

A) **DC connectors**

B) **Switch.** Screw the switch just enough so thread is totally covered by the nut. This will provide perfect height.

- Ensure all of the components are flush with the panel then **solder** the DC connectors and switch. **BUT DO NOT SOLDER THE USB CONNECTOR YET!!** Don't, seriously, it will ruin your day.

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

Once everything but the USB connector is soldered, remove the panel and USB connector so we can solder the rest of the components located in bottom side.



POWER CONNECTORS

In order to properly place the power connectors, you will need to cut flat the soldering points from the components **on the bottom side of the PCB**. The small arrow on the connectors must be oriented to the side of number '16' on the silkscreen.

2	SV100, SV101
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DC/DC Regulators

Make sure you place them on silkscreen side, beside the power connectors. In order to properly place them, you will need to cut flat the soldering points from the components on the other side of the PCB. The logos should be facing away from the edge of the board.

TRIPLECHECK the values! If you place them wrong, you might fry some modules.. . !

Qty	Value	Name on PCB
1	TSR-1-2490	U101
1	TSR-1-2450	U100

USB CONNECTOR

Before placing the USB connector we **must** test the module. Connect it to an external power supply (15 - 18v DC, center **positive**, with 2.5mm barrel connector) and measure the output with a voltmeter. You have designated test points for each rail (-12,5,9,12v)

TROUBLESHOOTING

-If the LEDs are not lit but you are measuring the correct power, the LEDs are the wrong way round.

-If the LEDs are not lit and you are not getting the correct voltages (or any voltages) at the pins, carefully go back through the workbook checking your connections and that you have made good solder joints. Also check if your power supply is set with the correct polarity, minimum input voltage is 15v DC and max current draw (2A+).

FINISHING

If the module is working and you are measuring the expected voltages, you can now place the USB connector through the front panel and solder it into place.

ENJOY YOUR NEW BEFACO MODULE!