HDMIpi MkII PCM/DSD/DoP to HDMI transmitter user's guide

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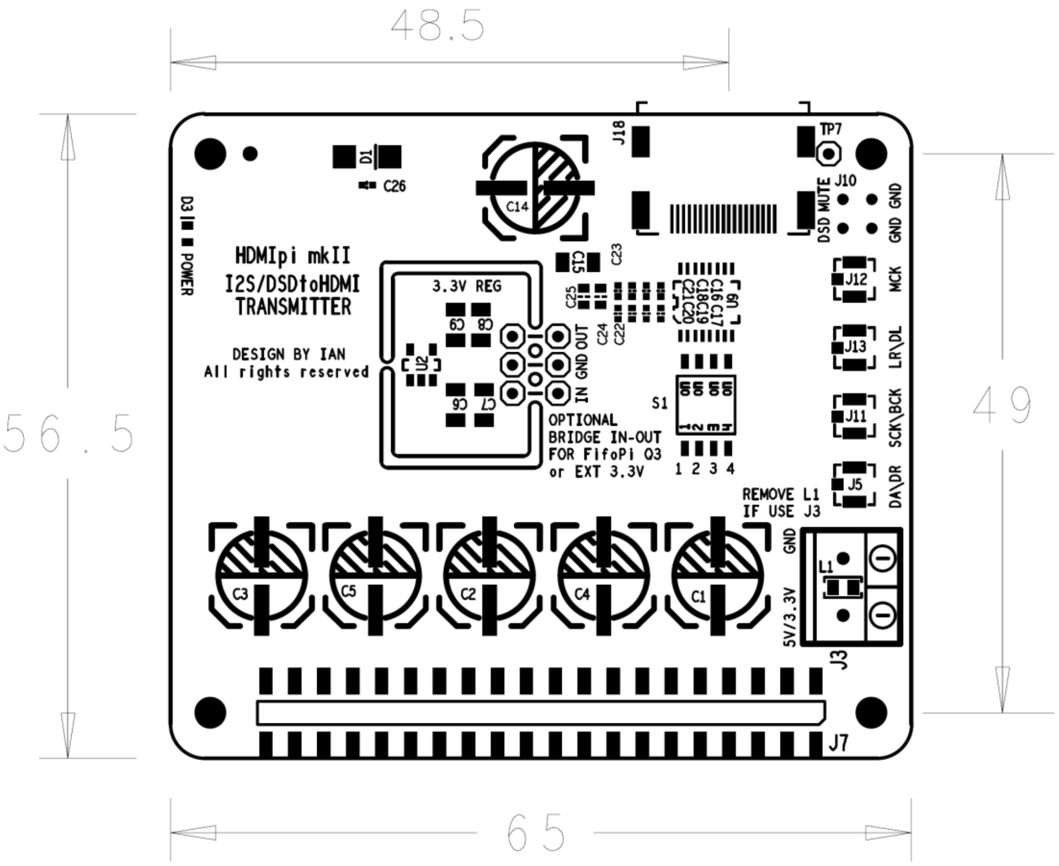
A. Highlighted Features and Specifications

- Converts PCM/DSD/DoP into balanced LVDS signals to transmit them over HDMI cable
- Standard PCM/DSD/DoP to HDMI signal configuration
- Transmits PCM signals up to 768KHz
- Transmits native DSD signals up to DSD1024
- Transmits DoP signal up to DSD256 in PCM package
- Works with either Raspberry Pi or as independent PCM/DSD/DoP to HDMI transmitter
- Digital music signals input either from GPIO or from high quality u.fl connectors
- Can power HDMI to PCM/DSD/DoP receiver over HDMI cable
- Replaceable 3.3V regulator board ready for higher quality power supply upgrade
- DIY friendly design

B. New upgraded features to MkII

- New DSD enable and MUTE signals over HDMI to make it possible to control external DAC switching between PCM and DSD and eliminating any possible popping sound.
- Enhanced decoupling capacitor networks to improve power supply performance.

C. Layout and Dimensions (in mm)



D. Getting start without MCLK

1. Plug HDMIpi transmitter into the GPIO port of Raspberry Pi.
2. Connect HDMI cable from receiver into HDMI connector J18
3. Power and Run Raspberry Pi based music player normally

E. Getting start with MCLK

1. Plug HDMIpi transmitter into the isolated GPIO port of FifoPi.
2. Connect MCLK clock signal from FifiPi to MCK connector J12 through u.fl cable.
3. Connect DSD and MUTE signals to J10 from FifoPi (GND is for optional).
4. Make sure switch S1.4 is set at off position
5. Connect HDMI cable from receiver into HDMI connector J18.
6. Power and run Raspberry Pi/FifoPi based music player normally

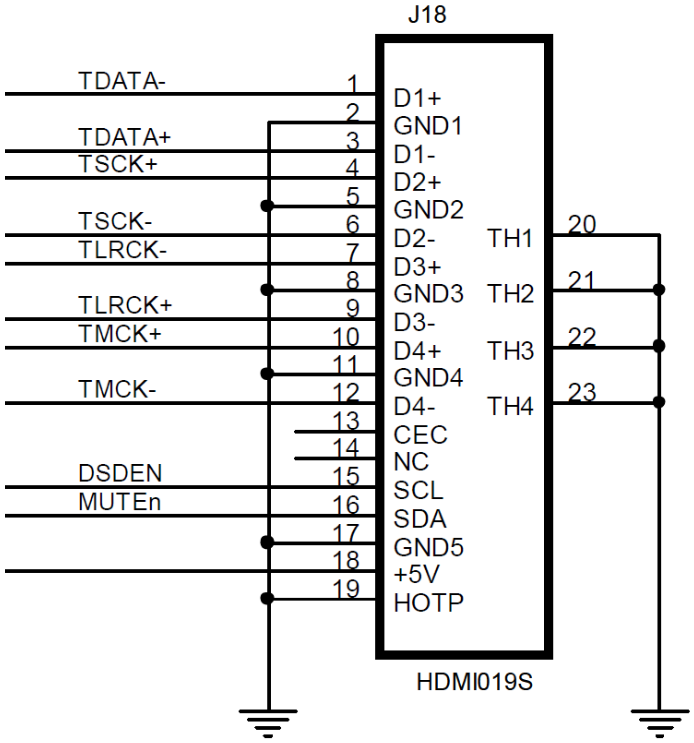
F. Connectors

J18: HDMI output connector

Standard HDMI type A connector. To output LVDS PCM/DSD/DoP signals to receiver through HDMI cable.

For higher signal quality, high speed HDMI cables version 2.0 or higher are recommended.

Please refer the following schematic for signal configurations.



40 pin GPIO connectors

pin number	**J1** 40 PIN GPIO connector to board below (Raspberry Pi, IsolatorPi I/II, FiFoPi, or similar)	**J7** Optional 40 PIN GPIO connector to HAT on top (was not installed by default)
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	SCK input	SCK from preceding board
35	LRCK/D1 input	LRCK/D1PIN from preceding board
40	SD/D2 input	SD/D2 PIN from preceding board
All other pins	same pin from preceding board	same pin from preceding board

40 pin GPIO connector note: All input/output signals are LVTTL (3.3V) logic level except power and ground.

J10: DSD and MUTE control signals input

HDMI Control	Low or unconnected	High
DSD	To play PCM	To play DSD
MUTE	To play normally	To mute DAC

Note: GND signals on J10 are optional if connects to FifoPi

J12: External MCLK input (u.fl coaxial cable socket)

When including the MCLK signal into HDMI cable, connect the external MCLK signal from a FifoPi or similar low jitter re-clocking source using a u.fl coaxial cable. Switch S1.4 needs to be set at off position in this case.

J11: High quality SCK input (u.fl coaxial cable socket)

When high quality SCK signal is required, connect the SCK signal from a FifoPi or similar low jitter re-clocking source using a u.fl coaxial cable. Switch S1.2 needs to be set at off position in this case.

J13: High quality LRCK/D1 input (u.fl coaxial cable socket)

When high quality LRCK/D1 signal is required, connect the LRCK/D1 signal from a FifoPi or similar low jitter re-clocking source using a u.fl coaxial cable. Switch S1.3 needs to be set at off position in this case.

J11: High quality SD/D2 input (u.fl coaxial cable socket)

When high quality SD/D2 signal is required, connect the SD/D2 signal from a FifoPi or similar low jitter re-clocking source using a u.fl coaxial cable. Switch S1.1 needs to be set at off position in this case.

J3: Optional DC power input

If don't want picking up power from GPIO, you can connect a 5V DC / 100mA (minimum) power supply to the 2-pin 5.0mm terminal J3. MAINTAINING CORRECT POLARITY!!! Low noise linear 5V power supply will be good for HDMIpi transmitter. Direct-connected 3.3V ultra capacitor / LifePO4 battery power supply can also be used. J3 was not installed by default. L1 needs to be removed before solder the supplied terminal block to J3 position.

J18: Optional control input

Reserved optional input that the logic level can be transmitted to the receiver.

Jumper Settings

Jumper Switch S1	OFF	ON
1	Input SD/D2 from u.fl connector only	Input SD/D2 from GPIO (default)
2	Input SCK from u.fl connector only	Input SCK from GPIO (default)
3	Input LRCK/D1 from u.fl connector only	Input LRCK/D1 from GPIO (default)
4	Input MCLK from u.fl connector only (default)	MCLK from GPIO5 (PIN29)

G. LED indicator

D3: Power indicator

H. Upgrade options

1. Use u.fl cables for all input signals. Make sure all jumper switches (S1) are at off position in this configuration.

2. Replace on-board 3.3V regulator with ultra-low noise regulator board such as LT3042/LT3045 or so on.

3. Using independent high quality power supply through J3. Need to remove L1 first, and then solder the supplied terminal block to the J3 position.

4. Use Direct-connected 3.3V ultra capacitor / LifePO4 battery power supply. In this setup, 3.3V regulator board can be bypassed with IN and OUT pins bridged together by a jumper wire.
   (This configuration can also be used when works with FifoPi Q3 for the 3.3V power supply through GPIO)

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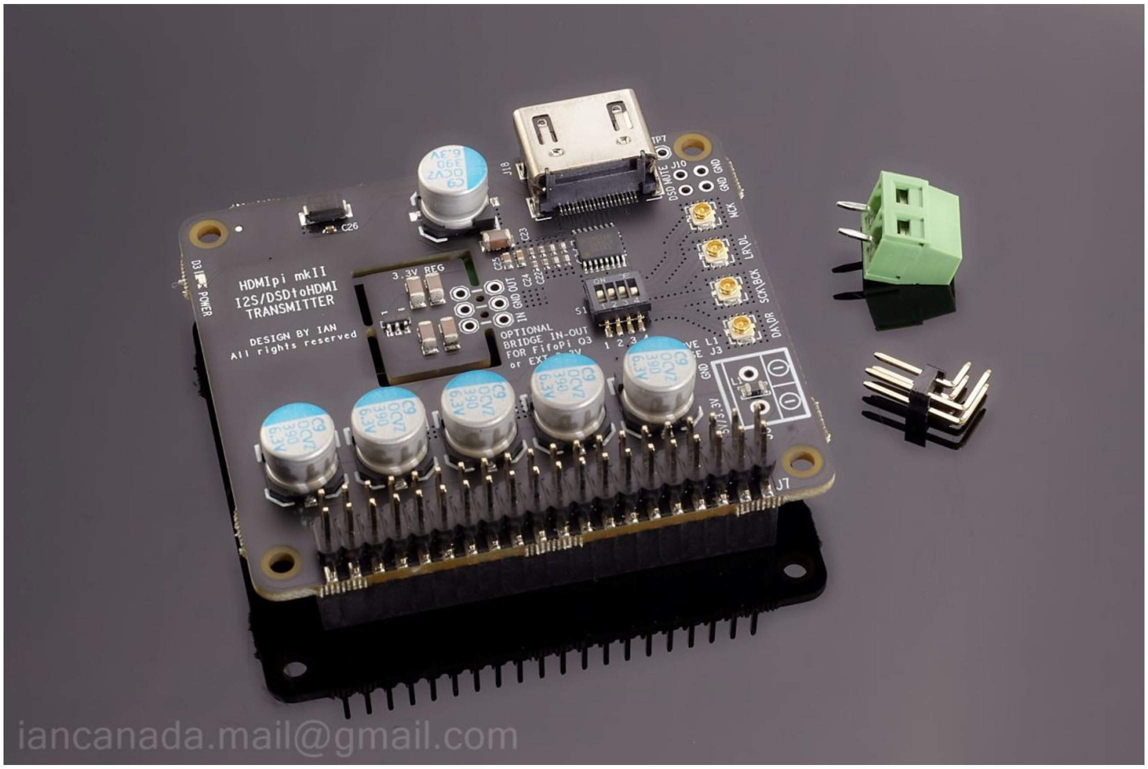
I. Pictures of HDMIpi PCM/DSD/DoP to HDMI transmitter

1. HDMIpi MkII PCM/DSD/DoP to HDMI transmitter as shipped



2. Works with FifoPi Q3