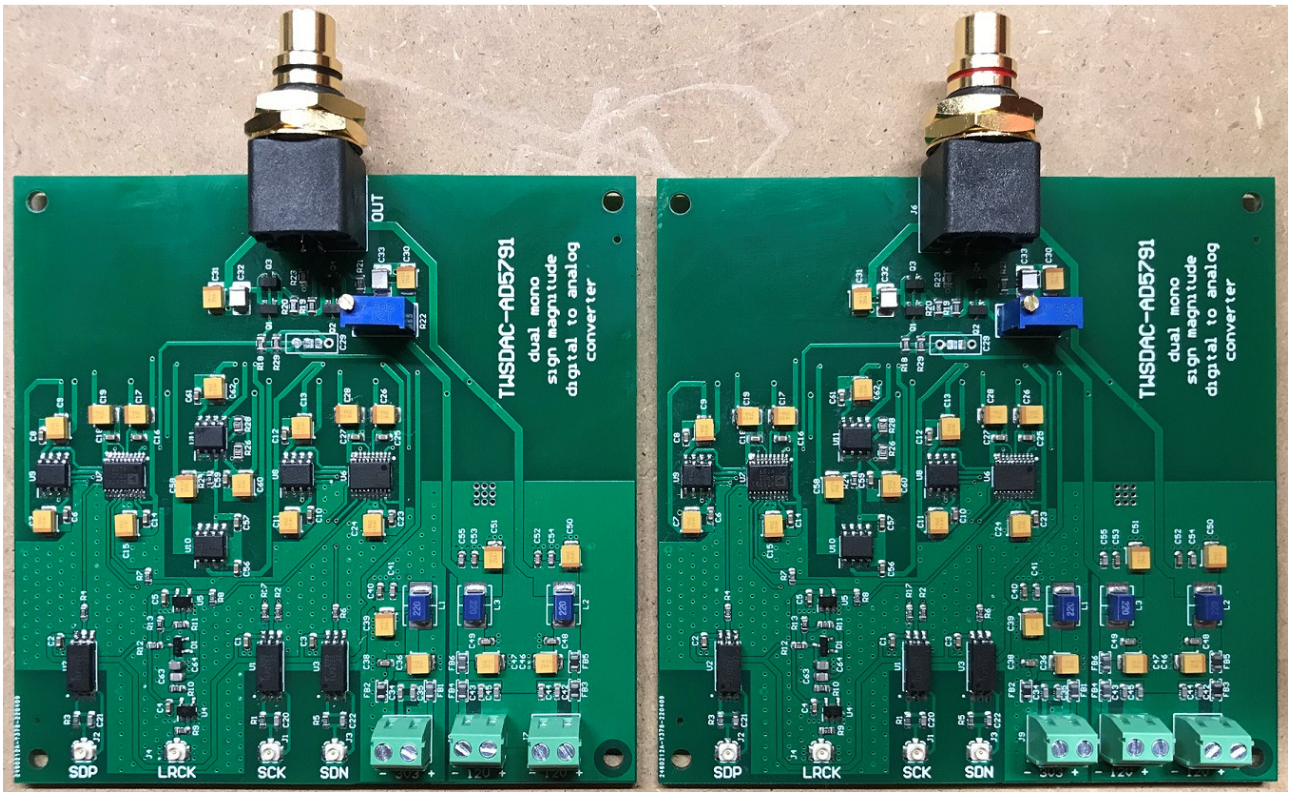
TWSDAC-AD5791 The Well Segmented DAC

AD5791 dual mono sign magnitude architecture



TWSDAC-AD5791 dual mono sign magnitude architecture digital to analog converter.

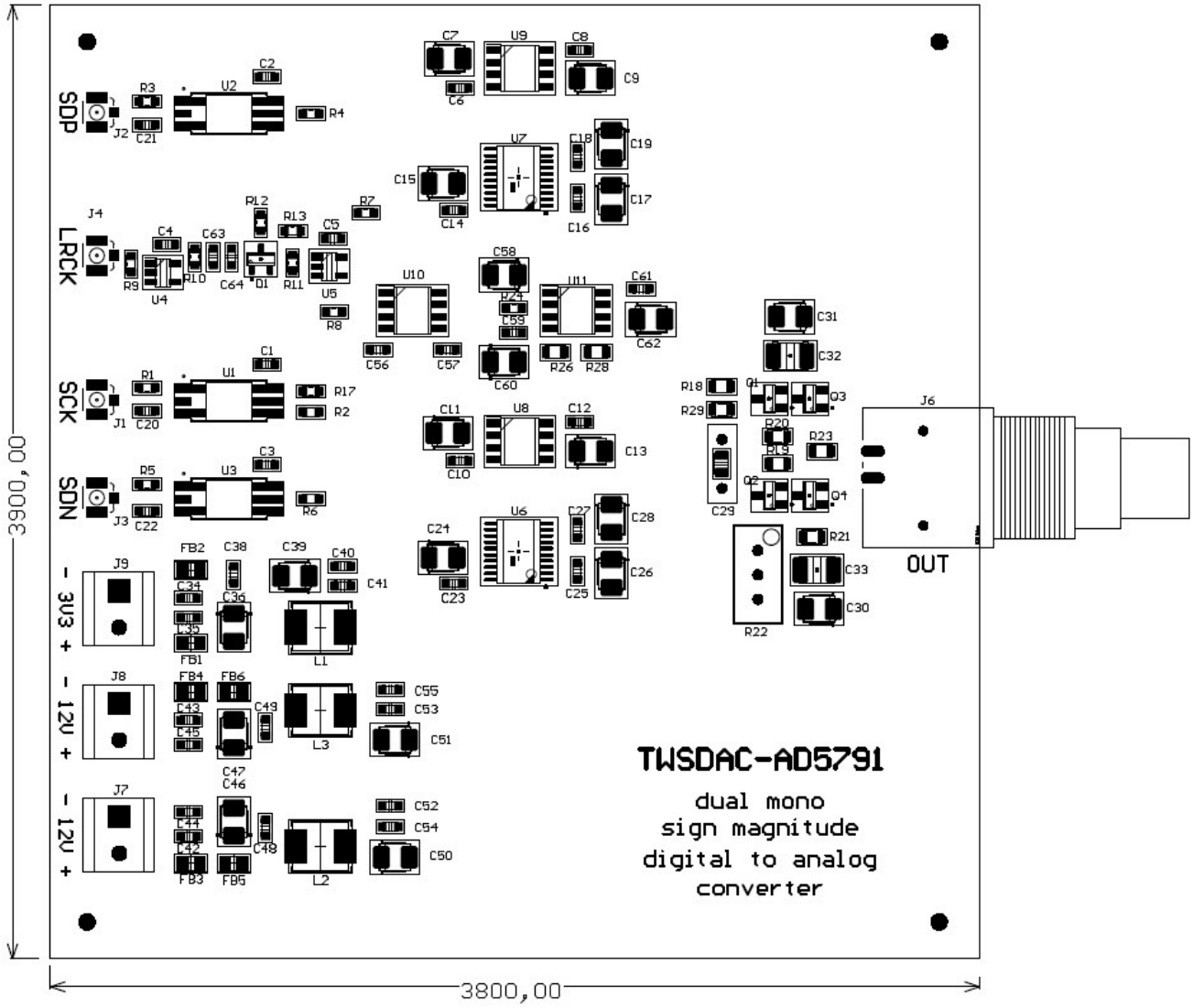
The TWSAFB-LT FIFO buffer provides the custom protocol to feed the AD5791 DAC in dual mono/sign magnitude architecture. This architecture avoids the DAC to switch the MSB every zero crossing in order to decrease the glitch.

Features:

Inputs: 24 bit custom protocol (provided by the TWSAFB-LT FIFO buffer)
Format: up to 20 bit 384kHz
Architecture: AD5791 R2R ladder with sign magnitude architecture
Clock mode: stopped clock
Master clock: 5.6448/6.144 MHz up to 176.4/192KHz, 11.2896/12.288 MHz up to 352.8/384 KHz
Isolation: Full optical isolation
Output: voltage output 2V rms, DC coupled
Power supply: +/- 12VDC 30 mA, +3.3VDC 40mA
Board size: 97 x 99 mm

Note: finished board without RCA connector (mono). Two DAC chip are needed for each channel.

PCB layout



Connectors

J1: SCK, serial clock input

J2: SDP, serial positive rail data input

J3: SDN, serial negative rail data input

J4: LRCK, latch input

J6: Analog output

J7-J8: Power supply, +/- 12VDC 30 mA

J9: Power supply, +3.3VDC 40mA

There is 1 available option for this board:

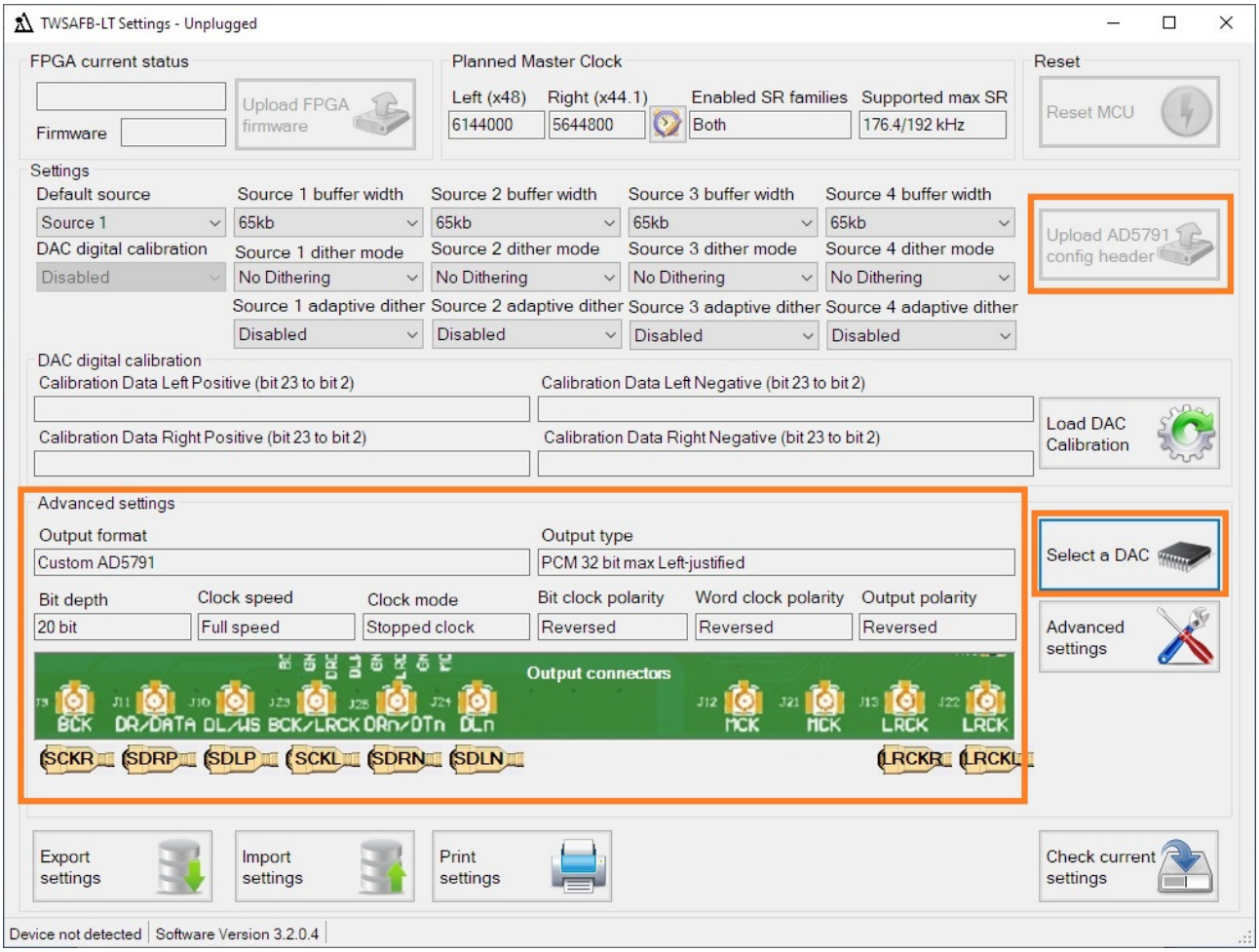
- finished mono board without RCA connector

Settings

Adjust the output offset: turn R22 to get 0V at the output.

Configuring and connecting to the TWSAFB-LT (FIFO Lite)

In order to get the DAC working, the TWSAFB-LT has to be configured as below:



1. Download, install and open the TWSAFB-LT Settings Windows application
2. Connect the TWSAFB-LT to a PC by USB
3. Wait until the device is detected
4. Press "Select a DAC" and select the "TWSDAC-AD5791 Dual Mono Dual DAC Sign Magnitude" from the DAC database
5. Press "Upload AD5791 config header" to upload the AD5791 DAC header
6. Press "Save in EEPROM" to store the settings in the TWSAFB-LT memory
7. Disconnect the USB from the TWSAFB-LT
8. Connect the DAC boards (two boards for stereo) as in the above picture using short u.fl cables
9. Connect a I2S source to the selected "Default source"