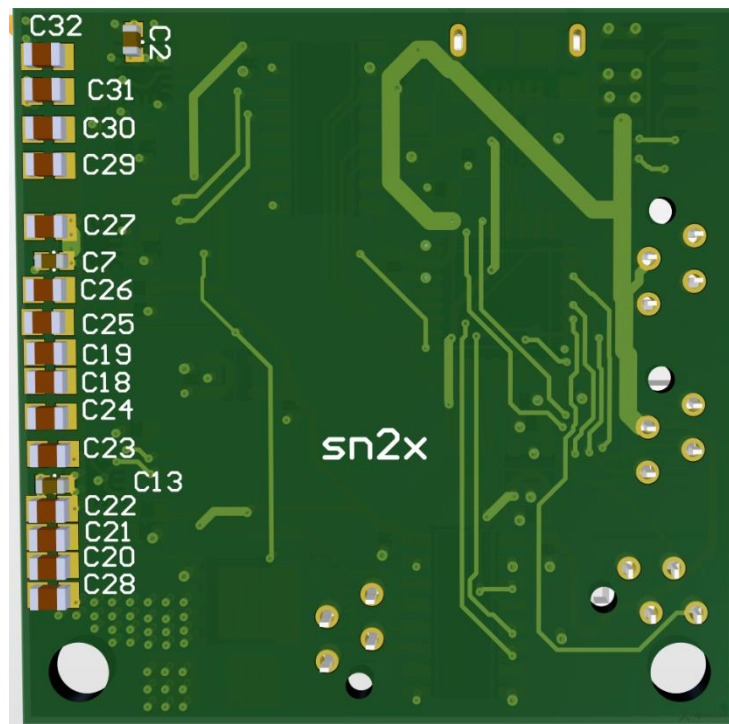
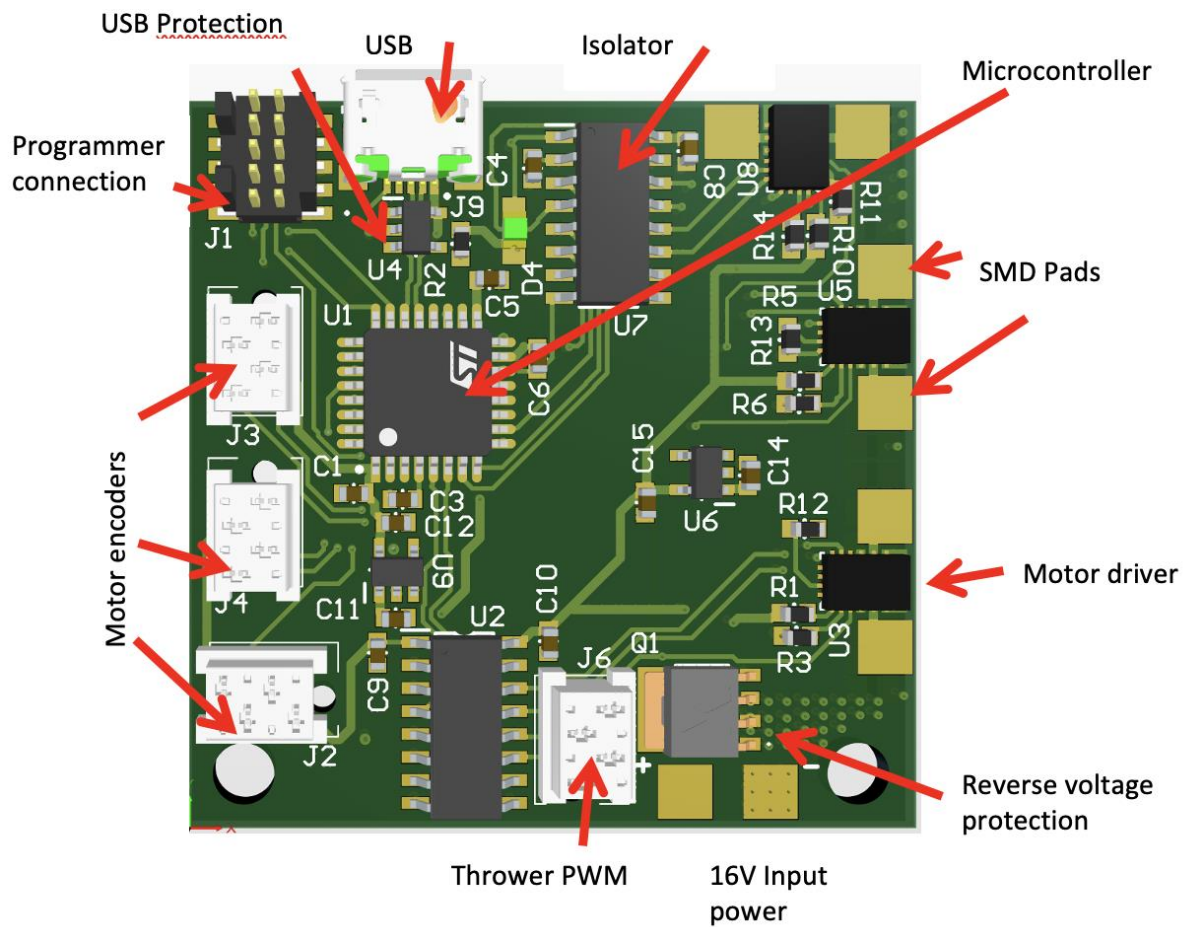


Mainboard documentation – team snäx



Mainboard consists of:

- STM32G441KB microcontroller
- Programmer connector for connecting STLink programmer to the microcontroller.
- USB connector for powering the microcontroller and for communicating with robot's computer.
- Three motor driver connected to two isolators to avoid short circuits on the motor's side damaging the computer.
- Three encoder connectors input and one PWM output for controlling the thrower

The mainboard is supplied with 16v on the motor drivers side with a reverse voltage protection for avoiding reverse voltage damaging the components. The motor drivers have 3 x 3 mm pads for each motor driver power outputs.

Connector pinouts:

- Power input
 - - J12 -> Power input positive potential
 - - J14 -> Power input negative potential
- Motor drivers' outputs
 - - J10/J13 -> Motor driver output for the first motor
 - - J7/J8 -> Motor driver output for the second motor
 - - J5/6 -> Motor driver output for the third motor
 - • J1 thrower connector 1- GND

2- PWM

3- Not used 4- Not used

- • J2, J3, J4 encoders 1- GND

2- +3,3

3- TIM_CH1 4- TIM_CH2

COMPONENTS			
Name	Comment	Designator	Quantity
DRV8243	Motor Driver	U3, U5, U8	3
Amphenol 10118193-0001LF	USB connector	J9	1
CM1223-02SO TVS diode array	USB protection	U4	1
STM32G441KBT6	Microcontroller	U1	1
MAX14930DASE+	Isolator (SOIC16 package)	U2, U7	2

Micro-Match 215079-4	Encoder, PWM connectors	J3, J4, J2, J6	4
Samtec FTSH-105-01-L-DV-K	Programmer connector	J1	1
BUK6Y10-30P	Reverse voltage protection	Q1	1
NCP164CSN330T1G	Voltage regulator for microcontroller	U9	1
NCV8730ASN500T1G	Voltage regulator at the motor driver's side	U6	1
10k 0603	Resistor	R1, R5, R10	3
1k 0603	Resistor	R2	1
2.7k 0603	Resistor	R3, R11, R6	3
100k 0603	Resistor	R12, R13, R14	3
0.1 uF 0603	Capacitor (MC)	C1, C5, C6, C2, C3, C4, C7, C8, C9, C10, C13	11
1 uF 0603	Capacitor	C11, C12, C14, C15	4
10 uF 0805	Capacitor	C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32	15

Firmware: <https://github.com/ut-robotics/picr22-team-snax/tree/electronics/firmware>

Gerber X2 files: https://github.com/ut-robotics/picr22-team-snax/blob/electronics/picr22-team-snax-mainboard_v3011.zip

PCB: <https://github.com/ut-robotics/picr22-team-snax/tree/electronics/picr22-team-snax-mainboard>