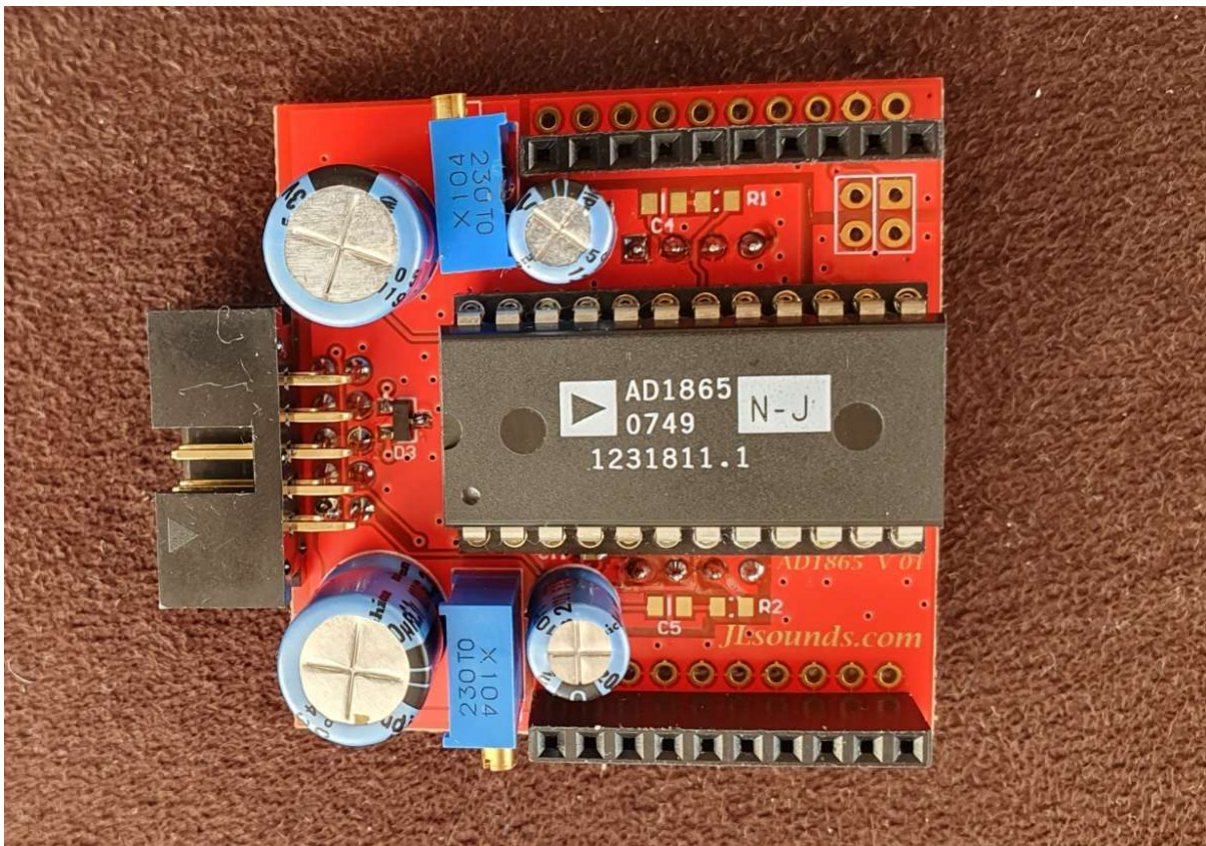


AD1865 DAC board



The AD1865 is dual 18-bit **R-2R** DAC, if it's driven via *I2SoverUSB board v.III* or *I2SoverUSB board v.III Fully Isolated outputs*, it can play up to **768kHz** audio. Current and voltage output modes are available on the AD1865 DAC board, i.e. the board can be used with embedded I-V converter into AD1865 or one can use external Op. Amp. as I-V converter. **MSB adjustment** is done on the AD1865 DAC. One can power the board via +/-5V DC power supply for AD1865 and Op. Amp. if used or to provide +/-5V DC power supply for AD1865 and +/-12V DC for Op. Amp.

The AD1865 DAC board can play only with Data L and Data R channels separated, i.e. the DAC won't be working if it's supplied with I2S.

H1, I interface – non isolated signals from *I2SoverUSB v.III board*.

H3, I interface – isolated signals from *I2SoverUSB v.III board*.

H5, I/O interface – external power supply input for the AD1865 DAC, oscillators and reclock on the *I2SoverUSB v.III board*, external power supply input Op. Amps. if used, Left channel output and Right channel output.

H1 header 10x2 row 2.54 pitch

Pin #	Name	Type	Description
1, 1.1	VDD	Power	If external power jumper is not cut +5.00VDC output. If external power jumper is cut power supply input 3.9V to +5.2VDC for USB input part
2, 2.1	GND	Ground	Electrical ground
3, 3.1	GP-IN	Input	General purpose input pin
4, 4.1	A0	Input	Sampling rate information
5, 5.1	A1	Input	Sampling rate information
6, 6.1	A2	Input	Sampling rate information
7, 7.1	MUTE	Input	Mute signal Low: the audio data stream is not valid and the DAC must be muted High: the audio data stream is valid
8, 8.1	DSD_PCM	Input	Audio Stream Format Low: the digital audio output stream format is PCM High: the digital audio output stream format is DSD
9, 9.1	A3	Input	Sampling rate information
10, 10.1	GND	Ground	Electrical ground

1.1 VDD	2.1 GND	3.1 GP-IN	4.1 A0	5.1 A1	6.1 A2	7.1 MUTE	8.1 DSD_P	9.1 A3	10.1 GND
1 VDD	2 GND	3 GP-IN	4 A0	5 A1	6 A2	7 MUTE	8 DSD_P	9 A3	10 GND

Note: H1 header duplicates H1 header of I2SoverUSB v.III board or *I2SoverUSB board v.III Fully Isolated outputs* and it's not needed if one wants to drive the AD1865 DAC via different interface.

H3 header 10x2 row 2.54 pitch

Pin #	Name	Type	Description
1	NC	NC	
2	NC	NC	
3	NC	NC	
4	NC	NC	
5	NC	NC	
6	NC	NC	
7	NC	NC	
8	NC	NC	
9	Data_R	Input	Data R
10	NC	NC	
11	CLK	Input	CLK
12	NC	NC	
13	Data_L	Input	Data L
14	NC	NC	
15	LL/LR	Input	LRCLK
16	NC	NC	
17	VDD	Power	Isolated power supply input +5.00VDC for oscillators and reclock.
18	NC	NC	
19	GND	Ground	Isolated ground connection
20	MUTE_iso	Output	Mute signal isolated Low: the audio data stream is valid High: the audio data stream is not valid and the DAC must be muted.

2 NC	4 NC	6 NC	8 NC	10 NC	12 NC	14 NC	16 NC	18 NC	20 MUTE_i
1 NC	3 NC	5 NC	7 NC	9 Data R	11 CLK	13 Data L	15 LL	17 VDD	19 GND

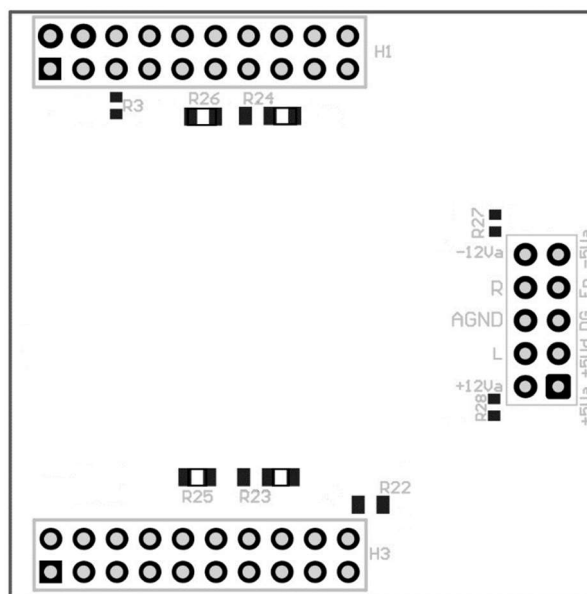
Note: H1 header replicates H1 header of *I2SoverUSB v.III* board or *I2SoverUSB board v.III Fully Isolated outputs*

H5, I/O interface

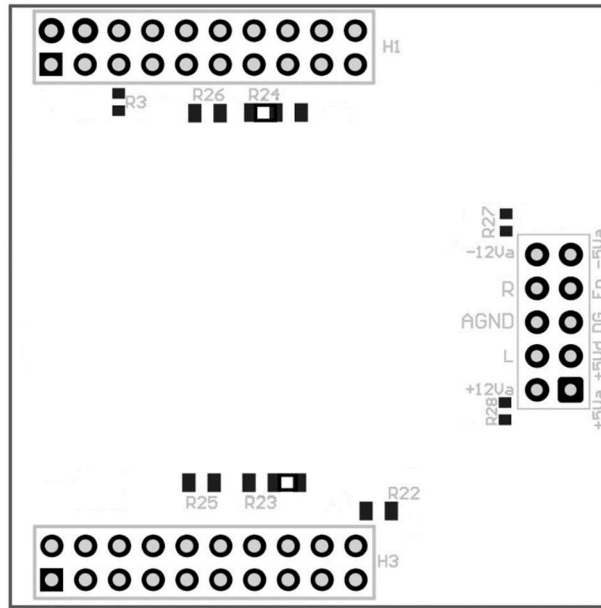
Pin #	Name	Signal
1	+5Va	+5V DC positive analog power supply
2	+12Va	+12V DC positive analog power supply
3	+5Vd	+5V DC positive digital power supply for isolated side of I2SoverUSB board.
4	L_out	Left Channel Analog DAC Output Pin
5	DGND	Digital GND
6	AGND	Analog GND
7	En	Mute output. <i>mute</i> – 3.3V; <i>work</i> – 0V
8	R_out	Right Channel Analog DAC Output Pin
9	-5Va	-5V DC negative analog power supply
10	-12Va	-12V DC negative analog power supply

2 +12Va	4 L_out	6 AGND	8 R_out	10 -12Va
1 +5Va	3 +5Vd	5 DGND	7 En	9 -5Va

Using Embedded I-V convertor – R23 (right), R24 (right), R25 and R26 – 0 ohm 0805 resistors must be soldered.



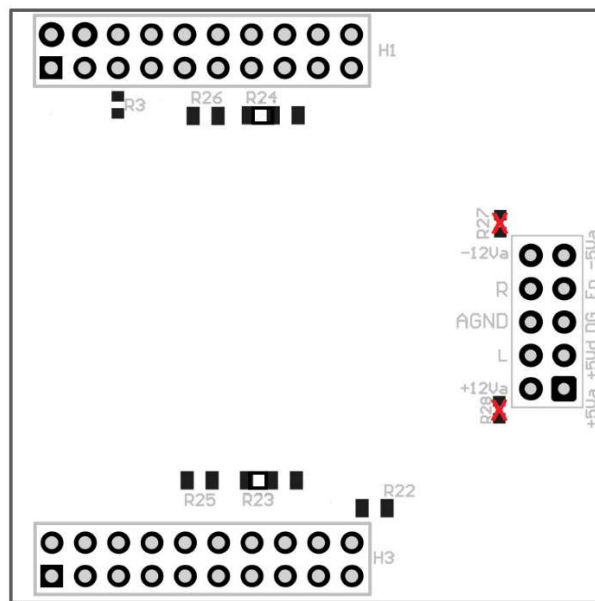
Using external I-V convertor with Op. Amp. just like OPA1655 – R23 (left), R24 (left) – 0 ohms 0805 resistors must be soldered.



Powering **AD1865** board:

If using embedded I-V converter – the board must be powered via +/-5V DC – no further changes on the board.

If you want to power external Op. Amps. with higher voltage (+/-12V DC), one must remove R27 and R28. Then you can provide +/-12V DC on dedicated input pins and +/-5V DC for the *AD1865* DAC.





Default setting is that +5Vd (used to power isolated side of *I2SoverUSB v.III* board) is get from +5Va. If one wants to use different power supply for isolated side of *I2SoverUSB v.III* board, R22 must be removed (4.7 ohm) and then one can provide power supply for *I2SoverUSB v. III board* on dedicated pin.

R3 – is 4.7k when *I2SoverUSB v. III board* is used. If used board is *I2SoverUSB board v.III Fully Isolated outputs* – then no R3 is needed.