

StationPi

Adapter PCB KIT

By Ian Jin Oct 23, 2020 Ver. 0.9b

A. Introduction

StationPi adapter PCB KIT was designed for RaspberryPi based audio applications to make them integrated better with RaspberryPi or other digital music sources. It can optimize the DIY DAC or digital transport to be more closed to a final product. The whole performance can also be improved as a consequence of the lower EMI noise.

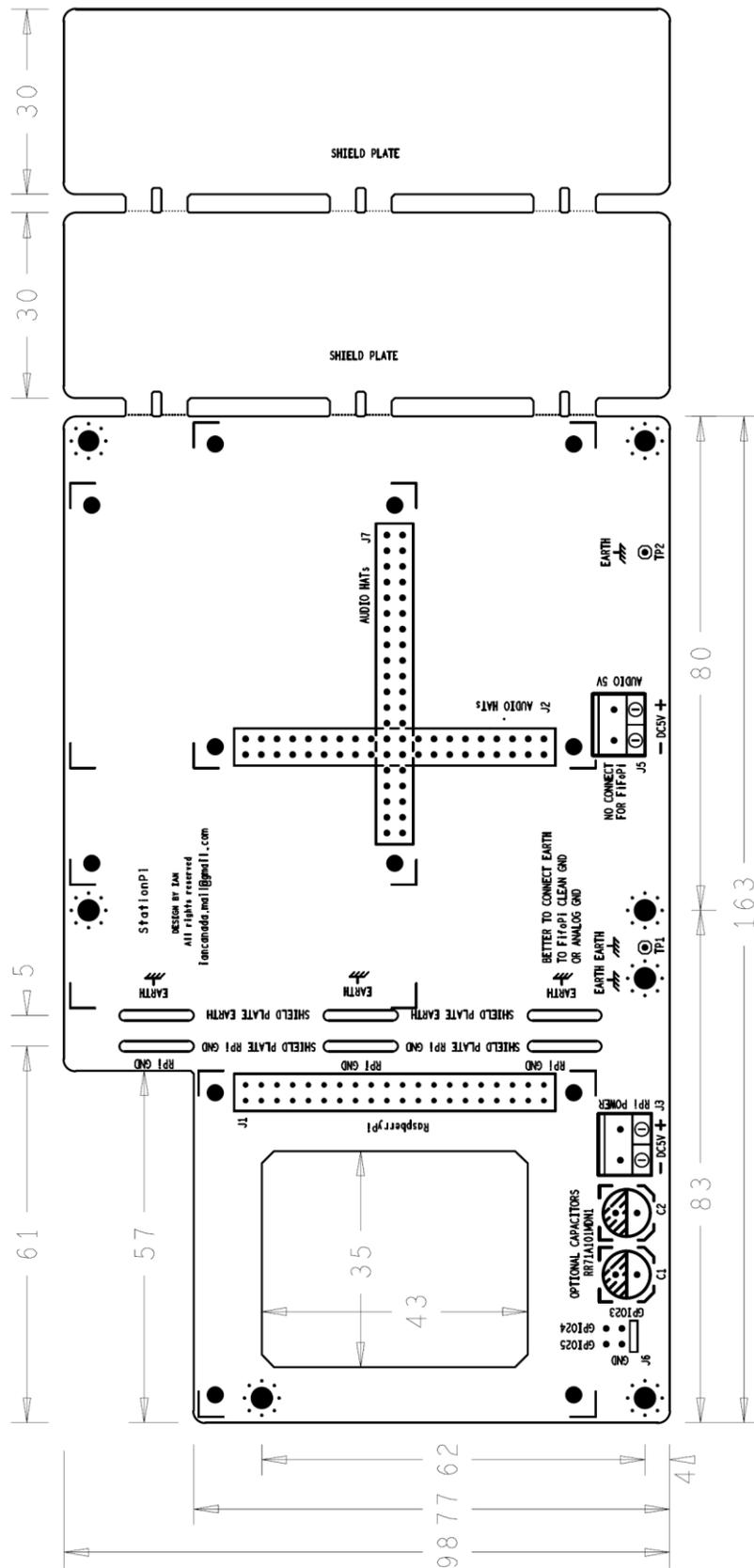
B. Highlighted Features

- Two stacks configuration.
- Independent power supplies directly to the GPIO of each stack.
- Double ground plates to shield the RaspberryPi EMI noise.
- Much easier to mount the whole setup into a case.
- Audio HATs can be installed in two different orientations to fit the case.
- Comes with a full set of connectors and screws and standoffs.
- Great to build DAC or digital transport projects.

C. KIT includes

- StationPi PCB with two shield plates attached
- GPIO socket for RaspberryPi. 40PIN, 2.54mm
- GPIO connector for audio HATs. 40PIN, 2.54mm
- 2 of GPIO connectors for audio HATs in secondary orientation. 18PIN, 2.54mm
- Right angle DIP connector of optional GPIO output. 4PIN, 2.54mm
- 6 of 6+4mm, M3 standoffs
- 6 of M3 screws
- 6 of M3 nuts
- 8 of 12+6mm, M2.5 standoffs
- 8 of M2.5 screws
- 8 of M2.5 nuts
- 2 of 2PIN DC power input terminal connectors

D. Layout and Dimensions (in mm)



E. Getting start

1. Break the two shield plates apart from the StationPi PCB.
2. Solder the 40PIN GPIO socket to position of J1.
3. Solder the 40PIN GPIO connector to the position of J7. And then solder the two 18PIN GPIO connectors the rest positions of J2.
4. Solder the two DC input terminal connectors to positions of J3 and J5
5. Solder the two shield plates PCB to the reserved positions between two stacks. Start from one of the feet at top to make them vertical to the StationPi PCB and parallel to each other. Then the rest feet at bottom side.
6. Solder the 4PIN optional connector to J6 if required.
7. Assemble the standoffs and screws.
8. Mount the StationPi PCB into a case if required.
9. Install a RaspberryPi (face down) into the GPIO J1.
10. Install the rest of audio HATs, such as FifoPi, into the GPIO J2 or J7 according the required orientation.
11. Connect analog ground of the system or the ground of FifoPi clean side to the EARTH of StationPi by a grounding wire. It can be connected either to the TP1, TP2 or to the screw footprint marked EARTH.
12. Connect a DC 5V input to J3 as RaspberryPi power. Connect another DC 5V input to J5 as Audio GPIO power.
13. Now, it's ready to build the rest of your system with StationPi.

F. Q & A

1. In my application, the audio HAT origination is fixed. Can I use only one GPIO connector?

Yes you can. In this case, you can solder only one 40PIN GPIO connector to the position of J2 or J7 according to that origination.

2. Can I share only one DC 5V power supply with both power inputs?

Yes, you can. But that's not recommended. If you really want to do so, please bridge J3 and J5 by wires 18AWG or bigger (+ to +, - to -). And then feed the DC 5V into J5.

3. If a FifoPi is installed to the J2 or J7, how to power the FifoPi Pi side?

You can power FifoPi Pi side either from J5 of the StationPi (recommended) or from J3 of the FifoPi.

4. If a FifoPi is installed, do I still need power the FifoPi clean side?

Yes. FifoPi clean side is isolated from StationPi, it will still need a very high quality independent power supply.

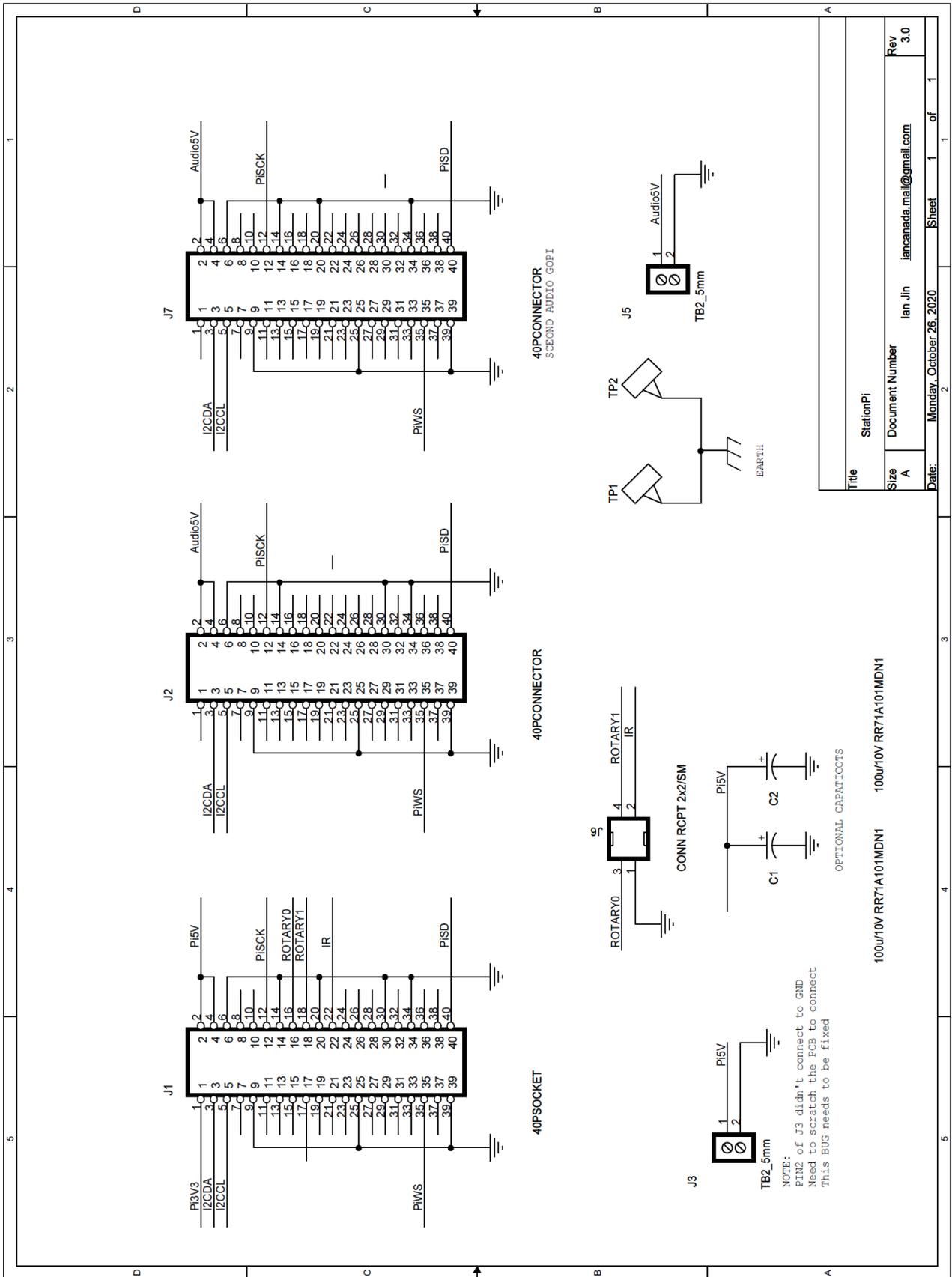
5. What's the J6 for?

J6 is optional for potential use of some RaspberryPi GPIO pins.

6. Do I need to install the optional capacitors C1 and C2 ?

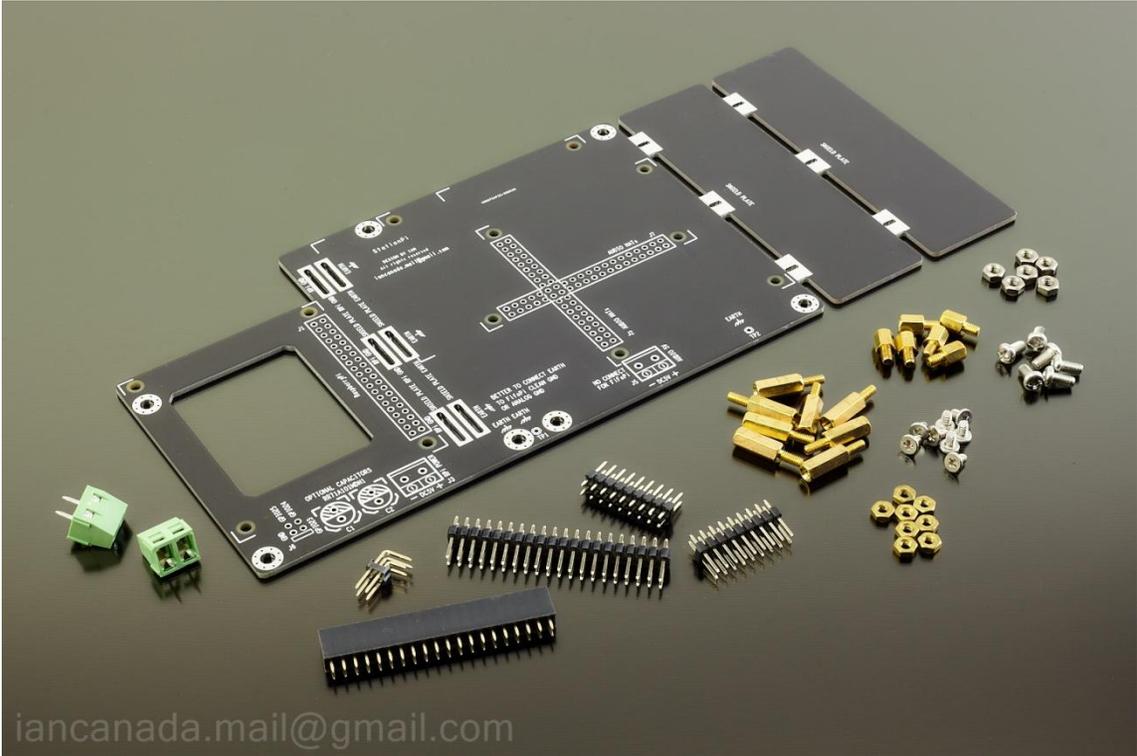
It's good to have but not a necessary. P/N can be found from the schematic. You can use capacitors with other P/N as long as they are in the same package.

G. Schematic

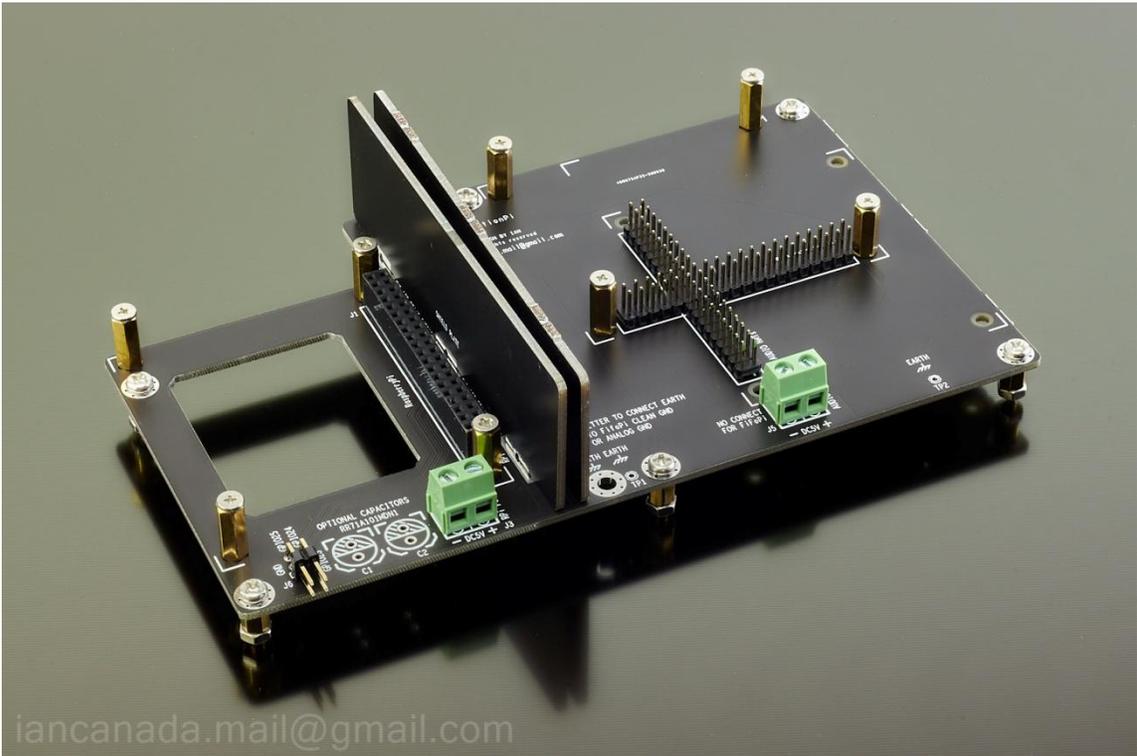


H. Pictures

1. StationPi as shipped



2. StationPi assembled



I. History of revising

Oct 23, 2020 V0.9b released

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