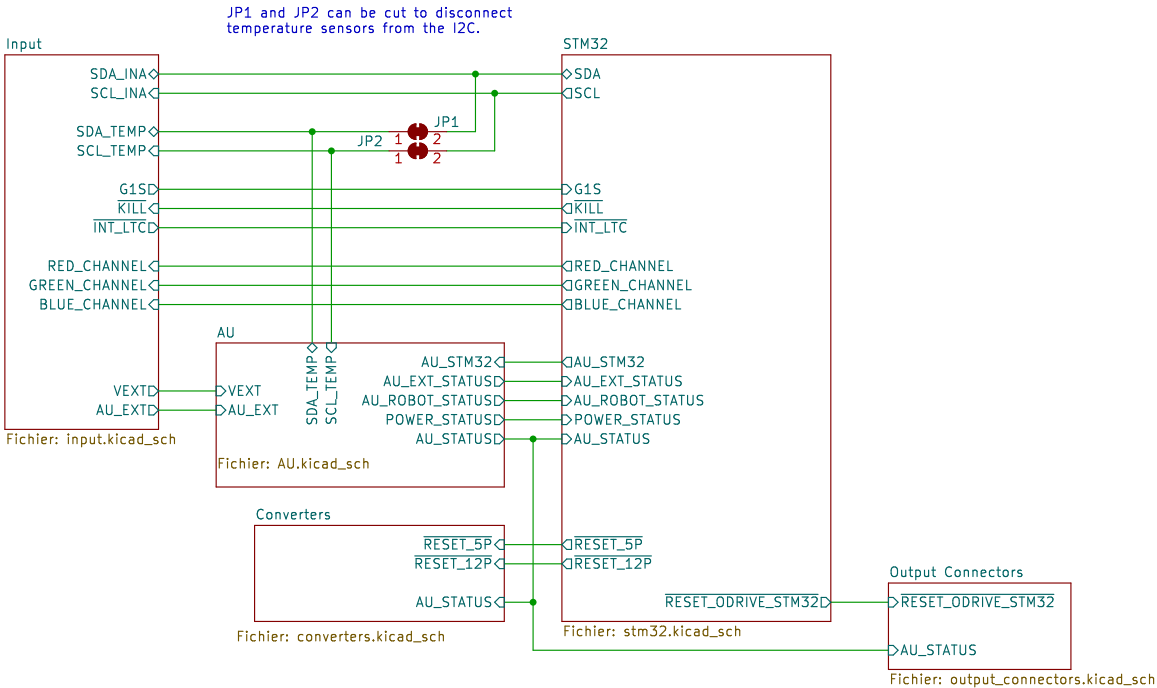
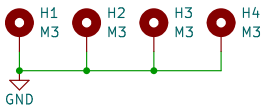


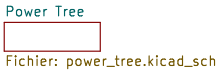
Main System



Mouting holes

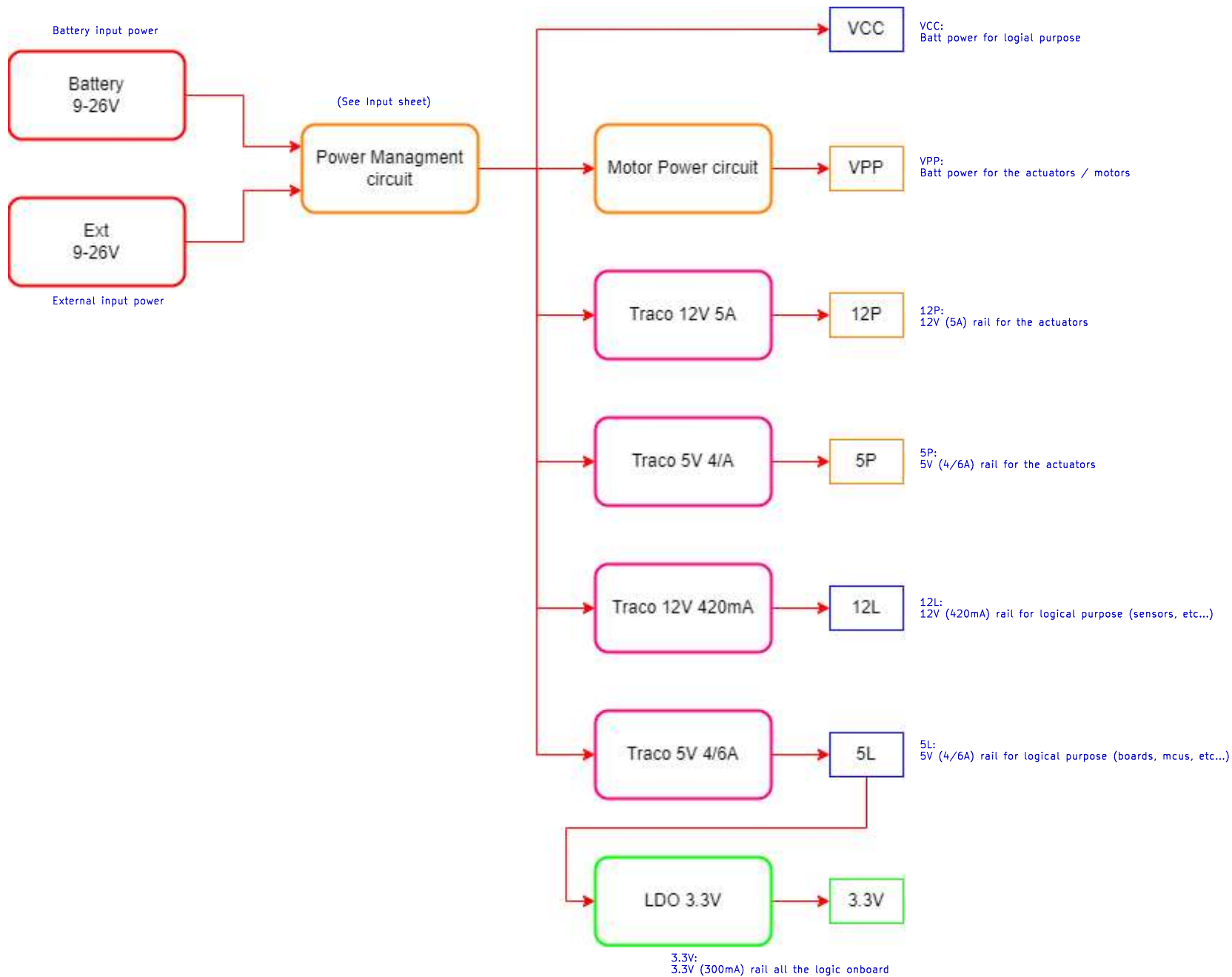


Power Tree sheet

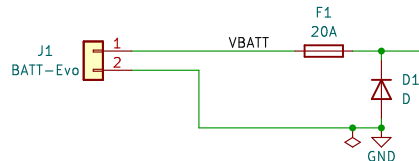


Marking

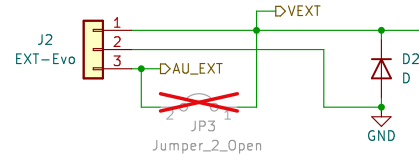
(CAN ID) LB1



Battery Input Power – 9 – 26V

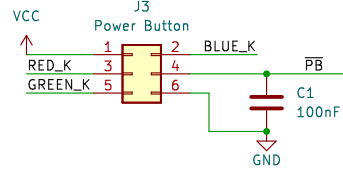


External Input Power with AU 9 – 26V



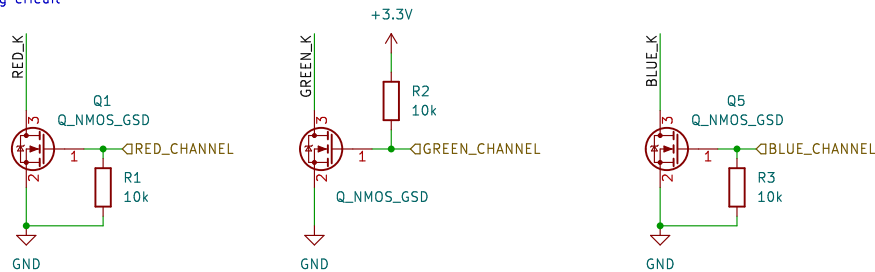
JP3 can bypass the EXT AU
An external fuse must be added before the input connector

Power Button



Power button is a RGB tactile switch.
The Red, Blue and Green led share a common anode.

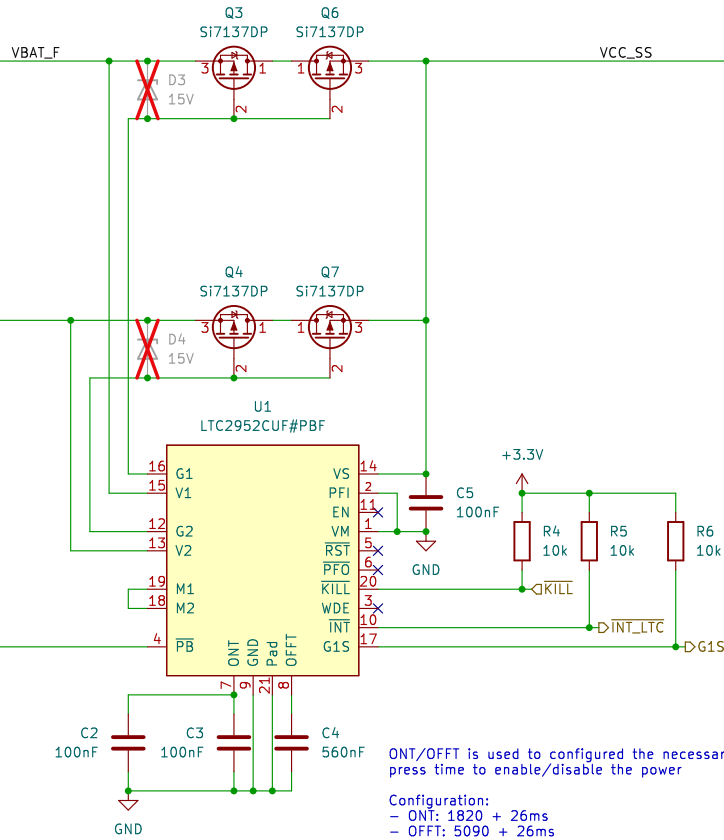
Leds driving cricuit



Each led is driven with
by controlling a NMOS wired
on the cathode.

By default, the green led is
powered.

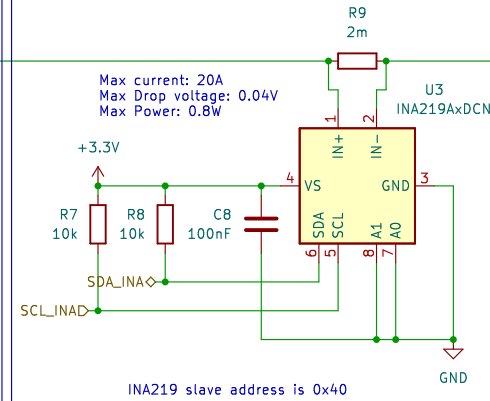
Input Power Circuit



ONT/OFFT is used to configured the necessary
press time to enable/disable the power

Configuration:
– ONT: 1820 + 26ms
– OFFT: 5090 + 26ms

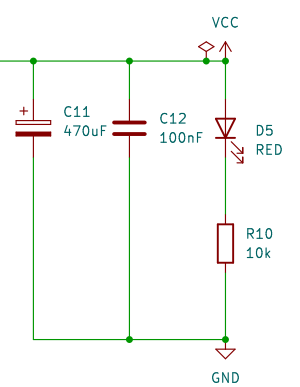
Current/Voltage Measurement



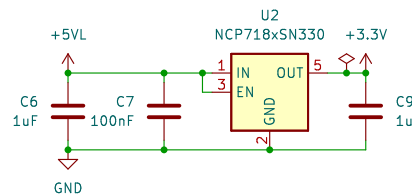
Max current: 20A
Max Drop voltage: 0.04V
Max Power: 0.8W

INA219 slave address is 0x40

Power Status Led & Decoupling

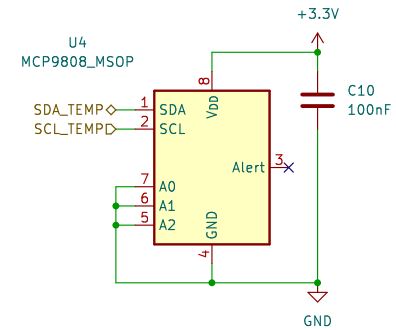


3.3V Regulation



LDO load:
– INA219 (1 mA)
– STM32G491 (50 mA)
– Led Status (3.3 mA)
– SN74AHC1G09 (10 uA)
– SN74LVC1G32 (10 uA)
– 2 x SN74LVC1G11 (20 nA)
Total: 55mA

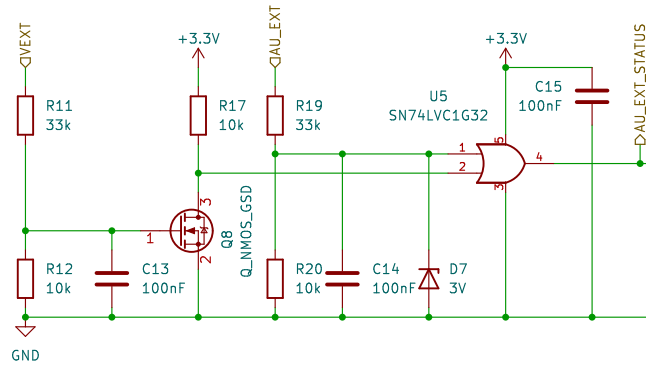
Temperature sensor



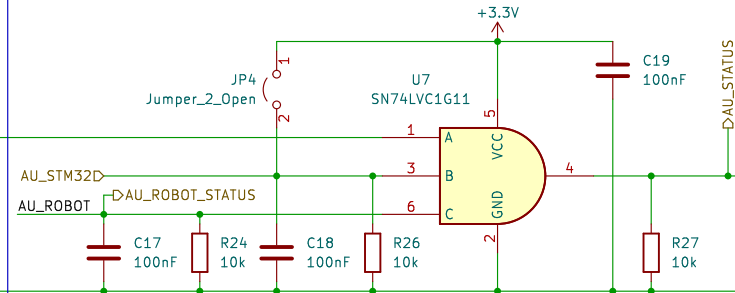
The sensor needs to be placed
below Q3, Q4, Q6 and Q7

MCP9808 slave address is 0x18

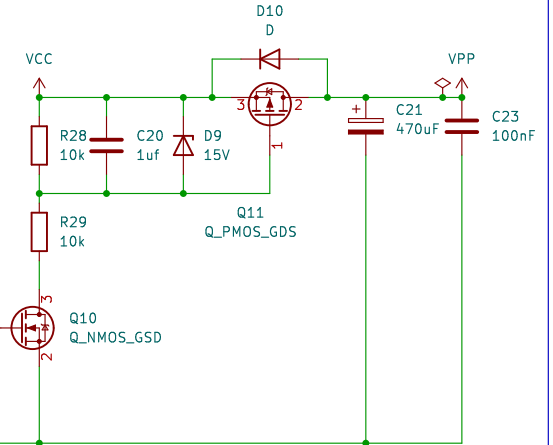
EXT AU Logical circuit



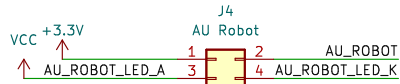
AU Logical circuit



VPP Power Circuit



Robot AU



The AU is a emergency stop with a green led.
The AU signal is wired on the NC pin.
The Led indicates if the actuators power is enabled.

Documentation

The circuit will enable the power for the actuators when:

- The AU of the robot is not pressed
- The STM32 enable the power
- If the external power is connected, the external AU is not pressed.

The logcical formula bellow summarize the circuit:

Power enable logic formula:
 $S = AU_ROBOT \& AU_STM \& (VEXT + AU_EXT)$

You can short STM32 AU by connecting JP4

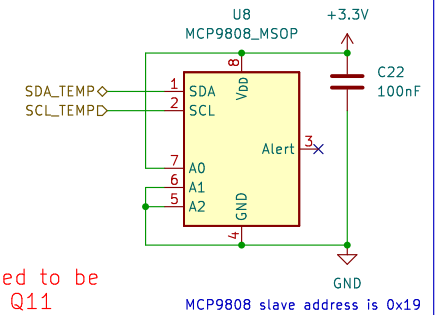
VEXT:
External power sensing signal
9V-26V when the external power is present

AU_EXT:
External AU signal
9-26V when the external AU is not pressed

AU_STM32:
STM32 AU signal
3.3V when the STM32 enable the power

AU_ROBOT:
STM32 AU signal
3.3V when the AU is not pressed

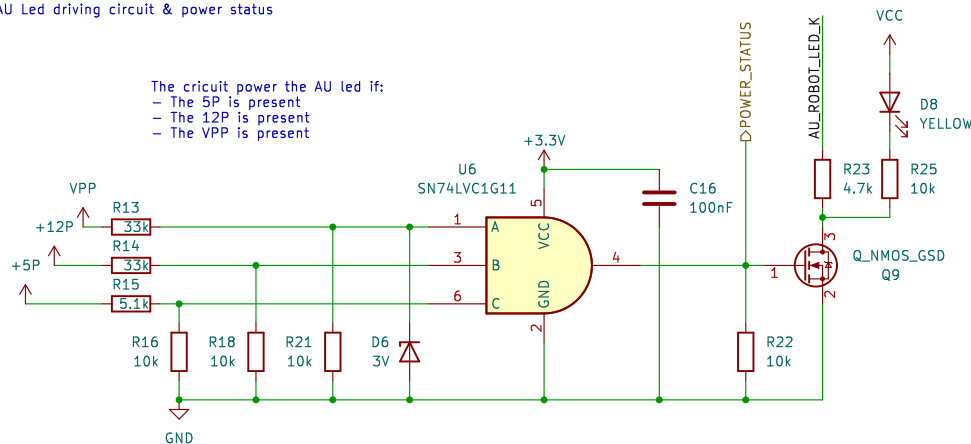
Temperature sensor



The sensor need to be placed bellow Q11

MCP9808 slave address is 0x19

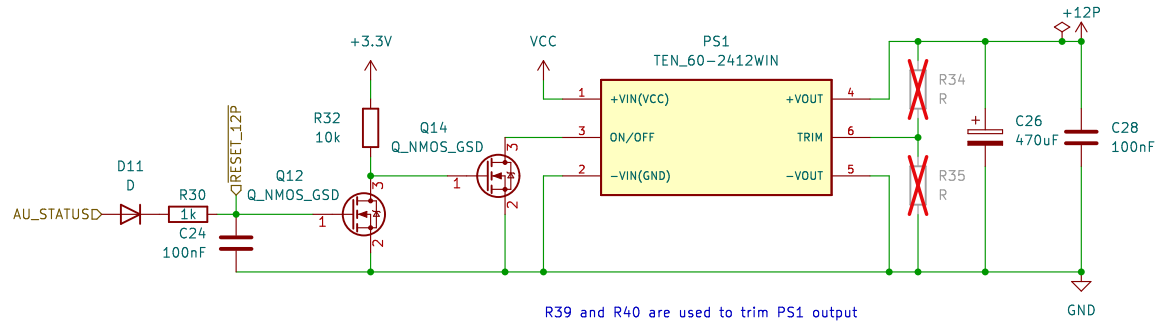
AU Led driving circuit & power status



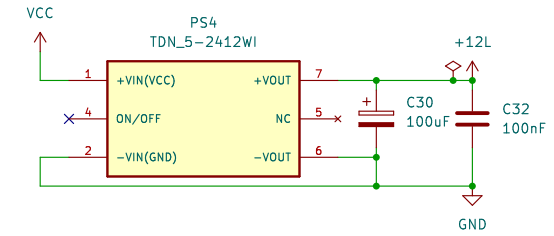
The cricuit power the AU led if:

- The 5P is present
- The 12P is present
- The VPP is present

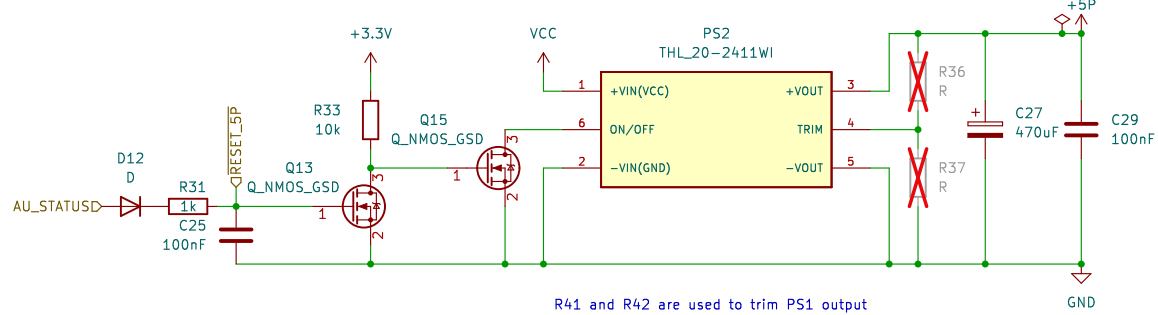
12V actuators power



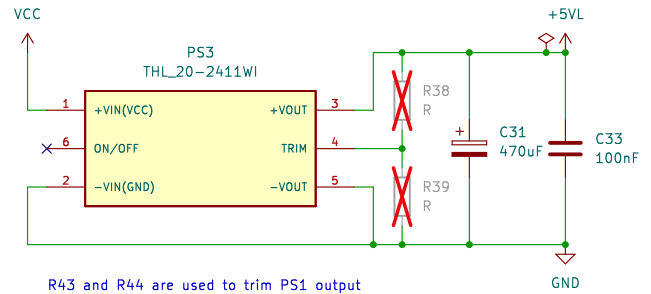
12V logical power



5V actuators power



5V logical power



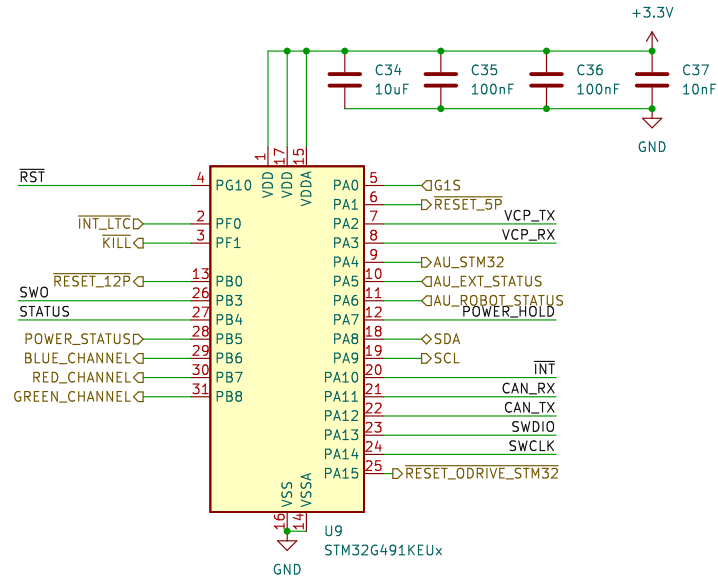
Documentation

ON/OFF control pins are used to enable (high level) or disable (low level) the output of the converters (+ or - 5% max).

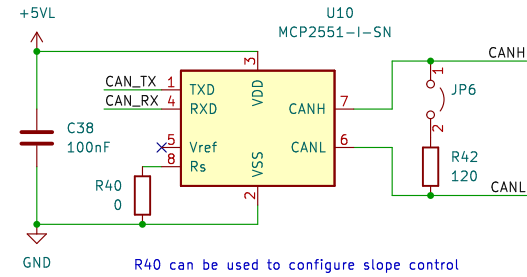
You can trim the converters output by using:

- R34 / R36 / R38 to trim up the voltage
- R35 / R37 / R39 to trim down the voltage

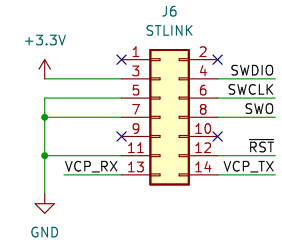
STM32



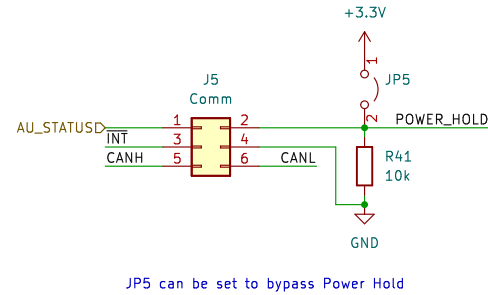
CAN



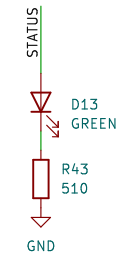
STLINK



Power Control Connector

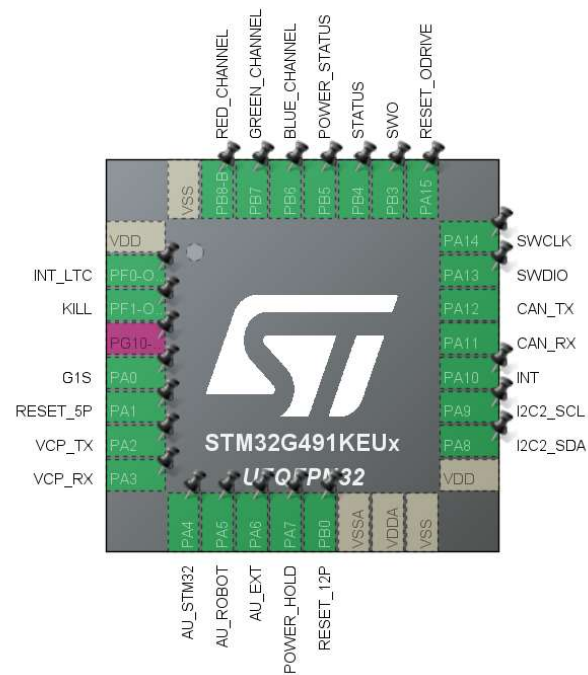


Status led

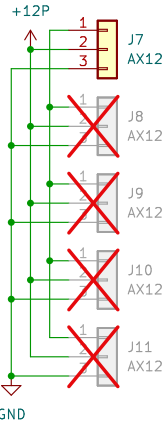


Mapping STM32

- TIM4 is used to drive the RGB power button led
- FDCAN1 is used to interface the STM32 with the CAN bus
- I2C2 is used to communicate with all onboard sensors
- UART2 is used for debugging
- INT_LTC / AU_ROBOT / AU_EXT / POWER_HOLD are used as external interrupts
- PB8 (BOOT0) is mapped as an output PWM (need to set nBOOT_SEL option byte to not use PB8 as BOOT0 pin)

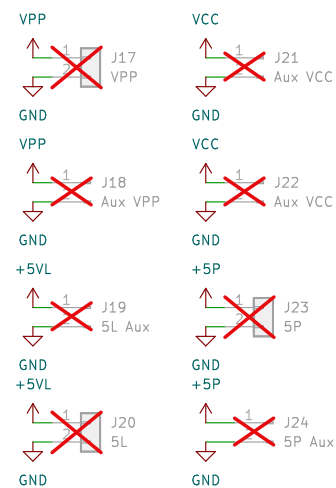
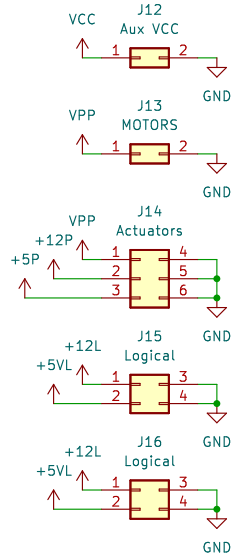


AX12



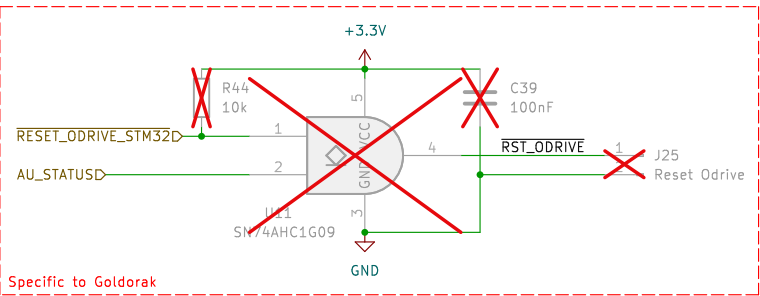
Output connectors

Specific to Evolutek



Specific to Goldorak

Reset Odrive



Specific to Goldorak