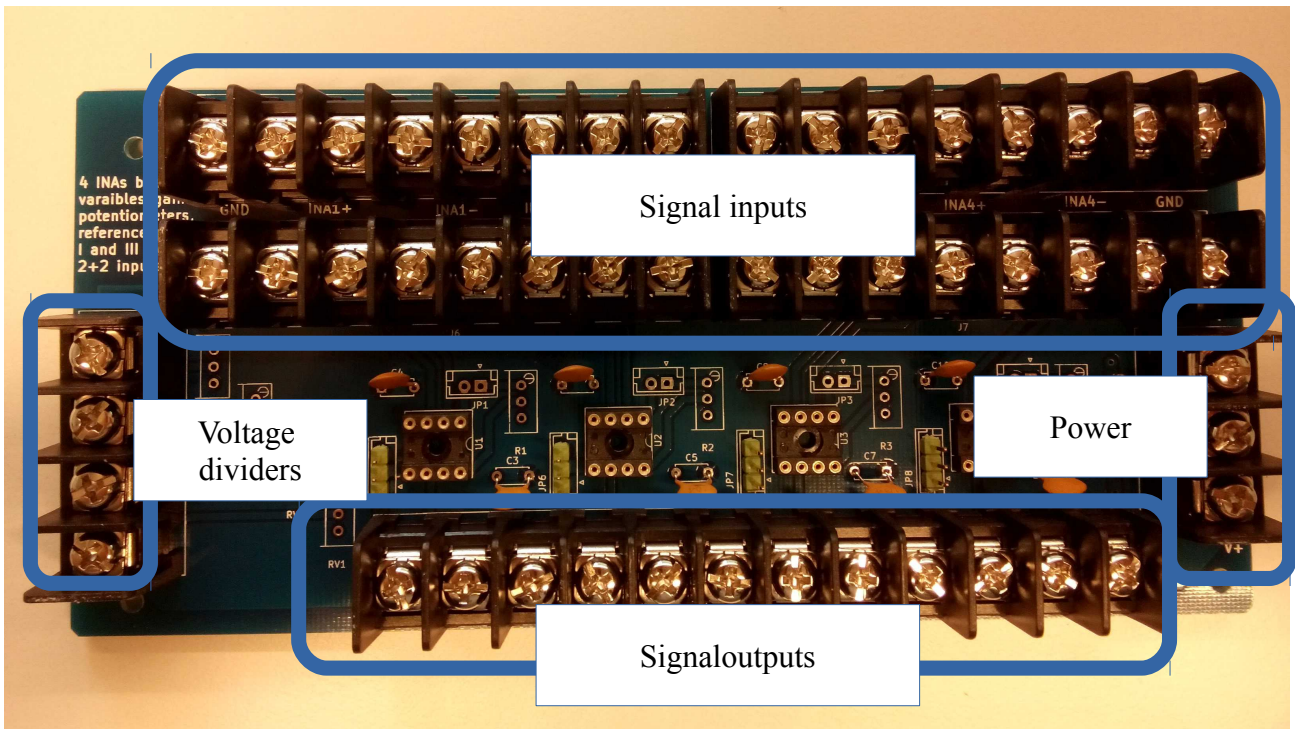


## 4 INAs board

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This board contains is made to allocate 4 INAs and 4 variable voltage dividers. INA 1 and 3 have two screw terminals for every inputs. INA 2 and 4 have only one screw terminal for input.



*Figure 1: Top view of the board.*

Note that there are some errors on the labels of the inputs. The backside (Figure 2) has the right labels.

The double terminal row on the signal inputs can be used for filtering and summing.

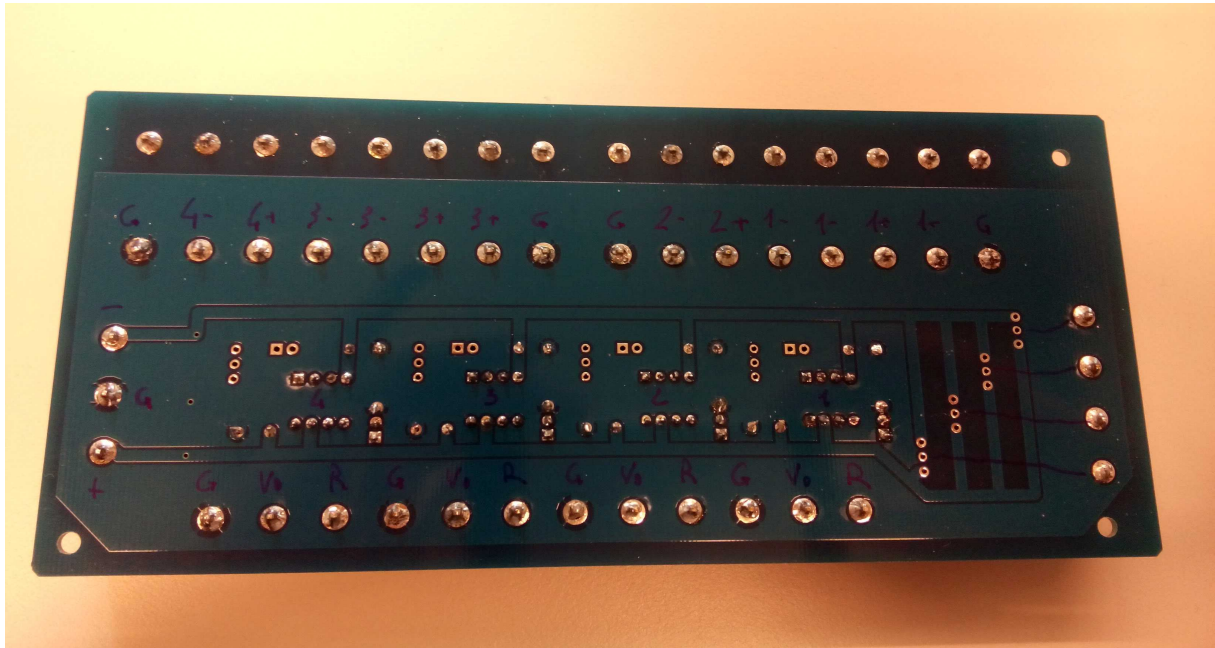
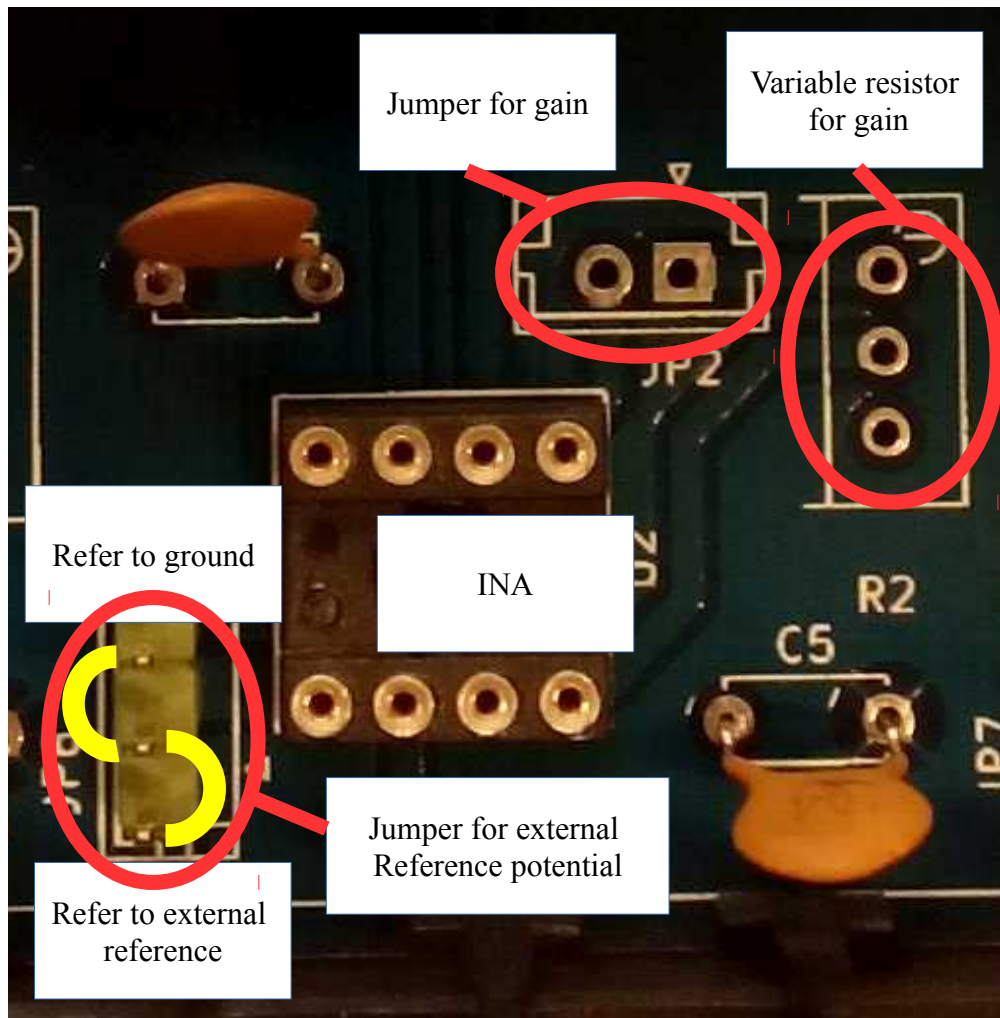


Figure 2: back side of the board with right labels

Label	Description
G	Ground
R	External reference potential
Vo	INA output
+	Positive rail
−	Negative rail
n+	Positive input INA n
n−	Negative input INA n

Table 1: labels on the board.

On the board is possible to change the gain factor through a variable resistance and select if the INA works against ground or against a provided reference voltage.



*Figure 3: single INA block with jumpers for gain and reference potential.*

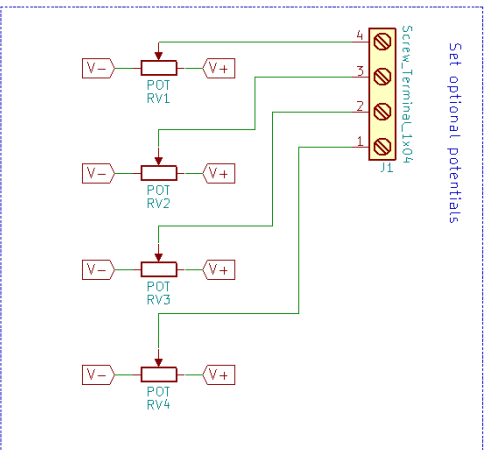
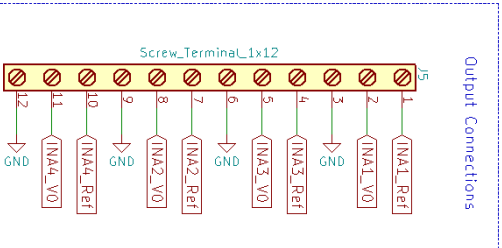
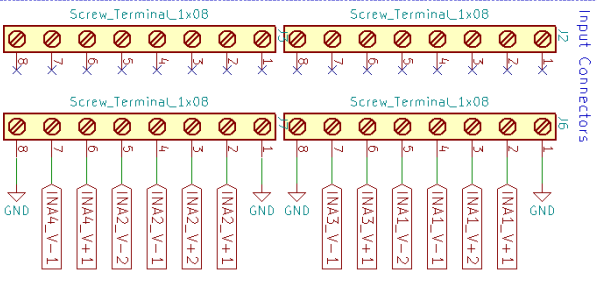
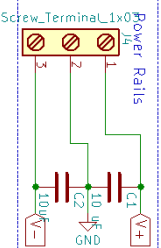
- 4 INAs board
- Two bypass caps in the beginning of the power rails and two caps for every opas
- Every INA has screw terminals so we can easy jump everywhere with cables
- Every INA has a double set of screw inputs

Between the first screw and the second screw a resistor can be placed.  
These resistors can be used for filtering or using 2/3 terminals for summing signals

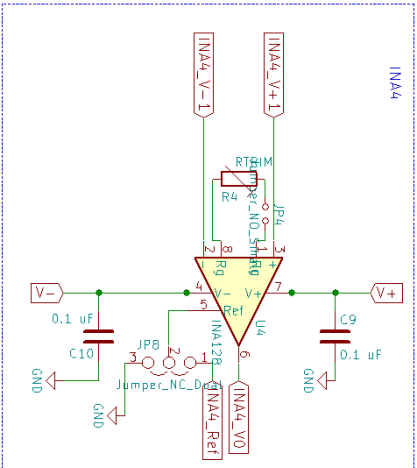
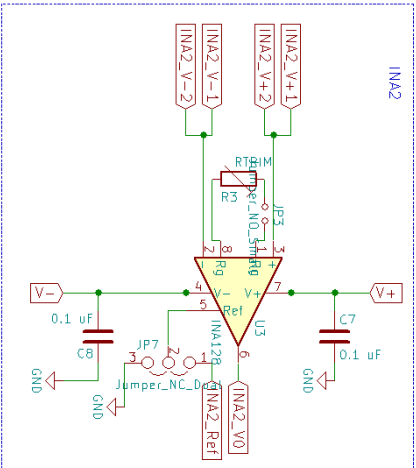
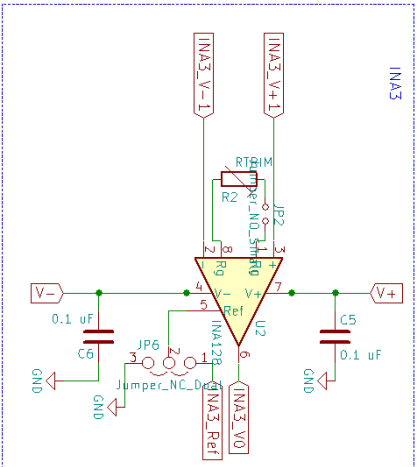
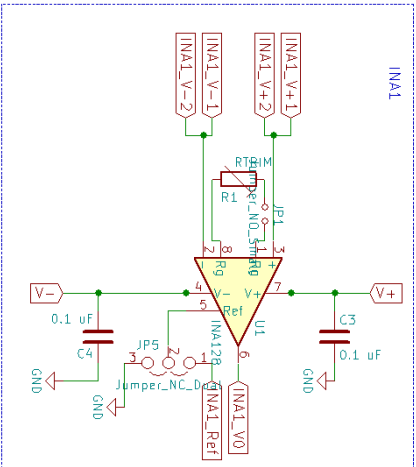
Gain of INAs  
Gain equation for INA128:  
 $G = 1 + 50 \text{ k}\Omega / R_G$

- | R       | G   |
|---------|-----|
| NC      | 1   |
| 50.00 k | 2   |
| 12.50 k | 5   |
| 5.556 k | 10  |
| ...     | ... |

Filtering:  
 $f = 1 / (2 * \pi * (R1 + R2) * C)$



Components:  
INA: INA128, from Texas Instruments  
Potentiometers: 3296W-1-104LF, from Bourns  
Connectors: from CBS345TB/x, from Camdenboss  
Capacitors: 100 nF, SF1H104Z-LS158, from Hitano: 10 uF, type 1206 SMD  
Jumpers: 2.5 mm pitch pins



Sheet: /  
File: schematic3.sch  
Title: 4 INAs board

Size: A4  
Date: 18 Jan 2017

KiCad E.D.A. - KiCad 4.0.5

Rev: 1/1