

Pin #	Signal
1	If USB jumper is installed this is +5V output; if USB jumper is open this is an input for external stabilized power supply +3.8V to +5.0V/0.4A for USB input part
2	GND
3	Configuration pin
4	A0 – output for selecting external master clock 0V – 45.158MHz; 3.3V – 49.152MHz; // look configuration table 2 and table 3
5	A1 // look configuration table 1, change takes place after USB reset
6	A2 // look configuration tables 2 and table 3, change takes place after USB reset
7	CODEC RESET 0V – reset; 3.3V – work
8	DATA FLAG – +3.3V – DSD data; 0V – PCM data
9	No connect
10	GND
	-----GALVANIC BARRIER-----
11	GND
12	Input +5V/0.2A stabilized external power supply for generators and the reclock*
13	LRCK_I2S / DATA_R DSD default
14	DATA_I2S / DATA_L DSD default / Data L, after configuration
15	BCLK I2S / CLK DSD
16	S/PDIF output for direct control of TOTX, use at least 12MBPS / Data R, after configuration
17	MCLK – 22.5792MHz / 24.576MHz
18	MCLK2 – 45.158MHz / 49.152MHz
19	External master clock input
20	MCLK3 – 11.2896MHz / 12.288MHz for SM5813

This specification file of I2SoverUSB is for boards with **ver. 12** of the firmware.

\* **This external power supply** is needed if you do not use PCM5102 or AK4396 board.

Table 1

Configuration	Pin	Settings
LRCK_I2S -> DATA_R DSD (AKM439x compatible)	Pin5	No configuration external resistance
LRCK_I2S -> DATA_L DSD (ES9018 compatible)	Pin5	Must be tied to Pin1 through external R3 4.7kΩ configuration resistance

DSD data format is automatically detected and is independent from Pin3, Pin4 and Pin6.

Table 2:

**Pin3 No configuration external resistance**

Configuration	Pin	Settings
I2S	Pin4, Pin6	No configuration external resistances (default)
LJ	Pin6	Must be connected to Pin1 through external R2 4.7kΩ configuration resistance
RJ 24-bit	Pin4	Must be connected to Pin1 through external R4 4.7kΩ configuration resistance
RJ 16-bit	Pin4, Pin6	These pins must be connected to Pin1 through external R2 and R4 4.7kΩ configuration resistances

**Configuration for PCM1704, PCM63, PCM61, PCM58, PCM56, AD1862, AD1865, AD1861, AD1860, AD1851 and other similar DACs.**

Table 3:

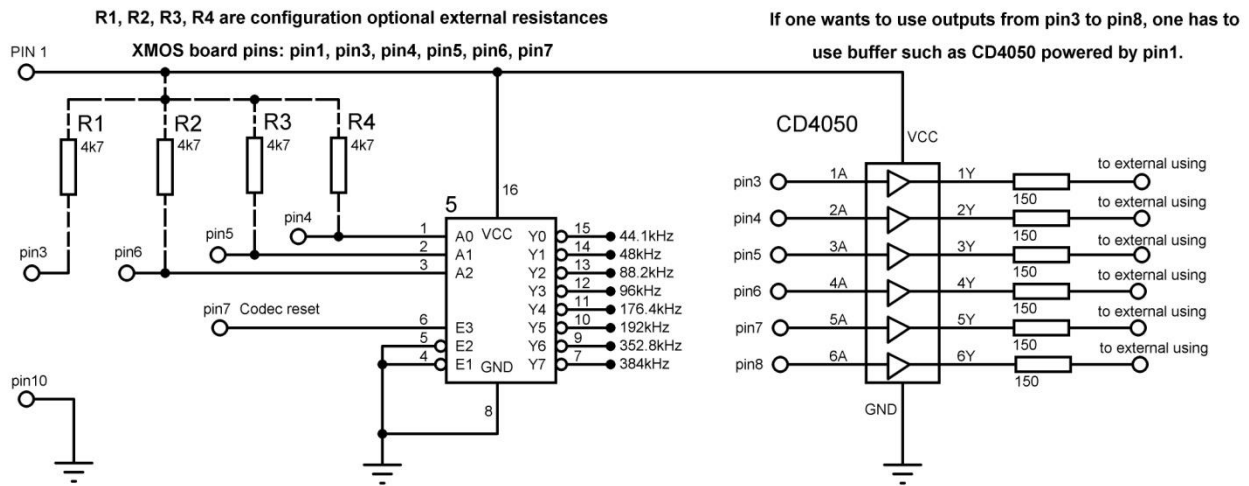
**Pin3 must be connected to Pin1 through external R1 4.7kΩ configuration resistance.** Changes takes part after USB reset.

Configuration	Pin	Settings
24-bit (PCM1704)	Pin4, Pin6	No configuration external resistances (default)
20-bit (PCM63)	Pin4	Must be connected to Pin1 through external R4 4.7kΩ configuration resistance
18-bit (PCM61)	Pin4, Pin6	These pins must be connected to Pin1 through external R2 and R4 4.7kΩ configuration resistances
16-bit (PCM56)	Pin6	Must be connected to Pin1 through external R2 4.7kΩ configuration resistance

For these protocols S/PDIF output is not available.

Pin16 -> Data R; Pin14 -> Data L

For example (HC138 is option):



A0, A1 and A2 outputs could be load with CMOS input level (3.3V).

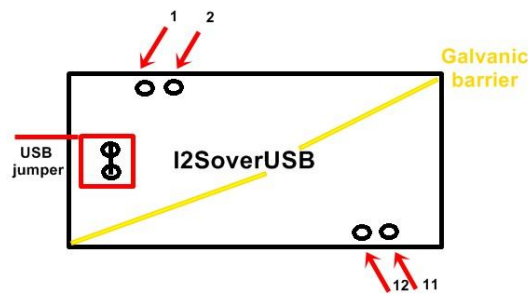
A0, A1 and A2 outputs are binary code for controlling 74HC138 for indicating received sampling frequency. In order not to blink LEDs when they determine, codec reset must be used to 74HC138.

Pins from 11 to 20 are galvanic isolated from all others. They are with 3.3V level. One TTL load.

If you want to use external master clock you have to cut “External clock” jumper. External master clock should be 45.158MHz or 49.152MHz (there is an output (pin 4, this pin is not galvanic isolated, recommend to use optocoupler) for selecting between different master clocks).

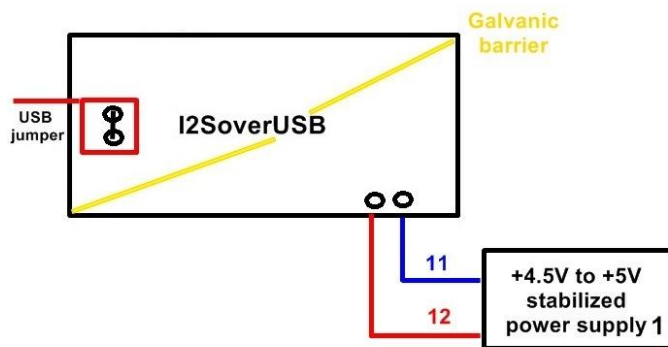
Different ways to power the I2SoverUSB board:

1. The board is powered only from USB bus. **Galvanic isolation is avoided.**

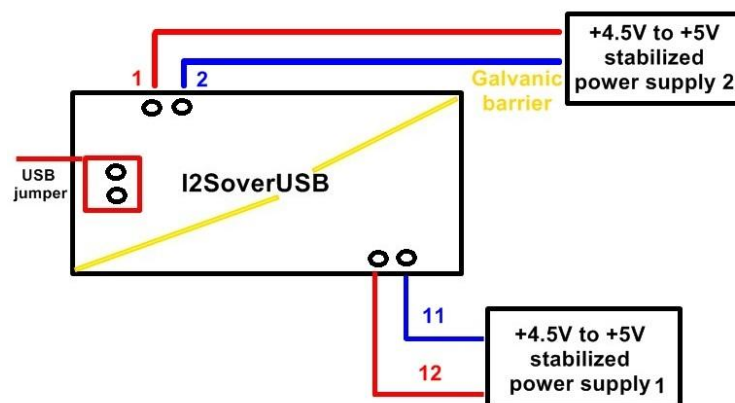


Pin 1 have to be tied to pin 12 and pin 2 (GND) have to be tied to pin 11 (GND).

2. The USB part is powered by USB bus, but the generators and the reclocks are fed by a separate external power supply



3. Both the USB part and the generators with the reclocks are fed by two different external power supplies.

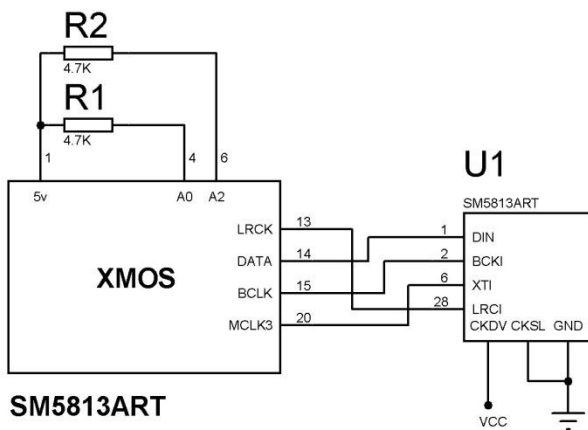
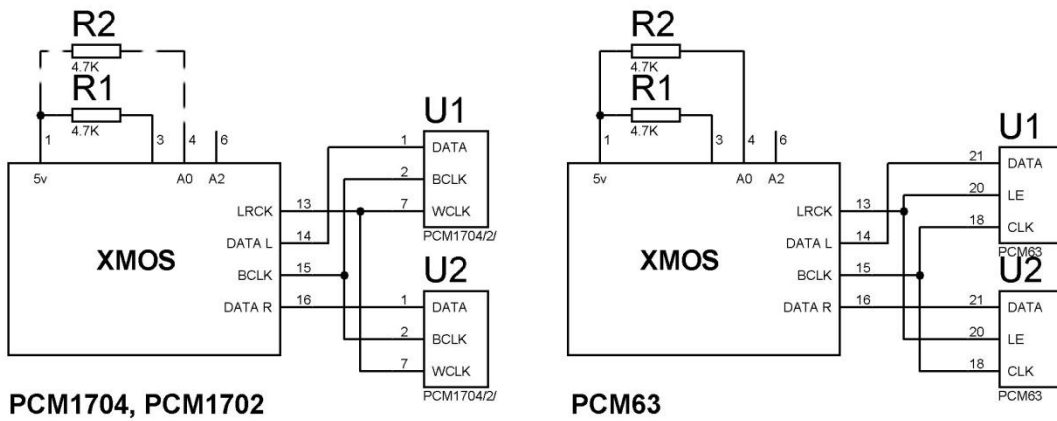
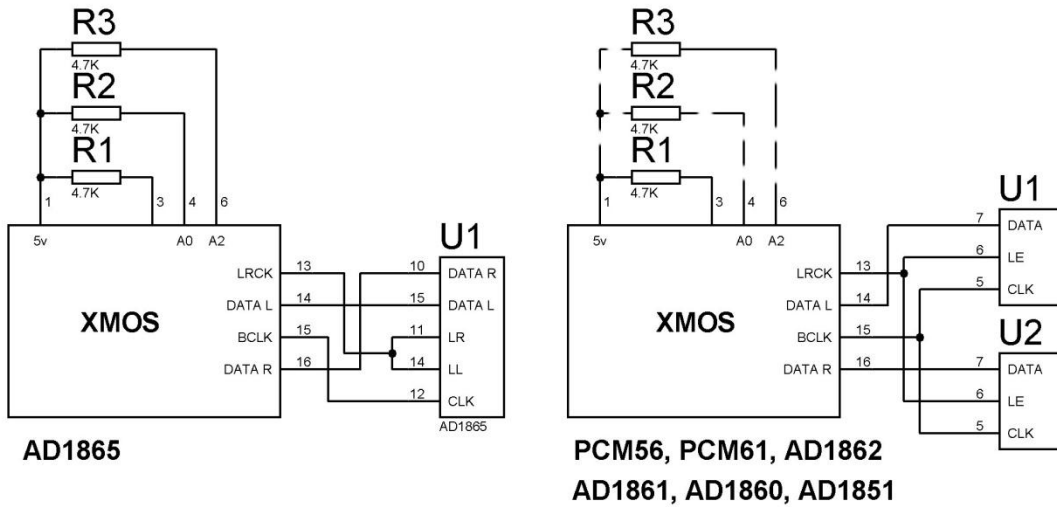


**The computer recognizes** the boards only if all power supplies are provided (all three ways to power the board), no matter the order of providing power supplies.

**If power supply 1 is gone**, then the audio data from host PC is stopped.

**PCB gets warm** – it's absolutely normal, that's because there are no impulse regulators, only analogue ones. The aim is lower noise, but the price is greater consumption.

**Schemes for connecting I2SoverUSB board to PCM1704, PCM63, PCM61, PCM56, AD1862, AD1865, AD1861, AD1860, AD1851 and other compatible DACs.**



**Note: One have to connect the GND (pin11) of the I2SoverUSB board to the Digital GND of the used DAC.**

The host computer must be configured to output bit depth equal or higher than used DAC. This can be done by using WASAPI and KS.

If using HQPlayer, it must be set to the exact bit depth (16/18/20/24).

# Mechanical characteristic

