Hello!

This guide is for building the 4R module from Transient Modules.

Since it is a 2HP module, it may be slightly tricky to assemble it. Take it easy and even if you're an experienced DIYer, please read **ALL** the steps thoroughly before starting the build as some of them may not be so obvious.
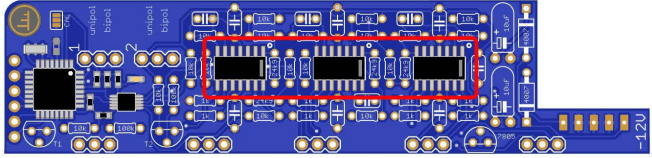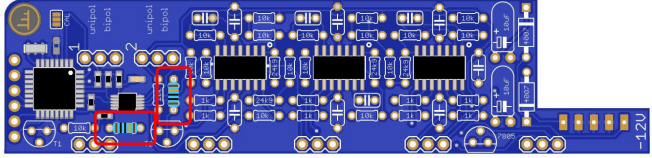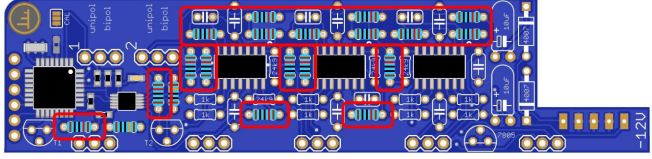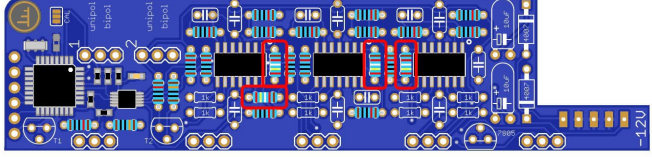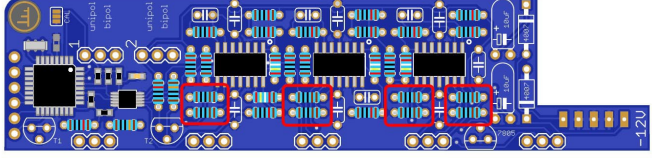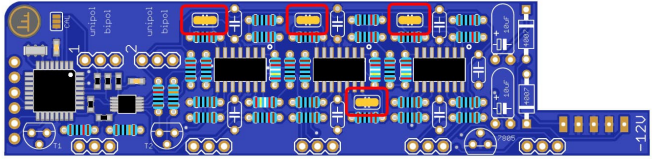
The 4R kit consists of two boards and all the parts come in one bag.

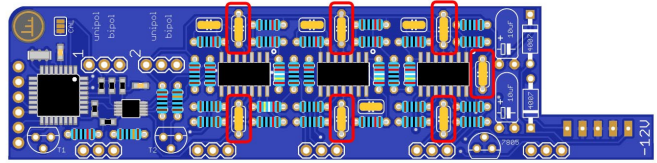See the lists below to identify each one of them easily before start building.

Part	Qty
Resistors:	
Resistor 100K	2
Resistor 10K	18
Resistor 1K	8
Resistor 24K9	4
Capacitors:	
100nF	7
22pF	4
10uF electrolytic	2
Others:	
3 pin angled headers	7
Power connector	1
Ribbon cable	1

Part	Qty
Regulators:	
7805	1
Transistors:	
2N3904	2
Others:	
LEDs bicolor	4
Jack sockets	6
Knurled nuts	6
Jumper	2
Panel	1
Bottom PCB	1
Top PCB	1
Silver screws	2

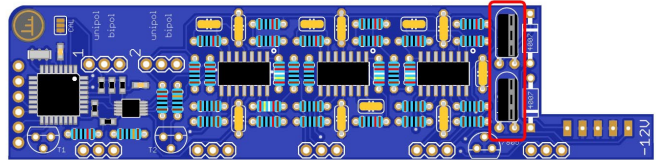| Part	Qty
Diodes:	
1N4007	2
Ics:	
TL074	3
Pre-soldered parts:	
Atmega328P-AU	1
MCP4728	1
Resistor 4K7	3
Resistor 10K	1
Crystal 16 MHz	1
Capacitor 100nF	2
Ferrite	1

؟•ﻻ•؟

Empty the bag into a bowl or container. This makes it much easier to pick the parts as you need them and you're a lot less likely to lose anything.	
1. Start with the SMD parts. Solder the 3x **TL074** ICs. Place them with **the line on the top face** of the TL074 at the same end as **the little circle** on the silkscreen (pin 1), as shown on the image. *TIP for SMD soldering:* *http://bit.ly/2pPBRyx*	
2. Solder the 2x **100K** resistors. *Colour code: brown, black, black, orange, brown.*	
3. Solder the 18x **10K** resistors. *Colour code: brown, black, black, red, brown.*	
4. Solder the 4x **24K9** resistor. *Colour code: red, yellow, white, red, brown.*	
5. Solder the 8x **1K** resistor. *Colour code: brown, black, black, brown, brown.*	
6. Solder the 4x **22pF** capacitors, labelled 22J.	

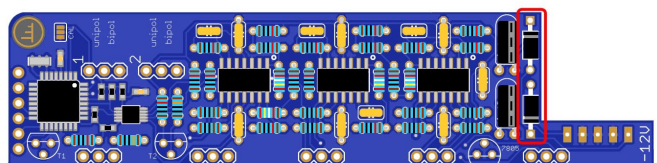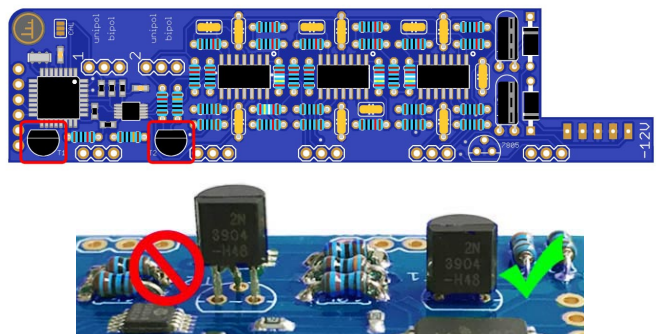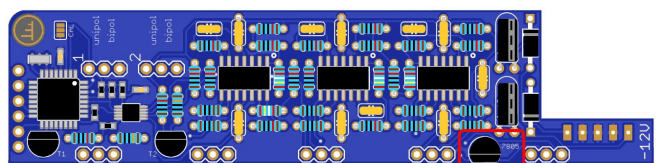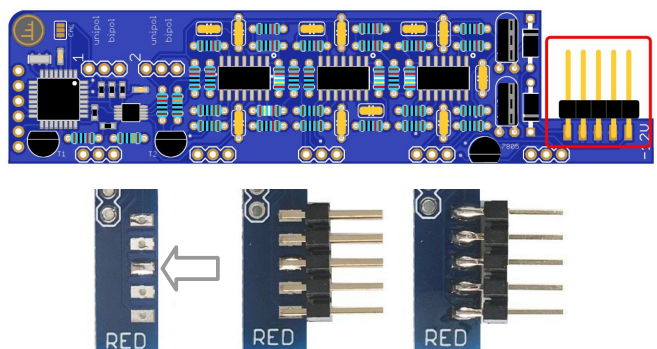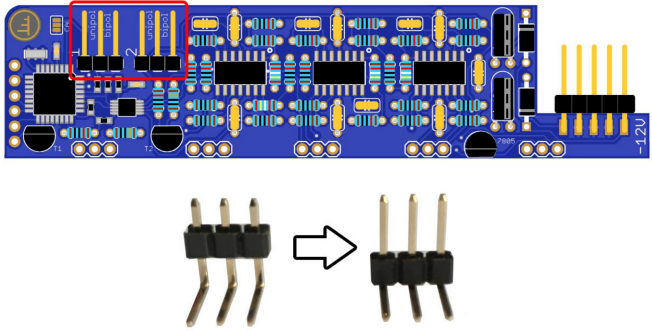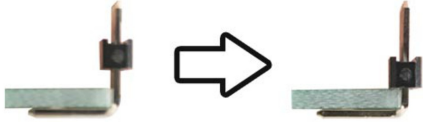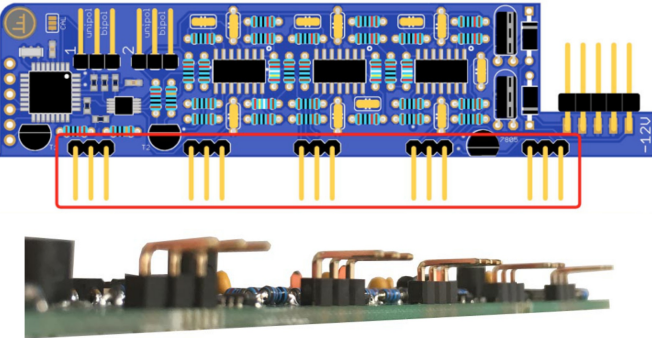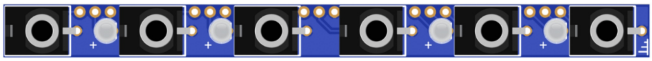|	
7. Solder the 7x **100nF** capacitors, labelled 104.	
8. Solder the 2x **10uF electrolytic capacitors**. They must be positioned horizontally as shown on the image. *NOTE! The long leg should be positioned in the pad marked with the + symbol.*	
9. Solder the 2x **1N4007** diodes. *NOTE! The grey **line** on the diode (cathode) should match the silkscreen, as shown in the picture.*	
10. Solder the 2x **2N3904** transistors. Labelled T1, T2. *NOTE! Make sure that this part is placed as low as possible. Push down the transistors a little bit harder than usual to make it completely sit on the PCB, like shown in the image.*	
11. Solder the **7805** regulator. Labelled 7805. *NOTE! As with the transistors, make sure that the 7805 is positioned as low as possible too.*	
12. Place the **power header.** It has to be positioned between the PCB as shown in the picture. Make sure it's 90º to the PCB before soldering. *TIP: (photo) you can put a small amount of solder on a pad before placing the header. It will help to keep it attached to the board while aligning it to ensure it's 90º before soldering the other pads.*	
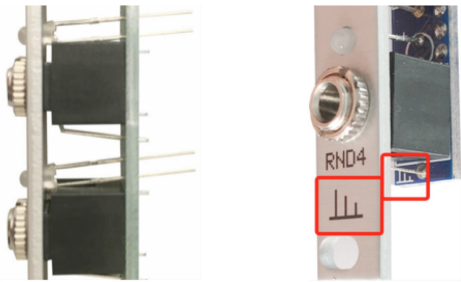
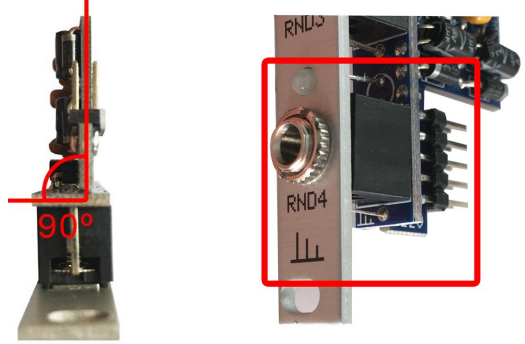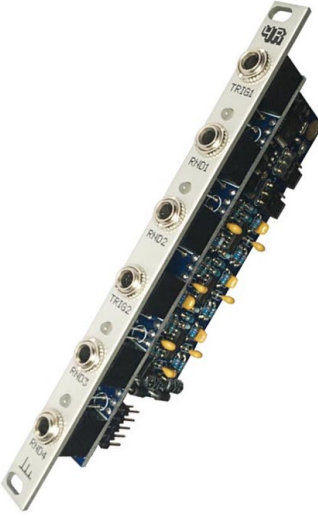|	
13. Take 2x **3 pin headers** and push the black plastic part all the way down as shown. Place the 2x **jumpers** on the headers in the position shown on the image and solder them ensuring they're sitting completely on the PCB. Don't forget to cut the legs on the other side of the PCB after soldering!	
14. Adjust the height of the remaining 5x **3 pin headers**. Place the headers under the top PCB it in the position shown on the image and push down the black plastic part until it touches the PCB.	
15. After adjusting the height of the 5x **3 pin headers**, place them **on the top side** of the board and solder them one by one ensuring they're all 90º to the PCB. Don't forget to cut the pins on the bottom side of the PCB after soldering!	
16. Now the top board! Place all the jack sockets and LEDs in their place. ***NOTE!*** *The long leg should be positioned in the pad marked with the + symbol.*	
17. Place the front panel. Make sure it's being placed in the right way: check that both Transient Modules logo on the panel and PCB are in the same end. Place the 6 knurled nuts on the jack sockets and make sure the leds are in position, through the holes of the panel.	
18. Solder all the LEDs and jack sockets and cut **ALL** the legs from **both** LEDs and jack sockets. Also leave the **NORM** SMD jumper unsoldered for now (TRIG2 won't be normalized to TRIG1 yet).	

19. Join both PCBs. Solder just one leg of any header and check that the boards are 90º. If so, solder the rest of the legs. If not, re-heat that leg to rectify the angle until they're completely perpendicular.

NOTE! The jacks and LEDs PCB is also symmetric, check that it's not placed upside down: the logo on the panel must be on the same end as the power header.

20. Connect the ribbon cable. The red stripe on the cable must line up with the RED indication on the module's power connector. And...   Module finished! :)

Check that all the inputs and outpus work correctly.

Calibration procedure instructions here.

If you want to calibrate the module later, solder the CAL jumper as shown:

Something is not working as it should? *

Did you like the build manual? *

You had problems during the build process or have an idea that could improve it? *

Are you missing any part? *

Were you soldering slightly drunk and made a mess? *

* Based on real e-mails.

Then, write to us at: contact@transientmodules.com

If everything went fine: congratulations and enjoy the module!

Transient Modules · 2021