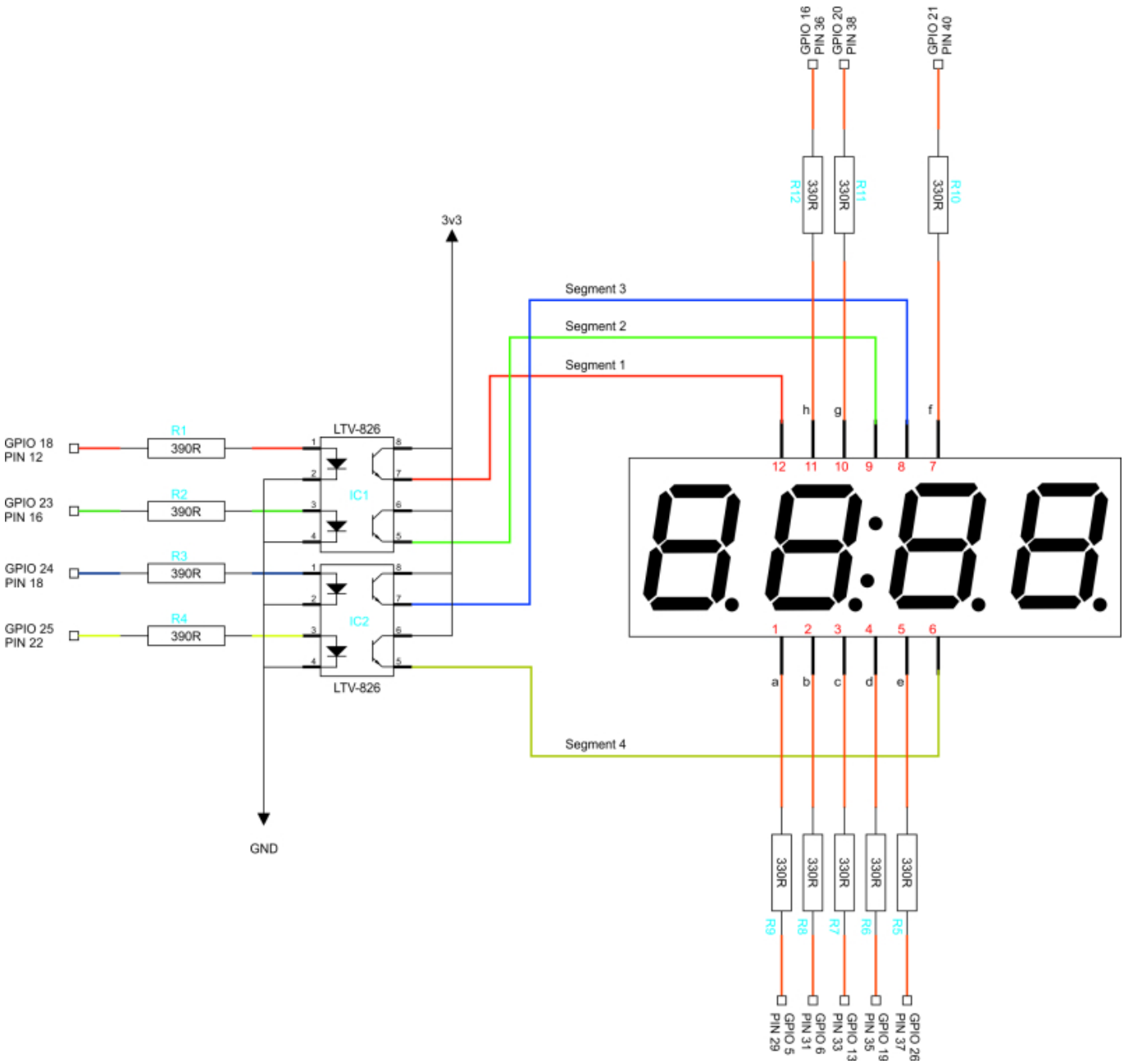
Circuit and PCB layouts

Mar 2017

The Circuit Diagram

Below is the circuit diagram for the Raspberry Pi NTP Clock. Bear in mind that I am using two Opto Isolators that are 8 pin packages, there are 16 pin packages that have enough connections that you can also use, it's up to you.

Please also remember that this project only uses 3.3v. So yes you do still power the Raspberry Pi with 5v, but circuit only uses the 3v3 pin on the Raspberry Pi, all resistor values reflect the fact that I am using 3v3.

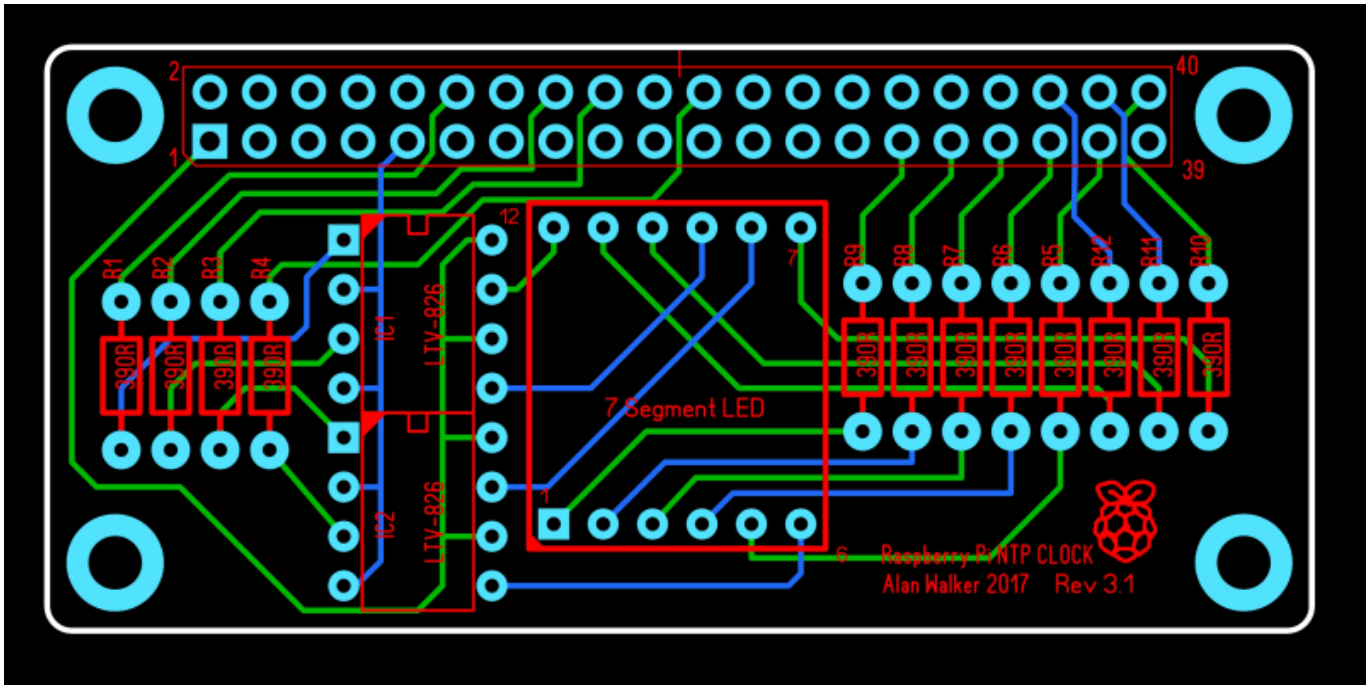


PCB Layout

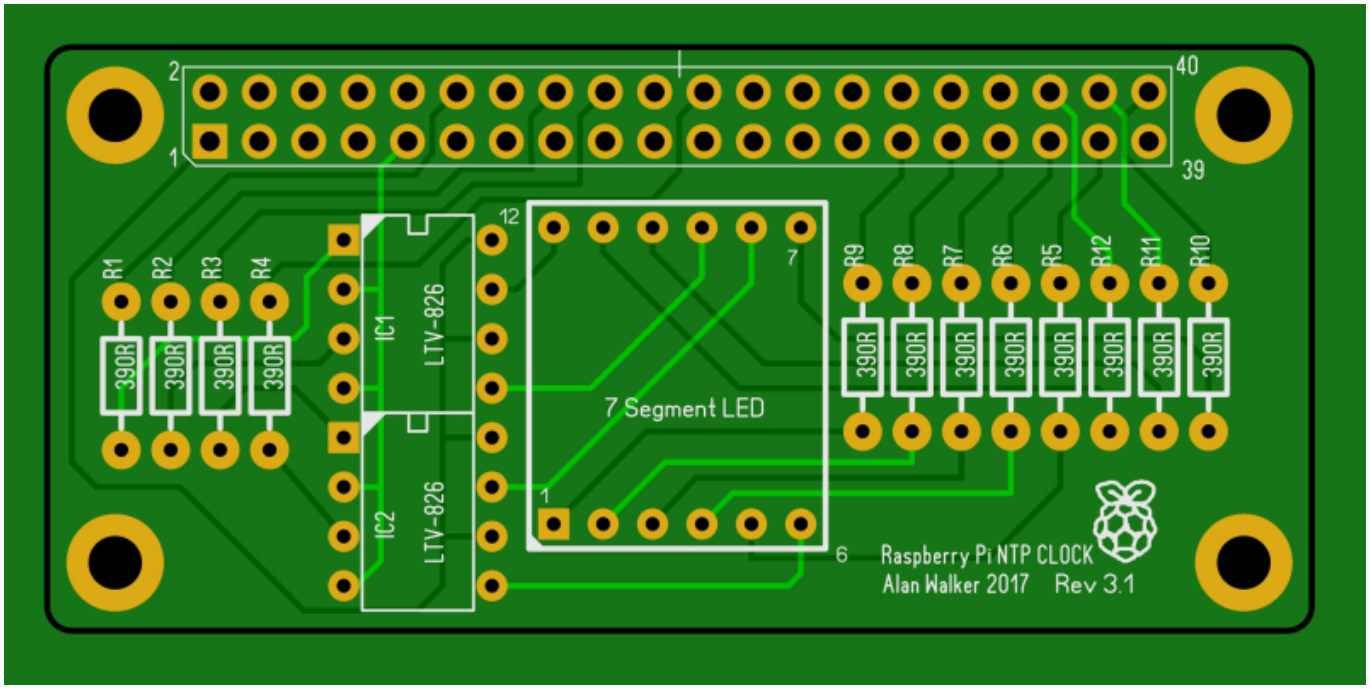
READ ME FIRST!!!! Before getting any PCBs made, please check the section at the end of this page called '**How to SAVE MONEY on your PCBs**'.

Here is what the PCB layout looks like (from the CAD drawings) I have not had any made yet, so this may be subject to change (I am writing this page Early March 2017).

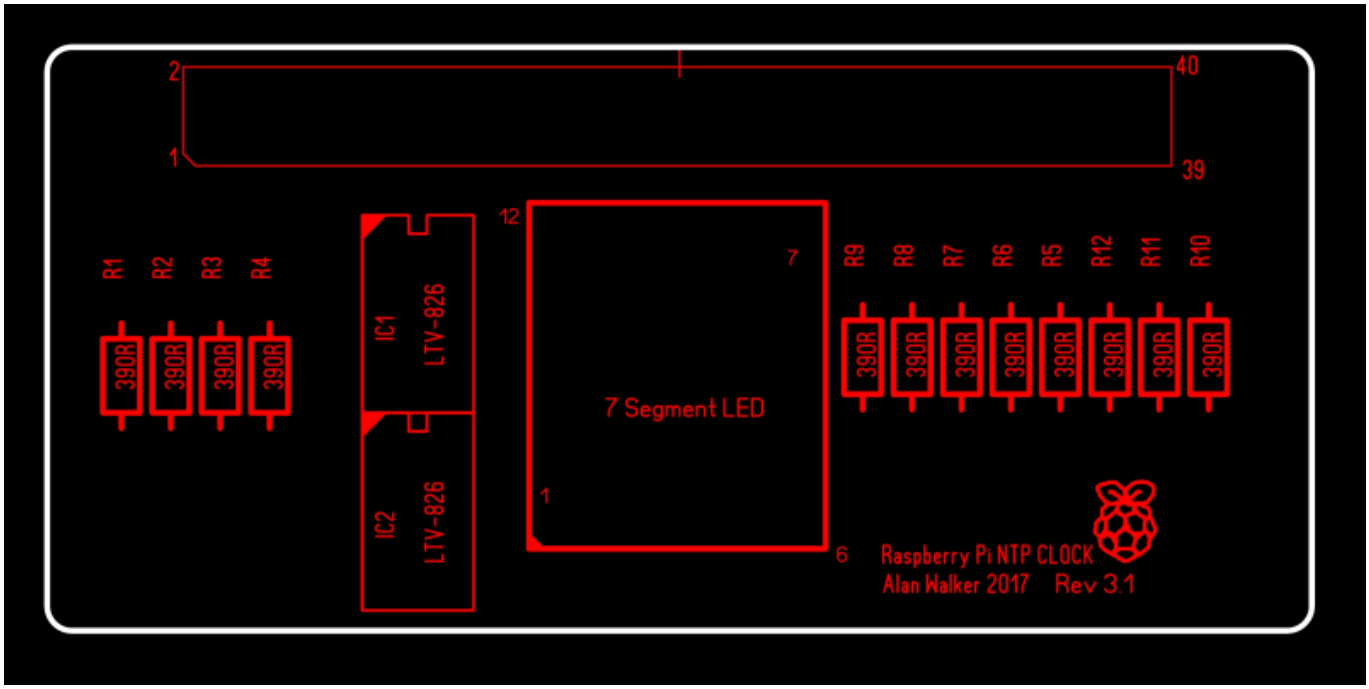
```
Full PCB - All Layers
```



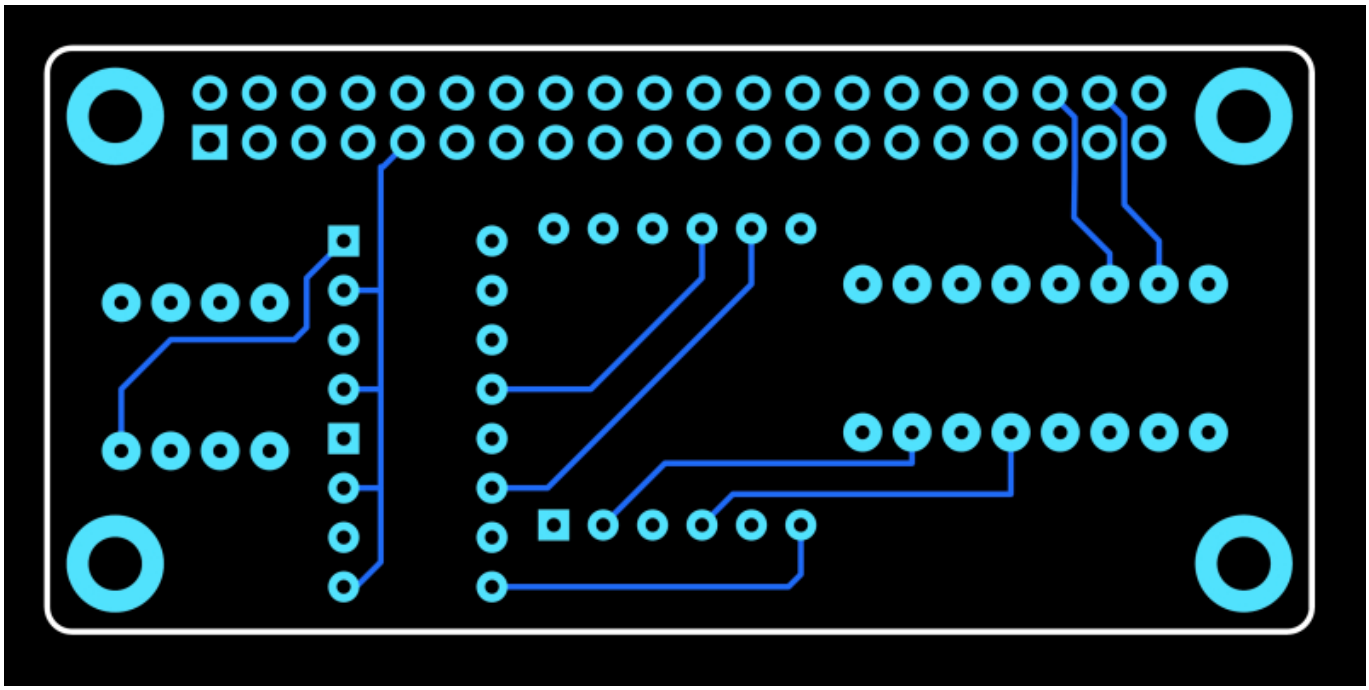

```
Photo View
```



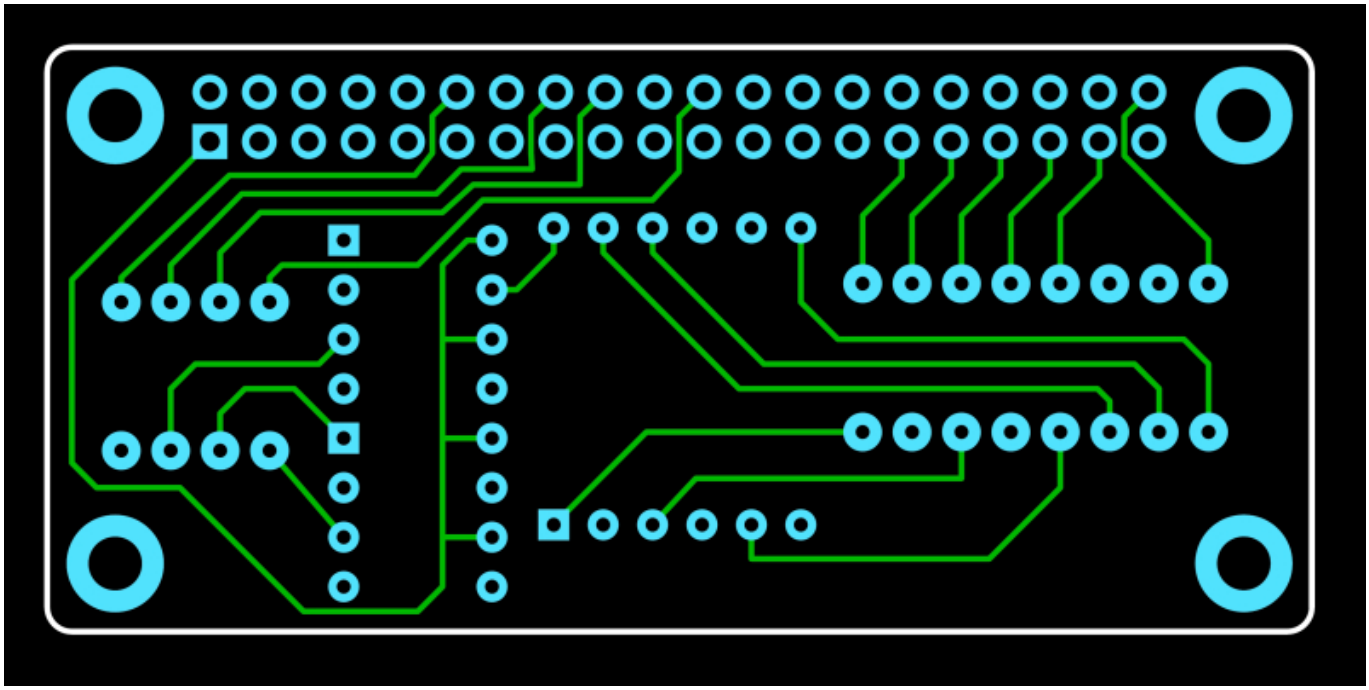
```
Top Layer Silkscreen
```




```
Top Layer Copper
```



```
Bottom Layer Copper
```



```
Outline Layer
```

If I have created this correctly, the PCB should be exactly the same size as the Raspberry Pi Zero (1, 1.3 and W) which is 65mm x 30mm (excluding edge connectors such as USB and HDMI) and the four corner holes should line up.

Gerber Files

If you wish to get your own PCBs made, you can use the attached Gerber files

Here

. However I have not had any made myself yet, so you might want to either wait, or create your own PCB.

PCB File

This is the PCB Layout file, produced in software called Sprint Layout v6.0 http://www.abacom-online.de/uk/html/sprint-layout.html. The PCB file can be downloaded

Here

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On the Sprint Layout website, you can download a free 'Viewer' for the PCB file so you can print it out. Please check their website for this software (Sprint Layout)

How to SAVE MONEY on your PCBs

So the PCB files above are perfectly valid. BUT I noticed something when ordering PCBs from certain manufacturers. The PCB for this project is 65x30mm, I noticed that the price does not change if you go up to 65x95mm (I think up to 100x100mm the price is the same) so you can fit three PCBs on one 'sheet' if you like, thus tripling the number of boards you get for the same price.

There is a zip file here with three boards in one PCB file, that you can use. It looks slightly different because with the help of a friend the layout has been tidied up a bit, but any of the boards are electrically valid.

Download Triple Board

HERE

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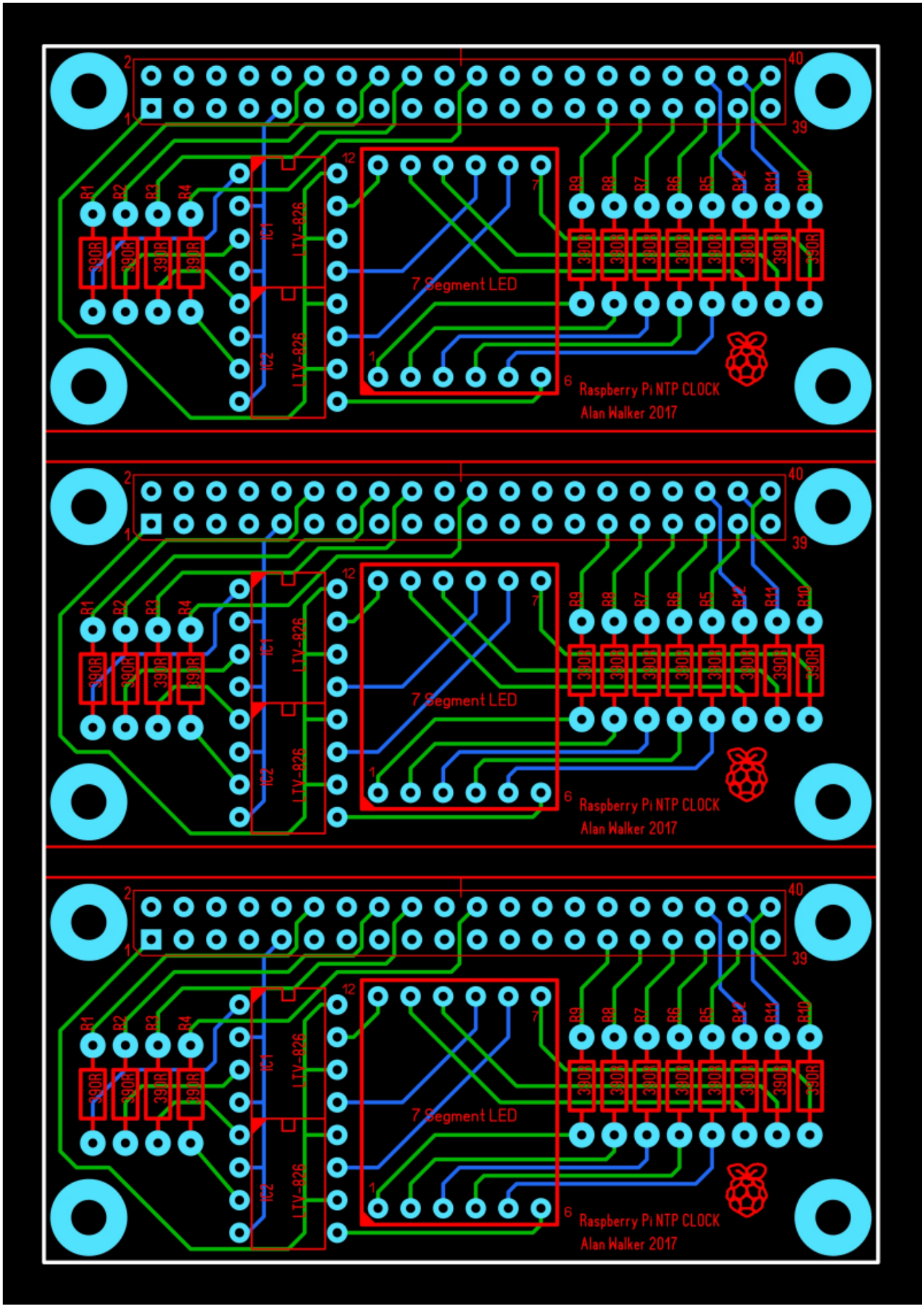
This is what the PCB looks like.


2
1
40
39
12
7
1
6
R1
R2
R3
R4
R9
R8
R7
R6
R5
R12
R11
R10
390R
IC1
IC2
LTV-826
7 Segment LED
Raspberry Pi NTP CLOCK
Alan Walker 2017

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