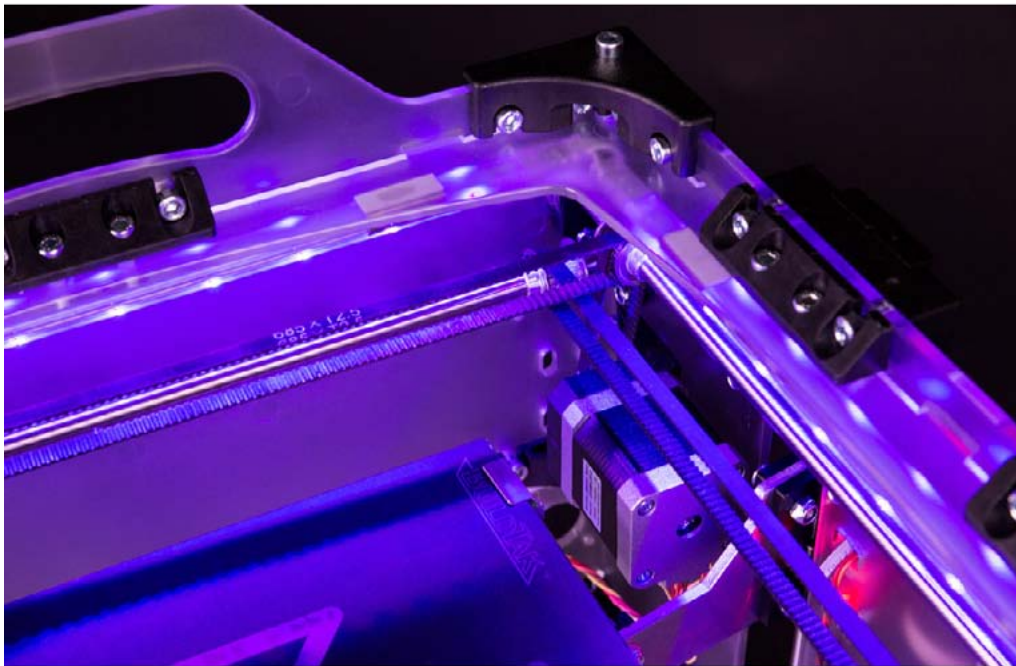




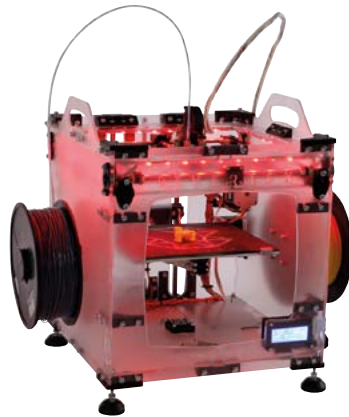
## ASSEMBLY MANUAL

### RGB LED ADD-ON FOR K8400 - VERTEX 3D PRINTER



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LED's get started!

## What's in the box

1. 4x LED strip 20 cm
2. 8x clips
3. 8x double-sided tapes
4. 3x short cables (2 connectors)
5. 1x long white cable (1 connector)
6. 1x long coloured cable (no connector)
7. 4x shrink tubes

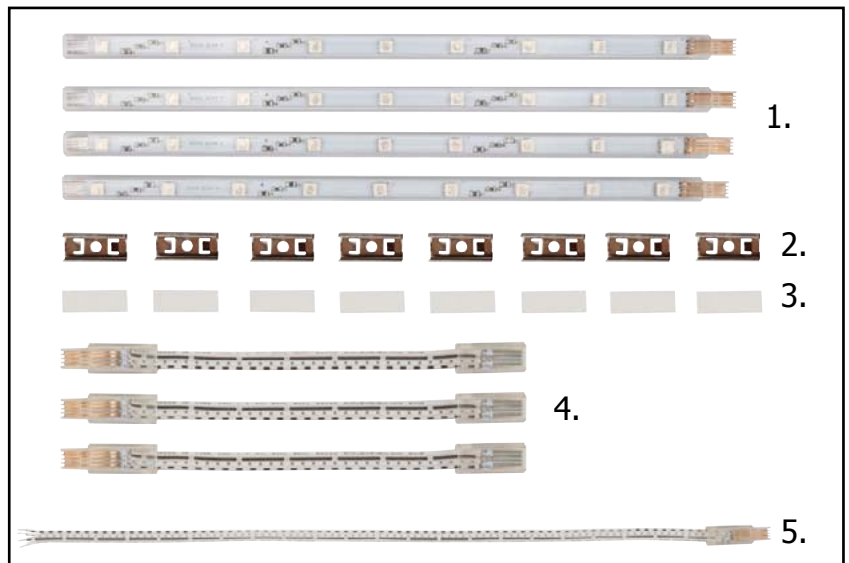


fig. 1

## What's on the PCB

1. 3x 330  $\Omega$  resistors
2. 3x 2V7 1.3 W zener diodes
3. 3x BUK9535-55 logic level FETs
4. 2x 2 pole screw terminals
5. 2x 6P female headers (14.5 mm pins)
6. 2x 6P female headers (5 mm pins) for connection on the motherboard

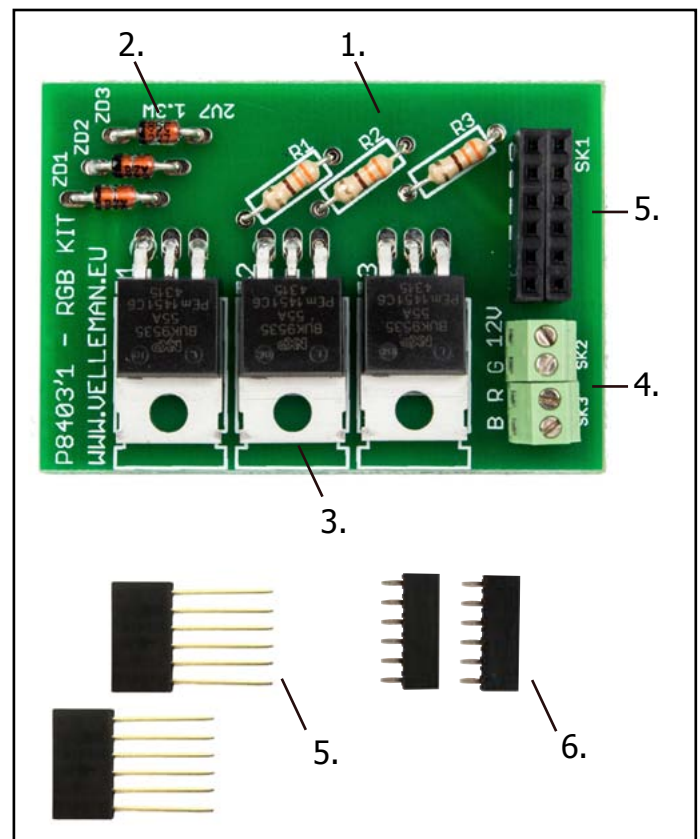


fig. 2

## PCB assembly

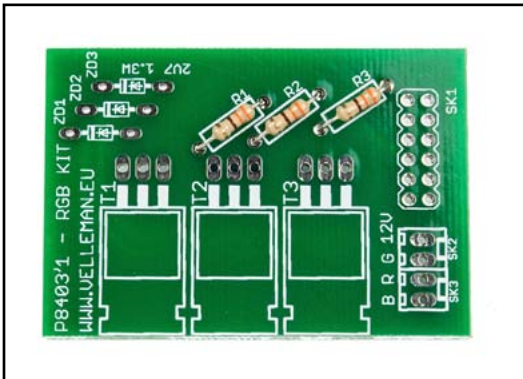


fig. 3

Solder the resistors:

**R1, R2, R3:** 330  $\Omega$

Orange, Orange, Brown

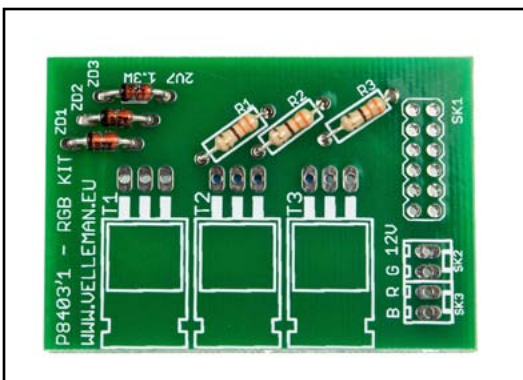


fig.4

Solder the zener diodes:

**ZD1, ZD2, ZD3:** 2V7 - 1.3 W

**Mind the polarity marks!**

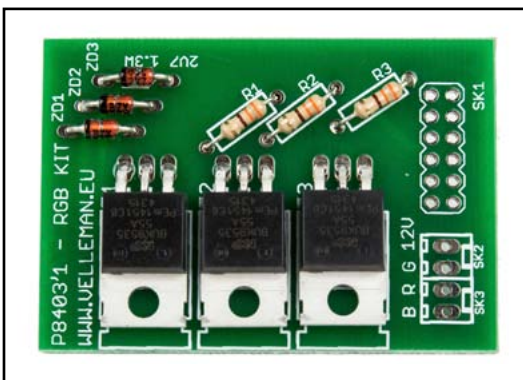


fig. 5

Solder the logic level FETs:

**T1, T2, T3:** BUK9535-55

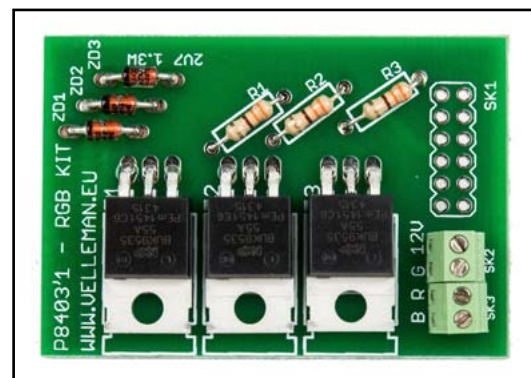


fig.6

Solder the screw terminals:

**SK2, SK3:** screw terminal, 2 pole, 2.54 mm pitch

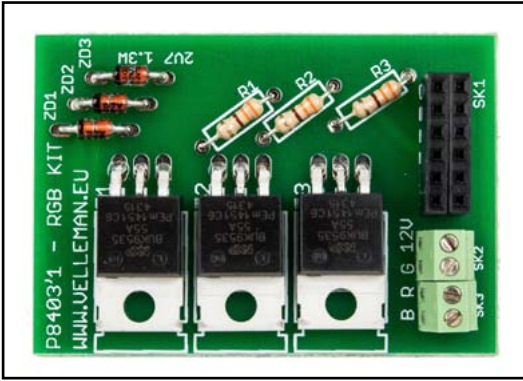


fig. 7

**SK1:** 2x 6P female headers  
(14.5 mm pins)

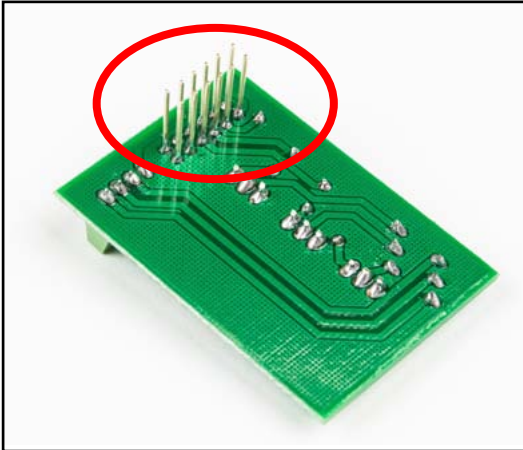


fig. 8

**Do not cut!**

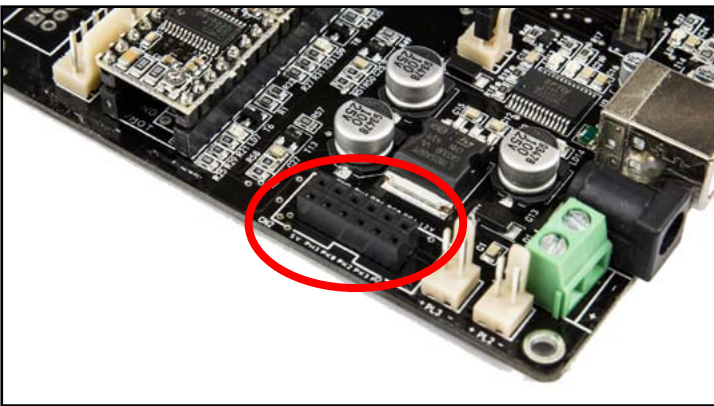


fig. 9

Solder the CN2 on the motherboard:  
2x 6P female headers (5 mm pins)

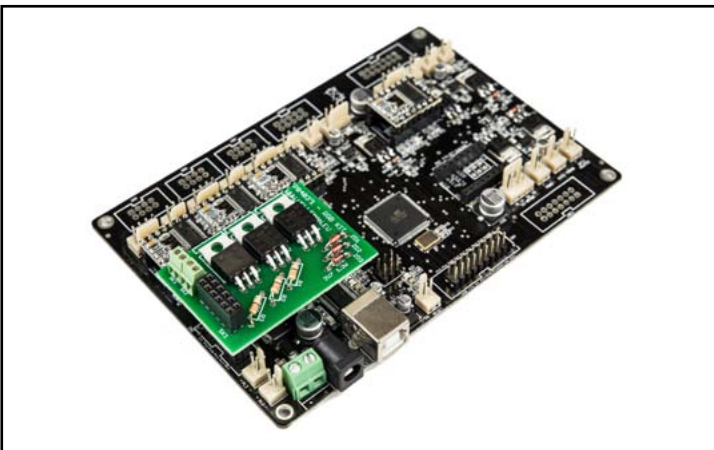


fig. 10

Mount your assembled PCB on top of the motherboard by plugging the 14.5 mm pins of the K8403 PCB into the two 6P female headers (5 mm pins) on the motherboard.

## Attach the LED strips

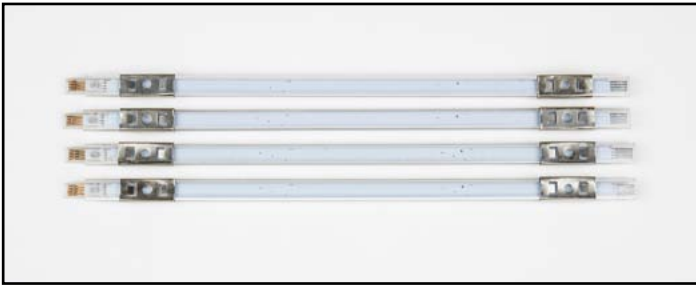


fig. 11

Add 2 clips onto each LED strip at about two centimeters from each end, as shown in picture.



fig. 12

Add a piece of double sided tape to each clip. (for your convenience, do not remove the upper layer of the tape yet)



fig. 13

Take the 4 shrink tubes.



fig. 14

Slide the 4 shrink tubes over the end of the longest white cable as shown in the picture.

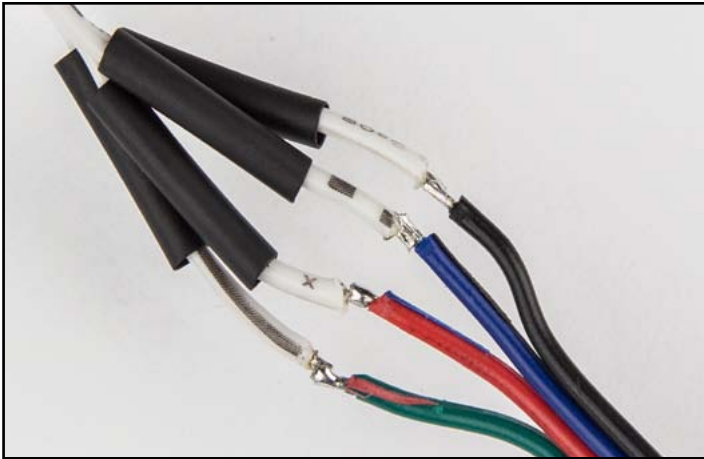


fig. 15

Solder the white cables to the coloured cable as shown in the picture.

**Mind which cable is soldered to the other!**

- green wire to white wire with full black line
- red wire to white wire with Xs
- blue wire to white wire with dotted line
- black wire to white wire with symbols

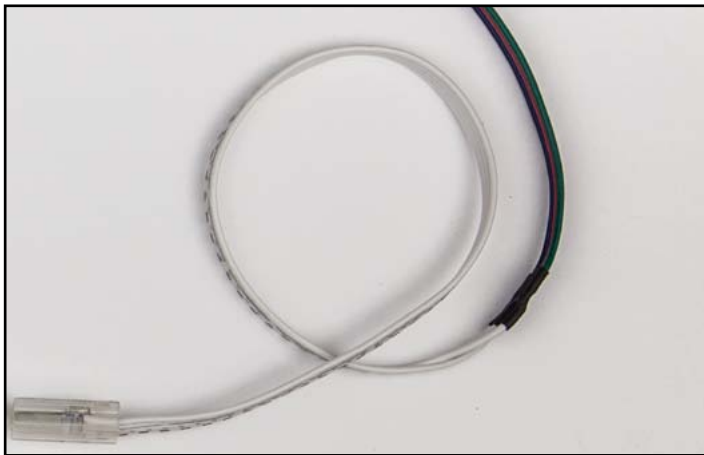


fig. 16

Slide the shrink tubes over the soldering and heat them with a hairdryer or heatgun to make them shrink.



fig. 17

Connect the LED strips with the 4 white cables, as shown in the picture.

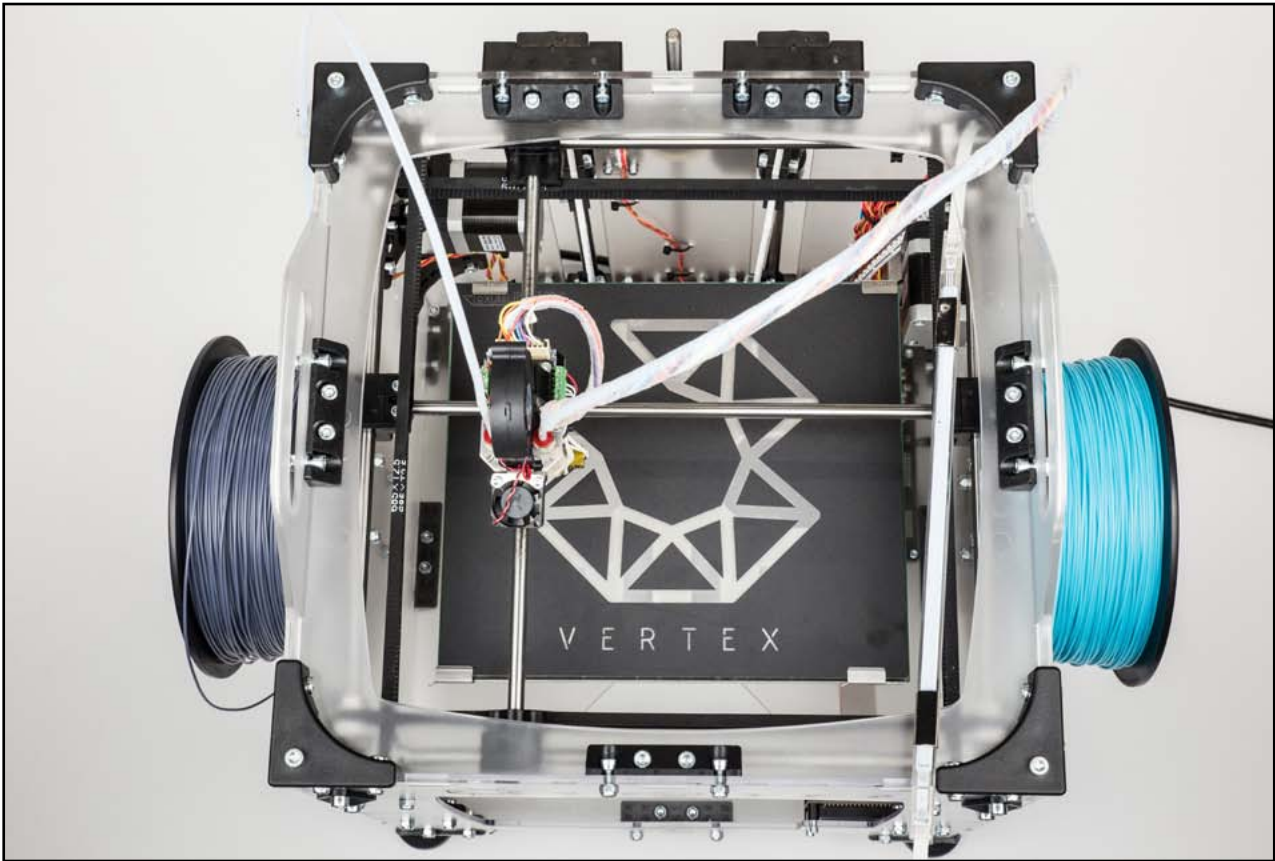


fig. 18

Attach the strips underneath the top of the 3D printer as shown in the pictures.

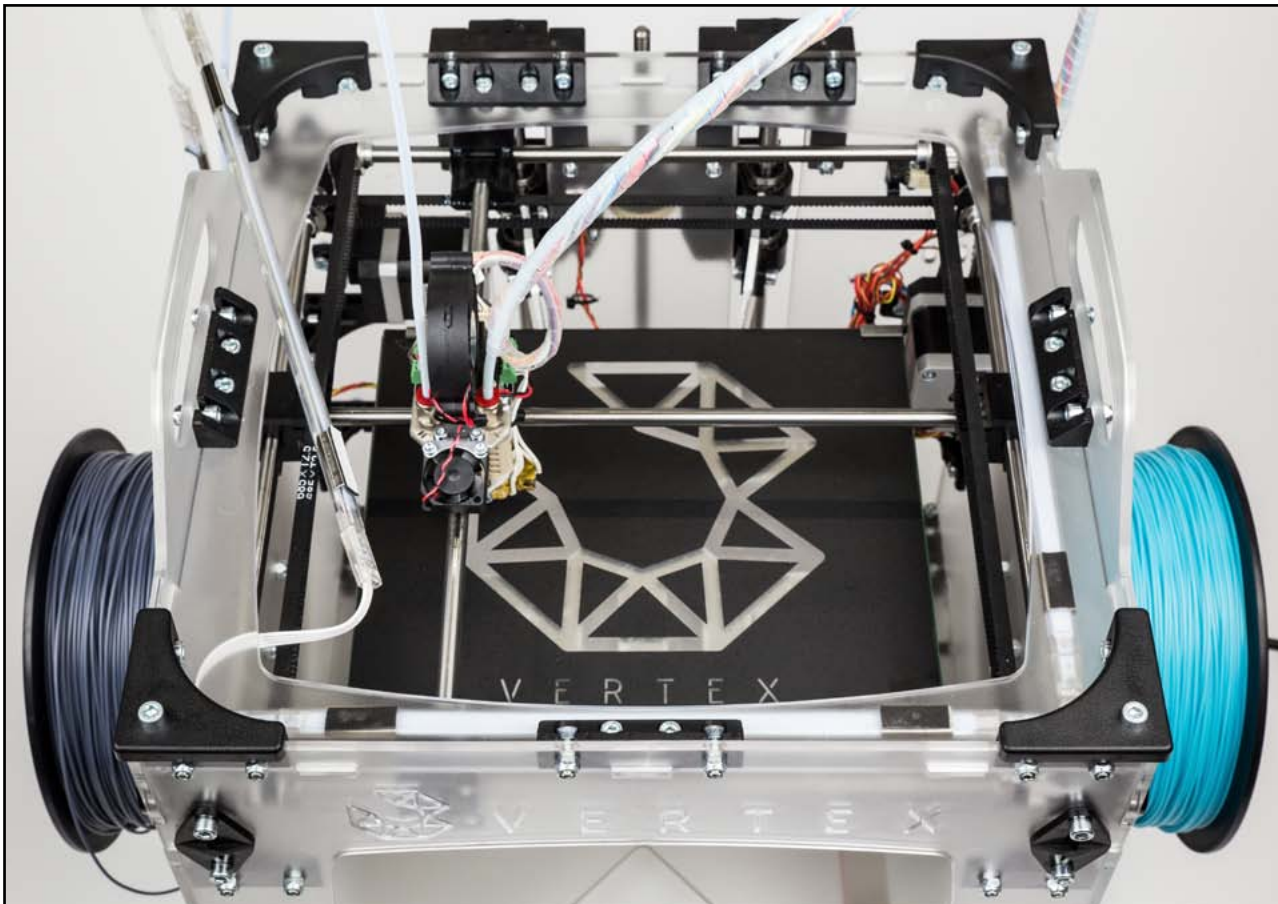


fig. 19





fig. 20

Route the long cable down to the motherboard.

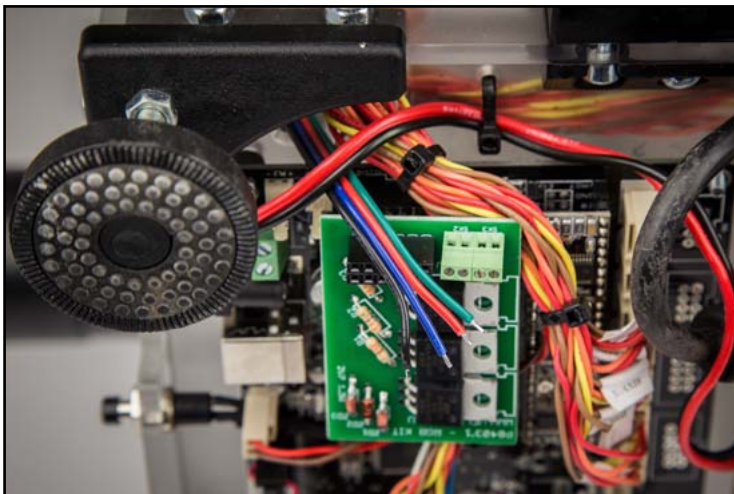


fig. 21

Connect the leads in the terminals.  
**Mind the polarity marks!**

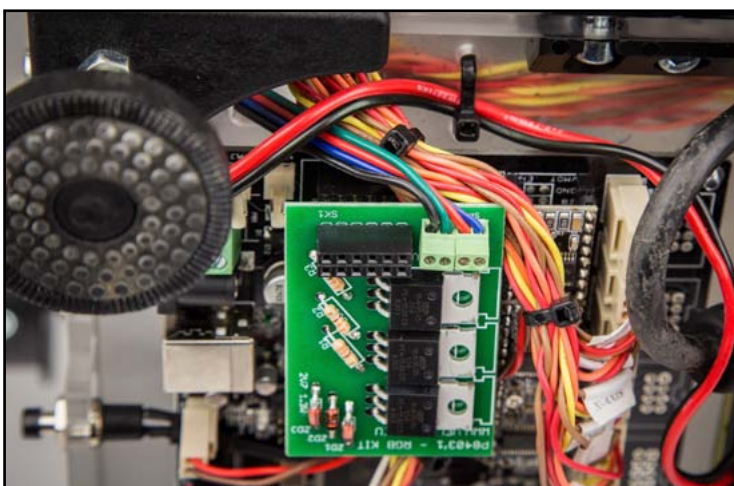


fig. 22

## Installing the firmware

Download the firmware you need here:

[www.vertex3dprinter.eu](http://www.vertex3dprinter.eu)

And follow instructions in following link:

<http://manuals.velleman.eu/article.php?id=31#CHANGINGUPLOADINGTHEFIRMWARE>

## Using the LEDs

To control the LEDs go to the 'menu', 'control printer' and then 'set LED color'.



fig. 23



fig. 24



fig. 25

## Control the LEDs with a G-Code

With the M420 code you can control your LED add-on through G-Code.

- 1) standard code: M420 Rx Ex Bx
- 2) x can be 0 or 1 to turn a color on or off
- 3) R = Red, E = Green, B = Blue

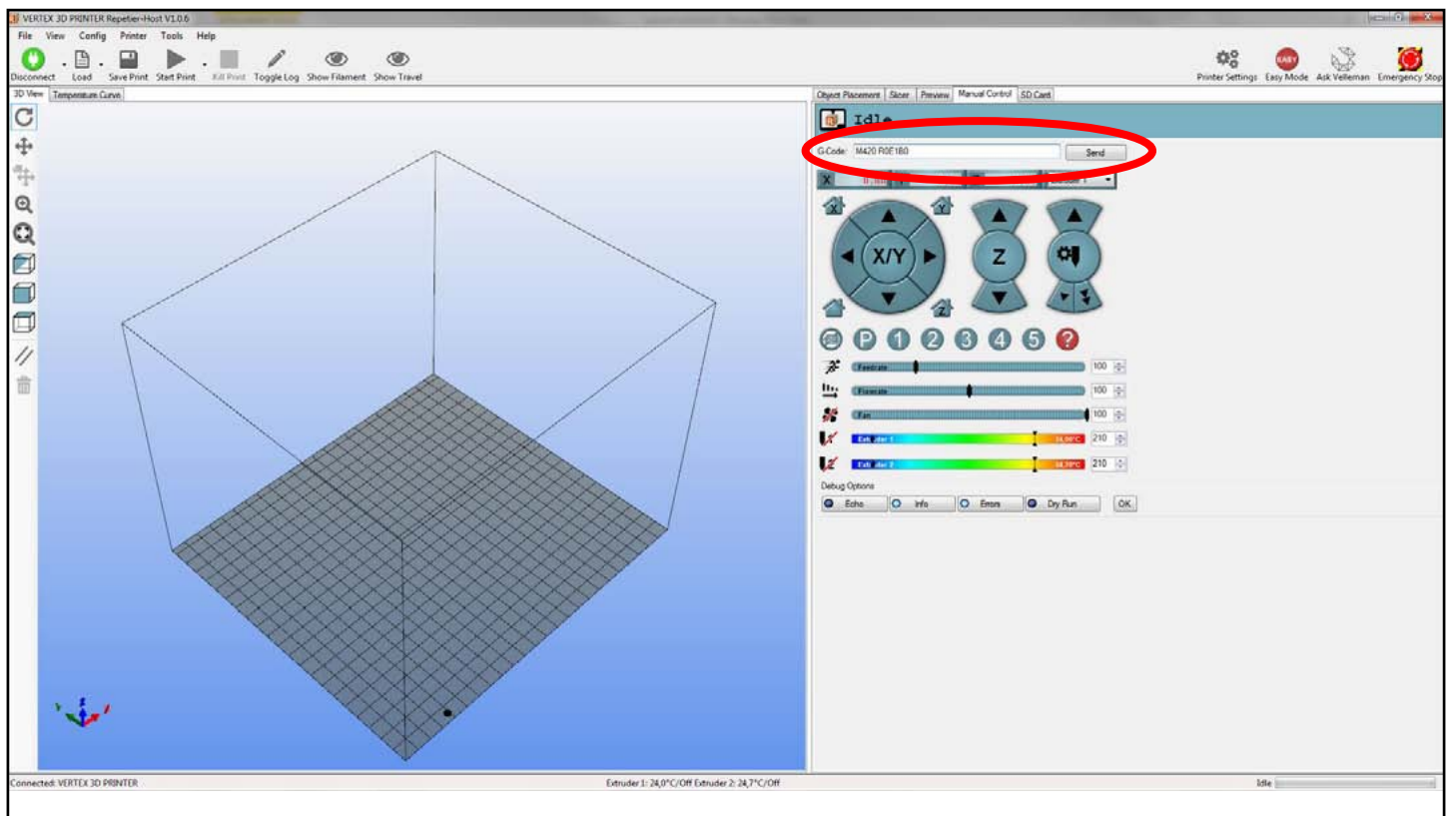
Not all values are needed, if a value is missing the previous state of the missing color is kept.

- 1) M420 R1 E1 (turn the red and green LEDs on, don't change the state of the blue LEDs)
- 2) M420 B0 (turn off the Blue LEDs and don't change the state of the others)

Example with Start G-Code in Repetier:

```
M420 R0 E0 B1; Set the LEDs to blue
G28 ; Home extruder
M420 R1 B0; Set the LEDs to red
G1 Z5 F{ Z_TRAVEL_SPEED}
G1 Z0 F{ Z_TRAVEL_SPEED}
M106 S165 ; Turn on fan
G90 ; Absolute positioning
M82 ; Extruder in absolute mode
; Activate all used extruder
{ IF_EXT0} M104 T0 S{ TEMP0}
{ IF_EXT1} M104 T1 S{ TEMP1}
G92 E0 ; Reset extruder position
; Wait for all used extruders to reach temperature
{ IF_EXT0} M109 T0 S{ TEMP0}
{ IF_EXT1} M109 T1 S{ TEMP1}
{ IF_EXT0} T0
{ IF_EXT1} T1
M420 R0 E1; Set the LEDs to green
M83
G1 E10 F100
M82
G92 E0 ; Reset extruder position
M117 Vertex is printing
G1 F1000 Z5
```

Example sending code with Repetier:



# velleman®

ORDERCODE: K8403

REVISION: HK8403'1

UPC



EUR



VellemanProjects



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