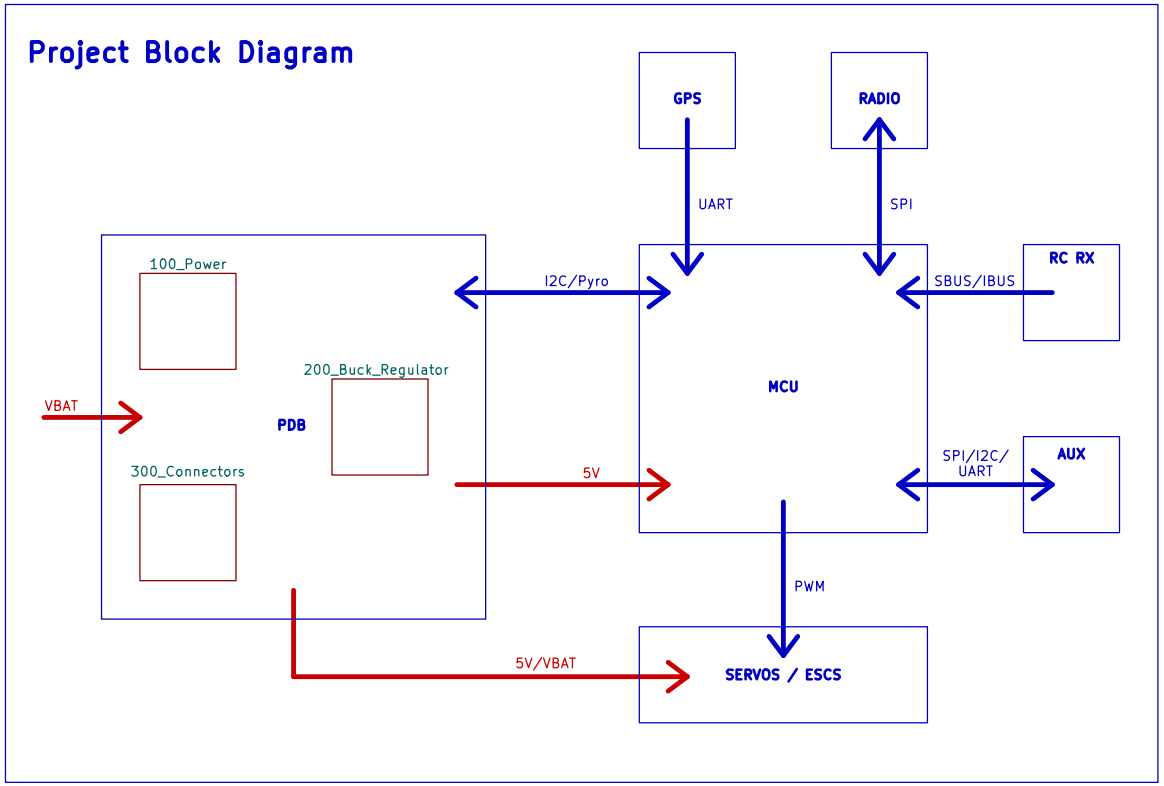
Project Block Diagram



Project Goals:

Be able to power 12 servos plus all on board electronics.

Have power switching between USB and Battery.

Have long range radio for communication.

Use GPS, barometer, magnetometer, gyroscope, and acceleromter to perform sensor fusion.

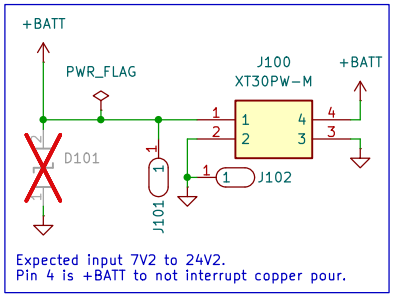
Use JTAG for debugging embedded software.

Be programmable through the ESP-IDF programming framework.

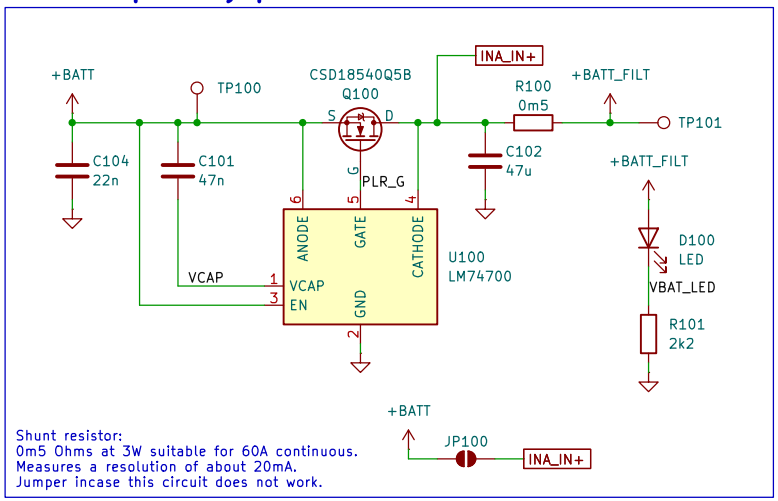
Able to be used in a variety of robotic systems: quadrupeds, drones, rockets, and fixed wings.

Sheet: /		
File: PDB_AURA.kicad_sch		
Title: PDB AURA		
Size: A4	Date: 25-05-2025	**Rev: 0.0.1**
KiCad E.D.A. 9.0.2		Id: 1/4

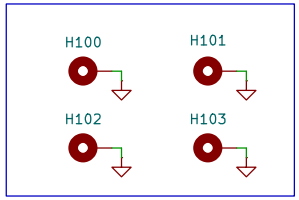
Battery



Reverse polarity protection



Mounting



Sheet: /100_Power/		
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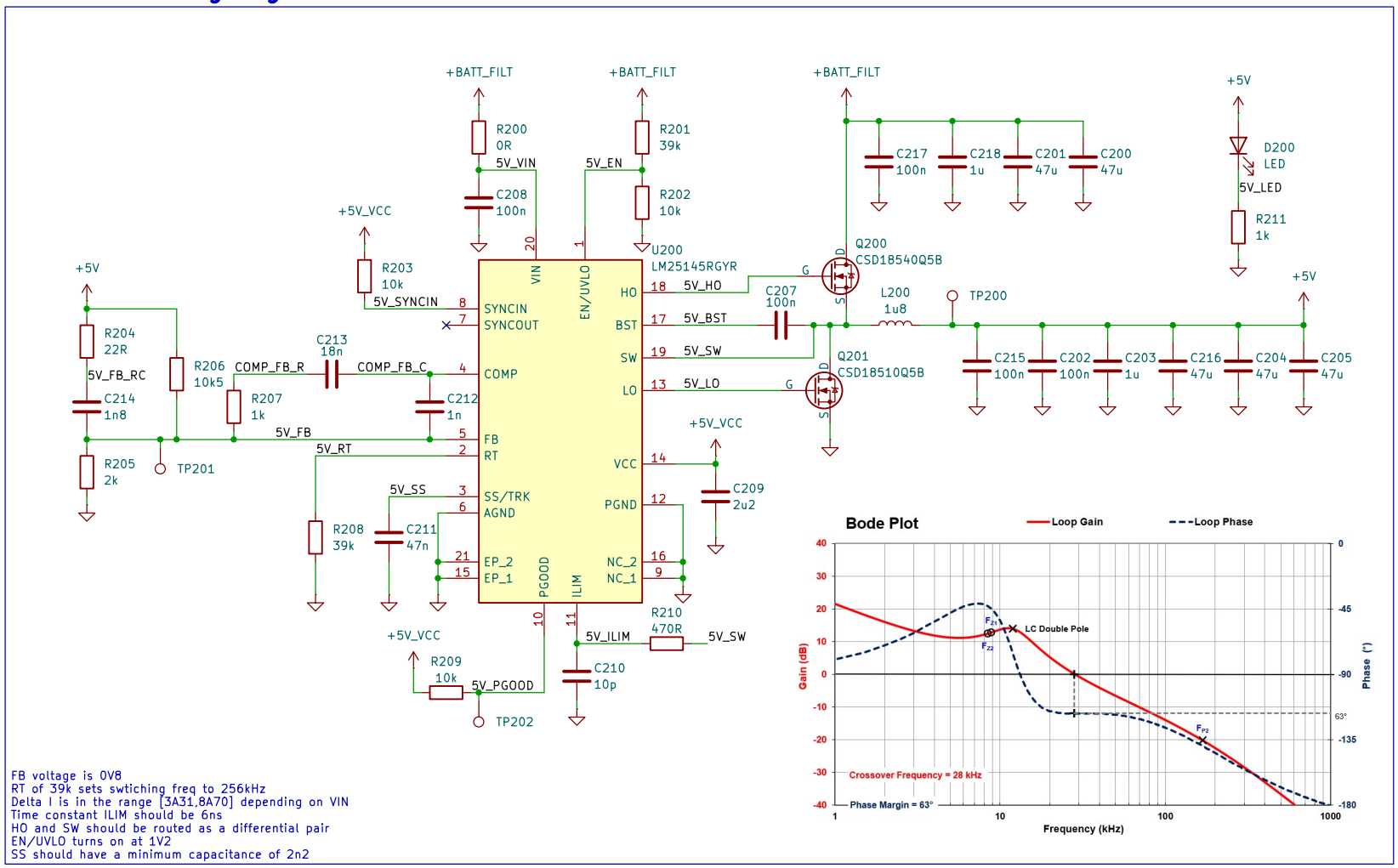
Title: Power Delivery		
Size: A4	Date: 07-05-2025	**Rev: 0.0.1**
KiCad E.D.A. 9.0.2		Id: 2/4

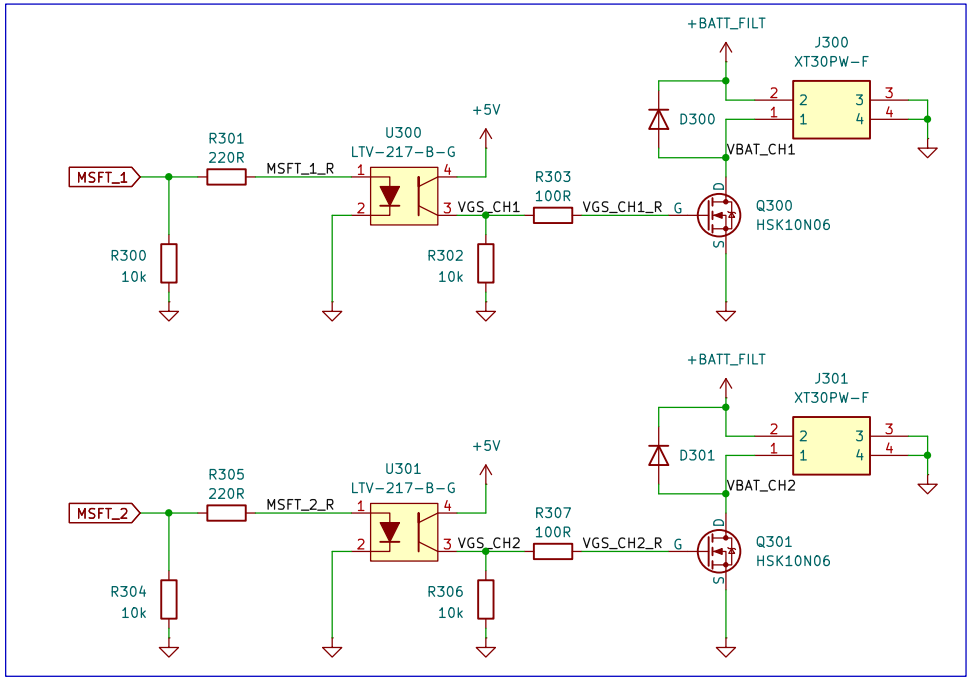
5V 20A Switching Regulator



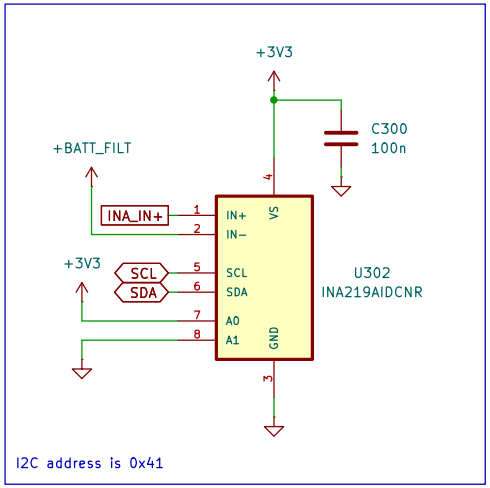
FB voltage is 0V8
RT of 39k sets swtiching freq to 256kHz
Delta I is in the range [3A31,8A70] depending on VIN
Time constant ILIM should be 6ns
HO and SW should be routed as a differential pair
EN/UVLO turns on at 1V2
SS should have a minimum capacitance of 2n2

Sheet: /200_Buck_Regulator/		
File: Buck_Regulator.kicad_sch		
Title: 5V 20A Switching Regulator		
Size: A4	Date: 20-06-2025	**Rev: 0.0.1**
KiCad E.D.A. 9.0.2		Id: 3/4

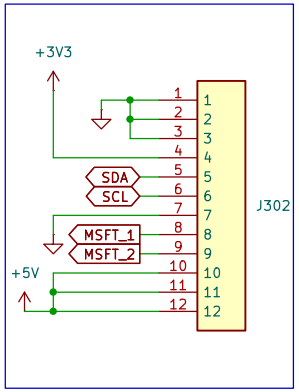
High power switches



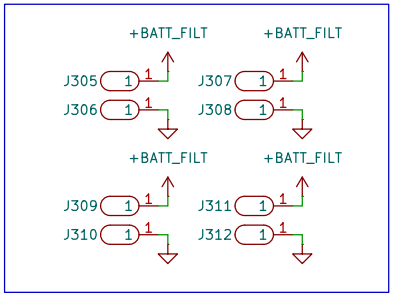
Power Sensing



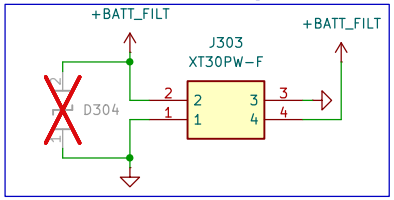
MCU Connector



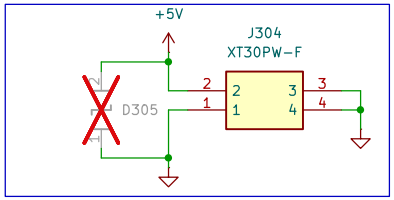
ESC Solder Pads



VBAT Pass Through



Servo 5V



Sheet: /300_Connectors/
File: Connectors.kicad_sch

Title: Connectors and Outputs

Size: A4	Date: 20-06-2025	**Rev: 0.0.1**
KiCad E.D.A. 9.0.2		Id: 4/4