

Quad Delta-Sigma Board

2016-02-22

4x AD7190 + Arduino Nano

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

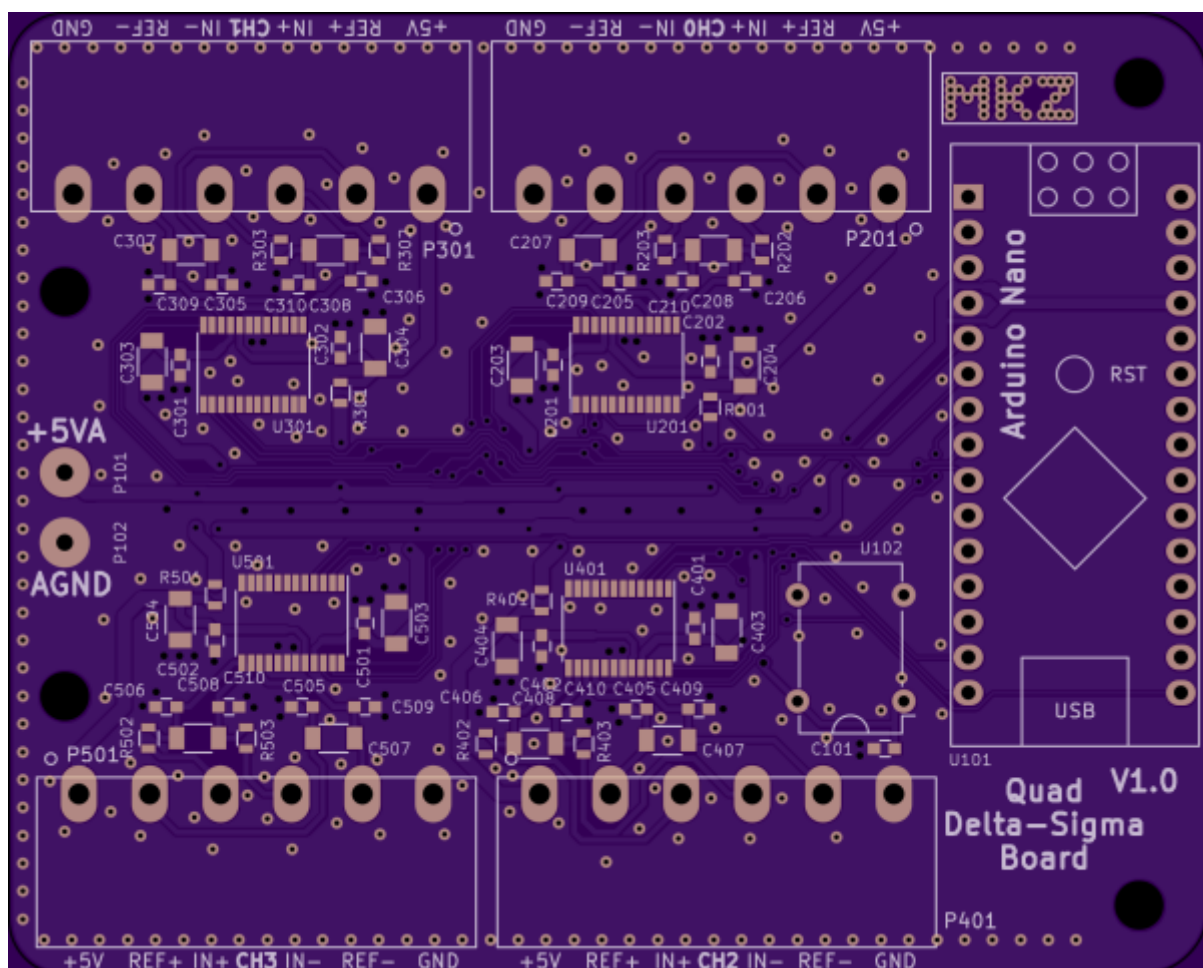
This board implements a 4 channel, ultra low noise, simultaneous sampling, 24 bit ADC. It has a dedicated oscillator and the sync line is conneted to all 4 ADCs. Its indended use is to read out 4 strain gauge weighing cells in a 6-wire configuration.

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

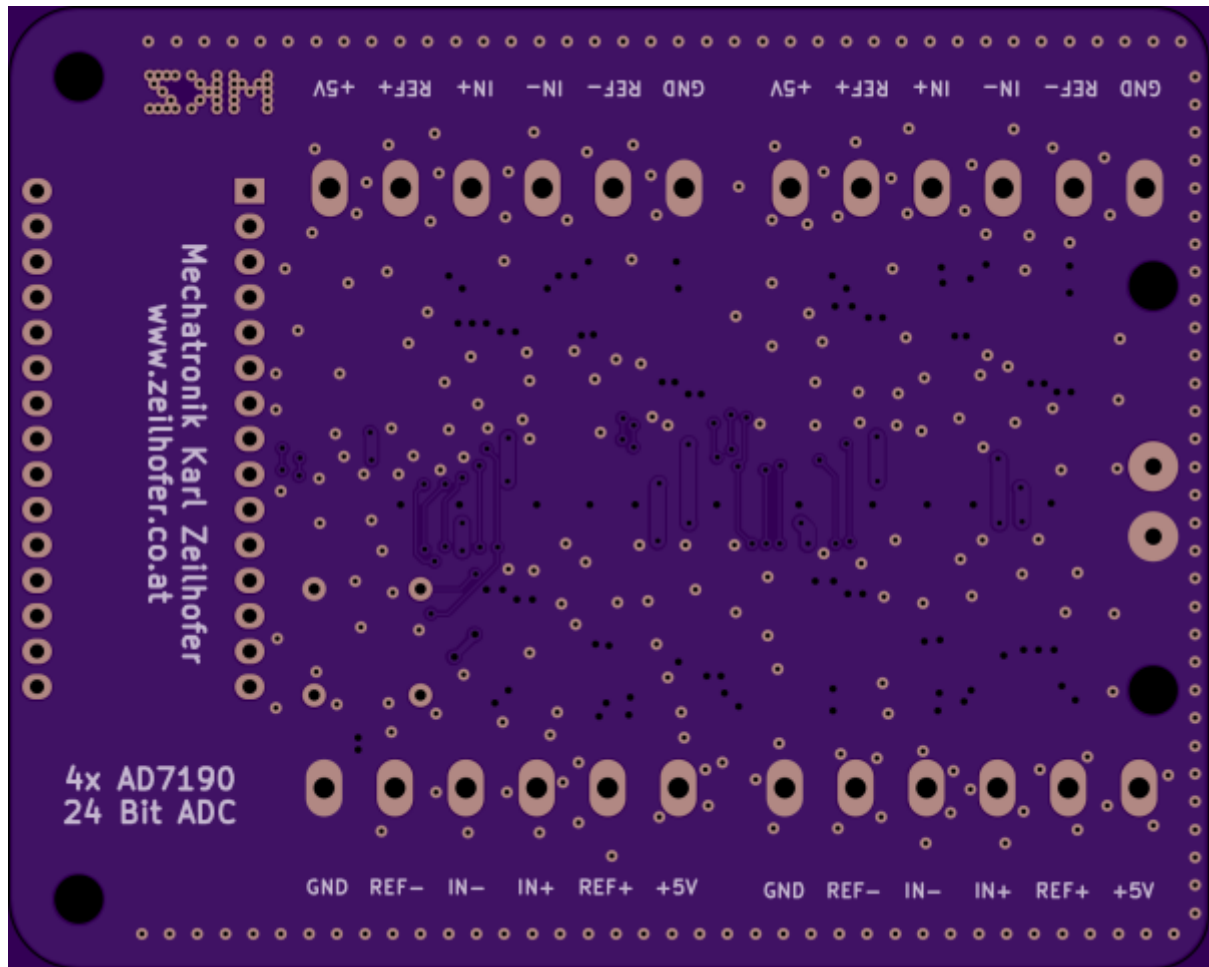
The digital part is supplied by the USB-port, and the analog part must be supplied seperately from a low noise 5V power supply ([see Ultra Low Noise Linear Power Supply, using LT3042](#)).

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

 **AD719x**

ADC Reset

ADC Read

ADC Write

CANCEL

OK

Analog Inputs

Channel Selection

✕

Ain 1 - Ain 2

✓

Ain 3 - Ain 4

✕

Temp Sensor

✕

Ain 2 - Ain 2

✕

Ain 1 - AinCom

✕

Ain 2 - AinCom

✕

Ain 3 - AinCom

✕

Ain 4 - AinCom

Gain

128

Polarity

BIPOLAR

Buffer

BUF ON

Chopping

CHOP ON

Diagnostics

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

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

Voltage Reference

Ref Selection

REFIN1

Specify what voltage is connected to ADC REFIN. The number is used for displaying results in Volts.

Ref Detect

Detect OFF

5,0000 V

Mode of Operation

Continuous Conversion

Digital Outputs

P0

0

Enable

P1

0

Enable

P2

0

Enable

P3

0

Enable

Power Switch

BPDSW ON

Output Data Format

Data Only

No Parity

Assembled Board

Here the blue wire was needed to supply the Arduino with 5V, because the USB-conector 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.

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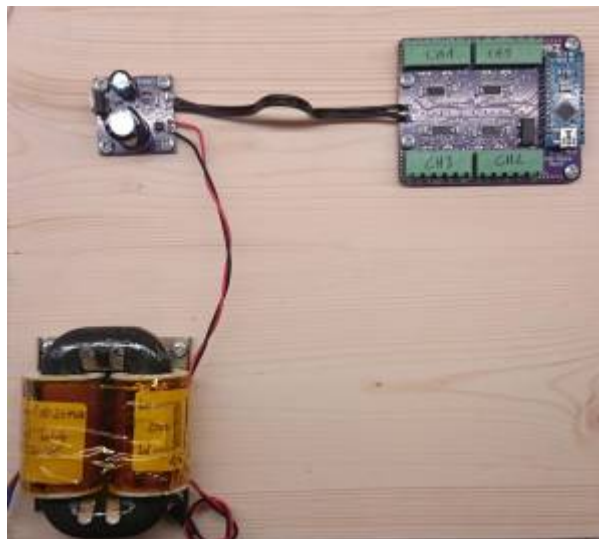
R-Core transformer, 230V to 2x 9V. This type of transformer has the least capacitive coupling. It's good to avoid common mode currents.



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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