

# Quad Delta-Sigma Board

2016-02-22

4x AD7190 + Arduino Nano

See also [The ultra low noise 24-bit ADC: AD7190](#)

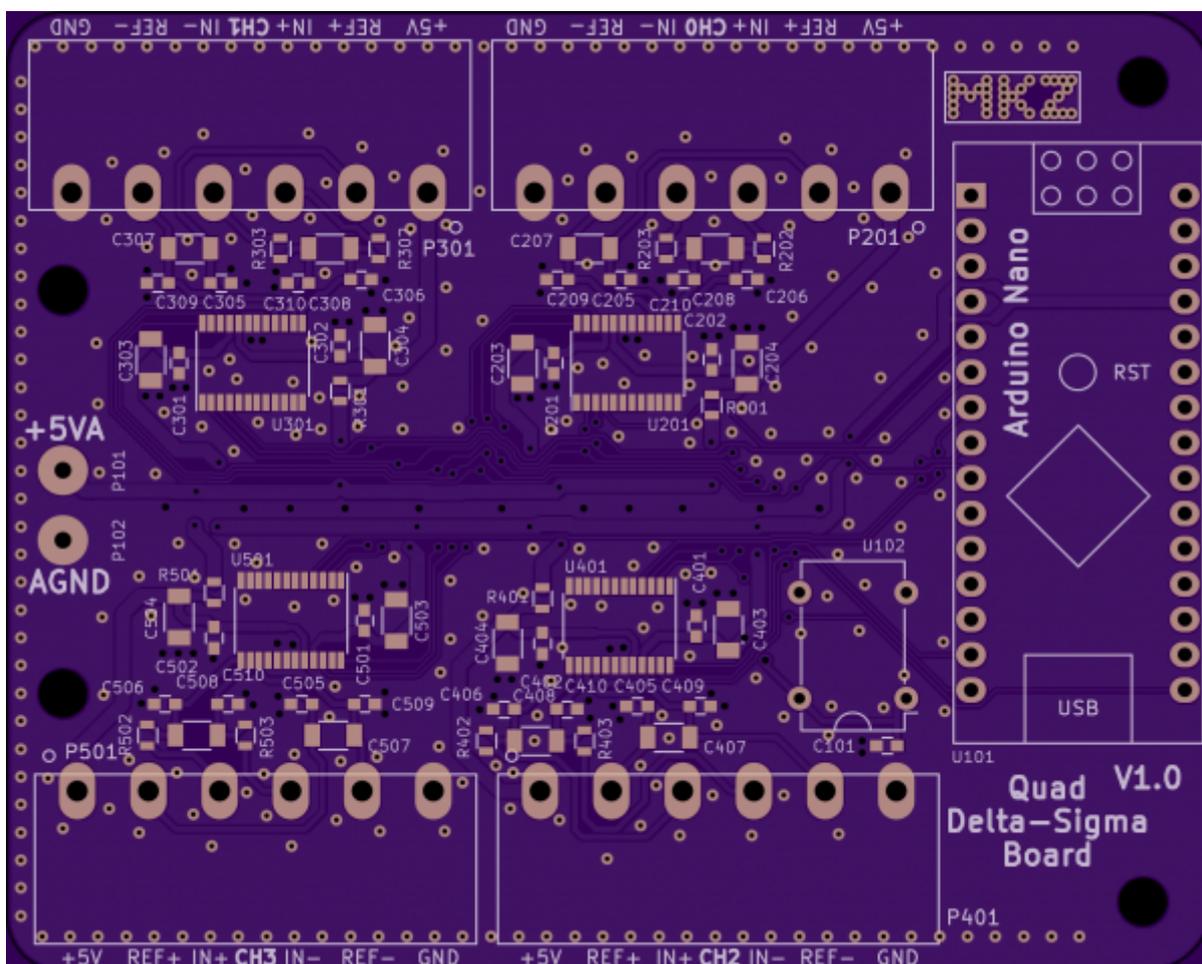
This board implements a 4 channel, ultra low noise, simultaneous sampling, 24 bit ADC. It has a dedicated oscillator and the sync line is conneted to all 4 ADCs. Its indended use is to read out 4 strain gauge weighing cells in a 6-wire configuration.

With an external reference voltage it can be used for direct voltage measurements too.

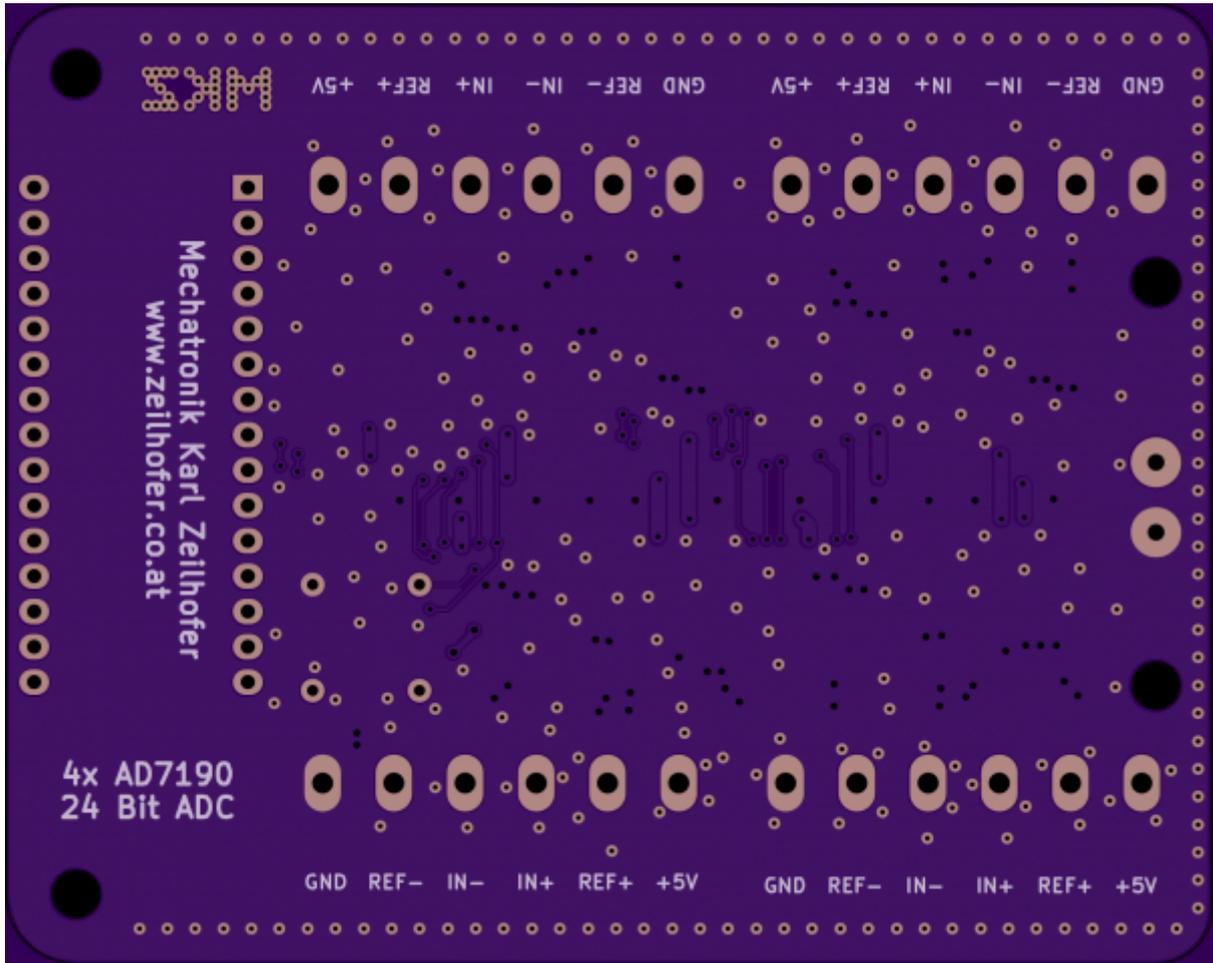
The digital part is supplied by the USB-port, and the analog part must be supplied seperately from a low noise 5V power supply ([see Ultra Low Noise Linear Power Supply, using LT3042](#)).

On each ADC only one out of two differential channels is used. See also [Mehrkanal Delta-Sigma ADCs und das Abtasttheorem](#).

## Top View



## Bottom View



## Configuration

The screenshot shows the AD719x software interface with the following settings:

- Buttons:** ADC Reset, ADC Read, ADC Write, CANCEL, OK
- Analog Inputs:** Channel Selection (Ain 1 - Ain 2), Gain (128), Polarity (BIPOLAR), Buffer (BUF ON), Chopping (CHOP ON), Diagnostic (Current OFF)
- Digital Filter:** FS bits (3), First Notch (Hz) (1600), 60Hz Rejection (OFF), Filter Type (SINC4), Zero Latency (Off)
- Clock Configuration:** External, 4,9152 MHz
- Voltage Reference:** Ref Selection (REFIN1), Ref Detect (Detect OFF), 5,0000 V
- Digital Outputs:** P0 P1 P2 P3 (0 0 0 0), Power Switch (BPDSW ON)
- Mode of Operation:** Continuous Conversion
- Output Data Format:** Data Only, No Parity
- Registers HEX:** 0 Status (00), 1 Mode (040003), 2 Config (800217), 3 Data (800000), 4 Chip ID (00), 5 GpoCon (70), 6 Offset (800000), 7 FullScale (550000)

## Assembled Board

Here the blue wire was needed to supply the Arduino with 5V, because the USB-connector had an up-bent leg before soldering, and therefore the V+ pin was not connected to the Arduino-PCB. When I fixed this, I removed the blue wire.



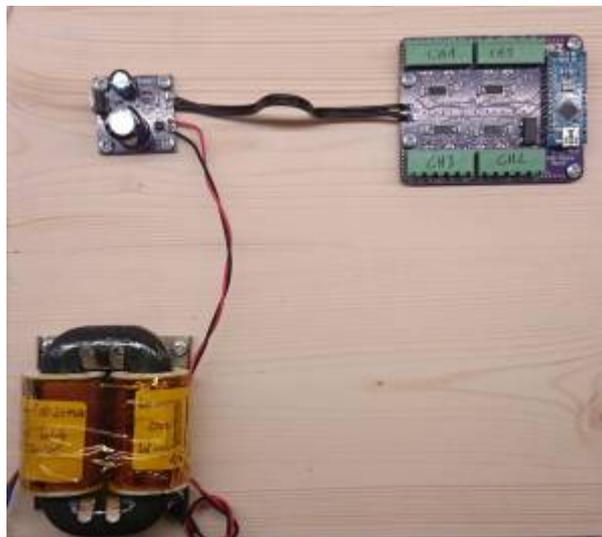
R-Core transformer, 230V to 2x 9V. This type of transformer has the least capacitive coupling. It's good to avoid common mode currents.



Here a close up of the board:



Between the transformer and the ADC-board there is the Ultra Low Noise Linear Power Supply, using LT3042



## Downloads

- [KiCad Project, V1.0](#)
- [Schematic, V1.0](#)

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