BridgePi

USB streamer adapter

By Ian Jin Jul 25, 2020 Ver. 0.9b

A. Introduction

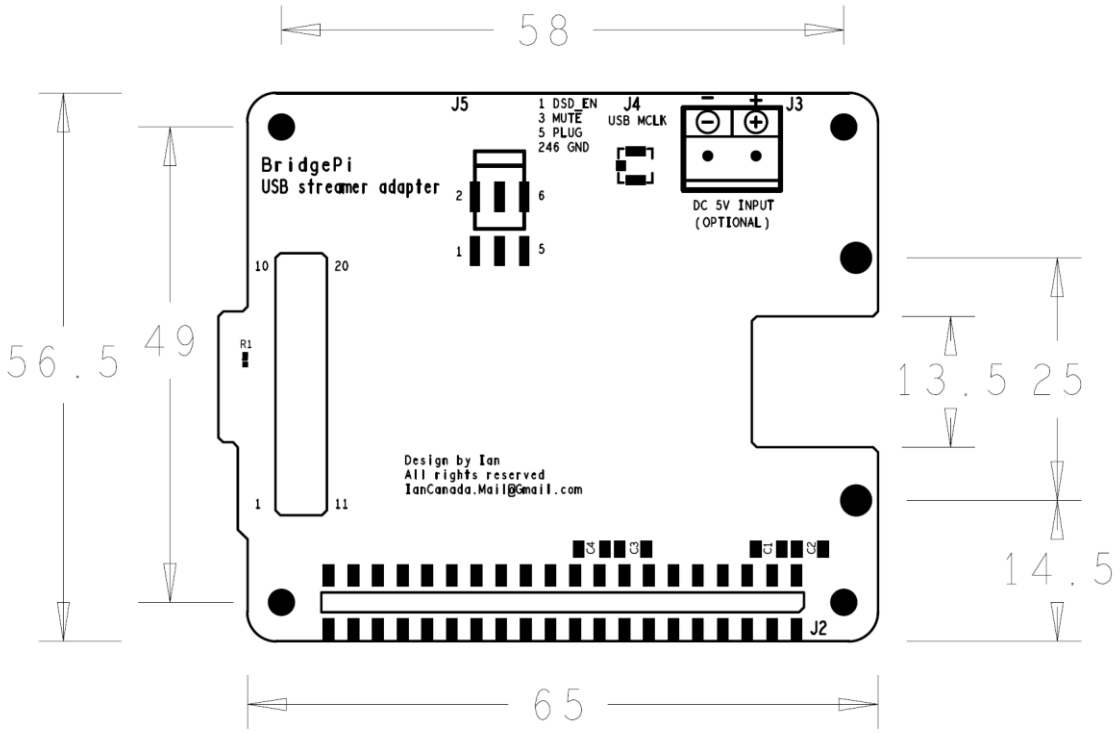
BridgePi is a HAT size adapter board that can bridge a USB streamer into a RaspberryPi stack through GPIO.

BridgePi opens a new window for RaspberryPi HATs, such as DACs, TransportPi, FifoPi and many others to make it possible for them to work with higher performance USB streamers. Native DSD up to DSD512 and PCM 768KHz or higher, HQPlayer, Roon up-sampling and so on are all possible to use.

B. Highlighted Features and Specifications

- Native DSD can be enabled when work with a RaspberryPi.
- Can also work without a RaspberryPi.
- Works with Amanero Combo384 or other compatible size USB streamers.
- Up to PCM 768 KHz and DSD512 (limited by the USB streamers)
- Low profile connector makes the USB streamer fitting the Raspberry HAT stack.
- Has high quality MCLK output in u.fl coaxial cable connector.
- Has DSD_EN and MUTE outputs possible to work with the pure DSD DAC.
- BridgePi itself doesn’t need a power supply
- Very easy to use. No additional software is required.
- DIY friendly, many options for different applications.

C. Layout and Dimensions (in mm)



D. Getting start

1. Tenderly plug an Amanero Combo384 or compatible size USB streamer into the 20pin low profile connector on the BridgePi (The SMT connector was mounted through to the back side of the PCB. The pads are not as strong as those in normal configuration). Fix the USB streamer with the supplied standoffs.
2. For applications without a RespberryPi, please jump the step 3.

   Plug the BridgePi into the GPIO of a RaspberryPi. Make sure standoffs (sold separately) are installed properly to avoid any possible short circuit.
3. Install the rest HATs, such as TransportPi, HdmiPi, FifiPi, DAC, I/V board and others on top of BridgePi. Connect additional cables such as u.fl cable for TransportPi if required.
4. Connect other power supplies as required (BridgePi itself doesn't need a power supply)
5. Connect the USB streamer on the BridgePi to a RaspberryPi or other player such as a mini PC and so on through a USB cable.
6. Make sure player software is installed properly.
7. Turn on power supplies. Enjoy the music

E. Connectors

20pin low profile connector: USB streamer connector

1	2	3	4	5	6	7	8	9	10
Plug	-	DATA/DSD1	SCK	LRCK/DSD2	MCLK	DSDEN	GND	-	-
11	12	13	14	15	16	17	18	19	20
MUTE	-	GND	GND	GND	-	-	-	-	-

J4: MCLK output in 50 ohm u.fl connector

MCLK output from the USB streamer

40pin GPIO connectors

pin numbers	**J1** 40 PIN GPIO connector to board below (Normally Raspberry Pi)	**J2** 40 PIN GPIO connector to HAT on top (FifoPi or DAC or other audio board)
1,17	3.3V from preceding board	3.3V from preceding board
2,4	5V from preceding board	5V from preceding board
6,9,14,20, 25,30,34, 39	GND	GND
12	NC	USB streamer SCK output
35	NC	USB streamer LRCK/DL output
40	NC	USB streamer SD/DR output
3	I2C DA	I2C DA
5	I2C CL	I2C CL
8	TXD0	TXD0
10	RXD0	RXD0
All other pins	same pin from preceding board	same pin from preceding board

J5: Control signals from USB streamer

1	2	3	4	5	6
DSD_EN	GND	MUTE	GND	Plug	GND

J3: Optional 5V DC input to power ReaspberryPi (not installed by default)

This connector is internally connected to both J1 and J2 GPIO 5V and GND. Normally we don't need this connector. If it is required, you can connect a DC 5V power supply to this connector to power devices such as a RaspberryPi through GPIO.

F. Application notes

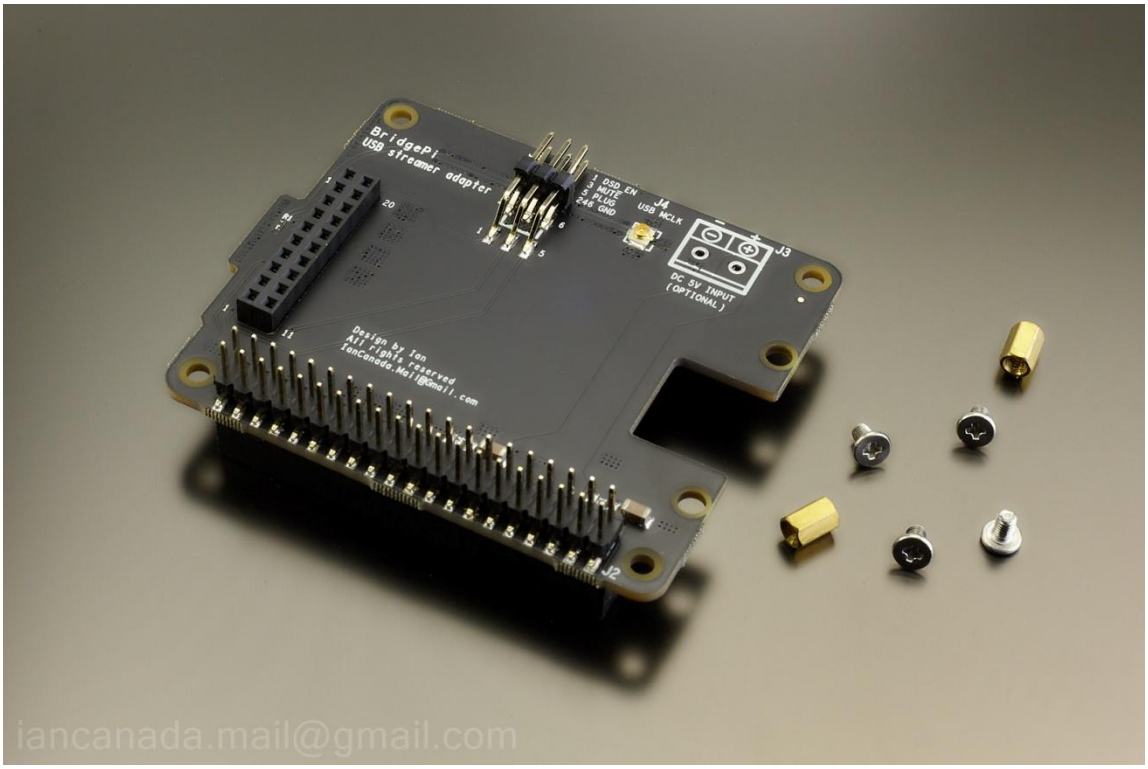
1. Not all Amanero Combo384 FW supports DSD512. Please contact the manufacturer for the correct FW to update.

2. Before first time power up, make sure there is space between pins of the USB streamer and the PCB on top of the BridgePi. Please use suitable standoffs. 13mm standoffs could be safer than the 12mm standoffs.

3. RaspberryPi software can recognize the USB streamer. Make sure that USB streamer is selected for output. And also make use native DSD is enabled.

G. Pictures of BridgePi

1. BridgePi as shipped



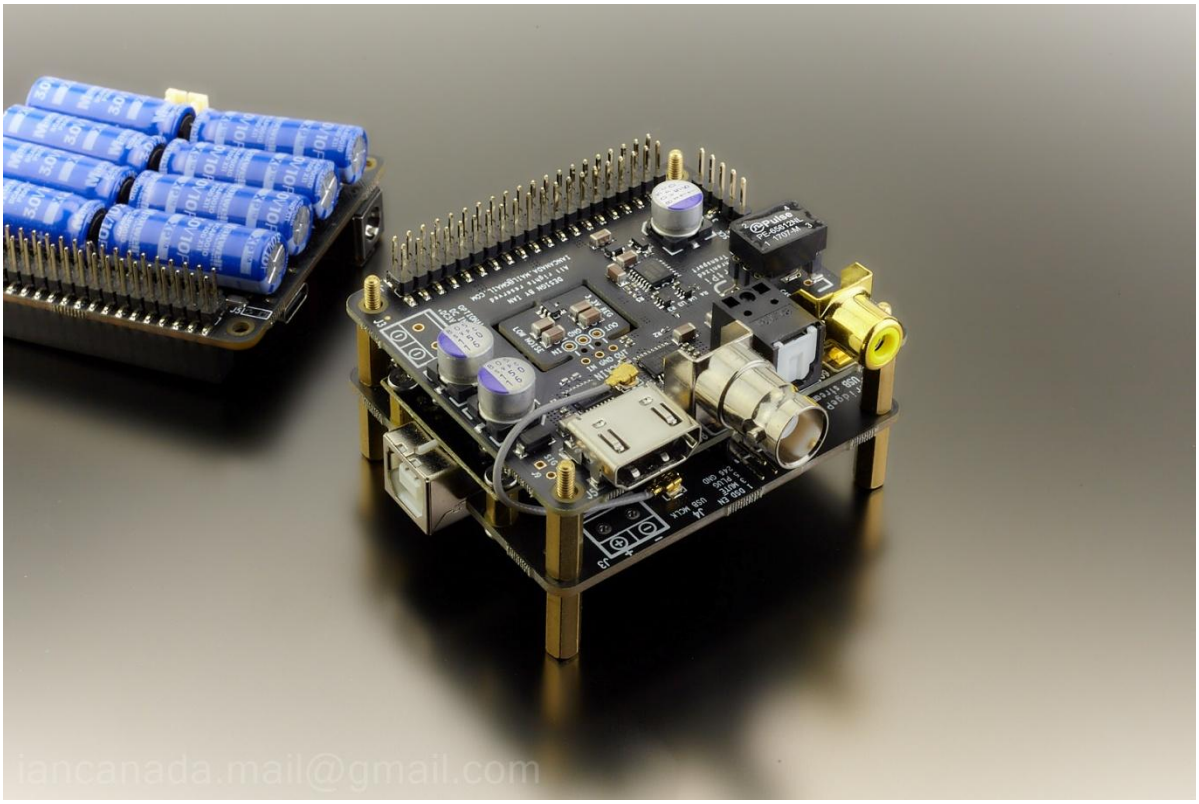
2. Install a USB streamer to the BridgePi

H. Application Examples

1. Simple USB transport without a RaspberryPi

a. BridegPi with Amanero Combo384 or compatible

b. TransportPi



Possible upgrade:

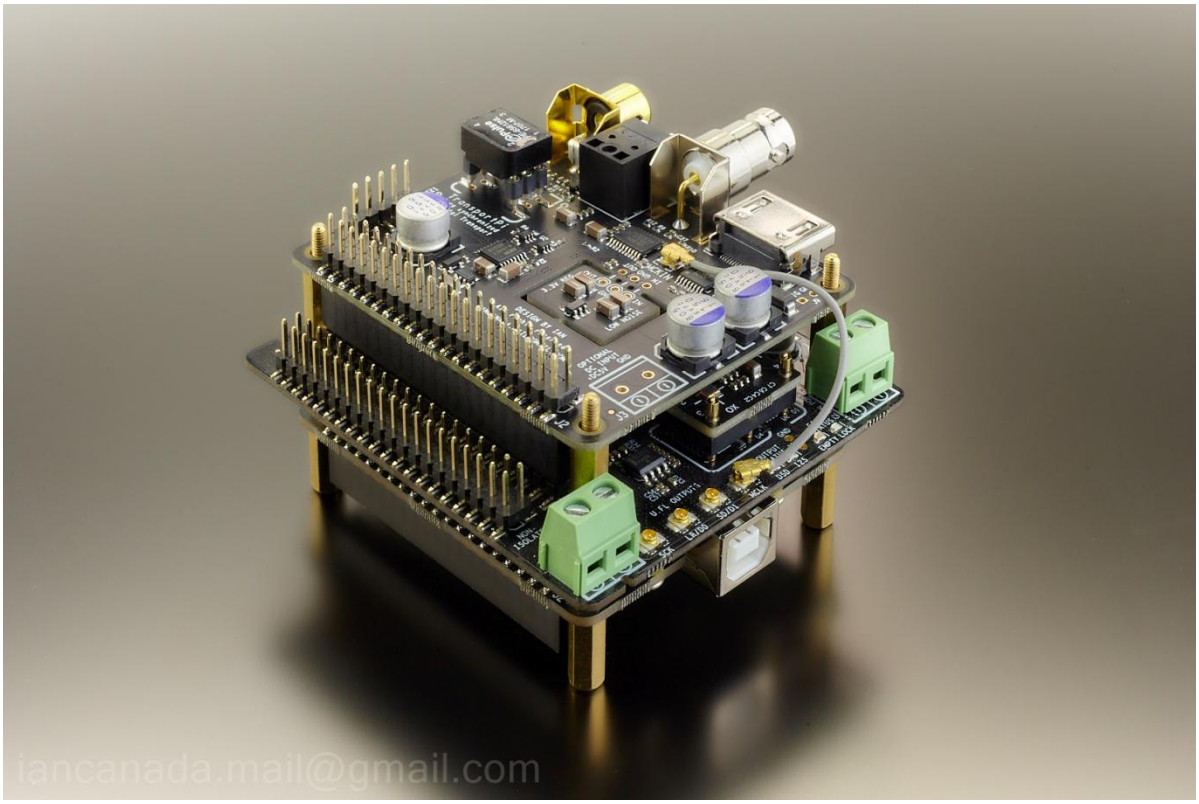
ConditionerPi for power supply

2. Advanced USB transport or DAC without a RaspberryPi

a. BridegPi with Amanero Combo384 or compatible

b. FifoPi

c. TransportPi or DAC



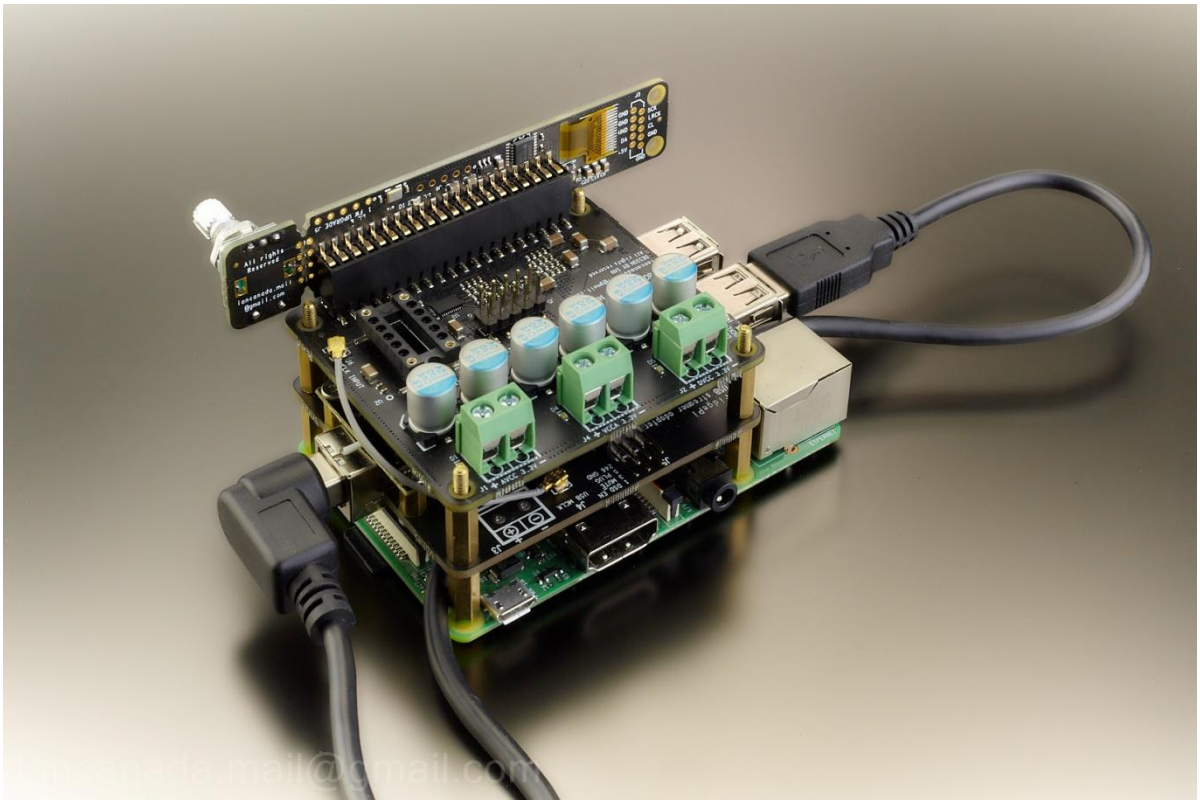
Possible upgrade:

a. XOs on FifoPi

b. ConditionerPi for power supply

c. UcConditioner for power supply

3. **RaspberryPi DAC or transport with native DSD support**
    a. RaspberryPi
    b. BridegPi with Amanero Combo384 or compatible
    c. FifoPi
    d. DAC HAT (can be in SYNC mode) or TransportPi



Possible upgrade:

a. ConditionerPi for power supply
b. UcConditioner for power supply

4. **Advanced RaspberryPi DAC or transport with native DSD support**
    a. RaspberryPi
    b. BridegPi with Amanero Combo384 or compatible
    c. FifoPi
    d. TransportPi or DAC

Possible upgrade:

a. XOs for FifoPi
b. ConditionerPi for power supply
c. UcConditioner for power supply

I. History of revising

Jul 26, 2020 V0.9b released