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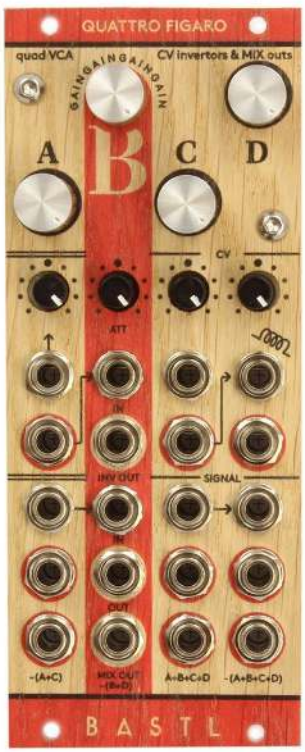
BASTL INSTRUMENTS

QUATTRO FIGARO v1.3 - Assembly Guide

bastl-instruments.com

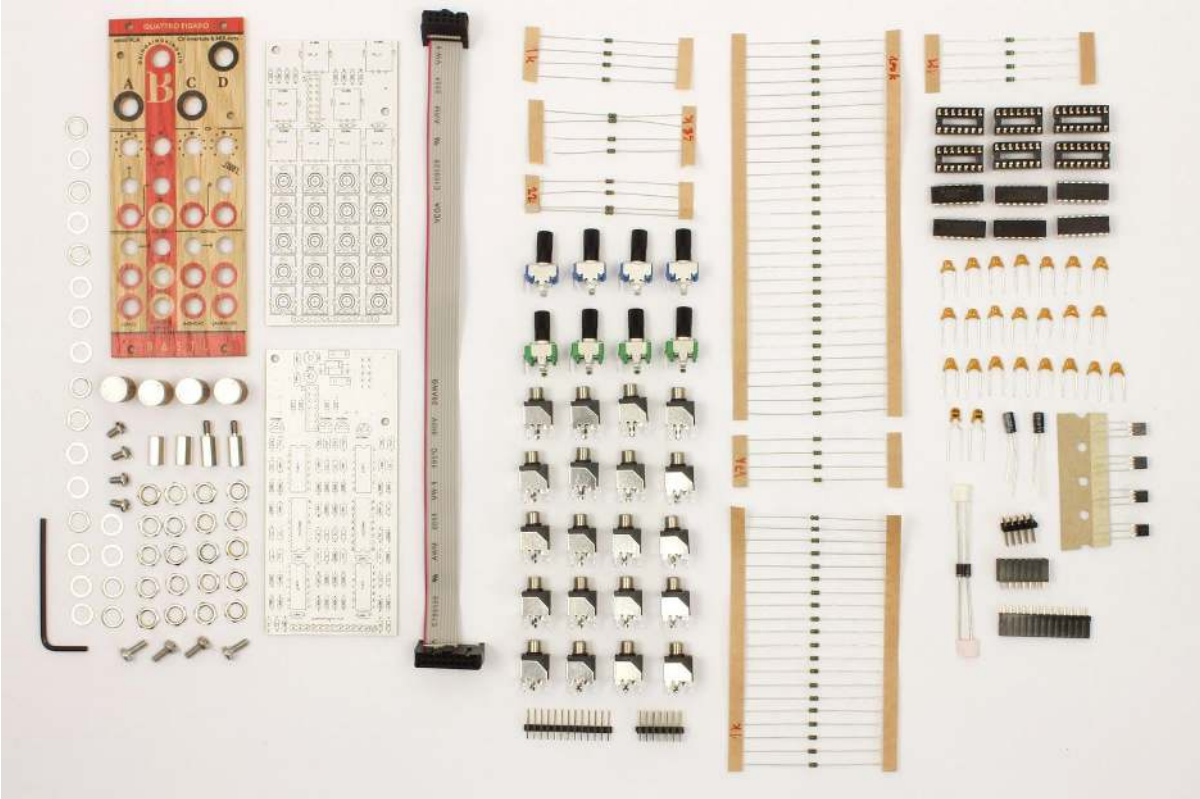


INTRODUCTION

This guide is for building Quattro Figaro module from Bastl Instruments. It is almost necessary to have basic soldering skills and to be able to identify electronic components before starting this kit. However if you have never soldered before, check out this tutorial first[1]. We even included some of the best quality solder to help you solder everything faster and better.

This kit consists of two boards. All the parts comes in three bags separated for Top board, Bottom board and Assembly parts. See Bill of Materials (BOM) for detailed list.

[1] http://www.instructables.com/id/How-to-solder/



Before starting this kit, prepare the following tools:

- Soldering iron (15-20W)
- Multi-meter
- Flush cutters
- n2. hex screwdriver or allen key (enclosed with kit)
- Phillips screwdriver
- Wrench No. 8
- Protective eyewear

We suggest that you work in a clean and a well lit and ventilated environment to avoid accidents or losing any of the small components.

Also briefly go through this guide and make sure that you understand all the steps.

BOTTOM BOARD

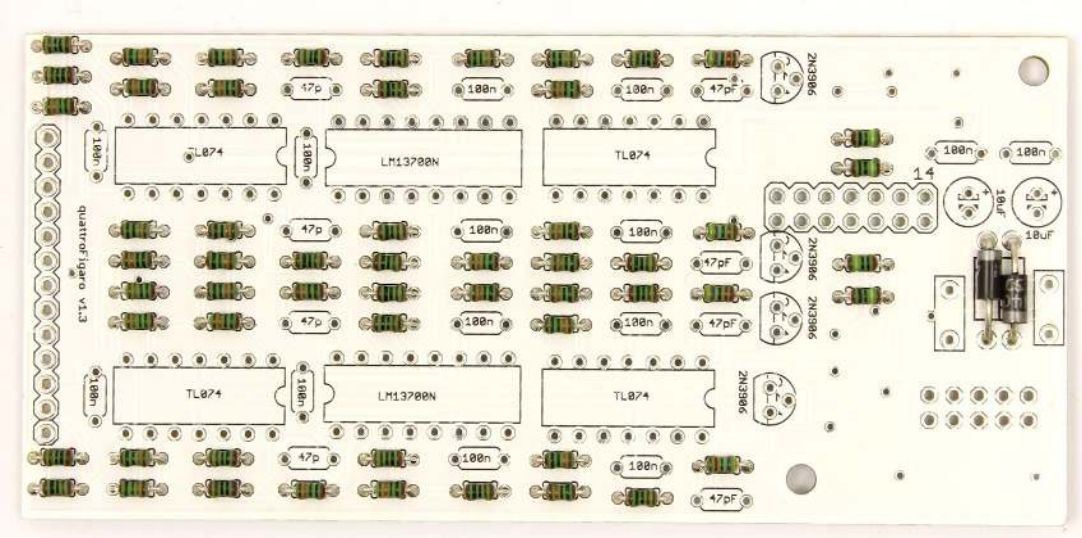
You will start with the bottom board PCB. Before starting soldering, take your time and find all the resistor values using a multimeter[2] (or you can check the color codes if you are seasoned enough):

- **100k** (29x)
- **1k** (20x)
- **47k** (4x)
- **1M** (4x)

Be careful to insert these **57 resistors** on the right place and solder them. Then snip the leads close to the PCB (be sure to make this step on all remaining leads in the course of this guide).

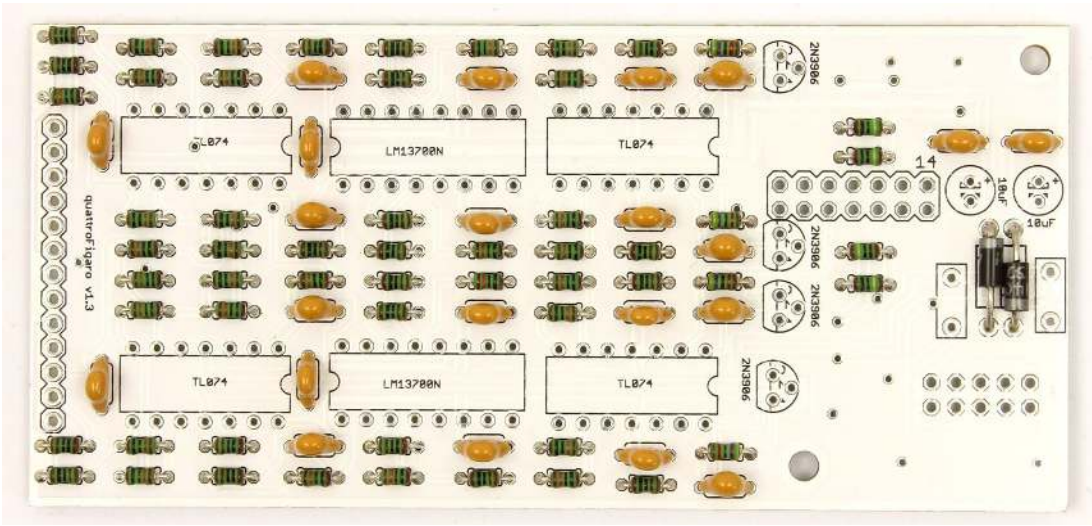
Solder also the two **diodes** (**1N4007**). Be careful, **diodes are polarized**! Make sure that the marking ring on the diode body matches the marking on the circuit board.

[2] https://learn.sparkfun.com/tutorials/how-to-use-a-multimeter/measuring-resistance



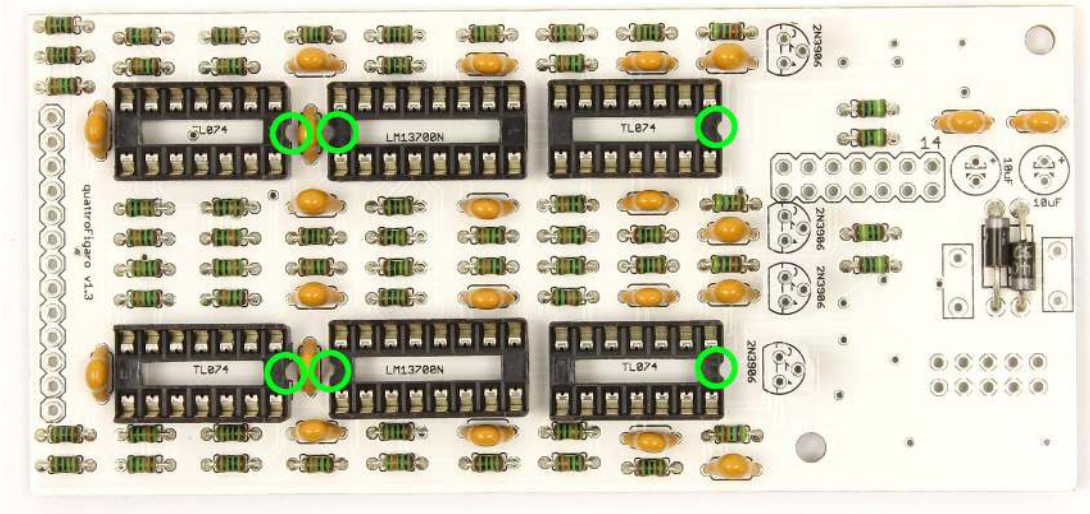
Next insert and solder the **ceramic capacitors**:

- **100nF** (14x, marked “104”)
- **47pF** (8x, marked “470”)



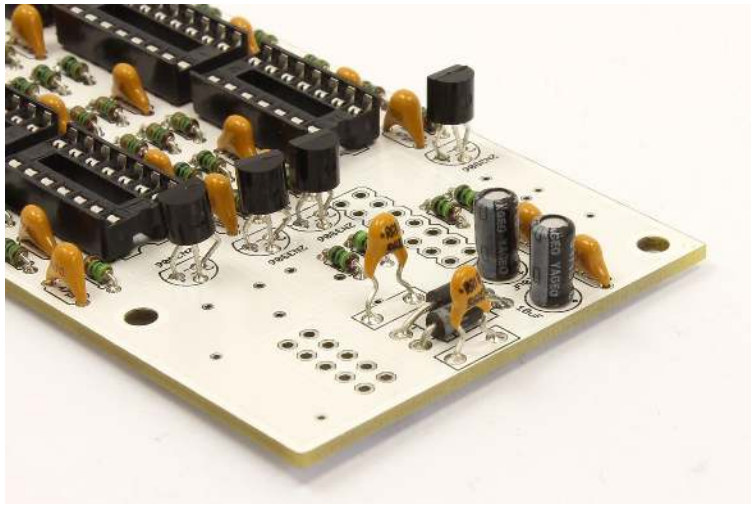
Now you can move to soldering the **IC sockets** (be aware of the right direction, there is a notch on the sockets that has to match with the sign on PCB):

- **14 pin DIL** (4x)
- **16 pin DIL** (2x)

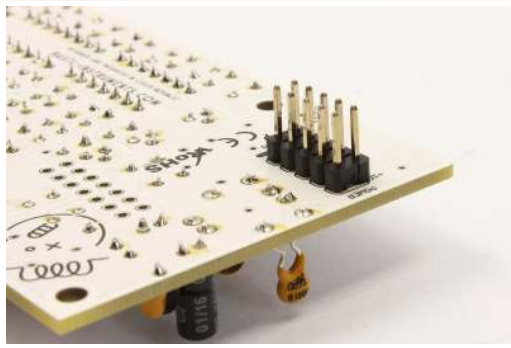


Then add and solder the next components (**transistors, fuses and electrolytic capacitors**) in the following order:

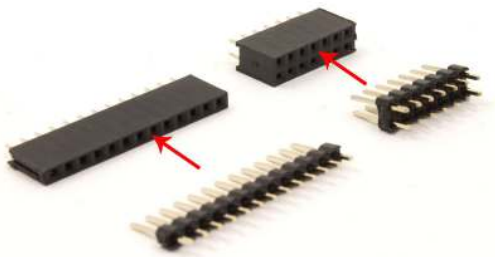
- **2N3906** transistor (4x, the flat side has to match with the printing on the PCB)
- **100mA** fuse (2x, they look quite similar to the ceramic capacitors, place them in the blank rectangular)
- **10µF** electrolytic capacitors (2x, there is a plus (+) sign on the PCB that has to match the longer lead of the electrolytic capacitors)

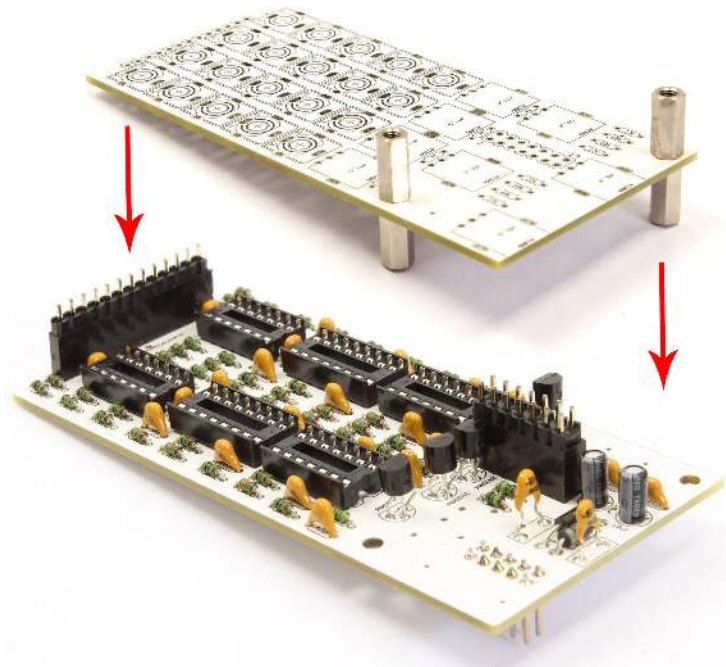


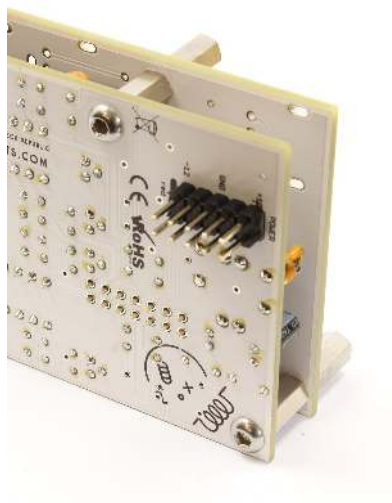
Turn around the PCB to insert the **2x5 pin male headers** and solder it. Be careful to solder the headers straight. You may first solder one of the pin, take the board in your hand and re-heat that pin while you are adjusting the header straight.



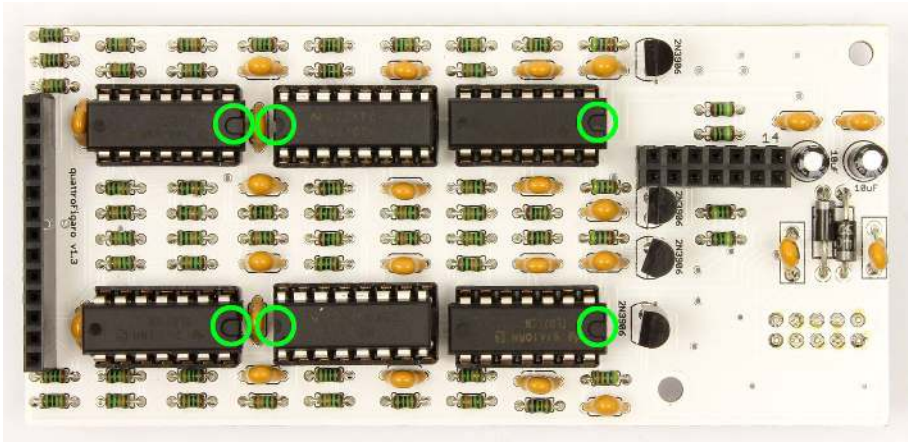
To finish soldering of the bottom board you have to **connect the female headers with the male headers** from the Top board bag. Then take the Top PCB and mount all the four hex spacers: nut-screw spacers on the top connected with the nut-nut spacers from the bottom. Place the headers on the bottom board **facing the female parts downwards**. Now **connect the boards** together and secure them with the **screws** from the bottom. Finally you are ready to solder all the male and female headers.







Disconnect the boards. Don't forget to place all six **ICs** into the sockets (4x **TL074**, 2x **LM13700N**). There is a notch on each IC that has to match with the notch on the socket. You might also have to bend the legs a little bit. Don't be afraid to push them firmly.

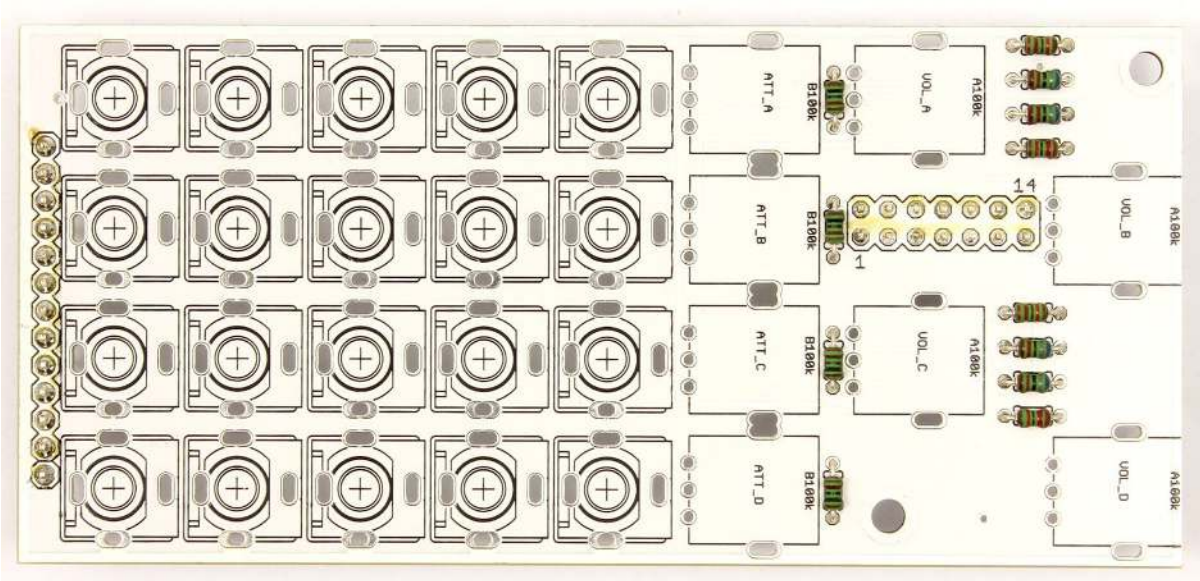


Great, you are done with the bottom board now! Before moving to the next one make the last check that all parts are on the right place and every joint is properly soldered.

TOP BOARD

Now let's do the top PCB. Again, start with the **resistors**:

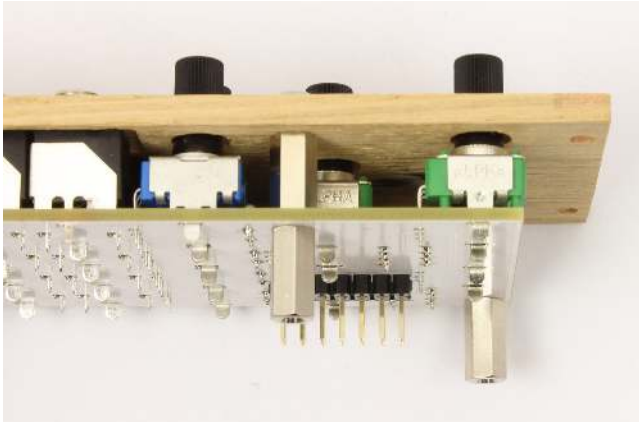
- **1k** (4x)
- **22k** (4x)
- **68k** (4x)



Then insert all the other parts (**jack connectors, potentiometers**) but **do not solder them yet**:

- Linear potentiometers (4x, marked "**B100k**" on the PCB and on itself)
- Logarithmic potentiometers (4x, marked "**A100k**" on the PCB and on itself)
- Jack connectors (20x)

Be careful to push the potentiometers right down to the PCB.



Give the PCB aside and take the **front panel** now. Mount there the screw-nut **spacers** with the **screws** (don't tighten them too much as you may damage the wooden panel). Lower the front panel down on the PCB with components inserted. Hold it together and mount it with the other **spacers**, jack **nuts** and **washers**. Make the last check of all the components about their position. Then turn around the PCB and solder them finally.

FINAL ASSEMBLY

Congratulations! You have made it through. Now just connect the PCBs together, secure the spacers with screws from the bottom and put the wooden knobs on the logarithmic potentiometers.

Before you connect anything, make sure that your system is disconnected from power. Also double check the polarity of the ribbon cable, the red cable should match the -12V rail both on the module and on the bus board!

TROUBLESHOOTING

Check the F.A.Q.[3] on our website first. If you are still in trouble the best thing is to take a nap! Especially late at night! Then you can can send the detailed description of the problem with enclosed high-resolution photos on diy@bastl-instruments.com. Consider our "Come to Daddy" service if you think that you are unable to make the module work on your own.

[3] http://www.bastl-instruments.com/diy-kits-f-a-q/

QUATTRO FIGARO v1.3 BILL OF MATERIALS		
SOLDERING_TOP		
qty	**value**	**part**
4	1k	R 0204
4	22k	R 0204
4	68k	R 0204
20	jack connector	PJ-301BMB
4	W B100k 20mm	linear potentiometer
4	A100k	logaritmic potentiometer
1	2x7 pin	double male pinheader
1	13pin	male pinheader
SOLDERING_BOTTOM		
qty	**value**	**part**
29	100k	R 0204
20	1k	R 0204
4	47k	R 0204
4	1M	R 0204
2	1N4007	diode
4	2N3906	PNP transistor
14	100nF	ceramic capacitor
8	47pF	ceramic capacitor
2	10uF	electrolytic capacitor
4	14 pin DIL	DIL socket - in foam
2	16 pin DIL	DIL socket - in foam
2	LM13700N	IC in foam
4	TL074	IC in foam
2	100 mA	fuse
1	13pin	female pinheader
1	2x5pin	double male pinheader
1	2x7pin	double female pinheader
ASSEMBLY		
qty	**value**	**part**
1	Top 1.3	PCB
1	Bottom 1.3	PCB
2		spacer nut-nut
2		spacer nut-screw
4	M3 x 6	screws
4	M3 X 8	panel screws
20		jack nuts
20		jack washers
4		pot knob
1		front panel
1		power cable 10-16 pin